

Phone: 503-510-1781 E-mail: cjcudmore@gmail.com Consulting"

"Environmental, Wetland and Land Use

MEMORANDUM

PECEIVE FEB 11 2016

DATE: February 5, 2016 **TO:** DSL and ACOE

RE: Mud Slough Mitigation Bank

FROM: Carla Cudmore

Attached is the Phase 4 Monitoring Report and Phase 3 Credit Sales Report for Mud Slough Wetland Mitigation Bank. If you have any questions please contact Mark Knaupp at 503-559-0223 or Carla Cudmore at 503-510-1781.

Mitigation Monitoring Report Cover Sheet Oregon Department of State Lands

Diock I. Iceboi e intormitto	Block 1:	Report	Inform	ation
------------------------------	----------	--------	--------	-------

DSL Perm	nit Number: 4462	25 COE Permit 1	Number: N	WP-1999-1585	Permittee: Knaupp
County:	Polk	Report Date:	1/27/16	Monitorin	g Year 1 2 3 4 <u>5</u>
Date Rem	oval-Fill Activity	Completed:			

Date mitigation was completed Grading: 11/2010 Planting: 10/2010 and 2/2011

Report submitted by: Mark Knaupp

Block 2: Monitoring Report Purpose

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

- G Compensatory **freshwater** wetland mitigation for permanent wetland impacts.
- G Compensatory **estuarine** wetland mitigation for permanent wetland impacts.
- G **Only non-wetland** compensatory mitigation.
- G Only mitigation for temporary impacts that has a monitoring requirement.
- G Voluntary wetland enhancement, creation or restoration (General authorization or individual permit) not funded with money from our wetland mitigation revolving fund.
- G Voluntary wetland enhancement, creation or restoration (General authorization or individual permit) funded with money from **our wetland mitigation revolving fund.**
- G Mitigation Bank Report
- G Other: Phase 4 Monitoring Report February, 2016

Block 3: Results

	Success Criteria	Met? (Y/N)	Comments/Reasons for Failure*
1.	Wet Prairie and Emergent Vegetation	4 of 4	
2.	Upland Knoll	2 of 2	
9			
	-		

Remedial work recommended	Yes	No X
Deed Restriction or other protection instrument attached (noted: if a fi	iled deed restric	tion was a
required as a permit condition, please attach a copy:	Yes	No X
*The Conservation Easement is in the Bank Document. We are waiting fo	r official approve	al from DSL
and the ACOE and will then submit a signed copy.		
Final Detailed Monitoring Report?	Yes X	No
* Future submissions will be less detailed annual report until all credits a	re sold.	
Requesting release or partial release of bond? Credits?	Yes X	No
*See report for detailed information		



Mud Slough Wetland Mitigation Bank

Phase 4 - 2015 Monitoring Report

and

Phase 3 – Credit Sales Report

Submitted by:
Mark Knaupp and Carla Cudmore

February, 2016

TABLE OF CONTENTS

REGUI	LATORY BACKGROUND	1
WORK	SUMMARY	1
AS-BU	ILT PLANS	2
PHASE	E 4 HYDROLOGY PERFORMANCE STANDARDS, METHODOLOGY, AND RESULTS	2
PHASE	4 VEGETATION PERFORMANCE STANDARDS, METHODOLOGY AND RESULTS	2
5.1.	Performance Standards	2
5.2	Methodology	3
	5.3.2 Upland Knoll	4
PHOTO	O POINT MONITORING	5
PHASE	3 CREDIT SALES SUMMARY	5
CREDI	T RELEASE REQUEST	7
ENDO	WMENT AND LONG TERM STEWARD	7
PHASE	3 BANK CLOSURE	7
	WORK AS-BU PHASE 5.1. 5.2 5.3 PHOTO PHASE CREDI ENDO PHASE	5.2 Methodology

LIST OF ATTACHMENTS

Attachment	1	Monitoring Point Location Map
Attachment	2	Sample Plot Monitoring Data
Attachment	3	Monitoring Photos
Attachment	4	COE Phases 3 Closure Letter

1.0 REGULATORY BACKGROUND

The purpose of this report is to summarize the progress of Phase 4 of the Mud Slough Wetland Mitigation Bank (Bank) located it 1875 N. Greenwood Road, Rickreall, Polk County, Oregon. This report will also report on the credit sales from Phase 3 of the Bank.

Phase 3 of the Bank is located in Township 7S, Range 4W, Section 20, Tax Lot 300. Phase 3 occupies 81.5 acres of the 413 acre tax lot. The MOA for Phase 3 was approved in July 2008. All 41.5 Phase 3 credits have been released for sale. The last annual monitoring report Phase 3 was submitted in 2013. The credit sales for Phase 3 are reported on in Section 7.0.

The MOA for Phase 4 was approved in June 2011. Phase 4 of the Bank includes 47.2 acres in Township 7S, Range 4W, Section 17, portions of Tax Lots 400 and 500. The primary goals for Phase 4 are to create 1.77 acres, enhance 1.24 acres and restore 40.1 acres of wet prairie and emergent wetland habitat. The Bank also includes a 4.09 acre upland knoll to provide varied wildlife habitat within the Bank. No credits have been released (see Section 8.0).

Phase 4 Bank credits:

Acres	Mitigation Type	Credit Ratio	Credits Earned
40.10	Restoration of cropped wetland	1:1	40.10
1.77	Creation	1 ½:1	1.18
1.24	Enhancement of cropped wetland	2:1	0.62
4.09	Upland knoll	6:1	0.68
47.20	Total Site		42.58

2.0 WORK SUMMARY

Herbicide applications occurred in October 2009 and in January, May and July 2010. Between August and November 2010, the drainage system was made inoperable and the drainage ditch in the southeast corner filled. Some minimal grading was done during this time to fill shallow ditches allowing for inundation of low areas. Primary seeding of the site was conducted in October 2010. Some additional seeding of fragrant and scouler's popcorn flower (*Plagiobothrys figuratus and Plagiobothrys scouleri*) was done in early February 2011. The trees and shrubs were planted on the upland knoll in February 2011. A total of 46 native species were planted.

Vegetation establishment in Phase 4 is unique from the previous phases of the Bank. The entire emergent and half of the wet prairie was seeded with mix predominantly comprised of forbs, sedges and rushes. Slough grass was the only grass species widely planted in the initial planting. The site was seeded with a mulch-seed mixture planted in a zone planting for individual species. The seed blend has been sorting itself out into different zones by moisture tolerance and topography in the subsequent years. Individual species seeding was also done for the more dominate species. This planting method is an effort to increase the forbs present in the prairie. This method has been and continues to be very successful as is indicated in the results section (Section 5).

Some additional seeding was done in October 2011, including spike bentgrass (*Agrostis exarata*), meadow barley (*Hordeum brachyantherum*), slender hairgrass (*Deschampsia elongata*), northwest cinquefoil (*Potentilla gracilis*), and wooly sunflower (*Eriophyllum lanatum*).

Manual removal of weeds along with spot spraying of weeds continues on Phase 4. The targeted species includes tansy ragwort (Senecio jacobea), Himalayan blackberry (Rubus discolor), meadow foxtail (Alopecurus pratensis) and velvet grass (Holcus lanatus). In addition, approximately 4000 black hawthorn (Crataegus douglasii) have been removed in the pasts two years. They were naturally seeded. No additional maintenance activities have been necessary. Normal spot spraying and hand plant removal will continue. Due to the success of the site, no additional plantings are planned.

3.0 AS-BUILT PLANS

No as-built plans were required or submitted for Phase 4 due to the lack of substantial grading changes made.

4.0 PHASE 4 HYDROLOGY PERFORMANCE STANDARDS, METHODOLOGY, AND RESULTS

The Phase 4 objective is to create areas that will hold precipitation to create seasonal saturation and inundation and meet the criteria defined in the 1987 Corps of Engineers Wetlands Delineations Manual (1987 Wetland Delineation Manual) and regional supplements.

A one-time hydrology delineation was conducted between February 6 and April 30, 2011. The monitoring included 31 monitoring tubes over the 47.2 acres of Phase 4. The results of the 2011 monitoring indicated the upland knoll area (except for one monitoring location) did not qualify as jurisdictional wetland which is as expected. The hydrology of the remainder of the site all qualified as jurisdictional wetland, with standing water at a maximum of 12" below the surface.

Due to some questions with the upland knoll 2011 results, additional monitoring of this area occurred in March 2012. The results of this monitoring obtained very similar results to the 2011 monitoring. Jamie Davis (USACE) and Dana Field (DSL) reviewed both the monitoring results and the site itself. They determined that there was a slight variation in the upland knoll perimeter from the original determination but the change in the acreage was negligible, so the original determination acreage was acceptable. All Phase 4 hydrology monitoring requirements have been met and approved.

5.0 PHASE 4 VEGETATION PERFORMANCE STANDARDS, METHODOLOGY AND RESULTS

5.1. Performance Standards

A. HERBACEOUS PERFORMANCE STANDARDS

1. The cover of native species is at least 60%. These densities will be a combination of planted individuals and natural recruitment.

- 2. The cover of invasive species is no more than 10%.
- 3. The wetland's prevalence index is less than 3.0.
- 4. By Year 3 and thereafter, there are at least six different native species or groupings of native species. To qualify, a species must have at least 5% average cover in the habitat class, and occur in at least 10% (three or more based on 31 plots) of the plots sampled. To qualify as a grouping of native species, each member of the grouping must have between 1 and 4% average cover. The grouping, will total 5% average cover and occur in at least 10% (three or more based on 31 plots) of the plots sampled.
- 5. Bare substrate represents no more than 20% cover.

*Non-native invasive species to be included: any plant species that appears on the current <u>Oregon Department of Agriculture Noxious Weed list</u>, plus known problem species including *Phalaris arundinacea*, *Mentha pulegium*, *Holcus lanatus*, *Anthoxanthum odoratum*, and the last crop plant if it is non-native. Beginning in year two of monitoring, DSL may consider a non-native plant species invasive if it comprises more than 15% cover in 10% or more of the sample plots in any habitat class, and increases in cover or frequency from the previous monitoring period. Plants that meet this definition should be considered invasive for all successive years of monitoring.

B. UPLAND KNOLL PERFORMANCE STANDARDS

- 1. The cover of native species is at least 60%.
- 2. The cover of invasive species is no more than 10%.

5.2 Methodology

Transect and sample plot locations were laid out in a stratified arrangement with equal distance between each transect and sample plot (See Attachment 1 - Monitoring Point Location Map). Transects were laid out in a stratified arrangement along one baseline with equal distance between each transect (approximately 400'). Transects run north to south with the sampling plots predetermined and systematically plotted on transects at equal distance from each other; the location of the first was randomly chosen. The starting points of the sample plots were staggered in order to cover a broader area. The sample plots were permanently identified in the field and are plotted on a site map. The upland knoll was monitored with five sample plots. Each sample point is the center of a circular plot, the radius of which will be five feet for the herbaceous layer and 30 feet radius for the overstory layer within the upland knoll, with center point for the herbaceous and overstory radius being the same. Each plot will be evaluated for species, indicator status, native/non-native and invasive status, the percent cover of each species present. If a plot includes bare soil, the reason for the bare soil will be noted and the percent it covers of each plot included. The number of stems for each tree species will be counted.

5.3 Phase 4 Vegetation Monitoring Results

Vegetation monitoring was conducted June 4 and 18, 2015 by Mark Knaupp and John Knaupp. Attachment 2 includes spread sheets with the sample point results of the 2015 sampling. Thirty-six monitoring plots were examined. The spread sheets include the botanical names, common names, indicator status, origin (native or non-native), moisture index, and planted or volunteer status. The plant species list includes all species found within Phase 4 within the plots or found while walking between sample plots throughout the entire year. Phase 4 continues to have a remarkable diverse and extensive native forb population. In 2013, there were six different native species or groupings of native species, in 2014 there were 10 species or groupings and this year there were nine.

5.3.1 Wet Prairie and Emergent Vegetation

Thirty-nine native species were identified within the wet prairie and emergent vegetation plots in 2015. The ground cover of Phase 4 is comprised of 51.35% herbaceous species, 48 .65% grass species. The herbaceous vegetation is maintaining over 50% of the total vegetation cover. The three most abundant herbaceous species are one-sided sedge (*Carex unilateralis*) at 13.55%, wooly sunflower at 9.06%, and creeping spike rush at 7.97%. The most three common grass species are meadow barley (26.71%), American sloughgrass at 7.52% and spike bentgrass at 6.45%.

The performance criteria for herbaceous wetland were again met for all five of the requirements.

Required: The cover of native species is at least 60%. These densities will be a combination of planted individuals and natural recruitment. *Met*, with 95.9% of the total ground cover (including bareland) being native species.

Required: The cover of invasive species is no more than 10%. *Met*, with 0.1% of non-native invasive plant cover.

Required: The wetland's prevalence index is less than 3.0. *Met, with a moisture index of 1.89*

Required: By Year 3 and thereafter, there are at least six different native species or groupings of native species. To qualify, a species must have at least 5% average cover in the habitat class, and occur in at least 10% (three or more based on 31 plots) of the plots sampled. To qualify as a grouping of native species, each member of the grouping must have between 1% and 4% average cover. The grouping will total 5% average cover and occur in at least 10% (three or more based on 31 plots) of the plots sampled. *Met with nine individual species/groupings with 5% or more average cover in at least 10% of the plots.* **Required:** Bare substrate represents no more than 20% cover. *Met with 0.0% bareground and 0.0 dead grass.*

5.3.2 Upland Knoll

The number of native species in the five upland knoll plots has fluctuated in the past years. In 2013 there were 13 native species, in 2014 20 native species and this year there are 12 native species.. The most common native species are meadow barley (*Hordeum brachyantherum*), northwest cinquefoil (*Potentilla gracilis*) and wooly sunflower (*Eriophyllum lanatum*).

The performance criteria for **upland knoll** were met for two of the two requirements.

February 2016

Required: The cover of native species is at least 60%. *Met with 100% native vegetation*.

Required: The cover of invasive species is no more than 10%. *Met*, with 0% non-native invasive species.

6.0 PHOTO POINT MONITORING

Photos from each of the established six photo points Phase 4 are included as Attachment 3. Photos were taken on June 24, 2015.

7.0 PHASE 3 CREDIT SALES SUMMARY

Table 3 – Credit Sales Summary

Date	Name	DSL Permit #	ACOE Permit #	Credits Purchased
11/20/09	Advantage Precast, Inc	ENF6899	NA	1.567
12/1/09	State of Oregon	34119-FP	2004-803	0.40
12/14/09	Central School District	42503-RF	2009-00253	1.70
12/14/09	GreenTree, LLC	39251	2007-842	0.44
12/23/09	ODOT	10008-RF	1996-00016	1.46
12/23/09	Pfeiffer Roofing, Inc.	ENF-6902	NA;	0.19
2/3/10	Windigo Properties, LLC	42654	2009-302	0.89
4/5/10	State of Oregon	43698-RF	2009-337	0.27
8/3/10	3510 Lancaster LLC	4145552-RF	2008-586	0.057
8/10/10	City of Salem	4925-ENF 4926-ENF 4927-ENF 4928-ENF 4929-ENF	NA	0.22
8/19/10	Troy and Gina Bundy	7014-ENF	NA	0.03
8/12/10	Les Toth dba Kathleen Manor	6994-ENF	NA	0.64
11/22/10	City of Dundee	45474-RF	2010-154	0.64
12/14/10	City of Oregon City	44900	2010-32	0.24
12/28/10	Eyvette & Loran Davidson	6612-ENF	NA	0.07
2/12/11	The Lenity Group	45110	2009-654	1.65
6//6/11	City of Salem	46640-GP	2011-98	0.14
6/23/11	Investors Brokerage, Inc.	46715-RF	2006-348	0.29
	Total Phase 3 Credit	Sales in Nov. 2009 thru	June 2011	10.894
7/5/11	City of Salem	46653-GP	2010-129	0.166
7/14/11	City of Wilsonville	45448-FP	2010- 40	0.40
10/17/11	Eyvette and Loran Davidson	ENF6612	N/A	0.25
10/11- 3/12	Sean Tyler Keys LLC	35920-RF	2010-402	0.34
11/14/11	Brian Sparks	47906 RF	2011-348	0.17

	Total Phase 3	Credits Sold		28.898
To	tal Phase 3 Credit Sales Septem	ber 1, 2014 – December 3	1, 2015	9.035
10/30/15	City of Salem	59016-RF	2015-230	0.472
7/29/15	Washington County	57032	2014-462	1.11
4/2/15	Fife Group	56688-RF	2014-288	0.29
4/2/15	Fife Group	56149-RF	2014-288	0.79
3/4/15	Kashmir Business Park	56812-RF	2014-339	0.212
11/21/14	ODOT	50098-RF	2012-145	0.841
11/21/14	City of Wilsonville	56093	2014-134	4.45
10/17/14	City of Salem	56309	2014-195	0.02
9/4/14	Polygon at Villebois	56009-FP	2014-133	0.82
9/4/14	Polygon at Villebois	56185-FP	2014-153	0.03
	Total Phase 3 Credit Sales Ju	ily 1, 2013 – August 31, 20	014	5.353
8/23/14	Calais at Villebois	55979-FP	NA .	0.37
8/12/14	Eyvette Davidson	6612-ENF	NA	0.25
4/17/14	OR Pride Nurseries	25818-RF	NA	0.14
4/9/14	Mt. West Investment	54536-RF	2013-295	0.063
4/3/14	J.C. Compton Co.	7395-ENF	NA	2.40
3/20/14	Baker Rock	14933-RP, 16275-PR	98-1454	0.99
12/26/13	Meriwether Farms	25566-RP	NA	0.75
10/15/13	Eyvette Davidson	6612-ENF	NA	0.25
7/16/13	Chehalem Park & Rec	7275-ENF	NA	0.14
	Total Phase 3 Credit Sales Ju	une 27, 2012 thru July 1,	2013	1.738
4/27/13	City of Wilsonville	52665-RF	2013	.01
11/21/12	City of Salem	51517	2012-458	.31
10/16/12	Eyvelle Davidson	ENF6612	NA	0.25
10/1/12	Wells Fargo Bank	50180-RF	2010-402	0.165
8/31/13	NW Freedom Corp	7125-ENF	NA	0.14
8/20/12	City of Wilsonville	49456-RF	2012-68	.033
8/3/12	NorPac Foods	50096-FP	2011-373	0.50
6/27/12	NorPac Foods	50096-FP	NA	0.33
	Total Phase 3 Credit Sales in	July 2011 thru June 25,	2012	1.878
6/11/12	MWSH Salem, LLC	48938-RF	2012-37	0.05
5/28/12	Pac Trust	49112	2012-48	0.41
3/31/12	ODOT	48392	2011-466	0.05

There are 41.5 credits available for Phase 3, all of which have been released. Of these 41.5 credits, 28.898 have been sold leaving 12.602 credits released and unsold.

8.0 CREDIT RELEASE REQUEST

I would like to request the release of all available Phase 4 credits as soon as possible. This includes credit releases #1, #2, #3, #4 and #5 totaling 75% release of the total credits (75% of the 42.58 total credits is 31.935 credits).

The requirements for the final 25% credit release (10.645 credits) include signing the conservation easement (approved and included in the Phase 4 instrument) and adding Phase 4 to the long term management plan.

The management plan approved for Phases 1-3, was approved to include Phase 4 when it was ready to be included. The Wetlands Conservancy and I determined that an additional \$50,000.00 be added to the endowment with the Wetlands Conservancy, would be adequate to maintain Phase 4. We are planning to fund the endowment completing the final requirement within the next few months. I have decided to increase the agreed upon endowment by 20% to \$60,000.00 in order to provide some additional security. Phase 4 could be placed under long term management upon completion of these final steps.

We request that the requirement for a financial assurance bond to cover any default, be waived as is set out in the Bond Release Schedule of "Exhibit J Financial Assurance" of the MBI. All monitoring has been completed and the 5th season performance standards have met.

I am requesting your approval of these measure and release of all credits as soon as possible.

9.0 ENDOWMENT AND LONG TERM STEWARD

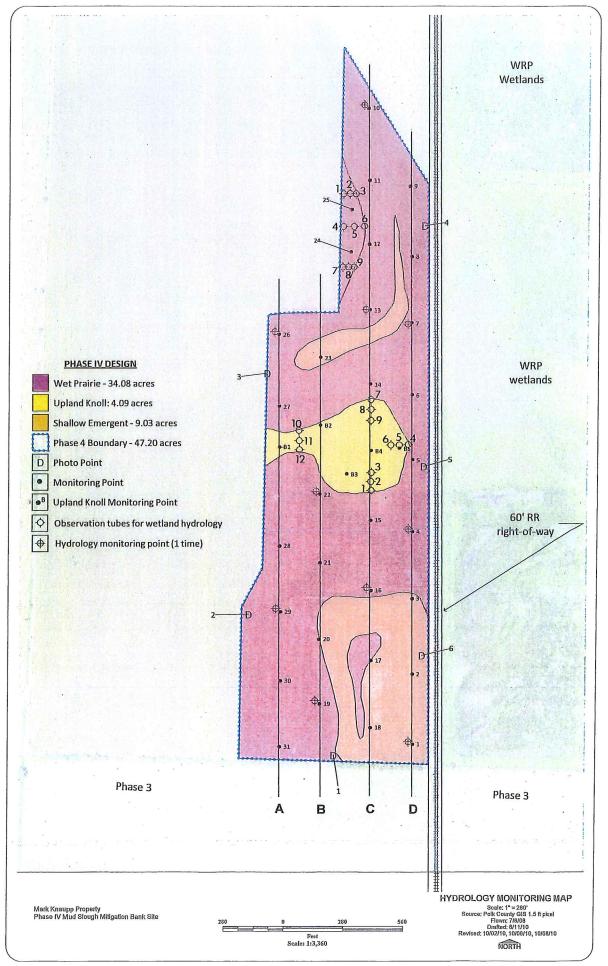
The Wetlands Conservancy has agreed to act as the long-term steward for Phase 4. We will sign the approved conservation easement for Phase 4 upon agency approval. Please submit the long term management plan to the IRT for approval.

10.0 PHASE 3 BANK CLOSURE

DSL approved closure of Phase 3 of the Bank in a letter dated March 19, 2014. The COE signed the Phase 3 closure letter on March 9, 2015 (see Attachment #4.)

11.0 PHASE 4 – MONITORING REPORT SUMMARY

This is the fifth and final monitoring report for Phase 4 since all performance standards have been met. A less detailed report as defined in the Phase 4 Banking Instrument will be submitted until the last credit is sold.



Phase 4 Monitoring Point Location Map

									F			lud S								nk	-									Water Commonweal						Pintramina
											Vetla	and P				erge 3, 201		ot Da	ata						_			_								
Species O	bserved			Wet/Prairi	.	Ave, %							June	: 4 ai	IU IC), ZU I	ວ ວ			5080585					Rifebberrie			will and design		graenina especia	wasta was a	Sonorma (SE)	Shire at the orbit	Aug = moreon	e Zero berla V VIII S	description
		9			Moistur	'e Cover ea	200 200 200 200 200 200 200 200 200 200		i in displayed and the	200 (CO) (CO)		ayasan xa									Plo	ot#s														
Botanical Name Overstory/Shrub Species	Common Name	Status	Origin	Pool	Index	Species	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	21	22	23	24	25	26	27	28	29	30	31
Salix sitchensis	Sitka willow	FACW	native		46555		1 1	31 30251	\$ 3555E	4	9 509000			1 33441	3			S 383250	15200		3 324570	Test.												350	550.619	\$8.50
Herbaceous Species	All and the second second second second second second																																		proprieduzione de la constanta	
Allium amplectens Aster halii	Slimleaf onion Hall's aster	NOL FAC	native native	Yes Yes	3	0.00 1.61								1000				i Silini						10129854				Т			1	Т			2.500	
Bidens frondosa	Leafy beggars-tick	FACW	native	les	2	0.00	+	 	T	 	_	+	-	+-	 T	-	-	╁		 -	-	 	ļ			T	-	50	 	<u> </u>	 	ļ				Ĺ
Boisduvalia densiflora	Dense spike-primrose	FACW	native	Yes	2	0.00	Т	J 110 F 200													T						Т	 	1-	ļ	-	+		\vdash	 	
Camassia quamash Carex densa	Common camas Dense sedge	FACW	native native	Yes Yes	1 1	0.13 1.19	2 9 9 9		T	E 455594	2		20			55555	1000000			T		T	5		5	1888	3		Ville Control		2000	1000000	\$100 SER		5,552	973543
Carex feta	Green-sheathed sedge	FACW	native	Yes	2	0.55					2	1		10					 	'-	T	+ '-	5		5	T	<u> </u>	+		-	-					
Carex unilateralis Centaurium umbellatum	One-sided sedge Common centuary	FACW	native introduced	Yes	3	13.55			75	5	42	50	20	55	20			3 . 1954818	100000	40		2	15	ar t ai	15	T			102.00		1000	SECTION.	1020000		16000	
Cirsium vulgare	Bull thistle	FACU	introduced		4	0.00		+	-	╁	 	+	 	 -	-	 	-	-	-	+		T	-		T	T_	T	T	T	ļ	_	T		,——	<u> </u>	
Clarkia amoena var caurina	Farrwell to spring	NOL	native			0.00		A																	Т	T	 '-	-		 					'	
Downingia elegans Eleocharis palustris	Showy downingia Creeping spike rush	OBL	native native	Yes	1 1	0.00 7.97	2	60		90			T		- 30							3000 abrin		0.5	SAME I				\$5550E		Control of the Control		144/155		T.	
Epilobium ciliatum	Hairy willow-herb	FACW	native	Yes	2	0.68	T				T	T	6	120006.000.000			T		T	or -extractions	SERVINGS	10		65	VARIAL I	199654	T	194000000000000000000000000000000000000	.T	T		(69889)	SSSTWES.	T	Т	5
Eriophyllum lanatum	Wooly sunflower Rush leaf coyote thistle	NOL OBL	native native	Yes Yes	14.50 to 14.50 to 15.00 to	9.06		3 2000550	e Selection	- 1500000		3 82457408	ti ganasatata	200000000000000000000000000000000000000		T	,gasac-	80	2500000	L SESSEE SECTION	Q-0.000 -000	T		130000000000000000000000000000000000000	5		Ť	3	75	78		Т	10			30
Erynigium petiolatum Galium trifidum	Small bedstraw	FACW	native	165	2	0.06	0.0000000000000000000000000000000000000	6 7556556	T	T			35333			750000000	144030					2	T	ASSESSED OF				1962		· T						
Ghaphalium palustre	Lowland cudweed	FAC	native	Yes	3	0.19		6																T		-			-	1		-		\rightarrow		T
Grindelia integrifolia Hypochaeris radicata	Willamette Valley gumweed Cat's ear dandelion	FACU	native introduced	Yes	2	6,23 0.32		30	20	T	i RPASSA	38	10000000	T	5	1504-1505-64	1000000000	1270 SERGE	videological (6	50	10:00:00:00:00	Laberra (Sa	45	Sanciagica	5	NEW PERSONNEL	STATE OF THE STATE OF	na transferance								
Juncuc effusus	Common rush	FACW	native	400000000000000000000000000000000000000	2	0.48	1 20 52 72 72	# 342348344	a chaire con			6 3000 COM	- 1201000000			1020224	1885-18523	7333333		1247059000	tegranic			15			Grand Control	0033050			T	10			Т	
Junus nevadensis	Sierra rush	FACW	native	Yes	2	0.00																	Т						_					-		
Juncus tenuis Lactuca serriola	Slender rush Prickly lettuce	FACU	native introduced	Yes	2	2.29 0,16	200000000000000000000000000000000000000						1		Silestra		i in in	-0656464		4444	10	45	Self-parage balls		A0851288	10	5	T	40.85	- 15 m (m 15 m)	T	.00.00.00.00.0	Alteria e en en els	T		
Lotus purshianus	Spanish clover	NOL	native	Yes	95025000 00000	0.32		in Prancisco			Т	2 5000:200	1201100-00100	Self-to-service	- Antonionio	T	1 2000 1 2000		TOPOGRADA:	PRINCE 9522	2012/2015/5/2	T			T	elikara da karaba		9,66,66		T	Т		10	T		5
Madia saliva	Coast tarweed Pennyroyal	NOL OBL	native introduced		354 1 35	1.45 0.06		el settemen	1 1000000000000000000000000000000000000	NO SERVICE		2	# # 1 m 1 m 1 m 1 m 1 m 1 m 1 m 1 m 1 m	ABPS Jane 1		5	Seculations.		-to-trostass	200000000	250470-0740	3· T	THE LANGE STORY					40			Ť		#:			
Mentha pulegium Mimulus guttatus	Common monkey flower	OBL.	native	Yes	1	0.00		4 10000000	1 ASSAS(91900)	1000	70024560	4	700000	28/22/2009	1025555	574766	275000	PARTIES.	T	536798	\$1315 E		70.00000	\$25,5255b			2000	Territoria	COSSESSION OF					34,486	12,3000	
Perideridia gairdneri	Gairdner's yampah	FAC	native	Yes	3	0.00					5000-000						Т															Т		-+		
Plagiobothrys figuratus Polygonum amphibium	Fragrant popcorn flower: Water smartweed	FACW OBL	native native	Yes	2	0.32		T					F		10	\$35555 \$35555			500000		Services Services															
Potentilla gracilis	Northwest cinquefoil	FAC	native	Yes	3	2.61	, Total Andreas	3 Navana (1952)		(GARASSA)	1	-04-0-2203-3	3	-	500000000	56.35555	-5000-00-0-	99586688		T	T	455 d 7553				5	15	2	100000		25	30				
Rumex crispis Rumex salicifolius	Curly dock Willow dock	FACW	introduced native		2	0.00	<u> </u>	_	ļ		-																				T		T			
Sidelcea nelsoniana	Nelson's checkermallow	FAC	native	33733333	3	0.00			\$555										25055				See		3000001	T	-50-61-61-7	Markey	965551035	152000000	LASSESSEE	ा	Children Noveled	W6000000	100000003	programme.
Sisyrinchlum auguslifolium	Pointed blue-eyed grass	FACW	native	Yes	2	0.16			ļ											T		T				Salarasas	100000-0000-	5	13000000000	veina jiha.	-of-residence	T	1038999	STRANGER :	14088928	9494455
Veronica scutellata Vicia tetrasperma	Marsh speedwell Slender vetch	OBL NOL	native introduced	ASSESSE .	1	0.81	, Falsassa		- Assault		- 2002/02/20	1 1930/201	A344948	25		-5	10	:::::::::::::::::::::::::::::::::::::::	486688	0.6545535	4/28/62/61	20	e sange de	· .	Ţ	24,42,44	-X-174 (1-22)	Dark destan		1-						
% Herbaceous Species	Cicildo Veteri	1105	minoudoca	+65-020,0-6304	A desperator hybridal	51.35	00487689	4 Technological	10(2)00(3)	or end bested		105-5-56	200 (400)(250000000	Section 15th	- 10		254,686	1000000000	REAGRESTICS	20	-65038606 I					3000034	V.83556	95555	15,453				1945	Better
								7.5000000000		73 SH 1-5.7	Reveral Resource	onurvess.	35-575-763	96890030EF	revineauz.				Bili di manines																	
Grass Species Agrostis exarata	Spike bentgrass	FACW	native	Yes	2	6.45	T T			T T	Ιт										75	ΤΙ				- An I	40 1									
Alopecurus aequalis	Short-awned foxtail	OBL	native		1	0.10		3													- 13		-			80	10	T			10	5		10	10	
Alopecurus pratensis	Meadow foxtail	FACW	introduced	3/22	2	0.16		1 300 A 33			Tooler Co	- 40	- C-F-30	200		Metalinad			22-22		49	5													\rightarrow	
Beckmania syzigachne Danthonia californica	American sloughgrass California oatgrass	OBL NOL	native native	Yes Yes		7,52 0,65	97	1 1	5	5	3	10	ि⊺ः	10	35	(20 CA4C)	197637	DATE:	ा अ	10	्रा 🗵		20	20	10 ¹	क्षी व	2	T	Т	T	17	881888		T	T	31454
Deschampsia cespitosa	Tufted hairgrass	FACW	native	Yes	2	0.39																			10	-	2					5	T	-+	T	
Deschampsia elongata Hordeum brachyantherum	Slender hairgrass Meadow barley	FACW	native native	Yes Yes	2	4.42 26.71	TENNINGS	\$2.565	49,000	40,000	40		40	Ville	\$4.5M	90	75	20	100		40					া	5	ा	ा	2	30			75		Hirah
Poa pratensis	Kentucky bluegrass	FAC	introduced	100	3	0.32	######################################	1 1323	Time	S. S. S.	140		40			90	75	20	100		10	T 5	10	300000	50	Service II	58	T	25	20	30 5	30	75 T	15	80	60
Poa trivialis	Rough bluegrass	FACW	introduced		2	1.94					5		10			Т	10				5	10				5			274 1948	1111111111	3	10		T	5	70, 200,400
% Grass Species Dead grass		\$1000000	100000000000000000000000000000000000000	100000000000000000000000000000000000000	34884454	48.65 0.00	* ************************************	400000	200000	Acgarda	VIII.	493044	Topic and	-1862AF	155,555	\$6 lanes	1888as	\$3595a	2000 SE	23000000	ender.	2000000	session in	52.55(44,52-2)		30,500.00	W1075.12.11	7.2.2.								
Bareground		1,12,13,13,13				0.00						,		10000000	v. 1001.000			200000		Spirit Std	44.0000.0	4-755	1907,000	2102 GEO.	rament _i	as North	1840311944	24-5/1888	-1888 H	#1434)/j	NAMES OF	10.535	48348	earini e	5 5 5 5 E	2416 NEE
Relative % non-native invasiv		Mean =			7740.00 SV	to Estate Hospita	0	0	0	0	0	2	0	0	0	0	0	0	0	0	0	0		0	0	0	0	0	0	0	0	0	0	0	0	0
Relative % non-native canopy Vegetation that is Native	/ cover;	Mean =		0,530,8	AND REAL PROPERTY.		100.0	100.0	100.0	100.0	95.0	98.0	90.0	100.0	0 100.0	95.0	20 80,0	100.0	100.0	100.0	5 95.0	40 60.0	100.0	100.0	0 100.0	95 n	100.0	0 100.0	100.0	0	05.0	20 80.0	0			5
Sample plot average moisture	index	Mean =	1.89			1	1.01	1.42		1.05	1.94	1.88	1.77	1.65	1.35	2.00	2.00	2.00	2.00	1.90	2.00	2.06	1.75	1.15	1.94	2.05	2.15	2.91	2.00	2.00	2.30	2.53		100.0 2,00		
Total # of native Species: 39 Total number of Species Sam	pled: 49 Total Number of		Praire or Ver lots: 31	nal Pool	Species =	27			33,33	1955			3.446		2 5 4 5 2 5 4 5	Track States		1999	training.			71 (3)			TO ST		THE STATE OF		1049	937-9	\$ 100 m	70.7				1000
	*Non-native invasive spe	cies to be	included: ar	nv plant s	pecies the	at appears	on the cu	rrent Or	l eaon De	l partmer	nt of Ann	riculture	Noxious	Weedfi	ist							$ \bot$	$ \bot$		-											
	plus known problem spec	cies includ	ing <i>Phalaris</i> a	arundinad	cea, Menti	ha pulegiun	n, Holcus	lanatus,	Anthox	anthum	odoratu	ım , and i	the last	crop pla	nt							-+			\dashv	-+		\dashv		-				-+	\rightarrow	
	if it is non-native. Beginn cover in 10% or more of	ning in yea	r 2 of monito	ring, DSI	L may con	increases	n-native s	pecies in	nvasive	if is com	prises r	more tha	n 15%			$-\Box$																				
	Plants that meet this defi									u uic ble	-vious fi	TOTILLOUIN	ig period			_					-+	-+		-+		-+								\perp	T	

	se 4 Mud Slougl Iland Knoll Plot									
Species Obser		Bata	Gario	Taria	Ave. %		Sam	nlo P	lot Nu	ımboı
Botanical Name	Common Name	Status	Origin	Index	Ave. % Cover	11	2	3	4	5
Overstory/Shrub - number of plants	Common Name	Status	Origin	Index	Ave. % Cover	Shire et a	2	198.00	Som Halls	385
Crataegus douglasii	Black hawthorne	FAC	native	3		1482461		1		
Pinus ponderosa	Willamette V. ponderosa		native	2			1			1
Quercus garryana	Oregon white oak	NOL	native			2	3	3	3	
Symphoricarpos albus	Snowberry	FACU	native	4					5	
Herbaceous Species - percent cover					ea. Species					
Achillea millefolium	Western yarrow	FACU	native		3.00	5	Т			10
Epilobium angustifolium	Fireweed	FACU	native	4	0.00					Т
Eriophyllum lanatum	Wooly sunflower	NOL	native		7.00	20	5	5	5	Т
Potentilla gracilis	Northwest cirquefoil	FAC	native	3	25.00	60	20	25	10	10
Clarkia amoena var caurina	Farwell to spring	NOL	native		1.00	5	Т	Т	Т	Т
Grass Species										
Danthonia californica	California oatgrass	NOL	native		3.00	Т	Т	5	10	Т
Hordeum brachyantherum	Meadow barley	FACW	native	2	61.00	10	75	65	75	80
Elymus glaucus	Blue wild rye	FACU	native	4	0.00		Т			Т
Bareground	Mean =	0.00								
Relative Percent Native Cover	Mean =	100.00	S.			100	100	100	100	100
Relative Percent Non-Native Cover	Mean =	0.00				0	0	0	0	0

Total # of Native Species: 12

Phase 4 Mud Slough Wetland Mitigatigation Bank Plant Species List June, 2015

Includes species identified in monitored plots, planted, or found while walking between sample plots throughout the entire year.

		Status	Origin	Wet Prairie	Moisture	Planted
Overstory				Vernal pool	Index	
Crataegus douglasii	Black hawthorne	FAC	native		3	
Pinus ponderosa	Willamette V. ponderosa pine	FACW	native		2	Х
Populus trichocarpa	Black cottonwood	FAC	native		3	
Pyrus fusca	Pacific crab apple	NOL	native			Х
Quercus garryana	Oregon white oak	NOL	native			X
Salix sitchensis	Sitka willow	FACW	native		2	
Tsuga heterophylla	Westen red cedar	FACU	native		4	Х
Shrubs					2 5000	
Amelanchier alnifolia	Serviceberry	FACU	native		4	Х
Oemleria cersiformis	Indian plum	FACU	native		4	X
Symphoricarpos albus	Snowberry	FACU	native		4	X
Herbaceous Species						
Achillea millefolium	Western yarrow	FACU	native		4	Х
Alisma plantago	Water plantain	OBL	native		1	- road
Allium amplectens	Slimleaf onion	NOL	native	Yes		Х
Aster halii	Hall's aster	FAC	native	Yes	3	X
Bidens cernua	Nodding beggars-tick	FACW	native	100	2	X
Bidens frondosa	Leafy beggars-tick	FACW	native		2	X
Boisduvalia densiflora	Dense spike-primrose	FACW	native	Yes	2	X
Camassia quamash	Common camas	FACW	native	Yes	2	$\frac{x}{x}$
Castilleja tenuis	Hairy Indian paintbrush	NOL	native	100		
Cerastium vulgatum	Mouse-ear chickweed	FACU	introduced		4	
Carex densa	Dense sedge	OBL	native	Yes	1	X
Carex feta	Green-sheathed sedge	FACW	native	Yes	2	X
Carex unilateralis	One-sided sedge	FACW	native	Yes	2	X
Centaurium umbellatum	Common centuary	FACV	introduced	100	3	
Cerastium vulgatum	Mouse-ear chickweed	FACU	introduced		4	
Cirsium arvense	Canada thistle	FACU	introduced		4	
Cirsium vulgare	Bull thistle	FACU	introduced		4	
Clarkia amoena var caurina		NOL			4	X
	Farrwell to spring		native			^
Crepis setosa	Bristly hawksbeard	NOL	native		Vertical district	nded governoon
Daucus carota	Queen Anne's lace	NOL	introduced	V		
Downingia elegans	Showy downingia	OBL	native	Yes	1	Χ
Eleocharis acicularis	Needle spike-rush	OBL	native	Yes	1	
Eleocharis ovata	Ovoid spikerush	OBL	native	Yes	1	Χ
Eleocharis palustris	Creeping spike rush	OBL	native		1	
Erynigium petiolatum	Rush leaf coyote thistle	OBL	native	Yes	1	Х
Epilobium angustifolium	Fireweed	FACU	native		4	
Epilobium ciliatum	Hairy willow-herb	FACW	native	Yes	2	
Epilobium paniculatum	Autumn willow-herb	NOL	native	Yes		
Eriophyllum lanatum	Wooly sunflower	NOL	native	Yes		Χ
Galium trifidum	Small Bedstraw	FACW	native		2	
Galium parisiense	Wall bedstraw	UPL	introduced		5	
Ghaphalium palustre	Lowland cudweed	FAC	native	Yes	3	
Grindelia integrifolia	Willamette Valley gumweed	FACW	native	Yes	2	Х
Hypochaeris radicata	Cat's ear dandelion	FACU	introduced		4	
Juncus bufonius	Toad rush	FACW	native	Yes	2	
Juncus effusus	Common rush	FACW	native		2	
Juncus nevadensis	Sierra rush	FACW	native	Yes	2	
Juncus tenuis	Slender rush	FACW	native	Yes	2	Х
Kickxia elatine	Sharppoint fluvelin	UPL	introduced		5	
Lactuca serriola	Prickly lettuce	FACU	introduced		4	
Lathyrus sphaericus	Grass pea-vine	NOL	introduced		AT PLANE	
Lamium amplexicaule	Henbit	NOL	introduced		- 1 x - 1 5 1	-

Lomatium nudicaule	Barestem desert-parsley	NOL	native	Yes		X
Lotus purshianus	Spanish clover	NOL	native	Yes		Х
Lupinus micranthus	Minature lupine	NOL	native			
Lupinas polyphyllus	Bigleaf lupine	FAC	native	Yes	3	X
Lythrum hyssopifolia	Hyssop loosesstrife	OBL	introduced		1	
Lythrum portula	Spatulaleaf loosestrife	NOL	introduced			
Madia sativa	Coast tarweed	NOL	native			
Medicago lupulina	Black medic	FAC	introduced		3	
Mentha pulegium	Pennyroyal	OBL	introduced		1 1	189.00
Mimulus guttatus	Common monkey flower	OBL	native	Yes	1	
Navarretia intertexta	Needle-leafed navarretia	FACW	native	Yes	2	
Parentucellia viscosa	Parentucellia	FAC	introduced		3	
Perideridia gairdneri	Gairdner's yampah	FAC	native	Yes	3	Х
Plagiobothrys figuratus	Fragrant popcorn flower	FACW	native	Yes	2	X
Plagiobothrys scouleri	Scouler's popcorn flower	FACW	native	Yes	2	X
Plantago major	Common plantain	FACU	introduced		4	
Polygonum amphibium	Water smartweed	OBL	native		1	
Polygonaceae persicaria	Lady's thumb	FACW	introduced		2	
Potentilla gracilis	Northwest cirquefoil	FAC	native	Yes	3	X
Prunella vulgaris	Self-heal	FACU	native	Yes	4	X
Ranuculus sceleratus	Cellery leaf buttercup	OBL	native	100	1	ATTEN ANTIQUE
Ranunculus occidentalis	Western buttercup	FAC	native	Yes	3	Х
Rorippa curvisiliqua	Western yellowcress	FACW	native	Yes	2	
Rumex crispis	Curly dock	FAC	introduced	100	3	1
Rumex salicifolius	Willow dock	FACW	native		2	
Senecio jacobea	Tansy ragwort	FACU	introduced		4	
Sidalcea campestris	Meadow checker-mallow	NOL	native		- 7	X
Sidelcea nelsoniana	Nelson's checkermallow	FAC	native		3	X
Sisyrinchium auguslifolium	Pointed blue-eyed grass	FACW	native	Yes	2	X
Sonchus asper	Prickly sow-thistle	FAC	introduced	103	3	PARTITION OF THE PARTIT
Taraxicum officinale	Dandelion	FACU	introduced	NS 90 F 2200 STATE TO SE	4	
Typa latifolia	Cat-tail	OBL	native		1	<u> </u>
Veronica americana	American speedwell	OBL	native		1	
Veronica americana Veronica peregrina	Purslane speedwell	OBL	native	Yes	1	
Veronica peregnita Veronica scutellata	Marsh speedwell	OBL	native	162	1	
Vicia hirsuta	Hairy vetch	NOL	introduced			
Vicia tetrasperma	Slender vetch	NOL	introduced			-
Wyethia angustifolia	Narrow-leaf mule's ears	FACU	native		4	X
vvyeuna angusinona	Inarrow-lear fitule's ears	FACO	Halive		. 4	- ^
Grass Species						
Agrostis exarata	Spike bentgrass	FACW	native	Yes	2	Х
Alopecurus aequalis	Short-awned foxtail	OBL	native		1	
Alopecurus geniculalus	Water foxtail	OBL	native		1	
Alopecurus pratensis	Meadow foxtail	FACW	introduced		2	
= ', , , , , ,		111044				Х
Beckmania syzigachne				Yes	1	
, ,	American sloughgrass	OBL	native	Yes	1	
Bromus carinatus	American sloughgrass California brome	OBL NOL	native native		1	
Bromus carinatus Danthonia californica	American sloughgrass California brome California oatgrass	OBL NOL NOL	native native native	Yes		Х
Bromus carinatus Danthonia californica Deschampsia cespitosa	American sloughgrass California brome California oatgrass Tufted hairgrass	OBL NOL NOL FACW	native native native native	Yes Yes	2	X
Bromus carinatus Danthonia californica Deschampsia cespitosa Deschampsia elongata	American sloughgrass California brome California oatgrass Tufted hairgrass Slender hairgrass	OBL NOL NOL FACW	native native native native	Yes	2 2	Х
Bromus carinatus Danthonia californica Deschampsia cespitosa Deschampsia elongata Echinochloa crus-galli	American sloughgrass California brome California oatgrass Tufted hairgrass Slender hairgrass Barnyard grass	OBL NOL NOL FACW FACW	native native native native native introduced	Yes Yes	2 2 2	X
Bromus carinatus Danthonia californica Deschampsia cespitosa Deschampsia elongata Echinochloa crus-galli Elymus glaucus	American sloughgrass California brome California oatgrass Tufted hairgrass Slender hairgrass Barnyard grass blue wild rye	OBL NOL NOL FACW FACW FACW	native native native native native introduced native	Yes Yes	2 2 2 2 4	X
Bromus carinatus Danthonia californica Deschampsia cespitosa Deschampsia elongata Echinochloa crus-galli Elymus glaucus Festuca arundinacea	American sloughgrass California brome California oatgrass Tufted hairgrass Slender hairgrass Barnyard grass blue wild rye Tall fescue	OBL NOL NOL FACW FACW FACU FACU	native native native native native introduced native introduced	Yes Yes	2 2 2	X
Bromus carinatus Danthonia californica Deschampsia cespitosa Deschampsia elongata Echinochloa crus-galli Elymus glaucus Festuca arundinacea Festuca myuros	American sloughgrass California brome California oatgrass Tufted hairgrass Slender hairgrass Barnyard grass blue wild rye Tall fescue Rat-tail fescue	OBL NOL NOL FACW FACW FACU FACU FACU	native native native native native introduced native introduced introduced	Yes Yes	2 2 2 4 3	X
Bromus carinatus Danthonia californica Deschampsia cespitosa Deschampsia elongata Echinochloa crus-galli Elymus glaucus Festuca arundinacea Festuca myuros Glyceria borealis	American sloughgrass California brome California oatgrass Tufted hairgrass Slender hairgrass Barnyard grass blue wild rye Tall fescue Rat-tail fescue Northern mannagrass	OBL NOL NOL FACW FACW FACU FACU FAC NOL OBL	native native native native native introduced native introduced introduced native	Yes Yes	2 2 2 4 3	X X X
Bromus carinatus Danthonia californica Deschampsia cespitosa Deschampsia elongata Echinochloa crus-galli Elymus glaucus Festuca arundinacea Festuca myuros Glyceria borealis Glyceria occidentalis	American sloughgrass California brome California oatgrass Tufted hairgrass Slender hairgrass Barnyard grass blue wild rye Tall fescue Rat-tail fescue Northern mannagrass Western mannagrass	OBL NOL NOL FACW FACW FACU FACU OBL OBL	native native native native native introduced native introduced introduced native native native	Yes Yes	2 2 2 4 3	X
Bromus carinatus Danthonia californica Deschampsia cespitosa Deschampsia elongata Echinochloa crus-galli Elymus glaucus Festuca arundinacea Festuca myuros Glyceria borealis Glyceria occidentalis	American sloughgrass California brome California oatgrass Tufted hairgrass Slender hairgrass Barnyard grass blue wild rye Tall fescue Rat-tail fescue Northern mannagrass Western mannagrass Velvet grass	OBL NOL NOL FACW FACW FACU FAC NOL OBL OBL FAC	native native native native native introduced native introduced introduced native native native native introduced	Yes Yes Yes	2 2 2 4 3 1 1 1 3	XXXX
Beckmania syzigachne Bromus carinatus Danthonia californica Deschampsia cespitosa Deschampsia elongata Echinochloa crus-galli Elymus glaucus Festuca arundinacea Festuca myuros Glyceria borealis Glyceria occidentalis Holcus lanatus Hordeum brachyantherum	American sloughgrass California brome California oatgrass Tufted hairgrass Slender hairgrass Barnyard grass blue wild rye Tall fescue Rat-tail fescue Northern mannagrass Western mannagrass Velvet grass Meadow barley	OBL NOL NOL FACW FACW FACU FAC NOL OBL OBL FAC FACW	native native native native native introduced native introduced introduced native native native native native native native native	Yes Yes Yes	2 2 2 4 3 1 1 3 2	X X X
Bromus carinatus Danthonia californica Deschampsia cespitosa Deschampsia elongata Echinochloa crus-galli Elymus glaucus Festuca arundinacea Festuca myuros Glyceria borealis Glyceria occidentalis Holcus lanatus Hordeum brachyantherum Panicum capillare	American sloughgrass California brome California oatgrass Tufted hairgrass Slender hairgrass Barnyard grass blue wild rye Tall fescue Rat-tail fescue Northern mannagrass Western mannagrass Velvet grass Meadow barley Common witchgrass	OBL NOL NOL FACW FACW FACU FAC NOL OBL OBL FAC FACW FACU	native native native native native introduced native introduced introduced native native native native native native introduced native native native	Yes Yes Yes	2 2 2 4 3 1 1 3 2 4	XXXX
Bromus carinatus Danthonia californica Deschampsia cespitosa Deschampsia elongata Echinochloa crus-galli Elymus glaucus Festuca arundinacea Festuca myuros Glyceria borealis Glyceria occidentalis Holcus lanatus Hordeum brachyantherum Panicum capillare	American sloughgrass California brome California oatgrass Tufted hairgrass Slender hairgrass Barnyard grass blue wild rye Tall fescue Rat-tail fescue Northern mannagrass Western mannagrass Velvet grass Meadow barley Common witchgrass Annual bluegrass	OBL NOL NOL FACW FACW FACU FAC NOL OBL OBL FAC FACW FACU FACC FACC FACW FACU FACC	native native native native native introduced native introduced introduced native native native native introduced native introduced native introduced native introduced	Yes Yes Yes	2 2 2 4 3 1 1 3 2 4 3	XXXXX
Bromus carinatus Danthonia californica Deschampsia cespitosa Deschampsia elongata Echinochloa crus-galli Elymus glaucus Festuca arundinacea Festuca myuros Glyceria borealis Glyceria occidentalis Holcus lanatus Hordeum brachyantherum Panicum capillare	American sloughgrass California brome California oatgrass Tufted hairgrass Slender hairgrass Barnyard grass blue wild rye Tall fescue Rat-tail fescue Northern mannagrass Western mannagrass Velvet grass Meadow barley Common witchgrass	OBL NOL NOL FACW FACW FACU FAC NOL OBL OBL FAC FACW FACU	native native native native native introduced native introduced introduced native native native native native native introduced native native native	Yes Yes Yes	2 2 2 4 3 1 1 3 2 4	XXXXX







DEPARTMENT OF THE ARMY

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

March 9, 2015

Operations Division Regulatory Branch Corps No.: NWP-1999-1585

Mr. Mark Knaupp Mud Slough Wetland Mitigation Bank 1875 North Greenwood Road Rickreall, Oregon 97371

Dear Mr. Knaupp:

The U.S. Army Corps of Engineers (Corps) has received your requests to close phases 2 and 3 of the Mud Slough Wetland Mitigation Bank. The requests were part of the July 2013 Phase 2 Annual Report and July 2013 Phases 3 and 4 Monitoring Report, respectively.

Per the Phase 3 Mitigation Banking Instrument (MBI) at Part VI. F, requirements for glosure include completion of the formal monitoring period and satisfaction of the performance standards. Formal monitoring for phases 1 and 2 have been completed, and the credits for each, 28.12 and 45.7, respectively, have been sold out. Formal monitoring for Phase 3 required five years of reporting, which was completed in 2013. A credit balance remains for the Phase 3 bank, and credit sales continue. The performance standards for all three phases have been satisfied. By this letter the Corps certifies that you have met the conditions for bank closure.

The Corps supports the Sponsor's efforts to provide permanent legal protection for the bank property through the Conservation Easement signed with The Wetlands Conservancy on May, 25, 2010. In addition, the provisions of the long-term management plan, secured in September 2013 with The Wetlands Conservancy and the Oregon Department of State Lands, are designed to ensure the bank property is managed, monitored, and maintained in perpetuity.

As noted in the Phase 3 MBI, less detailed long term annual reports must be submitted until 5 years after the last credit is sold. These reports are intended to ensure that performance standards are still being met so that remaining credits are market ready when a mitigation requirement arises.

The Corps appreciates your continued efforts to support and provide improved conditions for wetland ecosystems in Oregon. If you have any questions, please

contact Tom Taylor, Mitigation Program Manager, at the letterhead address, by telephone at (503)808-4386, or via email at thomas.j.taylor@usace.army.mil.

Sincerely,

Shawn H. Zinszer

Chief, Regulatory Branch

1

Copy Furnished (electronically):

Oregon Department of State Lands (Field)

Oregon Department of Environmental Quality (Nayar)

U.S. Fish and Wildlife Service (Ginger)

U.S. Environmental Protection Agency (Nadeau)

Oregon Department of Fish and Wildlife (Vaughn)

The Wetlands Conservancy (Lev)