

**Mitigation Monitoring Report Cover Sheet  
Oregon Department of State Lands**

**Block 1: Report Information**

DSL Permit Number:	COE Permit Number: <i>Nationwide Permit 27 - 200400726</i>
Permittee: <i>Gilmour</i>	
County: <i>Benton</i>	Report Date: <i>9/8/10</i> Monitoring Year <i>5</i>
Date Removal-Fill Activity Completed:	
Date mitigation was completed Grading: <i>2/05</i> Planting: <i>5/06</i>	

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.**
- 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	5 <sup>th</sup> year performance standard
5.	Buffer Areas - Upland Forest and Pond	4 of 4 requirements	5 <sup>th</sup> year performance standard

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: <i>previously submitted</i>	Yes X	No
Final Monitoring Report?	Yes	No X
Requesting release or partial release of bond/credits	Yes X	No

\*see report for detailed information

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## LIST OF ATTACHMENTS

Attachment	1	Sample Plot Monitoring Data
Attachment	2	Monitoring Point Location Map
Attachment	3	Photo Monitoring Point Photos

## 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:

<u>Type of Credit</u>	<u>Acres</u>	<u>Ratio</u>	<u>Credits</u>
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	<u>4.89</u>	10:1	<u>0.489</u>
Total	31.44 acres		16.8 credits

## 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. Outside perimeter areas received a broadleaf herbicide application in October.

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.

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. 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 - September 2009 through August 2010.**

<b>Activity</b>	<b>Location</b>
Site Preparation	Borders only
Existing forested vegetation treatment	All non-native vegetation treated
Spot weed control	100% of bank was patrolled
Broadleaf weed control	Borders
Mowing	60ft along borders and access trails through prairie

### **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<sup>0</sup> 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 than 15% of the relative plant cover is comprised of non-native invasive species as defined 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*), Eurasian water milfoil (*Myriophyllum spicatum*), climbing nightshade (*Solanum 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.
1. Tufted hairgrass (*Deschampsia cespitosa*) is represented by 25% or greater relative plant cover.
2. At least 50% of the relative plant cover (including bare soil) is comprised of native species.
4. No more than 15% of the relative plant cover is comprised of non-native invasive species as defined 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 better, 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 5<sup>th</sup> 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. This same protocol was used for plot 34 and photo point 6. 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 May 26, 2010 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-seven monitoring plots were examined.

During the May 2010 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.

As in previous years, grass species dominate the Bank with the two most abundant species meadow barley (*Hordeum brachyantherm*) and Tufted hairgrass (*Deschampsia cespitosa*) covering 9% and 25% respectively throughout all monitored habitats. Water foxtail (*Alopecurus geniculatus*), Spike bentgrass (*Agrostis exarata*) and Slender wheatgrass (*Elymus Trachycaulus*) were the three next most prevalent species.

### 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 81% native species.*

Required: No more than 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 1.53.*

### 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**; *Fourteen 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 38% 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 92.5% native plant cover. Non-native and bare ground accounted for 7.5%.*

Required: No more than 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 2.05.*

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.*

### 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. ( $6 \times .75 = 4.5$  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 93% native plant cover.*

Required: The wetland's moisture index is less than 3.0. —**Met**; *with an average weighted moisture index of 2.04.*

### 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 area is represented by monitoring plots 3, 8a, 15, 23, 34, and photo points 1 south, 3 south, and 2 photos from monitoring point 34.*

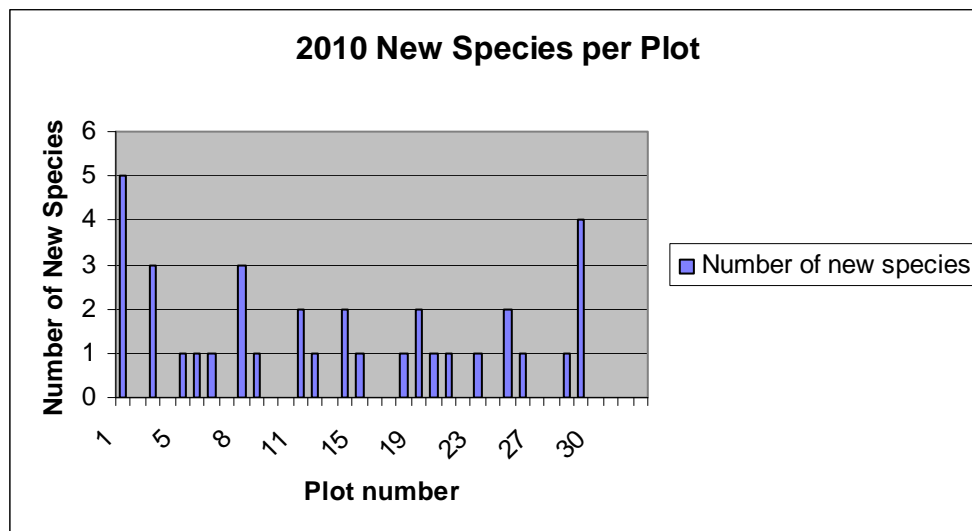
### 5.3.5 Buffer Areas - Upland Forest and Pond

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 area is represented by photo point 6 which was also used as the vegetation monitoring point. There are no non-native invasives in the existing pond and a photo of the existing pond is included in attachment 3.

## 6.0 SPECIES AREA CURVE

The sample plots were evaluated using a species area curve to show the incidence of new species found within each of the plots. The curve shows several spikes in the number of new species found as new wetland types are sampled. The last three plots showed no new species. All wetland types were included in the sample plots except for the 2 new plots.



## 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. To date 15.96 credits have been released, 15.1745 sold, with 0.7855 credits unsold. Table 2 summarizes the credit sales.

**Table 2 – Mid-Valley Phase 1 Credit Summary**

<i>DATE</i>	<i>NAME</i>	<i>LOCATION</i>	<i>PERMIT NUMBER</i>		<i>SOLD</i>	<i>BALANCE</i>
<b>9/28/05</b>	<b>CORPS/DSL INITIAL RELEASE - 30% CREDITS - 5.04</b>					<b>5.04</b>
			<b>DSL</b>	<b>CORP</b>		
10/4/05	Investor's Equity Inc - Keith Nakayama	Charlies Estates, Lebanon	35040-RF	200500499	0.18	<b>4.86</b>
10/4/05	RMA Development	Clearview III, Lebanon	34107-RF	200500164	0.47	<b>4.39</b>
10/4/05	Gordon Vogt	Skyview III, North Albany	33916-RF	200500075	0.09	<b>4.3</b>
10/7/05	Conser Homes	Morningstar Phase III	34842-SP	200500432	0.13	<b>4.17</b>
10/11/05	BBF Dev. Clover Ridge-Myles Breadner	Edgewater, Albany	NA	200500365	0.87	<b>3.3</b>
10/11/05	Wulf Const	Creekside at Adair, Adair Village,	NA	199900325	0.13	<b>3.17</b>
10/17/05	Ken Kohl-ODOT	OR 228: Or99E to I-5	NA	200500163	2.57	<b>0.6</b>
10/25/05	Conser Homes	Sweetwater Subdivision	15198/5877-ENF	DSL only	0.27	<b>0.33</b>
11/7/05	City of Philomath		NA	NA	0.34	<b>-0.01</b>
<b>6/9/06</b>	<b>CORPS/DSL 2ND RELEASE - 30% CREDITS - 5.04</b>					<b>5.03</b>
6/16/06	GRS Enterprises	Eagle View Estates	34707-RF	200500435	0.28	<b>4.75</b>
8/29/06	Kingdom Estates	31707 S Fifth Street, Lebanon	3642-FP	200600291	0.2695	<b>4.4805</b>
12/6/06	RC Ventures LLC	Millersburg	37196-RF	200600615	0.978	<b>3.5025</b>
12/6/06	Gregory M. Perry		37033-RF	200600550	0.07	<b>3.4325</b>
9/5/06	Home Solutions	Kevin Spillman	NA	NA	0.07	<b>3.3625</b>
1/5/07	North Coast Electric	Ferry Street, Albany	37472-RF	200600886	0.27	<b>3.0925</b>
2/14/07	Progressive Design Builders	Philomath	37098-FP	NA	0.5	<b>2.5925</b>
10/11/06	Fernwood Environmental	Lake Point Estates, Sweet Home	36435-RF	NA	0.2	<b>2.3925</b>
3/8/07	IWM, LLC - R & D Construction		37275-RF	2006-945	0.49	<b>1.9025</b>
8/13/07	<b>CORPS/DSL 3RD RELEASE - 20% CREDITS - 3.36</b>					<b>5.2625</b>
4/19/07	Arrt Properties, LLC		37469-RF	2006-909	1.12	<b>4.1425</b>
2/26/07	Brownsville JV, LLC	Brownsville	38586	2007-478	0.13	<b>4.0125</b>
3/28/08	Hendgen-McMinville LLC	Albany Heights, Albany	39616-RF	NA	1.65	<b>2.3625</b>
4/4/08	<b>CORPS/DSL 4th RELEASE - 15% CREDITS - 2.52</b>					<b>4.8825</b>
4/4/08	DSL	Per Dana Hicks	33347 & 36174	NA	3.99	<b>0.8925</b>
7/23/09	ODOT	I-5 Bridges- Various Locations	42585-GA	NA	0.092	<b>0.8005</b>
8/25/09	ODOT	Locke Creek Bridge OR99W	42796-RF	NA	0.015	<b>0.7855</b>
	Total Released = 15.96				Total Sold =15.1745	

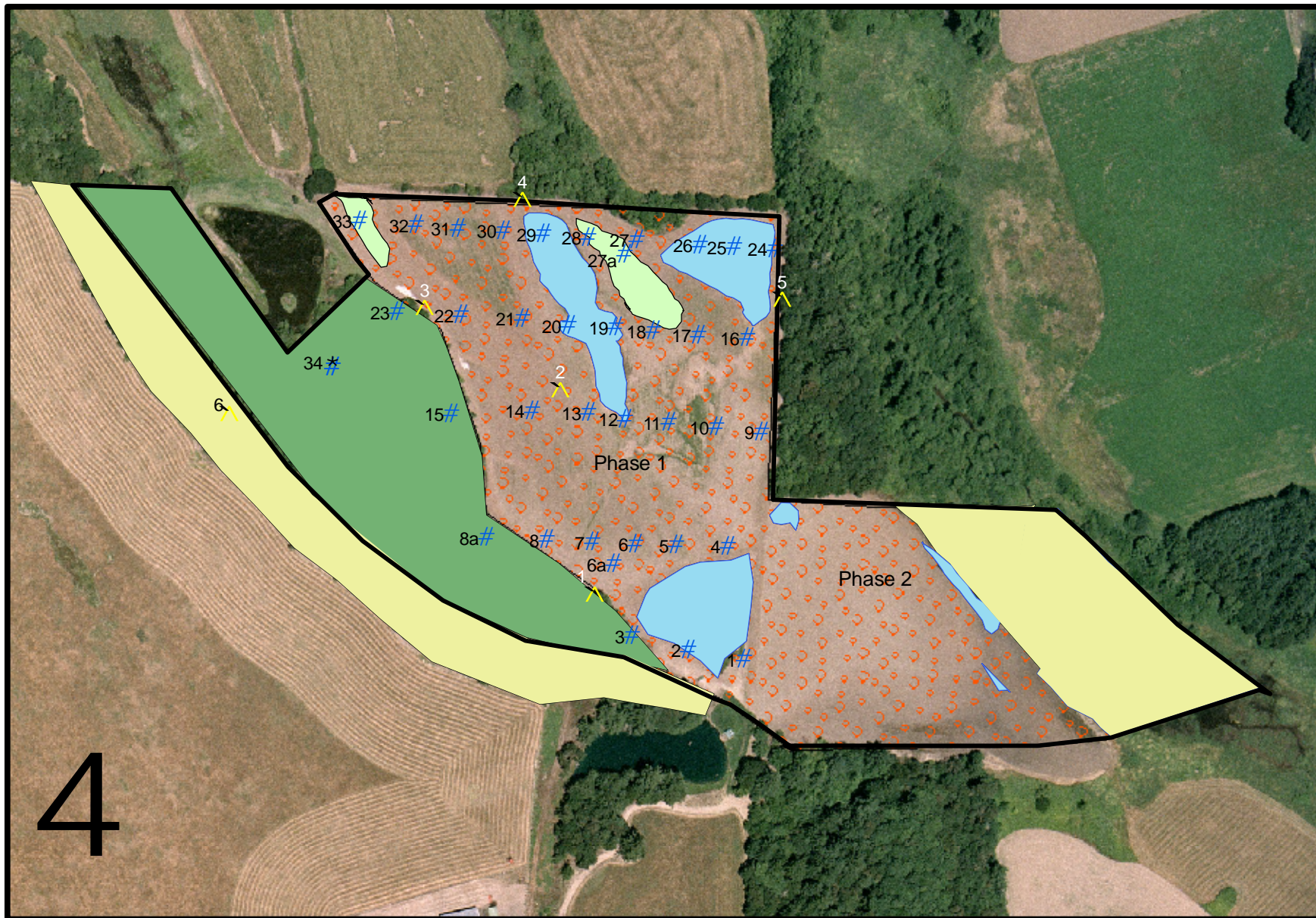
## 9.0 REQUEST FOR CREDIT RELEASE

Corps Credit Release #4 for 15% of the credits was released 4/4/08 and DSL Release #4 20% of the credits was released 8/1/408 for a combined total release of 15.96 credits from both agencies. We are requesting final credit releases #5 (5%) be released for 0.84 credits for the enhanced forest and buffer. The bank has met all 5 year performance standards.

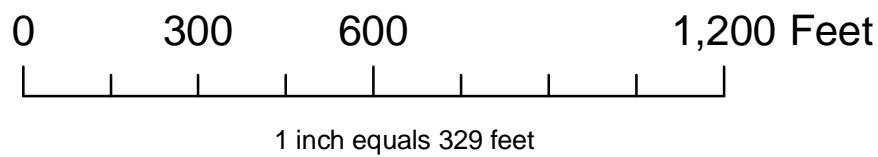
Total Credits Possible	16.80	
Release #1 (30%)	5.04	Grading and Initial Planting
Release #2 (30%)	5.04	Phase 1 Spring 2006 Monitoring
Release #3 (20%)	3.36	Phase 1 Fall 2006 Monitoring
Release #4 (15%)	2.52	Phase 1 2007 Monitoring
Current Request (5%)	0.84	Enhanced Forest and Buffer Credits



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



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



# Mid-Valley Phase 1 Mitigation Bank 2010 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 Southwest



Photo Point 5 North



Photo Point 5 Northwest



Photo Point 5 South



Existing Pond



Buffer Monitoring Point 6 North



Monitoring Point 34 North



Monitoring Point 34 South

