

**MARION MITIGATION BANK Monitoring Report Cover Sheet**  
**Oregon Department of State Lands**

**Block 1: Report Information**

DSL Permit Number: 37253-RF	COE Permit Number: NWP-2007-701	
Permittee: Marion Mitigation Bank LLC		
County: Marion	Report Date: December 5, 2019	Monitoring Year 19
Date Removal-Fill Activity Completed: 2008		
Date mitigation was completed	Grading: 2008	Planting: Completed 2018
Report submitted by: Green Banks LLC		

**Block 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**.

**X Mitigation Bank** Report

**Block 3: Results**

	Success Criteria ( <i>verbatim</i> , except spelling edits, from the 2001 MBI)	Met? (Y/N)	Comments/ Reason for failure*
1.	“Open water areas will have no more than 15% cover of undesirable invasive species [undesirable species include Eurasian watermilfoil ( <i>Myriophyllum spicatum</i> ), hydrilla ( <i>Hydrilla verticillata</i> ), purple loosestrife ( <i>Lythrum salicaria</i> ), and canarygrasses ( <i>Phalaris</i> sp.) smooth cordgrass ( <i>Spartina alterniflora</i> ), South American waterweed ( <i>Elodea densa</i> ), and <i>Spartina</i> (sp)].”	P1: NA P2 PEM: Y P3 PEM: Y	
2.	“Areas of herbaceous vegetation will be dominated (more than 50% cover and more than 50% frequency of occurrence) by desirable herbaceous wetland species (FAC or wetter) and plant associations, the species richness will be at least 50% as great as that of the reference; no more than 50% of the area will be dominated by one species; and they will have no more than 15% cover of invasive, undesirable herbaceous species*.”	P1: Y P2 PEM: Y P2 PSS/PFO:Y P3 PEM: Y P3 PSS/PFO:Y	
3.	“Scrub- shrub areas will have no fewer than 3 species of desirable shrubs and will have a stem density of planted trees and shrubs (or volunteers of desirable species) of at least 100 stems per acre or at least 50% of the density at the reference (whichever is greater); and will have no more than 15% cover of invasive, undesirable herbaceous species*.”	P1: Y P2 PEM: NA P2 PSS/PFO:Y P3 PEM: NA P3 PSS/PFO:Y	
4.	“Forested areas will have no fewer than 3 species of desirable trees and will have a stem density of planted trees and shrubs (or volunteers of desirable species) of at least 100 stems per acre or at least 50% of the density at the reference; and will have no more than 15% cover of invasive, undesirable herbaceous species*.”	P1: Y P2 PEM: NA P2 PSS/PFO:Y P3 PEM: NA P3 PSS/PFO:Y	

5.	<p>“Upland (Oak Savannah) will have at least oak (<i>Quercus garryana</i>) and other desirable tree species (with a stem density of at least 25 stems per acre) and at least one desirable herbaceous species that covers 50% or more of the upland area. There will be no more than 15% cover of undesirable invasive species [undesirable species include any canary grasses (<i>Phalaris</i> sp.) Canadian thistle (<i>Cirsium arvense</i>), Scots broom (<i>Cystisus scoparius</i>), Himalayan blackberry (<i>Rubus discolor</i>), and tansy ragwort (<i>Senecio jacobaea</i>)]. These criteria will be used to demonstrate success after the required five years.”</p>	<p>P1 UP: Y P2 UP: Y P3 UP: Y</p>	
6.	<p>Invasive List for Performance Standards 2 through 4: “*Undesirable species include the species in 1) above and any reed canarygrass (<i>Phalaris</i> Sp.), purple loosestrife (<i>Lythrum salicaria</i>), Canadian thistle (<i>Cirsium arvense</i>), Scots broom (<i>Cystisus scoparius</i>), Himalayan blackberry (<i>Rubus Discolor</i>), and tansy ragwort (<i>Senecio jacobaea</i>). Other species may be deemed undesirable by the MBRT in discussion with the sponsor.”</p>		

**Remedial work recommended**

Yes

No X

**Deed Restriction or other protection instrument attached (note: if a filed deed restriction was required as a permit condition, please attach a copy):**

Yes

No X

**Final Monitoring Report?**

Yes

No X

**GIS Data Submitted?**

Yes

No X

**Requesting release or partial release of bond?**

Yes

No

December 5, 2019

MARION MITIGATION BANK  
MONITORING REPORT YEAR 19 (2019)

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## 1.0 MITIGATION PLAN PURPOSE AND OVERVIEW

### 1.1 LOCATION

The Marion Mitigation Bank (Bank) is located 1.5 miles northeast of the community of Marion in Marion County, T9S, R2W, Sec. 27. The site is in the headwaters of Marion Creek, a tributary of the North Santiam River, in Hydrologic Unit 17090005 (USGS Hydrologic Unit Map for Oregon, 1974).

### 1.2 MITIGATION GOALS AND OBJECTIVES

The mitigation goals and objectives were defined in the 2001 Mitigation Bank Instrument (MBI), prepared by R. P. Novitzki and Associates, Inc. as: *“The goal of this bank is to convert marginal farmland back to natural wetland resources to enhance diversity, provide wildlife habitat, and support natural wetland functions. The project will restore a wetland complex comprised of several habitat types that will include temporarily-flooded, seasonally-flooded, and semi-permanently flooded Palustrine emergent, scrub-shrub and forested habitats. The restoration will be successful (certified) when species richness (in herbaceous areas) and stem density (in scrub-shrub and forested areas) is at least 50% that of reference. However, ongoing management of the site will strive to achieve 75% species richness and 75% stem density (of reference) by the fifth growing season (it is expected that the density will increase annually until it peaks and then decreases as the site reaches maturity).”*

### 1.3 MAINTENANCE AND MANAGEMENT ACTIONS

Green Banks LLC began managing the site in the summer of 2017. The maintenance efforts of 2019 have included manual, mechanical and chemical non-native weed control; planting trees and shrubs; and litter removal.

In January 2019, 800 trees and shrubs were planted on the upland hill in Phase 3 to replace trees and shrubs that did not survive in 2018. 300 trees and shrubs were also planted into other buffer areas where mortality had occurred. In the spring, mulch rings were installed on the trees and shrubs on the upland hill in Phase 3; to help them retain moisture, regulate temperature and reduce competition from weeds. Approximately 500 willow cuttings were installed in areas around the perimeter of the ponds that had low tree/shrub cover to increase shade and native species dominance.

In the summer, maintenance activities included mowing and herbicide applications. Herbicide applications targeted invasive plants such as reed canarygrass, Himalayan blackberry, teasel and thistle species. The upland buffers were mowed two times over the course of the growing season to reduce herbaceous competition on planted trees and shrubs. String-trimming and manual removal of weeds was also completed within the planted rows.

Litter removal efforts were also made, including the removal of a mobile home that had been staged on-site for many years. In the summer, a car was found deserted (likely stolen) on-site near a site entry gate. Green Banks attempted to move the vehicle off-site but it was stripped of its wheels and interior and we couldn't tow it with a truck. During a fall maintenance visit, we observed that the car had been taken off-site by an unknown party (possibly by the individual(s) that put it there originally). In order to improve access control on the site we replaced all locks and investigated potential ways to improve entry gate security.

## 1.4 MONITORING METHODS

The vegetation sampling protocol involves a stratified random sampling strategy which is described in the 2001 Mitigation Bank Instrument. In 2017, the DSL requested that there be ten plots per habitat type per phase, which caused a reduction of plots in some areas and the addition of plots in others. A detailed description of the adjustments is included in the 2017 Monitoring Report (Green Banks 2018).

The 2019 vegetation monitoring was conducted on July 1st, 2nd, 8th and 9th by C. Jonas Moiel (Senior Scientist), Margret Harburg (Environmental Scientist) and Alex Walt (Natural Resource Technician). On July 12<sup>th</sup> Dana Field (DSL) was provided with the 2019 monitoring data and visited the site for an annual site inspection. Several plots were missing data prior to the July 12th site visit; these plots were monitored on August 29th.

The term “desirable” herbaceous species is mentioned in the performance standards and MBI. For wetland areas it is defined as non-invasive species that are FAC or wetter. However, it is not well defined for the upland buffer areas. We interpret “desirable” herbaceous species in the upland buffer areas to mean *non-invasive species that are frequently mowed in vicinity of newly planted trees and shrubs*. During the summer site inspection of 2018, Dana Field suggested that mowed vegetation is desirable vegetation in the buffers. We agree as keeping the buffer areas mowed will reduce herb competition on the newly planted trees and shrubs.

The term “open water areas” is mentioned in the Performance Standard 1, but is not well defined. Based on the Cowardin definition, open water areas can be: unvegetated areas <20 acres in size, shallower than 6.6 feet, lacking a wave-formed or bedrock shoreline, and with a salinity of <0.5%. The purpose of this standard seems to be observing open water areas to ensure that invasive aquatic species are not becoming established. There is no cover standard for open water areas as it is assumed that most of the plot area will be areal cover by water (by definition). We believe that these plots are located in transitional areas between PEM and “open water” habitats. The PEM areas do have a requirement for 50% cover of desirable species. We assume that this means the other 50% cover could be bare ground (or invasive species), which is a concern for invasive species establishment. However, cover by water at a depth unsuitable for terrestrial species should not be a concern as it is not bare ground. For PEM plots that were sparsely vegetated with the remaining cover by water we did not apply the PEM cover standard as we believe these plots are located in a transitional area and are a mix of “open water” and PEM.

## 1.5 MONITORING DATA LOCATIONS

Please refer to the Monitoring Location map (Figure 1) which displays the locations of vegetation sampling plots and habitat types. The habitat types consist of Palustrine Emergent (PEM) wetlands, Palustrine Scrub-Shrub (PSS) wetlands and Palustrine Forested (PFO) wetlands (classes combined), and upland buffers.

### **Monitoring Transect and Plot Details**

The areal cover of species were recorded for the wetland habitats and herbaceous upland plots using a one-meter square quadrat with its southwest corner over the plot location facing north. Estimates of bare ground were made at each quadrat, and estimates of canopy cover were also included if present. In 2017, a new category was added for bare ground to record the area occupied by woody stems. Because the wetland monitoring protocol at this site has historically included adding herbaceous and overhanging woody cover in the same plots, we continued to use this approach in the wetlands.

The stem density in the PSS/PFO habitats was last sampled in 2008 for Phases 1 and 2, and 2013 for Phase 3. Density data were collected using ten random plots that sampled a ten-meter radius around the plot center. The PSS/PFO wetlands have exceeded the density standard for more than a decade and therefore woody stem density data are no longer collected.

The established upland buffer plots are displayed on Figure 1. The woody sampling plots measure 50' x 25', with the 50-foot edge placed along the transect. The plots are spaced every 75 feet along each transect, with 25 feet between each plot. Native woody stems (including volunteers) were counted within each woody plot. Herbaceous data were also collected at the starting corner of each woody plot using a one-meter quadrat.

## 1.6 HYDROLOGY METHODS AND CONTEXT

Post-construction hydrology monitoring had occurred in observation wells and pond staff-gauges from the time of Bank establishment until 2016. A post-construction wetland delineation (lite) was conducted by Geo Resources in 2015; additional data were requested by the DSL in response to the 2015 study in 2016.

A post-construction delineation was completed by Green Banks LLC in the spring of 2018. The DSL visited the site in the spring to check delineation plot data and site hydrology. The final delineation lite report was submitted in August of 2018.

## 2.0 RESULTS

### 2.1 VEGETATION STANDARDS RESULTS

The raw vegetation monitoring data for all the herbaceous and woody plots are presented in eleven tables (Appendix A). The performance standards from the 2001 MBI for the Marion Mitigation Bank are written verbatim on the cover sheet; in order to reduce redundancy, they are not reprinted here. The following paragraphs present a summary of the vegetation sampling results by phase and habitat type.

#### Phase 1

The Phase 1 wetland areas are all in the combined PSS/PFO Cowardin class. The vegetation in this habitat class is meeting the applicable performance standards (Standards 2, 3, and 4). FAC or wetter species accounted for 107% of the total cover (Standard 2). In 2008, a stem density survey was conducted in the PSS/PFO area, which demonstrated that it had a stem density of 554 stems per acre and greater than three desirable tree/shrub species; this met the Standard 3 and 4 (density criteria of at least 100 desirable native trees and shrubs per acre). Woody stem counts in the PSS/PFO areas have been discontinued after more than a decade of increased woody species growth and establishment.

In 2019, there were six native tree and shrub species which met the combined Standard 3 and 4 (woody species criteria of three native woody species in PSS or PFO area). The average invasive cover in this habitat was 0%, which met the Standard 3 and 4 (no more than 15% invasive cover). Native species cover averaged 73%. Common native species found in this habitat type include woody species such as *Salix hookeriana*, *Populus balsamifera ssp. trichocarpa*, and *Spiraea douglasii*; and herbaceous species such as *Eleocharis palustris*, *Deschampsia cespitosa*, *Carex obnupta*, *Juncus bufonius*, and *Hordeum brachyantherum*. The Prevalence Index (PI) was calculated as an additional way to demonstrate the

presence of a hydrophytic plant community; any PI of 3.0 or less is considered to be hydrophytic. The average PI in this habitat is 1.8.

The Phase 1 upland habitat is meeting Standard 5, native woody plant density criteria of 25 stems per acre, with an average of 171 stems per acre. Commonly observed tree and shrub species were *Amelanchier alnifolia*, *Rosa nutkana*, and *Mahonia aquifolium*. The herbaceous community had an average total herbaceous cover of 98% with 1% invasive cover; or 97% desirable herbaceous cover. This meets >50% cover by desirable herbaceous species for Standard 5.

## Phase 2

The Phase 2 PEM community is meeting all of the applicable performance standards (Standards 1 and 2). Seven new plots were added to Phase 2 in 2018 to meet the goal of having ten plots per habitat type per phase. The PEM community had an average of 11% invasive species cover, which is meeting Standards 1 and 2. The average percent cover of desirable (non-invasive) FAC or wetter species was 77%. Common native species included *Persicaria hydropiperoides*, *Hydrocotyle ranunculoides*, *Ludwigia palustris*, *Lemna minor* and *Bidens cernua*. The average PI in this habitat is 0.7.

The Phase 2 PSS/PFO plant community is meeting all of the applicable performance standards (2, 3, and 4). The desirable species (FAC or wetter) cover averaged 107%, far exceeding the Standard 2 criteria of 50%. Invasive cover consisted of *Phalaris arundinacea* and *Rubus armeniacus* and averaged 1%, thus meeting the Standards 3 and 4. Combined native cover averaged 105%. Common native species recorded were *Populus balsamifera ssp. trichocarpa*, *Salix sitchensis*, *Salix hookeriana*, and *Juncus effusus*. The prevalence index was 2.1, demonstrating a hydrophytic community.

In 2008, a stem density survey was conducted in the PSS/PFO area which demonstrated that it had a stem density of 1,363 stems per acre with 5 native woody species; this met the Standards 3 and 4 (density criteria of at least 100 desirable native trees and shrubs per acre and greater than three desirable tree/shrub species). Woody stem counts in the PSS/PFO areas have been discontinued after more than a decade of increased woody species growth and establishment.

The Phase 2 upland habitat is meeting performance Standard 5 (oak savannah). The average stem density from the ten woody plots was 610 stems per acre. Commonly observed tree and shrub species within the plots were *Fraxinus latifolia*, *Mahonia aquifolium*, *Rosa nutkana*, and *Quercus garryana*. The herbaceous community had an average total herbaceous cover of 81% with 0% invasive cover; or 81% desirable herbaceous cover. This meets Standard 5; greater than 50% cover by desirable herbaceous species.

## Phase 3

The Phase 3 PEM habitat is meeting all of the applicable performance standards. FAC or wetter species accounted for 93% of the cover, which meets the Standard 2 criterion of 50% or more desirable species. The invasive species cover was 0% in this habitat. The average native cover was 96%. The most prevalent native species recorded were *Eleocharis palustris*, *Juncus effusus*, *Ludwigia palustris*, *Lemna minor*, *Wolffia borealis*, and *Polygonum hydropiperoides*. The average PI in this community is 1.0.

The Phase 3 PSS/PFO community is meeting all the applicable performance standards (3 and 4). A total of eleven plots were sampled in this habitat. FAC or wetter species cover averaged 82% and the invasive cover averaged 7%. The average native cover was 61%. The most common woody species present was *Salix lucida*. A stem density survey was last conducted in 2013 that calculated an average of thousands



(~18,000) of stems per acre with at least three desirable shrub/tree species; which meets the stem density criteria of 100 stems per acre. Woody stem counts in the PSS/PFO areas have been discontinued after more than a decade of increased woody species growth and establishment.

The Phase 3 upland habitat is meeting performance Standard 5. The average stem density from the ten newly established woody plots was 310 stems per acre. Commonly observed tree/shrub species present were *Crataegus douglasii*, *Mahonia aquifolium*, *Quercus garryana*, and *Rosa nutkana*. The herbaceous community had an average total herbaceous cover of 104% with 3% invasive cover; or 101% desirable herbaceous cover; this meets Standard 5.

## 2.2 HYDROLOGY STANDARDS RESULTS

**Standard:** From the MBI- "*Each phase will be considered successful and certified when the restored, enhanced, and created areas meet the hydrology criteria as specified in the Corps of Engineers 1987 delineation protocols.*"

**Result:** A post-construction wetland delineation (lite) was completed by Green Banks LLC in 2018 which delineated 45.64-acres of wetland within the project area. A previous post-construction delineation was completed by Geo Resources LLC in 2015 but additional data were requested in several areas; the 2018 delineation focused on data collection in those areas and resulted in the modification of the delineated boundaries in some areas. The DSL visited the site on March 29, 2018 to observe early growing season hydrology and wetland data plots and boundaries. The final delineation "lite" report was submitted in August 2018 and approved.

**Standard Met?** Yes, for nearly all areas of the mitigation wetlands, hydrologic conditions meet or exceed the basic hydrology standard.

## 2.3 WETLAND ACREAGE ACHIEVED AND CREDITS PRODUCED

The 2018 wetland delineation boundary (45.64-acres) was overlaid onto the *2001 MBI Figure 2: Topography and land cover map of the Marion Mitigation Bank site* in GIS to determine the actual credits achieved after project construction. The process of overlaying the historic map into GIS included geo-referencing the map to the tax lot edges and then digitizing the historic polygons. The accuracy of the digitized polygons was verified by calculating the area of the polygons and comparing to the original acreages displayed in the MBI; the digitized polygons matched the acreages displayed on the historic MBI Figure 2 to the hundredth of an acre (the resolution from the MBI). Please refer to Figures 2a-2b, Table 1 and Appendix B, for information on the credits produced.

The Determination of Credits Map (Figure 2a) displays the various credits types generated by phase. The total number of credits produced based on the 2018 post-construction wetland delineation is 34.092 acre-credits; the MBI predicted the generation of 36.68 acre-credits, slightly more than what was produced.

A summary of credits produced by phase are included in Table 1.

**Table 1: Determination of Credits 2018**

Phase 1	Credits Predicted MBI	Credits Achieved
Restoration (1:1)	6.16	4.967
Creation (1.5:1)	2.20	1.214
Enhancement (2:1)	2.82	2.626
Buffer (10:1)	0.05	0.316
Total	<b>11.23</b>	<b>9.123</b>
Phase 2	Credits Predicted MBI	Credits Achieved
Creation (1.5:1)	10.11	9.157
Enhancement (3:1)	0.61	0.610
Buffer (10:1)	0.25	0.355
Total	<b>10.97</b>	<b>10.122</b>
Phase 3	Credits Predicted MBI	Credits Achieved
Restoration (1:1)	10.34	8.176
Creation (1.5:1)	3.07	5.280
Enhancement (2:1)	1.02	0.816
Buffer (10:1)	0.05	0.575
Total	<b>14.48</b>	<b>14.847</b>
<b>TOTAL CREDITS (all Phases)</b>	<b>36.68</b>	<b>34.092</b>

## 2.4 REFERENCE SITE DATA COLLECTION AND RESULTS

Please refer to the Year 18 (2018) Monitoring Report for information pertaining to the reference site data collection and results.

## 2.5 WILDLIFE OBSERVATIONS

Many species of wildlife utilize the habitat of the Bank. In April 2017, we observed a western pond turtle for the first time on site. The individual was a female, within egg laying age. Western pond turtles are rare in the Willamette valley north of Eugene. We also frequently observe garter snakes, pacific tree frogs, and red-legged frogs. Beaver activity is also commonly observed on-site and has been increasing each year. Evidence of wildlife usage and scat from deer, raccoon, and coyote demonstrate that there are mammalian species present. A heron rookery is thriving near to the western property boundary, located in cluster of cottonwood trees. Many migratory birds use the site on a seasonal basis and the Bank provides high quality nesting habitat for both migratory and resident avian species. The Bank has a wide range of species from pheasants nesting in the uplands, to American bitterns nesting in the emergent wetland areas.

### 3.0 CONCLUSIONS AND RECOMMENDATIONS

#### 3.1 PROJECT STATUS

The Marion Bank is meeting all of its performance standards in 2019. Increased maintenance efforts began in 2017 which have reduced the invasive species on-site to very low levels in all phases. The buffer areas were re-planted in January of 2018 with a much higher density of plants than required; approximately 500 stems per acre were installed when only 25 stems per acre are required. These newly installed woody plantings have had a low level of mortality throughout the year and will be maintained by mowing for the next couple years until they are more established.

A post-construction wetland delineation “lite” study was completed in 2018. This delineation provides evidence that the Bank is meeting the hydrology criteria specified in the MBI in most areas. Some areas that were designed to be wetland prior to construction were determined to be upland, however these areas are small and did not greatly affect the credits produced. We do not desire to rectify the areas that are not currently wetland but would rather adjust the total credits predicted from 36.68, to the actual produced of 34.092.

Reference site data were collected in 2018 for the mitigation wetlands as described in the MBI. The results of the study showed that the herbaceous communities within the mitigation wetlands have more than 50% the species richness of the reference; meeting the standard. The tree and shrub densities within the mitigation wetlands are also exceeding 50% of the density of the reference; the standard states that there will be a stem density of at least 100 stems per acre or at least 50% that of the reference (381).

The Marion Bank credit ledger for 2019 is included in Appendix B. The most recent credit release was on November 5, 2018, for 6.73 credits, bringing the total number of credits released to 30.09 credits or approximately 88.3% of the total credits produced (when using actual credits produced of 34.092). No credits were withdrawn in 2019; however, all of the released credits are reserved for purchase. There are a total of 6.543 credits currently released and available for withdrawal (as of 12/5/19).

#### 3.2 RECOMMENDATIONS

The Marion Bank is well established and requires a low level of maintenance. Most of the wetland areas have mature tree and shrub cover and emergent areas are mostly native dominated. The upland buffer areas were re-planted in 2017 and have been maintained primarily by maintenance mowing; most of the trees and shrubs in these areas have survived for 2 growing seasons.

The site should be observed approximately once per month during the growing season to identify any potential management concerns and plan for maintenance efforts. Mowing of the upland buffer areas should continue in 2020, occurring approximately in the spring and summer.

#### 3.3 FINANCIAL SECURITY STATUS

The Bank sponsor, Marion Mitigation Bank LLC, pledged a financial assurance in the form of a Performance Bond for \$30,000 for the release of mitigation credit. This Bond is currently active.

## 4.0 REFERENCES

Cowardin, L.M., V. Carter, F.C. Golet and E.T LaRoe. 1979. *Classification of Wetlands and Deepwater Habitats of the United States*. U.S. Department of the Interior, Fish and Wildlife Service. FWS/OBS-79/31. December 1979. Reprinted 1992.

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Novitzki, R. P., 2005-2013. 2004-2012 monitoring reports for Marion Mitigation Bank, Marion, OR. Unpublished report submitted to Oregon Department of State Lands, Salem OR, 93701.

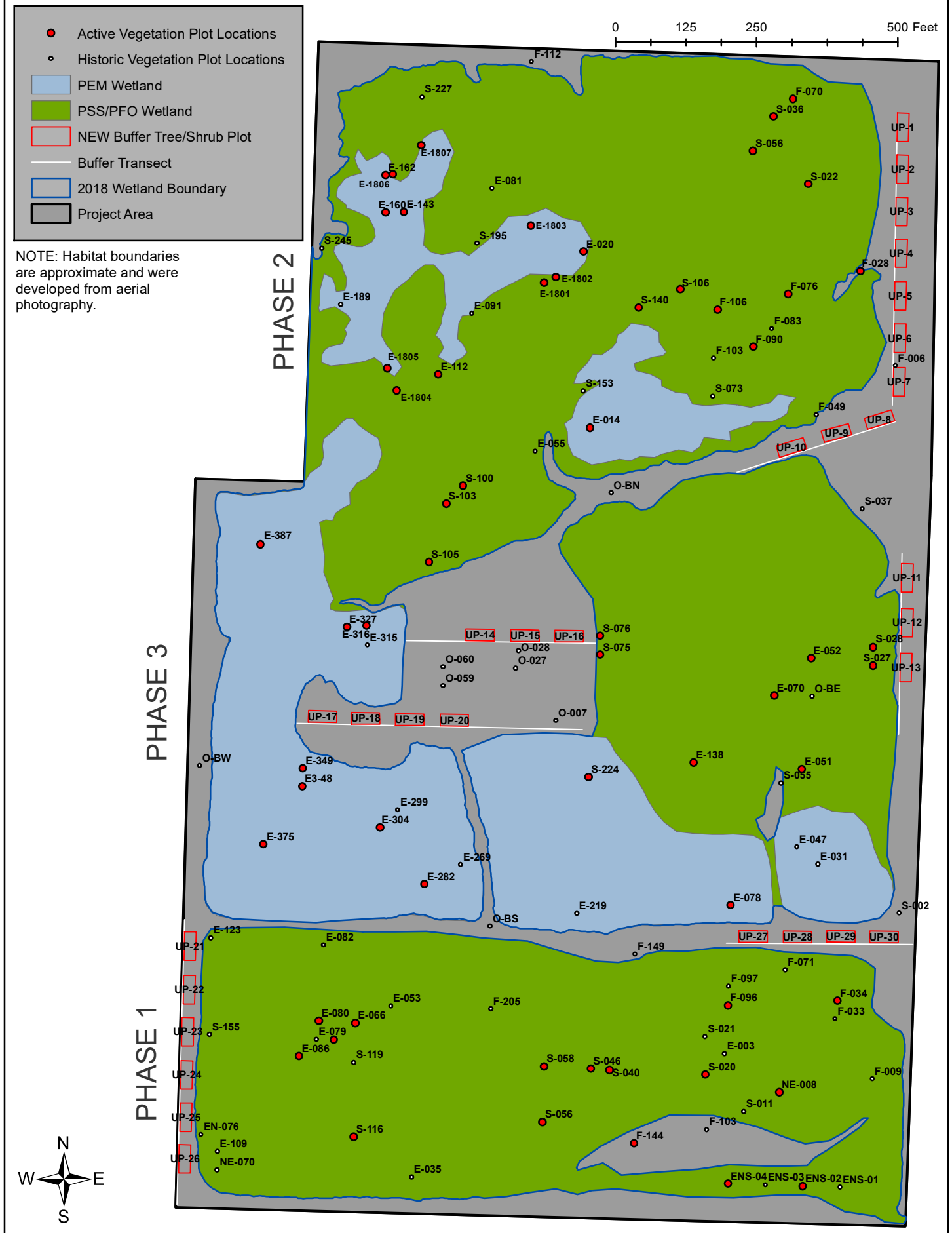
Novitzki, R. P., Stellrecht, 2014-2017. 2013-2016 monitoring reports for Marion Mitigation Bank, Marion, OR. Unpublished report submitted to Oregon Department of State Lands, Salem OR.

## **MAPS AND FIGURES:**

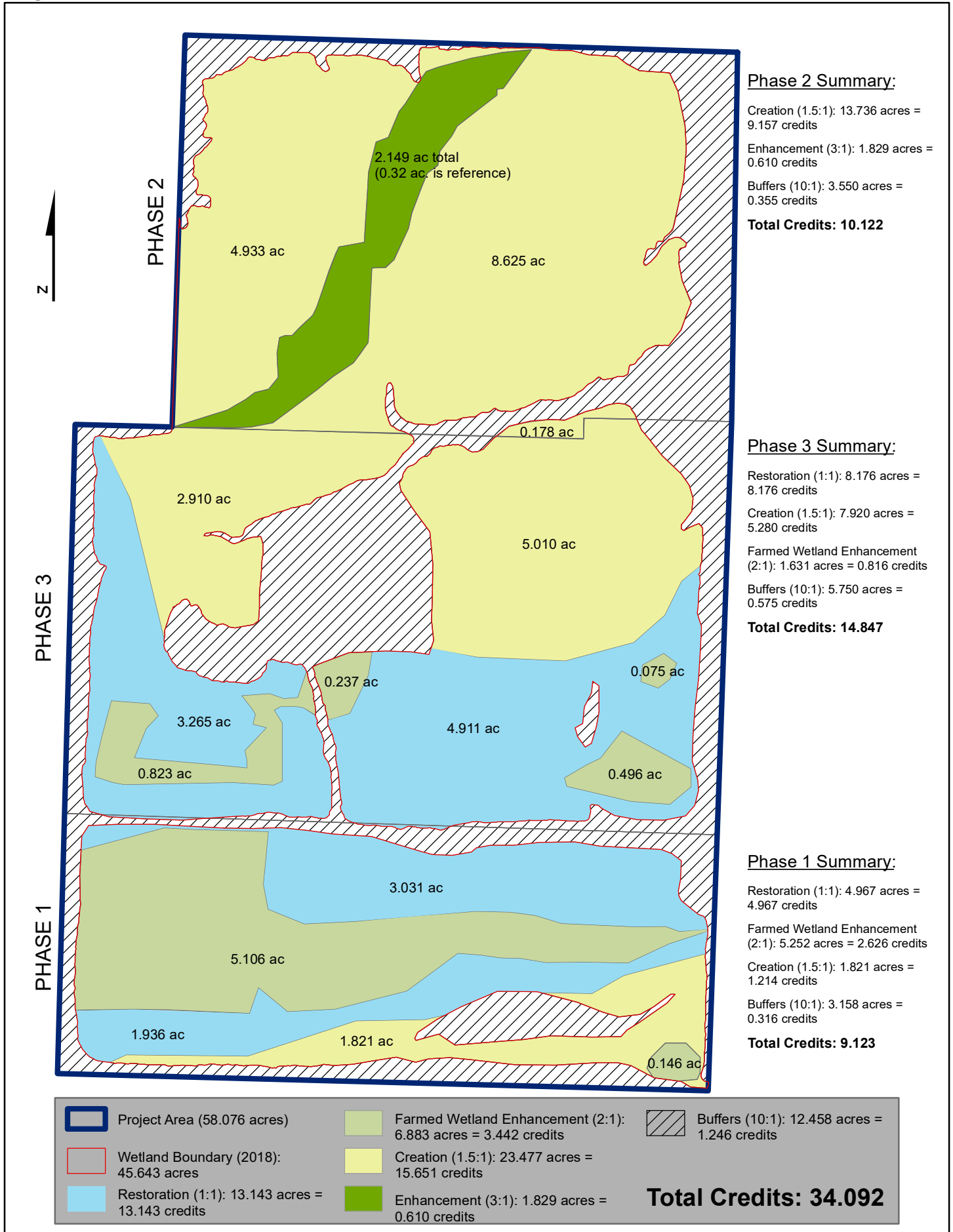
Figure 1: Monitoring Location and Habitat Map

Figure 2a: Determination of Credits Map

Figure 1: Monitoring Location and Habitat Map



# Figure 2a. Determination of Credits Map



0 62.5 125 250 375 500 Feet  
 1 inch = 250 feet when printed on 8.5"x11" paper

**APPENDICES:**

APPENDIX A: 2019 Vegetation Data

APPENDIX B: Credit Ledger (2019)



## **APPENDIX A: 2019 Vegetation Data**



Marion Mitigation Bank														
2019 Vegetation Monitoring		Sample Date(s):	7/1/19-7/2/19											
Phase 1 Buffer Herb Plots														
Species	Origin (N, NN, I)	Wetland Status (1 - 5)	UP-21-H	UP-22-H	UP-23-H	UP-24-H	UP-25-H	UP-26-H	UP-27-H	UP-28-H	UP-29-H	UP-30-H	Average	
<b>Native Herbaceous &amp; Woody Species</b>														
<i>Bromus carinatus</i>	N	5	0	0	0	0	0	0	0	0	0	10	1.0	
<i>Deschampsia cespitosa</i>	N	2	0	0	0	0	0	0	0	0	0	0	0.0	
<i>Eleocharis acicularis</i>	N	1	0	0	0	0	0	0	0	0	0	0	0.0	
<i>Eleocharis palustris</i>	N	1	0	0	0	0	0	0	0	0	0	0	0.0	
<i>Elymus glaucus</i>	N	4	0	0	0	0	0	0	0	0	0	0	0.0	
<i>Epilobium brachycarpum</i>	N		0	2	0	0	0	0	0	0	0	0	0.2	
<i>Epilobium ciliatum</i>	N	2	0	0	0	4	1	0	0	0	0	0	0.5	
<i>Equisetum arvense</i>	N	3	25	10	0	0	0	0	25	15	1	0	7.6	
<i>Festuca occidentalis</i>	N	5	0	0	0	0	0	0	0	0	0	0	0.0	
<i>Galium aparine</i>	N	4	1	10	0	0	0	0	5	2	5	3	2.6	
<i>Hordeum brachyantherum</i>	N	2	0	0	0	0	1	0	10	0	5	10	2.6	
<i>Madia elegans</i>	N	5	0	0	0	0	0	0	0	0	0	0	0.0	
<i>Madia glomerata</i>	N	4	0	0	1	2	0	0	0	0	0	0	0.3	
<i>Spiraea douglasii</i>	N	2	0	0	0	0	0	5	0	0	0	0	0.5	
<i>Veronica peregrina ssp. xalapense</i>	N	1	0	0	0	0	0	0	0	0	0	0	0.0	
<b>Invasive Herbaceous Species</b>														
<i>Cirsium arvense</i>	NN	3	0	0	10	1	0	0	0	0	0	0	1.1	
<i>Rubus armeniacus [discolor]</i> (includes overhanging plants)	NN	3	0	0	0	0	0	1	0	0	0	0	0.1	
<i>Phalaris arundinacea</i>	I	2	0	0	0	0	0	0	0	0	0	0	0.0	
<b>Non-Native Herbaceous Species</b>														
<i>Agrostis capillaris</i>	NN	3	15	5	75	60	0	0	0	0	0	0	15.5	
<i>Agrostis species</i> (assumed FAC, NN)	NN	3	0	0	0	0	0	80	5	30	0	0	11.5	
<i>Agrostis stolonifera</i>	NN	3	0	0	0	0	0	0	0	0	0	0	0.0	
<i>Avena sativa</i>	NN	5	0	0	0	0	0	0	0	0	0	0	0.0	
<i>Bromus hordeaceus ssp. hordeaceus</i>	NN	4	0	0	0	0	0	2	35	0	20	0	5.7	
<i>Bromus species</i> (assumed NN)	NN	0	6	0	4	0	0	5	5	5	0	20	4.0	
<i>Daucus carota</i>	NN	4	3	1	0	0	2	4	0	3	1	0	1.4	
<i>Dipsacus fullonum</i>	NN	3	0	0	0	0	0	0	0	0	0	0	0.0	
<i>Elymus (Agropyron) repens</i>	NN	3	0	0	0	0	0	0	0	30	0	0	3.0	
<i>Galium parisiense</i>	NN	4	0	0	0	0	0	0	0	0	0	0	0.0	
<i>Geranium dissectum</i>	NN	5	0	0	0	0	0	2	3	5	5	0	1.5	
<i>Geranium molle</i>	NN	5	0	0	0	0	0	0	0	0	0	0	0.0	
<i>Holcus lanatus</i>	NN	3	12	4	7	13	0	0	5	5	2	15	6.3	
<i>Lactuca serriola</i>	NN	4	0	1	1	2	0	1	0	0	1	1	0.7	
<i>Lotus corniculatus</i>	NN	3	0	0	0	0	0	0	0	5	0	0	0.5	
<i>Vicia hirsuta</i>	NN	5	15	0	0	0	0	3	5	0	0	0	2.3	
<i>Vicia pannonica</i>	NN	5	10	70	10	20	0	0	0	0	60	35	20.5	
<i>Vicia sativa</i>	NN	5	20	1	2	3	0	2	0	0	0	0	2.8	
<i>Vicia species</i> (assumed UPL)	NN	5	5	0	0	0	0	0	15	30	10	0	6.0	
<i>Vicia tetrasperma</i>	NN	5	0	0	0	0	0	1	0	0	0	0	0.1	
<b>Bare Substrate</b>														
Bare (soil, mud, rock)			0	0	0	0	64	3	0	0	0	0	6.7	
Algae, moss, duff, dead vegetation, etc. (incl. sprayed veg.)			0	0	0	0	20	0	0	0	0	0	2.0	
<b>Shade, Woody Stem Cover &amp; Water Depth</b>														
Approx. water depth (inches)			0	0	0	0	0	0	0	0	0	0	0.0	
Combined aerial cover by woody species (shade)			0	0	0	0	100	75	0	0	0	0	17.5	
Basal woody stem cover on ground			0	0	0	0	10	0	0	0	0	0	1.0	
<b>Summary Information</b>														
Cover of Native Species			26	22	1	6	2	5	40	17	11	23	15	4.0
Lower CI (80%)													10	
Upper CI (80%)													20	
Cover of Invasive Species			0	0	10	1	0	1	0	0	0	0	1	1.0
Lower CI (80%)													0	
Upper CI (80%)													2	
Bare Substrate			0	0	0	0	84	3	0	0	0	0	9	8.4
Lower CI (80%)													-2	
Upper CI (80%)													19	
Percent of FAC or wetter cover			52	19	82	77	2	85	45	55	8	25	28	
Sum of plant cover			106	110	106	109	4	101	113	130	110	94	98	

Marion Mitigation Bank

2019 Vegetation Monitoring		Sample Date(s):	7/1/19-7/2/19											
Phase 1 Buffer-Woody														
Native Tree and Shrub Species:		Origin (N, NN, I)	Wetland Status (1 - 5)	UP-21	UP-22	UP-23	UP-24	UP-25	UP-26	UP-27	UP-28	UP-29	UP-30	Row Average
Native Shrub and Tree Count		Woody Stem Count (Trees and Shrubs)												
<i>Amelanchier alnifolia</i>	N		4	4	1	0	0	0	5	2	1	0	0	1.3
<i>Crataegus douglasii</i>	N		3	0	0	0	0	1	0	2	2	0	0	0.5
<i>Frangula (Rhamnus) purshiana</i>	N		3	0	0	0	0	0	0	0	0	0	0	0.0
<i>Fraxinus latifolia</i>	N		2	0	0	1	0	0	0	0	0	0	0	0.1
<i>Holodiscus discolor</i>	N		4	0	0	0	0	0	0	0	0	1	0	0.1
<i>Lonicera involucrata</i>	N		3	0	1	0	0	0	0	0	0	0	0	0.1
<i>Mahonia aquifolium</i>	N		4	0	0	1	0	1	1	1	2	3	0	0.9
<i>Malus fusca</i>	N		2	0	0	0	0	0	0	0	0	0	0	0.0
<i>Physocarpus capitatus</i>	N		2	0	0	0	0	0	0	0	0	0	0	0.0
<i>Quercus garryana</i>	N		4	0	0	0	0	0	1	0	0	0	0	0.1
<i>Ribes sanguinium</i>	N		4	0	0	0	0	0	0	0	0	1	0	0.1
<i>Rosa nutkana</i>	N		3	2	1	2	1	7	0	2	0	1	1	1.7
Summary Information		Habitat Average												
Density of Woody Vegetation		Average per acre	209	105	139	35	314	244	244	174	209	35		171
Plot Area (shrub/tree plot)	1250													
Per acre multiplier: Input 4,047 if plot area entered in B49 is in sq.meters or 43,560 for sq.feet	43560													
Sum of native plants /plot			6	3	4	1	9	7	7	5	6	1		5
Does Plot Pass Native Cover Standard based on ≥ 25 native woody plants per acre Y or N?			Y	Y	Y	Y	Y	Y	Y	Y	Y	Y		

Marion Mitigation Bank

2019 Vegetation Monitoring															
Phase 2 PEM															
Species	Sample Date(s):	7/9/19 & 8/29/19	Wetland Status (1 - 5)	E-014	E-160	E-162	E-1801	E-1802	E-1803	E-1804	E-1805	E-1806	E-1807	Average	
<b>Native Herbaceous</b>															
<i>Azolla filliculoides/mexicana</i>	N	1	1	0	1	5	1	0	0	0	0	0	0	0.8	
<i>Bidens cernua</i>	N	2	0	0	0	0	0	0	0	25	3	15	4.3		
<i>Cyperus erythrorhizos</i>	N	1	0	0	0	0	0	0	0	1	0	0	0.1		
<i>Eleocharis acicularis</i>	N	1	0	0	0	0	2	0	0	0	0	0	0.2		
<i>Eleocharis ovata</i>	N	1	0	0	0	0	0	0	0	2	5	0	0.7		
<i>Eleocharis palustris</i>	N	1	0	0	5	5	5	0	0	0	0	0	1.5		
<i>Holcus mollis</i>	NN	4	0	0	0	0	0	0	0	2	0	0	0.2		
<i>Hydrocotyle ranunculoides</i>	N	1	0	0	4	0	0	76	0	65	88	55	28.8		
<i>Juncus effusus</i>	N	2	0	0	0	5	0	0	0	0	1	0	0.6		
<i>Leersia oryzoides</i>	N	1	0	0	0	2	5	0	0	1	0	0	0.8		
<i>Lemna minor</i>	N	1	13	15	3	3	10	0	0	0	0	0	4.4		
<i>Ludwigia palustris</i>	N	1	40	0	0	35	5	0	0	0	0	0	8.0		
<i>Mimulus guttatus</i>	N	1	0	0	0	0	0	0	0	20	0	0	2.0		
<i>Paspalum distichum</i>	N	3	0	0	0	0	0	0	0	0	0	0	0.0		
<i>Persicaria hydropteroides</i>	N	1	0	0	5	70	65	0	0	0	0	0	14.0		
<i>Persicaria species</i>	N	1	7	0	0	0	0	3	0	3	0	5	1.8		
<i>Salix lucida ssp. lasiandra</i>	N	2	0	0	95	0	0	0	0	0	0	0	9.5		
<i>Schoenoplectus acutus</i>	N	1	0	0	0	0	0	0	0	0	0	0	0.0		
<i>Sparganium emersum</i>	N	1	0	10	0	0	0	0	0	0	0	0	1.0		
<i>Veronica americana</i>	N	1	0	0	0	0	0	6	10	0	0	0	1.6		
<i>Wolffia borealis</i>	N	1	5	4	0	0	0	0	0	0	0	0	0.9		
<b>Invasive Herbaceous Species</b>															
<i>Phalaris arundinacea</i>	I	2	0	0	0	2	0	0	80	0	0	30	11.2		
<b>Non-Native Herbaceous Species</b>															
<i>Agrostis stolonifera</i>	NN	3	0	0	0	3	0	15	0	0	3	0	2.1		
<i>Elodea species</i>	NN	1	20	5	0	0	0	0	0	0	0	0	2.5		
<i>Mentha pulegium</i>	NN	1	0	0	0	0	0	0	0	0	0	1	0.1		
<b>Bare Substrate</b>															
Bare (soil, mud, rock, water)			14	70	54	0	7	0	0	3	0	0	14.8		
Algae, moss, duff, dead vegetation, etc. (incl. sprayed veg.)			0	0	0	0	0	0	0	0	0	0	0.0		
<b>Shade, Woody Stem Cover &amp; Water Depth</b>															
Approx. water depth (inches)			6	24	0	0	0	0.25	0	0	0.5	0.5	3.1		
Basal woody stem cover on ground			0	0	0	0	2	0	5	0	5	40	5.2		
<b>Summary Information</b>															
Cover of Native Species			66	29	113	125	93	85	32	97	97	75	81	10.0	
Lower CI (80%)													68		
Upper CI (80%)													94		
Cover of Invasive Species			0	0	0	2	0	0	80	0	0	30	11	8.2	
Lower CI (80%)													1		
Upper CI (80%)													22		
Bare Substrate			14	70	54	0	7	0	0	3	0	0	15	8.1	
Lower CI (80%)													4		
Upper CI (80%)													25		
Percent FAC or wetter cover			66	29	113	125	93	85	30	71	94	60	77		
Prevalence Index (aka SMI)			0.8	0.9	0.2	1.0	1.0	0.9	0.3	0.7	1.0	0.6	0.7	N/A	
Weighted Prevalence Index			66	29	18	130	91	85	30	71	95	60			
Sum of plant cover			86	34	113	130	93	100	112	97	100	106			

Marion Mitigation Bank															
2019 Vegetation Monitoring		Sample Date(s):	7/1/19-7/9/19												
Phase 2 PSS/PFO															
Species	Origin (N, NN, I)	Wetland Status (1 - 5)	F-070	F-076	F-090	F-106	S-022	S-036	S-056	S-106	S-140	E-020	F-028	Average	
<b>Native Herbaceous &amp; Woody Species</b>															
<i>Azolla filliculoides/mexicana</i>	N	1	0	0	0	0	0	0	0	0	0	3	0	0.3	
<i>Alisma triviale</i>	N	1	0	0	0	0	0	0	0	0	0	0	0	0.0	
<i>Bidens Frondosa</i>	N	1	0	0	3	0	0	0	0	0	0	0	0	0.3	
<i>Carex species</i>	N	2	0	0	0	0	0	0	0	0	0	0	15	1.4	
<i>Eleocharis palustris</i>	N	1	0	0	0	0	0	0	0	0	0	3	0	0.3	
<i>Elodea species</i>	N	1	0	0	0	0	0	0	0	0	0	5	0	0.5	
<i>Epilobium ciliatum</i>	N	2	10	0	0	0	2	0	0	1	0	0	0	1.2	
<i>Equisetum arvense</i>	N	3	45	2	2	0	3	0	0	5	0	0	5	5.6	
<i>Fraxinus latifolia</i>	N	2	0	0	60	60	0	0	0	0	10	5	0	12.3	
<i>Fraxinus latifolia seedling</i>	N	2	0	0	0	0	0	0	0	0	0	0	0	0.0	
<i>Galium aparine</i>	N	4	0	0	0	0	0	0	0	0	0	0	0	0.0	
<i>Juncus effusus</i>	N	2	0	25	20	55	0	0	25	0	0	25	0	13.6	
<i>Lemna minor</i>	N	1	0	0	5	0	0	0	0	0	1	4	0	0.9	
<i>Ludwigia palustris</i>	N	1	0	0	0	0	0	0	0	0	0	20	0	1.8	
<i>Myosotis laxa</i>	N	1	0	0	0	0	0	0	0	0	0	1	0	0.1	
<i>Polygonum hydropiperoides</i>	N	1	0	0	0	0	0	0	0	0	0	3	0	0.3	
<i>Polygonum species</i>	N	1	0	0	0	0	0	0	0	0	3	0	0	0.3	
<i>Populus balsamifera ssp. trichocarpa</i>	N	3	0	20	0	0	0	0	0	0	0	0	85	9.5	
<i>Salix hookeriana</i>	N	2	0	40	35	20	95	0	95	0	65	15	0	33.2	
<i>Salix lucida ssp. lasiandra</i>	N	2	0	0	0	0	0	20	0	0	0	0	0	1.8	
<i>Salix sitchensis</i>	N	2	95	0	0	0	0	80	0	0	25	0	0	18.2	
<i>Sparganium emersum</i>	N	1	0	3	0	0	0	0	0	0	0	0	0	0.3	
<i>Spiraea douglasii</i>	N	2	0	20	0	5	0	0	0	0	0	0	0	2.3	
<i>Veronica americana</i>	N	1	0	0	3	6	0	0	0	0	0	0	0	0.8	
<i>Wolffia borealis</i>	N	1	0	0	0	0	0	0	0	0	0	1	0	0.1	
<b>Invasive Herbaceous Species</b>															
<i>Phalaris arundinacea</i>	I	2	0	0	0	0	3	3	0	0	0	2	0	0.7	
<i>Rubus armeniacus</i>	I	3	0	0	0	0	0	0	3	12	0	0	0	1.4	
<b>Non-Native Herbaceous Species</b>															
<i>Agrostis stolonifera</i>	NN	3	0	0	0	0	0	0	0	0	0	0	0	0.0	
<i>Daucus carota</i>	NN	4	0	0	0	0	0	0	0	0	0	0	3	0.3	
<i>Geranium dissectum</i>	NN	5	0	0	0	0	0	0	0	0	0	0	1	0.1	
<i>Holcus lanatus</i>	NN	3	0	0	0	0	0	0	0	0	0	0	0	0.0	
<i>Holcus mollis</i>	NN	4	0	2	0	0	0	0	0	15	0	0	5	2.0	
<i>Leontodon taraxacoides (nudicaulis)</i>	NN	4	0	0	0	0	0	0	0	0	0	0	0	0.0	
<i>Leucanthemum vulgare</i>	NN	4	0	0	0	0	0	0	0	0	0	0	2	0.2	
<i>Lotus corniculatus</i>	NN	3	0	35	0	0	0	0	0	0	0	5	2	3.8	
<i>Mentha pulegium</i>	NN	1	0	0	0	0	0	0	0	0	0	15	0	1.4	
<i>Plantago lanceolata</i>	NN	4	0	0	0	0	0	0	0	0	0	0	0	0.0	
<i>Trifolium species</i>	NN		0	0	0	0	0	0	0	0	0	0	10	0.9	
<i>Schedonorus arundinaceus</i>	NN	3	0	0	0	0	0	0	0	0	0	0	0	0.0	
<i>unknown seedling</i>	NN		0	0	0	0	1	0	0	0	1	0	0	0.2	
<i>Vicia sp.</i>	NN		0	0	0	0	0	0	0	0	0	0	5	0.5	
<i>Vicia pannonica</i>	NN	5	0	0	0	0	0	0	0	0	0	0	0	0.0	
<b>Bare Substrate</b>															
Bare (soil, mud, rock)			25	33	67	37	41	97	72	67	95	13	52	54.5	
Algae, moss, duff, dead vegetation, etc. (incl. sprayed veg.)			0	0	0	0	0	0	0	0	0	0	0	0.0	
<b>Shade, Woody Stem Cover &amp; Water Depth</b>															
Approx. water depth (inches)			0	0	0	0	0	0	0	0	0	0	0	0.0	
Basal woody stem cover on ground			20	0	0	2	50	0	0	0	0	0	0	6.5	
<b>Summary Information</b>															
Cover of Native Species			150	110	128	146	100	100	120	6	104	85	105	105	11.6
Lower CI (80%)														90	
Upper CI (80%)														120	
Cover of Invasive Species			0	0	0	0	0	0	3	12	0	0	0	1	1.1
Lower CI (80%)														0	
Upper CI (80%)														3	
Bare Substrate			25	33	67	37	41	97	72	67	95	13	52	54	8.3
Lower CI (80%)														44	
Upper CI (80%)														65	
Percent FAC or wetter cover			150	142	125	146	100	100	120	6	104	95	92	107	
Prevalence Index (aka SMI)			2.3	2.4	1.9	2.0	2.0	1.9	2.0	3.4	1.9	1.4	2.4	2.1	N/A
Weighted Prevalence Index			345	352	244	286	203	200	249	113	201	154	316		
Sum of plant cover			150	147	128	146	104	103	123	33	105	107	133		

Marion Mitigation Bank														
2019 Vegetation Monitoring	Sample Date(s):	7/1/19-7/9/19												
Phase 2 Buffer Herb Plots														
Species	Origin (N, NN, I)	Wetland Status (1 - 5)	UP-1-H	UP-2-H	UP-3-H	UP-4-H	UP-5-H	UP-6-H	UP-7-H	UP-8-H	UP-9-H	UP-10-H	Average	
<b>Native Herbaceous &amp; Woody Species</b>														
<i>Agrostis exarata</i>	N	2	0	0	0	0	0	0	0	0	0	0	0.0	
<i>Alnus rubra</i>	N	2	0	0	0	0	0	0	0	0	80	15	9.5	
<i>Bidens cernua</i>	N	2	0	0	0	0	0	0	0	0	0	0	0.0	
<i>Bidens frondosa</i>	N	2	0	0	0	0	0	0	0	0	0	0	0.0	
<i>Bromus carinatus</i>	N	5	10	0	0	0	0	0	0	0	0	0	1.0	
<i>Carex feta</i>	N	2	0	0	0	0	0	0	0	0	0	0	0.0	
<i>Carex obrupta</i>	N	1	0	0	0	0	0	0	0	0	0	0	0.0	
<i>Deschampsia elongata</i>	N	2	0	0	0	0	0	20	0	0	0	0	2.0	
<i>Festuca occidentalis</i>	N	5	0	0	5	15	0	0	8	0	0	0	2.8	
<i>Fraxinus latifolia</i>	N	2	0	0	0	0	0	0	0	0	0	0	0.0	
<i>Fraxinus latifolia seedlings</i>	N	2	0	0	0	0	0	0	0	5	0	0	0.5	
<i>Galium aparine</i>	N	4	0	0	0	0	0	0	0	5	10	5	2.0	
<i>Plagiobothrys scouleri</i>	N	2	0	0	0	0	0	0	0	0	0	0	0.0	
<i>Prunella vulgaris</i>	N	4	0	1	0	0	0	1	0	0	0	0	0.2	
<b>Invasive Herbaceous Species</b>														
<i>Cirsium arvense</i>	I	3	0	0	0	0	0	0	0	0	0	0	0.0	
<i>Phalaris arundinacea</i>	I	2	0	0	0	0	0	0	0	0	0	0	0.0	
<b>Non-Native Herbaceous Species</b>														
<i>Agrostis capillaris</i>	NN	3	10	15	40	0	10	0	0	0	0	0	7.5	
<i>Agrostis species</i> (assumed FAC, NN)	NN	3	0	0	0	5	0	0	10	15	0	15	4.5	
<i>Agrostis stolonifera</i>	NN	3	0	0	0	0	30	0	0	0	0	0	3.0	
<i>Bromus species</i> (assumed NN)	NN		0	0	0	0	0	0	0	5	0	10	1.5	
<i>Bromus sterilis</i>	NN	5	0	0	0	0	0	0	0	0	0	0	0.0	
<i>Centaurium erythraea</i>	NN	3	0	0	0	0	0	0	5	0	0	0	0.5	
<i>Convolvulus arvensis</i>	NN	5	0	0	0	0	0	0	0	0	0	0	0.0	
<i>Crepis species</i>	NN		0	0	0	1	0	1	0	3	0	0	0.5	
<i>Daucus carota</i>	NN	4	1	1	3	1	1	1	30	10	5	0	5.3	
<i>Elymus (Agropyron) repens</i>	NN	3	10	0	0	0	0	0	0	0	0	0	1.0	
<i>Galium parisiense</i>	NN	4	0	0	0	0	0	0	0	0	0	0	0.0	
<i>Geranium dissectum</i>	NN	5	2	3	1	0	0	0	0	10	3	10	2.9	
<i>Geranium molle</i>	NN	5	0	0	0	2	0	0	0	0	0	0	0.2	
<i>Holcus lanatus</i>	NN	3	7	40	0	25	10	8	5	0	20	20	13.5	
<i>Holcus mollis</i>	NN	2	0	0	0	0	0	0	0	3	0	0	0.3	
<i>Hypochoeris radicata</i>	NN	4	0	1	1	0	2	0	6	0	0	0	1.0	
<i>Lapsana communis</i>	NN	4	0	0	0	0	0	0	0	0	0	4	0.4	
<i>Lactuca serriola</i>	NN	4	0	0	0	0	0	0	0	0	0	0	0.0	
<i>Leontodon taraxacoides (nudicaulis)</i>	NN	4	0	0	0	2	0	15	0	0	0	0	1.7	
<i>Leucanthemum vulgare</i>	NN	4	0	1	1	5	1	0	30	0	0	0	3.8	
<i>Lotus corniculatus</i>	NN	3	0	0	0	0	0	0	0	0	0	0	0.0	
<i>Parentucellia viscosa</i>	NN	3	0	0	1	0	0	0	0	1	0	0	0.2	
<i>Plantago lanceolata</i>	NN	4	0	0	0	2	0	0	0	0	0	0	0.2	
<i>Poa sp.</i> (assumed to be FAC, NN)	NN	3	0	0	0	0	0	0	0	0	0	10	1.0	
<i>Raphanus sativus</i>	NN	5	0	0	0	0	0	0	0	0	0	0	0.0	
<i>Rumex acetocella</i>	NN	4	0	0	1	0	0	4	0	0	0	0	0.5	
<i>Rumex crispus</i>	NN	3	0	0	0	0	0	0	0	0	0	0	0.0	
<i>Schedonorus arundinaceus</i>	NN	3	0	0	0	0	0	6	0	0	25	0	3.1	
<i>Trifolium species</i> (assumed UPL)	NN	5	0	0	0	0	0	1	0	5	0	0	0.6	
<i>Vicia hirsuta</i>	NN	5	5	0	0	0	0	0	0	0	0	0	0.5	
<i>Vicia pannonica</i>	NN	5	0	0	5	0	5	0	0	0	0	30	4.0	
<i>Vicia sativa</i>	NN	5	0	0	0	0	5	0	0	0	0	0	0.5	
<i>Vicia species</i> (assumed UPL)	NN	5	0	0	3	1	3	1	0	20	5	10	4.3	
<i>Vulpia bromoides</i>	NN	4	0	0	3	0	0	0	0	0	0	0	0.3	
<b>Bare Substrate</b>														
Bare (soil, mud, rock)			55	38	64	41	32	41	6	18	0	0	29.5	
Algae, moss, duff, dead vegetation, etc. (incl. sprayed veg.)			0	0	0	0	0	0	0	0	0	0	0.0	
<b>Shade, Woody Stem Cover &amp; Water Depth</b>														
Approx. water depth (inches)			0	0	0	0	0	0	0	0	0	0	0.0	
Combined areal cover by woody species (shade)			0	0	0	0	0	0	10	30	80	15	13.5	
Basal woody stem cover on ground			1	0	0	0	1	0	0	0	25	0	2.7	
<b>Summary Information</b>														
Cover of Native Species			10	1	5	15	0	21	8	10	90	20	18	8.3
Lower CI (80%)													7	
Upper CI (80%)													29	
Cover of Invasive Species			0	0	0	0	0	0	0	0	0	0	0	0.0
Lower CI (80%)													0	
Upper CI (80%)													0	
Bare Substrate			55	38	64	41	32	41	6	18	0	0	30	7.2
Lower CI (80%)													20	
Upper CI (80%)													39	
Percent of FAC or wetter cover			27	55	41	30	50	34	20	24	125	60	29	
Lower CI (80%)														
Upper CI (80%)														
Sum of plant cover			45	62	64	59	67	58	94	82	148	129	81	

Marion Mitigation Bank														
2019 Vegetation Monitoring	Sample Date(s):	7/1/19-7/9/19												
Phase 2 Buffer-Woody			UP-1	UP-2	UP-3	UP-4	UP-5	UP-6	UP-7	UP-8	UP-9	UP-10	Row Average	
Native Tree and Shrub Species:	Origin (N, NN, I)	Wetland Status (1 - 5)												
Native Shrub and Tree Count	Woody Stem Count (Trees and Shrubs)													
<i>Abies grandis</i>	N	4	0	0	0	0	0	0	0	0	0	0	0.0	
<i>Alnus rubra</i>	N	3	0	0	0	0	0	0	0	0	0	1	2	0.3
<i>Amelanchier alnifolia</i>	N	4	1	0	1	2	0	0	0	0	0	0	0.4	
<i>Crataegus douglasii</i>	N	3	1	5	3	1	0	2	0	0	2	0	1.4	
<i>Frangula (Rhamnus) purshiana</i>	N	3	2	1	0	1	0	0	0	0	1	0	0.5	
<i>Fraxinus latifolia</i>	N	2	3	6	5	4	1	3	2	15	0	2	4.1	
<i>Holodiscus discolor</i>	N	4	0	0	1	1	0	0	0	0	1	0	0.3	
<i>Lonicera involucrata</i>	N	3	0	0	0	0	0	0	1	0	0	0	0.1	
<i>Mahonia aquifolium</i>	N	4	0	0	8	6	3	6	4	0	3	1	3.1	
<i>Physocarpus capitatus</i>	N	2	0	0	0	0	0	0	0	1	0	1	0.2	
<i>Pinus ponderosa</i>	N	4	0	0	0	0	1	0	0	0	0	0	0.1	
<i>Populus balsamifera</i>	N	2	0	0	0	0	0	0	0	3	1	0	0.4	
<i>Pseudotsuga menziesii</i>	N	4	0	0	0	0	1	0	0	0	0	0	0.1	
<i>Quercus garryana</i>	N	4	4	5	3	6	2	4	4	3	1	0	3.2	
<i>Ribes sanguinum</i>	N	4	0	2	0	0	0	1	1	0	1	0	0.5	
<i>Rosa pisocarpa</i>	N	3	0	0	0	0	0	0	0	0	0	0	0.0	
<i>Rosa nutkana</i>	N	3	3	1	1	2	2	7	4	0	3	0	2.3	
<i>Rubus parviflorus</i>	N	4	0	0	0	0	0	0	0	0	0	0	0.0	
<i>Sambucus nigra ssp. cerulea</i>	N	4	0	0	0	0	0	0	0	0	0	0	0.0	
<i>Sambucus racemosa</i>	N	4	0	0	0	0	0	1	0	0	0	0	0.1	
<i>Salix scouleriana</i>	N	3	0	0	0	0	0	0	0	0	0	0	0.0	
<i>Salix sitchensis</i>	N	2	0	0	0	0	3	0	0	0	0	0	0.3	
<i>Spiraea douglasii</i>	N	2	0	0	0	0	1	0	0	0	0	0	0.1	
<i>Symphoricarpos albus</i>	N	4	0	0	0	0	0	0	1	0	0	0	0.1	
<i>Thuja plicata</i>	N	3	0	0	0	0	0	0	0	0	0	0	0.0	
<i>Tsuga heterophylla</i>	N	4	0	0	0	0	0	0	0	0	0	0	0.0	
Summary Information													Habitat Average	
Native Diversity--See buffer Herb table for summary info														
Density of Woody Vegetation		Average per acre	488	697	767	802	488	836	558	767	488	209	610	
Plot Area (shrub/tree plot)	1250													
Per acre multiplier: Input 4,047 if plot area entered in B50 is in sq.meters or 43,560 for sq.feet	43560													
Sum of native plants /plot			14	20	22	23	14	24	17	22	14	6	18	
Does Plot Pass Native Cover Standard based on ≥ 25 native woody plants per acre Y or N?			Y	Y	Y	Y	Y	Y	Y	Y	Y	Y		



Marion Mitigation Bank													
2019 Vegetation Monitoring		Sample Date(s):	7/1/19-7/9/19										
Phase 3 PEM													
Species	Origin (N, NN, I)	Wetland Status (1 - 5)	E-078	S-224	E-282	E-304	E-316	E-327	E-348	E-349	E-387	Average	
<b>Native Herbaceous &amp; Woody Species</b>													
<i>Azolla filliculoides/mexicana</i>	N	1	1	0	8	20	10	1	1	1	0	4.7	
<i>Bidens cernua</i>	N	2	1	0	0	0	0	0	0	0	40	4.6	
<i>Bidens frondosa</i>	N	2	1	0	0	0	3	0	0	0	1	0.6	
<i>Carex sp.</i> (assumed FAC or wetter)	N	3	0	0	0	0	0	0	0	0	0	0.0	
<i>Eleocharis ovata</i>	N	1	0	0	0	0	0	0	0	0	3	0.3	
<i>Eleocharis palustris</i>	N	1	55	8	30	0	0	0	10	15	0	13.1	
<i>Elodea species</i>	N	1	0	0	5	40	0	0	60	75	0	20.0	
<i>Elymus triticoides</i>	N	3	0	0	0	0	0	0	0	0	0	0.0	
<i>Epilobium ciliatum</i>	N	2	0	0	0	0	5	0	0	0	0	0.6	
<i>Equisetum arvense</i>	N	3	0	0	0	0	0	0	0	0	0	0.0	
<i>Galium aparine</i>	N	4	0	0	0	0	0	0	0	0	0	0.0	
<i>Hydrocotyle ranunculoides</i>	N	1	5	0	0	0	0	1	0	0	30	4.0	
<i>Juncus effusus</i>	N	2	0	0	0	0	55	0	0	0	0	6.1	
<i>Juncus patens</i>	N	2	0	0	0	0	0	0	0	0	8	0.9	
<i>Leersia oryzoides</i>	N	1	0	0	0	0	0	0	0	0	0	0.0	
<i>Lemna minor</i>	N	1	0	15	6	5	0	20	10	0	0	6.2	
<i>Ludwigia palustris</i>	N	1	35	15	5	10	3	1	0	2	0	7.9	
<i>Paspalum distichum</i>	N	3	0	0	0	0	0	0	0	0	15	1.7	
<i>Populus balsamifera ssp. trichocarpa</i>	N	3	0	0	0	0	0	0	0	0	0	0.0	
<i>Polygonum hydropiperoides</i>	N	1	0	0	3	0	1	1	0	0	5	1.1	
<i>Polygonum species</i> (assumed FACW or wetter)	N	2	0	5	0	0	0	0	0	0	0	0.6	
<i>Salix hookeriana</i>	N	2	0	0	0	0	90	0	0	0	0	10.0	
<i>Salix lucida ssp. lasiandra</i>	N	2	0	5	0	0	0	25	0	8	2	4.4	
<i>Salix sitchensis</i>	N	2	0	0	0	0	0	60	0	0	0	6.7	
<i>Schoenoplectus acutus</i>	N	1	0	0	0	0	0	0	0	0	0	0.0	
<i>Sparganium emersum</i>	N	1	0	5	0	0	0	0	3	0	0	0.9	
<i>Wolffia borealis</i>	N	1	1	3	0	8	0	0	5	3	0	2.2	
<b>Invasive Species</b>													
<i>Phalaris arundinacea</i>	I	0	0	0	0	0	0	0	0	0	0	0.0	
<b>Non-Native Herbaceous Species</b>													
<i>Agrostis species</i>	NN	3	0	0	0	0	5	0	0	0	0	0.6	
<i>Lotus corniculatus</i>	NN	3	0	0	0	0	1	0	0	0	0	0.1	
<i>Lythrum portula</i>	NN	1	0	10	0	0	0	0	0	0	0	1.1	
<i>Mentha pulegium</i>	NN	1	0	0	0	0	0	0	0	0	15	1.7	
<i>Potamogeton sp.</i>	NN	1	0	0	0	0	0	0	0	0	0	0.0	
unknown grass	NN		0	0	0	0	0	0	0	0	0	0.0	
<b>Bare Substrate</b>													
Bare (soil, mud, rock)		0	1	39	0	0	17	46	0	0	0	11.4	
unvegetated open water		0	0	0	43	17	0	0	11	0	0	7.9	
Basal cover of woody stems		0	0	0	0	0	0	30	0	0	0	3.3	
Algae, moss, duff, dead vegetation, etc. (incl. sprayed veg.)		0	0	0	0	0	0	0	0	0	0	0.0	
<b>Shade, Woody Stem Cover &amp; Water Depth</b>													
Approx. water depth (inches)		0	0	0	36	24	0	0	24	6	0	10.0	
<b>Summary Information</b>													
Cover of Native Species			99	56	57	83	167	109	89	104	104	96	11.0
Lower CI (80%)												82	
Upper CI (80%)												111	
Cover of Invasive Species			0	0	0	0	0	0	0	0	0	0	0.0
Lower CI (80%)												0	
Upper CI (80%)												0	
Bare Substrate			1	39	43	17	17	76	11	0	0	23	8.5
Lower CI (80%)												12	
Upper CI (80%)												34	
Percent FAC or wetter cover			94	56	57	83	163	108	89	104	81	93	
Prevalence Index (aka SMI)			1.0	1.0	0.9	0.5	1.9	1.8	0.3	0.4	1.3	1.0	N/A
Weighted Prevalence Index			96	66	52	43	328	193	29	37	154		
Sum of plant cover			99	66	57	83	173	109	89	104	119		

Marion Mitigation Bank

2019 Vegetation Monitoring		Sample Date(s):	7/1/19-7/9/19												
Phase 3 PSS/PFO															
Species	Origin (N, NN, I)	Wetland Status (1 - 5)	E-051	E-052	E-070	E-138	S-027	S-028	S-075	S-076	S-100	S-103	S-105	Average	
<b>Native Herbaceous &amp; Woody Species</b>															
<i>Alisma triviale</i>	N	1	0	0	0	0	15	0	0	0	1	0	0	1.5	
<i>Carex obnupta</i>	N	1	0	0	0	0	0	0	0	0	0	0	0	0.0	
<i>Eleocharis palustris</i>	N	1	0	40	0	0	0	0	0	0	0	0	0	3.6	
<i>Epilobium ciliatum</i>	N	2	0	0	0	3	0	0	0	0	1	0	15	1.7	
<i>Equisetum arvense</i>	N	3	0	0	0	0	0	0	0	0	1	0	0	0.1	
<i>Festuca rubra</i>	N	3	0	0	0	0	0	0	0	25	0	0	0	2.3	
<i>Galium aparine</i>	N	4	0	0	0	0	0	0	0	0	2	5	1	0.7	
<i>Hordeum brachyantherum</i>	N	2	0	0	0	0	0	0	0	0	55	0	5	5.5	
<i>Hydrocotyle ranunculoides</i>	N	1	0	0	0	0	80	0	0	0	0	0	0	7.3	
<i>Lemna minor</i>	N	1	0	0	1	0	5	95	0	0	0	0	0	9.2	
<i>Madia elegans</i>	N	5	0	0	0	0	0	0	0	0	0	0	5	0.5	
<i>Madia sp. (assumed native)</i>	N		0	0	0	0	0	0	0	0	0	0	0	0.0	
<i>Polygonum hydropiperoides</i>	N	1	0	20	1	0	0	0	0	0	0	0	0	1.9	
<i>Populus balsamifera ssp. trichocarpa</i>	N	3	0	15	0	0	0	0	0	0	0	0	0	1.4	
<i>Prunella vulgaris</i>	N	4						0	0	0	0	0	0	0.0	
<i>Rosa nutkana</i>	N	3	0	0	0	0	0	0	0	0	0	0	7	0.6	
<i>Salix lucida ssp. lasiandra</i>	N	2	70	80	95	0	0	10	0	0	0	0	0	23.2	
<i>Salix species (assumed FAC or wetter)</i>	N	3	5	0	0	0	0	0	0	0	0	0	0	0.5	
<i>Veronica americana</i>	N	1	0	0	0	0	0	0	0	0	0	0	0	0.0	
<i>Wolfea borealis</i>	N	1	0	1	1	0	3	3	0	0	0	0	0	0.7	
<b>Invasive Herbaceous Species</b>															
<i>Phalaris arundinacea</i>	I	2	12	0	5	40	7	0	0	0	3	0	5	6.5	
<b>Non-Native Herbaceous Species</b>															
<i>Agrostis capillaris/castellana</i>	NN	3	0	0	0	0	0	0	10	10	0	0	35	5.0	
<i>Bromus species</i>	NN		0	0	0	0	0	0	0	0	0	0	2	0.2	
<i>Cirsium vulgare</i>	NN	4	0	0	0	0	0	0	0	0	0	0	1	0.1	
<i>Daucus carota</i>	NN	4	0	0	0	0	0	0	3	0	1	1	0	0.5	
<i>Geranium dissectum</i>	NN	5	0	0	0	0	0	0	0	0	5	5	0	0.9	
<i>Geranium molle</i>	NN	5	0	0	0	0	0	0	0	1	0	0	1	0.2	
<i>Holcus lanatus</i>	NN	3	0	0	0	0	0	0	0	45	20	30	20	10.5	
<i>Holcus mollis</i>	NN	4	0	0	0	0	0	0	10	5	0	0	0	1.4	
<i>Lactuca serriola</i>	NN	4	0	0	0	0	0	0	0	0	1	0	1	0.2	
<i>Mentha pulegium</i>	NN	1	0	0	0	0	0	0	55	0	0	0	0	5.0	
<i>Myosotis discolor</i>	NN	3	0	0	0	0	0	0	0	0	0	0	0	0.0	
<i>Parentucellia viscosa</i>	NN	3	0	0	0	0	0	0	4	0	0	0	1	0.5	
<i>Poa sp. (assumed FAC)</i>	NN	3	0	0	0	0	0	0	0	0	0	0	0	0.0	
<i>Rumex crispus</i>	NN	3	0	0	0	0	0	0	0	0	0	0	0	0.0	
<i>Solanum dulcamara</i>	NN	3	0	0	10	10	0	0	0	0	0	0	0	1.8	
<i>Trifolium sp</i>	NN		0	0	0	0	0	0	5	0	0	0	0	0.5	
<i>Vicia hirsuta</i>	NN	5	0	0	0	0	0	0	0	0	0	0	0	0.0	
<i>Vicia pannonica</i>	NN	5	0	0	0	0	0	0	15	15	30	50	10	10.9	
<i>Vicia sativa</i>	NN	5	0	0	0	0	0	0	0	0	0	0	10	0.9	
<i>Vicia species</i>	NN		0	0	0	0	0	0	5	0	0	15	10	2.7	
<i>Vicia tetrasperma</i>	NN	5	0	0	0	0	0	0	0	6	0	0	0	0.5	
<b>Bare Substrate</b>															
Bare (soil, mud, rock)			82	36	72	46	0	2	0	0	0	0	0	21.6	
Algae, moss, duff, dead vegetation, water-stained leaves, etc. (incl. sprayed veg.)			0	0	0	0	0	0	0	0	0	0	0	0.0	
<b>Shade, Woody Stem Cover &amp; Water Depth</b>															
Approx. water depth (inches)			0	0	0	0	1	12	0	0	0	0	0	1.2	
Combined aerial cover by woody species (shade)			75	100	95	130	0	10	0	0	0	0	0	37.3	
Basal woody stem cover on ground			5	1	1	0	0	0	0	0	0	0	0	0.6	
<b>Summary Information</b>															
Cover of Native Species			75	156	98	3	103	108	0	25	60	5	33	61	15.6
Lower CI (80%)														41	
Upper CI (80%)														81	
Cover of Invasive Species			12	0	5	40	7	0	0	0	3	0	5	7	3.5
Lower CI (80%)														2	
Upper CI (80%)														11	
Bare Substrate			82	36	72	46	0	2	0	0	0	0	2	22	9.6
Lower CI (80%)														10	
Upper CI (80%)														34	
Percent FAC or wetter cover			75	156	108	13	103	108	65	80	78	30	82	82	
Prevalence Index (aka SMI)			2.1	1.7	2.1	2.2	1.1	1.1	1.7	3.2	3.1	3.7	2.9	2.3	N/A
Weighted Prevalence Index			179	266	233	116	117	118	184	345	373	389	372		
Sum of plant cover			87	156	113	53	110	108	107	107	120	106	129	109	

Marion Mitigation Bank														
2019 Vegetation Monitoring	Sample Date(s):	7/1/19-7/9/19												
Phase 3 Buffer Herb Plots			UP-11-H	UP-12-H	UP-13-H	UP-14-H	UP-15-H	UP-16-H	UP-17-H	UP-18-H	UP-19-H	UP-20-H	Average	
Species	Origin (N, NN, I)	Wetland Status (1 - 5)												
<b>Native Herbaceous &amp; Woody Species</b>														
<i>Elymus glaucus</i>	N	4	0	0	0	5	0	0	3	0	0	0	0.8	
<i>Festuca occidentalis</i>	N	5	0	0	0	20	0	0	6	0	0	0	2.6	
<i>Galium aparine</i>	N	4	5	3	2	0	0	0	0	1	1	0	1.2	
<i>Galium trifidum</i>	N	2	0	0	0	0	0	0	0	0	0	0	0.0	
<i>Geranium carolinianum</i>	N	5	0	0	3	0	0	0	0	0	0	0	0.3	
<b>Invasive Herbaceous Species</b>														
<i>Cirsium arvense</i>	I	3	0	0	0	5	5	0	0	15	3	0	2.8	
<i>Phalaris arundinacea</i>	I	2	0	0	0	0	0	0	0	0	0	0	0.0	
<b>Non-Native Herbaceous Species</b>														
<i>Agrostis species (assumed FAC, NN)</i>	NN	3	0	15	40	45	0	0	0	50	30	0	18.0	
<i>Agrostis stolonifera</i>	NN	3	0	0	0	0	0	0	0	0	0	0	0.0	
<i>Anthemis cotula</i>	NN	4	0	0	0	0	0	0	0	2	0	0	0.2	
<i>Avena sativa</i>	NN	5	0	0	0	0	0	0	0	0	0	0	0.0	
<i>Avena species</i>	NN	5	0	0	0	0	0	0	0	0	0	0	0.5	
<i>Bromus hordeaceus ssp. hordeaceus</i>	NN	4	0	0	0	0	0	0	0	0	0	0	0.0	
<i>Bromus species (assumed NN)</i>	NN		0	7	0	0	0	0	0	0	0	0	0.7	
<i>Bromus sterilis</i>	NN	5	0	0	0	0	0	0	0	0	0	0	0.0	
<i>Centaurium erythraea</i>	NN	3	0	0	0	0	0	0	0	0	0	0	0.0	
<i>Cirsium vulgare</i>	NN	4	0	0	8	0	0	0	0	0	0	0	0.8	
<i>Convolvulus arvensis</i>	NN	5	0	0	0	0	0	0	0	0	0	0	0.0	
<i>Daucus carota</i>	NN	4	0	0	7	0	0	0	25	2	2	2	3.8	
<i>Dipsacus fullonum</i>	NN	3	0	0	0	0	0	0	0	0	0	1	0.1	
<i>Elymus (Agropyron) repens</i>	NN	3	70	0	0	0	0	18	0	0	38	0	12.6	
<i>Galium parisiense</i>	NN	4	0	0	0	0	0	0	0	0	0	0	0.0	
<i>Geranium dissectum</i>	NN	5	0	5	0	0	0	0	0	0	1	0	0.6	
<i>Geranium molle</i>	NN	5	0	0	0	0	0	0	0	0	0	0	0.0	
<i>Holcus lanatus</i>	NN	3	0	0	5	10	90	50	0	5	0	0	16.0	
<i>Holcus mollis</i>	NN	2	0	0	0	0	0	0	0	0	0	0	0.0	
<i>Hypochaeris radicata</i>	NN	4	0	0	0	0	0	0	3	0	0	0	0.3	
<i>Lactuca serriola</i>	NN	4	0	0	2	0	0	0	0	2	0	0	0.4	
<i>Parentucellia viscosa</i>	NN	3	0	0	0	0	0	0	0	1	0	0	0.1	
<i>Poa sp. (assumed to be FAC, NN)</i>	NN	3	0	0	0	0	0	0	30	0	0	0	3.0	
<i>Raphanus sativus</i>	NN	5	0	0	0	0	0	0	1	1	0	95	9.7	
<i>Rumex acetosa</i>	NN	3	0	0	0	0	0	0	0	0	0	0	0.0	
<i>Schedonorus arundinaceus</i>	NN	3	15	0	0	0	0	0	0	0	0	0	1.5	
<i>Vicia hirsuta</i>	NN	5	0	0	0	0	0	0	0	0	2	0	0.2	
<i>Vicia pannonica</i>	NN	5	0	0	50	0	0	20	25	20	15	0	13.0	
<i>Vicia sativa</i>	NN	5	0	0	0	10	10	0	0	0	0	0	2.0	
<i>Vicia species (assumed UPL)</i>	NN	5	10	75	0	10	0	20	0	2	0	5	12.2	
<i>Vicia tetrasperma</i>	NN	5	0	0	0	0	0	0	0	2	8	0	1.0	
<i>Vicia villosa and/or V. cracca</i>	NN	5	0	0	0	0	0	0	0	0	0	0	0.0	
<i>Vulpia bromoides</i>	NN	4	0	0	0	0	0	0	0	0	0	0	0.0	
<b>Bare Substrate</b>														
Bare (soil, mud, rock)			0	0	0	0	0	0	7	0	0	0	0.7	
Algae, moss, duff, dead vegetation, etc. (incl. sprayed veg.)			0	0	0	0	0	0	0	0	0	0	0.0	
<b>Shade, Woody Stem Cover &amp; Water Depth</b>														
Approx. water depth (inches)			0	0	0	0	0	0	0	0	0	0	0.0	
Combined aerial cover by woody species (shade)			0	55	30	0	0	0	0	0	0	2	8.7	
Basal woody stem cover on ground			0	0	0	0	0	0	0	0	0	0	0.0	
<b>Summary Information</b>														
Cover of Native Species			5	3	5	25	0	0	9	1	1	0	5	2.4
Lower CI (80%)													2	
Upper CI (80%)													8	
Cover of Invasive Species			0	0	0	5	5	0	0	15	3	0	3	1.5
Lower CI (80%)													1	
Upper CI (80%)													5	
Bare Substrate			0	0	0	0	0	0	7	0	0	0	1	0.7
Lower CI (80%)													0	
Upper CI (80%)													2	
Percent of FAC or wetter cover			85	15	45	55	90	68	30	56	68	1	32	
Sum of plant cover			105	105	117	105	105	108	93	103	100	103	104	

Marion Mitigation Bank													
2019 Vegetation Monitoring	Sample Date(s):	7/1/19-7/9/19											
Phase 3 Buffer-Woody	Origin (N, NN, I)	Wetland Status (1 - 5)	UP-1	UP-12	UP-13	UP-14	UP-15	UP-16	UP-17	UP-18	UP-19	UP-20	Row Average
Native Tree and Shrub Species:													
Native Shrub and Tree Count	Woody Stem Count (Trees and Shrubs)												
<i>Amelanchier alnifolia</i>	N	4	0	0	0	0	0	0	0	0	0	0	0.0
<i>Crataegus douglasii</i>	N	3	1	4	0	0	0	2	0	0	0	1	0.8
<i>Frangula (Rhamnus) purshiana</i>	N	3	0	2	1	0	0	0	0	0	0	0	0.3
<i>Fraxinus latifolia</i>	N	2	0	1	1	0	0	0	0	0	0	0	0.2
<i>Holodiscus discolor</i>	N	4	0	0	0	0	2	1	0	0	0	0	0.3
<i>Lonicera involucrata</i>	N	3	0	0	0	0	0	0	0	0	0	0	0.0
<i>Mahonia aquifolium</i>	N	4	2	1	1	7	3	3	4	4	2	4	3.1
<i>Physocarpus capitatus</i>	N	2	0	0	0	0	0	0	0	0	0	0	0.0
<i>Pinus ponderosa</i>	N	4	0	0	0	2	3	0	0	0	1	0	0.6
<i>Pseudotsuga menziesii</i>	N	4	1	0	0	0	1	2	0	0	1	0	0.5
<i>Quercus garryana</i>	N	4	1	0	0	1	2	3	0	0	0	2	0.9
<i>Ribes sanguinum</i>	N	4	0	0	0	0	0	0	0	0	0	0	0.0
<i>Rosa pisocarpa</i>	N	3	0	0	0	0	0	0	0	0	0	0	0.0
<i>Rosa nutkana</i>	N	3	1	0	0	3	5	2	1	1	0	1	1.4
<i>Sambucus racemosa</i>	N	4	0	2	0	0	0	0	0	0	0	0	0.2
<i>Symphoricarpos albus</i>	N	4	0	0	0	2	0	2	0	1	0	1	0.6
Summary Information	Habitat Average												
Native Diversity--See buffer Herb table for summary info													
Density of Woody Vegetation	Average per acre	209	348	105	523	558	523	174	209	139	314	310	
Plot Area (shrub/tree plot)	1250												
Per acre multiplier: Input 4,047 if plot area entered in B49 is in sq.meters or 43,560 for sq.feet	43560												
Sum of native plants /plot		6	10	3	15	16	15	5	6	4	9	9	
Does Plot Pass Native Cover Standard based on ≥ 25 native woody plants per acre Y or N?		Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	

**APPENDIX B: Credit Ledger (2019)**

APPENDIX B:

MARION MITIGATION BANK CREDIT LEDGER: 9/14/2018 - 12/5/2019

<b>Date</b>	<b>Transaction Type</b>	<b>Jurisdiction</b>	<b>Permitee</b>	<b>Permit Number (DSL/Corps)</b>	<b>Wetland Impact Type</b>	<b>Number of Credits (ac.)</b>	<b>Balance of Credits after Transaction (ac.)</b>
11/5/2018	release	State/ Federal	NA	NA	NA	6.73	7.433
11/15/2018	withdrawal	State/ Federal	Headrick Properties	8014-ENF		0.89	6.543
<b>Credits Released 2018-2019 (ac.): 6.73</b>							<b>Credits Withdrawn 2019 (ac.): 0.0</b>
<b>Total Credits Released (ac.): 30.09</b>						<b>Total Credits Withdrawn (ac.): 23.547</b>	<b>Balance (ac.): 6.543</b>