

# ELK RIVER PLANNING AREA 1 65% REVEGETATION DESIGN PLAN

EUREKA, HUMBOLDT COUNTY, CA

PREPARED FOR:  
CALIFORNIA TROUT  
1380 9TH STREET  
ARCATA, CA 95521

PREPARED BY:  
STILLWATER SCIENCES      NORTHERN HYDROLOGY AND ENGINEERING  
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ARCATA, CA 95521        MCKINLEYVILLE, CA 95519

PROJECT FUNDED BY:  
CALIFORNIA STATE COASTAL CONSERVANCY

## ELK RIVER PLANNING AREA 1 65% REVEGETATION DESIGN PLAN

### REVISIONS

NO#	DESCRIPTION	DATE

### GENERAL NOTES, TERMS, & CONDITIONS:

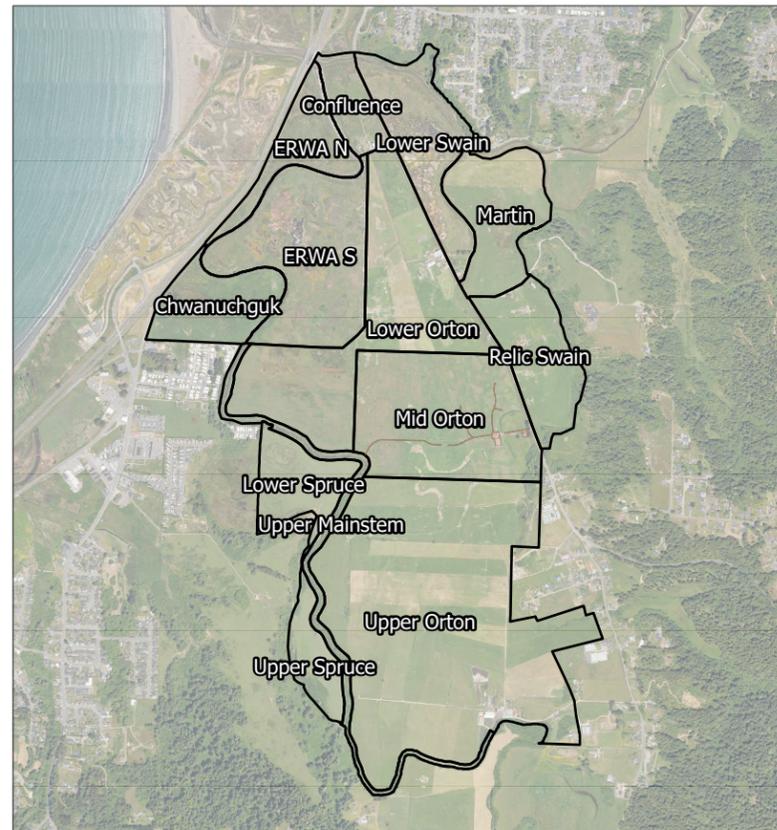
**1. DESIGN INTENT. THE REVEGETATION DESIGN CONTAINED HEREIN IS FOR DESIGN REVIEW PURPOSES ONLY.** THESE DRAWINGS REPRESENT THE GENERAL DESIGN INTENT TO BE IMPLEMENTED AND THE CONTRACTOR(S) IS/ARE RESPONSIBLE FOR ALL ITEMS SHOWN ON THESE PLANS. CONTRACTOR(S) SHALL BE RESPONSIBLE FOR CONTACTING THE PROJECT MANAGER FOR ANY CLARIFICATIONS OR FURTHER DETAILS NECESSARY TO ACCOMMODATE ACTUAL SITE CONDITIONS. ANY DEVIATION FROM THESE PLANS WITHOUT THE LANDOWNER'S REPRESENTATIVE APPROVAL ARE AT THE CONTRACTOR'S OWN RISK AND EXPENSE. NOTIFY PROJECT MANAGER IMMEDIATELY OF ANY UNEXPECTED AND CHANGED CONDITIONS, SAFETY HAZARDS, AND ENVIRONMENTAL PROBLEMS ENCOUNTERED.

**2. JOB SITE CONDITIONS AND CONTRACTOR RESPONSIBILITY.** CONTRACTOR(S) SHALL ASSUME SOLE AND COMPLETE RESPONSIBILITY FOR SITE CONDITIONS DURING THE COURSE OF THE CONSTRUCTION OF THIS PROJECT, INCLUDING THE SAFETY OF ALL PERSONS AND PROPERTY, AND ALL ENVIRONMENTAL PROTECTION ELEMENTS, WHETHER SHOWN ON THESE DRAWINGS OR NOT. CONTRACTOR(S) SHALL FOLLOW ALL APPLICABLE CONSTRUCTION AND SAFETY REGULATIONS. THESE REQUIREMENTS SHALL APPLY CONTINUOUSLY AND WILL NOT BE LIMITED TO NORMAL WORKING HOURS. THE CONTRACTOR(S) SHALL DEFEND, INDEMNIFY, AND HOLD THE LANDOWNER, THE CIVIL ENGINEER (NHE), OR REVEGETATION ENGINEER (STILLWATER SCIENCES) HARMLESS FROM ANY AND ALL LIABILITY, REAL OR ALLEGED, IN CONNECTION WITH THE PERFORMANCE OF WORK ON THIS PROJECT, EXCEPT FROM LIABILITY ARISING FROM THE SOLE NEGLIGENCE OF THE AFOREMENTIONED PARTIES.

**3. DAMAGE.** CONTRACTOR(S) SHALL EXERCISE CARE TO AVOID DAMAGE TO EXISTING PUBLIC AND PRIVATE PROPERTY, INCLUDING NATIVE TREES AND SHRUBS, AND OTHER PROPERTY IMPROVEMENTS. IF CONTRACTOR(S) CAUSES DAMAGES TO SUCH ITEMS, THEY SHALL BE RESPONSIBLE FOR REPAIR OR REPLACEMENT IN LIKE NUMBER, KIND, CONDITION, AND SIZE. ANY SUCH COST MAY BE DEDUCTED BY OWNER FROM MONIES DUE TO CONTRACTOR(S) UNDER THIS CONTRACT.

**4. PLANTING DESIGN.** THE PLANTING PLAN SET CONTAINED HEREIN IS PREPARED TO CONVEY THE CONCEPT AND INTENT OF PLANT INSTALLATIONS AND SEEDING ACROSS THE PROJECT SITE. REQUIRED ON-SITE ENGINEERING, ADAPTATION, AND FINAL PLANTING CONFIGURATIONS ARE THE SOLE RESPONSIBILITY OF THE CONTRACTOR, WITH APPROVAL BY THE PROJECT AND/OR REVEGETATION ENGINEER. THIS PLAN SET SHALL NOT BE INTERPRETED AS FINAL ENGINEERING DESIGN OR A GUARANTEE OF PROJECT SUCCESS. IT IS DISTINCTLY UNDERSTOOD THAT FINAL PLANT SPECIES SELECTION, QUANTITIES, PLACEMENT, AND ALL OTHER PROJECT IMPLEMENTATION DECISIONS SHALL BE MADE ON-SITE AND AT THE DISCRETION OF THE AFOREMENTIONED PARTIES.

### LOCATION MAP:



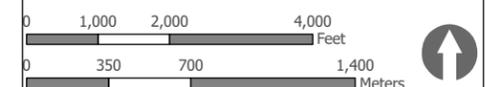
SUBAREAS INCLUDED IN PLANNING AREA 1 65% REVEGETATION DESIGN PLANS
CHWANUCHGUK
CONFLUENCE
ELK RIVER WILDLIFE AREA NORTH
ELK RIVER WILDLIFE AREA SOUTH
LOWER SPRUCE
LOWER SWAIN
LOWER ORTON
MID ORTON
UPPER ORTON
RELIC SWAIN
UPPER MAINSTEM
UPPER SPRUCE

### ABBREVIATIONS AND SYMBOLS:

- PA 1 boundary and subarea
- ⋄ [EG] Fence
- ♣ [DG] Fence
- ▨ Invasive vegetation management
- ⊠ Special-status plant
- Public access
- Electric utility pole
- Electric utility line
- Electric utility wire zone and tree clearance buffer
- ／ Contour (1 ft)
- ／ Contour (10 ft)

MAP PROJECTION  
NAD\_1983\_2011\_StatePlane\_California\_1  
FIPS\_0401\_US\_Feet\_10N  
**Stillwater Sciences**

### SCALE & NORTH ARROW



### REFERENCE BLOCK

DESIGN: EC  
DRAWN: EJ  
APPROVED: EC

### TITLE SHEET

SHEET 1 OF 1

**ELK RIVER PLANNING AREA 1  
65% REVEGETATION  
DESIGN PLAN**

- PA 1 boundary and subarea
- Contour (1 ft)
- Contour (10 ft)
- ✦ [DG] Fence
- ✦ [EG] Fence
- ⊠ Special-status plant
- ▨ Invasive vegetation management
- Planting zone**
- Lyngbye's sedge marsh (Lsm)
- Humboldt Bay owl's clover marsh (Hbocm)
- Low tidal marsh (natural recruitment) (Ltm)
- High tidal marsh (Htm)
- Emergent brackish marsh (Ebm)
- Coastal grassland corridor (Cgc)
- Coastal scrub (Cs)
- Riparian in-fill (Rif)
- Waters (W)
- Preserved area**
- Retain Eelgrass (Re)
- Retain Lyngbye's sedge marsh (Rls)
- Retain vegetation (Rv)

MAP PROJECTION  
NAD\_1983\_2011\_StatePlane\_California\_1  
FIPS\_0401\_US\_Feet\_10N  
**Stillwater Sciences**

**SCALE & NORTH ARROW**

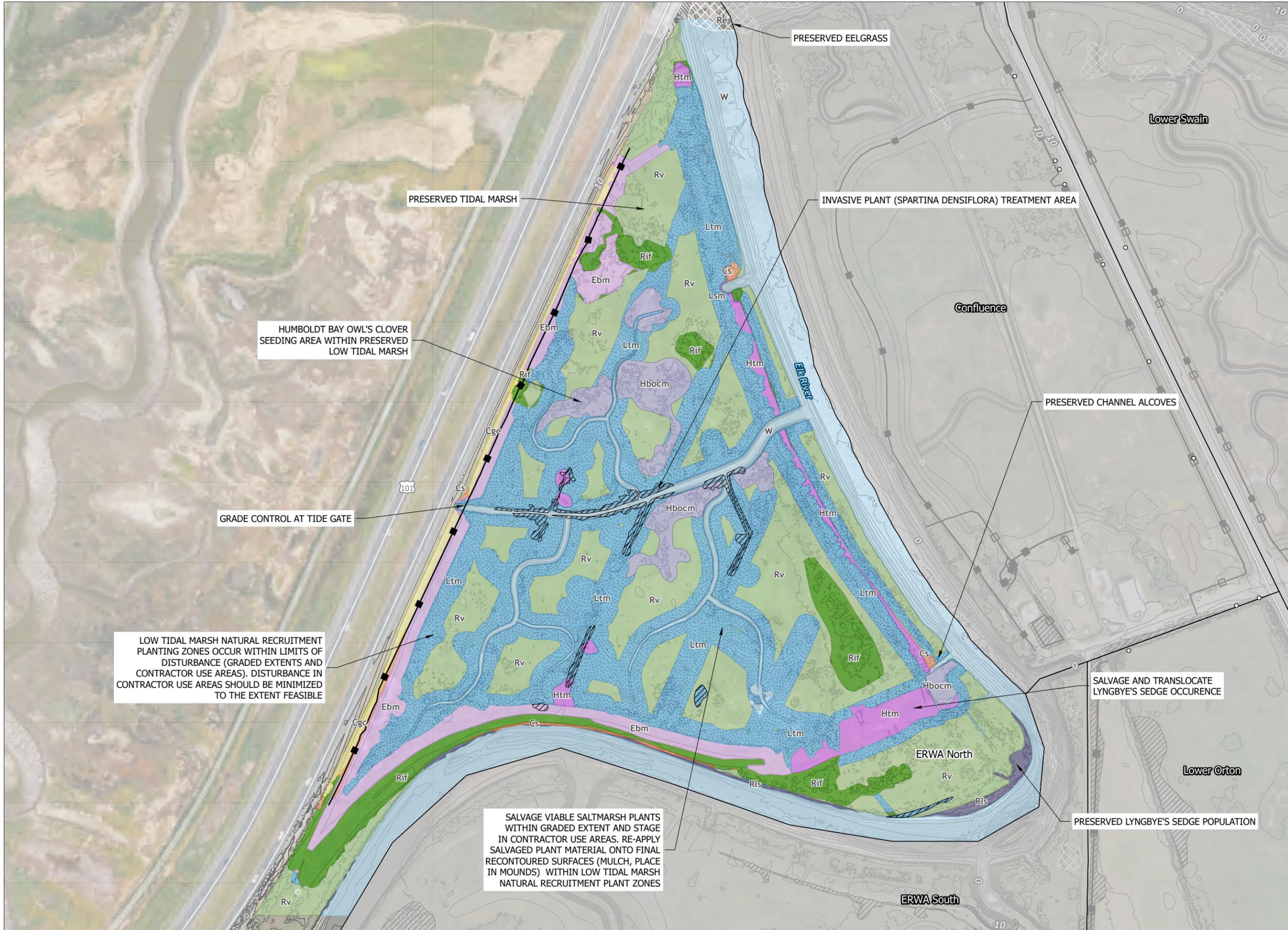


**REFERENCE BLOCK**

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PLAN VIEW 1 OF 1, ELK RIVER  
WILDLIFE AREA NORTH

SHEET 1 OF 2



**ERWA NORTH - PLANTING PLAN**

DATA SOURCES  
Imagery: NAIP 2024  
Roads, rivers, cities: ESRI 2016

**ELK RIVER PLANNING AREA  
65% REVEGETATION  
DESIGN PLAN**



LYNGBYE'S SEDGE MARSH: 0.004 ACRES						
Scientific name	Common name	Form	Propagule type	Spacing (feet on-center)	Fill (Percent)	Quantity
<i>Carex lyngbyei</i>	Lyngbye's sedge	perennial graminoid	AB34 PB	3	80	15
<i>Triglochin maritima</i>	arrowgrass	perennial herb	AB34 PB	3	20	4

HUMBOLDT BAY OWL'S CLOVER MARSH: 0.98 ACRES						
Scientific name	Common name	Form	Propagule type	Spacing (feet on-center)	Fill (Percent)	Quantity
<i>Castilleja ambigua</i> subsp. <i>humboldtensis</i> *	Humboldt Bay owl's clover	hemi-parasitic annual herb	PB	4	10	267
*Planting may be substituted with direct seeding onto host plants.						

EMERGENT BRACKISH MARSH: 1.47 ACRES						
Scientific name	Common name	Form	Propagule type	Spacing (feet on-center)	Fill (Percent)	Quantity
<i>Angelica lucida</i>	seacoast angelica	perennial (biannual) herb	PB	6	5	89
<i>Deschampsia cespitosa</i>	tufted hairgrass	fountain summer semi-deciduous grass	PB	6	30	534
<i>Festuca rubra</i>	red fescue	upright, fountain grass	PB	6	30	534
<i>Grindelia stricta</i> var. <i>stricta</i>	Oregon gumweed	summer semi-deciduous, spreading perennial herb	AB35 PB	6	10	178
<i>Juncus lescurii</i>	San Francisco rush	perennial graminoid	AB34 PB	6	5	89
<i>Potentilla anserina</i> subsp. <i>pacifica</i>	Pacific silverweed	perennial herb	AB34 PB	6	15	267
<i>Symphotrichum chilense</i>	Pacific aster	winter deciduous perennial herb	1 gallon	6	5	89

HIGH TIDAL MARSH: 0.63 ACRES						
Scientific name	Common name	Form	Propagule type	Spacing (feet on-center)	Fill (Percent)	Quantity
<i>Distichlis spicata</i>	saltgrass	upright grass	PB	6	25	191
<i>Grindelia stricta</i> var. <i>stricta</i>	Oregon gumweed	summer semi-deciduous, spreading perennial herb	AB35 PB	6	25	191
<i>Jaumea carnosa</i>	marsh jaumea	perennial herb	PB	6	5	38
<i>Juncus lescurii</i>	San Francisco rush	perennial graminoid	AB34 PB	6	15	114
<i>Limonium californicum</i>	western marsh rosemary	mounding, spreading evergreen perennial herb	PB	6	5	38
<i>Salicornia pacifica</i>	pickleweed	perennial herb	PB	6	10	76
<i>Triglochin maritima</i>	arrowgrass	perennial herb	AB34 PB	6	15	114

COASTAL GRASSLAND CORRIDOR: 0.27 ACRES						
Scientific name	Common name	Form	Propagule type	Application rate (lbs/acre)	Fill (Percent)	Quantity
<i>Achillea millefoliata</i>	common yarrow	perennial forb	broadcast seed	0.6	5	0.01
<i>Bromus sitchensis</i> var. <i>carinatus</i>	California brome	upright graminoid	broadcast seed	21	15	0.85
<i>Festuca rubra</i>	red fescue	perennial graminoid	broadcast seed	4.8	30	0.39
<i>Lupinus rivularis</i>	riverbank lupine	perennial herb	broadcast seed	30	5	0.41
<i>Regreen or equivalent</i>	sterile wheat hybrid	annual graminoid	broadcast seed	40	25	2.7
<i>Scrophularia californica</i>	figwort	perennial forb	broadcast seed	0.4	10	0.01
<i>Symphotrichum chilense</i>	Pacific aster	perennial forb	broadcast seed	0.8	10	0.02

COASTAL SCRUB: 0.13 ACRES						
Scientific name	Common name	Form	Propagule type	Spacing (feet on-center)	Fill (Percent)	Quantity
<i>Baccharis pilularis</i>	coyote brush	mounding, spreading evergreen shrub	1 gallon	6	5	8
<i>Ceanothus thyrsiflorus</i> var. <i>thyrsiflorus</i>	blueblossom	mounding, spreading evergreen shrub	1 gallon	8	5	4
<i>Frangula purshiana</i>	casara	upright winter deciduous shrub	1 gallon	6	10	16
<i>Garrya elliptica</i>	wavy leaf silk tassel	rounded evergreen shrub	1 gallon	10	5	3
<i>Lonicera involucrata</i>	twin berry	upright winter deciduous shrub	1 gallon	6	15	24
<i>Morella californica</i>	Pacific wax myrtle	upright evergreen shrub	1 gallon	6	15	24
<i>Ribes sanguineum</i>	red-flowering currant	upright winter deciduous shrub	1 gallon	6	5	8
<i>Rubus parviflorus</i>	thimbleberry	upright, spreading winter deciduous shrub, perennial herb	1 gallon	6	10	16
<i>Rubus spectabilis</i>	salmonberry	upright, mounding, spreading winter deciduous shrub	1 gallon	6	15	24
<i>Sambucus racemosa</i>	red elderberry	winter deciduous shrub, tree	1 gallon	8	15	13
Seed mix	F2	F3	F5	Application rate (lbs/acre)	F9	F10
<i>Achillea millefoliata</i>	common yarrow	perennial forb	broadcast seed	0.6	5	0.01
<i>Artemisia douglasiana</i>	mugwort	perennial forb	broadcast seed	4.4	5	0.03
<i>Bromus sitchensis</i> var. <i>carinatus</i>	California brome	perennial graminoid	broadcast seed	21	25	0.68
<i>Festuca rubra</i>	red fescue	perennial graminoid	broadcast seed	4.8	25	0.16
<i>Lupinus rivularis</i>	riverbank lupine	perennial herb	broadcast seed	13	5	0.08
<i>Regreen or equivalent</i>	sterile wheat hybrid	annual graminoid	broadcast seed	40	25	1.3
<i>Scrophularia californica</i>	figwort	perennial forb	broadcast seed	0.4	5	0.01
<i>Symphotrichum chilense</i>	Pacific aster	perennial forb	broadcast seed	0.8	5	0.01

RIPARIN IN-FILL: 1.61 ACRES						
Scientific name	Common name	Form	Propagule type	Spacing (feet on-center)	Fill (Percent)	Quantity
<i>Alnus rubra</i>	red alder	upright winter deciduous tree	1 gallon	10	10	70
<i>Frangula purshiana</i>	casara	upright winter deciduous shrub	1 gallon	10	5	35
<i>Lonicera involucrata</i>	twin berry	upright winter deciduous shrub	1 gallon	10	5	35
<i>Morella californica</i>	Pacific wax myrtle	upright evergreen shrub	1 gallon	10	15	105
<i>Physocarpus capitatus</i>	Pacific ninebark	rounded winter deciduous shrub	1 gallon	10	5	35
<i>Picea sitchensis</i>	Sitka spruce	pyramidal, upright evergreen tree	TP4	10	10	70
<i>Pinus contorta</i> subsp. <i>contorta</i>	shore pine	evergreen tree	TP4	10	5	35
<i>Ribes sanguineum</i>	red-flowering currant	upright winter deciduous shrub	1 gallon	10	10	70
<i>Rubus spectabilis</i>	salmonberry	upright, mounding, spreading winter deciduous shrub	1 gallon	10	15	105
<i>Salix hookeriana</i>	dune willow	upright winter deciduous tree, shrub	live pole cuttings	10	5	35
<i>Sambucus racemosa</i>	red elderberry	winter deciduous shrub, tree	1 gallon	10	15	105

**REFERENCE BLOCK**

DESIGN: EC  
DRAWN: EJ  
APPROVED: EC

PLANTING SCHEDULE  
SHEET 1 OF 1

SHEET 2 OF 2

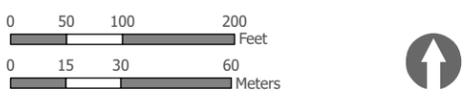
**ELK RIVER PLANNING AREA 1  
65% REVEGETATION  
DESIGN PLAN**

- PA 1 boundary and subarea
- ◆ [DG] Fence
- ⊗ [EG] Fence
- ⊠ Special-status plant
- ⊞ Invasive vegetation management
- Electric utility pole
- Contour (1 ft)
- Contour (10 ft)
- Design plant zone**
- Humboldt Bay owl's clover tidal marsh (Hbocm)
- High tidal marsh (natural recruitment) (Htm (nr))
- High tidal marsh (Htm)
- Emergent brackish marsh (Ebm)
- Emergent brackish pond (Ebp)
- Lower coastal marsh (Lcm)
- Mesic coastal grassland (Mcg)
- Coastal grassland corridor (Cgc)
- Coastal scrub (Cs)
- Riparian scrub (Rs)
- Riparian in-fill (Rif)
- Mixed evergreen riparian forest (Merf)
- Wetland pasture seed mix (Wpsm)
- Waters (W)
- Parking lot
- Road
- Preserved area**
- Retain riparian (Rr)
- Retain vegetation (Rv)
- Retain tidal marsh (Rtm)

MAP PROJECTION  
NAD\_1983\_UTM\_Zone\_10N  
Transverse\_Mercator



**SCALE & NORTH ARROW**

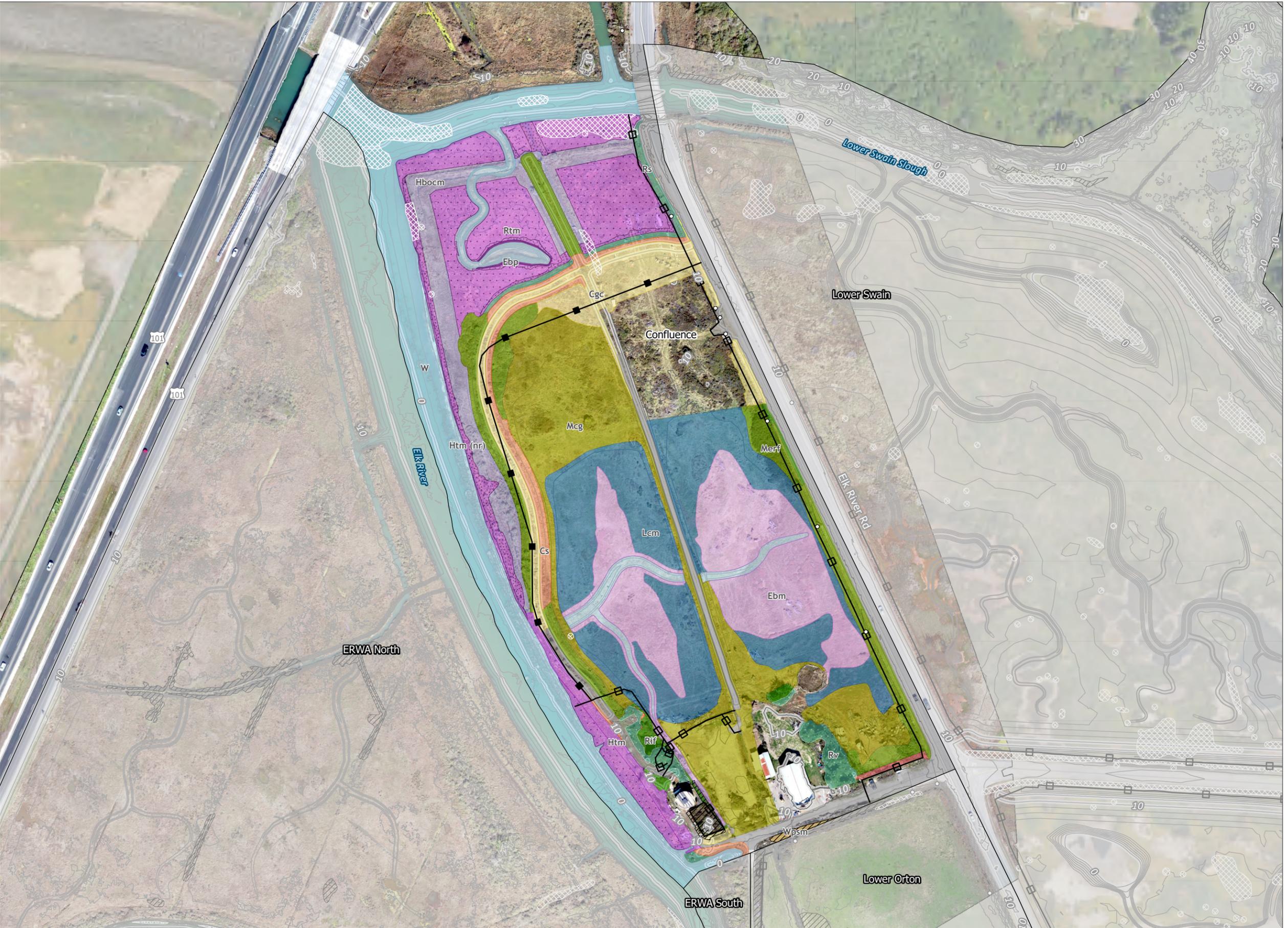


**REFERENCE BLOCK**

DESIGN: EC  
DRAWN: EJ  
APPROVED: EC

PLAN VIEW 1 OF 1, CONFLUENCE

SHEET 1 OF 2



**CONFLUENCE - PLANTING PLAN**

DATA SOURCES  
Imagery: NAIP 2024  
Roads, rivers, cities: ESRI 2016

**ELK RIVER PLANNING AREA 1**  
**65% REVEGETATION**  
**DESIGN PLAN**

**HUMBOLDT BAY OWL'S CLOVER MARSH: 0.87 ACRES**

Scientific name	Common name	Form	Propagule type	Spacing (feet on-center)	Fill (Percent)	Quantity
<i>Castilleja ambigua</i> subsp. <i>humboldtensis</i> *	Humboldt Bay owl's clover	hemi-parasitic annual herb	PB	4	10	237
*Planting may be substituted with direct seeding onto host plants.						

**HIGH TIDAL MARSH: 0.2 ACRES**

Scientific name	Common name	Form	Propagule type	Spacing (feet on-center)	Fill (Percent)	Quantity
<i>Distichlis spicata</i>	saltgrass	upright grass	PB	6	25	61
<i>Grindelia stricta</i> var. <i>stricta</i>	Oregon gumweed	summer semi-deciduous, spreading perennial herb	AB35 PB	6	25	61
<i>Jaumea carnosa</i>	marsh jaumea	perennial herb	PB	6	5	12
<i>Juncus lescurei</i>	San Francisco rush	perennial graminoid	AB34 PB	6	15	36
<i>Limonium californicum</i>	western marsh rosemary	mounding, spreading evergreen perennial herb	PB	6	5	12
<i>Salicornia pacifica</i>	pickleweed	perennial herb	PB	6	10	24
<i>Triglochin maritima</i>	arrowgrass	perennial herb	AB34 PB	6	15	36

**EMERGENT BRACKISH MARSH: 1.89 ACRES**

Scientific name	Common name	Form	Propagule type	Spacing (feet on-center)	Fill (Percent)	Quantity
<i>Distichlis spicata</i>	saltgrass	upright grass	PB	4	35	1801
<i>Eleocharis macrostachya</i>	pale spike rush	upright evergreen graminoid	PB	4	15	772
<i>Elymus triticoides</i>	creeping wild rye	winter deciduous grass	AB34 PB	4	15	772
<i>Potentilla anserina</i> subsp. <i>pacifica</i>	Pacific silverweed	perennial herb	AB34 PB	4	15	772
<i>Triglochin maritima</i>	arrowgrass	perennial herb	AB34 PB	6	20	457

**EMERGENT BRACKISH POND: 0.02 ACRES**

Scientific name	Common name	Form	Propagule type	Spacing (feet on-center)	Fill (Percent)	Quantity
<i>Bolboschoenus maritimus</i> subsp. <i>paludosus</i>	prairie rush	perennial graminoid	AB34 PB	3	50	48
<i>Schoenoplectus acutus</i> var. <i>occidentalis</i>	tule	perennial graminoid	AB34 PB	2	10	22
<i>Schoenoplectus pungens</i> var. <i>longispicatus</i>	three square	perennial graminoid	PB	3	20	19
<i>Triglochin maritima</i>	arrowgrass	perennial herb	AB34 PB	4	20	11

**LOWER COASTAL MARSH: 2.34 ACRES**

Scientific name	Common name	Form	Propagule type	Spacing (feet on-center)	Fill (Percent)	Quantity
<i>Carex obnupta</i>	slough sedge	upright perennial graminoid	AB34 PB	5	25	1019
<i>Distichlis spicata</i>	saltgrass	upright grass	PB	4	10	637
<i>Elymus triticoides</i>	creeping wild rye	winter deciduous grass	AB34 PB	4	15	956
<i>Potentilla anserina</i> subsp. <i>pacifica</i>	Pacific silverweed	perennial herb	AB34 PB	4	20	1274
<i>Scirpus microcarpus</i>	paniced bulrush	upright winter deciduous graminoid	PB	5	15	612
<i>Trifolium wormskioldii</i>	cow clover	mounding winter deciduous perennial herb	PB	4	15	956

**MESIC COASTAL GRASSLAND: 2.48 ACRES**

Scientific name	Common name	Form	Propagule type	Application rate (lbs/acre)	Fill (Percent)	Quantity
<i>Agrostis exarata</i>	spike bent grass	perennial grass	broadcast seed	0.4	40	0.40
<i>Hordeum brachyantherum</i> subsp. <i>brachyantherum</i>	meadow barley	perennial grass	broadcast seed	21.6	25	13.39
<i>Potentilla anserina</i> subsp. <i>pacifica</i>	Pacific silverweed	perennial herb	broadcast seed	7.2	15	2.68
<i>Trifolium wormskioldii</i>	cow clover	mounding winter deciduous perennial herb	broadcast seed	5.8	20	2.88

**COASTAL GRASSLAND CORRIDOR: 0.8 ACRES**

Scientific name	Common name	Form	Propagule type	Application rate (lbs/acre)	Fill (Percent)	Quantity
<i>Achillea millefoliata</i>	common yarrow	perennial forb	broadcast seed	0.6	5	0.02
<i>Elymus glaucus</i>	blue wildrye	perennial graminoid	broadcast seed	16.2	20	2.59
<i>Festuca idahoensis</i>	Idaho fescue	perennial graminoid	broadcast seed	4.8	25	0.96
<i>Lupinus rivularis</i>	riverbank lupine	perennial herb	broadcast seed	30	5	1.2
<i>Bromus sitchensis</i> var. <i>carinatus</i>	Sitka brome	upright graminoid	broadcast seed	21	40	6.72
<i>Symphyotrichum chilense</i>	Pacific aster	perennial forb	broadcast seed	0.8	5	0.03

**COASTAL SCRUB: 0.34 ACRES**

Scientific name	Common name	Form	Propagule type	Spacing (feet on-center)	Fill (Percent)	Quantity
<i>Baccharis pilularis</i>	coyote brush	mounding, spreading evergreen shrub	1 gallon	6	10	41
<i>Ceanothus thyrsiflorus</i> var. <i>thyrsiflorus</i>	blueblossom	mounding, spreading evergreen shrub	1 gallon	8	15	35
<i>Diplacus aurantiacus</i>	orange bush monkeyflower	mounding, spreading evergreen shrub	1 gallon	4	10	93
<i>Frangula purshiana</i>	casara	upright winter deciduous shrub	1 gallon	6	15	62
<i>Garrya elliptica</i>	wavy leaf silk tassel	rounded evergreen shrub	1 gallon	10	10	15
<i>Lonicera involucrata</i>	twin berry	upright winter deciduous shrub	1 gallon	6	10	41
<i>Morella californica</i>	Pacific wax myrtle	upright evergreen shrub	1 gallon	6	15	62
<i>Ribes sanguineum</i>	red-flowering currant	upright winter deciduous shrub	1 gallon	6	5	21
<i>Rubus parviflorus</i>	thimbleberry	upright, spreading winter deciduous shrub, perennial herb	1 gallon	6	5	21
<i>Sambucus racemosa</i>	red elderberry	winter deciduous shrub, tree	1 gallon	8	5	12
<b>Seed Mix</b>				<b>Application rate (lbs/acre)</b>		
<i>Achillea millefoliata</i>	common yarrow	perennial forb	broadcast seed	0.6	15	0.03
<i>Artemisia douglasiana</i>	mugwort	perennial forb	broadcast seed	4.4	5	0.07
<i>Elymus triticoides</i>	creeping wild rye	perennial graminoid	broadcast seed	19.2	25	1.63
<i>Festuca rubra</i>	red fescue	perennial graminoid	broadcast seed	4.8	15	0.24
<i>Sterile wheat (Regreen™ or equivalent)</i>	sterile wheat	annual cover crop	broadcast seed	40	25	3.4
<i>Scrophularia californica</i>	figwort	perennial forb	broadcast seed	0.4	5	0.01
<i>Symphyotrichum chilense</i>	Pacific aster	perennial forb	broadcast seed	0.8	10	0.03

**RIPARIAN SCRUB: 0.13 ACRES**

Scientific name	Common name	Form	Propagule type	Spacing (feet on-center)	Fill (Percent)	Quantity
<i>Frangula purshiana</i>	casara	upright winter deciduous shrub	1 gallon	6	10	16
<i>Lonicera involucrata</i>	twin berry	upright winter deciduous shrub	1 gallon	6	10	16
<i>Morella californica</i>	Pacific wax myrtle	upright evergreen shrub	1 gallon	8	20	18
<i>Ribes sanguineum</i>	red-flowering currant	upright winter deciduous shrub	1 gallon	6	10	16
<i>Rubus spectabilis</i>	salmonberry	upright, mounding, spreading winter deciduous shrub	1 gallon	6	20	31
<i>Salix hookeriana</i>	dune willow	upright winter deciduous tree, shrub	live pole cuttings	8	15	13
<i>Sambucus racemosa</i>	red elderberry	winter deciduous shrub, tree	1 gallon	8	15	13
<b>Seed Mix</b>				<b>Application rate (lbs/acre)</b>		
<i>Achillea millefoliata</i>	common yarrow	perennial forb	broadcast seed	0.6	10	0.01
<i>Bromus sitchensis</i> var. <i>carinatus</i>	California or maritime brome	perennial graminoid	broadcast seed	21	25	0.68
<i>Festuca rubra</i>	red fescue	perennial graminoid	broadcast seed	4.8	25	0.16
<i>Lupinus rivularis</i>	riverbank lupine	perennial herb	broadcast seed	13	5	0.08
<i>Regreen or equivalent</i>	sterile wheat hybrid	annual graminoid	broadcast seed	40	30	1.56
<i>Scrophularia californica</i>	figwort	perennial forb	broadcast seed	0.4	5	0.01



**REFERENCE BLOCK**

DESIGN: EC  
 DRAWN: EJ  
 APPROVED: EC

PLANTING SCHEDULE  
 SHEET 1 OF 2

SHEET 2 OF 3

**ELK RIVER PLANNING AREA 1  
65% REVEGETATION  
DESIGN PLAN**

RIPARIAN IN-FILL: 0.12 ACRES						
Scientific name	Common name	Form	Propagule type	Spacing (feet on-center)	Fill (Percent)	Quantity
<i>Alnus rubra</i>	red alder	upright winter deciduous tree	1 gallon	8	10	8
<i>Frangula purshiana</i>	casacara	upright winter deciduous shrub	1 gallon	8	5	4
<i>Lonicera involucrata</i>	twin berry	upright winter deciduous shrub	1 gallon	8	15	12
<i>Morella californica</i>	Pacific wax myrtle	upright evergreen shrub	1 gallon	8	20	16
<i>Physocarpus capitatus</i>	Pacific ninebark	rounded winter deciduous shrub	1 gallon	8	10	8
<i>Picea sitchensis</i>	Sitka spruce	pyramidal, upright evergreen tree	TP4	8	10	8
<i>Pinus contorta subsp. contorta</i>	shore pine	evergreen tree	TP4	8	10	8
<i>Rubus parviflorus</i>	thimbleberry	upright, spreading winter deciduous shrub, perennial herb	1 gallon	8	10	8
<i>Sambucus racemosa</i>	red elderberry	winter deciduous shrub, tree	1 gallon	8	10	8

MIXED EVERGREEN RIPARIAN FOREST: 1.05 ACRES						
Scientific name	Common name	Form	Propagule type	Spacing (feet on-center)	Fill (Percent)	Quantity
<i>Alnus rubra</i>	red alder	upright winter deciduous tree	1 gallon	14	10	23
<i>Frangula purshiana</i>	casacara	upright winter deciduous shrub	1 gallon	6	5	64
<i>Morella californica</i>	Pacific wax myrtle	upright evergreen shrub	1 gallon	6	10	127
<i>Physocarpus capitatus</i>	Pacific ninebark	rounded winter deciduous shrub	1 gallon	6	5	64
<i>Picea sitchensis</i>	Sitka spruce	pyramidal, upright evergreen tree	TP4	10	30	137
<i>Pinus contorta subsp. contorta</i>	shore pine	evergreen tree	TP4	10	10	46
<i>Ribes sanguineum</i>	red-flowering currant	upright winter deciduous shrub	1 gallon	6	5	64
<i>Rubus parviflorus</i>	thimbleberry	upright, spreading winter deciduous shrub, perennial herb	1 gallon	6	5	64
<i>Rubus spectabilis</i>	salmonberry	upright, mounding, spreading winter deciduous shrub	1 gallon	6	5	64
<i>Salix hookeriana</i>	dune willow	upright winter deciduous tree, shrub	live pole cuttings	10	10	46
<i>Sambucus racemosa</i>	red elderberry	winter deciduous shrub, tree	1 gallon	8	5	36
<b>Seed mix</b>				<b>Application rate (lbs/acre)</b>		
<i>Achillea millefoliata</i>	common yarrow	perennial forb	broadcast seed	0.6	15	0.09
<i>Artemisia douglasiana</i>	mugwort	perennial forb	broadcast seed	4.4	5	0.23
<i>Elymus triticoides</i>	creeping wild rye	perennial graminoid	broadcast seed	19.2	25	5.04
<i>Festuca rubra</i>	red fescue	perennial graminoid	broadcast seed	4.8	15	0.76
<i>Sterile wheat (Regreen™ or equivalent)</i>	sterile wheat	annual cover crop	broadcast seed	40	25	10.5
<i>Scrophularia californica</i>	figwort	perennial forb	broadcast seed	0.4	5	0.02
<i>Symphotrichum chilense</i>	Pacific aster	perennial forb	broadcast seed	0.8	10	0.08



**REFERENCE BLOCK**

DESIGN: EC  
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PLANTING SCHEDULE  
SHEET 2 OF 2

SHEET 3 OF 3

**ELK RIVER PLANNING AREA 1  
65% REVEGETATION  
DESIGN PLAN**

- PA 1 boundary and sub area
- ⊗ [EG] Fence
- ⚡ [DG] Fence
- ▨ Invasive vegetation management
- ▨ Special-status plant
- Electric utility line
- Electric utility pole
- ▨ Electric utility wire zone and tree clearance buffer
- Contour (1 ft)
- Contour (10 ft)
- Planting zone**
- ▨ Lyngbye's sedge marsh (Lsm)
- ▨ Humboldt Bay owl's clover tidal marsh (Hbocm)
- ▨ Low tidal marsh (natural recruitment) (Ltm)
- ▨ High tidal marsh (Htm)
- ▨ Emergent brackish marsh (Ebm)
- ▨ Emergent brackish pond (Ebp)
- ▨ Mesic coastal grassland (Mcg)
- ▨ Coastal grassland corridor (Cgc)
- ▨ Coastal scrub (Cs)
- ▨ Riparian scrub (Rs)
- ▨ Waters (W)
- ▨ Bridge/Waters (Bw)
- ▨ Public access
- ▨ Developed
- Preserved area**
- ▨ Retain Monterey cypress (Rmc)
- ▨ Retain vegetation (Rv)
- ▨ Retain Lyngbye's sedge marsh (Rlsm)

MAP PROJECTION  
NAD 1983 (2011)  
StatePlane California I  
FIPS 0401 (US Feet)



**SCALE & NORTH ARROW**



**REFERENCE BLOCK**

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PLAN VIEW 1 OF 1, LOWER SWAIN SLOUGH

SHEET 1 OF 2



**ELK RIVER PLANNING AREA 1**  
**65% REVEGETATION**  
**DESIGN PLAN**



**REFERENCE BLOCK**

DESIGN: EC  
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PLANTING SCHEDULE  
 SHEET 1 OF 2

SHEET 2 OF 3

LYNGBYE'S SEDGE MARSH: 1.73 ACRES						
Scientific name	Common name	Form	Propagule type	Spacing (feet on-center)	Fill (Percent)	Quantity
<i>Carex lyngbyei</i>	Lyngbye's sedge	perennial graminoid	AB34 PB	6	60	1256
<i>Triglochin maritima</i>	arrowgrass	perennial herb	AB34 PB	6	40	837
HUMBOLDT BAY OWL'S CLOVER MARSH: 11.76 ACRES						
Scientific name	Common name	Form	Propagule type	Spacing (feet on-center)	Fill (Percent)	Quantity
<i>Juncus lescurii</i>	San Francisco rush	perennial graminoid	AB34 PB	5	10	2049
<i>Distichlis spicata</i>	saltgrass	upright grass	PB	5	10	2049
<i>Salicornia pacifica</i>	pickleweed	perennial herb	PB	5	10	2049
<i>Castilleja ambigua</i> subsp. <i>humboldtensis</i> *	Humboldt Bay owl's clover	hemi-parasitic annual herb	PB	4	5	1601
*Planting may be substituted with direct seeding onto host plants.						
HIGH TIDAL MARSH: 11.85 ACRES						
Scientific name	Common name	Form	Propagule type	Spacing (feet on-center)	Fill (Percent)	Quantity
<i>Distichlis spicata</i>	saltgrass	upright grass	PB	6	25	3585
<i>Grindelia stricta</i> var. <i>stricta</i>	Oregon gumweed	summer semi-deciduous, spreading perennial herb	AB35 PB	6	25	3585
<i>Jaumea carnosa</i>	marsh jaumea	perennial herb	PB	6	5	717
<i>Juncus lescurii</i>	San Francisco rush	perennial graminoid	AB34 PB	6	15	2151
<i>Limonium californicum</i>	western marsh rosemary	mounding, spreading evergreen perennial herb	PB	6	5	717
<i>Salicornia pacifica</i>	pickleweed	perennial herb	PB	6	10	1434
<i>Triglochin maritima</i>	arrowgrass	perennial herb	AB34 PB	6	15	2151
EMERGENT BRACKISH MARSH: 2.08 ACRES						
Scientific name	Common name	Form	Propagule type	Spacing (feet on-center)	Fill (Percent)	Quantity
<i>Angelica lucida</i>	seacoast angelica	perennial (biannual) herb	PB	4	5	283
<i>Deschampsia cespitosa</i>	tufted hairgrass	fountain summer semi-deciduous grass	PB	4	25	1416
<i>Elymus triticoides</i>	creeping wild rye	winter deciduous grass	AB34 PB	4	10	566
<i>Festuca rubra</i>	red fescue	upright, fountain grass	PB	4	25	1416
<i>Grindelia stricta</i> var. <i>stricta</i>	Oregon gumweed	summer semi-deciduous, spreading perennial herb	AB35 PB	4	5	283
<i>Hordeum brachyantherum</i> subsp. <i>brachyantherum</i>	meadow barley	perennial grass	PB	4	5	283
<i>Juncus lescurii</i>	San Francisco rush	perennial graminoid	AB34 PB	4	5	283
<i>Potentilla anserina</i> subsp. <i>pacifica</i>	Pacific silverweed	perennial herb	AB34 PB	4	15	849
<i>Symphotrichum chilense</i>	Pacific aster	winter deciduous perennial herb	1 gallon	4	5	283
EMERGENT BRACKISH POND: 0.91 ACRES						
Scientific name	Common name	Form	Propagule type	Spacing (feet on-center)	Fill (Percent)	Quantity
<i>Bolboschoenus maritimus</i> subsp. <i>paludosus</i>	saltmarsh bulrush	perennial graminoid	AB34 PB	3	45	414
<i>Eleocharis macrostachya</i>	pale spike rush	upright evergreen graminoid	PB	3	15	138
<i>Potentilla anserina</i> subsp. <i>pacifica</i>	Pacific silverweed	perennial herb	AB34 PB	4	15	78
<i>Schoenoplectus acutus</i> var. <i>occidentalis</i>	tule	perennial graminoid	AB34 PB	3	5	46
<i>Schoenoplectus pungens</i> var. <i>longispicatus</i>	three square	perennial graminoid	PB	3	10	92
<i>Triglochin maritima</i>	arrowgrass	perennial herb	AB34 PB	4	10	52
COASTAL GRASSLAND CORRIDOR: 0.89 ACRES						
Scientific name	Common name	Form	Propagule type	Application rate (lbs/acre)	Fill (Percent)	Quantity
<i>Achillea millefoliata</i>	common yarrow	perennial forb	broadcast seed	0.6	5	0.03
<i>Bromus sitchensis</i> var. <i>carinatus</i>	California brome	upright graminoid	broadcast seed	21	20	3.74
<i>Festuca rubra</i>	red fescue	perennial graminoid	broadcast seed	4.8	30	1.28
<i>Lupinus rivularis</i>	riverbank lupine	perennial herb	broadcast seed	30	5	1.34
<i>Regreen or equivalent</i>	sterile wheat hybrid	annual graminoid	broadcast seed	40	20	7.12
<i>Scrophularia californica</i>	figwort	perennial forb	broadcast seed	0.4	10	0.04
<i>Symphotrichum chilense</i>	Pacific aster	perennial forb	broadcast seed	0.8	10	0.07

MESIC COASTAL GRASSLAND: 0.64 ACRES						
Scientific name	Common name	Form	Propagule type	Spacing (feet on-center)	Fill (Percent)	Quantity
<i>Angelica lucida</i>	seacoast angelica	perennial (biannual) herb	PB	8	5	22
<i>Calamagrostis nutkaensis</i>	Pacific reedgrass	evergreen perennial graminoid	AB35 PB	8	30	131
<i>Deschampsia cespitosa</i>	tufted hairgrass	fountain summer semi-deciduous grass	PB	8	25	109
<i>Festuca rubra</i>	red fescue	upright, fountain grass	PB	8	25	109
<i>Potentilla anserina</i> subsp. <i>pacifica</i>	Pacific silverweed	perennial herb	AB34 PB	8	10	44
<i>Symphotrichum chilense</i>	Pacific aster	winter deciduous perennial herb	1 gallon	8	5	22
<b>Seed mix</b>				<b>Application rate (lbs/acre)</b>		
<i>Achillea millefoliata</i>	common yarrow	perennial forb	broadcast seed	0.6	5	0.02
<i>Artemisia douglasiana</i>	mugwort	perennial forb	broadcast seed	4.4	10	0.28
<i>Elymus triticoides</i>	creeping wild rye	perennial graminoid	broadcast seed	19.2	25	3.07
<i>Festuca rubra</i>	red fescue	perennial graminoid	broadcast seed	4.8	15	0.46
<i>Hordeum brachyantherum</i> subsp. <i>brachyantherum</i>	northern barley	perennial graminoid	broadcast seed	21.6	25	3.46
<i>Scrophularia californica</i>	figwort	perennial forb	broadcast seed	0.4	5	0.01
<i>Symphotrichum chilense</i>	Pacific aster	winter deciduous perennial herb	broadcast seed	0.8	15	0.08
COASTAL SCRUB: 1.71 ACRES						
Scientific name	Common name	Form	Propagule type	Spacing (feet on-center)	Fill (Percent)	Quantity
<i>Baccharis pilularis</i>	coyote brush	mounding, spreading evergreen shrub	1 gallon	6	5	103
<i>Ceanothus thyrsiflorus</i> var. <i>thyrsiflorus</i>	blueblossom	mounding, spreading evergreen shrub	1 gallon	8	5	58
<i>Diplacus aurantiacus</i>	orange bush monkeyflower	mounding, spreading evergreen shrub	1 gallon	6	5	103
<i>Frangula purshiana</i>	casacara	upright winter deciduous shrub	1 gallon	6	15	310
<i>Garrya elliptica</i>	wavy leaf silk tassel	rounded evergreen shrub	1 gallon	10	10	74
<i>Lonicera involucrata</i>	twin berry	upright winter deciduous shrub	1 gallon	6	15	310
<i>Morella californica</i>	Pacific wax myrtle	upright evergreen shrub	1 gallon	8	20	233
<i>Ribes sanguineum</i>	red-flowering currant	upright winter deciduous shrub	1 gallon	6	5	103
<i>Rubus spectabilis</i>	salmonberry	upright, mounding, spreading winter deciduous shrub	1 gallon	6	5	103
<i>Rubus parviflorus</i>	thimbleberry	upright, spreading winter deciduous shrub, perennial herb	1 gallon	6	10	207
<i>Sambucus racemosa</i>	red elderberry	winter deciduous shrub, tree	1 gallon	8	5	58
<b>Seed Mix</b>				<b>Application rate (lbs/acre)</b>		
<i>Achillea millefoliata</i>	common yarrow	perennial forb	broadcast seed	0.6	15	0.15
<i>Artemisia douglasiana</i>	mugwort	perennial forb	broadcast seed	4.4	5	0.38
<i>Elymus triticoides</i>	creeping wild rye	perennial graminoid	broadcast seed	19.2	10	3.28
<i>Festuca rubra</i>	red fescue	perennial graminoid	broadcast seed	4.8	15	1.23
<i>Hordeum brachyantherum</i> subsp. <i>brachyantherum</i>	northern barley	perennial graminoid	broadcast seed	21.6	25	9.23
<i>Lupinus rivularis</i>	riverbank lupine	perennial herb	broadcast seed	13	10	2.22
<i>Scrophularia californica</i>	figwort	perennial forb	broadcast seed	0.4	10	0.07
<i>Symphotrichum chilense</i>	Pacific aster	perennial forb	broadcast seed	0.8	10	0.14

**RIPARIAN SCRUB: 3.11 ACRES**

Scientific name	Common name	Form	Propagule type	Spacing (feet on-center)	Fill (Percent)	Quantity
<i>Alnus rubra</i>	red alder	upright winter deciduous tree	1 gallon	14	10	69
<i>Frangula purshiana</i>	casacara	upright winter deciduous shrub	1 gallon	6	5	188
<i>Lonicera involucrata</i>	twin berry	upright winter deciduous shrub	1 gallon	6	5	188
<i>Morella californica</i>	Pacific wax myrtle	upright evergreen shrub	1 gallon	8	15	318
<i>Physocarpus capitatus</i>	Pacific ninebark	rounded winter deciduous shrub	1 gallon	6	5	188
<i>Picea sitchensis</i>	Sitka spruce	pyramidal, upright evergreen tree	TP4	10	5	68
<i>Pinus contorta</i> subsp. <i>contorta</i>	shore pine	evergreen tree	TP4	10	5	68
<i>Ribes sanguineum</i>	red-flowering currant	upright winter deciduous shrub	1 gallon	6	10	376
<i>Rubus parviflorus</i>	thimbleberry	upright, spreading winter deciduous shrub, perennial herb	1 gallon	6	5	188
<i>Rubus spectabilis</i>	salmonberry	upright, mounding, spreading winter deciduous shrub	1 gallon	6	15	564
<i>Salix hookeriana</i>	dune willow	upright winter deciduous tree, shrub	live pole cuttings	10	5	68
<i>Sambucus racemosa</i>	red elderberry	winter deciduous shrub, tree	1 gallon	8	15	318
<b>Seed Mix</b>				<b>Application rate (lbs/acre)</b>		
<i>Achillea millefoliata</i>	common yarrow	perennial forb	broadcast seed	0.6	15	0.21
<i>Artemisia douglasiana</i>	mugwort	perennial forb	broadcast seed	4.4	15	1.56
<i>Bromus sitchensis</i> var. <i>carinatus</i>	California or maritime brome	perennial graminoid	broadcast seed	21	20	7.43
<i>Festuca rubra</i>	red fescue	perennial graminoid	broadcast seed	4.8	15	5.09
<i>Hordeum brachyantherum</i> subsp. <i>brachyantherum</i>	northern barley	perennial graminoid	broadcast seed	21.6	15	15.28
<i>Scrophularia californica</i>	figwort	perennial forb	broadcast seed	0.4	10	0.21
<i>Symphotrichum chilense</i>	Pacific aster	perennial forb	broadcast seed	0.8	10	0.14

**ELK RIVER PLANNING AREA 1  
65% REVEGETATION  
DESIGN PLAN**

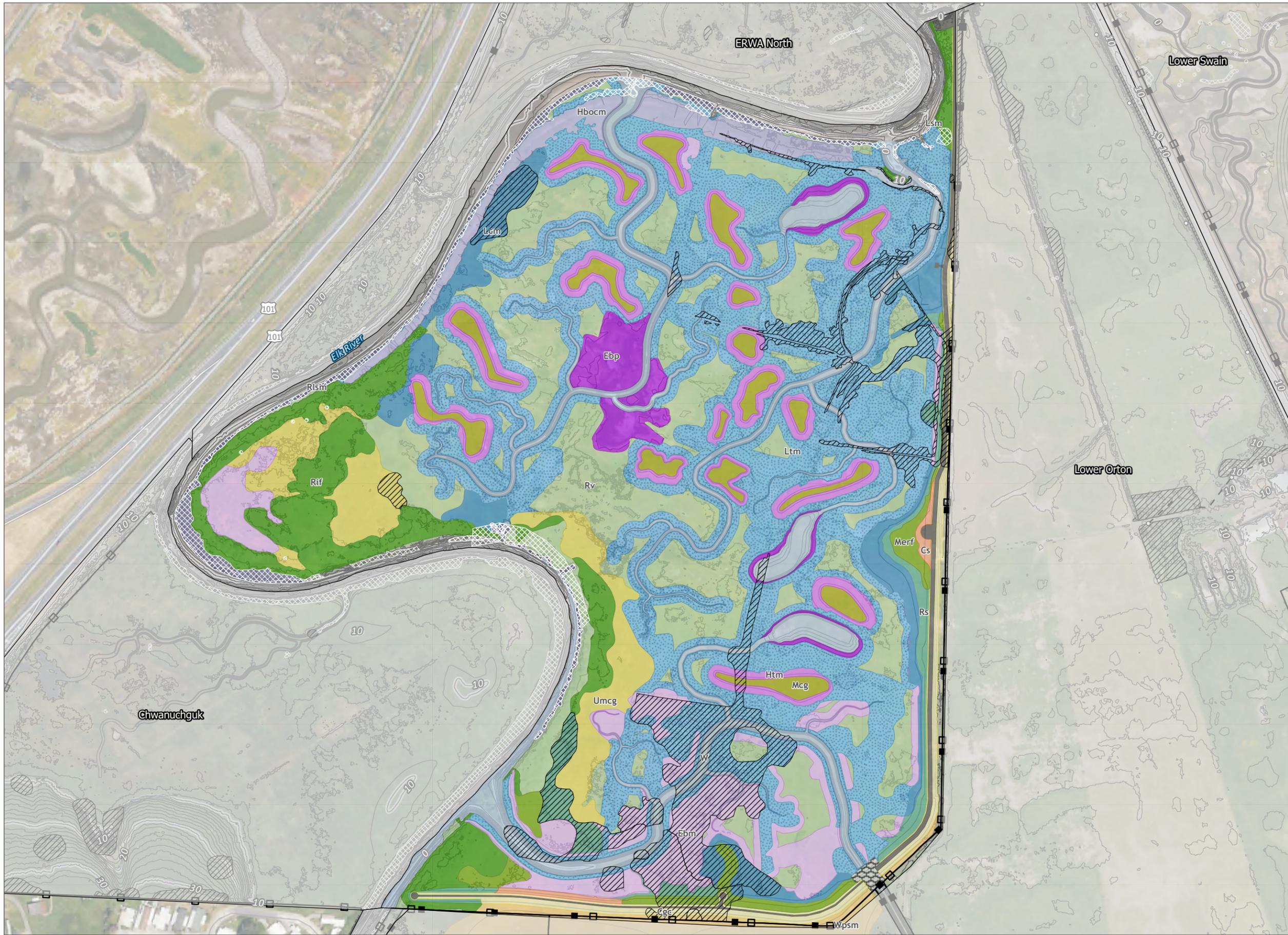


**REFERENCE BLOCK**

DESIGN: EC  
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APPROVED: EC

PLANTING SCHEDULE  
SHEET 2 OF 2

SHEET 3 OF 3



**ELK RIVER PLANNING AREA 1  
65% REVEGETATION  
DESIGN PLAN**

- PA 1 boundary and subarea
- ⊗ [EG] Fence
- ⚡ [DG] Fence
- ▨ Invasive vegetation management
- ⊗ Special-status plant
- Electric utility pole
- Electric utility line
- ▨ Electric utility wire zone and tree clearance buffer
- Contour (1 ft)
- Contour (10 ft)
- Planting zone**
- ▨ Lyngbye's sedge marsh (Lsm)
- ▨ Humboldt bay owl's clover marsh (Hbocm)
- ▨ Low tidal marsh (natural recruitment) (Ltm)
- ▨ High tidal marsh (Htm)
- ▨ Emergent brackish marsh (Ebm)
- ▨ Emergent brackish pond (Ebp)
- ▨ Lower coastal marsh (Lcm)
- ▨ Wetland pasture seed mix (Wpsm)
- ▨ Mesic coastal grassland (Mcg)
- ▨ Upper mesic coastal grassland (Umcg)
- ▨ Coastal grassland corridor (Cgc)
- ▨ Coastal scrub (Cs)
- ▨ Riparian scrub (Rs)
- ▨ Riparian in-fill (Rif)
- ▨ Mixed evergreen riparian forest (Merf)
- ▨ Waters (W)
- ▨ Crossing
- ▨ Public access
- Preserved area**
- ▨ Retain Lyngbye's sedge marsh (Rlsm)
- ▨ Retain vegetation (Rv)

MAP PROJECTION  
NAD\_1983\_2011\_StatePlane\_California\_1  
FIPS\_0401\_US\_Feet\_10N  
**Stillwater Sciences**

**SCALE & NORTH ARROW**



**REFERENCE BLOCK**

DESIGN: EC  
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PLAN VIEW 1 OF 1, ELK RIVER  
WILDLIFE AREA, SOUTH

SHEET 1 OF 3



**REFERENCE BLOCK**

DESIGN: EC  
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PLANTING SCHEDULE  
 SHEET 1 OF 2

SHEET 2 OF 3

LYNGBYE'S SEDGE MARSH: 0.01 ACRES						
Scientific name	Common name	Form	Propagule type	Spacing (feet on-center)	Fill (Percent)	Quantity
<i>Carex lyngbyei</i>	Lyngbye's sedge	perennial graminoid	AB34 PB	3	60	29
<i>Triglochin maritima</i>	arrowgrass	perennial herb	AB34 PB	3	40	19
HUMBOLDT BAY OWL'S CLOVER MARSH: 2.01 ACRES						
Scientific name	Common name	Form	Propagule type	Spacing (feet on-center)	Fill (Percent)	Quantity
<i>Castilleja ambigua</i> subsp. <i>humboldtensis</i> *	Humboldt Bay owl's clover	hemi-parasitic annual herb	PB	4	10	547
*Planting may be substituted with direct seeding onto host plants.						
HIGH TIDAL MARSH: 4.09 ACRES						
Scientific name	Common name	Form	Propagule type	Spacing (feet on-center)	Fill (Percent)	Quantity
<i>Distichlis spicata</i>	saltgrass	upright grass	PB	6	25	1236
<i>Grindelia stricta</i> var. <i>stricta</i>	Oregon gumweed	summer semi-deciduous, spreading perennial herb	AB35 PB	6	25	1236
<i>Jaumea carnosa</i>	marsh jaumea	perennial herb	PB	6	5	247
<i>Juncus lescurii</i>	San Francisco rush	perennial graminoid	AB34 PB	6	15	742
<i>Limonium californicum</i>	western marsh rosemary	mounding, spreading evergreen perennial herb	PB	6	5	247
<i>Salicornia pacifica</i>	pickleweed	perennial herb	PB	6	10	494
<i>Triglochin maritima</i>	arrowgrass	perennial herb	AB34 PB	6	15	742
EMERGENT BRACKISH MARSH: 5.61 ACRES						
Scientific name	Common name	Form	Propagule type	Application rate (lbs/acre)	Fill (Percent)	Quantity
<i>Angelica lucida</i>	seacoast angelica	perennial (biannual) herb	broadcast seed	14.2	5	4
<i>Deschampsia cespitosa</i>	tufted hairgrass	fountain summer semi-deciduous grass	broadcast seed	1.2	30	2
<i>Festuca rubra</i>	red fescue	upright, fountain grass	broadcast seed	4.8	35	9.4
<i>Grindelia stricta</i> var. <i>stricta</i>	Oregon gumweed	summer semi-deciduous, spreading perennial herb	broadcast seed	17.8	10	10
<i>Distichlis spicata</i>	saltgrass	upright grass	broadcast seed	3.2	15	2.7
<i>Potentilla anserina</i> subsp. <i>pacifica</i>	Pacific silverweed	perennial herb	broadcast seed	7.2	5	2
EMERGENT BRACKISH POND: 2.04 ACRES						
Scientific name	Common name	Form	Propagule type	Spacing (feet on-center)	Fill (Percent)	Quantity
<i>Bolboschoenus maritimus</i> subsp. <i>paludosus</i>	prairie rush	perennial graminoid	AB34 PB	3	45	4441
<i>Eleocharis macrostachya</i>	pale spike rush	upright evergreen graminoid	PB	3	15	1480
<i>Potentilla anserina</i> subsp. <i>pacifica</i>	Pacific silverweed	perennial herb	AB34 PB	4	15	833
<i>Schoenoplectus acutus</i> var. <i>occidentalis</i>	tule	perennial graminoid	AB34 PB	3	5	493
<i>Schoenoplectus pungens</i> var. <i>longispicatus</i>	three square	perennial graminoid	PB	3	10	987
<i>Triglochin maritima</i>	arrowgrass	perennial herb	AB34 PB	4	10	555
LOWER COASTAL MARSH: 3.44 ACRES						
Scientific name	Common name	Form	Propagule type	Spacing (feet on-center)	Fill (Percent)	Quantity
<i>Carex obnupta</i>	slough sedge	upright perennial graminoid	AB34 PB	4	30	2810
<i>Oenanthe sarementosa</i>	Pacific water parsley	perennial herb	AB34 PB	4	10	937
<i>Potentilla anserina</i> subsp. <i>pacifica</i>	Pacific silverweed	perennial herb	AB34 PB	4	20	1873
<i>Scirpus microcarpus</i>	panicked bulrush	upright winter deciduous graminoid	PB	4	20	1873
<i>Elymus triticoides</i>	creeping wild rye	winter deciduous grass	AB34 PB	4	15	1405
<i>Trifolium wormskioldii</i>	cow clover	mounding winter deciduous perennial herb	1" plug	4	5	468
MESIC COASTAL GRASSLAND: 2.64 ACRES						
Scientific name	Common name	Form	Propagule type	Application rate (lbs/ac)	Fill (Percent)	Quantity
<i>Achillea millefoliata</i>	common yarrow	perennial forb	broadcast seed	0.6	5	0.1
<i>Angelica lucida</i>	seacoast angelica	perennial (biannual) herb	broadcast seed	14.1	5	1.9
<i>Deschampsia cespitosa</i>	tufted hairgrass	fountain summer semi-deciduous grass	broadcast seed	1.2	40	1.3
<i>Elymus triticoides</i>	creeping wild rye	perennial graminoid	broadcast seed	19.2	25	12.7
<i>Hordeum brachyantherum</i> subsp. <i>brachyantherum</i>	northern barley	perennial graminoid	broadcast seed	21.6	15	8.6
<i>Symphotrichum chilense</i>	Pacific aster	winter deciduous perennial herb	broadcast seed	0.8	5	0.1
<i>Trifolium wormskioldii</i>	cow clover	mounding winter deciduous perennial herb	broadcast seed	7.2	5	1

UPPER MESIC COASTAL GRASSLAND: 3.75 ACRES						
Scientific name	Common name	Form	Propagule type	Application rate (lbs/acre)	Fill (Percent)	Quantity
<i>Achillea millefoliata</i>	common yarrow	perennial forb	drill seed	0.3	5	0.06
<i>Calamagrostis nutkaensis</i>	Pacific reedgrass	evergreen perennial graminoid	drill seed	0.3	40	0.45
<i>Festuca rubra</i>	red fescue	upright, fountain grass	drill seed	2.4	40	3.6
<i>Symphotrichum chilense</i>	Pacific aster	winter deciduous perennial herb	drill seed	0.4	10	0.15
<i>Trifolium wormskioldii</i>	cow clover	mounding winter deciduous perennial herb	drill seed	3.6	5	0.68
COASTAL GRASSLAND CORRIDOR: 1.7 ACRES						
Scientific name	Common name	Form	Propagule type	Application rate (lbs/acre)	Fill (Percent)	Quantity
<i>Achillea millefoliata</i>	common yarrow	perennial forb	broadcast seed	0.6	5	0.05
<i>Bromus sitchensis</i> var. <i>carinatus</i>	California brome	upright graminoid	broadcast seed	21	20	7.14
<i>Festuca rubra</i>	red fescue	perennial graminoid	broadcast seed	4.8	30	0.01
<i>Lupinus rivularis</i>	riverbank lupine	perennial herb	broadcast seed	30	5	2.55
<i>Regreen or equivalent</i>	sterile wheat hybrid	annual graminoid	broadcast seed	40	20	13.6
<i>Scrophularia californica</i>	figwort	perennial forb	broadcast seed	0.4	10	0.07
<i>Symphotrichum chilense</i>	Pacific aster	perennial forb	broadcast seed	0.8	10	0.14
COASTAL SCRUB: 0.23 ACRES						
Scientific name	Common name	Form	Propagule type	Spacing (feet on-center)	Fill (Percent)	Quantity
<i>Baccharis pilularis</i>	coyote brush	mounding, spreading evergreen shrub	1 gallon	6	10	28
<i>Ceanothus thyrsiflorus</i> var. <i>thyrsiflorus</i>	blueblossom	mounding, spreading evergreen shrub	1 gallon	8	20	31
<i>Diplacis aurantiacus</i>	orange bush monkeyflower	mounding, spreading evergreen shrub	1 gallon	6	5	14
<i>Frangula purshiana</i>	casacara	upright winter deciduous shrub	1 gallon	6	5	14
<i>Garrya elliptica</i>	wavy leaf silk tassel	rounded evergreen shrub	1 gallon	10	20	20
<i>Lonicera involucrata</i>	twin berry	upright winter deciduous shrub	1 gallon	6	10	28
<i>Morella californica</i>	Pacific wax myrtle	upright evergreen shrub	1 gallon	8	15	23
<i>Ribes sanguineum</i>	red-flowering currant	upright winter deciduous shrub	1 gallon	6	5	14
<i>Rubus parviflorus</i>	thimbleberry	upright, spreading winter deciduous shrub, perennial herb	1 gallon	6	5	14
<i>Sambucus racemosa</i>	red elderberry	winter deciduous shrub, tree	1 gallon	8	5	8
Seed Mix				Application rate (lbs/acre)		
<i>Achillea millefoliata</i>	common yarrow	perennial forb	broadcast seed	0.6	15	0.02
<i>Artemisia douglasiana</i>	mugwort	perennial forb	broadcast seed	4.4	5	0.05
<i>Elymus triticoides</i>	creeping wild rye	perennial graminoid	broadcast seed	19.2	10	0.44
<i>Festuca rubra</i>	red fescue	perennial graminoid	broadcast seed	4.8	15	0.17
<i>Hordeum brachyantherum</i> subsp. <i>brachyantherum</i>	northern barley	perennial graminoid	broadcast seed	21.6	25	1.24
<i>Lupinus rivularis</i>	riverbank lupine	perennial herb	broadcast seed	13	10	0.3
<i>Scrophularia californica</i>	figwort	perennial forb	broadcast seed	0.4	10	0.01
<i>Symphotrichum chilense</i>	Pacific aster	perennial forb	broadcast seed	0.8	10	0.02

**ELK RIVER PLANNING AREA 1  
65% REVEGETATION  
DESIGN PLAN**

RIPARIN SCRUB: 1.76 ACRES						
Scientific name	Common name	Form	Propagule type	Spacing (feet on-center)	Fill (Percent)	Quantity
<i>Frangula purshiana</i>	casacara	upright winter deciduous shrub	1 gallon	6	5	106
<i>Lonicera involucrata</i>	twin berry	upright winter deciduous shrub	1 gallon	6	15	319
<i>Morella californica</i>	Pacific wax myrtle	upright evergreen shrub	1 gallon	8	25	299
<i>Physocarpus capitatus</i>	Pacific ninebark	rounded winter deciduous shrub	1 gallon	6	5	106
<i>Picea sitchensis</i>	Sitka spruce	pyramidal, upright evergreen tree	TP4	10	5	38
<i>Pinus contorta subsp. contorta</i>	shore pine	evergreen tree	TP4	10	5	38
<i>Ribes sanguineum</i>	red-flowering currant	upright winter deciduous shrub	1 gallon	6	10	213
<i>Rubus parviflorus</i>	thimbleberry	upright, spreading winter deciduous shrub, perennial herb	1 gallon	6	5	106
<i>Rubus spectabilis</i>	salmonberry	upright, mounding, spreading winter deciduous shrub	1 gallon	6	15	319
<i>Salix hookeriana</i>	dune willow	upright winter deciduous tree, shrub	live pole cuttings	10	5	38
<i>Sambucus racemosa</i>	red elderberry	winter deciduous shrub, tree	1 gallon	8	5	60
<b>Seed Mix</b>				<b>Application rate (lbs/acre)</b>		
<i>Achillea millefoliata</i>	common yarrow	perennial forb	broadcast seed	0.6	15	0.21
<i>Artemisia douglasiana</i>	mugwort	perennial forb	broadcast seed	4.4	15	1.56
<i>Bromus sitchensis var. carinatus</i>	California brome	perennial graminoid	broadcast seed	21	20	7.43
<i>Festuca rubra</i>	red fescue	perennial graminoid	broadcast seed	4.8	15	5.09
<i>Hordeum brachyantherum subsp. brachyantherum</i>	northern barley	perennial graminoid	broadcast seed	21.6	15	15.28
<i>Scrophularia californica</i>	figwort	perennial forb	broadcast seed	0.4	10	0.21
<i>Symphotrichum chilense</i>	Pacific aster	perennial forb	broadcast seed	0.8	10	0.14

RIPARIN IN-FILL: 5.87 ACRES						
Scientific name	Common name	Form	Propagule type	Spacing (feet on-center)	Fill (Percent)	Quantity
<i>Alnus rubra</i>	red alder	upright winter deciduous tree	1 gallon	10	10	256
<i>Frangula purshiana</i>	casacara	upright winter deciduous shrub	1 gallon	10	10	256
<i>Lonicera involucrata</i>	twin berry	upright winter deciduous shrub	1 gallon	10	10	256
<i>Morella californica</i>	Pacific wax myrtle	upright evergreen shrub	1 gallon	10	10	256
<i>Physocarpus capitatus</i>	Pacific ninebark	rounded winter deciduous shrub	1 gallon	10	5	128
<i>Picea sitchensis</i>	Sitka spruce	pyramidal, upright evergreen tree	TP4	10	10	256
<i>Pinus contorta subsp. contorta</i>	shore pine	evergreen tree	TP4	10	10	256
<i>Ribes sanguineum</i>	red-flowering currant	upright winter deciduous shrub	1 gallon	10	5	128
<i>Rubus parviflorus</i>	thimbleberry	upright, spreading winter deciduous shrub, perennial herb	1 gallon	10	10	256
<i>Rubus spectabilis</i>	salmonberry	upright, mounding, spreading winter deciduous shrub	1 gallon	10	10	256
<i>Sambucus racemosa</i>	red elderberry	winter deciduous shrub, tree	1 gallon	10	10	256

MIXED EVERGREEN RIPARIAN FOREST: 1.24 ACRES						
Scientific name	Common name	Form	Propagule type	Spacing (feet on-center)	Fill (Percent)	Quantity
<i>Alnus rubra</i>	red alder	upright winter deciduous tree	1 gallon	14	10	28
<i>Frangula purshiana</i>	casacara	upright winter deciduous shrub	1 gallon	6	5	75
<i>Morella californica</i>	Pacific wax myrtle	upright evergreen shrub	1 gallon	6	10	150
<i>Physocarpus capitatus</i>	Pacific ninebark	rounded winter deciduous shrub	1 gallon	6	5	75
<i>Picea sitchensis</i>	Sitka spruce	pyramidal, upright evergreen tree	TP4	10	30	162
<i>Pinus contorta subsp. contorta</i>	shore pine	evergreen tree	TP4	10	10	54
<i>Ribes sanguineum</i>	red-flowering currant	upright winter deciduous shrub	1 gallon	6	5	75
<i>Rubus parviflorus</i>	thimbleberry	upright, spreading winter deciduous shrub, perennial herb	1 gallon	6	5	75
<i>Rubus spectabilis</i>	salmonberry	upright, mounding, spreading winter deciduous shrub	1 gallon	6	5	75
<i>Salix hookeriana</i>	dune willow	upright winter deciduous tree, shrub	live pole cuttings	10	10	54
<i>Sambucus racemosa</i>	red elderberry	winter deciduous shrub, tree	1 gallon	8	5	42
<b>Seed Mix</b>				<b>Application rate (lbs/acre)</b>		
<i>Achillea millefoliata</i>	common yarrow	perennial forb	broadcast seed	0.6	15	0.11
<i>Artemisia douglasiana</i>	mugwort	perennial forb	broadcast seed	4.4	15	0.82
<i>Bromus sitchensis var. carinatus</i>	California brome	perennial graminoid	broadcast seed	21	20	5.21
<i>Festuca rubra</i>	red fescue	perennial graminoid	broadcast seed	4.8	15	0.89
<i>Hordeum brachyantherum subsp. brachyantherum</i>	northern barley	perennial graminoid	broadcast seed	21.6	15	4.02
<i>Scrophularia californica</i>	figwort	perennial forb	broadcast seed	0.4	10	0.05
<i>Symphotrichum chilense</i>	Pacific aster	perennial forb	broadcast seed	0.8	10	0.1



**REFERENCE BLOCK**

DESIGN: EC  
DRAWN: EJ  
APPROVED: EC

PLANTING SCHEDULE  
SHEET 2 OF 2

SHEET 3 OF 3

**ELK RIVER PLANNING AREA 1  
65% REVEGETATION  
DESIGN PLAN**

- PA 1 boundary and subarea
- Contour (1 ft)
- Contour (10 ft)
- ◆ [DG] Fence
- ◆ [EG] Fence
- ⊠ Special-status plant
- ⊠ Invasive vegetation management
- Electric utility pole
- Electric utility line
- Electric utility wire zone and tree clearance buffer

**Plant zone**

- Emergent brackish pond (Ebm)
- Lower coastal marsh (Lcm)
- Upper coastal marsh (interplant) (Ucm)
- Wetland pasture seed mix
- Mesic coastal grassland (Mcg)
- Riparian scrub (Rs)
- Mixed evergreen riparian forest, lower (Merf - l)
- Mixed evergreen riparian forest, upper (Merf - u)
- Crossing
- Waters
- Road
- Developed



**SCALE & NORTH ARROW**

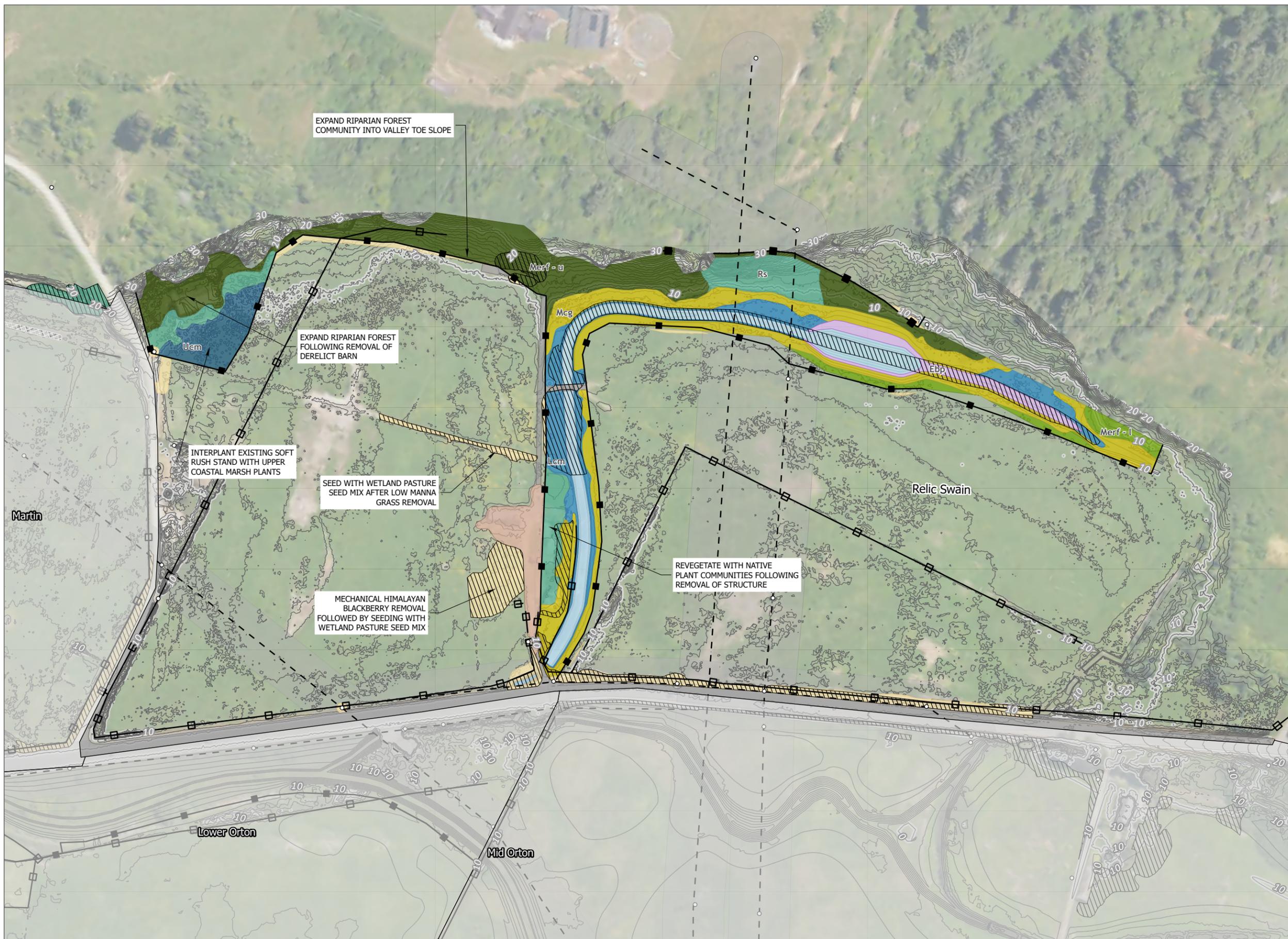


**REFERENCE BLOCK**

DESIGN: EC  
DRAWN: EJ  
APPROVED: EC

PLAN VIEW 1 OF 1, RELIC SWAIN

SHEET 1 OF 2



**RELIC SWAIN - PLANTING PLAN**

DATA SOURCES  
Imagery: NAIP 2024  
Roads, rivers, cities: ESRI 2016

**ELK RIVER PLANNING AREA 1**  
**65% REVEGETATION**  
**DESIGN PLAN**



**REFERENCE BLOCK**

DESIGN: EC  
 DRAWN: EJ  
 APPROVED: EC

**PLANTING SCHEDULE**  
**SHEET 1 OF 1**

**SHEET 2 OF 2**

EMERGENT BRACKISH POND: 0.24 ACRES						
Scientific name	Common name	Form	Propagule type	Spacing (feet on-center)	Fill (Percent)	Quantity
<i>Bolboschoenus maritimus subsp. paludosus</i>	saltmarsh bulrush	perennial graminoid	AB34 PB	3	25	292
<i>Eleocharis macrostachya</i>	pale spike rush	upright evergreen graminoid	PB	3	15	175
<i>Potentilla anserina subsp. pacifica</i>	Pacific silverweed	perennial herb	AB34 PB	4	25	164
<i>Schoenoplectus acutus var. occidentalis</i>	tule	perennial graminoid	AB34 PB	3	25	292
<i>Schoenoplectus pungens var. longispicatus</i>	three square	perennial graminoid	PB	3	5	58
<i>Triglochin maritima</i>	arrowgrass	perennial herb	AB34 PB	4	5	33

LOWER COASTAL MARSH: 0.71 ACRES						
Scientific name	Common name	Form	Propagule type	Application rate (lbs/acre)	Fill (Percent)	Quantity
<i>Carex obnupta</i>	slough sedge	upright perennial graminoid	AB34 PB	5	35	433
<i>Elymus triticoides</i>	creeping wild rye	winter deciduous grass	AB34 PB	4	5	97
<i>Juncus lescurei</i>	San Francisco rush	perennial graminoid	AB34 PB	4	10	193
<i>Potentilla anserina subsp. pacifica</i>	Pacific silverweed	perennial herb	AB34 PB	4	15	290
<i>Scirpus microcarpus</i>	panicked bulrush	upright winter deciduous graminoid	PB	5	30	371
<i>Symphotrichum chilense</i>	Pacific aster	winter deciduous perennial herb	1 gallon	4	5	97

UPPER COASTAL MARSH (INTERPLANT): 0.36 ACRES						
Scientific name	Common name	Form	Propagule type	Spacing (feet on-center)	Fill (Percent)	Quantity
<i>Carex praegracilis</i>	clustered field sedge	upright, mounding evergreen perennial graminoid	PB	6	40	174
<i>Elymus triticoides</i>	creeping wild rye	winter deciduous grass	AB34 PB	6	30	131
<i>Potentilla anserina subsp. pacifica</i>	Pacific silverweed	perennial herb	AB34 PB	6	5	22
<i>Ranunculus californica</i>	common buttercup	fountain perennial herb		6	10	44
<i>Trifolium wormskioldii</i>	cow clover	mounding winter deciduous perennial herb	PB	6	15	65

MESIC COASTAL GRASSLAND: 1.56 ACRES						
Scientific name	Common name	Form	Propagule type	Application rate (lbs/acre)	Fill (Percent)	Quantity
<i>Achillea millefoliata</i>	common yarrow	perennial forb	broadcast seed	1.2	5	0.09
<i>Angelica lucida</i>	seacoast angelica	perennial (biannual) herb	broadcast seed	28.2	5	2.2
<i>Deschampsia cespitosa</i>	tufted hairgrass	fountain summer semi-deciduous grass	broadcast seed	1.2	40	0.75
<i>Elymus triticoides</i>	creeping wild rye	perennial graminoid	broadcast seed	19.2	15	4.49
<i>Hordeum brachyantherum subsp. brachyantherum</i>	northern barley	perennial graminoid	broadcast seed	21.6	20	6.74
<i>Symphotrichum chilense</i>	Pacific aster	winter deciduous perennial herb	broadcast seed	0.8	10	0.12
<i>Trifolium wormskioldii</i>	cow clover	mounding winter deciduous perennial herb	broadcast seed	7.2	5	0.56

RIPARIAN SCRUB: 0.91 ACRES						
Scientific name	Common name	Form	Propagule type	Spacing (feet on-center)	Fill (Percent)	Quantity
<i>Frangula purshiana</i>	casara	upright winter deciduous tree, shrub	1 gallon	6	10	110
<i>Lonicera involucrata</i>	twin berry	upright winter deciduous shrub	1 gallon	6	15	165
<i>Morella californica</i>	Pacific wax myrtle	upright evergreen shrub	1 gallon	8	30	186
<i>Ribes sanguineum</i>	red-flowering currant	upright winter deciduous shrub	1 gallon	6	5	55
<i>Rubus parviflorus</i>	thimbleberry	upright, spreading winter deciduous shrub, perennial herb	1 gallon	6	5	55
<i>Rubus spectabilis</i>	salmonberry	upright, mounding, spreading winter deciduous shrub	1 gallon	6	15	165
<i>Salix hookeriana</i>	dune willow	upright winter deciduous tree, shrub	live pole cuttings	10	5	20
<i>Sambucus racemosa</i>	red elderberry	winter deciduous shrub, tree	1 gallon	8	15	93
<b>Seed mix</b>				<b>Application rate (lbs/acre)</b>		
<i>Achillea millefoliata</i>	common yarrow	perennial forb	broadcast seed	0.6	0.1	0.05
<i>Bromus sitchensis var. carinatus</i>	California brome	perennial graminoid	broadcast seed	21	0.25	4.78
<i>Festuca rubra</i>	red fescue	perennial graminoid	broadcast seed	4.8	0.25	1.09
<i>Lupinus rivularis</i>	riverbank lupine	perennial herb	broadcast seed	13	0.05	0.59
<i>Regreen or equivalent</i>	sterile wheat hybrid	annual graminoid	broadcast seed	40	0.3	10.92
<i>Scrophularia californica</i>	figwort	perennial forb	broadcast seed	0.4	0.05	0.02

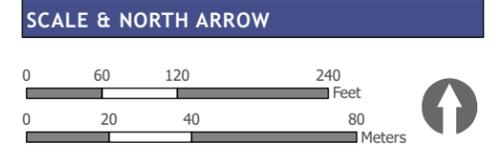
MIXED EVERGREEN RIPARIAN FOREST LOWER: 0.28 ACRES						
Scientific name	Common name	Form	Propagule type	Spacing (feet on-center)	Fill (Percent)	Quantity
<i>Alnus rubra</i>	red alder	upright winter deciduous tree	1 gallon	14	25	16
<i>Frangula purshiana</i>	casara	upright winter deciduous tree, shrub	1 gallon	6	5	17
<i>Morella californica</i>	Pacific wax myrtle	upright evergreen tree, shrub	1 gallon	6	10	34
<i>Picea sitchensis</i>	Sitka spruce	pyramidal, upright evergreen tree	TP4	10	25	30
<i>Populus trichocarpa</i>	black cottonwood	upright, upright columnar winter deciduous tree	TP4	10	15	18
<i>Salix hookeriana</i>	dune willow	upright winter deciduous tree, shrub	live pole cuttings	10	5	6
<i>Salix lasiandra</i>	Pacific willow	upright winter deciduous tree, shrub	live pole cuttings	10	15	18
<i>Midstory/Understory</i>						
<i>Athyrium filix-femina var. cyclosorum</i>	common ladyfern	fern	1 gallon	10	20	24
<i>Lonicera involucrata</i>	twin berry	upright winter deciduous shrub	1 gallon	10	10	12
<i>Petasites frigidus var. palmatus</i>	western sweet coltsfoot	perennial herb	1 gallon	10	15	18
<i>Physocarpus capitatus</i>	Pacific ninebark	rounded winter deciduous shrub	1 gallon	10	15	18
<i>Polystichum munitum</i>	western swordfern	upright, fountain summer semi-deciduous, evergreen fern	1 gallon	10	5	6
<i>Ribes sanguineum</i>	red-flowering currant	upright winter deciduous shrub	1 gallon	10	5	6
<i>Rubus spectabilis</i>	salmonberry	upright, mounding, spreading winter deciduous shrub	1 gallon	10	15	18
<i>Sambucus racemosa</i>	red elderberry	winter deciduous shrub	1 gallon	10	15	18
<b>Seed Mix</b>				<b>Application rate (lbs/acre)</b>		
<i>Achillea millefoliata</i>	common yarrow	perennial forb	broadcast seed	0.6	10	0.02
<i>Bromus sitchensis var. carinatus</i>	California brome	perennial graminoid	broadcast seed	21	25	1.47
<i>Festuca rubra</i>	red fescue	perennial graminoid	broadcast seed	4.8	25	0.34
<i>Lupinus rivularis</i>	riverbank lupine	perennial herb	broadcast seed	13	5	0.18
<i>Regreen or equivalent</i>	sterile wheat hybrid	annual graminoid	broadcast seed	40	30	3.36
<i>Scrophularia californica</i>	figwort	perennial forb	broadcast seed	0.4	5	0.01

MIXED EVERGREEN RIPARIAN FOREST UPPER: 1.85 ACRES						
Scientific name	Common name	Form	Propagule type	Spacing (feet on-center)	Fill (Percent)	Quantity
<i>Abies grandis</i>	grand fir	pyramidal evergreen tree	TP4	10	5	40
<i>Acer macrophyllum</i>	big-leaf maple	upright, rounded, upright columnar winter deciduous tree	1 gallon	10	10	81
<i>Alnus rubra</i>	red alder	upright winter deciduous tree	1 gallon	10	20	161
<i>Frangula californica</i>	coffeeberry	mounding, rounding, spreading evergreen shrub	1 gallon	10	15	121
<i>Malus fusca</i>	Oregon crab apple	upright winter deciduous tree	1 gallon	10	15	121
<i>Picea sitchensis</i>	Sitka spruce	pyramidal, upright evergreen tree	TP4	10	30	242
<i>Tsuga heterophylla</i>	western hemlock	pyramidal evergreen tree	TP4	10	5	40
<i>Understory</i>						
<i>Lonicera involucrata</i>	twin berry	upright winter deciduous shrub	1 gallon	10	30	242
<i>Oemleria cerasiformis</i>	oso berry	upright winter deciduous shrub	1 gallon	10	10	81
<i>Rubus parviflorus</i>	thimbleberry	upright, spreading winter deciduous shrub, perennial herb	1 gallon	10	25	201
<i>Polystichum munitum</i>	western swordfern	upright, fountain summer semi-deciduous, evergreen fern	1 gallon	10	15	121
<i>Sambucus racemosa</i>	red elderberry	winter deciduous shrub, tree	1 gallon	10	20	161
<b>Seed Mix</b>				<b>Application rate (lbs/acre)</b>		
<i>Achillea millefoliata</i>	common yarrow	perennial forb	broadcast seed	0.6	10	0.11
<i>Bromus sitchensis var. carinatus</i>	California brome	perennial graminoid	broadcast seed	21	25	9.71
<i>Festuca rubra</i>	red fescue	perennial graminoid	broadcast seed	4.8	25	2.22
<i>Lupinus rivularis</i>	riverbank lupine	perennial herb	broadcast seed	13	5	1.2
<i>Regreen or equivalent</i>	sterile wheat hybrid	annual graminoid	broadcast seed	40	30	22.2
<i>Scrophularia californica</i>	figwort	perennial forb	broadcast seed	0.4	5	0.04

**ELK RIVER PLANNING AREA 1  
65% REVEGETATION  
DESIGN PLAN**

- PA 1 boundary and subarea
- Contour (1 ft)
- Contour (10 ft)
- ⊠ [EG] Fence
- ⊠ [DG] Fence
- ▨ Invasive vegetation management
- ⊠ Special-status plant
- Planting zone
- Lyngbye's sedge marsh (Lsm)
- Humboldt Bay owl's clover marsh (Hb)
- Emergent brackish marsh (Ebm)
- Coastal prairie grassland (Cpg)
- Mesic coastal grassland (Mcg)
- Hazelnut scrub (Hs)
- Riparian scrub (Rs)
- Riparian scrub hillside (Rsh)
- Mixed evergreen riparian forest (Merf)
- Riparian forest hillside (Rfh)
- Waters
- Preserved area
- Retain coastal marsh (Rcm)
- Retain Lyngbye's sedge marsh (Rlsm)
- Retain riparian (Rr)

MAP PROJECTION  
NAD\_1983\_2011\_StatePlane\_California\_1  
FIPS\_0401\_US\_Feet\_10N  
**Stillwater Sciences**

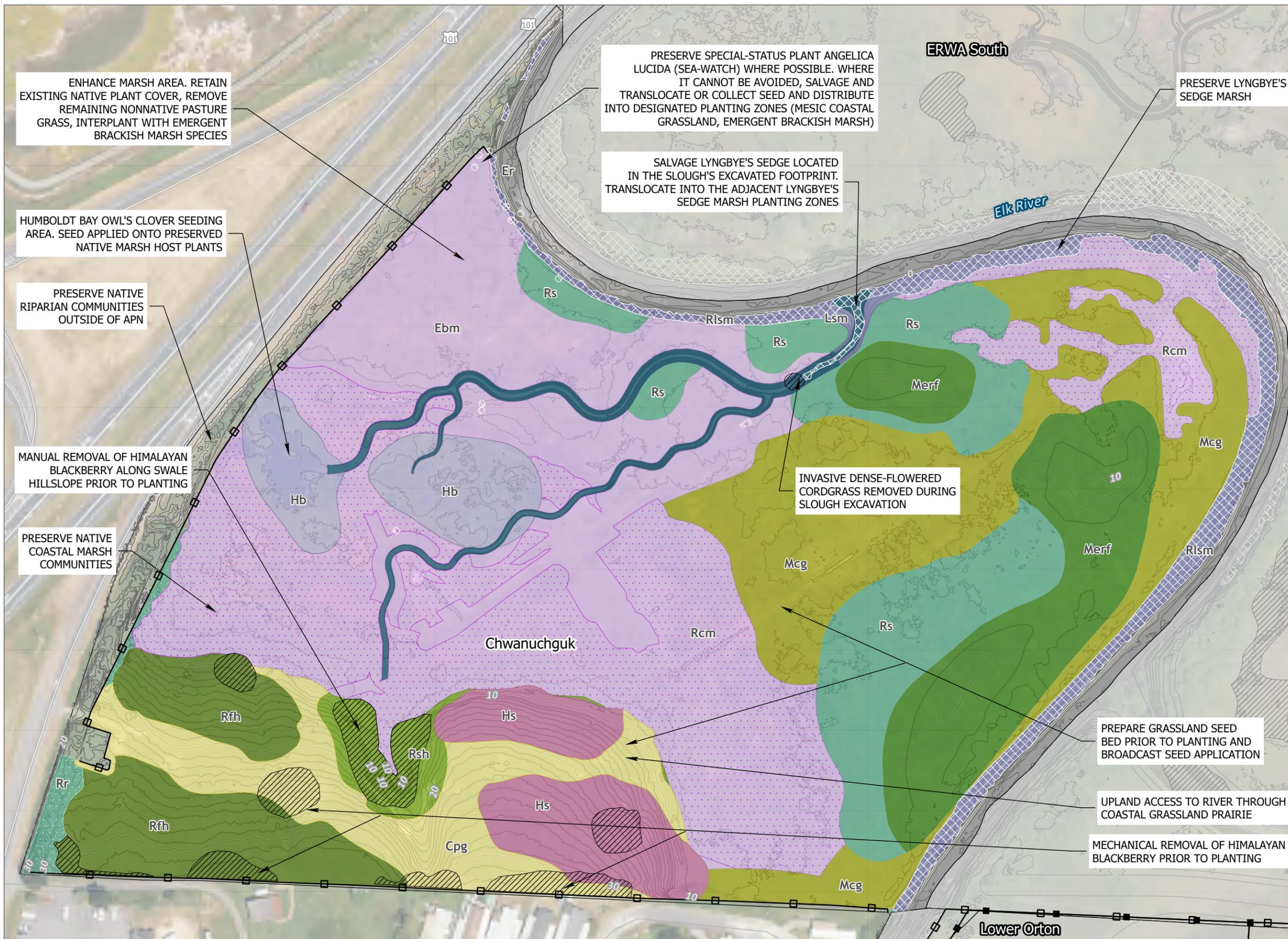


**REFERENCE BLOCK**

DESIGN: EC  
DRAWN: EJ  
APPROVED: EC

PLAN VIEW 1 OF 1, CHWANUCHGUK

SHEET 1 OF 3



ENHANCE MARSH AREA. RETAIN EXISTING NATIVE PLANT COVER, REMOVE REMAINING NONNATIVE PASTURE GRASS, INTERPLANT WITH EMERGENT BRACKISH MARSH SPECIES

HUMBOLDT BAY OWL'S CLOVER SEEDING AREA. SEED APPLIED ONTO PRESERVED NATIVE MARSH HOST PLANTS

PRESERVE NATIVE RIPARIAN COMMUNITIES OUTSIDE OF APN

MANUAL REMOVAL OF HIMALAYAN BLACKBERRY ALONG SWALE HILLSLOPE PRIOR TO PLANTING

PRESERVE NATIVE COASTAL MARSH COMMUNITIES

PRESERVE SPECIAL-STATUS PLANT ANGELICA LUCIDA (SEA-WATCH) WHERE POSSIBLE. WHERE IT CANNOT BE AVOIDED, SALVAGE AND TRANSLOCATE OR COLLECT SEED AND DISTRIBUTE INTO DESIGNATED PLANTING ZONES (MESIC COASTAL GRASSLAND, EMERGENT BRACKISH MARSH)

SALVAGE LYNGBYE'S SEDGE LOCATED IN THE SLOUGH'S EXCAVATED FOOTPRINT. TRANSLOCATE INTO THE ADJACENT LYNGBYE'S SEDGE MARSH PLANTING ZONES

INVASIVE DENSE-FLOWERED CORDGRASS REMOVED DURING SLOUGH EXCAVATION

PREPARE GRASSLAND SEED BED PRIOR TO PLANTING AND BROADCAST SEED APPLICATION

UPLAND ACCESS TO RIVER THROUGH COASTAL GRASSLAND PRAIRIE

MECHANICAL REMOVAL OF HIMALAYAN BLACKBERRY PRIOR TO PLANTING

**CHWANUCHGUK - PLANTING PLAN**

DATA SOURCES  
Imagery: NAIP 2024  
Roads, rivers, cities: ESRI 2016

**ELK RIVER PLANNING AREA**  
**65% REVEGETATION**  
**DESIGN PLAN**



**REFERENCE BLOCK**

DESIGN: EC  
 DRAWN: EJ  
 APPROVED: EC

PLANTING SCHEDULE  
 SHEET 1 OF 2

SHEET 2 OF 3

LYNGBYE'S SEDGE MARSH: 0.09 ACRES						
Scientific name	Common name	Form	Propagule type	Spacing (feet on-center)	Fill (Percent)	Quantity
<i>Carex lyngbyei</i>	Lyngbye's sedge	perennial graminoid	AB34 PB	4	60	147
<i>Triglochin maritima</i>	arrowgrass	perennial herb	AB34 PB	4	40	98
HUMBOLDT BAY OWL'S CLOVER MARSH: 1.34 ACRES						
Scientific name	Common name	Form	Propagule type	Spacing (feet on-center)	Fill (Percent)	Quantity
<i>Castilleja ambigua</i> subsp. <i>humboldtensis</i> *	Humboldt Bay owl's clover	hemi-parasitic annual herb	PB	4	10	365
*Planting may be substituted with direct seeding onto host plants.						
EMERGENT BRACKISH MARSH: 4.58 ACRES						
Scientific name	Common name	Form	Propagule type	Spacing (feet on-center)	Fill (Percent)	Quantity
<i>Angelica lucida</i>	seacoast angelica	perennial (biannual) herb	PB	8	5	156
<i>Deschampsia cespitosa</i>	tufted hairgrass	fountain summer semi-deciduous grass	PB	8	30	935
<i>Festuca rubra</i>	red fescue	upright, fountain grass	PB	8	30	935
<i>Grindelia stricta</i> var. <i>stricta</i>	Oregon gumweed	summer semi-deciduous, spreading perennial herb	AB35 PB	8	10	312
<i>Juncus lescurei</i>	San Francisco rush	perennial graminoid	AB34 PB	8	10	312
<i>Potentilla anserina</i> subsp. <i>pacifica</i>	Pacific silverweed	perennial herb	AB34 PB	8	15	468
COASTAL PRAIRIE GRASSLAND: 2.13 ACRES						
Scientific name	Common name	Form	Propagule type	Spacing (feet on-center)	Fill (Percent)	Quantity
<i>Allium unifolium</i>	one leaf onion	upright columnar perennial geophyte	PB	8	10	145
<i>Brodiaea terrestris</i> subsp. <i>terrestris</i>	dwarf brodiaea	perennial geophyte	PB	8	5	72
<i>Camassia quamash</i> subsp. <i>breviflora</i>	common camas	upright summer deciduous perennial geophyte	PB	8	5	72
<i>Carex praegracilis</i>	clustered field sedge	upright, mounding evergreen perennial graminoid	2 inch	8	15	217
<i>Chlorogalum pomeridianum</i> var. <i>divaricatum</i>	wavy-leafed soap plant	summer deciduous perennial geophyte	1 gallon	8	10	145
<i>Dichelostemma congestum</i>	fork-toothed ookow	perennial geophyte	PB	8	5	72
<i>Ligusticum apiifolium</i>	lovage	perennial herb	PB	8	10	145
<i>Iris douglasiana</i>	Douglas iris	fountain evergreen perennial herb	4 inch	8	15	217
<i>Sisyrinchium bellum</i>	western blue-eyed-grass	upright columnar summer semi-deciduous perennial herb	1 gallon	8	10	145
<i>Triteleia hyacinthina</i>	white brodiaea	summer deciduous perennial herb	PB	8	5	72
<i>Viola adunca</i> subsp. <i>adunca</i>	western dog violet	perennial herb	AB34 PB	8	10	145
<b>Seed mix</b>				<b>Application rate (lbs/acre)</b>		
<i>Achillea millefoliata</i>	common yarrow	perennial forb	broadcast seed	0.6	10	0.13
<i>Danthonia californica</i>	California oatgrass	upright grass	broadcast seed	14.6	30	9.33
<i>Deschampsia cespitosa</i>	tufted hairgrass	fountain summer semi-deciduous grass	broadcast seed	1.2	30	0.77
<i>Hordeum brachyantherum</i> subsp. <i>brachyantherum</i>	northern barley	perennial graminoid	broadcast seed	21.6	30	13.8
MESIC COASTAL GRASSLAND: 4.82 ACRES						
Scientific name	Common name	Form	Propagule type	Application rate (lbs/acre)	Fill (Percent)	Quantity
<i>Angelica lucida</i>	seacoast angelica	perennial (biannual) herb	broadcast seed	14.1	5	3.4
<i>Calamagrostis nutkaensis</i>	Pacific reedgrass	evergreen perennial graminoid	broadcast seed	0.6	40	1.16
<i>Deschampsia cespitosa</i>	tufted hairgrass	fountain summer semi-deciduous grass	broadcast seed	1.2	15	0.87
<i>Festuca rubra</i>	red fescue	upright, fountain grass	broadcast seed	4.8	30	6.94
<i>Symphotrichum chilense</i>	Pacific aster	winter deciduous perennial herb	broadcast seed	0.8	5	0.19
<i>Trifolium wormskioldii</i>	cow clover	mounding winter deciduous perennial herb	broadcast seed	7.2	5	1.74

HAZELNUT SCRUB: 1.56 ACRES						
Scientific name	Common name	Form	Propagule type	Spacing (feet on-center)	Fill (Percent)	Quantity
<i>Corylus cornuta</i> var. <i>californica</i>	California hazelnut	winter deciduous shrub	1 gallon	6	40	757
<i>Holodiscus discolor</i>	ocean spray	upright, weeping summer semi-deciduous, winter deciduous shrub	1 gallon	6	20	379
<i>Ribes sanguineum</i>	red-flowering currant	upright winter deciduous shrub	1 gallon	6	15	284
<i>Rubus parviflorus</i>	thimbleberry	upright, spreading winter deciduous shrub, perennial herb	1 gallon	6	10	189
<i>Vaccinium ovatum</i>	evergreen huckleberry	upright, spreading evergreen shrub	1 gallon	6	10	189
<i>Polystichum munitum</i>	western swordfern	upright, fountain summer semi-deciduous, evergreen fern	1 gallon	6	5	95
<b>Seed Mix</b>				<b>Application rate (lbs/acre)</b>		
<i>Achillea millefoliata</i>	common yarrow	perennial forb	broadcast seed	0.6	10	0.09
<i>Bromus sitchensis</i> var. <i>carinatus</i>	California brome	perennial graminoid	broadcast seed	21	25	8.22
<i>Festuca rubra</i>	red fescue	perennial graminoid	broadcast seed	4.8	25	1.88
<i>Lupinus rivularis</i>	riverbank lupine	perennial herb	broadcast seed	13	5	1.02
<i>Regreen or equivalent</i>	sterile wheat hybrid	annual graminoid	broadcast seed	40	30	18.78
<i>Scrophularia californica</i>	figwort	perennial forb	broadcast seed	0.4	5	0.03
RIPARIAN SCRUB: 3.12 ACRES						
Scientific name	Common name	Form	Propagule type	Spacing (feet on-center)	Fill (Percent)	Quantity
<i>Alnus rubra</i>	red alder	upright winter deciduous tree	1 gallon	14	5	35
<i>Frangula purshiana</i>	casara	upright winter deciduous shrub	1 gallon	6	5	189
<i>Lonicera involucrata</i>	twin berry	upright winter deciduous shrub	1 gallon	6	5	189
<i>Morella californica</i>	Pacific wax myrtle	upright evergreen shrub	1 gallon	8	15	319
<i>Physocarpus capitatus</i>	Pacific ninebark	rounded winter deciduous shrub	1 gallon	6	5	189
<i>Picea sitchensis</i>	Sitka spruce	pyramidal, upright evergreen tree	TP4	10	5	68
<i>Pinus contorta</i> subsp. <i>contorta</i>	shore pine	evergreen tree	TP4	10	5	68
<i>Ribes sanguineum</i>	red-flowering currant	upright winter deciduous shrub	1 gallon	6	10	378
<i>Rubus parviflorus</i>	thimbleberry	upright, spreading winter deciduous shrub, perennial herb	1 gallon	6	5	189
<i>Rubus spectabilis</i>	salmonberry	upright, mounding, spreading winter deciduous shrub	1 gallon	6	15	566
<i>Salix hookeriana</i>	dune willow	upright winter deciduous tree, shrub	live pole cuttings	10	10	136
<i>Sambucus racemosa</i>	red elderberry	winter deciduous shrub, tree	1 gallon	8	15	319
<b>Seed Mix</b>				<b>Application rate (lbs/acre)</b>		
<i>Achillea millefoliata</i>	common yarrow	perennial forb	3.12	0.6	10	0.19
<i>Bromus sitchensis</i> var. <i>carinatus</i>	California brome	perennial graminoid	3.12	21	25	16.38
<i>Festuca rubra</i>	red fescue	perennial graminoid	3.12	4.8	25	3.74
<i>Lupinus rivularis</i>	riverbank lupine	perennial herb	3.12	13	5	2.03
<i>Regreen or equivalent</i>	sterile wheat hybrid	annual graminoid	3.12	40	30	37.44
<i>Scrophularia californica</i>	figwort	perennial forb	3.12	0.4	5	0.06

**ELK RIVER PLANNING AREA  
65% REVEGETATION  
DESIGN PLAN**



**REFERENCE BLOCK**

DESIGN: EC  
DRAWN: EJ  
APPROVED: EC

PLANTING SCHEDULE  
SHEET 2 OF 2

SHEET 3 OF 3

RIPARIAN SCRUB (HILLSIDE): 0.57 ACRES						
Scientific name	Common name	Form	Propagule type	Spacing (feet on-center)	Fill (Percent)	Quantity
<i>Frangula californica</i>	coffeeberry	mounding, rounding, spreading evergreen shrub	1 gallon	6	10	69
<i>Lonicera involucrata</i>	twin berry	upright winter deciduous shrub	1 gallon	6	10	69
<i>Morella californica</i>	Pacific wax myrtle	upright evergreen shrub	1 gallon	8	20	78
<i>Ribes sanguineum</i>	red-flowering currant	upright winter deciduous shrub	1 gallon	6	15	103
<i>Rubus parviflorus</i>	thimbleberry	upright, spreading winter deciduous shrub, perennial herb	1 gallon	6	10	69
<i>Rubus spectabilis</i>	salmonberry	upright, mounding, spreading winter deciduous shrub	1 gallon	5	15	149
<i>Salix hookeriana</i>	dune willow	upright winter deciduous tree, shrub	live pole cuttings	10	10	25
<i>Sambucus racemosa</i>	red elderberry	winter deciduous shrub, tree	1 gallon	8	10	39
<b>Seed mix</b>				<b>Application rate (lbs/acre)</b>		
<i>Achillea millefoliata</i>	common yarrow	perennial forb	broadcast seed	0.6	10	0.03
<i>Bromus sitchensis</i> var. <i>carinatus</i>	California brome	perennial graminoid	broadcast seed	21	25	2.99
<i>Festuca rubra</i>	red fescue	perennial graminoid	broadcast seed	4.8	25	0.68
<i>Lupinus rivularis</i>	riverbank lupine	perennial herb	broadcast seed	13	5	0.37
<i>Regreen or equivalent</i>	sterile wheat hybrid	annual graminoid	broadcast seed	40	30	6.84
<i>Scrophularia californica</i>	figwort	perennial forb	broadcast seed	0.4	5	0.01

MIXED EVERGREEN RIPARIAN FOREST: 3.03 ACRES						
Scientific name	Common name	Form	Propagule type	Spacing (feet on-center)	Fill (Percent)	Quantity
<i>Alnus rubra</i>	red alder	upright winter deciduous tree	1 gallon	10	15	198
<i>Malus fusca</i>	Oregon crab apple	upright winter deciduous tree	1 gallon	10	5	66
<i>Physocarpus capitatus</i>	Pacific ninebark	rounded winter deciduous shrub	1 gallon	8	5	103
<i>Picea sitchensis</i>	Sitka spruce	pyramidal, upright evergreen tree	TP4	10	30	397
<i>Pinus contorta</i> subsp. <i>contorta</i>	shore pine	evergreen tree	TP4	10	10	132
<i>Salix lasiandra</i>	Pacific willow	upright winter deciduous tree, shrub	live pole cuttings	10	15	198
<i>Sambucus racemosa</i>	red elderberry	winter deciduous shrub, tree	1 gallon	8	5	103
<i>Petasites frigidus</i> var. <i>palmatus</i>	western sweet coltsfoot	perennial herb	1 gallon	10	5	66
<i>Tolmiea diplomenziesii</i>	pig-a-back plant	perennial herb	1 gallon	10	5	66
<i>Viola adunca</i> subsp. <i>adunca</i>	western dog violet	perennial herb	AB34 PB	10	5	66
<b>Seed Mix</b>				<b>Application rate (lbs/acre)</b>		
<i>Achillea millefoliata</i>	common yarrow	perennial forb	FACU	0.6	10	0.18
<i>Bromus sitchensis</i> var. <i>carinatus</i>	California brome	perennial graminoid	NL/UPL	21	25	15.94
<i>Festuca rubra</i>	red fescue	perennial graminoid	FAC	4.8	25	3.64
<i>Lupinus rivularis</i>	riverbank lupine	perennial herb	FAC	13	5	1.97
<i>Regreen or equivalent</i>	sterile wheat hybrid	annual graminoid	N/A	40	30	36.44
<i>Scrophularia californica</i>	figwort	perennial forb	FAC	0.4	5	0.06

RIPARIAN FOREST HILLSIDE: 2.19 ACRES						
Scientific name	Common name	Form	Propagule type	Spacing (feet on-center)	Fill (Percent)	Quantity
<i>Abies grandis</i>	grand fir	pyramidal evergreen tree	TP4	10	15	143
<i>Acer macrophyllum</i>	big-leaf maple	upright, rounded, upright columnar winter deciduous tree	1 gallon	10	20	191
<i>Alnus rubra</i>	red alder	upright winter deciduous tree	1 gallon	10	10	95
<i>Frangula californica</i>	coffeeberry	mounding, rounding, spreading evergreen shrub	1 gallon	10	10	95
<i>Malus fusca</i>	Oregon crab apple	upright winter deciduous tree	1 gallon	10	5	48
<i>Picea sitchensis</i>	Sitka spruce	pyramidal, upright evergreen tree	TP4	10	30	286
<i>Tsuga heterophylla</i>	western hemlock	pyramidal evergreen tree	TP4	10	10	95
<i>Understory</i>						
<i>Gaultheria shallon</i>	salal	upright evergreen shrub	1 gallon	12	25	166
<i>Lonicera involucrata</i>	twin berry	upright winter deciduous shrub	1 gallon	12	10	66
<i>Oemleria cerasiformis</i>	oso berry	upright winter deciduous shrub	1 gallon	12	5	33
<i>Rubus parviflorus</i>	thimbleberry	upright, spreading winter deciduous shrub, perennial herb	1 gallon	10	10	95
<i>Polystichum munitum</i>	western swordfern	upright, fountain summer semi-deciduous, evergreen fern	1 gallon	10	35	334
<i>Sambucus racemosa</i>	red elderberry	winter deciduous shrub, tree	1 gallon	10	10	95
<i>Viola adunca</i> subsp. <i>adunca</i>	western dog violet	perennial herb	AB34 PB	10	5	48

**ELK RIVER PLANNING AREA 1  
65% REVEGETATION  
DESIGN PLAN**

- PA 1 boundary and subarea
  - Contour (1 ft)
  - Contour (10 ft)
  - ⊘ [EG] Fence
  - ⊘ [DG] Fence
  - ▨ Invasive vegetation management
  - ▨ Special-status plant
  - Electric utility pole
  - Electric utility line
  - Electric utility wire zone and tree clearance buffer
- Plant zone**
- Emergent brackish marsh
  - Emergent brackish pond
  - Lower coastal marsh
  - Upper coastal marsh
  - Coastal grassland corridor
  - Riparian emergent marsh
  - Mixed evergreen riparian forest
  - Deciduous riparian forest
  - Tidal bench
  - Open water
  - Grade control
  - Tide gate

MAP PROJECTION  
NAD\_1983\_UTM\_Zone\_10N  
Transverse\_Mercator

**Stillwater Sciences**

**SCALE & NORTH ARROW**

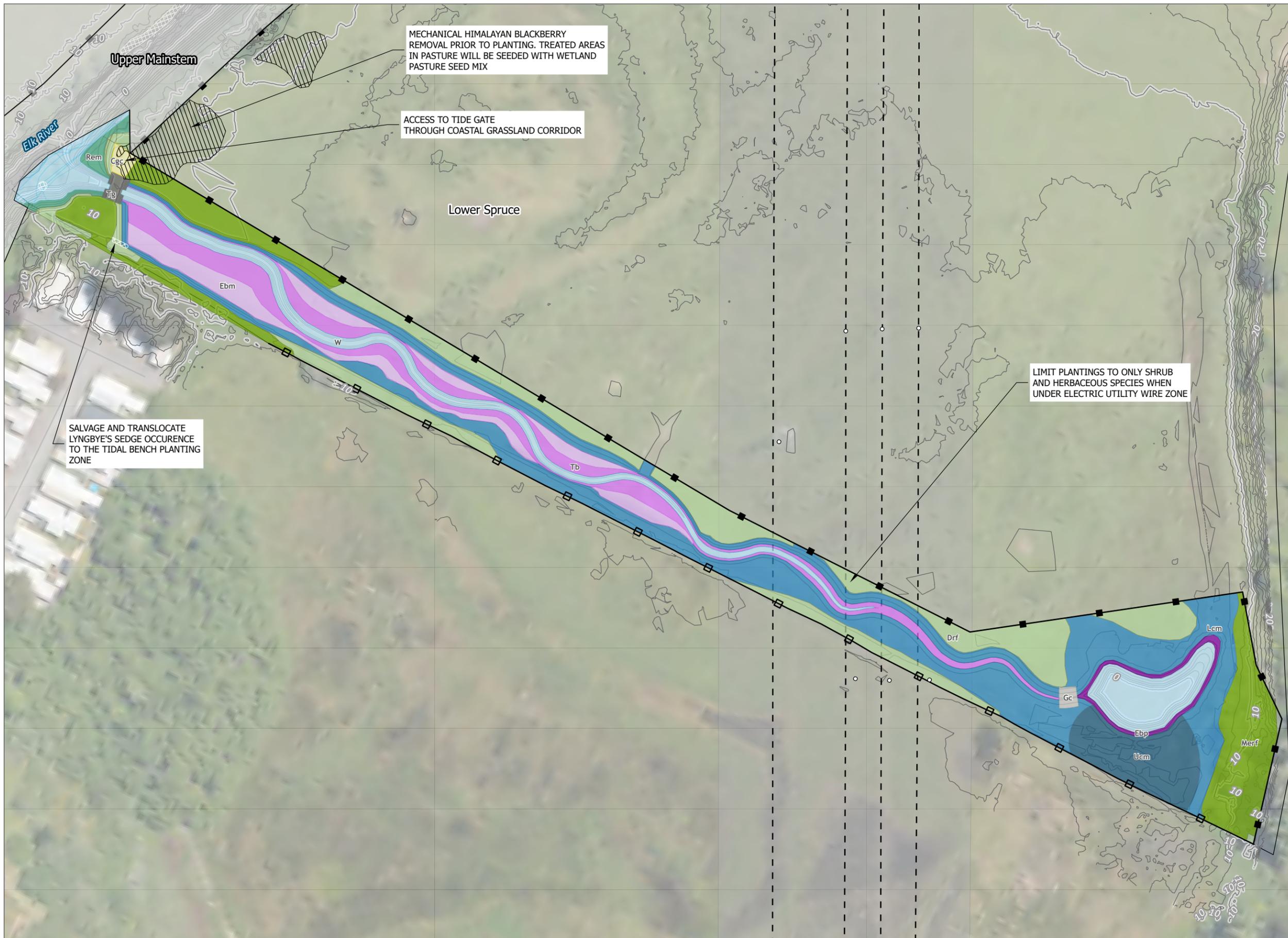


**REFERENCE BLOCK**

DESIGN: EC  
DRAWN: EJ  
APPROVED: EC

PLAN VIEW 1 OF 1, LOWER SPRUCE

SHEET 1 OF 2



**LOWER SPRUCE - PLANTING PLAN**

DATA SOURCES  
Imagery: NAIP 2024  
Roads, rivers, cities: ESRI 2016



**REFERENCE BLOCK**

DESIGN: EC  
 DRAWN: EJ  
 APPROVED: EC

**PLANTING SCHEDULE**  
**SHEET 1 OF 1**

**SHEET 2 OF 2**

**EMERGENT BRACKISH MARSH: 0.25 ACRES**

Scientific name	Common name	Form	Propagule type	Spacing (feet on-center)	Fill (Percent)	Quantity
<i>Angelica lucida</i>	seacoast angelica	perennial (biannual) herb	PB	6	5	15
<i>Deschampsia cespitosa</i>	tufted hairgrass	fountain summer semi-deciduous grass	PB	5	30	131
<i>Festuca rubra</i>	red fescue	upright, fountain grass	PB	5	30	131
<i>Grindelia stricta</i> var. <i>stricta</i>	Oregon gumweed	summer semi-deciduous, spreading perennial herb	AB35 PB	6	10	30
<i>Juncus lescurii</i>	San Francisco rush	perennial graminoid	AB34 PB	6	5	15
<i>Potentilla anserina</i> subsp. <i>pacifica</i>	Pacific silverweed	perennial herb	AB34 PB	6	15	45

**EMERGENT BRACKISH POND: 0.04 ACRES**

Scientific name	Common name	Form	Propagule type	Spacing (feet on-center)	Fill (Percent)	Quantity
<i>Bolboschoenus maritimus</i> subsp. <i>paludosus</i>	saltmarsh bulrush	perennial graminoid	AB34 PB	3	30	58
<i>Eleocharis macrostachya</i>	pale spike rush	upright evergreen graminoid	PB	3	5	10
<i>Potentilla anserina</i> subsp. <i>pacifica</i>	Pacific silverweed	perennial herb	AB34 PB	4	15	16
<i>Schoenoplectus acutus</i> var. <i>occidentalis</i>	tule	perennial graminoid	AB34 PB	3	30	57
<i>Schoenoplectus pungens</i> var. <i>longispicatus</i>	three square	perennial graminoid	PB	3	10	19
<i>Triglochin maritima</i>	arrowgrass	perennial herb	AB34 PB	4	10	11

**LOWER COASTAL MARSH: 1.06 ACRES**

Scientific name	Common name	Form	Propagule type	Spacing (feet on-center)	Fill (Percent)	Quantity
<i>Angelica lucida</i>	seacoast angelica	perennial (biannual) herb	PB	4	5	144
<i>Carex obnupta</i>	slough sedge	upright perennial graminoid	AB34 PB	4	30	866
<i>Elymus triticoides</i>	creeping wild rye	winter deciduous grass	AB34 PB	4	5	144
<i>Juncus lescurii</i>	San Francisco rush	perennial graminoid	AB34 PB	4	10	289
<i>Oenanthe sarmentosa</i>	Pacific water parsley	perennial herb	AB34 PB	4	5	144
<i>Potentilla anserina</i> subsp. <i>pacifica</i>	Pacific silverweed	perennial herb	AB34 PB	4	15	433
<i>Scirpus microcarpus</i>	paniced bulrush	upright winter deciduous graminoid	PB	4	30	866

**UPPER COASTAL MARSH: 0.22 ACRES**

Scientific name	Common name	Form	Propagule type	Spacing (feet on-center)	Fill (Percent)	Quantity
<i>Carex praegracilis</i>	clustered field sedge	upright, mounding evergreen perennial graminoid	PB	4	40	240
<i>Elymus triticoides</i>	creeping wild rye	winter deciduous grass	AB34 PB	4	30	180
<i>Potentilla anserina</i> subsp. <i>pacifica</i>	Pacific silverweed	perennial herb	AB34 PB	4	5	30
<i>Ranunculus californica</i>	common buttercup	fountain perennial herb	PB	4	10	60
<i>Trifolium wormskioldii</i>	cow clover	mounding winter deciduous perennial herb	PB	4	15	90

**COASTAL GRASSLAND CORRIDOR: 0.02 ACRES**

Scientific name	Common name	Form	Propagule type	Application rate (lbs/acre)	Fill (Percent)	Quantity
<i>Achillea millefoliata</i>	common yarrow	perennial forb	broadcast seed	0.6	15	0.01
<i>Bromus sitchensis</i> var. <i>carinatus</i>	California brome	upright graminoid	broadcast seed	21	25	0.11
<i>Festuca rubra</i>	red fescue	perennial graminoid	broadcast seed	4.8	25	0.02
<i>Hordeum brachyantherum</i> subsp. <i>brachyantherum</i>	northern barley	perennial graminoid	broadcast seed	21.6	25	0.11
<i>Symphotrichum chilense</i>	Pacific aster	perennial forb	broadcast seed	0.8	10	0.02

**TIDAL BENCH: 0.39 ACRES**

Scientific name	Common name	Form	Propagule type	Spacing (feet on-center)	Fill (Percent)	Quantity
<i>Bolboschoenus maritimus</i> subsp. <i>paludosus</i>	prairie rush	perennial graminoid	AB34 PB	4	30	319
<i>Carex lyngbyei</i>	Lyngbye's sedge	perennial graminoid	AB34 PB	4	35	372
<i>Triglochin maritima</i>	arrowgrass	perennial herb	AB34 PB	4	35	372

**MIXED EVERGREEN RIPARIAN FOREST: 0.52 ACRES**

Scientific name	Common name	Form	Propagule type	Spacing (feet on-center)	Fill (Percent)	Quantity
<i>Alnus rubra</i>	red alder	upright winter deciduous tree	1 gallon	14	25	29
<i>Frangula purshiana</i>	casacara	upright winter deciduous tree, shrub	1 gallon	6	5	31
<i>Morella californica</i>	Pacific wax myrtle	upright evergreen tree, shrub	1 gallon	6	10	63
<i>Picea sitchensis</i>	Sitka spruce	pyramidal, upright evergreen tree	TP4	10	25	57
<i>Populus trichocarpa</i>	black cottonwood	upright, upright columnar winter deciduous tree	TP4	10	15	34
<i>Salix hookeriana</i>	dune willow	upright winter deciduous tree, shrub	live pole cuttings	10	5	11
<i>Salix lasiandra</i>	Pacific willow	upright winter deciduous tree, shrub	live pole cuttings	10	15	34
<i>Midstory/Understory</i>						
<i>Athyrium filix-femina</i> var. <i>cyclosorum</i>	common ladyfern	fern	1 gallon	10	20	45
<i>Lonicera involucrata</i>	twin berry	upright winter deciduous shrub	1 gallon	10	10	23
<i>Petasites frigidus</i> var. <i>palmatius</i>	western sweet coltsfoot	perennial herb	1 gallon	10	15	34
<i>Physocarpus capitatus</i>	Pacific ninebark	rounded winter deciduous shrub	1 gallon	10	15	34
<i>Polystichum munitum</i>	western swordfern	upright, fountain summer semi-deciduous, evergreen fern	1 gallon	10	5	11
<i>Ribes sanguineum</i>	red-flowering currant	upright winter deciduous shrub	1 gallon	10	5	11
<i>Rubus spectabilis</i>	salmonberry	upright, mounding, spreading winter deciduous shrub	1 gallon	10	15	34
<i>Sambucus racemosa</i>	red elderberry	winter deciduous shrub	1 gallon	10	15	34
<b>Seed Mix</b>				<b>Application rate (lbs/acre)</b>		
<i>Achillea millefoliata</i>	common yarrow	perennial forb	broadcast seed	0.6	10	0.03
<i>Bromus sitchensis</i> var. <i>carinatus</i>	California brome	perennial graminoid	broadcast seed	21	25	2.73
<i>Festuca rubra</i>	red fescue	perennial graminoid	broadcast seed	4.8	25	0.62
<i>Lupinus rivularis</i>	riverbank lupine	perennial herb	broadcast seed	13	5	0.34
<i>Regreen or equivalent</i>	sterile wheat hybrid	annual graminoid	broadcast seed	40	30	6.24
<i>Scrophularia californica</i>	figwort	perennial forb	broadcast seed	0.4	5	0.01

**DECIDUOUS RIPARIAN FOREST: 0.66 ACRES**

Scientific name	Common name	Form	Propagule type	Spacing (feet on-center)	Quantity	Fill (Percent)
<i>Alnus rubra</i>	red alder	upright winter deciduous tree	1 gallon	14	29	20
<i>Lonicera involucrata</i>	twin berry	upright winter deciduous shrub	1 gallon	8	22	5
<i>Morella californica</i>	Pacific wax myrtle	upright evergreen shrub	1 gallon	6	160	20
<i>Physocarpus capitatus</i>	Pacific ninebark	rounded winter deciduous shrub	1 gallon	8	22	5
<i>Populus trichocarpa</i>	black cottonwood	upright, upright columnar winter deciduous tree	TP4	10	29	10
<i>Rubus parviflorus</i>	thimbleberry	upright, spreading winter deciduous shrub, perennial herb	1 gallon	8	22	5
<i>Rubus spectabilis</i>	salmonberry	upright, mounding, spreading winter deciduous shrub	1 gallon	8	22	5
<i>Salix hookeriana</i>	dune willow	upright winter deciduous tree, shrub	live pole cuttings	10	14	5
<i>Salix lasiandra</i>	Pacific willow	upright winter deciduous tree, shrub	live pole cuttings	10	57	20
<i>Sambucus racemosa</i>	red elderberry	winter deciduous shrub, tree	1 gallon	8	22	5
<i>Understory</i>						
<i>Athyrium filix-femina</i> var. <i>cyclosorum</i>	common ladyfern	fern	1 gallon	10	57	20
<i>Carex obnupta</i>	slough sedge	upright perennial graminoid	AB34 PB	10	43	15
<i>Heracleum maximum</i>	cow parsnip	upright perennial herb	1 gallon	10	57	20
<i>Lupinus polyphyllus</i> var. <i>polyphyllus</i>	bigleaf lupine	perennial herb	AB34 PB	10	29	10
<i>Petasites frigidus</i> var. <i>palmatius</i>	western sweet coltsfoot	perennial herb	1 gallon	10	57	20
<i>Tolmiea diplomenziesii</i>	pig-a-back plant	perennial herb	1 gallon	10	43	15
<b>Seed Mix</b>				<b>Application rate (lbs/acre)</b>		
<i>Achillea millefoliata</i>	common yarrow	perennial forb	broadcast seed	0.6	10	0.04
<i>Bromus sitchensis</i> var. <i>carinatus</i>	California brome	perennial graminoid	broadcast seed	21	25	3.47
<i>Festuca rubra</i>	red fescue	perennial graminoid	broadcast seed	4.8	25	0.79
<i>Lupinus rivularis</i>	riverbank lupine	perennial herb	broadcast seed	13	5	0.43
<i>Regreen or equivalent</i>	sterile wheat hybrid	annual graminoid	broadcast seed	40	30	7.92
<i>Scrophularia californica</i>	figwort	perennial forb	broadcast seed	0.4	5	0.01

**ELK RIVER PLANNING AREA 1  
65% REVEGETATION  
DESIGN PLAN**

- PA 1 boundary and sub area
- Contour (1 ft)
- Contour (10 ft)
- ◆ [DG] Fence
- ◆ [EG] Fence
- ▨ Invasive vegetation management
- ▨ Special-status plant
- Electric utility pole
- Electric utility line
- Electric utility wire zone and tree clearance buffer
- Planting zone**
- Lower coastal marsh (Lcm)
- Upper coastal marsh (Ucm)
- Mesic coastal grassland (Mcg)
- Hazelnut scrub (Hs)
- Riparian emergent marsh (Rem)
- Riparian in-fill (Rif)
- Riparian scrub (Rs)
- Mixed evergreen riparian forest (Merf)
- Waters (W)
- Grade control
- Crossing
- Road
- Preserved area**
- Retain vegetation (riparian) (Rv)

MAP PROJECTION  
NAD\_1983\_UTM\_Zone\_10N  
Transverse\_Mercator



**SCALE & NORTH ARROW**

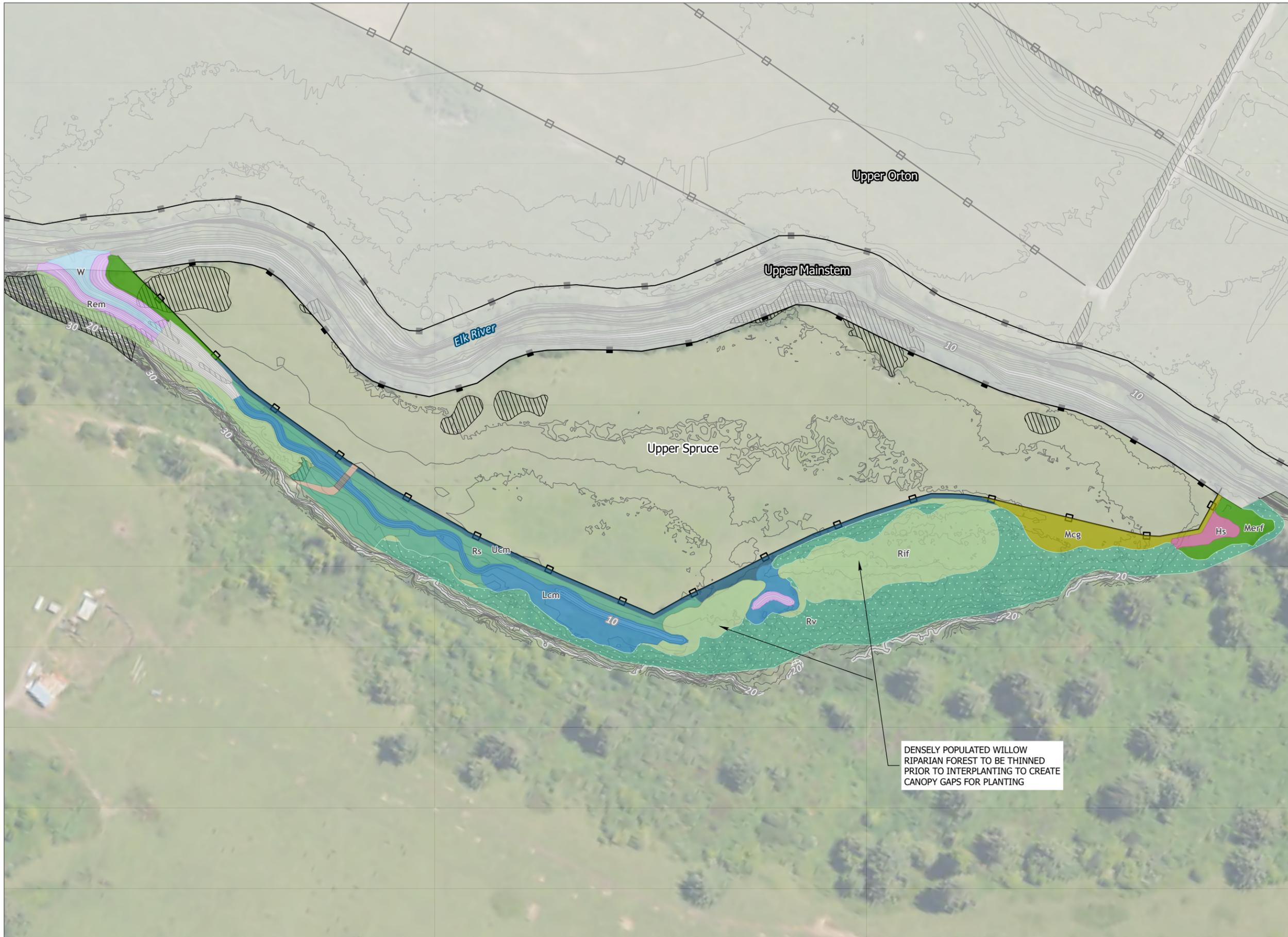


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DESIGN: EC  
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APPROVED: EC

PLAN VIEW 1 OF 1, UPPER SPRUCE

SHEET 1 OF 3



DENSELY POPULATED WILLOW  
RIPARIAN FOREST TO BE THINNED  
PRIOR TO INTERPLANTING TO CREATE  
CANOPY GAPS FOR PLANTING

**UPPER SPRUCE - PLANTING PLAN**

DATA SOURCES  
Imagery: NAIP 2024  
Roads, rivers, cities: ESRI 2016

**ELK RIVER PLANNING AREA 1**  
**65% REVEGETATION**  
**DESIGN PLAN**



**REFERENCE BLOCK**

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PLANTING SCHEDULE  
 SHEET 1 OF 2

SHEET 2 OF 3

**LOWER COASTAL MARSH: 0.69 ACRES**

Scientific name	Common name	Form	Propagule type	Spacing (feet on-center)	Fill (Percent)	Quantity
<i>Carex obnupta</i>	slough sedge	upright perennial graminoid	AB34 PB	5	20	240
<i>Eleocharis macrostachya</i>	pale spike rush	upright evergreen graminoid	PB	4	15	282
<i>Oenanthe sarmentosa</i>	Pacific water parsley	perennial herb	AB34 PB	4	10	188
<i>Potentilla anserina subsp. pacifica</i>	Pacific silverweed	perennial herb	AB34 PB	4	40	751
<i>Scirpus microcarpus</i>	panicked bulrush	upright winter deciduous graminoid	PB	5	15	180

**UPPER COASTAL MARSH: 0.32 ACRES**

Scientific name	Common name	Form	Propagule type	Spacing (feet on-center)	Fill (Percent)	Quantity
<i>Carex praegracilis</i>	clustered field sedge	upright, mounding evergreen perennial graminoid	PB	4	50	436
<i>Elymus triticoides</i>	creeping wild rye	winter deciduous grass	AB34 PB	4	25	218
<i>Ranunculus californica</i>	California buttercup	fountain perennial herb	PB	4	10	87
<i>Trifolium wormskioldii</i>	cow clover	mounding winter deciduous perennial herb	PB	4	15	131

**MESIC COASTAL GRASSLAND: 0.29 ACRES**

Scientific name	Common name	Form	Propagule type	Spacing (feet on-center)	Fill (Percent)	Quantity
<i>Calamagrostis nutkaensis</i>	Pacific reedgrass	evergreen perennial graminoid	AB35 PB	6	40	140
<i>Deschampsia cespitosa</i>	tufted hairgrass	fountain summer semi-deciduous grass	PB	6	20	70
<i>Festuca rubra</i>	creeping wild rye	winter deciduous grass	AB34 PB	6	30	105
<i>Gaultheria shallon</i>	salal	upright evergreen shrub	1 gallon	6	5	18
<i>Heracleum maximum</i>	cow parsnip	upright perennial herb	1 gallon	6	5	18

**HAZELNUT SCRUB: 0.07 ACRES**

Scientific name	Common name	Form	Propagule type	Spacing (feet on-center)	Fill (Percent)	Quantity
<i>Corylus cornuta var. californica</i>	California hazelnut	winter deciduous shrub	1 gallon	6	40	34
<i>Holodiscus discolor</i>	ocean spray	upright, weeping summer semi-deciduous, winter deciduous shrub	1 gallon	6	20	17
<i>Polystichum munitum</i>	western swordfern	upright, fountain summer semi-deciduous, evergreen fern	1 gallon	6	5	4
<i>Ribes sanguineum</i>	red-flowering currant	upright winter deciduous shrub	1 gallon	6	15	13
<i>Rubus parviflorus</i>	thimbleberry	upright, spreading winter deciduous shrub, perennial herb	1 gallon	6	10	8
<i>Vaccinium ovatum</i>	evergreen huckleberry	upright, spreading evergreen shrub	1 gallon	6	10	8
<i>Seed Mix</i>				Application rate (lbs/acre)		
<i>Achillea millefoliata</i>	common yarrow	perennial forb	broadcast seed	0.6	10	0.01
<i>Bromus sitchensis var. carinatus</i>	California or maritime brome	perennial graminoid	broadcast seed	21	30	0.44
<i>Festuca rubra</i>	red fescue	perennial graminoid	broadcast seed	4.8	30	0.08
<i>Regreen or equivalent</i>	sterile wheat hybrid	annual graminoid	broadcast seed	40	25	0.7
<i>Scrophularia californica</i>	figwort	perennial forb	broadcast seed	0.4	5	0.01

**RIPARIAN EMERGENT MARSH: 0.2 ACRES**

Scientific name	Common name	Form	Propagule type	Spacing (feet on-center)	Fill (Percent)	Quantity
<i>Carex obnupta</i>	slough sedge	upright perennial graminoid	AB34 PB	4	40	218
<i>Oenanthe sarmentosa</i>	Pacific water parsley	perennial herb	AB34 PB	4	15	82
<i>Potentilla anserina subsp. pacifica</i>	Pacific silverweed	perennial herb	AB34 PB	4	15	82
<i>Scirpus microcarpus</i>	panicked bulrush	upright winter deciduous graminoid	PB	5	30	105

**RIPARIAN IN-FILL: 1.87 ACRES**

Scientific name	Common name	Form	Propagule type	Spacing (feet on-center)	Fill (Percent)	Quantity
<i>Acer macrophyllum</i>	big-leaf maple	upright, rounded, upright columnar winter deciduous tree	1 gallon	15	10	36
<i>Alnus rubra</i>	red alder	upright winter deciduous tree	1 gallon	15	15	54
<i>Frangula purshiana</i>	cascara	upright winter deciduous shrub	1 gallon	15	5	18
<i>Malus fusca</i>	Oregon crab apple	upright winter deciduous tree	1 gallon	15	10	36
<i>Oemleria cerasiformis</i>	oso berry	upright winter deciduous shrub	1 gallon	15	5	18
<i>Physocarpus capitatus</i>	Pacific ninebark	rounded winter deciduous shrub	1 gallon	15	10	36
<i>Picea sitchensis</i>	Sitka spruce	pyramidal, upright evergreen tree	TP4	15	20	72
<i>Populus trichocarpa</i>	black cottonwood	upright, upright columnar winter deciduous tree	TP4	15	15	54
<i>Rubus parviflorus</i>	thimbleberry	upright, spreading winter deciduous shrub, perennial herb	1 gallon	15	5	18
<i>Rubus spectabilis</i>	salmonberry	upright, mounding, spreading winter deciduous shrub	1 gallon	15	5	18
<i>Understory</i>						
<i>Athyrium filix-femina var. cyclosorum</i>	common ladyfern	fern	1 gallon	12	25	141
<i>Lupinus polyphyllus var. polyphyllus</i>	bigleaf lupine	perennial herb	AB34 PB	12	25	141
<i>Lysichiton americanus</i>	yellow skunk cabbage	perennial herb	1 gallon	12	20	113
<i>Petasites frigidus var. palmatus</i>	western sweet coltsfoot	perennial herb	1 gallon	12	25	141
<i>Viola adunca subsp. adunca</i>	western dog violet	perennial herb	AB34 PB	8	5	64

**RIPARIAN SCRUB: 0.69 ACRES**

Scientific name	Common name	Form	Propagule type	Spacing (feet on-center)	Fill (Percent)	Quantity
<i>Ceanothus thyrsiflorus var. thyrsiflorus</i>	blueblossom	mounding, spreading evergreen shrub	1 gallon	8	5	23
<i>Diplacus aurantiacus</i>	orange bush monkeyflower	mounding, spreading evergreen shrub	1 gallon	6	5	42
<i>Lonicera involucrata</i>	twin berry	upright winter deciduous shrub	1 gallon	6	10	83
<i>Morella californica</i>	Pacific wax myrtle	upright evergreen shrub	1 gallon	8	20	94
<i>Physocarpus capitatus</i>	Pacific ninebark	rounded winter deciduous shrub	1 gallon	6	10	83
<i>Ribes sanguineum</i>	red-flowering currant	upright winter deciduous shrub	1 gallon	6	10	83
<i>Rubus parviflorus</i>	thimbleberry	upright, spreading winter deciduous shrub, perennial herb	1 gallon	6	10	83
<i>Rubus spectabilis</i>	salmonberry	upright, mounding, spreading winter deciduous shrub	1 gallon	6	15	125
<i>Sambucus racemosa</i>	red elderberry	winter deciduous shrub, tree	1 gallon	8	15	70
<i>Seed Mix</i>						
<i>Achillea millefoliata</i>	common yarrow	perennial forb	broadcast seed	0.6	10	0.04
<i>Bromus sitchensis var. carinatus</i>	California or maritime brome	perennial graminoid	broadcast seed	21	30	4.35
<i>Festuca rubra</i>	red fescue	perennial graminoid	broadcast seed	4.8	25	0.83
<i>Regreen or equivalent</i>	sterile wheat hybrid	annual graminoid	broadcast seed	40	25	6.9
<i>Scrophularia californica</i>	figwort	perennial forb	broadcast seed	0.4	5	0.01
<i>Symphotrichum chilense</i>	Pacific aster	perennial forb	broadcast seed	0.8	5	0.03

**UPPER SPRUCE - PLANTING SCHEDULE**

**ELK RIVER PLANNING AREA 1  
65% REVEGETATION  
DESIGN PLAN**

MIXED EVERGREEN RIPARIAN FOREST: 0.27 ACRES					
Scientific name	Common name	Form	Spacing (feet on-center)	Fill (Percent)	Quantity
<i>Abies grandis</i>	grand fir	pyramidal evergreen tree	10	5	6
<i>Alnus rubra</i>	red alder	upright winter deciduous tree	14	20	12
<i>Frangula purshiana</i>	casarea	upright winter deciduous shrub	6	10	33
<i>Malus fusca</i>	Oregon crab apple	upright winter deciduous tree	10	5	6
<i>Physocarpus capitatus</i>	Pacific ninebark	rounded winter deciduous shrub	6	15	49
<i>Picea sitchensis</i>	Sitka spruce	pyramidal, upright evergreen tree	10	20	24
<i>Rubus parviflorus</i>	thimbleberry	upright, spreading winter deciduous shrub, perennial herb	6	10	33
<i>Sambucus racemosa</i>	red elderberry	winter deciduous shrub, tree	8	10	18
<i>Vaccinium ovatum</i>	evergreen huckleberry	upright, spreading evergreen shrub	10	5	6
<i>Understory</i>					
<i>Athyrium filix-femina</i> var. <i>cyclosorum</i>	common ladyfern	fern	10	30	35
<i>Lupinus polyphyllus</i> var. <i>polyphyllus</i>	bigleaf lupine	perennial herb	10	20	24
<i>Petasites frigidus</i> var. <i>palmatus</i>	western sweet coltsfoot	perennial herb	10	30	35
<i>Polystichum munitum</i>	western swordfern	upright, fountain summer semi-deciduous, evergreen fern	10	20	24
<i>Seed mix</i>					
<i>Achillea millefoliata</i>	common yarrow	perennial forb	0.6	10	0.02
<i>Bromus sitchensis</i> var. <i>carinatus</i>	California or maritime brome	perennial graminoid	21	30	1.7
<i>Festuca rubra</i>	red fescue	perennial graminoid	4.8	25	0.32
<i>Regreen or equivalent</i>	sterile wheat hybrid	annual graminoid	40	25	2.7
<i>Scrophularia californica</i>	figwort	perennial forb	0.4	5	0.01
<i>Symphotrichum chilense</i>	Pacific aster	perennial forb	0.8	5	0.01



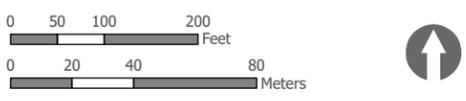
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PLANTING SCHEDULE SHEET 2 OF 2	
SHEET 3 OF 3	

# ELK RIVER PLANNING AREA 1 65% REVEGETATION DESIGN PLAN

- PA 1 boundary and subarea
- [DG] Fence
- Invasive vegetation management
- Special-status plant
- Electric utility pole
- Electric utility line
- Electric utility wire zone and tree clearance buffer
- Contour (1 ft)
- Contour (10 ft)
- Adjacent sheet
- Planting zone**
- Emergent brackish marsh (Ebm)
- Emergent brackish pond (Ebp)
- Lower coastal marsh (Lcm)
- Upper coastal marsh (Ucm)
- Wetland pasture seed mix (Wpsm)
- Mesic coastal grassland (Mcg)
- Upper mesic coastal grassland (Umcg)
- Coastal scrub (Cs)
- Riparian scrub (Rs)
- Riparian scrub - hillside (Rsh)
- Mixed evergreen riparian forest (Merf)
- Deciduous riparian forest (Drf)
- Waters (W)
- Road
- Grade control
- Developed
- RSP

MAP PROJECTION  
NAD\_1983\_UTM\_Zone\_10N  
Transverse\_Mercator

## SCALE & NORTH ARROW



## REFERENCE BLOCK

DESIGN: EC  
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PLAN VIEW 1 of 3, ORTON

SHEET 1 OF 6



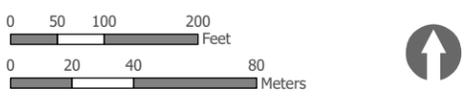
**ELK RIVER PLANNING AREA 1  
65% REVEGETATION  
DESIGN PLAN**

- PA 1 boundary and subarea
- [DG] Fence
- Invasive vegetation management
- Special-status plant
- Electric utility pole
- Electric utility line
- Electric utility wire zone and tree clearance buffer
- Contour (1 ft)
- Contour (10 ft)
- Adjacent sheet
- Planting zone**
- Lyngbye's sedge marsh (Lsm)
- Emergent brackish marsh (Ebm)
- Emergent brackish pond (Ebp)
- Lower coastal marsh (Lcm)
- Upper coastal marsh (Ucm)
- Wetland pasture seed mix (Wpsm)
- Mesic coastal grassland (Mcg)
- Upper mesic coastal grassland (Umcg)
- Riparian scrub (Rs)
- Riparian scrub - hillside (Rsh)
- Riparian in-fill (Rif)
- Mixed evergreen riparian forest (Merf)
- Deciduous riparian forest (Drf)
- Waters (W)
- Public access
- Road
- Crossing
- Grade control (Gc)
- Utility pole
- Preserved area**
- Retain Lyngbye's sedge marsh (Rlsm)
- Retain Monterey cypress (Rmc)
- Retain marsh (Rm)
- Retain riparian (Rr)

MAP PROJECTION  
NAD\_1983\_UTM\_Zone\_10N  
Transverse\_Mercator



**SCALE & NORTH ARROW**

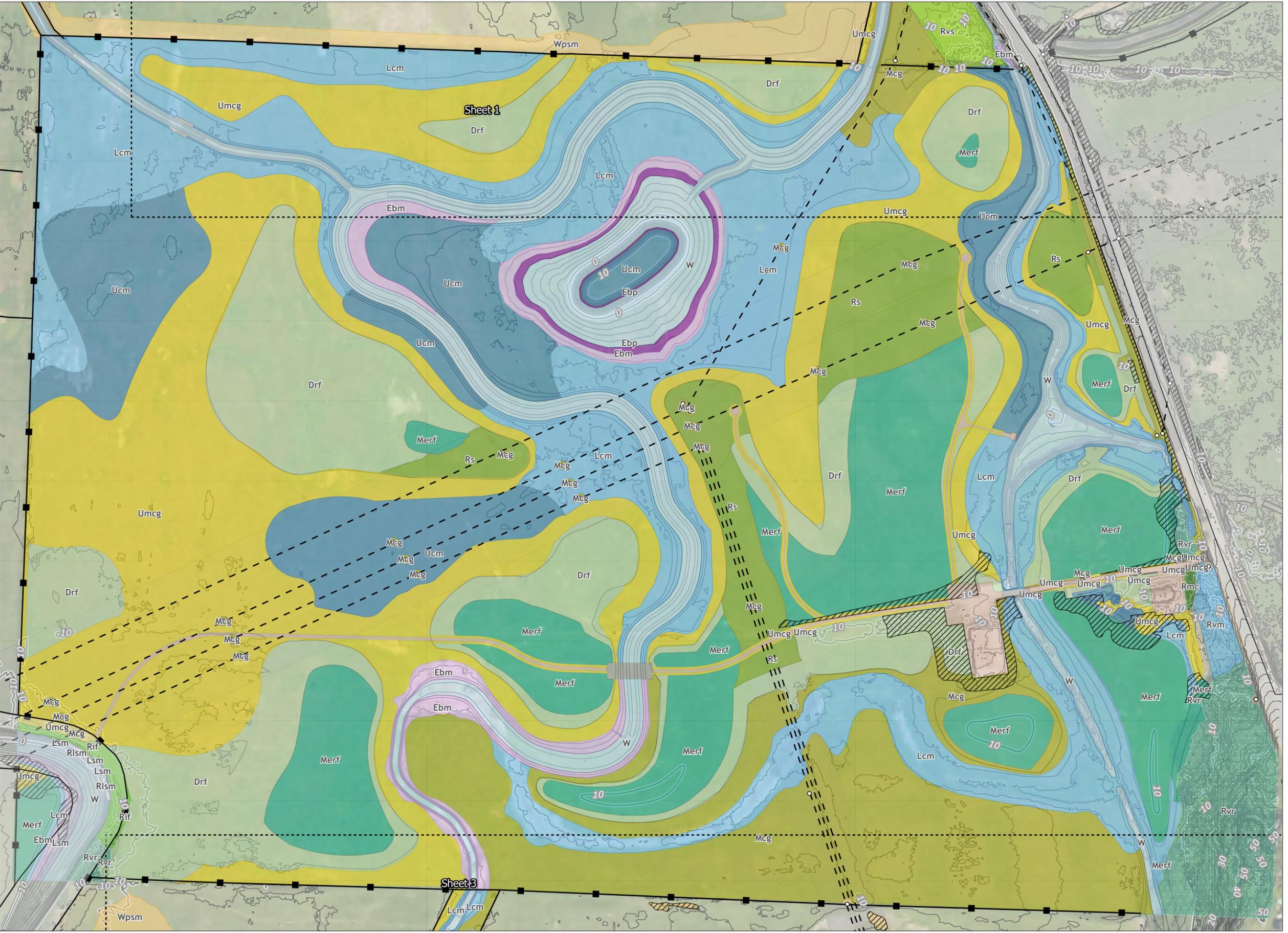


**REFERENCE BLOCK**

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DRAWN: EJ  
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PLAN VIEW 2 of 3, ORTON

SHEET 2 OF 6



**ORTON - PLANTING PLAN**

DATA SOURCES  
Imagery: NAIP 2024  
Roads, rivers, cities: ESRI 2016

# ELK RIVER PLANNING AREA 1 65% REVEGETATION DESIGN PLAN

- PA 1 boundary and subarea
- [DG] Fence
- Invasive vegetation management
- Special-status plant
- Electric utility pole
- Electric utility line
- Electric utility wire zone and tree clearance buffer
- Contour (1 ft)
- Contour (10 ft)
- Adjacent sheet
- Planting zone**
- Emergent brackish marsh (Ebm)
- Lower coastal marsh (Lcm)
- Upper coastal marsh (Ucm)
- Wetland pasture seed mix (Wpsm)
- Mesic coastal grassland (Mcg)
- Upper mesic coastal grassland (Umcg)
- Coastal scrub (Cs)
- Riparian emergent marsh (Rem)
- Riparian scrub (Rs)
- Riparian scrub - hillside (Rsh)
- Riparian in-fill (Rif)
- Mixed evergreen riparian forest (Merf)
- Riparian forest - hillside (Rfh)
- Deciduous riparian forest (Drf)
- Waters (W)
- Road
- Crossing
- Developed
- Preserved area**
- Retain riparian (Rr)

MAP PROJECTION  
NAD\_1983\_UTM\_Zone\_10N  
Transverse\_Mercator

## SCALE & NORTH ARROW

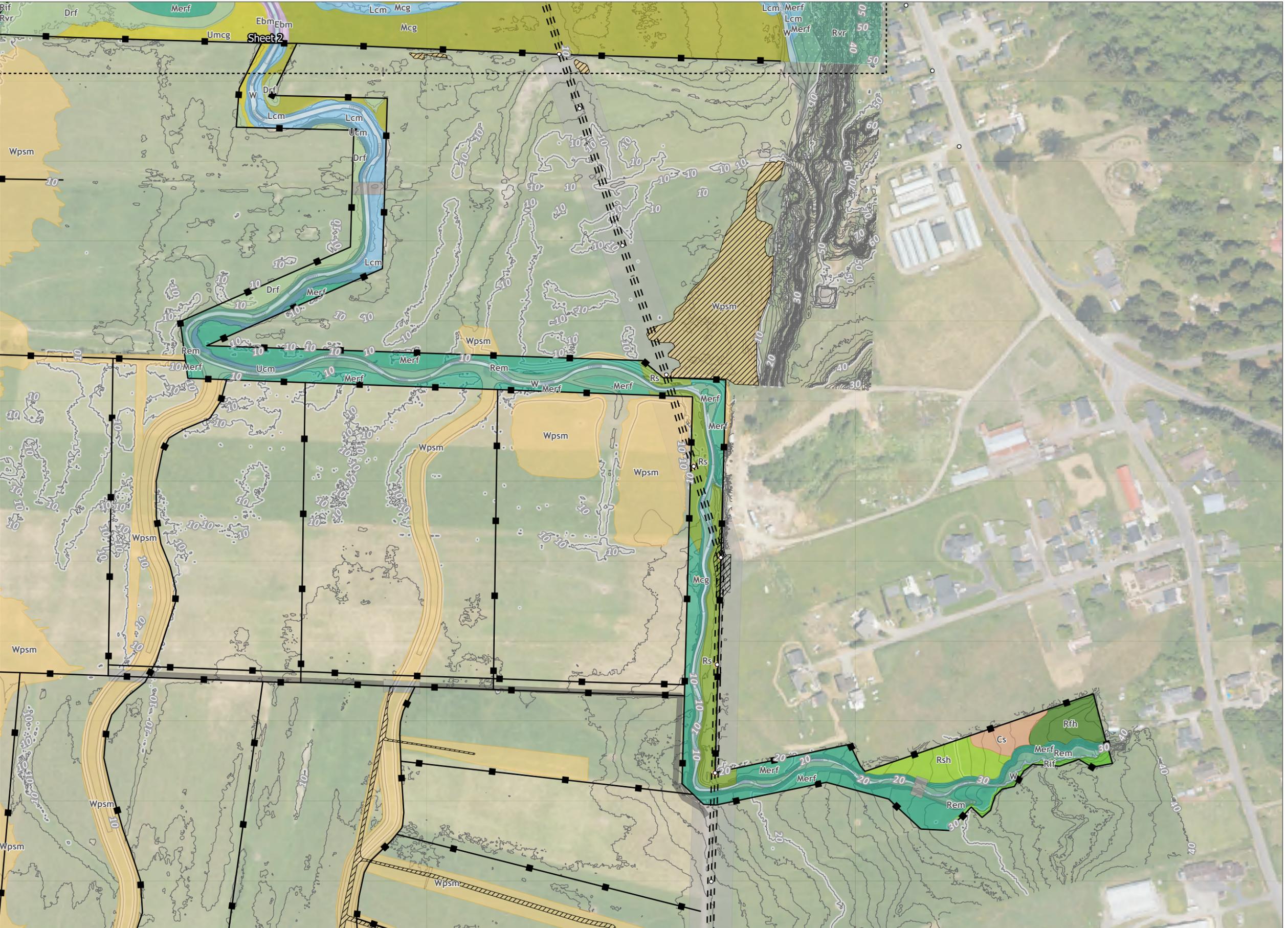


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PLAN VIEW 3 of 3, ORTON

SHEET 3 OF 6



# ELK RIVER PLANNING AREA 1

## 65% REVEGETATION DESIGN PLAN



### REFERENCE BLOCK

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PLANTING SCHEDULE SHEET 1 OF 3

SHEET 4 OF 6

### LYNGBYE'S SEDGE MARSH: 0.14 ACRES

Scientific name	Common name	Form	Propagule type	Spacing (feet on-center)	Fill (Percent)	Quantity
<i>Carex lyngbyei</i>	Lyngbye's sedge	perennial graminoid	AB34 PB	3	60	407
<i>Triglochin maritima</i>	arrowgrass	perennial herb	AB34 PB	4	40	152

### EMERGENT BRACKISH MARSH: 2.34 ACRES

Scientific name	Common name	Form	Propagule type	Spacing (feet on-center)	Fill (Percent)	Quantity
<i>Angelica lucida</i>	seacoast angelica	perennial (biannual) herb	PB	6	5	142
<i>Deschampsia cespitosa</i>	tufted hairgrass	fountain summer semi-deciduous grass	PB	6	30	849
<i>Festuca rubra</i>	red fescue	upright, fountain grass	PB	6	30	849
<i>Grindelia stricta</i> var. <i>stricta</i>	Oregon gumweed	summer semi-deciduous, spreading perennial herb	AB35 PB	6	10	283
<i>Juncus lescurii</i>	San Francisco rush	perennial graminoid	AB34 PB	6	5	142
<i>Potentilla anserina</i> subsp. <i>pacifica</i>	Pacific silverweed	perennial herb	AB34 PB	6	15	425
<i>Symphotrichum chilense</i>	Pacific aster	winter deciduous perennial herb	1 gallon	6	5	142

### EMERGENT BRACKISH POND: 0.38 ACRES

Scientific name	Common name	Form	Propagule type	Spacing (feet on-center)	Fill (Percent)	Quantity
<i>Bolboschoenus maritimus</i> subsp. <i>paludosus</i>	saltmarsh bulrush	perennial graminoid	AB34 PB	3	35	639
<i>Eleocharis macrostachya</i>	pale spike rush	upright evergreen graminoid	PB	3	15	274
<i>Potentilla anserina</i> subsp. <i>pacifica</i>	Pacific silverweed	perennial herb	AB34 PB	4	15	154
<i>Schoenoplectus acutus</i> var. <i>occidentalis</i>	tule	perennial graminoid	AB34 PB	3	15	274
<i>Schoenoplectus pungens</i> var. <i>longispicatus</i>	three square	perennial graminoid	PB	3	10	182
<i>Triglochin maritima</i>	arrowgrass	perennial herb	AB34 PB	4	10	103

### LOWER COASTAL MARSH: 17.93 ACRES

Scientific name	Common name	Form	Propagule type	Spacing (feet on-center)	Fill (Percent)	Quantity
<i>Carex obnupta</i>	slough sedge	upright perennial graminoid	AB34 PB	5	35	10934
<i>Elymus triticoides</i>	creeping wild rye	winter deciduous grass	AB34 PB	5	5	1562
<i>Juncus lescurii</i>	San Francisco rush	perennial graminoid	AB34 PB	5	10	3124
<i>Potentilla anserina</i> subsp. <i>pacifica</i>	Pacific silverweed	perennial herb	AB34 PB	5	15	4686
<i>Scirpus microcarpus</i>	panicked bulrush	upright winter deciduous graminoid	PB	6	30	6509
<i>Symphotrichum chilense</i>	Pacific aster	winter deciduous perennial herb	1 gallon	5	5	1562

### UPPER COASTAL MARSH: 8.28 ACRES

Scientific name	Common name	Form	Propagule type	Application rate (lbs/acre)	Fill (Percent)	Quantity
<i>Carex praegracilis</i>	clustered field sedge	upright, mounding evergreen perennial graminoid	drilled seed	2.1	40	7
<i>Elymus triticoides</i>	creeping wild rye	winter deciduous grass	drilled seed	9.6	30	23.8
<i>Ranunculus californica</i>	common buttercup	fountain perennial herb	drilled seed	5.5	10	4.6
<i>Potentilla anserina</i> subsp. <i>pacifica</i>	Pacific silverweed	perennial herb	drilled seed	2.9	5	1.2
<i>Trifolium wormskioldii</i>	cow clover	mounding winter deciduous perennial herb	drilled seed	3.6	15	4.5

### MESIC COASTAL GRASSLAND: 10.0 ACRES

Scientific name	Common name	Form	Propagule type	Application rate (lbs/acre)	Fill (Percent)	Quantity
<i>Achillea millefoliata</i>	common yarrow	perennial forb	drilled seed	0.6	5	0.3
<i>Angelica lucida</i>	seacoast angelica	perennial (biannual) herb	drilled seed	14.1	5	7.05
<i>Deschampsia cespitosa</i>	tufted hairgrass	fountain summer semi-deciduous grass	drilled seed	0.6	40	2.4
<i>Elymus triticoides</i>	creeping wild rye	perennial graminoid	drilled seed	9.6	15	14.4
<i>Hordeum brachyantherum</i> subsp. <i>brachyantherum</i>	northern barley	perennial graminoid	drilled seed	10.8	20	21.6
<i>Symphotrichum chilense</i>	Pacific aster	winter deciduous perennial herb	drilled seed	0.4	10	0.4
<i>Trifolium wormskioldii</i>	cow clover	mounding winter deciduous perennial herb	drilled seed	3.6	5	1.8

### UPPER MESIC COASTAL GRASSLAND: 19.88 ACRES

Scientific name	Common name	Form	Propagule type	Application rate (lbs/acre)	Fill (Percent)	Quantity
<i>Achillea millefoliata</i>	common yarrow	perennial forb	drill seed	0.3	5	0.3
<i>Calamagrostis nutkaensis</i>	Pacific reedgrass	evergreen perennial graminoid	drill seed	0.3	40	2.39
<i>Festuca rubra</i>	red fescue	upright, fountain grass	drill seed	2.4	40	19.08
<i>Symphotrichum chilense</i>	Pacific aster	winter deciduous perennial herb	drill seed	0.4	10	0.8
<i>Trifolium wormskioldii</i>	cow clover	mounding winter deciduous perennial herb	drill seed	3.6	5	3.58

### COASTAL SCRUB: 0.48 ACRES

Scientific name	Common name	Form	Propagule type	Spacing (feet on-center)	Fill (Percent)	Quantity
<i>Baccharis pilularis</i>	coyote brush	mounding, spreading evergreen shrub	1 gallon	6	5	29
<i>Ceanothus thyrsiflorus</i> var. <i>thyrsiflorus</i>	blueblossom	mounding, spreading evergreen shrub	1 gallon	8	10	33
<i>Diplacus aurantiacus</i>	orange bush monkeyflower	mounding, spreading evergreen shrub	1 gallon	6	5	29
<i>Frangula purshiana</i>	casara	upright winter deciduous shrub	1 gallon	6	15	87
<i>Garrya elliptica</i>	wavy leaf silk tassel	rounded evergreen shrub	1 gallon	10	10	21
<i>Lonicera involucrata</i>	twin berry	upright winter deciduous shrub	1 gallon	6	10	58
<i>Morella californica</i>	Pacific wax myrtle	upright evergreen shrub	1 gallon	6	15	87
<i>Ribes sanguineum</i>	red-flowering currant	upright winter deciduous shrub	1 gallon	6	5	29
<i>Rubus parviflorus</i>	thimbleberry	upright, spreading winter deciduous shrub, perennial herb	1 gallon	6	5	29
<i>Rubus spectabilis</i>	salmonberry	upright, mounding, spreading winter deciduous shrub	1 gallon	6	15	87
<i>Sambucus racemosa</i>	red elderberry	winter deciduous shrub, tree	1 gallon	8	5	16

Seed Mix				Application rate (lbs/acre)		
<i>Achillea millefoliata</i>	common yarrow	perennial forb	broadcast seed	0.6	10	0.03
<i>Bromus sitchensis</i> var. <i>carinatus</i>	California brome	perennial graminoid	broadcast seed	21	25	2.52
<i>Festuca rubra</i>	red fescue	perennial graminoid	broadcast seed	4.8	25	0.58
<i>Regreen or equivalent</i>	sterile wheat hybrid	annual graminoid	broadcast seed	40	30	5.76
<i>Lupinus rivularis</i>	riverbank lupine	perennial herb	broadcast seed	1.3	5	0.31
<i>Scrophularia californica</i>	figwort	perennial forb	broadcast seed	0.4	5	0.01

### RIPARIAN EMERGENT MARSH: 1.71 ACRES

Scientific name	Common name	Form	Propagule type	Spacing (feet on-center)	Fill (Percent)	Quantity
<i>Carex obnupta</i>	slough sedge	upright perennial graminoid	AB34 PB	5	40	1192
<i>Oenanthe sarmentosa</i>	Pacific water parsley	perennial herb	AB34 PB	4	15	698
<i>Potentilla anserina</i> subsp. <i>pacifica</i>	Pacific silverweed	perennial herb	AB34 PB	4	15	698
<i>Scirpus microcarpus</i>	panicked bulrush	upright winter deciduous graminoid	PB	5	30	894

### RIPARIAN SCRUB: 5.51 ACRES

Scientific name	Common name	Form	Propagule type	Spacing (feet on-center)	Fill (Percent)	Quantity
<i>Frangula purshiana</i>	casara	upright winter deciduous shrub	1 gallon	6	10	667
<i>Holodiscus discolor</i>	ocean spray	upright, weeping shrub	1 gallon	6	5	333
<i>Lonicera involucrata</i>	twin berry	upright winter deciduous shrub	1 gallon	6	5	333
<i>Morella californica</i>	Pacific wax myrtle	upright evergreen shrub	1 gallon	8	20	750
<i>Rosa nutkana</i>	Nootka rose	upright winter deciduous shrub	1 gallon	6	5	333
<i>Ribes sanguineum</i>	red-flowering currant	upright winter deciduous shrub	1 gallon	6	10	667
<i>Rubus parviflorus</i>	thimbleberry	upright, spreading winter deciduous shrub, perennial herb	1 gallon	6	5	333
<i>Rubus spectabilis</i>	salmonberry	upright, mounding, spreading winter deciduous shrub	1 gallon	6	15	1000
<i>Sambucus racemosa</i>	red elderberry	winter deciduous shrub, tree	1 gallon	8	25	938

**ELK RIVER PLANNING AREA 1**  
**65% REVEGETATION**  
**DESIGN PLAN**

RIPARIAN SCRUB - HILLSIDE: 0.6 ACRES						
Scientific name	Common name	Form	Propagule type	Spacing (feet on-center)	Fill (Percent)	Quantity
<i>Corylus cornuta var. californica</i>	California hazelnut	winter deciduous shrub	1 gallon	6	5	36
<i>Frangula californica</i>	coffeeberry	mounding, rounding, spreading evergreen shrub	1 gallon	6	10	73
<i>Lonicera involucrata</i>	twin berry	upright winter deciduous shrub	1 gallon	6	15	109
<i>Morella californica</i>	Pacific wax myrtle	upright evergreen shrub	1 gallon	8	15	61
<i>Ribes sanguineum</i>	red-flowering currant	upright winter deciduous shrub	1 gallon	6	15	109
<i>Rubus parviflorus</i>	thimbleberry	upright, spreading winter deciduous shrub, perennial herb	1 gallon	6	10	73
<i>Rubus spectabilis</i>	salmonberry	upright, mounding, spreading winter deciduous shrub	1 gallon	5	15	157
<i>Salix lasiolepis</i>	arroyo willow	upright, rounded, upright columnar winter deciduous tree, shrub	live pole cuttings	10	10	26
<i>Sambucus racemosa</i>	red elderberry	winter deciduous shrub, tree	1 gallon	8	5	20
<b>Seed Mix</b>				<b>Application rate (lbs/acre)</b>		
<i>Achillea millefoliata</i>	common yarrow	perennial forb	broadcast seed	0.6	10	0.04
<i>Bromus sitchensis var. carinatus</i>	California brome	perennial graminoid	broadcast seed	21	25	3.15
<i>Festuca rubra</i>	red fescue	perennial graminoid	broadcast seed	4.8	25	0.72
<i>Regreen or equivalent</i>	sterile wheat hybrid	annual graminoid	broadcast seed	40	30	7.2
<i>Lupinus rivularis</i>	riverbank lupine	perennial herb	broadcast seed	13	5	0.39
<i>Scrophularia californica</i>	figwort	perennial forb	broadcast seed	0.4	5	0.01

RIPARIAN IN-FILL: 0.41 ACRES						
Scientific name	Common name	Form	Propagule type	Spacing (feet on-center)	Fill (Percent)	Quantity
<i>Alnus rubra</i>	red alder	upright winter deciduous tree	1 gallon	14	25	23
<i>Cornus sericea subsp. occidentalis</i>	American dogwood	upright winter deciduous shrub	1 gallon	10	10	18
<i>Frangula purshiana</i>	casacara	upright winter deciduous shrub	1 gallon	10	10	18
<i>Malus fusca</i>	Oregon crab apple	upright winter deciduous tree	1 gallon	10	10	18
<i>Physocarpus capitatus</i>	Pacific ninebark	rounded winter deciduous shrub	1 gallon	10	10	18
<i>Picea sitchensis</i>	Sitka spruce	pyramidal, upright evergreen tree	TP4	10	10	18
<i>Salix lasiandra</i>	Pacific willow	upright winter deciduous tree, shrub	live pole cuttings	10	10	18
<i>Sambucus racemosa</i>	red elderberry	winter deciduous shrub, tree	1 gallon	10	10	18
<i>Umbellularia californica</i>	California laurel	upright, rounded evergreen tree	TP4	10	5	9
<b>Understory</b>						
<i>Athyrium filix-femina var. cyclosorum</i>	common ladyfern	upright winter deciduous fern	1 gallon	8	10	28
<i>Petasites frigidus var. palmatus</i>	western sweet coltsfoot	perennial herb	1 gallon	8	10	28
<i>Lonicera involucrata</i>	twin berry	upright winter deciduous shrub	1 gallon	10	10	18
<i>Physocarpus capitatus</i>	Pacific ninebark	rounded winter deciduous shrub	1 gallon	10	5	9
<i>Ribes sanguineum</i>	red-flowering currant	upright winter deciduous shrub	1 gallon	10	10	18
<i>Rubus spectabilis</i>	salmonberry	upright, mounding, spreading winter deciduous shrub	1 gallon	10	15	27

MIXED EVERGREEN RIPARIAN FOREST: 14.88 ACRES						
Scientific name	Common name	Form	Propagule type	Spacing (feet on-center)	Fill (Percent)	Quantity
<i>Alnus rubra</i>	red alder	upright winter deciduous tree	1 gallon	10	25	1620
<i>Physocarpus capitatus</i>	Pacific ninebark	rounded winter deciduous shrub	1 gallon	8	10	1013
<i>Picea sitchensis</i>	Sitka spruce	pyramidal, upright evergreen tree	TP4	10	25	1620
<i>Pinus contorta subsp. contorta</i>	shore pine	evergreen tree	TP4	10	20	1296
<i>Salix lasiandra</i>	Pacific willow	upright winter deciduous tree, shrub	live pole cuttings	10	10	648
<i>Salix hookeriana</i>	dune willow	upright winter deciduous tree, shrub	live pole cuttings	8	5	506
<i>Sambucus racemosa</i>	red elderberry	winter deciduous shrub, tree	1 gallon	8	5	506
<b>Understory</b>						
<i>Athyrium filix-femina var. cyclosorum</i>	common ladyfern	upright winter deciduous fern	1 gallon	10	20	1296
<i>Carex obnupta</i>	slough sedge	upright perennial graminoid	AB34 PB	10	20	1296
<i>Petasites frigidus var. palmatus</i>	western sweet coltsfoot	perennial herb	1 gallon	10	20	1296
<i>Vaccinium ovatum</i>	evergreen huckleberry	evergreen upright, spreading shrub	1 gallon	10	20	1296
<i>Scirpus microcarpus</i>	small fruited bulrush	upright perennial graminoid	PB	10	20	1296
<b>Seed Mix</b>				<b>Application rate (lbs/acre)</b>		
<i>Achillea millefoliata</i>	common yarrow	perennial forb	broadcast seed	0.6	10	0.89
<i>Bromus sitchensis var. carinatus</i>	California brome	perennial graminoid	broadcast seed	21	25	78.12
<i>Festuca rubra</i>	red fescue	perennial graminoid	broadcast seed	4.8	25	17.86
<i>Regreen or equivalent</i>	sterile wheat hybrid	annual graminoid	broadcast seed	40	30	178.56
<i>Lupinus rivularis</i>	riverbank lupine	perennial herb	broadcast seed	13	5	9.67
<i>Scrophularia californica</i>	figwort	perennial forb	broadcast seed	0.4	5	0.3

RIPARIAN FOREST HILLSIDE: 0.45 ACRES						
Scientific name	Common name	Form	Propagule type	Spacing (feet on-center)	Fill (Percent)	Quantity
<i>Acer macrophyllum</i>	big-leaf maple	upright, rounded, upright columnar winter deciduous tree	1 gallon	10	20	39
<i>Alnus rubra</i>	red alder	upright winter deciduous tree	1 gallon	14	20	20
<i>Frangula californica</i>	coffeeberry	mounding, rounding, spreading evergreen shrub	1 gallon	6	15	82
<i>Lonicera involucrata</i>	twin berry	upright winter deciduous shrub	1 gallon	6	10	54
<i>Picea sitchensis</i>	Sitka spruce	pyramidal, upright evergreen tree	TP4	10	20	39
<i>Tsuga heterophylla</i>	western hemlock	pyramidal evergreen tree	TP4	10	5	10
<i>Sambucus racemosa</i>	red elderberry	winter deciduous shrub, tree	1 gallon	8	10	31
<b>Seed Mix</b>				<b>Application rate (lbs/acre)</b>		
<i>Achillea millefoliata</i>	common yarrow	perennial forb	broadcast seed	0.6	10	0.03
<i>Bromus sitchensis var. carinatus</i>	California brome	perennial graminoid	broadcast seed	21	25	2.36
<i>Festuca rubra</i>	red fescue	perennial graminoid	broadcast seed	4.8	25	0.54
<i>Regreen or equivalent</i>	sterile wheat hybrid	annual graminoid	broadcast seed	40	30	5.4
<i>Lupinus rivularis</i>	riverbank lupine	perennial herb	broadcast seed	13	5	0.29
<i>Scrophularia californica</i>	figwort	perennial forb	broadcast seed	0.4	5	0.01



**REFERENCE BLOCK**

DESIGN: EC  
 DRAWN: EJ  
 APPROVED: EC

PLANTING SCHEDULE  
 SHEET 2 OF 3

SHEET 5 OF 6

**ELK RIVER PLANNING AREA 1  
65% REVEGETATION  
DESIGN PLAN**

DECIDUOUS RIPARIAN FOREST: 14.2 ACRES						
Scientific name	Common name	Form	Propagule type	Spacing (feet on-center)	Fill (Percent)	Quantity
<i>Alnus rubra</i>	red alder	upright winter deciduous tree	1 gallon	14	20	631
<i>Frangula purshiana</i>	casacara	upright winter deciduous shrub	1 gallon	8	5	483
<i>Lonicera involucrata</i>	twin berry	upright winter deciduous shrub	1 gallon	8	5	483
<i>Physocarpus capitatus</i>	Pacific ninebark	rounded winter deciduous shrub	1 gallon	8	5	483
<i>Populus trichocarpa</i>	black cottonwood	upright, upright columnar winter deciduous tree	TP4	10	20	1237
<i>Rubus parviflorus</i>	thimbleberry	upright, spreading winter deciduous shrub, perennial herb	1 gallon	8	5	483
<i>Rubus spectabilis</i>	salmonberry	upright, mounding, spreading winter deciduous shrub	1 gallon	8	5	483
<i>Salix hookeriana</i>	dune willow	upright winter deciduous tree, shrub	live pole cuttings	10	10	619
<i>Salix lasiandra</i>	Pacific willow	upright winter deciduous tree, shrub	live pole cuttings	10	20	1237
<i>Sambucus racemosa</i>	red elderberry	winter deciduous shrub, tree	1 gallon	8	5	483
<b>Understory</b>						
<i>Athyrium filix-femina</i> var. <i>cyclosorum</i>	common ladyfern	fern	1 gallon	10	20	1237
<i>Carex obnupta</i>	slough sedge	upright perennial graminoid	AB34 PB	10	15	928
<i>Heracleum maximum</i>	cow parsnip	upright perennial herb	1 gallon	10	20	1237
<i>Lupinus polyphyllus</i> var. <i>polyphyllus</i>	bigleaf lupine	perennial herb	AB34 PB	10	10	619
<i>Petasites frigidus</i> var. <i>palmatus</i>	western sweet coltsfoot	perennial herb	1 gallon	10	20	1237
<i>Tolmiea diplomenziesii</i>	pig-a-back plant	perennial herb	1 gallon	10	15	928
<b>Seed Mix</b>				<b>Application rate (lbs/acre)</b>		
<i>Achillea millefoliata</i>	common yarrow	perennial forb	broadcast seed	0.6	10	0.85
<i>Bromus sitchensis</i> var. <i>carinatus</i>	California brome	perennial graminoid	broadcast seed	21	25	74.55
<i>Festuca rubra</i>	red fescue	perennial graminoid	broadcast seed	4.8	25	17.04
<i>Regreen</i> or equivalent	sterile wheat hybrid	annual graminoid	broadcast seed	40	30	170.4
<i>Lupinus rivularis</i>	riverbank lupine	perennial herb	broadcast seed	13	5	9.23
<i>Scrophularia californica</i>	figwort	perennial forb	broadcast seed	0.4	5	0.28



REFERENCE BLOCK	
DESIGN: EC DRAWN: EJ APPROVED: EC	
PLANTING SCHEDULE SHEET 3 OF 3	
SHEET 6 OF 6	

**ELK RIVER PLANNING AREA 1  
65% REVEGETATION  
DESIGN PLAN**

- PA 1 boundary and subarea
- ◆ [DG] Fence
- ▨ Invasive vegetation management
- ▤ Special-status plant
- Contour (1 ft)
- - - Contour (10 ft)
- ⋈ Adjacent sheet
- Planting zone
- Lyngbye's sedge marsh (Lsm)
- Wetland pasture seed mix (Wp)
- Riparian in-fill (Rif)
- Mixed evergreen riparian forest (Merf)
- Deciduous riparian forest (Drf)
- Preserved area
- Retain riparian (Rr)
- Retain Lyngbye's sedge (Rls)



MAP PROJECTION  
NAD\_1983\_UTM\_Zone\_10N  
Transverse\_Mercator

**SCALE & NORTH ARROW**



**REFERENCE BLOCK**

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APPROVED: EC

PLAN VIEW 1 of 6, UPPER MAINSTEM

SHEET 1 OF 8

**ELK RIVER PLANNING AREA 1  
65% REVEGETATION  
DESIGN PLAN**

- PA 1 boundary and subarea
- ◆ [DG] Fence
- ▨ Invasive vegetation management
- ▩ Special-status plant
- ↗ Electric utility line
- Electric utility wire zone and tree clearance buffer
- Contour (1 ft)
- - - Contour (10 ft)
- ⋮ Adjacent sheet

**Willow thinning treatment area**

- ▭ Full removal
- ▭ Pruning treatment

**Planting zone**

- ▭ Lyngbye's sedge marsh (Lsm)
- ▭ Emergent brackish marsh (Ebm)
- ▭ Riparian emergent marsh (Rem)
- ▭ Lower coastal marsh (Lcm)
- ▭ Wetland pasture seed mix (Wp)
- ▭ Mesic coastal grassland (Mcg)
- ▭ Upper mesic coastal grassland (Umcg)
- ▭ Riparian in-fill (Rif)
- ▭ Mixed evergreen riparian forest (Merf)
- ▭ Deciduous riparian forest (Drf)

**Preserved area**

- ▭ Retain riparian (Rr)
- ▭ Retain Lyngbye's sedge (Rls)

MAP PROJECTION  
NAD\_1983\_UTM\_Zone\_10N  
Transverse\_Mercator



**SCALE & NORTH ARROW**

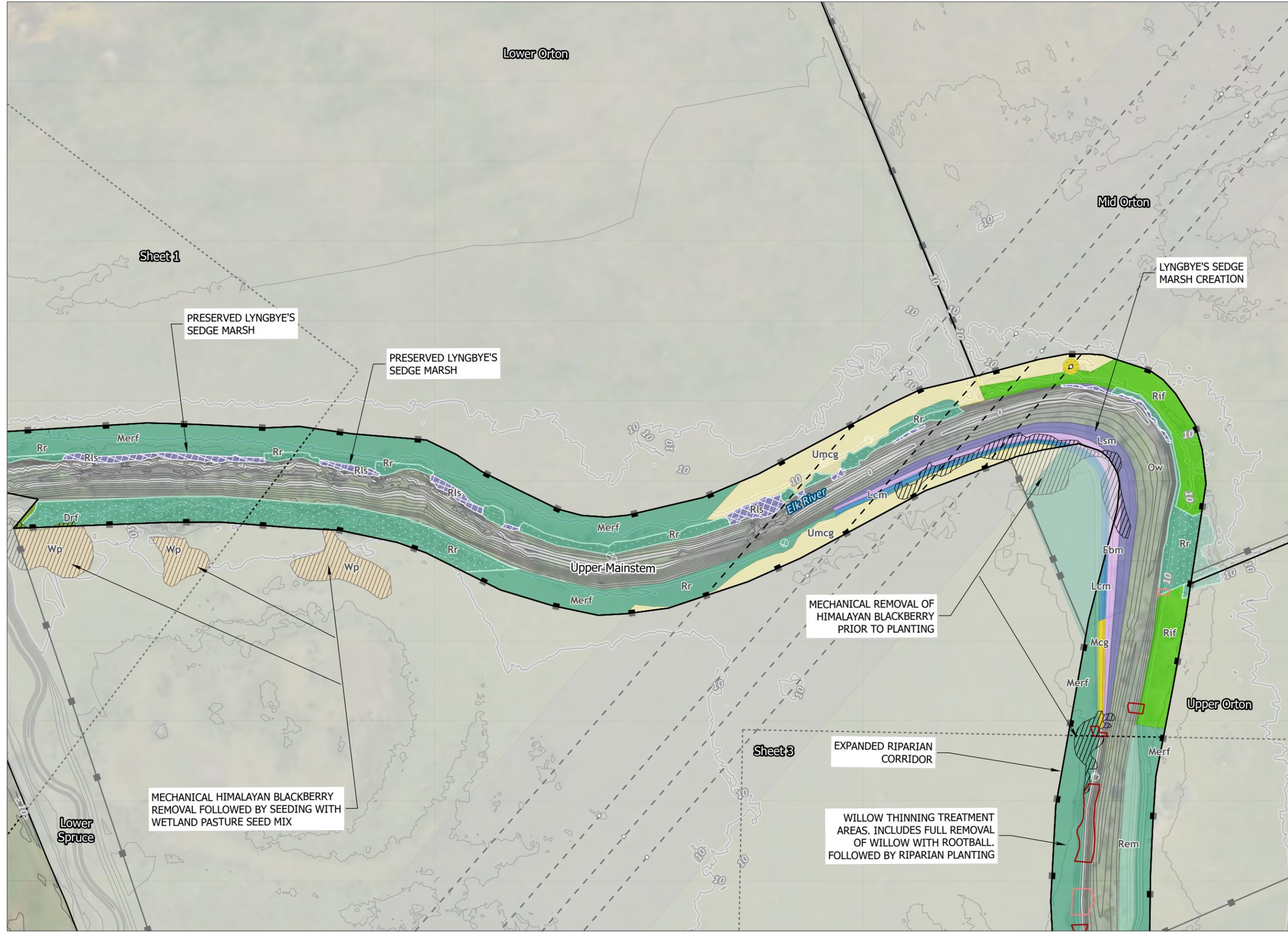


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PLAN VIEW 2 of 6, UPPER MAINSTEM

SHEET 2 OF 8

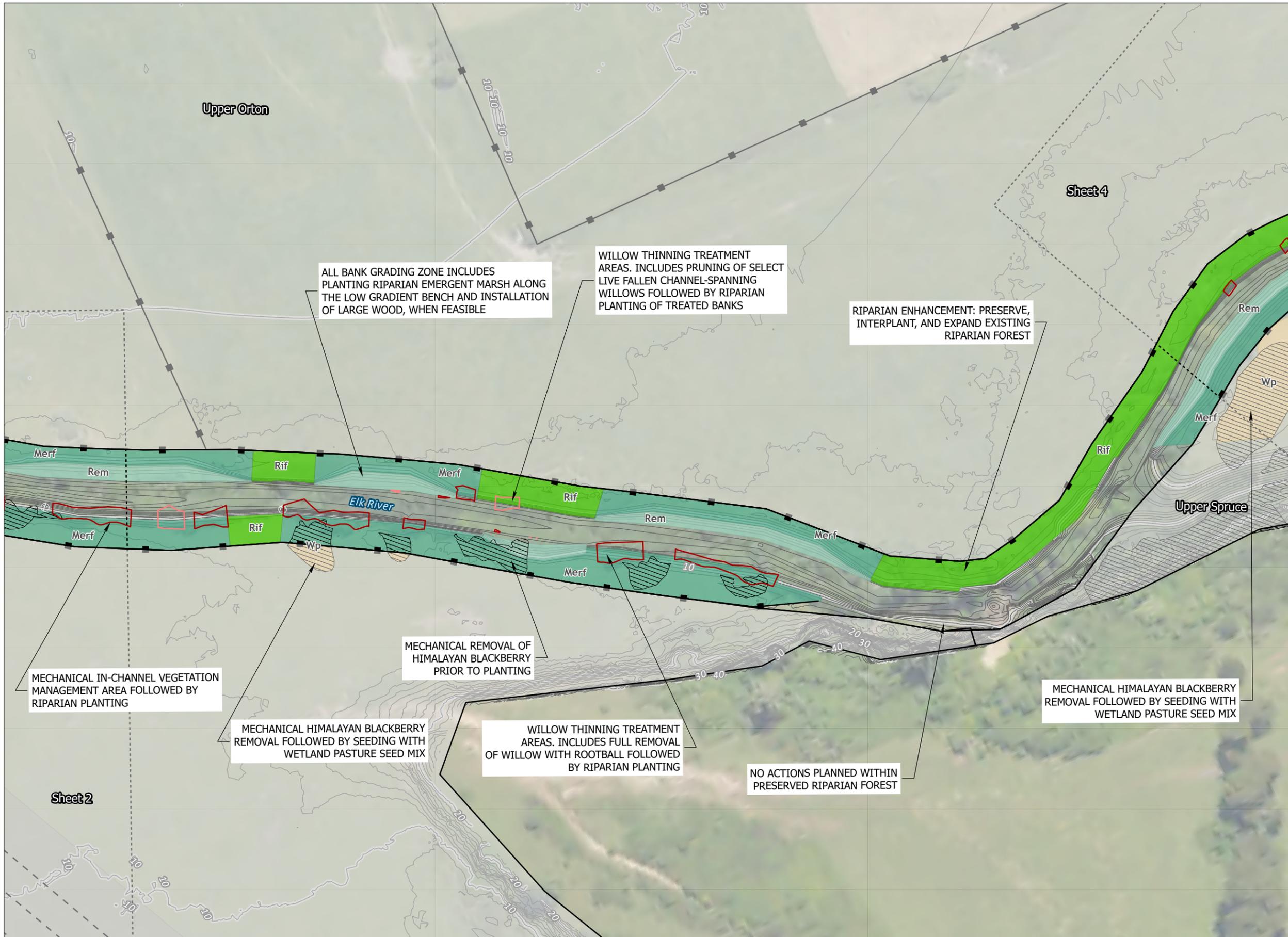


**UPPER MAINSTEM - PLANTING PLAN**

DATA SOURCES  
Imagery: NAIP 2024  
Roads, rivers, cities: ESRI 2016

**ELK RIVER PLANNING AREA 1  
65% REVEGETATION  
DESIGN PLAN**

- PA 1 boundary and subarea
- ◆ [DG] Fence
- ▨ Invasive vegetation management
- ⊠ Special-status plant
- Electric utility line
- Electric utility wire zone and tree clearance buffer
- Contour (1 ft)
- Contour (10 ft)
- ⋮ Adjacent sheet
- Willow thinning treatment area
- ▭ Full removal
- ▭ Pruning treatment
- Planting zone
- Riparian emergent marsh (Rem)
- Wetland pasture seed mix (Wp)
- Riparian in-fill (Rif)
- Mixed evergreen riparian forest (Merf)



ALL BANK GRADING ZONE INCLUDES PLANTING RIPARIAN EMERGENT MARSH ALONG THE LOW GRADIENT BENCH AND INSTALLATION OF LARGE WOOD, WHEN FEASIBLE

WILLOW THINNING TREATMENT AREAS. INCLUDES PRUNING OF SELECT LIVE FALLEN CHANNEL-SPANNING WILLOWS FOLLOWED BY RIPARIAN PLANTING OF TREATED BANKS

RIPARIAN ENHANCEMENT: PRESERVE, INTERPLANT, AND EXPAND EXISTING RIPARIAN FOREST

MECHANICAL REMOVAL OF HIMALAYAN BLACKBERRY PRIOR TO PLANTING

MECHANICAL HIMALAYAN BLACKBERRY REMOVAL FOLLOWED BY SEEDING WITH WETLAND PASTURE SEED MIX

WILLOW THINNING TREATMENT AREAS. INCLUDES FULL REMOVAL OF WILLOW WITH ROOTBALL FOLLOWED BY RIPARIAN PLANTING

NO ACTIONS PLANNED WITHIN PRESERVED RIPARIAN FOREST

MECHANICAL HIMALAYAN BLACKBERRY REMOVAL FOLLOWED BY SEEDING WITH WETLAND PASTURE SEED MIX

MECHANICAL IN-CHANNEL VEGETATION MANAGEMENT AREA FOLLOWED BY RIPARIAN PLANTING

MAP PROJECTION  
NAD\_1983\_UTM\_Zone\_10N  
Transverse\_Mercator

**SCALE & NORTH ARROW**

0 50 100 200 Feet

0 15 30 60 Meters

**REFERENCE BLOCK**

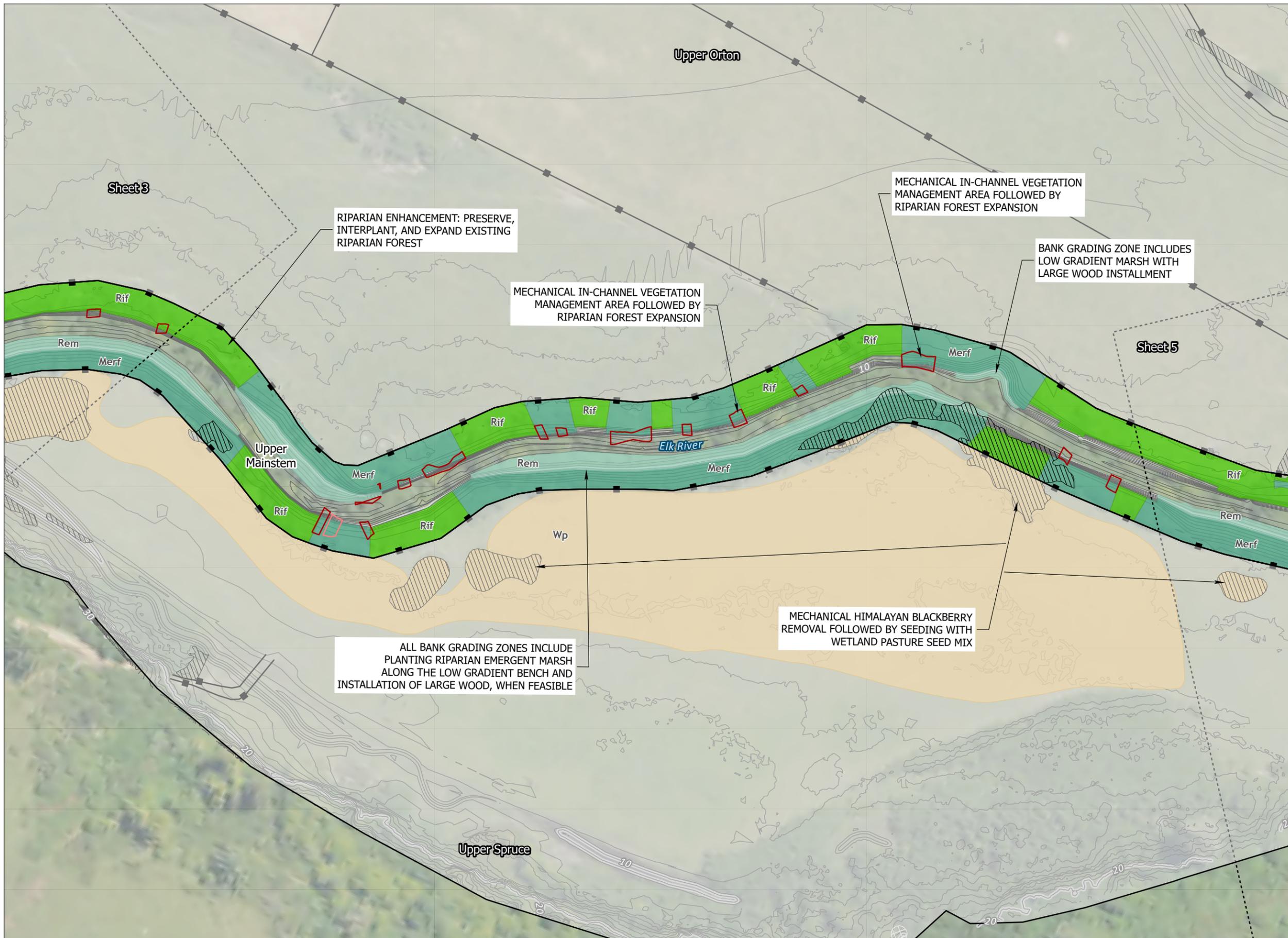
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PLAN VIEW 3 of 6, UPPER MAINSTEM

SHEET 3 OF 8

**ELK RIVER PLANNING AREA 1  
65% REVEGETATION  
DESIGN PLAN**

- PA 1 boundary and subarea
- ◆ [DG] Fence
- ▨ Invasive vegetation management
- ⊠ Special-status plant
- Contour (1 ft)
- Contour (10 ft)
- ⋮ Adjacent sheet
- Willow thinning treatment area
- Full removal
- Pruning treatment
- Planting zone
- Riparian emergent marsh (Rem)
- Wetland pasture seed mix (Wp)
- Riparian in-fill (Rif)
- Mixed evergreen riparian forest (Merf)



**SCALE & NORTH ARROW**



**REFERENCE BLOCK**

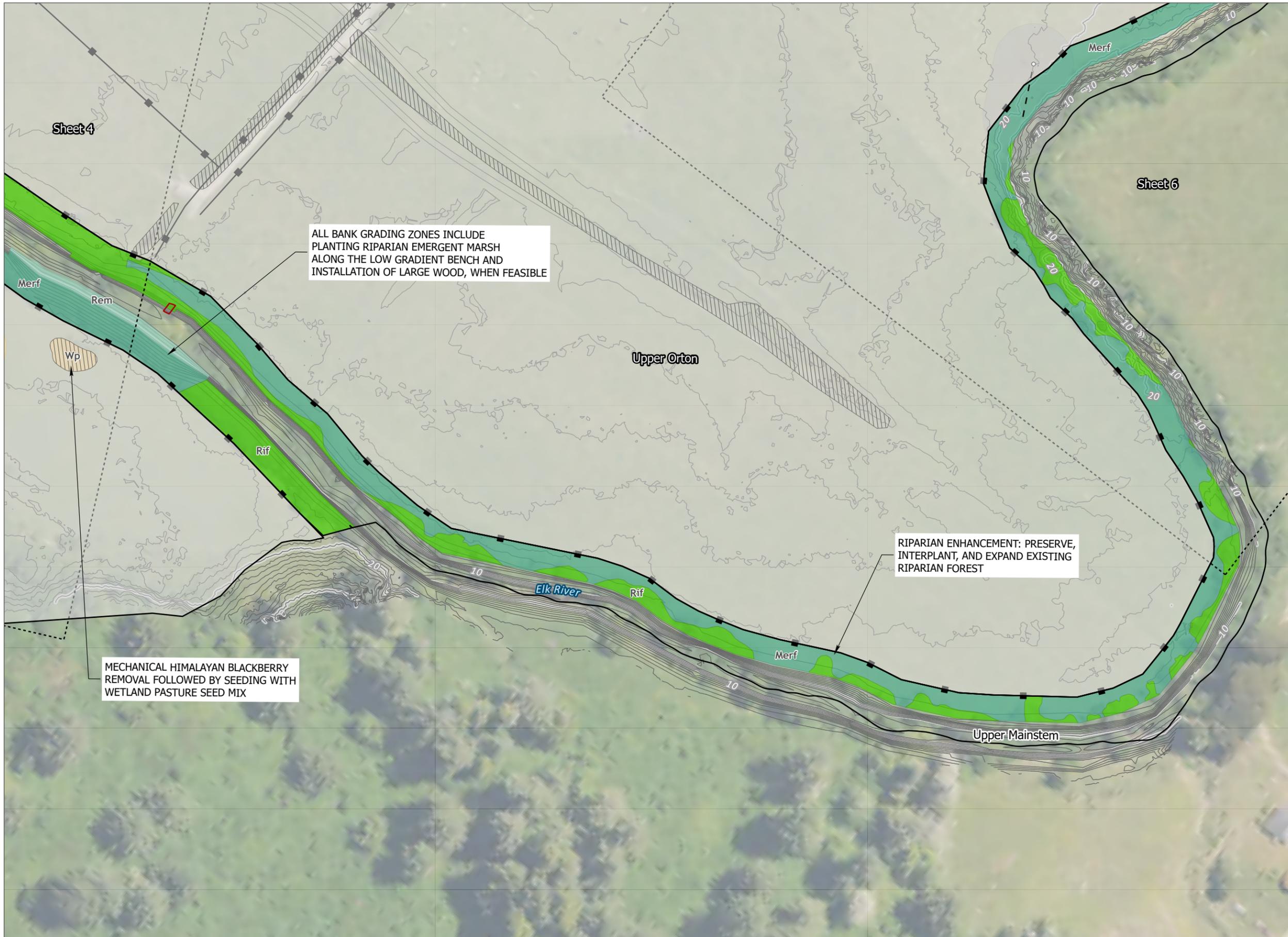
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APPROVED: EC

PLAN VIEW 4 of 6, UPPER MAINSTEM

SHEET 4 OF 8

**ELK RIVER PLANNING AREA 1  
65% REVEGETATION  
DESIGN PLAN**

- PA 1 boundary and subarea
- ◆ [DG] Fence
- ▨ Invasive vegetation management
- ⊠ Special-status plant
- ↗ Electric utility line
- Contour (1 ft)
- - Contour (10 ft)
- ⊞ Adjacent sheet
- Willow thinning treatment area
- ▢ Full removal
- Planting zone
- Riparian emergent marsh (Rem)
- Wetland pasture seed mix (Wp)
- Riparian in-fill (Rif)
- Mixed evergreen riparian forest (Merf)



ALL BANK GRADING ZONES INCLUDE PLANTING RIPARIAN EMERGENT MARSH ALONG THE LOW GRADIENT BENCH AND INSTALLATION OF LARGE WOOD, WHEN FEASIBLE

RIPARIAN ENHANCEMENT: PRESERVE, INTERPLANT, AND EXPAND EXISTING RIPARIAN FOREST

MECHANICAL HIMALAYAN BLACKBERRY REMOVAL FOLLOWED BY SEEDING WITH WETLAND PASTURE SEED MIX

MAP PROJECTION  
NAD\_1983\_UTM\_Zone\_10N  
Transverse\_Mercator

**SCALE & NORTH ARROW**

0 50 100 200 Feet

0 15 30 60 Meters

**REFERENCE BLOCK**

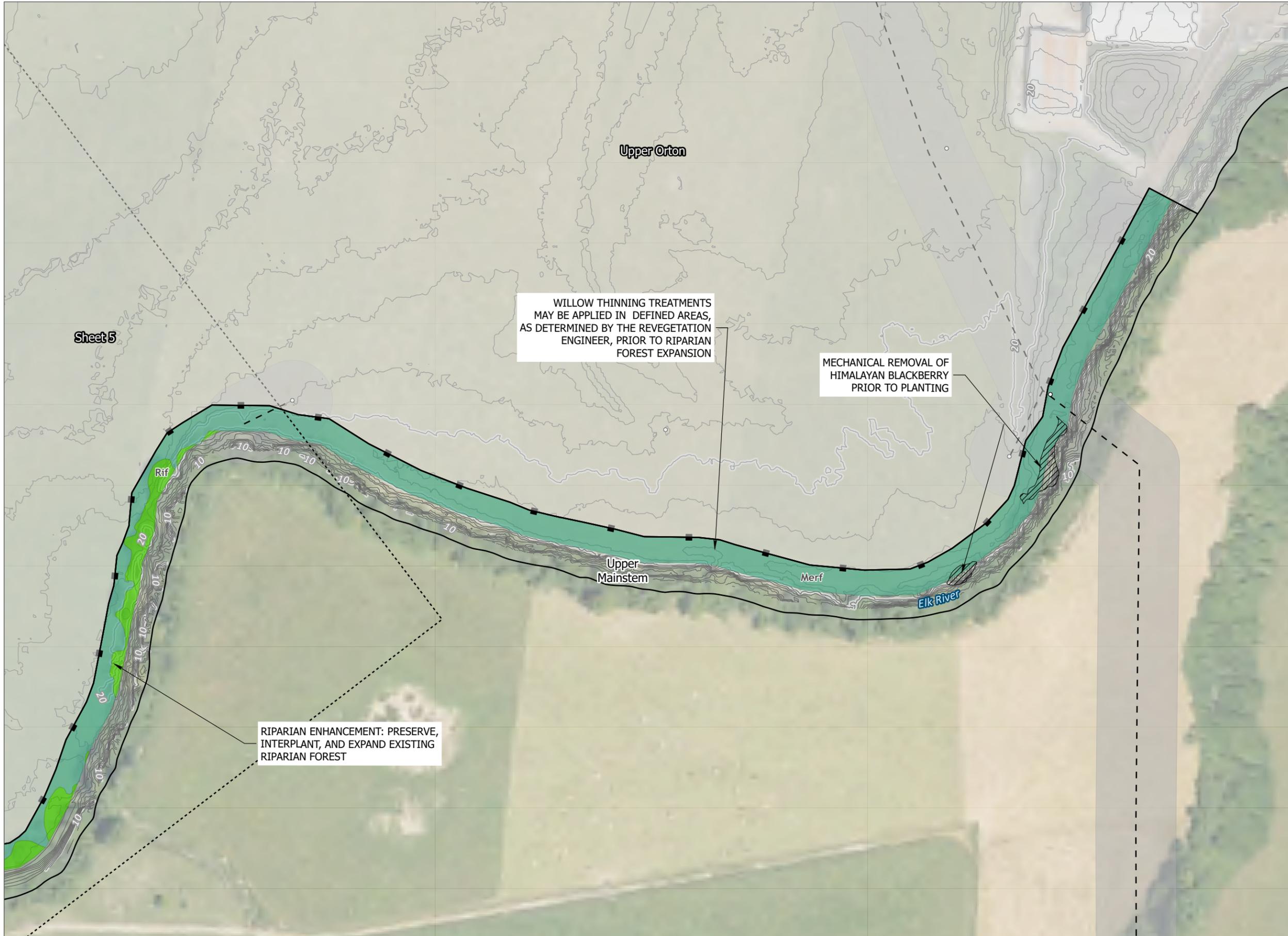
DESIGN: EC	
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APPROVED: EC	

PLAN VIEW 5 of 6, UPPER MAINSTEM

SHEET 5 OF 8

**ELK RIVER PLANNING AREA 1  
65% REVEGETATION  
DESIGN PLAN**

- PA 1 boundary and subarea
- ◆ [DG] Fence
- ▨ Invasive vegetation management
- Electric utility pole
- Electric utility line
- Electric utility wire zone and tree clearance buffer
- Contour (1 ft)
- Contour (10 ft)
- ⋮ Adjacent sheet
- Planting zone
- Riparian in-fill (Rif)
- Mixed evergreen riparian forest (Merf)



Sheet 5

WILLOW THINNING TREATMENTS MAY BE APPLIED IN DEFINED AREAS, AS DETERMINED BY THE REVEGETATION ENGINEER, PRIOR TO RIPARIAN FOREST EXPANSION

MECHANICAL REMOVAL OF HIMALAYAN BLACKBERRY PRIOR TO PLANTING

RIPARIAN ENHANCEMENT: PRESERVE, INTERPLANT, AND EXPAND EXISTING RIPARIAN FOREST

MAP PROJECTION  
NAD\_1983\_UTM\_Zone\_10N  
Transverse\_Mercator

**SCALE & NORTH ARROW**



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PLAN VIEW 6 OF 6, UPPER MAINSTEM

SHEET 6 OF 8

**ELK RIVER PLANNING AREA 1**  
**65% REVEGETATION**  
**DESIGN PLAN**



**REFERENCE BLOCK**

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 APPROVED: EC

PLANTING SCHEDULE  
 SHEET 1 OF 2

SHEET 7 OF 8

LYNGBYE'S SEDGE MARSH: 0.12 ACRES						
Scientific name	Common name	Form	Propagule type	Spacing_(feet on-center)	Fill (Percent)	Quantity
<i>Carex lyngbyei</i>	Lyngbye's sedge	perennial graminoid	AB34 PB	4	60	196
<i>Triglochin maritima</i>	arrowgrass	perennial herb	AB34 PB	4	40	131
EMERGENT BRACKISH MARSH: 0.04 ACRES						
Scientific name	Common name	Form	Propagule type	Spacing_(feet on-center)	Fill (Percent)	Quantity
<i>Eleocharis macrostachya</i>	pale spike rush	upright evergreen graminoid	PB	2	30	131
<i>Juncus lescurii</i>	San Francisco rush	perennial graminoid	AB34 PB	2	20	87
<i>Potentilla anserina subsp. pacifica</i>	Pacific silverweed	perennial herb	AB34 PB	4	30	33
<i>Schoenoplectus pungens var. longispicatus</i>	three square	perennial graminoid	PB	3	10	19
<i>Scirpus microcarpus</i>	paniced bulrush	upright winter deciduous graminoid	PB	2	10	44
RIPARIAN EMERGENT MARSH: 0.89 ACRES						
Scientific name	Common name	Form	Propagule type	Spacing_(feet on-center)	Fill (Percent)	Quantity
<i>Carex obnupta</i>	slough sedge	upright perennial graminoid	AB34 PB	4	40	969
<i>Oenanthe sarmentosa</i>	Pacific water parsley	perennial herb	AB34 PB	3	15	646
<i>Potentilla anserina subsp. pacifica</i>	Pacific silverweed	perennial herb	AB34 PB	4	15	363
<i>Scirpus microcarpus</i>	paniced bulrush	upright winter deciduous graminoid	PB	5	30	465
LOWER COASTAL MARSH: 0.04 ACRES						
Scientific name	Common name	Form	Propagule type	Application rate (lbs/acre)	Fill (Percent)	Quantity
<i>Carex obnupta</i>	slough sedge	upright perennial graminoid	AB34 PB	4	35	38
<i>Elymus triticoides</i>	creeping wild rye	winter deciduous grass	AB34 PB	4	5	5
<i>Juncus lescurii</i>	San Francisco rush	perennial graminoid	AB34 PB	4	10	11
<i>Potentilla anserina subsp. pacifica</i>	Pacific silverweed	perennial herb	AB34 PB	4	15	16
<i>Scirpus microcarpus</i>	paniced bulrush	upright winter deciduous graminoid	PB	4	30	33
<i>Symphyotrichum chilense</i>	Pacific aster	winter deciduous perennial herb	1 gallon	4	5	5
MESIC COASTAL GRASSLAND: 0.02 ACRES						
Scientific name	Common name	Form	Propagule type	Spacing_(feet on-center)	Fill (Percent)	Quantity
<i>Angelica lucida</i>	seacoast angelica	perennial (biannual) herb	PB	4	5	3
<i>Festuca rubra</i>	red fescue	upright, fountain grass	PB	4	30	16
<i>Carex obnupta</i>	slough sedge	upright perennial graminoid	AB34 PB	4	15	8
<i>Deschampsia cespitosa</i>	tufted hairgrass	fountain summer semi-deciduous grass	PB	4	30	16
<i>Elymus triticoides</i>	creeping wild rye	winter deciduous grass	AB34 PB	4	5	3
<i>Potentilla anserina subsp. pacifica</i>	Pacific silverweed	perennial herb	AB34 PB	4	15	8
UPPER MESIC COASTAL GRASSLAND: 0.44 ACRES						
Scientific name	Common name	Form	Propagule type	Spacing_(feet on-center)	Fill (Percent)	Quantity
<i>Achillea millefoliata</i>	common yarrow	perennial forb	1 gallon	2	5	240
<i>Calamagrostis nutkaensis</i>	Pacific reedgrass	evergreen perennial graminoid	AB35 PB	5	40	307
<i>Festuca rubra</i>	red fescue	upright, fountain grass	PB	4	40	479
<i>Symphyotrichum chilense</i>	Pacific aster	winter deciduous perennial herb	1 gallon	4	10	120
<i>Trifolium wormskioldii</i>	cow clover	mounding winter deciduous perennial herb	4 inch	4	5	60

RIPARIAN IN-FILL: 3.66 ACRES						
Scientific name	Common name	Form	Propagule type	Spacing_(feet on-center)	Fill (Percent)	Quantity
<i>Abies grandis</i>	grand fir	pyramidal evergreen tree	TP4	15	5	35
<i>Alnus rubra</i>	red alder	upright winter deciduous tree	1 gallon	15	10	71
<i>Frangula purshiana</i>	cascara	upright winter deciduous shrub	1 gallon	15	5	35
<i>Lonicera involucrata</i>	twin berry	upright winter deciduous shrub	1 gallon	15	5	35
<i>Malus fusca</i>	Oregon crab apple	upright winter deciduous tree	1 gallon	15	5	35
<i>Oemleria cerasiformis</i>	oso berry	upright winter deciduous shrub	1 gallon	15	5	35
<i>Physocarpus capitatus</i>	Pacific ninebark	rounded winter deciduous shrub	1 gallon	15	5	35
<i>Picea sitchensis</i>	Sitka spruce	pyramidal, upright evergreen tree	TP4	15	15	106
<i>Populus trichocarpa</i>	black cottonwood	upright, upright columnar winter deciduous tree	TP4	15	10	71
<i>Ribes sanguineum</i>	red-flowering currant	upright winter deciduous shrub	1 gallon	15	5	35
<i>Rubus parviflorus</i>	thimbleberry	upright, spreading winter deciduous shrub, perennial herb	1 gallon	15	5	35
<i>Rubus spectabilis</i>	salmonberry	upright, mounding, spreading winter deciduous shrub	1 gallon	15	5	35
<i>Salix lasiandra</i>	Pacific willow	upright winter deciduous tree, shrub	live pole cuttings	15	10	71
<i>Sambucus racemosa</i>	red elderberry	winter deciduous shrub, tree	1 gallon	15	5	35
<i>Tsuga heterophylla</i>	western hemlock	pyramidal evergreen tree	TP4	15	5	35
MIXED EVERGREEN RIPARIAN FOREST LOWER: 6.99 ACRES						
Scientific name	Common name	Form	Propagule type	Spacing_(feet on-center)	Fill (Percent)	Quantity
<i>Abies grandis</i>	grand fir	pyramidal evergreen tree	TP4	10	15	457
<i>Acer macrophyllum</i>	big-leaf maple	upright, rounded, upright columnar winter deciduous tree	1 gallon	10	5	152
<i>Alnus rubra</i>	red alder	upright winter deciduous tree	1 gallon	14	15	233
<i>Morella californica</i>	Pacific wax myrtle	upright evergreen shrub	1 gallon	6	15	1269
<i>Picea sitchensis</i>	Sitka spruce	pyramidal, upright evergreen tree	TP4	10	30	913
<i>Salix lasiandra</i>	Pacific willow	upright winter deciduous tree, shrub	live pole cuttings	10	5	152
<i>Sambucus racemosa</i>	red elderberry	winter deciduous shrub, tree	1 gallon	8	15	714
<i>Understory</i>						
<i>Athyrium filix-femina var. cyclosorum</i>	common ladyfern	fern	1 gallon	10	20	609
<i>Ribes sanguineum</i>	red-flowering currant	upright winter deciduous shrub	1 gallon	6	15	1269
<i>Rubus parviflorus</i>	thimbleberry	upright, spreading winter deciduous shrub, perennial herb	1 gallon	8	15	714
<i>Petasites frigidus var. palmatus</i>	western sweet coltsfoot	perennial herb	1 gallon	10	20	609
<i>Polystichum munitum</i>	western swordfern	upright, fountain summer semi-deciduous, evergreen fern	1 gallon	10	15	457
<i>Tolmiea diplomenziesii</i>	pig-a-back plant	perennial herb	1 gallon	10	15	457
Seed Mix			Application rate (lbs/acre)			
<i>Achillea millefoliata</i>	common yarrow	perennial forb	broadcast seed	6.99	15	1.56
<i>Artemisia douglasiana</i>	mugwort	perennial forb	broadcast seed	6.99	15	7.43
<i>Bromus sitchensis var. carinatus</i>	California brome	perennial graminoid	broadcast seed	6.99	20	5.09
<i>Festuca rubra</i>	red fescue	perennial graminoid	broadcast seed	6.99	15	15.28
<i>Hordeum brachyantherum subsp. brachyantherum</i>	northern barley	perennial graminoid	broadcast seed	6.99	15	0.21
<i>Scrophularia californica</i>	figwort	perennial forb	broadcast seed	6.99	10	0.14
<i>Symphyotrichum chilense</i>	Pacific aster	perennial forb	broadcast seed	6.99	10	0.141489

**DECIDUOUS RIPARIAN FOREST: 0.8 ACRES**

Scientific name	Common name	Form	Propagule type	Spacing_(feet on-center)	Fill (Percent)	Quantity
<i>Alnus rubra</i>	red alder	upright winter deciduous tree	1 gallon	14	20	36
<i>Lonicera involucrata</i>	twin berry	upright winter deciduous shrub	1 gallon	8	10	54
<i>Morella californica</i>	Pacific wax myrtle	upright evergreen shrub	1 gallon	8	10	54
<i>Physocarpus capitatus</i>	Pacific ninebark	rounded winter deciduous shrub	1 gallon	8	5	27
<i>Populus trichocarpa</i>	black cottonwood	upright, upright columnar winter deciduous tree	TP4	10	20	70
<i>Rubus spectabilis</i>	salmonberry	upright, mounding, spreading winter deciduous shrub	1 gallon	8	5	27
<i>Salix hookeriana</i>	dune willow	upright winter deciduous tree, shrub	live pole cuttings	10	10	35
<i>Salix lasiandra</i>	Pacific willow	upright winter deciduous tree, shrub	live pole cuttings	10	15	52
<i>Sambucus racemosa</i>	red elderberry	winter deciduous shrub, tree	1 gallon	8	5	27
<i>Understory</i>						
<i>Athyrium filix-femina</i> var. <i>cyclosorum</i>	common ladyfern	fern	1 gallon	10	20	70
<i>Carex obnupta</i>	slough sedge	upright perennial graminoid	AB34 PB	10	15	52
<i>Heracleum maximum</i>	cow parsnip	upright perennial herb	1 gallon	10	20	70
<i>Lupinus polyphyllus</i> var. <i>polyphyllus</i>	bigleaf lupine	perennial herb	AB34 PB	10	10	35
<i>Petasites frigidus</i> var. <i>palmatus</i>	western sweet coltsfoot	perennial herb	1 gallon	10	20	70
<i>Tolmiea diplomenziesii</i>	pig-a-back plant	perennial herb	1 gallon	10	15	52
<b>Seed Mix</b>				<b>Application rate (lbs/acre)</b>		
<i>Achillea millefoliata</i>	common yarrow	perennial forb	broadcast seed	0.6	10	0.05
<i>Bromus sitchensis</i> var. <i>carinatus</i>	California brome	perennial graminoid	broadcast seed	21	25	4.2
<i>Festuca rubra</i>	red fescue	perennial graminoid	broadcast seed	4.8	25	0.96
<i>Lupinus rivularis</i>	riverbank lupine	perennial herb	broadcast seed	13	5	0.52
Regreen or equivalent	sterile wheat hybrid	annual graminoid	broadcast seed	40	30	9.6
<i>Scrophularia californica</i>	figwort	perennial forb	broadcast seed	0.4	5	0.02

**ELK RIVER PLANNING AREA 1  
65% REVEGETATION  
DESIGN PLAN**



**REFERENCE BLOCK**

DESIGN: EC  
DRAWN: EJ  
APPROVED: EC

PLANTING SCHEDULE  
SHEET 2 OF 2

SHEET 8 OF 8