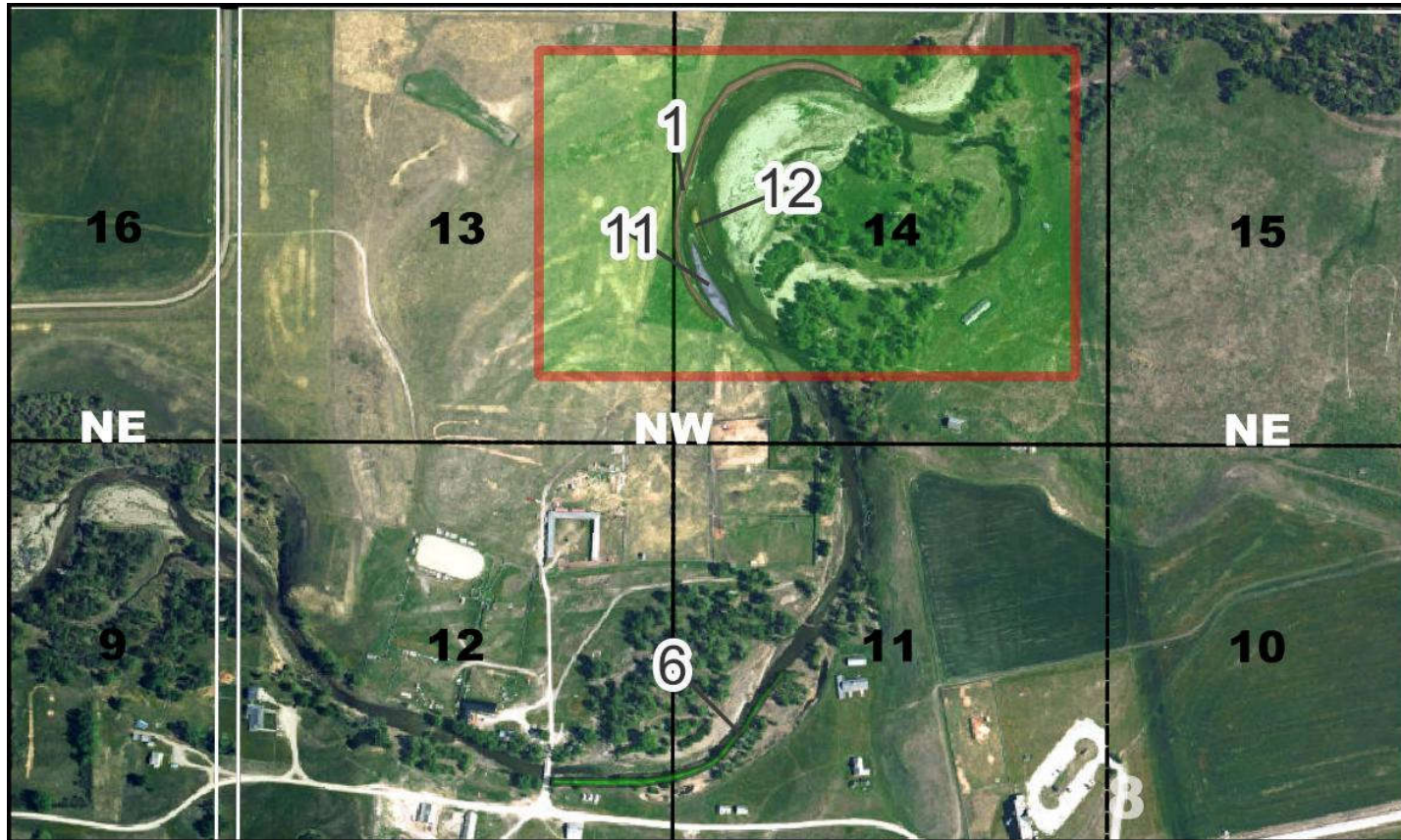


Bar U Historic Site—Riparian Planting Plan Areas 1, 6, 11, & 12



Contacts

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Bar U Historic Site Riparian Planting Plan

Location Plan

Drawing List	Sheet No.
1. Location Plan	1
2. Site 1 , 11 and 12 Plan	2
3. Site 6 Plan	3
4. Detailed Plant Lists	4
5. Specifications	5-10

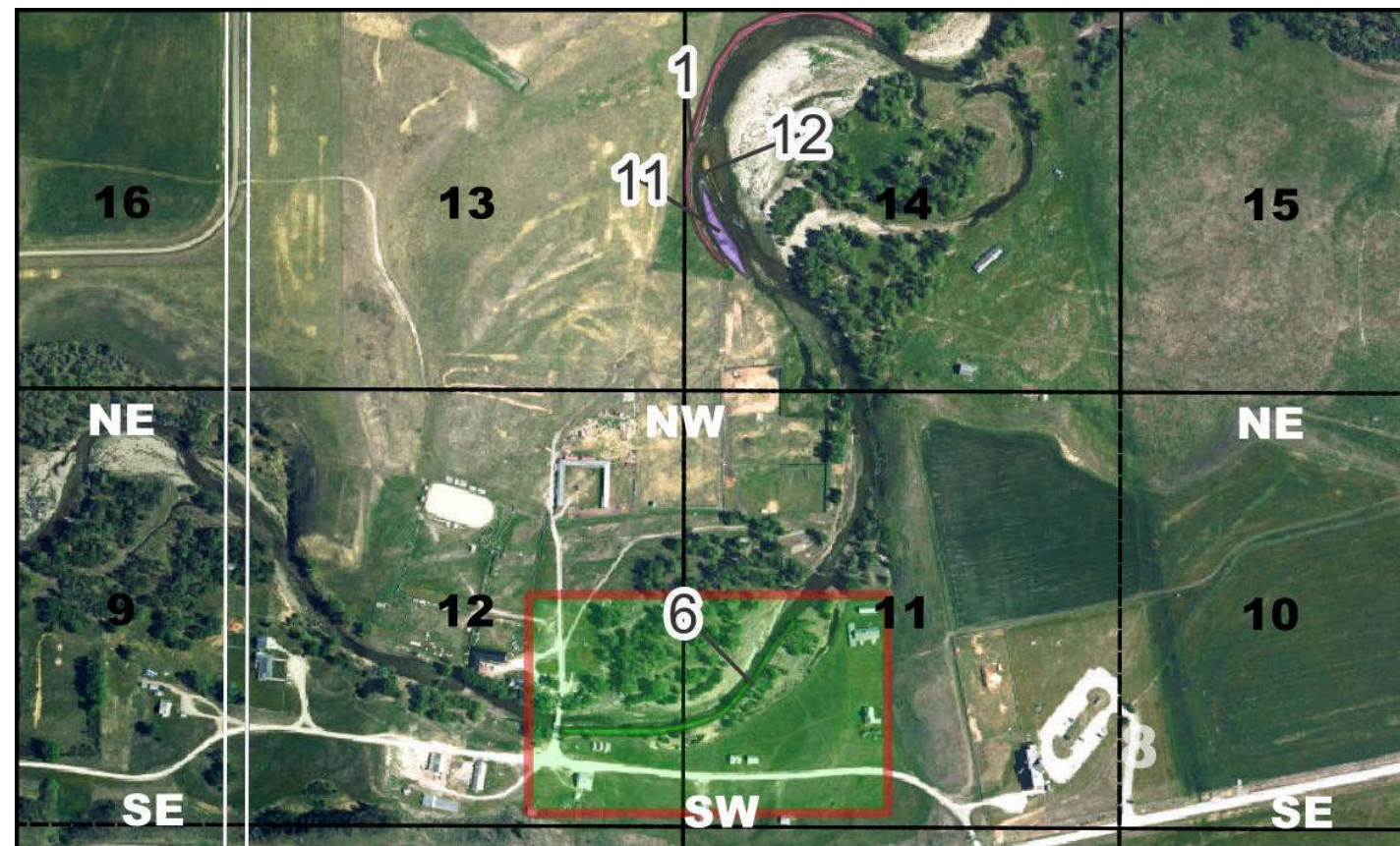
Notes

This project is for riparian plantings and no soil disturbance is to be completed outside of the act of installation of the live plant materials into the ground. The planting will not allow equipment as it is in the banks and riparian areas.

Plant material is not all readily available and should be custom ordered ahead of time

Poplar trees within the footprint will be wired with page wire at least 3ft high

Beaver fence will be installed along area 1 for the first growing season.



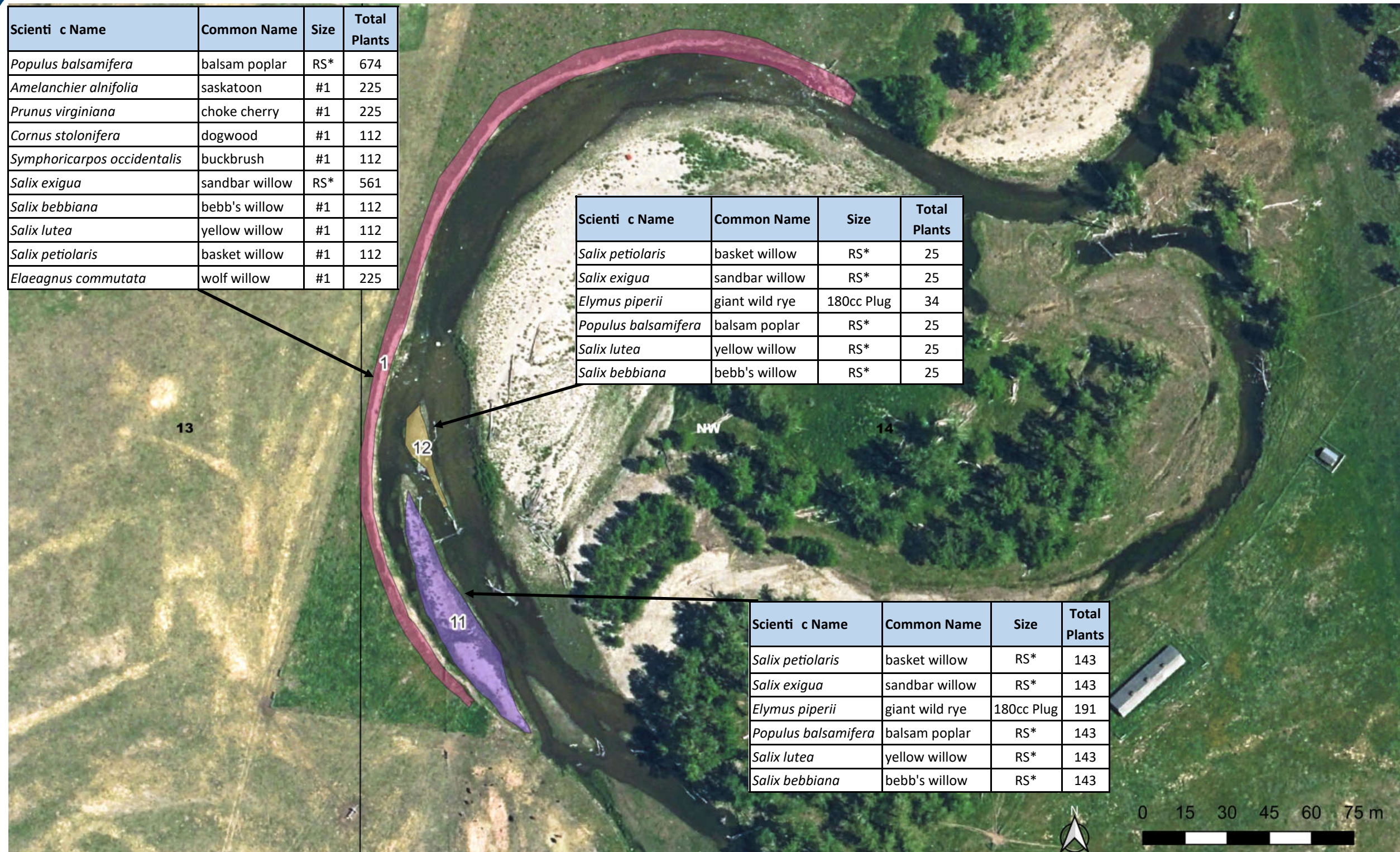
NAD83/Alberta 3TM ref merid 114 W

FINAL
 7 November 2022
 Sheet 1 of 3

Scientific Name	Common Name	Size	Total Plants
<i>Populus balsamifera</i>	balsam poplar	RS*	674
<i>Amelanchier alnifolia</i>	saskatoon	#1	225
<i>Prunus virginiana</i>	choke cherry	#1	225
<i>Cornus stolonifera</i>	dogwood	#1	112
<i>Symphoricarpos occidentalis</i>	buckbrush	#1	112
<i>Salix exigua</i>	sandbar willow	RS*	561
<i>Salix bebbiana</i>	bebb's willow	#1	112
<i>Salix lutea</i>	yellow willow	#1	112
<i>Salix petiolaris</i>	basket willow	#1	112
<i>Elaeagnus commutata</i>	wolf willow	#1	225

Scientific Name	Common Name	Size	Total Plants
<i>Salix petiolaris</i>	basket willow	RS*	25
<i>Salix exigua</i>	sandbar willow	RS*	25
<i>Elymus piperii</i>	giant wild rye	180cc Plug	34
<i>Populus balsamifera</i>	balsam poplar	RS*	25
<i>Salix lutea</i>	yellow willow	RS*	25
<i>Salix bebbiana</i>	bebb's willow	RS*	25

Scientific Name	Common Name	Size	Total Plants
<i>Salix petiolaris</i>	basket willow	RS*	143
<i>Salix exigua</i>	sandbar willow	RS*	143
<i>Elymus piperii</i>	giant wild rye	180cc Plug	191
<i>Populus balsamifera</i>	balsam poplar	RS*	143
<i>Salix lutea</i>	yellow willow	RS*	143
<i>Salix bebbiana</i>	bebb's willow	RS*	143



Bar U Historic Site Riparian Restoration Plantings:

For Contractor Use

- Polygon 1**
- Polygon 11**
- Polygon 12**

Polygon 1: Planting will be from the ordinary high watermark up to the top of the bank. Do not plant any farther than 2m back from top of bank. Plantings should be randomized in this area with a relatively uniform distribution of plant material..

Polygon 1 is 2,245m² and will be planted at 1 plant/ m²

Polygon 12: this polygon should be planted everywhere that is above the ordinary high water mark.

Polygon 12 is 169 m² and will be planted at 0.65 plants / m²

Polygon 11, plant everywhere above the ordinary high water mark.

Polygon 11 is 955 m² and will be planted at 0.65 plants / m²



Scale: 1 to 1000
NAD83/Alberta 3TM ref merid 114 W

Bar U Historic Site Riparian Restoration Plantings:

For Contractor Use

 **Polygon 6**



Scale: 1 to 1000
NAD83/Alberta 3TM ref merid 114 W

This polygon includes the undercut bank and the top of the bank. The water's edge moves with erosion and planting is expected to occur from above the waterline and over the top of the bank. Planting will continue 2m back from the bank edge on average..

Plantings are to be randomized throughout the footprint and relatively uniformly distributed.. A 1m distance from all mature trees and large shrubs (>2m tall) will occur and in these areas planting may go farther than 2 m from the top of bank.

Rooted stakes will be 1m tall rooted stakes with at least 250mm rooted in soil.
Polygon 6 is 1306m² and will be planted at 0.38 plants /m²



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Sheet 3 of 3

Table 1: Polygon 1 (SAsC6 PI/Buffaloberry/Hairy Wildrye)

7 Letter Code	Scientific Name	Common Name	Size	Plants/m ²	Area (m ²)	Total Plants
Popubal	<i>Populus balsamifera</i>	balsam poplar	RS*	0.3	2245	674
Amelaln	<i>Amelanchier alnifolia</i>	saskatoon	#1	0.1	2245	225
Prunvir	<i>Prunus virginiana</i>	choke cherry	#1	0.1	2245	225
Cornsto	<i>Cornus stolonifera</i>	dogwood	#1	0.05	2245	112
Sympocc	<i>Symphoricarpos occidentalis</i>	buckbrush	#1	0.05	2245	112
Saliexi	<i>Salix exigua</i>	sandbar willow	RS*	0.25	2245	561
Salibeb	<i>Salix bebbiana</i>	bebb's willow	#1	0.05	2245	112
Salilut	<i>Salix lutea</i>	yellow willow	#1	0.05	2245	112
Salipet	<i>Salix petiolaris</i>	basket willow	#1	0.05	2245	112
Elaecom	<i>Elaeagnus commutata</i>	wolf willow	#1	0.1	2245	225

RS* = Rooted Stake

Table 2: Polygon 6 (SAsC6 PI/Buffaloberry/Hairy Wildrye)

7 Letter Code	Scientific Name	Common Name	Size	Plants/m ²	Area (m ²)	Total Plants
Saliexi	<i>Salix exigua</i>	sandbar willow	RS*	0.125	1306	163
Salibeb	<i>Salix bebbiana</i>	bebb's willow	RS*	0.125	1306	163
Salilut	<i>Salix lutea</i>	yellow willow	RS*	0.125	1306	163

RS* = Rooted Stake

Table 3: Polygon 11 (SAsA18 Fireweed/Rough Fescue)

7 Letter Code	Scientific Name	Common Name	Size	Plants/m ²	Area (m ²)	Total Plants
Salipet	<i>Salix petiolaris</i>	basket willow	RS*	0.15	955	143
Saliexi	<i>Salix exigua</i>	sandbar willow	RS*	0.15	955	143
Elympip	<i>Elymus piperii</i>	giant wild rye	180cc Plug	0.2	955	191
Popubal	<i>Populus balsamifera</i>	balsam poplar	RS*	0.15	955	143
Salilut	<i>Salix lutea</i>	yellow willow	RS*	0.15	955	143
Salibeb	<i>Salix bebbiana</i>	bebb's willow	RS*	0.15	955	143

RS* = Rooted Stake

Table 4: Polygon 12 (SANF1 Labrador Tea/Feather Moss [PI])

7 Letter Code	Scientific Name	Common Name	Size	Plants/m ²	Area (m ²)	Total Plants
Salipet	<i>Salix petiolaris</i>	basket willow	RS*	0.15	169	25
Saliexi	<i>Salix exigua</i>	sandbar willow	RS*	0.15	169	25
Elympip	<i>Elymus piperii</i>	giant wild rye	180cc Plug	0.2	169	34
Popubal	<i>Populus balsamifera</i>	balsam poplar	RS*	0.15	169	25
Salilut	<i>Salix lutea</i>	yellow willow	RS*	0.15	169	25
Salibeb	<i>Salix bebbiana</i>	bebb's willow	RS*	0.15	169	25

RS* = Rooted Stake

Appendix C - Relevant Specifications

1 Live Plant Material Sourcing

The following guidelines must be followed for all plant materials provided by the contractor:

- Plant materials required for planting are specified within the Plant Materials List (Appendix B) and within Appendix A Figures.
- All plant materials will be true to species and of native lines (wild sourced seed lots) and horticultural cultivars will not be accepted. Parks Canada reserves the right to inspect plant material prior to installation and reject material which does not meet specifications.
- Only plants grown locally from source material (i.e., seeds or cuttings) collected from applicable southern Alberta natural subregions and ecosites.
- Plants from out of the region will not be accepted unless pre-approval is received from Parks Canada.
- In the event that an identified species is out of stock, substitutions of larger or smaller stock, or an alternate species, will require approval from the Parks Canada, prior to purchase.
- Plant material will be structurally sound, well balanced, healthy, vigorous, of normal growth habits, with a strong fibrous root system, and root ball that is intact when removed from the container.
- Plant material will be free of plant pathogens and insect infestations.
- Potted Plants Size
 - #1 gallon pots will be used unless otherwise specified.
 - Larger plants may be substituted but smaller plants will not be accepted.
- Live plugs
 - All plugs will be 180 cc plugs or larger.
 - Plugs must be fully rooted and hardy.
- Rooted Live Cuttings
 - All live cuttings must be sourced within 200 km of the Bar U Ranch and within Alberta (unless prior approval from Parks Canada is obtained).
 - With rooted cuttings, the material must be harvested in the dormant season and rooted for at least 3 months prior to installation
 - Cuttings will be true to species, free of disease, insect infestations, insect eggs, rodent damage, splitting, and other abrasions, or scars.
 - Cuttings will be reasonably straight to enable installation through methods described within this specification.
 - Rooted cuttings will be a minimum of 1.5 m tall. Taller cuttings are allowed but not shorter.

- Rooted cuttings must have a rooted soil zone that is at least 250 millimetres (mm) tall and at least 75 mm in diameter.
- Rooted cuttings will be well rooted and able to hold soil to the stake and around the roots.
- Rooted cuttings will have well developed leaves at the top of the cutting on branches at least 100 mm long.
- Rooted cuttings do not need to have leaves below the top 200 mm of the stem, and it is preferred that the lower stem is free of leaves as this will be installed into the soil.
- Where rooted material is being used, the stem diameter requirements will be waived as long as the material has healthy leaf growth on the top 20 % of the stem.
- Rooted cuttings must be acclimatized to the local climate prior to installation for a minimum of 2 weeks outdoors (this is especially important to September-October installations).
- For all planting activity that occurs before June 1st or after September 15th, all live plant materials supplied must be dormant or going into dormancy, as appropriate for the season.
 - Rooted willow cuttings are to be installed after the last frost and before June 30th.

2 Live Plant Storage and Handling

2.1 Delivery and Onsite Storage

- Material Transportation:
 - Protect plant material from damage during transportation. Ensure materials are loaded in a manner which prevents crushing, or other damaging during transportation.
 - If delivery distance is less than 30 km and vehicle travels at speeds under 80 km/h, tie tarpaulins around plants or over vehicle box.
 - If delivery distance exceeding 30 km or vehicle travels at speeds over 80 km/h, use enclosed vehicle
 - Deliver materials to site in original nursery packaging, labelled with species and applicable grower information.
- Plant materials will be delivered from the grower as required and will not be left unplanted on the project site without proper storage and watering.
 - Delivery in batches with enough for 1-2 days of planting will reduce onsite care needs and risk to live materials between delivery and planting.
- Protect plant material from frost, excessive heat, wind and sun during delivery and onsite storage.
- Store plants outside in diffuse sunlight and exposed to full day -length hours.

- Protect plants during shipment and until planted on site, with tarpaulin or other suitable covering to prevent excessive drying from sun and wind, and breakage from wind and equipment.
- Ensure plants are not allowed to dry out (regular watering required if immediate planting is not completed).
- Never store on asphalt roadsides or exposed in full sun.
- Do not remove cuttings from containers until immediately prior to planting to prevent drying out of planting material.
- Protect foliage and root balls using anti-desiccants and tarpaulins, where use of enclosed vehicle is impractical due to size and weight of plant material
- Contractor to confirm plants brought to site with Parks Canada prior to commencing installation.

2.2 Handling

- Handle cuttings with reasonable care and skill at all times to prevent injuries to trunks, branches, stems and roots.
- Replace plant material damaged after delivery at no extra cost to Parks Canada.

3 Live Material Installation

- All plants will be planted before June 30 or after September 15th to avoid planting during dry conditions.
- Prior to planting, the Contractor will schedule an onsite meeting with Parks Canada to confirm planting layout, address quality of materials, inspections, schedule, installation, and maintenance procedures.
 - Do not use plants whose soil balls have been cracked or broken prior to or during planting.
 - Dead or diseased plants shall not be planted.
 - Replace plant material damaged after delivery at no extra cost to Parks Canada
- The Contractor will maintain a qualified, experienced full-time supervisor on the project site during layout and while planting is in progress to confirm layout and liaise with Parks Canada should any issues arise.
- The overall placement target density for each polygon and species is indicated within the planting tables on the figures (and used to determine the number of plants required); however, planting placement will be completed in a randomized fashion with variable spacing and species order so that no visible lines of plants and to best replicate a natural area (i.e. not planted in rows or large “clumps” of one species).
- Ensure material being planted is not excessively dry. Watering prior to planting may be required to prevent plantings from drying out if imminent moisture/rain is not expected (and material being installed is not senesced).
- All live plant material will be installed by hand (shovels and trowels) by digging small holes in the topsoil and gravel appropriate to the size of the material being planted.

- Minimize travel of any kind on planted surfaces to avoid damaging newly installed plants.
- Ensure all containers, wrap, plastic, tags, etc. are collected on an ongoing basis and removed from site for disposal.

3.1 Potted Material

- Excavate a hole slightly larger than the size of the pot.
- Remove the plant from the container. Remove plants from containers as planting progresses; exposure to sunlight and wind can quickly dry out the root ball. Rewetting prior to planting should occur if root balls are dry.
- Gently disturb the base and sides of the root ball to loosen the rooting and soil ball. Do not disturb too much causing loss of soil and free roots.
- Insert plant into the excavated hole all the way to the bottom (tight contact at the base) so that the top of the potting material is slightly below (~2 to 3 cm) the surrounding soil surface.
- Excavated soil will be backfilled into any spaces along the sides and gently pressed into place to minimize air gaps without over compacting the area.
- Excavated soil will be backfilled into any spaces along the sides and gently pressed (hand-pressure) into place to minimize air gaps without compacting the area. Nursery potting material is more susceptible to drying out due to the high composition of peat in the material.
- Firmly press down with hand pressure around the base of the stake to secure the plant in place.
- Remove all tags, flagging, etc from the plant and collect for offsite disposal.

3.2 Rooted Stakes

- Excavate a hole slightly larger than the size of the pot; Rooted stakes will be planted 300-500mm deep therefore the hole must be at least that deep.
- Remove the rooted stake from the container. Remove rooted stakes from containers as planting progresses; exposure to sunlight and wind can quickly dry out the root ball. Rewetting prior to planting should occur if root balls are dry.
- Gently disturb the base and sides of the root ball to loosen the rooting and soil ball. Do not disturb too much causing loss of soil and free roots.
- Insert rooted stake into the excavated hole all the way to the bottom (tight contact at the base) so that the top of the potting material is slightly below (~2 to 3 cm) the surrounding soil surface.
- Excavated soil will be backfilled into any spaces along the sides and gently pressed (hand-pressure) into place to minimize air gaps without compacting the area.
- Excavated soil will then be placed around the base of the stake completely covering the potting material to prevent the potting material from drying out. Nursery potting material is more susceptible to drying out due to the high composition of peat in the material.

- Firmly press down with hand pressure around the base of the stake to secure in place.
- Remove all tags, flagging, etc from the stake and collect for offsite disposal.

3.3 Plugs

- Use a tree planters shovel (ideal)
- Thrust the shovel blade into the ground. Ensure the depth of the shovel end is slightly deeper than the height of the plug.
- Shift the shovel back and forth while inserted into the ground to open a space.
- Ensure the space created is vertical, allowing upright positioning of the plug, and deep enough the full root ball will fit below the ground surface.
- Remove the wrapping/plastic pot from the plug.
- Once a large enough space has been formed, shift the shovel away from you and insert the root ball of the plug into the space as you remove the shovel blade.
- Ensure the plug is securely into the base of the space, is upright, and at least 2/3 of the above ground growth (stems/leaves) is visible above the ground surface. Access to sunlight is critical for plug survival, thus above ground parts of the plug must not be buried during planting.
- Using gentle foot-pressure, gently step on the ground surface surrounding the plug to secure it in place and minimize any gaps between the ground material and root ball.
- If a tree planter shovel is not available, plugs may be installed in a similar method to potted material.

3.4 Beaver Fencing and Protection

- A beaver fence will be installed along the toe of the plantings in area 1. This will extend to top of bank at each end of the planting area
- Beaver fence will be 3ft tall and holes will be no larger than 1inch in diameter. Page wire will be used (not chicken wire).
- Beaver fence will be installed using rebar or T posts at least every 10 feet or closer where necessary.
- For trees within the project area, they will be wired with the same wire as above. Wire will not be secured to the trees, but staked to the ground around the tree. Wire will be installed leaving room for the tree to grow.

Bar U Historic Site Cost Summary of All Activities Areas 6
SCHEDULE A - UNIT PRICE SCHEDULE

NO.	ITEM	UNIT	QTY.	UNIT PRICE	TOTAL
A	DIVISION 01 - GENERAL:				
2	Construction Facilities (Section 01 52 00 - Construction Facilities)	I.s.	1		
3	Mobilization / Demobilization	I.s.	1		
				SUBTOTAL A:	

C	DIVISION 32 - EXTERIOR IMPROVEMENTS:				
Landscape Maintenance (Section 32 01 90 - Landscape Maintenance)					
4	Landscape maintenance during warranty and monitoring period (measurement by year)	ea.			
Tree and Shrubs Preservation (Section 32 01 19.13 - Tree and Shrub Preservation)					
5	Wire around trees	ea.			
Plant Material - Supply and Install (Section 32 93 10 - Plant Material)					
6	<i>Amelanchier alnifolia</i> - Saskatoon - #1 Cont.	ea.	0		
7	<i>Elaeagnus commutata</i> - Wolf Willow - #1 Cont.	ea.	0		
8	<i>Prunus virginiana</i> - Western Chokecherry - #1 Cont.	ea.	0		
9	<i>Salix bebbiana</i> - Bebb's Willow - #1 Cont.	ea.	0		
10	<i>Salix bebbiana</i> - Bebb's Willow - 0.7 gallon rooted stake 1m tall	ea.	163		
11	<i>Symphoricarpos occidentalis</i> - Buckbrush - #1 Cont.	ea.	0		
12	<i>Populus balsamifera</i> - Balsam Poplar - #1 Cont.	ea.	0		
13	<i>Populus balsamifera</i> - Balsam Poplar - 0.7 gallon rooted stake 1m tall	ea.	0		
14	<i>Cornus stolonifera</i> - Dogwood - #1 Cont.	ea.	0		
15	<i>Salix exigua</i> - Sandbar Willow - #1 Cont.	ea.	0		
16	<i>Salix exigua</i> - Sandbar Willow - 0.7 gallon rooted stake 1m tall	ea.	163		
17	<i>Salix lutea</i> - Yellow Willow - #1 Cont.	ea.	0		
18	<i>Salix lutea</i> - Yellow Willow - 0.7 gallon rooted stake 1m tall	ea.	163		
19	<i>Salix petiolaris</i> - Basket Willow - #1 Cont.	ea.	0		
20	<i>Salix petiolaris</i> - Basket Willow - 0.7 gallon rooted stake 1m tall		0		
21	<i>Elymus piperii</i> - Giant Wild Rye - plug 180cc	ea.	0		
Beaver Protection Fencing - Supply and Install (Section 32 93 10 - Plant Material)					
22	Beaver Protection Fencing	I.m.			
				SUBTOTAL C:	

TOTAL AMOUNT:	
5% GST:	
TOTAL TENDERED AMOUNT:	

SUBMITTED BY (NAME & ADDRESS):	SEAL:
SIGNATURE & NAME:	DATE:

Bar U Historic Site Cost Summary of All Activities Areas 1, 6, 11 and 12

SCHEDULE A - UNIT PRICE SCHEDULE

NO.	ITEM	UNIT	QTY.	UNIT PRICE	TOTAL
A	DIVISION 01 - GENERAL:				
1	Environmental Procedures (Section 01 35 43 - Environmental Procedures)	l.s.	1		
2	Construction Facilities (Section 01 52 00 - Construction Facilities)	l.s.	1		
3	Mobilization / Demobilization	l.s.	1		
SUBTOTAL A:					

C	DIVISION 32 - EXTERIOR IMPROVEMENTS:				
Landscape Maintenance (Section 32 01 90 - Landscape Maintenance)					
4	Landscape maintenance during warranty and monitoring period (measurement by year)	ea.			
Tree and Shrubs Preservation (Section 32 01 19.13 - Tree and Shrub Preservation)					
5	Wire around trees	ea.	674		
Plant Material - Supply and Install (Section 32 93 10 - Plant Material)					
6	<i>Amelanchier alnifolia</i> - Saskatoon - #1 Cont.	ea.	225		
7	<i>Elaeagnus commutata</i> - Wolf Willow - #1 Cont.	ea.	225		
8	<i>Prunus virginiana</i> - Western Chokecherry - #1 Cont.	ea.	112		
9	<i>Salix bebbiana</i> - Bebb's Willow - #1 Cont.	ea.	112		
10	<i>Salix bebbiana</i> - Bebb's Willow - 0.7 gallon rooted stake 1m tall	ea.	113		
11	<i>Symphoricarpos occidentalis</i> - Buckbrush - #1 Cont.	ea.	112		
12	<i>Populus balsamifera</i> - Balsam Poplar - #1 Cont.	ea.	0		
13	<i>Populus balsamifera</i> - Balsam Poplar - 0.7 gallon rooted stake 1m tall	ea.	674		
14	<i>Cornus stolonifera</i> - Dogwood - #1 Cont.	ea.	112		
15	<i>Salix exigua</i> - Sandbar Willow - #1 Cont.	ea.	0		
16	<i>Salix exigua</i> - Sandbar Willow - 0.7 gallon rooted stake 1m tall	ea.	674		
17	<i>Salix lutea</i> - Yellow Willow - #1 Cont.	ea.	112		
18	<i>Salix lutea</i> - Yellow Willow - 0.7 gallon rooted stake 1m tall	ea.	113		
19	<i>Salix petiolaris</i> - Basket Willow - #1 Cont.	ea.	112		
20	<i>Salix petiolaris</i> - Basket Willow - 0.7 gallon rooted stake 1m tall		113		
21	<i>Elymus piperii</i> - Giant Wild Rye - plug 180cc	ea.	168		
Beaver Protection Fencing - Supply and Install (Section 32 93 10 - Plant Material)					
22	Beaver Protection Fencing	l.m.	225		
SUBTOTAL C:					

TOTAL AMOUNT:	
5% GST:	
TOTAL TENDERED AMOUNT:	

SUBMITTED BY (NAME & ADDRESS):	SEAL:
SIGNATURE & NAME:	DATE: