Deschutes Lower Indian Ford Riparian Restoration

Project Completion Report

8/4/20

Prepared for:

OWEB

Indian Ford Strategic Implementation Area

Prepared by:

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Deschutes Soil and Water Conservation District

Completion Summary:

The Strategic Implementation Area (SIA) in Lower Indian Ford Creek identified agricultural properties that are likely polluting waters of the state and violating local area Agricultural Water Quality Rules. Since 2015 landowners within the lower reaches of Indian Ford have participated in activities to restore the creeks water quality. Phase 1 was completed in 2017 and eliminated an illegal diversion and 880 ft. of ditch, treated 20 acres of invasive species, and restored over 1.2 miles of stream bank and 36 acres of riparian meadow. Phase 2 was completed in 2018 where additional 20 acres of vegetation was planted to improve riparian function and condition and habitat for wildlife. Riparian plantings where planted in key locations according to specifications. Areas of key importance were areas of natural clumping, back filled areas where ditches use to be, and along streambanks to stabilizes soil and improve riparian vegetation condition.

Background on the problem that generated the Project:

The Oregon Department of Agriculture (ODA) reviewed aerial images to identify streams and the adjacent lands that have been used for agriculture and are at severe risk for causing water quality issues. Lower Indian Ford Creek was identified as the focus creek in Deschutes County for restoration. As a result of that effort; landowners along Indian Ford Creek were contacted by Deschutes Soil and Water Conservation District (DSWCD) to provide technical and financial assistance to them in an effort to restore the native plant community to the stream corridor.

The Strategic Implementation Area (SIA) in Lower Indian Ford Creek identified agricultural properties that are likely polluting waters of the state and violating local area Agricultural Water Quality Rules. Past practices for producing livestock/grazing and hay and flood water mitigation by Army Corp of Engineers have reduced riparian vegetation, which has caused the creeks water temperatures to warm significantly. Indian Ford Creek is DEQ 303(d) listed for high water temperatures. Another result of past grazing and channelization is excess sediment delivery to the creek and trampled bank erosion. Rain

and snow events in livestock yards that have standing or piled manure, on high water table soils cause excess pollutant runoff into the streams. Also, many landowners are not educated on how to effectively manage their land, which is a wetland seasonally flooded stream corridor and are not aware of the ecosystem function and values it can provide to their land.

Four properties were identified by ODA through the Strategic Implementation Area (SIA) process. The Knapp property is located along Indian Ford Road upstream of Camp Polk Road and the Deschutes Land Trust Meadow Preserve. This property was identified as significant for lack of riparian vegetation. Parrish and Weitzman properties are located downstream of Camp Polk Road and were found to be significant and moderate concerns for lack of streamside vegetation, which may contribute sediment or impact water temperature. There was 5 push up rock dams and an unused ditch located in the Parrish property meadow. The fourth property is located at the mouth of Indian Ford Creek and the confluence with Whychus Creek at RM 20. During the beginning of this project, this property was owned by O'Neal and is currently owned by Kerry Newell. The O'Neal property had a large manure pile (120 yards) that was in the floodplain of Whychus Creek as well as large trash piles dispersed across the property. This manure pile was possibly leading to pollutants runoff into Whychus Creek. All four properties include invasive weeds such as: reed canary grass, knapweed, and thistle.

This project sought to aid in implementing the Upper Deschutes Agricultural Water Quality Management Plan by achieving sufficient streamside vegetation, stabilize streambanks, filter overland flow, and moderate solar heating. It also worked within the ESA Recovery plan by reducing the amount of sediment and other pollutants, such as organic material and excess nutrients in surface runoff and could provide suitable habitat for desired fish and other aquatic species.

Description of the work done, placing it in its larger watershed context:

Indian Ford Creek is a spring fed system in the Whychus Watershed, which historically provided important habitat for steelhead, beavers, and other wildlife and connects Indian Ford with the Deschutes River. The Whychus Watershed continues to receive a large amount of interest due to the rapid growth occurring in Deschutes County. Historically, Indian Ford Creek was a naturally braided system lined with densely vegetated wetlands and large willow and aspen stands. Anthropogenic changes on the landscape altered the diversity of the creek to a single incised channel with minimal floodplain and riparian vegetation and the waters have been disconnected from fish and wildlife habitat downstream in Whychus Creek. Due to these changes, the Indian Ford Watershed health has diminished, and various documents have been written to identify the need to restore diverse components of the watershed. Also, Indian Ford Creek has been listed under the Clean Water Act 303 (d) due to high temperatures and has been identified by ODA as a Strategic Implementation Area due to impacts to water quality.

With the reintroduction of anadromous fish species to Whychus Creek over the last decade, there needs to be an increase in emphasis on water quality within the system and specifically Indian Ford Creek. Landowners want to see water flow to Whychus Creek. There have been great strides to improve the watershed, however limiting factors still exist. Degraded water quality resulting from high water temperatures, low dissolved oxygen levels, high nutrient concentrations, sediment from loss of riparian vegetation, over grazing, and dewatering from irrigation, remain an issue in the watershed. This restoration project along lower Indian Ford Creek was meant to enhance the water quality, decrease water temperature, and protect the banks from trampling and erosion. Performing restoration

treatments along these four properties provides benefits to the entire watershed, which has and continues to require uplift.

There was restoration work done on four properties along Lower Indian Ford Creek: Knapp Property (Willows Ranch), Parrish, Weitzman, and O'Neal (currently Newell). The plants that were used for this project were grown for a two-year time frame at Clearwater Native Nursery before being planted in the ground. Wild Resources LLC was hired to help with the planting. These properties had the following treatments completed:

Knapp Property:

The project implementation occurred along the riparian corridor of the Knapp property, which is 4,700 feet in length along both sides of Indian Ford Creek. There was fencing installed along the stream at approximately 35 feet from the creek for cattle exclusion. This was performed by the landowners before the planting portion of this project began and naturally aided in reducing bank erosion, trampling, and enhanced plant growth along the creek. The total riparian area on the Knapp property is approximately 6 acres and this entire area was planted with the following riparian species plants: Native willow (Salix, Coyote, and live trimmings), Dogwood, Ponderosa Pine, Woods rose, Alder, Elderberry, Snowberry, Douglas Spirea, and Current. Plant spacing followed the specifications in the diagram below and willow cuttings from the property and neighboring forest service land and Deschutes Land Trust Preserve were transplanted horizontally beginning at the low water line extending in a trench for 5' to the high water line on both sides of the ditch; spaced 5 feet apart in along the water line, so that 1' of the stems remain in the water for the dryer season. All the plants that were planted, but not including the transplanted willows were caged using hand-made metal cages for the larger plants and biodegradable vexar tubing for the rest.

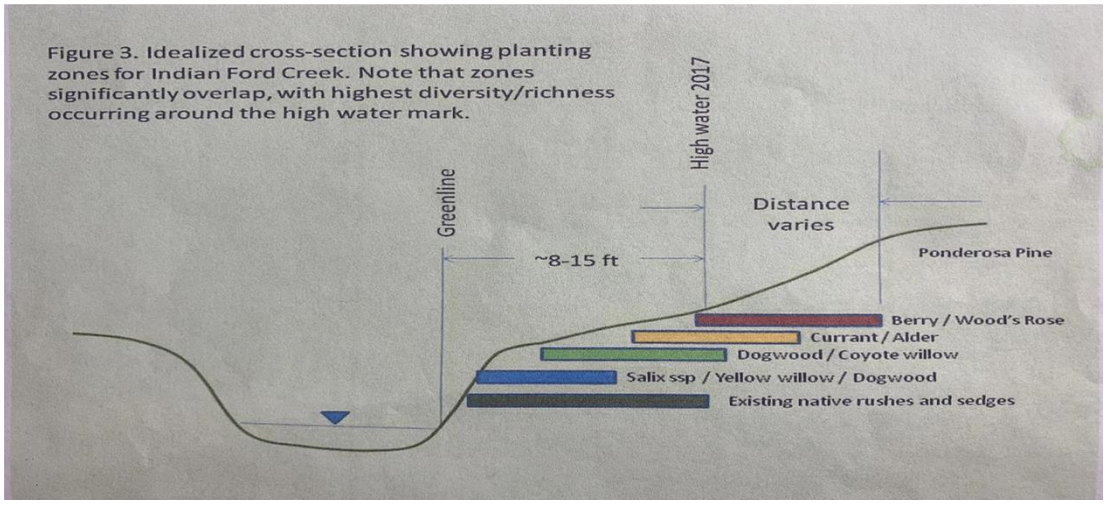


Figure 3. Idealized cross-section showing planting zones for Indian Ford Creek. Note that zones significantly overlap, with highest diversity/richness occurring around the high water mark.

Parrish and Weitzman:

These properties have not been used for ranching purposes for several years, which will aid in plant establishment and a decrease in bank erosion. There is no fencing along the creek on the Parrish property and some barbed wire on the Weitzman property. Much of the banks along Indian Ford Creek on both sides and the bottom of the ditches are overgrown with Reed Canary Grass. There was weed

treatment performed on these two properties that included mowing, spraying, and scalping weeds to prepare the site for planting. The total project riparian planting area is 10 acres and approximately 5 acres of the riparian area is where willows were transplanted inside the creeks high and low water marks with some Alder in strategic locations. The other 5 acres of the seasonally flooded topography was planted with shrubs that do not need an abundant water supply. The same plants that were used for the Knapp property were used along the entire length of Indian Ford Creek for the Parrish and Weitzman Property. In addition to planting, there were five rock push up dams in the Parrish meadow and an illegal ditch that ran from Indian Ford Creek to a property downstream of Weitzman through the entire meadow. The push up dams were removed and hauled off site and the ditch was obliterated, filled in, and received planting treatment along 200 – 300 feet of the ditch flowing downstream from Indian Ford Creek. Also, native seeding was performed on the dry meadow portion of these properties and includes Idaho fescue, blue bunch wheatgrass, Indian rise grass, and Big basin wildrye.

O'Neal (currently Newell) Property:

This portion of this restoration project included the removal of an approximate 120-yard manure pile that was in the floodplain of Whychus Creek. The manure pile was removed from the property and taken to the local landfill. Currently, there are no grazing activities along the creeks. All horses located on the property are confined within the stalls located along the southern portion of the property. The stalls are located approximately 45 feet away from the creek. When Newell took ownership of this property, many efforts have been made to restore his land. The trash piles scattered across the property have been cleaned up and removed or confined to an area away from Whychus Creek and Indian Ford Creek. In the spring of 2020, a Dryland high desert mix was spread over the property and was beginning to sprout in June 2020. A weed treatment was also performed in June 2020 across the property. The new landowner (Newell) has planted aspens and other trees along the upper banks of Whychus Creek to provide shade and bank stabilization and has a high level of interest in restoring Indian Creek to get the flow returning to Whychus Creek. There are horses on his property, and he would like to allot some of his land for grazing and bring back a forested landscape to the uplands of the two creeks on his property. The following plan could aid in long term manure management on the Newell property:

Long Term Manure Management – Newell Property

Goal:
To enhance property to provide forage and a good quality of life for livestock. Responsibly manage manure to prevent pollutant runoff to Whychus and Indian Ford Creek. Be compliant with Deschutes County Land Management Plan.
Objective 1:
Examine pastures and landscape on property to determine renovation options.
Objective 2:
Examine associated agricultural lands to determine options.
Resource Issues that need to be examined:

Soil Erosion – Streambank; property is located at the confluence of Whychus Creek and Indian Ford Creek. Spring runoff on Whychus creek causes erosion on stream banks threatening structures near the creek.

Soil Condition – Organic Matter Depletion; Soils are extremely degraded due to past activities on the property. Soil structure and O&M have been altered to a point where soils are extremely cobbly with no A horizon.

Soil Condition – Compaction – previous activities have compacted soils causing little to no vegetation to grow.

Soil Condition – Animal waste and other organics; manure pile has been removed from the floodplain of Whychus creek.

Water Quality – Excessive nutrients and organics; Runoff from manure may have detrimental effects on the water quality and ground water in Whychus and Indian Ford Creek.

Water Quality – Sediment and turbidity; High waterflows in the spring that cause streambank erosion result in excess sediment and turbidity

Plants – not adapted to site; property is inundated with mustard, thistle, and other undesirable plants

Plant – Productivity and Health; < 10% desirable species on pasture lands, however 70% desirable species on the rangeland area.

Plant Condition – Noxious and Invasive species; >90% of the pasture area has invasive species

Plant Condition – Forage Quality and Palatability; Poor quality of forage grasses on site. Minimal grass available for forage. Seeding was performed in the Spring of 2020.

Animal – Cover, water, food; Examine the new construction for the livestock on the property

Pasture - Pasture will need to be renovated to establish desirable species for forage. A soil test should be taken to determine the nutrients available in the soil and to determine if alkalinity is an issue. Since the soils are extremely cobbly care should be taken when renovating the pasture. When establishing new pastures, a pre-emergence herbicide will need to be applied to control the competition of undesirable species. Seeding was completed in early spring of 2020 to ensure germination of desirable species.

Manure will need to be removed or incorporated with compost to improve O&M and soil condition. Keep manure or manure compost 35 ft. from the creek to prevent surface runoff. Consider compost facility if retaining or boarding horses. Compost facility must have an impermeable flooring to prevent leaching of contaminates.

Fencing will need to be established to defer and control grazing on newly established pasture and along the creek banks. Preferably you should seed pasture before installing fences.

Irrigation:
It is unknown how much surface or ground water rights there are for the property. Contact Deschutes County Water Master to obtain this information. Phone: 541-306-6885 ext. 102.

Streambank:
Placement of large woody material can be used to increase channel roughness, dissipate energy, reduce erosion, and create aquatic habitat. Riparian plantings can also be planted to create shade and stabilize streambanks. Reconstruction of the confluence can be considered to improve stream flows and fish habitat. This would have to include many landowners along Lower Indian Ford Creek. The creek becomes dry in early summer months somewhere between Camp Polk Road and Barclay Road. This entire stretch of river is private land. Reed Canary grass is prevalent along the streambank of Indian Ford. It is not recommended to control this at this time, since Reed Canary grass is in abundance upstream from the property. To control the invasive species will take a group effort with surrounding landowners.

Description and explanation of any changes to the original proposal:

The project proposal included removing a culvert in the Indian Ford Creek on the O'Neal property. This property was visited on July 27, 2020 and the culvert was not removed. Another goal of this project was to increase the holding capacity of the meadow on the Parrish and Weitzman properties. This does not seem to have been accomplished. In addition to the planting along the creek banks, there needs to be stream restoration activities to inundate the floodplain into the spring and summer months.

Summary of any outreach activities related to the project:

DSWCD partnered with Deschutes Basin Land Trust, Oregon Youth Academy, and Redmond School District Ecological Sciences class for willow cuttings and planting. OYCP national guard crew assisted in the construction of the metal plant cages for the project and in the planting on the Parrish and Weitzman Properties. Also, DSWCD worked closely with the landowner/managers to explain and provide a better understanding of the riparian treatment and maintenance that was occurring on their property.

Lessons learned, if any, from the project:

This project was completed before starting this new position as the manager of DSWCD. It has been difficult to find records of the exact specifications of the work completed. It is particularly important to remain organized throughout the entire length of the project and provide thorough records of the details of the project. There are records of hiring a riparian designer for this project (Michael Hughes – Certified Ecological Restoration Practitioner), but there is no evidence of the assessment, plan, implementation, or monitoring for this project design. The restoration treatments were implemented with the goal of enhancing water quality and reducing stream temperature, yet there was no surveys or information gathered on the water quality or temperature when this project began. There was an order receipt from July 7, 2017 for two Kestrel drop temperature data loggers and there is no evidence of temperature readings along any portion of Indian Ford Creek. The photo points were displayed neatly and efficiently, but there were only records from pre project, and none immediately post project. It has been three years since the plantings were installed and there is no information on the survival or state of the plants. Monitoring restoration activities to illustrate the benefits occurring on the landscape are integral components to stream and riparian restoration and need to be performed and documented according to a set schedule.

From the photo points, you can see the positive results of fencing for cattle removal. This decreases the bank erosion drastically and allows the full potential for plant growth. It is great to see the outreach and education performed with the OYCP national guard crew and the Redmond School district and these efforts should be utilized in future restoration projects.

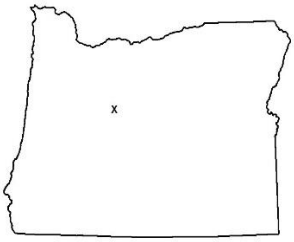
Recommendations, if any, for more effective implementation of similar projects:

This project was implemented as a part of an SIA that was identified by ODA to improve the water quality of Indian Ford Creek and agricultural lands. There were treatments performed that had successful outcomes: removal of the manure pile on the O'Neal property, fencing with a 35 foot buffer from the creek on the Knapp property, and the removal of the rock push up dams and illegal ditch on the Parrish property. These tasks will aid in improving the water quality, reducing bank erosion and trampling, and returning the creek to a more natural flow. Indian Ford creek has been altered to a single

incised channel on these properties for agricultural purposes. To restore and inundate the floodplain and secondary channels and return flow to Whychus Creek, major alterations to the stream channel need to be implemented and would require a large collaboration and approval by private landowners on lower Indian Ford Creek. There are still limiting factors occurring on Indian Ford Creek and many possibilities of uplift to the creek and uplands. This project was a great starting point to restore Indian Ford Creek, improve water quality, and reduce water temperatures. More restoration should be implemented to continue to restore the creek and watershed.

Photos and Plant Establishment:

On June 29 and 30, 2020, the DSWCD performed a complete plant count of the Knapp, Parrish, and Weitzman properties. Photos were taken at the established photo points for this project. The plants were rooted and grown in a nursery for two years before installation. There was willow and Dogwood recruitment occurring along the banks of Indian Ford Creek along all three properties and some small areas of aspen recruitment. The current had the highest survival rate. There were a high number of unidentified dead plants. The SE side of the Knapp property and the SW side of Parrish and Weitzman property had a high mortality rate. Below are the photo points from pre-planting (March 2017) to current photos (June 2020) and there is a table of the living and mortality numbers attached below.

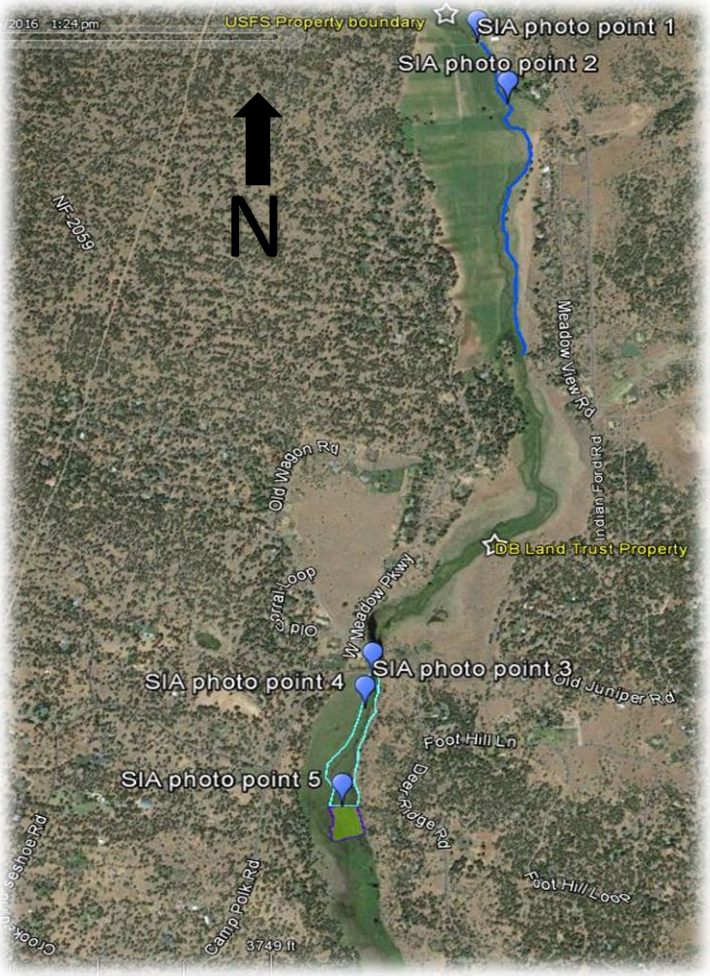


X approximate location of Indian Ford Creek riparian project - State of Oregon

Strategic Implementation Area Deschutes SWCD/ODA

LOWER INDIAN FORD CREEK

Photo location Map Comparison March 2017 to June 2020
Legal Description: T14S, R10E, WM, Deschutes County



Willows Ranch point 1 looking upstream, & downstream photo point on small bridge

Latitude: 44°20'31.49"N
Longitude: 121°32'30.18"W

Upstream

March 2017

June 29, 2020

Downstream

March 2017

June 29, 2020

SIA Photo point 2

Latitude: 44°20'24.92"N
Longitude: 121°32'23.14"W

Downstream

March 2017

June 29, 2020

SIA Photo point 3 – Parrish Property – Bridge at Camp Polk Rd.

Latitude: 44°19'12.17"N

Longitude: 121°32'18.08"W

Upstream

March 2017

June 30, 2020

Downstream

March 2017

June 30, 2020

SIA Photo point 4 looking downstream at illegal ditch take off from pushup dam

Latitude: 44°19'7.96"N

Longitude: 121°32'17.74"W

March 2017

June 30, 2020

SIA Photo point 5 looking downstream at illegal ditch overflow from neighbor’s pond back to Lower Indian Ford Creek where algae is present along with a reduced amount of water than diverted

Latitude: 44°18'55.58"N
Longitude: 121°32'16.85"W

Downstream

March 2017

June 30, 2020

Upstream – June 30, 2020

PHOTO DESCRIPTION FORM

Project Grant #

Project Name: Lower Indian Ford Creek Restoration

Date: 3/24/2017

Crew: Jan Roofener

Photo #	Photo taken at a photo point	project feature	Standing	Facing	* L or P	Scene description	Latitude	Longitude
1	SIA 1	stream center	on small bridge	N. & S.	P	upstream and downstream	44°20'31.49"N	121°32'30.18"W
2	SIA 2	stream center	foot bridge	South	P	downstream	44°20'24.92"N	121°32'23.14"W
3	SIA 3	Left bank	next to small juniper	N. & S.	P	upstream and downstream	44°19'12.17"N	121°32'18.08"W
4	SIA 4	Left bank	100' downstream from 1	South	P	downstream at rock pushup dam and ditch POD	44°19'7.96"N	121°32'17.74"W
5	SIA 5	right bank	S. Fenceline	S. & W.	P	upstream and downstream	44°18'55.58"N	121°32'16.85"W

*Landscape or Portrait

Willows Ranch Random Photos:

April 6, 2016 **June 29, 2020**

Plant Count June 29 and June 30, 2020

Total Plants Ordered and Planted on the three properties

Species	Knapp Property/Willows Ranch	Parrish Property	Weitzman Property	Totals Planted (Ordered)
Native willow mix (Salix, Coyote, and live trimmings)	800	800	240	1840
Dogwood	100	100	30	230
Ponderosa Pine	65	65	25	155
Woods rose	250	200	50	500
Alder	150	75	25	250
Elderberry	180	75	25	280
Snowberry	150	75	25	250
Currant	500	250	50	800
Quaking Aspen	0	125	0	125
Total:	**2195**	**1765**	**470**	**4430**

Total number of living plants counted

Living	Willows Ranch (6/29/2020)	Parrish (6/30/3030)	Weitzman (6/30/2020)	Total	Percent Alive
Native willow mix (Salix, Coyote, and live trimmings)	**127**	**76**	**40**	**243**	20%

Dogwood	**51**	**33**	**10**	**94**	8%
Ponderosa Pine	**36**	**19**	**1**	**56**	5%
Woods rose	**53**	**29**	**7**	**89**	7%
Alder	**85**	**25**	**18**	**128**	11%
Elderberry	**57**	**45**	**17**	**119**	10%
Snowberry	**58**	**53**	**17**	**128**	11%
Douglas Spirea	**73**	**24**	**14**	**111**	9%
Currant	**96**	**87**	**22**	**205**	17%
Quaking Aspen	**31**	**4**	**1**	**36**	3%
Unidentifiable	**0**	**0**	**0**	**0**	0%
Total:	**667**	**395**	**147**	**1209**	**100%**

Total number of dead plants counted					
Dead	**Willows Ranch (6/29/2020)**	**Parrish (6/30/3030)**	**Weitzman (6/30/2020)**	**Total**	**Percent Dead**
Native willow mix (Salix, Coyote, and live trimmings)	**57**	**88**	**31**	**176**	21%
Dogwood	**25**	**10**	**2**	**37**	5%
Ponderosa Pine	**14**	**17**	**1**	**32**	4%
Woods rose	**6**	**1**	**0**	**7**	1%
Alder	**0**	**0**	**0**	**0**	0%
Elderberry	**14**	**1**	**0**	**15**	2%
Snowberry	**3**	**1**	**1**	**5**	1%
Douglas Spirea	**4**	**0**	**0**	**4**	0%
Currant	**25**	**5**	**2**	**32**	4%

Quaking Aspen	**0**	**0**	**0**	**0**	0%
Unidentifiable	**251**	**199**	**62**	**512**	62%
Totals:	**399**	**322**	**99**	**820**	**100%**

Total Plants Planted/Transplanted	**4,430**
Total Plants Counted:	**2,029**
Total Living Plants Counted	**1,209 (59.59%)**
Total Dead Plants Counted	**820 (40.41%)**
Plants not accounted for	**2,467**