CITY OF Salem AT YOUR SERVICE

Public Works Department

Salem Stream Mitigation Bank

2022 Annual Program Report
Township 8 South, Range 3 West, Section 23BB
Salem, Marion County, Oregon

JANUARY 18, 2023

Background

The Salem Stream Mitigation Bank (SMB) Program has been developed to provide compensatory mitigation for unavoidable impacts to jurisdictional streams resulting from City of Salem (City) projects. The SMB is an "Umbrella Bank", as such, it provides a framework for the establishment, use, operation, and maintenance of multiple compensatory mitigation sites within the City's urban growth boundary (UGB). Bank sites are targeted at meeting specific watershed goals. At this time only the Waln Creek Stream Bank site is approved and active. The bank site is located in South Salem adjacent to the City's Battle Creek Park.

The goals of the City's SMB Program are to:

1) provide a basis for planning and implementation of cost-effective stream restoration projects; and

2) streamline the Removal-Fill and Section 404/401 permit evaluation process by providing a means for quantifying and compensating for unavoidable in-stream impacts.

Total Credit Additions

In February 2016 the Oregon Department of State Lands (DSL) and the Army Corps of Engineers (Corps) released the first 30% of credits to the bank. This included 2,633 instream credits and 589 riparian credits for a total release of 3,222 credits.

The next release occurred in August 2018 with an additional 45%, or 4,833 credits, released to the bank, including 3,949 instream and 884 riparian credits, bringing the cumulative total to 8,055 credits.

DSL and Corps approved the release of final 25% of credits in November 2021 after completion and approval of the site's Long Term Management Plan. The final release included 2,194 instream credits and 492 riparian credits for a total of 2,286 new credits and a cumulative total of 10,741 credits (8,776 instream and 1965 riparian).

See Attachment 1 for the Program Ledger. See Attachment 2 for the Letters of Release.

Total Credit Subtractions

There has been one debit of riparian credits from the bank and no debits of instream credits. In July 2016, 58 riparian credits were used by the City Public Works Department to mitigate for loss of riparian vegetation resulting from the Summer Street Culvert Replacement.

See Attachment 3 for Credit Receipt. See Attachment 4 for Summary Table.

2022 Activity

The bank saw no credit or debit activity in 2022. On June 7, Oregon Department of State Lands (DSL) conducted a site visit to the Waln Creek Stream Bank site with City Natural Resources Planning and Stormwater Quality staff. During the site visit, DSL noted that non-native invasive grasses and forbs, including common velvetgrass (*Holcus lanatus*), reed canary grass (*Phalaris arundinacea*), and

catchweed bedstraw (*Galium aparine*), have become well established on both sides of the Waln Creek floodplain within the northern portion of the bank site.

Based on the results of the site visit DSL requested that the City conduct vegetation monitoring in the northern portion of the Waln Creek Stream Bank site to determine if performance standards continue to be met. DSL also recommended reestablishing permanent vegetation monitoring locations and increasing treatment of invasive understory plants until canopy cover increases to 50% in the northern half of the bank.

The City contracted with Pacific Habitat Services to conduct the requested vegetation monitoring and the monitoring visit was conducted on September 1, 2022. During the monitoring visit the northern section of the bank site was not meeting the Native Species Cover (60 percent native cover) or Invasive Species Cover performance standards (less than 10 percent non-native cover). However, it was exceeding the Woody Vegetation performance standard of at least 1,600 stems/acre. The monitoring report includes recommendations for invasive species control and remedial planting and seeding, which are discussed further under the Site Management section below.

The full monitoring report is included as Attachment 5.

Site Management – Waln Creek

Throughout 2022 the City continued to inspect the bank site to address issues of litter, weed management, transient camps, and beaver (*Castor canadensis*) pressure. Trash was cleaned up on several occasions (including from a few transient camps that had to be evicted), reed canary grass was mowed monthly, and Himalayan blackberry (*Rubus armeniacus*) was cut and pulled on multiple visits. In March 2022, approximately 1,500 live stake and bare plants were installed. Additionally, old beaver protection fencing was removed where it was getting too tight around trees, new beaver exclusion fencing was installed around patches of new live stakes, and maintenance of the pond leveler previously installed at the beaver dam was performed by Beaver State Wildlife Solutions.

In mid-2022, City Stormwater staff became concerned about the flood capacity of Waln Creek and hired a West Consultants to conduct a professional survey of the creek, including the stretch within the stream bank site. The survey revealed that invasive reed canary grass has been causing the stream channel to fill in with sediment, and subsequent modeling of various storm scenarios indicated that this will likely result in increased frequency and severity of flood events in the surrounding neighborhood.

Prior to 2022, the City attempted to control invasive plants, including reed canary grass, within the mitigation bank site through cultural and mechanical methods alone, planting hundreds of native trees and shrubs and mowing down the reed canary grass on a monthly basis. Despite these efforts, reed canary grass has continued to expand and dominate stretches of the stream, making it clear that a more aggressive intervention was needed. After consulting with DSL and Ash Creek Forest Management, it was determined that herbicide treatment would be the best approach to gain control of the reed canary grass and reduce sediment buildup in the creek.

Ash Creek Forestry Management was subsequently contracted to carry out the invasive plant control. Two treatments occurred in 2022: the first on September 23rd and the second on December 5th. Treatments consisted of application of aquatic-use approved herbicides Rodeo (glyphosate) and Garlon 3a (triclopyr) by state-licensed applicators. Additional treatment is planned for the spring, after which

the area will be seeded with a native seed mix and more native shrubs and trees will be planted. Once established, the native plants will provide natural competition for invasive species and shade to the area, which should further aid in reducing ongoing and future infestation by invasive plants. A map of the treatment area is included in Attachment 6.

Future Activity

The City anticipates utilizing the stream mitigation bank to compensate for impacts associated with a planned channel erosion repair project on Shelton Ditch. The project is still in the engineering design phase, but a Joint Permit Application has been drafted and is anticipated to be ready for submittal to state and federal agencies in 2023. Environmental permitting for the project is expected to be completed in 2023, in preparation for construction to begin in 2024. Other use of mitigation credits may occur as the City continues to replace, improve, and upgrade culverts and other stream/roadway crossings within the bank's service area.

The City's latest capital funding forecast has initial construction of Battle Creek Park improvements occurring no sooner than FY26/27. All Battle Creek Park projects will take place outside of the SMB project area. Initial construction may focus on a new bridge crossing of Battle Creek, which would be outside (downstream) of the SMB project area.

Recommendations

The City continues to monitor the rate of credit sales for the Salem Stream Mitigation Bank and is evaluating whether the rate of credit sales warrants keeping credits exclusively for City projects. At this time, it appears there may be enough capacity in the SMB to offer credit sales to outside organizations, such as private developers. Meetings will be scheduled with the Corps and DSL in 2023 to discuss potential changes to the SMB. These changes may include updating the Mitigation Bank Instrument accounting system, expansion of the service area, and/or addition of wetland banking to the Umbrella MBI.

Attachments

1. 2022 Program Ledger
2. Letters of Release
3. Summer Street Culvert Replacement Credit Receipt
4. Summer Street Culvert Replacement Summary Table
5. 2022 Vegetation Monitoring Report
6. 2022 Herbicide Treatment Sign

ATTACHMENT 1: 2022 PROGRAM LEDGER

Waln Creek Stream Bank Mitigation Site - Phase 1

Credit Ledger

Total Credits Available from Bank after all conditions met: 10,741

Total Instream Credits Available	Total Riparian Credits Available
8776	1965

Transaction Date	Applicant Name	Project Name	Transaction Type	# Total Credits Active	State Permit #	Federal Permit #	Instream Credit	Riparian Credit
2/26/2016	City	Waln Creek Stream Bank	1st Release (30%)	3222			2633	589
7/18/2016	City	Summer Street Culvert	Withdrawal	3164	58725-GP	NWP 2013-286-1	0	-58
8/27/2018	City	Waln Creek Stream Bank	2nd Release (45%)	7997			3949	884
2019	City	No Activity		7997				
2020	City	No Activity		7997				
11/19/2021	City	Waln Creek Stream Bank	Final Release (25%)	10683			2194	492
2022	City	No Activity		10683				
End of 2022		**Balance**		**10683**			**8776**	**1907**

ATTACHMENT 2: LETTERS OF RELEASE

DSL, 2016, First Release of Credits

Corps, 2016, First Release of Credits

DSL, 2018, Second Release of Credits

Corps, 2019, Second Release of Credits

DSL, 2021, Third/Final Release of Credits

Corps, 2021, Third/Final Release of Credits

Oregon
Kate Brown, Governor

Department of State Lands
775 Summer Street NE, Suite 100
Salem, OR 97301-1279
(503) 986-5200
FAX (503) 378-4844
www.oregon.gov/dsl

February 26, 2016

Patricia Farrell
City of Salem
Public Works Department, rm 325
555 Liberty St
Salem, OR 97301-3513

RE: First release of credits for Waln Creek Stream Mitigation Bank

Dear Patricia;

I am pleased to announce that we have received the necessary documentation for the initial credit release following approval of the Salem Stream Mitigation Bank Instrument (MBI). We have received the as-built drawings, and evidence that initial plantings have been completed at the Waln Creek site. Therefore, according the credit release schedule in the Waln Creek Mitigation Plan Agreement, the Department hereby releases 2,633 instream and 589 riparian credits, for a total of **3,222** credits under the Salem stream mitigation protocol. This represents **30%** of the total expected credits for this site.

These newly released credits are hereby available for city use or for purchase by parties within your service area who have submitted Removal-Fill permit applications to perform regulated activities in waters of the State of Oregon, or to resolve enforcement cases. Please note you will also need to secure the credit release from the Corps before any of these credits can be sold as compensatory mitigation for a Clean Water Act 404 permit.

Credits may be used or sold only when: 1) a permit application has been submitted wherein the applicant requests approval to use/purchase stream credits instead of conducting their own mitigation, 2) the DSL Resource Coordinator and the Corps Permit Evaluators concur that the stream functions and values proposed to be impacted by the project requiring the permit will be adequately compensated for by the mitigation bank, and 3) if the sale is for resolution of an enforcement case, the agency staff involved have agreed to the manner of resolution. Please note that the number of debits must be determined using the Salem stream mitigation calculation protocol included in the approved Bank Instrument.

For each credit use or sale, please send a copy of the receipt to each agency's permit coordinators, to Tom Taylor at the Corps, and to me. The receipt should identify the date, applicant name, project name, DSL and/or Corps permit file numbers, and the number of instream and riparian credits used or sold.

We wish to recognize the considerable effort in planning and development of the stream function evaluation tool pioneered by City of Salem staff, and also for the design and site management for the Waln creek bank thus far. If you have any questions, please contact me at 503-551-5617.

Sincerely,

Dana Field
Mitigation Specialist

CC: Tom Taylor, Corps of Engineers
IRT
Mike DeBlasi, DSL

DEPARTMENT OF THE ARMY
PORTLAND DISTRICT, CORPS OF ENGINEERS
POST OFFICE BOX 2946
PORTLAND, OREGON 97208-2946

March 22, 2016

Regulatory Branch
Corps No.: NWP-2010-591

Ms. Patricia Farrell
Planning & Development
City of Salem Public Works Department
555 Liberty Street SE
Salem, Oregon 97301-3503

Dear Ms. Farrell:

The U.S. Army Corps of Engineers (Corps) has received your request dated February 25, 2016, to release credits for the Waln Creek Enhancement and Battle Creek Culvert Removal Mitigation Bank. This initial release is based on the City of Salem completing the initial plantings at the bank site and submitting the as-built report. Both of these requirements have been met (*i.e.*, in early 2013 and September 2015, respectively).

The Corps is releasing 2,633 and 589, or 30 percent of the 8,776 and 1,965 instream and riparian credits, respectively, which are projected to be available at the bank site. This constitutes Release 1 as specified in the City of Salem Stream Mitigation Program Umbrella Mitigation Bank Instrument, Appendix A, Waln Creek Enhancement and Battle Creek Culvert Removal Project Mitigation Plan, Section IX, Credit Determination and Credit Release Schedule. A total of 3,222 credits (30 percent) have now been released.

You are reminded to include with each submitted credit sale receipt the information listed in Exhibit G - Sample Credit Receipt of the Stream Mitigation Program, Umbrella Mitigation Bank Instrument. Please submit the receipts electronically to Mr. Tom Taylor using the e-mail information below.

Thank you for your efforts to create a successful mitigation bank. If you have any questions, please contact Mr. Taylor at the letterhead address, by telephone, at (503) 808-4386 or via e-mail at: thomas.j.taylor@usace.army.mil.

Sincerely,

for Shawn H. Zinszer
Chief, Regulatory Branch

Copy Furnished (electronically):

Oregon Department of State Lands (Field)
Oregon Department of Environmental Quality (Nayar)
U.S. Fish and Wildlife Service (Ginger)
U.S. Environmental Protection Agency (Nadeau)
Oregon Department of Fish and Wildlife (Vaughan)
National Marine Fisheries Service (Liverman)

Oregon
Kate Brown, Governor

Department of State Lands
775 Summer Street NE, Suite 100
Salem, OR 97301-1279
(503) 986-5200
FAX (503) 378-4844
www.oregon.gov/dsl

August 27, 2018

Patricia Farrell
City of Salem
Public Works Department, rm 325
555 Liberty St
Salem, OR 97301-3513

RE: Second release of credits for Waln Creek Stream Mitigation Bank

Dear Patricia;

Thank you for your efforts to continue the success of the stream mitigation project. Our annual inspections and your recent monitoring reports confirm that the vegetation has established as expected and that the re-aligned channel is stable and performing the expected functions. We agree with the recommendations of the 2017 monitoring report that additional trees receive beaver protection cages, as tall woody vegetation is an important component of the credit accounting protocol.

According the credit release schedule in the Waln Creek Mitigation Plan Agreement, the project now qualifies for another credit release. The Department hereby releases 3949 instream and 884 riparian credits, for a total of **4833** credits under the Salem stream mitigation protocol. This represents **45%** of the expected credits and brings the cumulative releases to 8055, or 75% of the expected total for this site.

These newly released credits are hereby available for city use or for purchase by parties within your service area who have submitted Removal-Fill permit applications to perform regulated activities in waters of the State of Oregon, or to resolve enforcement cases. Please note you will also need to secure the credit release from the Corps before any of these credits can be sold as compensatory mitigation for a Clean Water Act 404 permit.

Credits may be used or sold only when: 1) a permit application has been submitted wherein the applicant requests approval to use/purchase stream credits instead of conducting their own mitigation, 2) the DSL Resource Coordinator and the Corps Permit Evaluators concur that the stream functions and values proposed to be impacted by the project requiring the permit will be adequately compensated for by the mitigation bank, and 3) if the sale is for resolution of an enforcement case, the agency staff involved have agreed to the manner of resolution. Please note that the number of debits must be determined using the Salem stream mitigation calculation protocol included in the approved Bank Instrument.

For each credit use or sale, please send a copy of the receipt to each agency's permit coordinators, to Tom Taylor at the Corps, and to me. The receipt should identify the date, applicant name, project name, DSL and/or Corps permit file numbers, and the number of instream and riparian credits used or sold. If you have any questions, please contact me at 503-986-5238.

Sincerely,

Dana Field
Mitigation Specialist

CC: Tom Taylor, Corps of Engineers
IRT
Fred Small, consultant
Mike DeBlasi, DSL

DEPARTMENT OF THE ARMY
CORPS OF ENGINEERS, PORTLAND DISTRICT
P.O. BOX 2946
PORTLAND, OREGON 97208-2946

January 23, 2019

Regulatory Branch
Corps No.: NWP-2011-100

Ms. Patricia Farrell
Planning & Development
City of Salem Public Works Department
555 Liberty Street SE
Salem, Oregon 97301-3503
pfarrell@cityofsalem.net

Dear Ms. Farrell:

The U.S. Army Corps of Engineers (Corps) has reviewed your Mitigation Monitoring Reports for Year 4 (2016) and Year 5 (2017) dated January 2017 and December 2017, and an e-mail dated August 23, 2018, that conveys recent field observations from Ms. Dana Field (Oregon Department of State Lands), for the combined Waln Creek Enhancement and Battle Creek Culvert Removal Mitigation Project (Project). As provided in the credit release schedule of the Project mitigation plan[1], the City of Salem is eligible for a credit release.

To date the Corps has released 30 percent of the total 8,776 instream credits and 1,965 riparian credits, which are projected to be available at the Project site. The current release is based on the Waln and Battle creeks Project site (i.e., channel and riparian community) generally demonstrating stability and the City sufficiently meeting all performance standards for Years 4 and 5.

The Corps is releasing 3,949 instream credits and 884 riparian credits, or 45 percent of the credits projected to be available at the Project site. This constitutes Release 2 as specified in the Project mitigation plan. A cumulative total of 8,055 (75%) of the expected total credits for this site has now been released.

You are reminded to include with each submitted credit sale receipt the information listed in Exhibit G - Sample Credit Receipt of the Stream Mitigation Program, Umbrella Mitigation Bank Instrument. Please submit the receipts electronically to Mr. Tom Taylor

[1] City of Salem Stream Mitigation Program Umbrella Mitigation Bank Instrument (NWP-2010-591), Appendix A, Waln Creek Enhancement and Battle Creek Culvert Removal Project Mitigation Plan, Section IX, dated May 8, 2014

using the e-mail information below. In the meantime we look forward to receiving your Year 6 monitoring report, which is due on January 31, 2019.

Thank you for your continued efforts to create a successful mitigation bank. If you have any questions, please contact Mr. Taylor at the letterhead address, by telephone, at (503) 808-4386 or via e-mail at: thomas.j.taylor@usace.army.mil.

Sincerely,

William D. Abadie
Chief, Regulatory Branch

cc:

Oregon Department of State Lands (dana.field@state.or.us)
Oregon Department of Environmental Quality (sara.christensen@state.or.us)
U.S. Fish and Wildlife Service (shauna_everett@fws.gov)
U.S. Environmental Protection Agency (Nadeau.tracie@epa.gov)
Oregon Department of Fish and Wildlife (joy.r.vaughan@state.or.us)
National Marine Fisheries Service (marc.liverman@noaa.gov)

Oregon
Kate Brown, Governor

Department of State Lands
775 Summer Street NE, Suite 100
Salem, OR 97301-1279
(503) 986-5200
FAX (503) 378-4844
www.oregon.gov/dsl

November 19, 2021

Jennifer Mongolo and Patricia Farrell
City of Salem
Public Works Department, rm 325
555 Liberty St
Salem, OR 97301-3513

RE: Final release of credits for Waln Creek Stream Mitigation Bank

Dear Jennifer and Patricia;
The Department is pleased to approve the Long Term Management Plan dated April 2021 on the cover, finalized May 17, and reviewed at the May 20, 2021 IRT meeting. I apologize for my delay in responding to your submittal; it does not reflect any concerns with the quality of the long-term plan.

The project now qualifies for the final release of credits. The final 25% of credits includes 2194 instream credits and 492 riparian credits for a total of 2,286. This brings the total credits released for sale or transfer to 100%, consisting of 8776 instream and 1965 riparian credits, for a total of 10,741. Please note you will also need to secure the credit release from the Corps before any of these credits can be sold as compensatory mitigation for Corps permits.

We appreciate that the City voluntarily pioneered a unique method of quantifying stream impacts and mitigation measures. We are also aware that there has only been a single use of mitigation credits from the bank to date, possibly due to difficulties determining the necessary number of debits using the Salem stream mitigation calculation protocol in the Bank Instrument, or possibly due to the small service area. We are open to future conversion of the resource gains at the Waln Creek site to the new stream credit accounting protocol that is under development by DSL, the Corps, and EPA. Once this protocol becomes available, you may seek an amendment of the MBI to include the accounting and perhaps expand the service area.

Since construction in 2012 the site has met performance standards, vegetation has established as expected, and the re-aligned channel is stable and performing the expected functions. As long as credits are available for sale or transfer, we will need to confirm that resource gains are still meeting expectations. This may be accomplished with photo monitoring and/or periodic walk-throughs by agency staff. If there is evidence of deterioration of the restored functions and values, DSL may request repair and further monitoring before credit sales. We encourage ongoing protection of trees from beaver damage to retain shade over the stream.

For each credit use or sale, please email a copy of the receipt to each agency's permit coordinators and to the mitigation bank leads, Thomas Sentner for the Corps and Grey Wolf for DSL. Each receipt should identify the date, applicant name, project name, DSL and/or Corps

permit file numbers, and the number of instream and riparian credits used or sold. If you have any questions, please contact Grey Wolf at 503-986-5321. Thank you for your efforts to maintain the success of the stream mitigation project.

Sincerely,

Dana Field
Mitigation Specialist

EC: Thomas Sentner, Andrea Seager, Corps of Engineers
Grey Wolf, Carrie Landrum, DSL
IRT

DEPARTMENT OF THE ARMY
U.S. ARMY CORPS OF ENGINEERS, PORTLAND DISTRICT
P.O. BOX 2946
PORTLAND, OR 97208-2946

November 26, 2021

Regulatory Branch
Corps No. NWP-2011-100

Jennifer Mongolo and Patricia Farrell
City of Salem
Public Works Department
555 Liberty Street Southeast, Room 325
Salem, Oregon 97301-3513

Dear Jennifer Mongolo and Patricia Farrell:

The U.S. Army Corps of Engineers (Corps) received your April 20, 2021 letter requesting the final credit release for the Waln Creek Enhancement and Battle Creek Culvert Removal Project (Project). You have requested the Corps release up to 100% credit related to the credit release schedule located in the Salem Umbrella Mitigation Bank Instrument, Appendix A, entitled “Waln Creek Enhancement and Battle Creek Culvert Removal Project Mitigation Plan.” (Plan) To date, the Corps has released a total of 6,582 instream credits and 1,473 riparian credits for a total of 8,055 credits, representing seventy-five percent (75%) of the total credits for the Project.

The long-term management plan (LTMP) has been reviewed by the IRT and no concerns were raised. The Corps approves the LTMP. Additionally, all performance standards continue to be met as of the year 2020 report.

Based on expectations set in the Plan, including Section IX. Credit Determination and Credit Release Schedule, the final 2,194 instream credits and 492 riparian credits for a total of 2,286 (25%) credits will be released based on approval of the LTMP. This amount reflects the 100% release, consisting of 8,776 instream and 1,965 riparian credits, for a total of 10,741 credits.

Please continue to provide annual documentation of site performance until all credits have been sold. When credits are sold, please ensure you provide a copy of the sales receipt to the Corps. You may mail them to the above address, to the attention of Thomas Sentner or you may e-mail them to him at the e-mail below.

If you have any questions regarding this credit release, please contact Thomas Sentner by phone at (503) 808-4959 or e-mail: Thomas.f.sentner@usace.army.mil.

Sincerely,

For: William D. Abadie
Chief, Regulatory Branch

Enclosure

cc:

Oregon Department of State Lands (Grey Wolf, Grey.Wolf@dsl.state.or.us)
Oregon Department of Environmental Quality (Haley Teach, haley.teach@state.or.us)
Oregon Department of Fish and Wildlife (Joy Vaughan, joy.r.vaughan@state.or.us)
U.S. Environmental Protection Agency (Tracie Nadeau, nadeau.tracie@epa.gov)
U.S. Fish and Wildlife Service (Shauna Everett, shauna_everett@fws.gov)
National Marine Fisheries Service (Kate Wells, Kathleen.Wells@noaa.gov)

ATTACHMENT 3

Credit Receipt

Salem Stream Mitigation Bank

The bank sponsor will complete a credit receipt using the template below for every sale or transfer of credits, and immediately provide a copy of each receipt to both co-chair agencies, regardless of jurisdiction.

Date: July 18, 2016
Number of instream
credits sold:0
Number of riparian
credits sold:58
Permittee Name: Jim Bonnet/City of Salem
Project Name: Summer Street Culvert Replacement
Corps Permit Number: NWP 2013-286-1
DSL Permit Number: 58725-GP
Other Project Identifier: Summer Street at Clark Creek (T 7S, R 3W, Section 34)
Impact HUC: 170900070301

Please provide impact area and best professional judgment function and value rating for each impact site in the following table. Provide a written discussion of rationale for function and value ratings using direct measurement or observation of indicators.(Note: see Joint Permit Application for discussion of functions and values rating).

		Functions and Values Ratings			
Impact Site	Impact Area	Hydrologic	Geomorphic	Biological	Chemical and Nutrient
Clark Creek	0.015 acre	Modified, perennial	Low-moderate	Moderate	Low

By selling credits to the permittee, CITY OF SALEM, hereby assumes responsibility for fulfilling the mitigation obligation of the Permit(s) listed above.

Sponsor signature: _____
Peter Fernandez, Public Works Director, City of Salem

ATTACHMENT 4: 2016 SUMMARY TABLE FOR SUMMER ST CULVERT REPLACEMENT

CITY OF SALEM STREAM MITIGATION PROCESS (Ver. 1.0) - Page 5 - PROJECT SUMMARY AND SCORES

Project Name:	Summer Street Culvert at Clark Creek	Date:	07/01/16
Impact Stream Name:	Clark Creek	Reach #:	1
Mitigation Stream Name:	Clark Creek	Reach #:	1
Location:	2925 & 2960 Summer Street SE (north of Vista Ave SE)	Evaluator(s):	JVS/SE

Table 5A: Project Summary

Instream Impact Duration:	Permanent		In-Kind:	Category 1	Location:	Off-site

Type of Instream Impact:	Span Structure	Utility Crossings	Armoring	Impoundment	Morphologic	Culvert/Pipe	
Instream Impact Length:			4			20	26.6

Riparian Impact:									
	Low	Left Herb/Low Shrub	182	Left Tree/Tall Shrub		Right Herb/Low Shrub	18	Right Tree/Tall Shrub	
	Medium	Left Herb/Low Shrub		Left Tree/Tall Shrub		Right Herb/Low Shrub		Right Tree/Tall Shrub	
	High	Left Herb/Low Shrub		Left Tree/Tall Shrub		Right Herb/Low Shrub		Right Tree/Tall Shrub	

INSTREAM NET IMPROVEMENT FACTORS - ABOVE BANKFULL STAGE				
Laying back bank:	Right Side	40	Left Side	41

INSTREAM NET IMPROVEMENT FACTORS - AT OR BELOW BANKFULL STAGE									
Bioengineering:	Left Side		Right Side		Changing straightened channel to an appropriate conformation:		Adding habitat structures		
Removal of bank armoring:	Right Side		Left Side		Replacing undersized culvert with fish-passable culver or bridge:	41.5	Removing dams or adding fish ladders		
Removing man-made debris below ordinary high water:					Increasing culvert size or adding culverts to increase floodplain connectivity:				
Bench Creation:	Left Side		Right Side		Laying back bank:	Right Side 40	Left Side	20	

Riparian area to be enhanced:									
	Low	Left Herb/Low Shrubs	228	Left Tree/Tall Shrub		Right Herb/Low Shrub	290	Right Tree/Tall Shrub	
	Medium	Left Herb/Low Shrubs		Left Tree/Tall Shrub		Right Herb/Low Shrub		Right Tree/Tall Shrub	

Table 5B: Summary of Scores

Total Instream Debits (from Table 2):	H	190
Total Riparian Debits (from Table 2):	I+J	56
Total Debits (from Table 2):	K	247
Total Instream Credits (from Table 3A):	JJ	166
Total Riparian Credits (from Table 4B):	PP	23
Total Credits: FF+SS	QQ	189

Mitigation balance: a negative number indicates how much additional mitigation credit is needed; a positive number indicates the amount of surplus mitigation credit	58

At least 25% of the mitigation must be instream and below the bankfull elevation. Required credits are:		47.60
Instream mitigation (below bankfull elevation) requirement:	Exceeded by:	71
	Insufficient by:	

1. MITIGATION MONITORING REPORT COVER SHEET OREGON DEPARTMENT OF STATE LANDS

1: Waln Creek/ Battle Creek Riparian Enhancement Project--- Identifiers:

DSL Permit #	47781-RF	**COE Permit #**	2011-100	**Permittee**	City of Salem
County	Marion	**Report Date:**	November 1, 2022	**Monitoring Year**	10
Date Removal-Fill Activity Completed:		Summer 2012			
Date mitigation was completed:		**Grading**	Summer 2012	**Planting**	Fall-Winter 2012-13
Report submitted by:		Pacific Habitat Services, Inc.			

2: Monitoring Report Purpose:

This monitoring report is for monitoring a project that includes: (check all that apply):

- ☐ Compensatory **freshwater** wetland mitigation for permanent wetland impacts.
- ☐ Compensatory **estuarine** wetland mitigation for permanent wetland impacts.
- ☒ **Only non-wetland** compensatory mitigation.
- ☐ **Only mitigation for temporary** impacts that had a monitoring requirement.
- ☐ **Voluntary** wetland enhancement, creation or restoration (General authorization or individual permit) not funded with money from our wetland mitigation revolving fund.
- ☐ Voluntary wetland enhancement, creation or restoration (General authorization or individual permit) funded with money from **our wetland mitigation revolving fund**.
- ☐ **Mitigation Bank** Report
- ☒ Other **Stream Mitigation Bank**

3: Results:

	Performance Standards	Fully Met? (Y/N)	Comments/Reason for shortfall (mark NA if doesn't apply this year) *
#31	**Native Species Cover:** The cover of native species, as defined in the USDA Plants Database, in the herbaceous stratum is at least 60%.	N	Sampling of 1^{m2} nested quadrats indicated that approximately **30%** of the herbaceous stratum is comprised of **native** species.
#32	**Invasive Species Cover:** The cover of invasive species is no more than 10%. A plant species should automatically be labeled as invasive if it appears on the current ODA noxious weed list, plus known problem species including *Phalaris arundinacea, Mentha pulegum, Holcus lanatus, Anthoxanthum odoratum*, and the last crop plant if it is non-native. Non-native plants should be labeled as such if they are listed as non-native on the USDA Plants Database. Beginning in Year 2 of monitoring, DSL will consider a non-native plant species invasive if it comprises more than 15% cover in 10% or more of the sample plots in any habitat class, and increases in cover or frequency from the previous monitoring period. Plants that meet this definition will be considered invasive for all successive years of monitoring. After the site has matured to the stage when desirable canopy species reach 50% cover, the cover of invasive understory species may increase but may not exceed 30%.	N	Sampling of 1^{m2} nested quadrats indicated that **17.4%** of the herbaceous stratum is comprised of **invasive** non-native species, with the inclusion of *Holcus lanatus*.

	Performance Standards	Fully Met? (Y/N)	Comments/Reason for shortfall (mark NA if doesn't apply this year) *
#34	**Woody Vegetation:** The density of woody vegetation is at least 1,600 live native plants (shrubs) and/or stems (trees) per acre OR the cover of native woody vegetation on the site is at least 50%. Native species volunteering on the site may be included, dead plants do not count, and the standard must be achieved for 2 years without irrigation.	Y	Sampling of 15'R plots indicates an estimated density of **3,806 plants per acre**.

4: Further Actions:

Remedial work recommended	Yes ☒	No ☐
Deed Restriction or other protection instrument attached	Yes ☐	No ☒
Final Monitoring Report?	Yes ☐	No ☐
Requesting release or partial release of financial security?	Yes ☐	No ☒

** see report for detailed information*

2. WALN CREEK STREAM MITIGATION BANK OVERVIEW

A. Location

The mitigation site is located at:

Lat: 44.864813^0 Long: -123.023656^0

The site can be reached via Commercial Street SE (Business Route 99) south of its intersection with Kuebler Boulevard. Continue south to Waln Street, then turn right (heading west). The Waln Creek channel is crossed approximately 1,000 feet west of Commercial Street.

B. Stream Banking Mitigation Goals and Objectives

The Waln Creek/ Battle Creek riparian enhancement mitigation site was intended to replace the functions and values lost over many years as a result of channelization and vegetation manipulation associated with its previous land uses, most recently as a golf course. In addition**,** an interagency agreement was brokered by the City of Salem to establish a Stream Mitigation Bank that included the Waln Creek channel improvements. Refer to the *Salem Stream Mitigation Bank/ Waln Creek Enhancement and Battle Creek Culvert Removal Project Prospectus* (PHS 2013) and the *Umbrella Mitigation Bank Instrument* (City of Salem 2012) for further details.

Riparian Vegetation Success Criteria

The recent request by DSL emphasized that certain success criteria included in the DSL removal fill permit and the bank instrument still must be met at the mitigation bank site; these standards are:

No.	Condition	DSL Performance Standard
31	Native Species Cover	The cover of native species, as defined in the USDA Plants Database, in the herbaceous stratum is at least 60%.
32	Invasive Species Cover	The cover of invasive species is no more than 10% [*details on what may constitute an invasive are included on cover sheet above*]
34	Woody Vegetation	The density of woody vegetation is at least 1,600 live native plants (shrubs) and/or stems (trees) per acre OR the cover of native woody vegetation on the site is at least 50%....

These standards are further addressed in Section 3: Results.

C. Monitoring Methods

Vegetation Monitoring

Vegetation monitoring has continued to follow the routine methods specified by DSL's Removal-Fill Guidelines (see *Routine Monitoring Guidance for Vegetation*, 2009). Since DSL requested that a relatively open area in the northern portion of the site be resurveyed in 2022, the number of sampling plots was reduced accordingly. A total of seven 15-foot radius circular plots were revisited to estimate woody plant survival and density within the 0.78-acre study area. Table 1 below lists the coordinates for each plot, while the sampling layout is depicted in Figure 2 (Appendix B).

Table 1. Easting and Northing Coordinates* for Sample Plots within the Waln Creek Stream Mitigation Bank site in Salem, OR

Sample Plot	Easting	Northing	Comments
1 [old 3]	7547949.28	446927.46	
2 [old 4]	7547949.28	446831.41	
3 [old 5]	7547949.28	446774.75	Note: plot center was offset 30' to south due to large hornet's nest within plot
4 [old 25]	7547864.28	446942.42	
5 [old 24]	7547864.28	446768.36	
6 [old 23]	7547873.46	446566.78	
7 [old 22]	7547873.33	446510.49	

**Coordinate System: Oregon State Plane North NAD83 (international feet)*

Groundcover development was also assessed within a total of 14 one-meter^2 quadrats, with the nested plots positioned at opposite ends of each 15'-R circular plot.

Data collected in the woody plant sampling plots was then tabulated in an MS Excel spreadsheet (Appendix A), and the mean, standard error, standard deviation, and confidence interval (for an 80% confidence level) of the sampled population were calculated for the total live count for all plots.

Similarly, the groundcover plots were tabulated and analyzed for relative success per the routine DSL performance standards for groundcover development. These standards include cover by native woody and herbaceous species, as well as cover by non-native and invasive species.

3. RESULTS

A. Vegetation Standards

Data from vegetation sampling (for both groundcover and woody species) has been tabulated and is included in Appendix A. Relative success of each performance standard is summarized below.

Performance Standard #31 Result:

Native Species Cover: *The cover of native species, as defined in the USDA Plants Database, in the herbaceous stratum is at least 60%.*

Summary Metric:

This standard was not met; the 1m^2 sampling plots provided a mean cover of approximately **30%** by native herbaceous species (80% CI).

Performance Standard #32 Result:

Invasive Species Cover: *The cover of invasive species is no more than 10%. A plant species should automatically be labeled as invasive if it appears on the current ODA noxious weed list, plus known problem species including Phalaris arundinacea, Mentha pulegium, Holcus lanatus, Anthoxanthum odoratum, and the last crop plant if it is non-native. Non-native plants should be labeled as such if they are listed as non-native on the USDA Plants Database. Beginning in Year 2 of monitoring, DSL will consider a non-native plant species invasive if it comprises more than 15% cover in 10% or more of the sample plots in any habitat class, and increases in cover or frequency from the previous monitoring period. Plants that meet this definition will be*

considered invasive for all successive years of monitoring. After the site has matured to the stage when desirable canopy species reach 50% cover, the cover of invasive understory species may increase but may not exceed 30%

Summary Metric:

This standard was not met, based on the inclusion of *Holcus lanatus* as an invasive species at this site, with the $1m^2$ sampling plots providing a mean cover of **17.4%** (80% CI) for invasive herbaceous species. No invasive woody species were detected within the sampling plots this year.

Performance Standard #34 Result:

Woody Vegetation: *The density of woody vegetation is at least 1,600 live native plants (shrubs) and/or stems (trees) per acre OR the cover of native woody vegetation on the site is at least 50%. Native species volunteering on the site may be included, dead plants do not count, and the standard must be achieved for 2 years without irrigation.*

Summary Metric:

This standard has been met, with the 15'-R sampling plots providing an estimated density of approximately **3,835 plants per acre** (based on an estimated 2,996 stems within the 0.78-acre study area).

Table 3 lists the woody species originally specified for the Waln Creek/Battle Creek riparian mitigation area, along with the estimated number of plants surviving in September 2022. A more detailed breakdown of actual counts and associated statistics is included in Appendix A.

Table 3. Summary of 2022 Woody Plant Estimates for the North section of the Waln Creek Stream Mitigation Bank site in Salem, OR

Botanical Name	Common Name	September 2022 Sampling Estimates*
TREES		
Alnus rhombifolia	White alder	14
Crataegus douglasii	Douglas hawthorn	96
Fraxinus latifolia	Oregon ash	315
Malus fusca	Pacific crabapple	7
Populus balsamifera spp. trichocarpa	Black cottonwood	274
Thuja plicata	Western red cedar	0
SHRUBS		
Cornus sericea	Red-osier dogwood	41
Lonicera involucrata	Twinberry	206
Physocarpus capitatus	Pacific ninebark	69
Rosa nutkana, R. pisocarpa[1]	Nootka rose, clustered rose	624
Sambucus cerulea	blue elderberry	0
Spiraea douglasii	Douglas spirea	809
Symphoricarpos albus	snowberry	542
TOTAL WOODY PLANTS (estimated)		**2,996****

**Based on extrapolated values from overall mean of 62.43 plants per sampling unit [factor of 33,926 sf (overall area)/706 sf (sampling unit)=48.05]; individual spp. counts have been similarly inferred*

***As shown on the attached spreadsheet in Appendix A, the extrapolated mean (2,996) may vary based on the assigned confidence interval. For example, at a sampling CI of 80%, the estimated count could range anywhere from 2,476 to 3,516 for the area in question.*

[1]Many but not all rose plantings tallied were in fruit, and those could be positively identified as R. pisocarpa. Still, at least a portion of the non-fruiting plants are likely to be R. nutkana.

4. CONCLUSIONS AND RECOMMENDATIONS

A. Project Status

Groundcover Development

Groundcover estimates within the riparian planting area fall below the standard for native herbaceous cover (30% versus the >60% standard). In addition, the cover standard for invasive herbaceous species (<10%) has not been met as well.

The dominant native groundcover species remains meadow barley, with spike bentgrass and tufted hairgrass also common in places. The most common non-natives and/or invasives are common velvetgrass, birds-foot trefoil, and reed canarygrass. The latter species dominates both banks of Waln Creek.

Woody Plant Density

Woody plant survival in 2022 continues to be high, with relatively few dead plants encountered. Most importantly, the estimated stem density is approximately **3,835 stems per acre** for the 0.78-acre study area, significantly above the performance target of 1,600 stems per acre.

B. Recommendations

Beaver Damage Control and Remedial Plantings

Despite the high stem densities observed in 2022, additional tree plantings are especially recommended for areas primarily vegetated by herbaceous groundcover and shrubs of lower stature (especially in closer proximity to Waln Creek), to increase stream shading.

In addition, the potential for plant losses due to beaver activity remains an ongoing concern. Recent steps have been taken to offset those losses, with numerous tree saplings as well as willow and red-osier cuttings installed along the channel within protective wire mesh exclosures.

The City intends to continue this program of planting additional willow, red osier, and cottonwood stakes along the channel banks in order to enhance beaver-impacted areas. Additional tree plantings are planned for the adjacent floodplain terraces as well; likely plantings include white alder, black cottonwood, and ponderosa pine, among other species.

Weed Control

Invasive species persist in scattered locations across the site, most notably the reed canarygrass monoculture along the bed and banks of Waln Creek. Weed control efforts should be continued on an as-need basis to detect and control any emerging populations of this and other species through either physical removal or chemical spot treatments. Invasives control should prioritize any efforts that lessen competition with desirable plantings.

Unfortunately, much of the groundcover in the revised study area away from Waln Creek includes non-native grasses (most notably velvetgrass and bentgrasses), which are widespread within a diverse mixed matrix. This matrix also includes a variety of desirable woody species (mostly lower statured shrubs such as snowberry and roses) as well as native grasses (meadow barley, spike bentgrass, and tufted hairgrass), making any kind of intensive invasives control, especially with herbicides, problematic at best.

Even when applied through spot-spraying or wick applications, herbicide applications within such a matrix are most likely to have negative effects on adjacent, desirable woody and herbaceous species. Accordingly, herbicides are not recommended except where applications can be reliably restricted to target plants only. Applications are likely to be most successful on this site in the near-monoculture stands of reed canarygrass along Waln Creek, within scattered Himalayan blackberry thickets, and in the few locations where non-native grasses clearly dominate. Otherwise, mowing of these non-native grasses prior to seed set may be the more practicable option.

Remedial Seeding

Use of a broad-spectrum herbicide (e.g. aquatic approved glyphosate such as Rodeo) in areas now dominated by reed canarygrass or other near-monocultures will likely result in areas of bare soil. Protecting these areas from erosion may warrant short-term use of weed-free straw or other ground covering; however, to effectively compete with recolonizing weeds, applying a native seed mix in those areas is recommended. An appropriate seed mix for this site may include spike bentgrass, meadow barley, tufted hairgrass, and slender wildrye, as well as a variety of native forbs.

5. MAPS AND FIGURES

Figure 1 depicts the overall site plan for the Waln Creek/Battle Creek riparian enhancement area. Figure 2 provides the original planting plan overview, while Figure 3 depicts the revised study area with sample plot and photopoint locations overlain on a recent aerial photo. Maps and figures are included in Appendix B.

6. APPENDICES

Appendix A: Vegetation Data
Appendix B: Maps and Figures
Appendix C: Photodocumentation

Appendix A

Vegetation Data

(PHS #7609) Monitoring for Waln Creek riparian corridor (North segment), Salem (data collected on September 1, 2022)

Specified Plantings			Quadrats										
R9-IND Status	Plant Species	Common Name	1	2	3	4	5	6	7	Mean (by spp.)	plants per SF	inferred plant #'s	STDEV BY SPP.
			No. of live plants										
TREES													
FAC	*Alnus rhombifolia*	White alder	1	0	1	0	0	0	0	**0.29**	0.0004	14	0.49
FAC	*Crataegus douglasii*	Black hawthorn	5	3	1	3	0	1	1	**2.00**	0.0028	96	1.73
FACW	*Fraxinus latifolia*	Oregon ash	4	2	4	14	11	10	1	**6.57**	0.0093	315	5.03
FACW	*Malus fusca*	Pacific crabapple	0	0	1	0	0	0	0	**0.14**	0.0002	7	0.38
FAC	*Populus balsamifera ssp. trichocarpa*	black cottonwood	1	6	1	23	3	4	2	**5.71**	0.0081	274	7.83
SHRUBS													
FACW	*Cornus sericea*	Red-osier dogwood	4	0	1	1	0	0	0	**0.86**	0.0012	41	1.46
FAC	*Lonicera involucrata*	Twinberry	8	4	15	0	0	3	0	**4.29**	0.0061	206	5.56
FAC	*Physocarpus capitatus*	Pacific ninebark	1	0	7	1	0	1	0	**1.43**	0.0020	69	2.51
FAC	*Rosa nutkana, R. pisocarpa*	Nootka rose, swamp rose	2	28	14	19	3	19	6	**13.00**	0.0184	624	9.73
FACW	*Spiraea douglasii*	Douglas' spirea	4	22	14	20	20	18	20	**16.86**	0.0238	809	6.20
FACU	*Symphoricarpos albus*	snowberry	50	7	16	0	0	2	4	**11.29**	0.0160	542	17.95
										Overall Mean			**Overall SD**
		TOTAL LIVE	**80**	**72**	**75**	**81**	**37**	**58**	**34**	**62.43**	0.0883	2996	19.91

Descriptive Statistics	
Mean	62.42857143
Standard Error	7.524110904
Median	72
Mode	#N/A
Standard Devia	19.90692629
Sample Varianc	396.2857143
Kurtosis	-1.47955124
Skewness	-0.73384044
Range	47
Minimum	34
Maximum	81
Sum	437
Count	7
Confidence Lev	10.83288192

Notes:			
For 80% Confidence Level, mean count per sample can range from 51.60 to 73.26	51.60	0.0730	2476
For 80% Confidence Level, the extrapolated mean total of 2,969 plants can actually vary from 2,476 to 3,516 plants.	73.26	0.1036	3516

Site: Wahn/Battle Creek Riparian Enhancement site (Northern section), Salem

Sample Date: September 1, 2022

Shrub-Dominated and Forested Wetland Habitat Unit

Percent Cover per sample plot

Species	Origin (N, NN, I)	Wetland Status (1 - 5)	1 NE	1 SW	2 NE	2 SW	3 NE	3 SW	4 NE	4 SW	5 NE	5 SW	6 NE	6 SW	7 NE	7 SW	Row Average
Native Herbaceous Species *species-latin name*																	
Agrostis exarata	N	2	2	2	30	20	0	0	0	12	25	10	0	25	0	10	9.7
Carex sp.	N	2	0	0	12	0	0	0	0	0	0	0	0	0	0	0	0.9
Deschampsia cespitosa	N	2	0	0	0	0	0	0	0	0	10	15	0	0	0	0	1.8
Festuca occidentalis (?)	N	3	0	0	0	0	0	0	0	0	0	0	0	3	0	0	0.2
Hordeum brachyantherum	N	2	5	2	10	10	0	5	5	5	5	0	5	15	80	25	12.3
Juncus effusus	N	2	20	2	0	0	15	10	0	0	0	0	0	0	0	0	3.4
Rubus ursinus	N	4	0	0	0	0	0	0	0	0	0	0	25	0	0	0	1.8
Invasive Herbaceous Species *species-latin name*																	
Phalaris arundinacea	I	2	0	0.5	0	0	0	0	5	0	0	0	2	0	5	0	0.9
Holcus lanatus	NN	3	25	55	25	0	10	25	3	5	0.5	0	12	40	15	15	16.5
Non-Native Herbaceous Species *species-latin name*																	
Agrostis stolonifera/ A. capillaris	NN	3	3	2	1	0	0	0	0	0	0	0	0	0	0	5	0.8
Daucus carota	NN	4	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0.0
Hypochaeris radicata	NN	4	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0.0
Leucanthemum vulgare	NN	4	0	0	0	0	0	0	0	0	0	0	0	0	0	10	0.7
Lolium perenne	NN	3	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0.0
Lotus corniculatus	NN	3	10	5	40	0	0	5	0	0	70	0	15	0	2	2	10.6
Parentucellia viscosa	NN	3	0	0	0	0	0	1	0	0	0	0	0	0	0	0	0.1
Native Shrub and Tree Species *species-latin name*																	
Alnus rhombifolia	N	3	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0.0
Cornus sericea	N	2	0	0	0	0	0	70	0	5	0	0	0	0	0	0	5.4
Crataegus douglasii	N	3	20	0	0	0	0	0	0	0	0	0	25	0	0	12	4.1
Fraxinus latifolia	N	2	0	2	0	0	0	0	0	5	0	0	0	0	0	0	0.5
Lonicera involucrata	N	3	25	0	0	0	0	0	0	0	0	0	0	0	0	0	1.8
Physocarpus capitatus	N	3	0	0	0	0	25	0	0	0	0	0	25	0	0	0	3.6
Populus balsamifera ssp trichocarpa	N	3	0	0	0	40	0	0	0	0	0	0	0	0	0	0	2.9
Rosa nutkana/R. pisocarpa	N	3	0	0	0	0	20	0	8	0	0	0	0	0	0	0	2.0
Spiraea douglasii	N	2	0	0	0.5	50	15	0	80	75	0.5	80	0	20	0.5	20	24.4
Symphoricarpos albus	N	4	0	30	0	0	0	15	0	0	0	0	0	0	0	0	3.2
Non-Native Shrub and Tree Species *species-latin name*																	
			0	0	0	0	0	0	0	0	0	0	0	0	0	0	0.0
			0	0	0	0	0	0	0	0	0	0	0	0	0	0	0.0
Invasive Shrub and Tree Species *species-latin name*																	
Rubus armeniacus	I	3	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0.0
Bare Substrate																	
bare soil			0	0	0	0	15	0	0	0	0	0	0	0	0	0	1.1

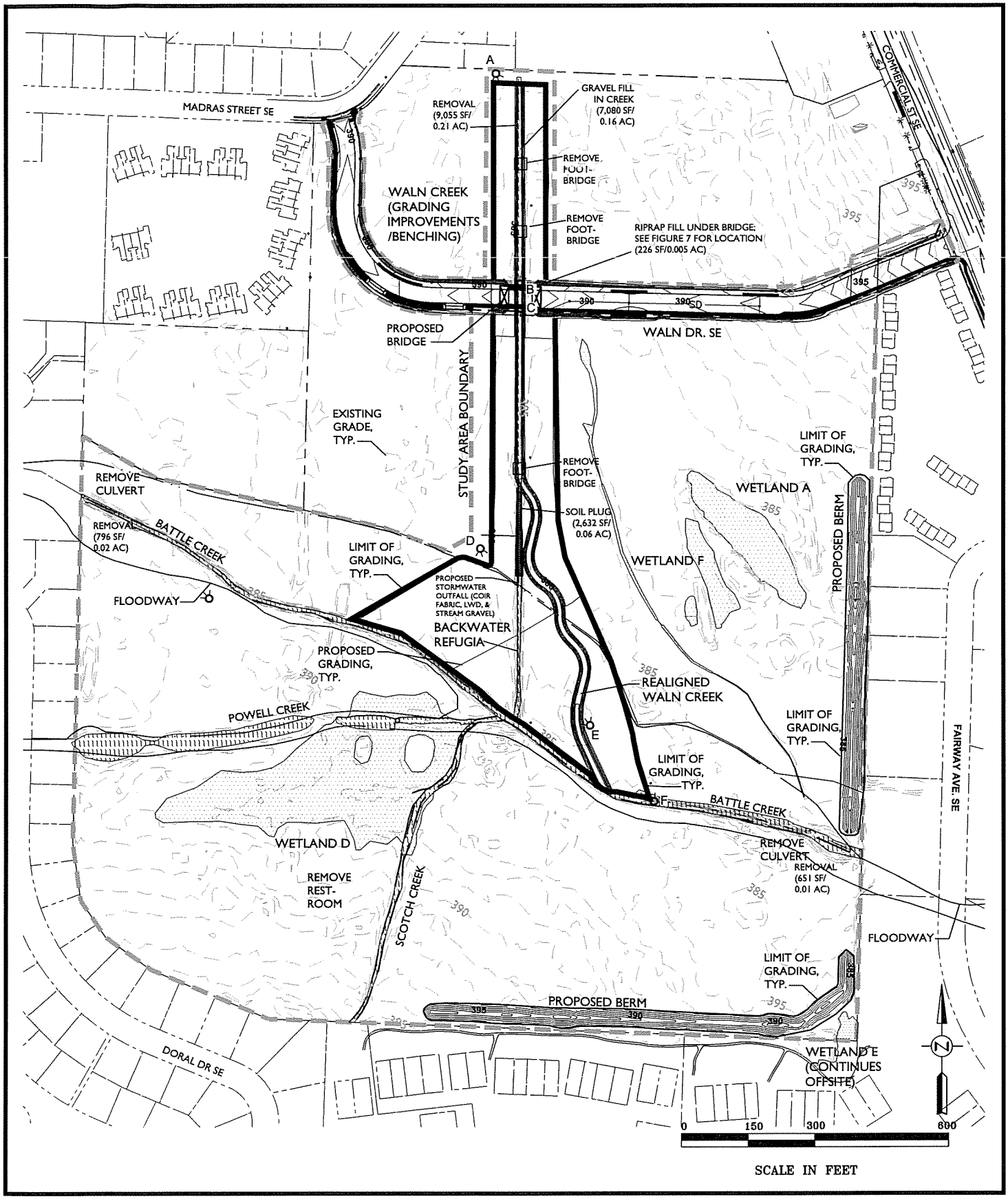
Plant Count (Shrubs) + Stem Count (Trees)---in 15'R plots

Native Shrub and Tree Count			1		2		3		4		5		6		7		
species-latin name																	
Alnus rhombifolia			1		0		1		0		0		0		0		0.3
Cornus sericea			4		0		1		1		0		0		0		0.9
Crataegus douglasii			5		3		1		3		0		1		1		2.0
Fraxinus latifolia			4		2		4		14		11		10		1		6.6
Lonicera involucrata			8		4		15		0		0		3		0		4.3
Malus fusca			0		0		1		0		0		0		0		0.1
Physocarpus capitatus			1		0		7		1		0		1		0		1.4
Populus balsamifera ssp trichocarpa			1		6		1		23		3		4		2		5.7
Rosa nutkana/R. pisocarpa			2		28		14		19		3		19		6		13.0
Spiraea douglasii			4		22		14		20		20		18		20		16.9
Symphoricarpos albus			50		7		16		0		0		2		4		11.3
Total stems (per plot)			**80**		**72**		**75**		**81**		**37**		**58**		**34**		**62.4**

Routine Performance Standards	**Threshold**		1 NE	1 SW	2 NE	2 SW	3 NE	3 SW	4 NE	4 SW	5 NE	5 SW	6 NE	6 SW	7 NE	7 SW	**Habitat Average**	**Standard Error**	**Standard Met?**
Cover of Native Herbaceous Species	**>=60%**		27	6	52	30	15	15	5	17	40	25	30	43	80	35	**30.00**	**5.3**	**NO**
Lower CI (80%)																	**23.19**		
Upper CI (80%)																	**36.81**		
Cover of Invasive Herbaceous Species	**<=10%**		25	56	25	0		25	8	5	1	0	14	40	20	15	**17.92**	**5**	**NO**
Lower CI (80%)																	**12.04**		
Upper CI (80%)																	**23.81**		
Cover of Invasive Shrubs and Trees	**<=10%**		0	0	0	0	0	0	0	0	0	0	0	0	0	0	**0.00**	**0**	**YES**
Lower CI (80%)																	**0.00**		
Upper CI (80%)																	**0.00**		
Bare Substrate	**<=20%**		0	0	0	0	15	0	0	0	0	0	0	0	0	0	**1.07**	**1**	**YES**
Lower CI (80%)																	**-0.30**		
Upper CI (80%)																	**2.45**		
Native Diversity (all layers)	**6**																		
Prevalence Index--All strata	**<3.0**		2	3	3	2	2	2	2	2	3	2	2	2	2	2	**2.30**		**YES**
Weighted Prevalence Index			203	318	303	280	195	300	203	219	293	210	266	249	212	176			
Sum of plant cover			110	100	119	120	85	131	96	107	111	105	107	103	98	99			
Density of Woody Vegetation	>=1,600 per acre	Average per acre	4936		4442		4627		4998		2283		3579		2098		3851.83	N/A	YES
Plot Area (shrub/tree plot)	706																		
Per acre multiplier: Input 4,047 if plot area entered in B84 is in sq.meters or 43,560 for	43560																		
Cover of Native Shrubs and Trees	>=50% (alternative)		45	32	1	90	60	85	88	85	1	80	50	20	1	32	38.32	9	
Lower CI (80%)																	26.55		
Upper CI (80%)																	50.09		

Appendix B

Maps and Figures



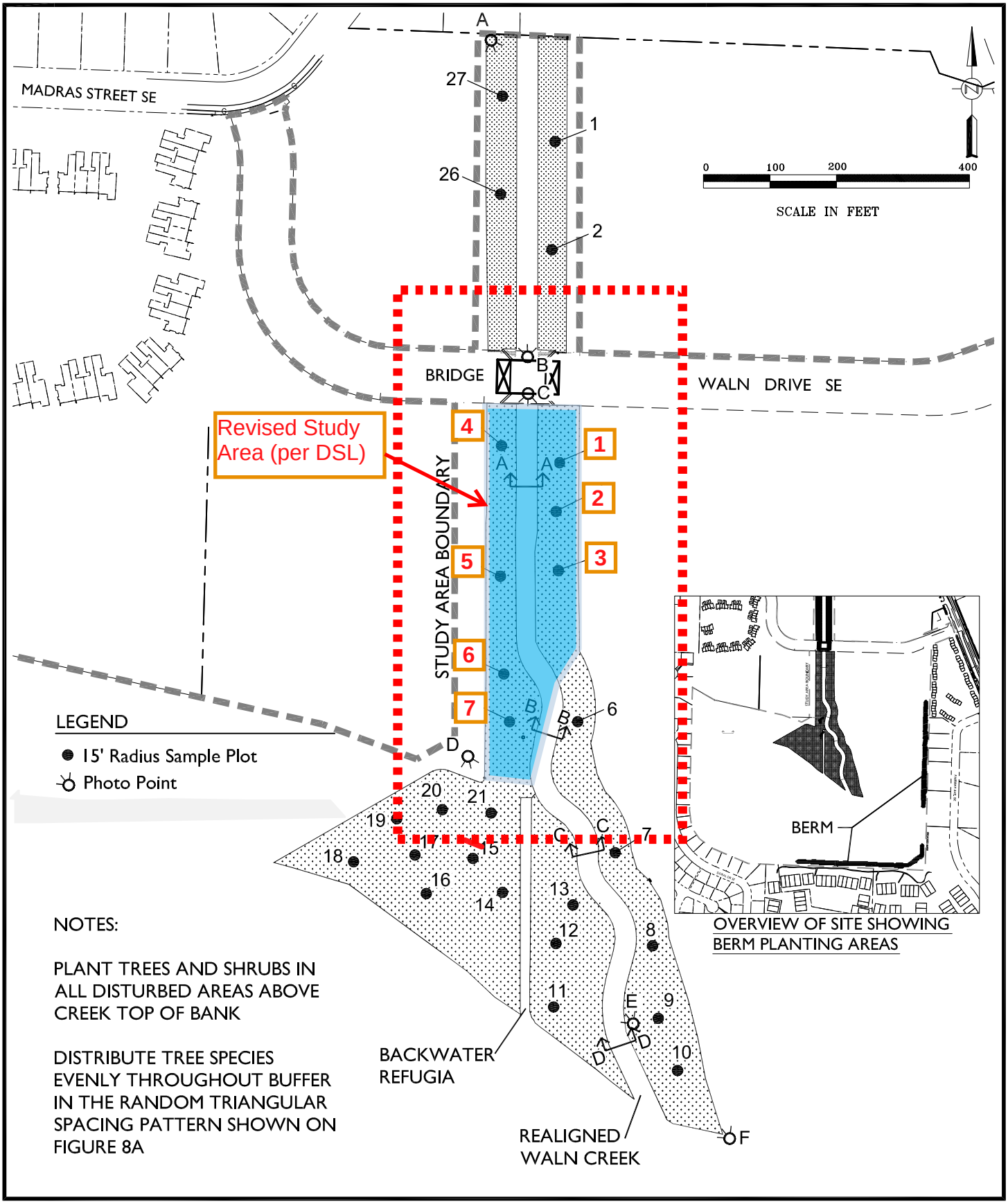
5187
12/16/13

Overall Grading and site plan at the Waln Creek and Battle Creek enhancement project in Salem, Oregon, showing limits of riparian buffer enhancement area. Provided by OTAK, Inc., 2011.

FIGURE 1

Pacific Habitat Services, Inc.

X:\Project Directories\5100\5187 Battle Creek, Salem monitoring\AutoCAD\Plot Dwgs\Fig1-Grading and Site Plan.dwg, 12/18/2013 1:22:19 PM



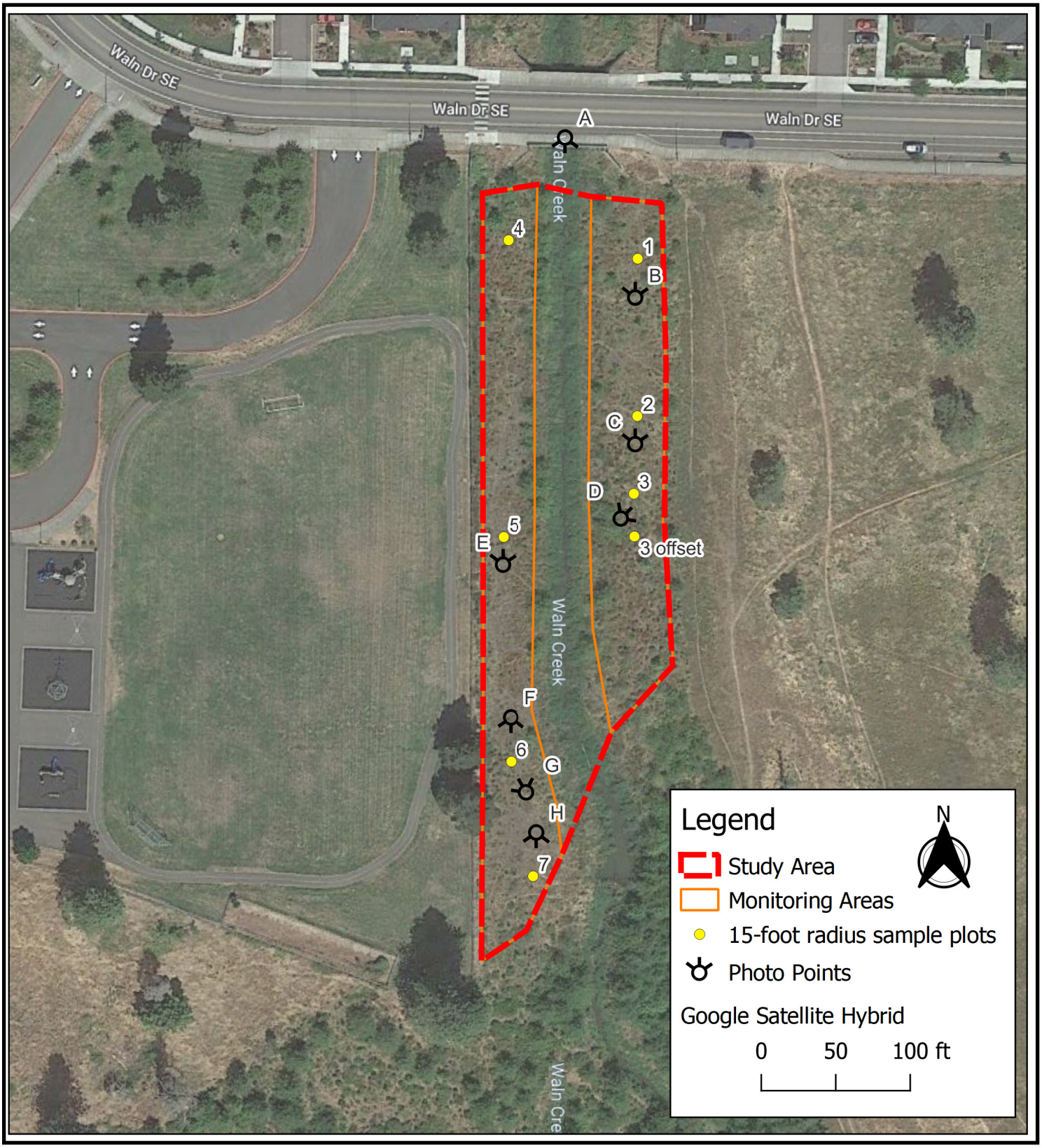
5187
9/20/2016

Riparian planting plan overview at the Waln Creek and Battle Creek enhancement project in Salem, Oregon, showing sample plot and photo point locations.

FIGURE 2

Pacific Habitat Services, Inc.

X:\Project Directories\5100\5187 Battle Creek, Salem monitoring\AutoCAD\Plot Dwgs\Fig1-Grading and Site Plan.dwg, 9/20/2016 2:55:52 PM



#7609
10/31/2022

Pacific Habitat Services, Inc.
9450 SW Commerce Circle, Suite 180
Wilsonville, OR 97070

Waln Creek Stream Mitigation Bank (City of Salem) with revised monitoring area (per DSL), showing location of sample plots and photopoints.

FIGURE
3

Appendix C

Photodocumentation

Photo A:

Looks S from Waln Drive SE culvert crossing.

Photo was taken on 8/23/2022.

Photo B:

Looks N from south edge of Sample Plot #1.

Photo was taken on 9/1/2022.

7609
9/14/22

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Wilsonville, OR 97070

Photodocumentation

Waln Creek/Battle Creek riparian mitigation area in Salem, Oregon.

Photo C:

Looks N from south edge of Sample Plot #2.

Photo was taken on 9/1/2022.

Photo D:

Looks N through original location of Sample Plot #3; note plot was offset 30' to south due to large hornet's nest (shows in center-left portion of frame).

Photo was taken on 9/1/2022.

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9450 SW Commerce Circle, Suite 180
Wilsonville, OR 97070

Photodocumentation

Waln Creek/Battle Creek riparian mitigation area in Salem, Oregon.

Photo E:

Looks N through Sample Plot #5.

Photo was taken on 9/1/2022.

Photo F:

Looks NW through Sample Plot #6.

Photo was taken on 9/1/2022.

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9/14/22

Pacific Habitat Services, Inc.
9450 SW Commerce Circle, Suite 180
Wilsonville, OR 97070

Photodocumentation

Waln Creek/Battle Creek riparian mitigation area in Salem, Oregon.

Photo G:

Looks S through Sample Plot #6.

Photo was taken on 9/1/2022.

Photo H:

Looks S through Sample Plot #7.

Photo was taken on 9/1/2022.

Pacific Habitat Services, Inc.
9450 SW Commerce Circle, Suite 180
Wilsonville, OR 97070

Photodocumentation

Waln Creek/Battle Creek riparian mitigation area in Salem, Oregon.

Stream Restoration Work

NOTICE OF HERBICIDE APPLICATION

Application will occur on the listed dates

Please keep pets on leash and refrain from contact with the work area until sprayed surfaces (indicated with blue dye) have dried.

HERBICIDE APPLICATION DETAILS:

What plant is being treated: Reed canary grass

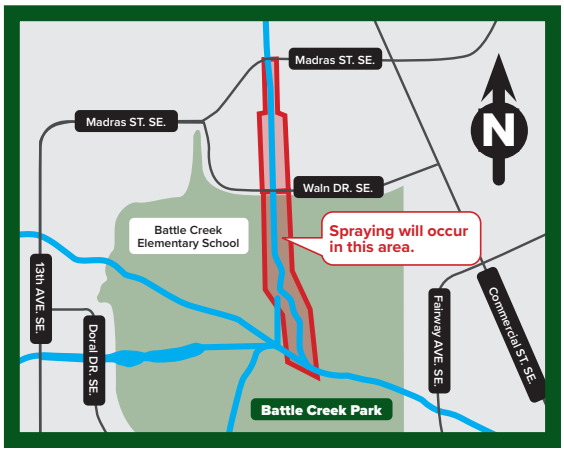
Why: Invasive reed canary grass is taking over the stream channel and riparian area, degrading the diversity and functionality of the stream habitat, and causing sediment to build up, which increases flooding risk.

Where is treatment occurring: Along the streambanks between the culvert at Madras St SE and where Waln Creek and Battle Creek merge in Battle Creek Park. (See map inset to the right.)

What is being applied: The aquatic-use approved herbicides Rodeo (glyphosate) and Garlon 3a (triclopyr).

Who is providing treatment: State-licensed applicators from Ash Creek Forestry Management in coordination with City of Salem.

About the herbicides: They are EPA-certified and salmon-safe herbicides commonly used in stream restoration projects. They break down in water without harming the non-targeted plants and animals.



CITY OF Salem AT YOUR SERVICE
Public Works Department

If you have questions please contact the Stormwater Quality Supervisor at 503-589-2188 or stormwaterquality@cityofsalem.net.