Mid-Valley – Phase 1

Mitigation Monitoring Report Cover Sheet
Oregon Department of State Lands

Block 1: Report Information

DSL Permit Number:	COE Permit Number: *Nationwide Permit 27 - 200400726*
Permittee: *Gilmour*	
County: *Benton*	Report Date: *11/10/11* Monitoring Year 6
Date Removal-Fill Activity Completed:	
Date mitigation was completed Grading: *2/05* Planting: *5/06*	

Report submitted by: Marvin and Cindy Gilmour

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 has 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
- ■ Other: _____

Block 3: Results

	Success Criteria	Met? (Y/N)	Comments/Reasons for Failure*
1.	Emergent Vegetation	3 of 3 requirements	
2.	Wetgrass Prairie	6 of 6 requirements	
3.	Created Tree/Shrub	5 of 5 requirements	
4.	Forest - Enhanced	2 of 2 requirements	5th year performance standard, met in 2010
5.	Buffer Areas - Upland Forest and Pond	4 of 4 requirements	5th year performance standard, met in 2010

Remedial work recommended	Yes	No X
Deed Restriction or other protection instrument attached (noted: if a filed deed restriction was a required as a permit condition, please attach a copy: *previously submitted*	Yes X	No
Final Monitoring Report?	Yes	No X
Requesting release or partial release of bond/credits	Yes	No X

*see report for detailed information

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LIST OF ATTACHMENTS

1.0 REGULATORY BACKGROUND

The purpose of this report is to summarize the progress of Phase 1 of the Mid-Valley Wetland Mitigation Bank (Bank). The Bank is located approximately one mile east of Independence Highway and one and one-half miles south of Springhill Drive in T10S, R4W, Sec. 15, Tax Lot 700. The letter of approval for the Bank was signed on September 27, 2005 and is permitted as ACOE permit #2004-000726. Phase 1 of the Bank consists of 33.1 acres.

Development of the Bank was through a combination of restoration of previously drained wetlands (10.58 acres), restoration of wet prior converted (1.02 acres), enhancement of remnant ash swales and shrub/scrub (10.17 acres), and the creation of wetlands from upland agricultural land (4.78 acres). The inclusion of adjacent 4.89 acres of upland forest as buffer to the Bank is also planned.

Anticipated Bank credits:

Type of Credit	Acres	Ratio	Credits
Restoration	10.58	1:1	10.580
WPC Restoration	1.02	2:1	0.510
Creation	4.78	1½:1	3.187
Enhancement	10.17	5:1	2.034
Buffer	4.89	10:1	0.489
Total	**31.44**		**16.8**

2.0 WORK SUMMARY

Due to the age of this site and the excellent restoration work done by the Bank sponsors, maintenance is becoming much less time consuming each year. In September, all borders and existing forested areas were spot herbicide treated for non-natives. Due to early fall rains, mowed areas were spot treated for non-natives which took advantage of warm soils and significant moisture. Additional forbs planting was done on the south border to increase diversity, and allow for grass specific herbicide treatment if needed for Annual bluegrass.

Beginning in early March, efforts concentrated on covering all prairie areas to spot treat unwanted species before native grasses got tall and inhibited detection. All prairie areas were walked at least two times targeting velvet grass (*Holcus lanatus*), meadow foxtail (*Alopecurus pratensis*), penny royal (*Mentha pulegium*), parentucellia (*Parentucellia viscosa*) and any other non-natives encountered. The existing forested area was periodically spot treated throughout the season. As spring moved forward focus shifted towards patrolling the emergent draw down zones for opportunistic species such as spatula-leaf loosestrife (*Lythrum portula*) and penny royal (*Mentha pulegium*). Most of this time was spent on surveillance, with little spraying as

non-natives are well under control.

Limited mowing was performed in early July. Mowing concentrated on the outside borders, where new weeds are most likely to move in, and corridors through the prairie areas to aid in weed surveillance. Heavy forbs areas were also mowed to reduce biomass, overall ~25% of the site was mowed. Following mowing, prairie areas were periodically scanned for unwanted species such as wild carrots, dandelions, Centaury, and thistles while detection was easy, to prevent any of these species from potentially going to seed.

Table 1. Summary of Restoration Activities - October 2010 through October 2011.

Activity	Location
Site Preparation	Borders only
Existing forested vegetation treatment	All non-native vegetation treated
Spot weed control	100% of bank was patrolled
Mowing	60ft along borders, access trails through prairie, and heavy forbs areas

3.0 AS-BUILT PLANS

The as-built plans were submitted with the first monitoring report in April 2006.

4.0 HYDROLOGY PERFORMANCE STANDARDS, METHODOLOGY, AND RESULTS

4.1 Performance standards:

Wetland hydrology, defined as saturation of the major part of the root zone (in the upper 12-inches of the soil profile) or ponding upon the soil surface for at least 12.5% of the growing season must be achieved (for the purpose of this determination, the growing season is defined as the period in which temperatures are expected to be above 28^0 F in 5 out of 10 years. This is the period between March and November in Benton County. Wetland hydrology will be present in three out of five years or less if the weather records are close to normal and no irrigation is supplied.

4.2 Methodology:

Water depth and depth of saturation will be indicated throughout the site using a combination of groundwater monitoring tubes as an aid to show how the water level follows the site topography, and paired plots along the site boundary and any high areas to indicate the exact location of the wetland boundary. The paired plots will be done using soil probes or pits. In addition, these areas will be visually documented with photographs to show a dominance of wetland species. The wetland boundary will then

be displayed on a site map.

4.3 Results

This provision has been met for at least three years and is no longer being monitored.

5.0 VEGETATION PERFORMANCE STANDARDS AND METHODOLOGY

Vegetation monitoring was conducted on all areas.

5.1. Performance Standards

Emergent Herbaceous

1. A minimum of 55% of the relative plant cover (including bare soil) is comprised of native species.
2. No more that 15% of the relative plant cover is comprised of non-native invasive species as define below.
3. The wetland's moisture index is less than 3.0.
   *Non-native invasive species to be included: reed canary grass (*Phalaris arundinacea*), purple loosestrife (*Lythrum salicaria*), Himalayan blackberry (*Rubus discolor*), and Japanese knotweed (*Polygonum cuspidatum*), Eurasion water milfoil (*Myriophyllum spicatum*), climbing nightshade (*solanium dulcamara*) (and yellow-flag iris (*Iris pseudacorus*), Anne's lace (*Daucus carota*), Canadian thistle (*Cirsium arvense*), bull thistle (*Cirsium vulgare*), orchard grass (*Dactylis glomerata*) and annual ryegrass (*Lolium multiflorum*) or others as determined by the MBRT.

Wetgrass Prairie

The above performance standards along with the following:

1. At least 10 wetgrass prairie species are present as listed in "Species Composition for Willamette Valley Vegetation Types" by Kathy Pendergrass, August 2003, *supplied by John Marshall (USFWS) author of "Draft Guidance on Vegetation Performance Standard and Monitoring Protocols for Reference Sites and Mitigation Sites"* to enhance Appendix II of this document.
2. Tufted hairgrass (*Deschampsia cespitosa*) is represented by 25% or greater relative plant cover.
3. At least 50% of the relative plant cover (including bare soil) is comprised of native species.
4. No more that 15% of the relative plant cover is comprised of non-native invasive species as define above.
5. The prairie's moisture index is between 2.0 and 3.0.
6. No more than 5% relative plant cover by shrubs or trees.

Shrub and Forest - Created

By the end of the second growing season, the shrub and forest component of the wetland will meet or exceed 75% of the species richness of the reference site (excluding non-native invasive species). The plant density in forested wetlands

will be at least 50 to 100 living stems per acre and shrub/scrub wetlands at least 200 to 300 living woody stem per acre, of species that are rated FAC or wetter, excluding FAC- species. This must be achieved by the end of the second growing season following planting and maintained through the end of the monitoring period until canopy coverage is greater than 30%. There will be no more than 15% aerial coverage of non-native invasive species*. These densities will be a combination of planted individuals and natural recruitment.

In addition the herbaceous layer in the forest and shrub areas will meet or exceed the performance standards for emergent herbaceous wetlands as stated above.

Forest - Enhanced

Year five performance standard for the enhanced forested wetland will be maintaining the existing wetland forest and shrub layers while managing for no more than 15% of non-native invasive species.

Buffer Areas - Upland Forest and Pond

Year five performance standard for the upland forest buffer will be to maintain the forest cover with 20% or less of non-native invasives. The five year performance standard for the existing pond will be to maintain it as a pond/wetland and maintain 20% or less of non-native invasives.

5.2 Methodology

Monitoring was conducted of the existing monitoring points that had been laid out using a stratified systematic plot method. The transects were laid out in a stratified arrangement along one baseline with equal distance between each transect (approximately 250'). The transects crossed the entire wetland, generally perpendicular to the topography. The sampling plots were predetermined and plotted on the transects at 100-foot intervals from each other. Two additional plots were added for 2010 per the 5th year monitoring requirements. These plots were #34 in the existing forested area, and photo point 6 which is illustrated on the map (attachment 2) and utilized as both a vegetation and photo monitoring point.

The herbaceous sample plots were conducted using one meter quadrants, located at the northwest corner of each point. When needed, a 30-foot diameter forest/shrub sample plot was placed with its center at the plot center point encompassing the herbaceous plots. The starting point of the sample plots was staggered in order to cover a broader area. The sample plots were permanently identified in the field and were plotted on a site map.

5.3 Vegetation Monitoring Results

Vegetation monitoring was conducted on June 6, 2011 by Marvin Gilmour, and Ray Fiori. Attachment 1 includes spread sheets with the monitoring results. The monitoring point location map is included as Attachment 2. The spread sheets include a complete listing of all species identified in the Bank's monitoring plots including both the botanical and common names, the indicator status, origin (native or non-native), and moisture index. Thirty-six monitoring plots were examined.

During the June 2011 monitoring, 47 plant species were identified in the Bank monitoring plots. Although considerably more diversity exists on the site, species were only counted if they occurred in a monitoring plot. Species encountered in previous years remain on the list as they are likely to show up again, but were not counted in the total species. As the bank matures, some of the annual, early seral species are beginning to disappear, but will resurface through various disturbance regimes.

As with last year, several areas of bareland were included in the monitoring results which resulted from an accumulation of organic matter. In areas with a lot of grass, the water sitting on the site over the winter caused the grass to create mats of dead biomass on the ground surface, forming a deep organic litter mat. As evident from last year, this process sets back succession and allows new seedlings to germinate in the rich organic matter. This process has also proved very beneficial for introducing forbs species. During the monitoring, we noted these areas on the monitoring data sheets as bare ground due to organic litter cover. Open water was more prevalent this year with a very cold and wet spring in which evaporation didn't begin to outpace precipitation until late May (Hyslop data).

This year grass species represent 58.43% of the vegetation cover with the two most abundant species Spike bentgrass (*Agrostis exarata)* and Tufted hairgrass (*Deschampsia cespitosa*) covering 12% and 21% respectively throughout all monitored habitats. This was a shift from last year when Meadow barley was the second most abundant species, with forbs, sedges, and rushes continuing to increase. Water foxtail *(Alopecurus geniculatus*), Meadow barley (*Hordeum brachyantherm*) and Slender wheatgrass *(Elymus Trachycaulus)* were the three next most prevalent grass species. Sedges and rushes represented 11.7% cover this year, grasses were 58.4%, and forbs were 20.2%.

5.3.1 Emergent Vegetation

All three of the performance criteria for **emergent herbaceous** vegetation were met.

Required: At least 55% of the mean plant cover (including bare soil) will be comprised of native species. – ***Met;****, Plots 2, 16, 19, 20, 24, 25, 26 and 29 are the planned emergent vegetation plots, which are comprised of 87.5% native species.*

Required: No more that 15% of the mean plant cover will be comprised of non-native invasive species. –***Met;*** *with 0% of non-native invasive species.*

Required: The wetland's moisture index is less than 3.0. –***Met;*** *with an average weighted moisture index of 1.29.*

5.3.2 Wetgrass Prairie

The performance criteria for **wetgrass prairie** were met for 6 of the 6 requirements.

Required: At least 10 wetgrass prairie species are present as listed in "Species Composition for Willamette Valley Vegetation Types" by Kathy Pendergrass. – ***Met;*** *Fifteen wet grass prairie species were identified within the wet prairie plots this year with nineteen species throughout all the monitoring points.*

Required: Tufted hairgrass is represented by 25% or greater mean cover. -- ***Met;*** *Tufted hairgrass was present on average 28.5% in the 20 plots identified as wetland prairie.*

Required: At least 55% of the mean plant cover (including bare soil) will be comprised of native species. – ***Met;*** *In the 20 wetland prairie plots there was 93.5% native plant cover. Non-native and bare ground accounted for 6.5%.*

Required: No more that 15% of the mean plant cover will be comprised of non-native invasive species. – ***Met;*** *0% of non-native invasive species.*

Required: The prairie's moisture index is between 2.0 and 3.0.--***Met;*** *the average weighted moisture index of the prairie plots is 2.07.*

Required: The prairie has no more than 5% mean cover by shrubs or trees. – ***Met;*** *four of the 20 prairie plots have any shrub or overstory component, none of which accounts for significant shading. There were 88 stems noted, 25 Oregon ash (Fraxinus latifolia), and 63 Nootka rose (Rosa nutkana). This standard will be more closely reviewed as the shrub and tree components begin to grow and age, but this represents the same number as last year.*

5.3.3 Shrub and Forest - Created

The performance criteria for **shrub and forest - created** were met for 5 of the 5 requirements.

Required: By the end of the second growing season, the shrub and forest component of the wetland will meet or exceed 75% of the species richness of the reference site (excluding non-native invasive species*)* .—***Met;*** *reference site (in-Bank) contains a combination of six overstory and scrub/shrub species, while the Bank (not including the reference sites) includes 10 overstory and scrub/shrub species, which exceeds the 75% species richness required. (6 x .75 = 4.5 required species).*

Required The plant density in forested wetlands will be at least 50 to 100 living stems per acre and shrub/scrub wetlands at least 200 to 300 living woody stem per acre, of species that are rated FAC or wetter. This must be maintained through the end of the monitoring period until canopy coverage is greater than 30%. -- ***Met;*** *there are 62 trees per acre and 339 shrubs per acre.*

Required: There will be no more than 15% aerial coverage of non-native invasive species*. – ***Met with 0% non-native invasives.***

In addition, the herbaceous layer in the forest and shrub areas will meet or exceed the performance standards for emergent herbaceous wetlands (below):

Required: At least 55% of the mean plant cover (including bare soil) will be comprised of native species. – ***Met***; plots 27, 27a (not monitored for herbaceous), 28 and 33 are the planned forest/shrub vegetation plots, which are comprised of 80% native plant cover.

Required: The wetland's moisture index is less than 3.0. –***Met;*** *with an average weighted moisture index of 2.12.*

5.3.4 Forest - Enhanced

The performance criteria for **Forest - Enhanced** were met for 2 of the 2 requirements.

Required: Year five performance standard for the enhanced forested wetland will be maintaining the existing wetland forest and shrub layers while managing for no more than 15% of non-native invasive species. ***Met,*** *This was documented last year as part of the year 5 monitoring report and is no longer being monitored.*

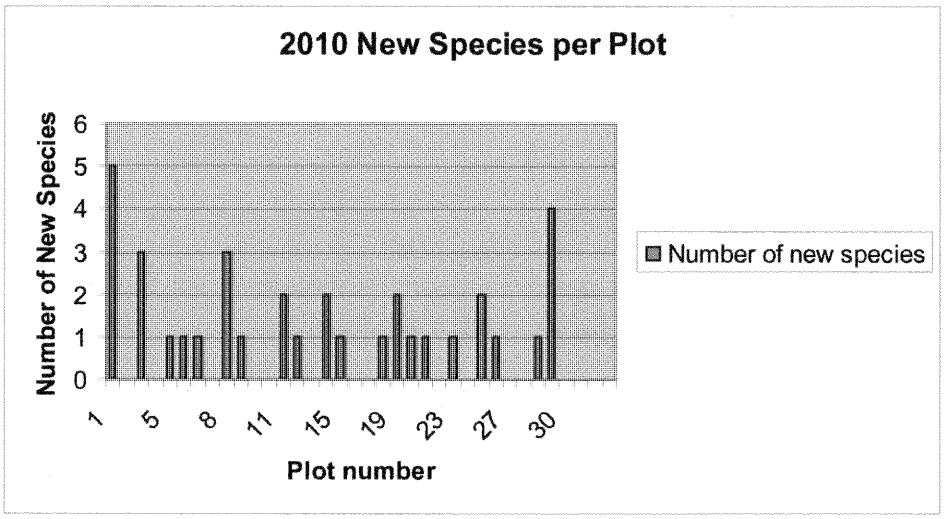
5.3.5 Buffer Areas - Upland Forest and Pond

The performance criteria for **Buffer Areas - Upland Forest and Pond** were met for 4 of the 4 requirements.

Required: Year five performance standard for the upland forest buffer will be to maintain the forest cover with 20% or less of non-native invasives. The five year performance standard for the existing pond will be to maintain it as a pond/wetland and maintain 20% or less of non-native invasives.— ***Met,*** *This was documented last year as part of the year 5 monitoring report and is no longer being monitored.*

6.0 SPECIES AREA CURVE

Below is the data from last year which is very similar to this year, with no new species in the last several plots. It's been well established at this point that there is an adequate number of monitoring plots, and we are requesting to omit this section from future reports.



7.0 PHOTO POINT MONITORING

Monitoring point photos are included as Attachment 3.

8.0 CREDIT SALES SUMMARY

Mid-Valley Mitigation Bank (Phase 1) has a possible 16.8 credits. On 12/21/10 the Corps released the final credits and DSL did the same on 12/29/10 verifying all credits available to sell. The final credits were sold from the bank this year, resulting in a balance of zero credits. This is the first of the final five monitoring report. Table 2 summarizes the credit sales.

Table 2 – Mid-Valley Phase 1 Credit Summary

DATE	*NAME*	*LOCATION*	*PERMIT NUMBER*		*SOLD*	*BALANCE*
9/28/05	**CORPS/DSL INITIAL RELEASE - 30% CREDITS - 5.04**					**5.04**
			DSL	**CORP**		
10/4/05	Investor's Equity Inc - Keith Nakayama	Charlies Estates, Lebanon	35040-RF	200500499	0.18	**4.86**
10/4/05	RMA Development	Clearview III, Lebanon	34107-RF	200500164	0.47	**4.39**
10/4/05	Gordon Vogt	Skyview III, North Albany	33916-RF	200500075	0.09	**4.3**
10/7/05	Conser Homes	Morningstar Phase III	34842-SP	200500432	0.13	**4.17**
10/11/05	BBF Dev. Clover Ridge-Myles Breadner	Edgewater, Albany	NA	200500365	0.87	**3.3**
10/11/05	Wulf Const	Creekside at Adair, Adair Village,	NA	199900325	0.13	**3.17**
10/17/05	Ken Kohl-ODOT	OR 228: Or99E to I-5	NA	200500163	2.57	**0.6**
10/25/05	Conser Homes	Sweetwater Subdivision	15198/5877-ENF	DSL only	0.27	**0.33**
11/7/05	City of Philomath		NA	NA	0.34	**-0.01**
6/9/06	**CORPS/DSL 2ND RELEASE - 30% CREDITS - 5.04**					**5.03**
6/16/06	GRS Enterprises	Eagle View Estates	34707-RF	200500435	0.28	**4.75**
8/29/06	Kingdom Estates	31707 S Fifth Street, Lebanon	3642-FP	200600291	0.2695	**4.4805**
12/6/06	RC Ventures LLC	Millersburg	37196-RF	200600615	0.978	**3.5025**
12/6/06	Gregory M. Perry		37033-RF	200600550	0.07	**3.4325**
9/5/06	Home Solutions	Kevin Spillman	NA	NA	0.07	**3.3625**
1/5/07	North Coast Electric	Ferry Street, Albany	37472-RF	200600886	0.27	**3.0925**
2/14/07	Progressive Design Builders	Philomath	37098-FP	NA	0.5	**2.5925**
10/11/06	Fernwood Environmental	Lake Point Estates, Sweet Home	36435-RF	NA	0.2	**2.3925**
3/8/07	IWM, LLC - R & D Construction		37275-RF	2006-945	0.49	**1.9025**
8/13/07	**CORPS/DSL 3RD RELEASE - 20% CREDITS - 3.36**					**5.2625**
4/19/07	Arrt Properties, LLC		37469-RF	2006-909	1.12	**4.1425**
2/26/07	Brownsville JV, LLC	Brownsville	38586	2007-478	0.13	**4.0125**
3/28/08	Hendgen-McMinville LLC	Albany Heights, Albany	39616-RF	NA	1.65	**2.3625**
4/4/08	**CORPS/DSL 4th RELEASE - 15% CREDITS - 2.52**					**4.8825**
4/4/08	DSL	Per Dana Hicks	33347 & 36174	NA	3.99	**0.8925**
7/23/09	ODOT	I-5 Bridges-Various Locations	42585-GA	NA	0.092	**0.8005**
8/25/09	ODOT	Locke Creek Bridge OR99W	42796-RF	NA	0.015	**0.7855**
12/29/10	**CORPS/DSL 5th/Final RELEASE - 5% CREDITS - 0.84**					**1.63**
8/17/11	OSU	SW 15th St. & Philomath BLVD	46865-RF	2011-181	1.63	**0.0**
	Total Released = 16.8			Total Sold =16.8		

Attachment 1

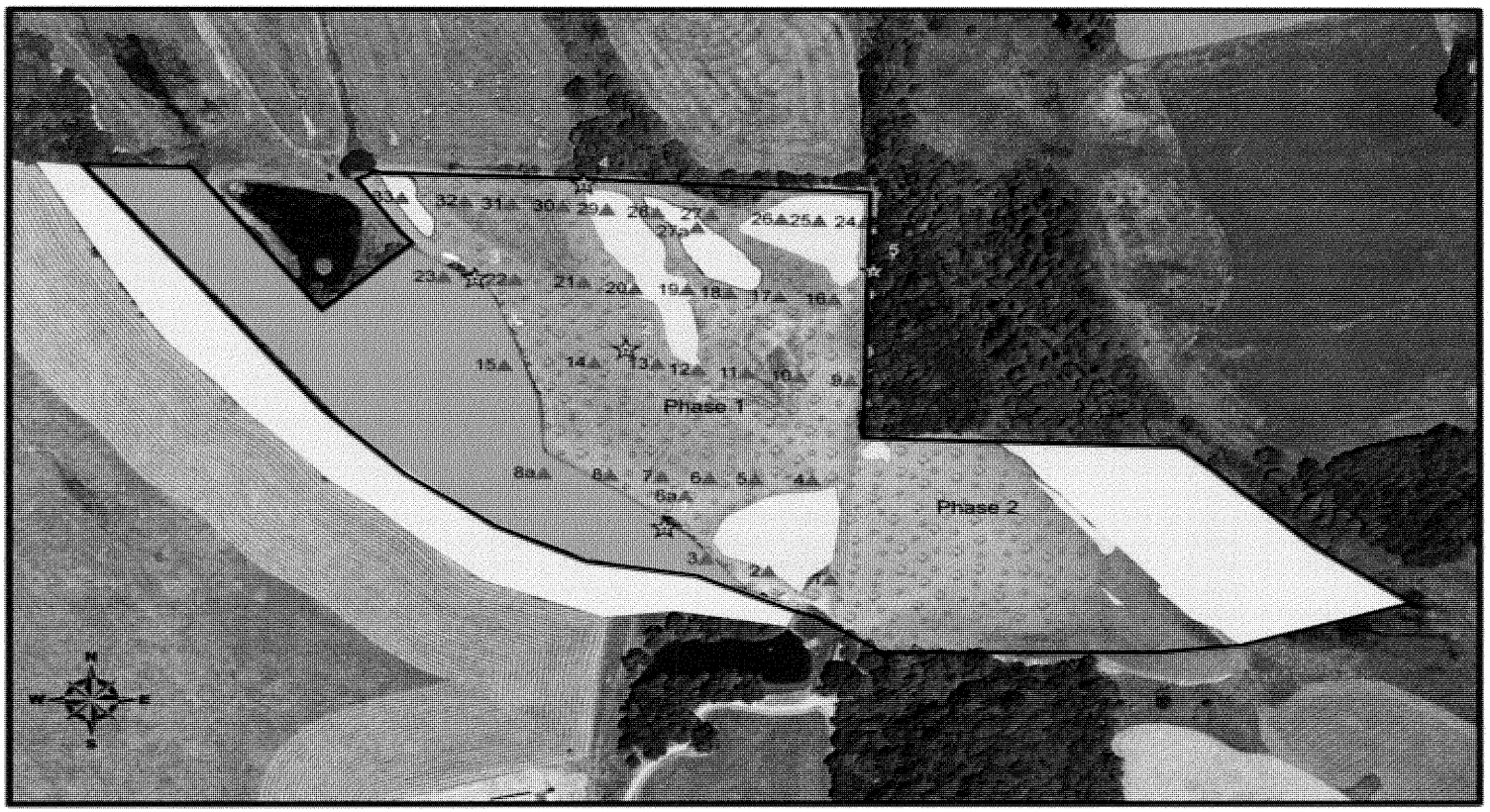
Mid-Valley Mitigation Bank - Phase 1

Sample Plot Monitoring Results - June 6, 2011

Botanical Name	Common Name	Status	Origin	Wet Prairie Species	Wet Prairie Index	Average Cover each Species					1	2	3	4	5	6	6a	7	8	8a	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26	27	27a	28	29	30	31	32	33
																					REF						REF									REF											
																																							Stem count Obs						
Overstory Species - stem count (within 30' diameter)					Wet Prairie	FOB	FISN	Emergent	Extra																																					
Acer macrophyllum	Bigleaf maple	FACU	native		4				Bank																																					
Alnus rubra	Red alder	FAC	native		2																																				1					
Crataegus douglasii	Black hawthorn	FAC	native		3																51						1																			
Fraxinus latifolia	Oregon ash	FACW	native		2								11				33				8						23	2							7	4										
Malus fusca	Western crabapple	FACW	native		2																																		1		2					
Prunus nigra/cerasifera	Black cherry/cherry	FAC	native		2																							1																		
AVG Treeplot (fac or wetter)	1.00																																													
AVG Treeplot (fac or wetter)	81.7																																													
Sapling/Shrub Species - stem count (within 30' diameter)																																														
Cornus sericea	Red osier dogwood	FACW	native		3																																	3		8	4					8
Rosa eulosia	Nootka rose	FAC	native	Yes	2												45												1				44													
Salix lasiandra	Pacific willow	FACW	native		2																							3								5										
Symphoricarpos albus	Snowberry	FACU	native		4																																									
AVG Shrubplot (fac or wetter)	5.0																																													
AVG Shrubplot (fac or wetter)	100.1																																													
Herbaceous Species - percent cover (1 meter square sample plots)																																														
Allium cernuum	Nodding "onion" wetter allium	OBL	native		1	0.00	0.00	0.00	2.33	0.21%																					10															
Alopecurus aequalis	Water foxtail	OBL	native		1	0.00	0.00	0.00	2.33	0.21%																															10					
Baltica oppositifolia	Rocking beltcentaury	FACW+	native		2	0.00	0.00	0.00	0.00	0.00%																																				
Carex aquatilis	Common carex	FACW	Native	Yes	3	0.00	0.00	0.00	0.00	0.00%																																				
Carex obnupta	Slough sedge	OBL	native		1	30.00	0.00	0.00	0.00	5.14%											25	50					60																			
Carex stipatoidea	One-sided sedge	FACW	native	Yes	2	0.50	0.00	0.00	0.00	0.29%														10																						
Centaurium erythraea	Centaury	FAC	non		3	0.00	0.00	3.25	0.00	0.14%																																				5
Cicuta douglasii	Western water hemlock	OBL	native		1	0.00	0.00	0.00	0.00	0.00%																																				
Downingia elegans	Showy downingia	OBL	native	Yes	1	0.00	0.00	0.00	0.00	0.00%																																				
Eleocharis ovata	Ovoid spike rush	OBL	native	Yes	1	0.25	0.00	0.00	0.00	0.14%														5																						
Elisanthe gracilis	Slender false hemp	OBL	native		1	0.00	0.00	0.00	4.33	0.57%																					20															
Epilobium ciliatum ssp. ciliatum	Watson's willow herb	FACW	native	Yes	2	0.50	1.25	0.00	0.00	0.43%			5			5							5																							
Epilobium densiflorum	Dense willow-herb	FACW	native	Yes	2	0.50	0.00	0.00	0.00	0.29%																				10																
Geum macrophyllum	Large leaf avens	FACW	native		3	0.25	12.50	0.00	0.00	1.43%			50																																	
Geranium molle	Dovefoot geranium	NOL	non		3	0.00	0.00	0.00	0.00	0.00%																																				
Grindelia stricta/nana	Brachiate heldand-aster	OBL	native	Yes	1	0.00	0.00	0.00	0.83	0.14%																																				5
Juncus effusus	Soft rush	FACW	native		2	4.50	3.75	0.00	0.00	3.00%	40						45				5						15																			
Juncus tenuis	Thread rush	FACW	native		2	0.00	0.00	0.00	4.33	1.00%																						35														
Juncus tenuis	Slender rush	FACW	native	Yes	2	3.75	0.00	0.00	0.00	1.00%											15		60																							
Lactuca serriola	Prickly lettuce	NOL	non			0.00	0.00	2.50	0.00	0.29%																															5					5
Lactuca virosa	Wild lettuce	NOL	non			0.00	3.75	0.00	0.00	0.43%																										15										
Lactuca serriola	Prickly lettuce	NOL	non		3	3.00	0.00	0.00	0.00	1.71%																				60																
Lythrum portula	Spring Beauty	FAC	native		3	9.50	22.50	0.00	0.00	2.86%																																				
Montia stricta	Pumpkinseed	FAC	native		3	0.00	0.00	0.00	0.00	0.00%			5						15	25							5								60											
Pentachaetina microsa	Pentachaetina	FAC	native		3	0.00	0.00	0.00	0.00	0.00%																																				
Physalis/Physa flagellaris	Cutleaved ground-cherry	FACW	native	Yes	2	0.00	0.00	0.00	7.50	1.71%																											60									
Plagiobothrys scouleri	Scouler's popcorn flower	FACW	native	Yes	2	0.00	0.00	0.00	0.83	0.14%																									5											
Potentilla gracilis	Slender cinquefoil	FAC	native	Yes	3	0.25	0.00	0.00	0.00	0.14%																5																				
Ranunculus repens	Creeping buttercup	FACU	native		4	0.00	0.00	0.00	0.00	0.00%																																				
Ranunculus orthorhynchus	Straight beaked buttercup	FACW	native	Yes	2	0.00	2.50	0.00	0.00	0.29%			5																						5										
Rorippa curvisiliqua	Western yellowcress	OBL	native	Yes	1	0.00	0.00	0.00	1.25	0.14%					5	5							5			5				10							5				5						
Rubus discolor	Himalayan blackberry	FACU	non		4	0.00	0.00	0.00	0.00	0.00%																																				
Rubus ursinus	Pacific blackberry	FAC	native		3	0.00	0.00	0.00	0.00	0.00%																																				
Rubus ursinus	Trailing blackberry	FACU	native		4	0.00	6.25	0.00	0.00	0.71%																	20								5											
Sagittaria latifolia	Wapato	OBL	native		1	0.00	0.00	0.00	0.83	0.14%		5																																		
Sidalcea campestris	Meadow sidalcea	NOL	native			3.00	0.00	0.00	0.00	1.71%					25	15	20																													
Sidalcea malviflora	Checkerbloom/mallow	NOL	native	Yes		0.00	0.00	0.00	0.00	2.00%																		15	20																	
Stenotaphrum secundatum	Blue eyed grass	FACW	native	Yes	2	0.00	0.00	0.00	0.00	0.00%																				10																
Trifolium amplifolium	Fringed vetch	NOL	native			0.00	2.00	0.00	0.00	0.00%											15																									
Trifolium gracilentum	Cat-tail	OBL	native		1	0.00	0.00	5.00	0.00	1.14%																															40					
Veronica peregrina	Purslane speedwell	OBL	native		1	0.00	0.00	0.00	7.50	1.29%	30	60																																		
Veronica peregrina var. xalapensis	Hairy purslane speedwell	OBL	native	Yes	1	0.00	0.00	0.00	0.00	0.00%																																				
Vicia sativa	Hairy vetch	NOL	non			0.00	1.25	0.00	0.00	0.14%																									5											
Grass Species - percent cover (1 meter square sample plots)																																														
Agrostis exarata	Spike bentgrass	FACW	native	Yes	2	16.00	0.00	2.50	9.33	13.00%		10		25	45	15		10			15	70	10	30	30	30		65	70	10		10	20	15								10				10
Alopecurus geniculatus	Water foxtail	OBL	native		1	2.25	0.00	0.00	13.75	4.43%		25												25				25			65																
Beckmannia syzigachne	Slough grass	OBL	native	Yes	1	0.25	0.00	0.00	3.75	2.14%														5				5			5	45										15					
Bolboschoenus maritimus	Little saltbog sedge	FAC	native		3	0.00	0.00	0.00	0.00	0.00%																																				
Deschampsia cespitosa	California hairgrass	FAC	native	Yes	2	1.50	0.00	0.00	0.00	0.86%																15							20													
Deschampsia cespitosa	Tufted hairgrass	FACW	native	Yes	2	36.00	2.50	30.00	4.00	12.71%	15		10	25	35	40	30	35		15	20	30	35	35	30	40		5	10		10		50	50		25			40		50		5		50
Deschampsia elongata	Slender hairgrass	FACW	native	Yes	2	1.50	2.50	2.50	0.00	1.43%			10	10			20																													10
Elymus glaucus	Blue wildrye	FACU	native		3	0.75	0.00	5.00	0.00	0.71%																						5	35						10			20	75	75	10
Hordeum brachyantherum	Meadow barley	FACW	native	Yes	3	6.50	3.75	5.00	11.00	7.29%			10	10		15	5	15	10				10					15						20		75			10		10		20	20		
Juncus mustitorus	Annual rush grass	FACU	non		4	0.00	0.00	0.00	0.00	0.00%																																				
Poa cusicka	Pacific bluegrass	FACW	non		2	0.00	2.50	0.00	0.00	0.29%																									10											
Vulpia myuros	Rattail fescue	FAC	non		3	0.00	0.00	1.25	0.00	0.14%																															5					
Sample Plot #											1	2	3	4	5	6	6a	7	8	8a	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26	27	27a	28	29	30	31	32	33
Open Water: 19,25,28,29						mean=	4.72															10															35	105				44					
Bentgrass: blue to organic after cover 1,4,7,8,11,12,27,28 include to mature inundation							mean=		4.86		35			30				25	20						50			100											30							
Relative % native cover including bentgrass as non-native (herbaceous only)											75	100	100	70	100	100	100	75	85	100	100	100	100	100	80	100	100	100	80	100	100	100	100	70	100	100	100	100	85		75	100	100	100	100	80
well prairie mean =	92.86						average mean=		87.58		non-native herbaceous only mean=																88.06																			
% non-native invasives as defined in Final Document											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%	0%	0%	0%
well prairie mean =	0.00						average mean=		0.00		non-native herbaceous only mean=																0.00																			
Sample plot weighted moisture index (herbaceous lower only)											1.33	1.10	2.08	2.00	1.30	1.94	2.30	2.00	2.13	1.44	1.50	2.00	1.90	1.45	1.10	2.20	1.85	1.75	2.00	2.50	1.05	1.85	2.25	2.20	2.00	2.00	1.30		2.13		2.07	1.00	2.20	2.70	2.70	2.10
well prairie mean =	2.07						average mean=		1.73		non-native herbaceous only mean=																2.12																			
Wet Prairie (WP), Emergent (EM), Forest Edging (FOB), Forest/Shrub (FISN)											WP	EM	FOB	WP	WP	WP	WP	WP	WP	FOB	WP	WP	WP	WP	WP	WP	FOB	EM	WP	EM	EM	EM	WP	WP	FOB	EM	EM	EM	FISN		FISN	EM	WP	WP	WP	FISN

Attachment 2

Mid-Valley Mitigation Bank Phase 1 Vegetation/Photo Monitoring Points



▲ Phase 1 Monitoring points
☆ Photo Points
PFO
PEMC
PSS
Wet Prairie
Buffer

0 250 500 1,000 Feet

1 inch equals 329 feet

Attachment 3 – Monitoring Photos

Mid-Valley Phase 1 Mitigation Bank 2011 Photo Monitoring

Photo Point 1 North

Photo Point 1 East

Photo Point 1 South

Photo Point 1 West

Photo Point 2 North

Photo Point 2 East

Photo Point 2 South

Photo Point 2 West

Photo Point 3 North

Photo Point 3 East

Photo Point 3 South

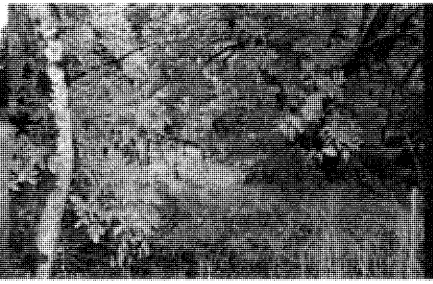


Photo Point 3 West

Attachment 3 – Monitoring Photos

Photo Point 4 North

Photo Point 4 South

Photo Point 4 East

Photo Point 5 East

Photo Point 5 North

Photo Point 5 Northwest

Photo Point 5 South