2010 MONITORING REPORT
For
OAK CREEK MITIGATION BANK
LEBANON, OR

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Submitted to
Oregon Department of State Lands
U.S. Army Corps of Engineers

Submitted by
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January 31, 2011

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LEBANON, OR

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Oak Creek Cover Sheet 2010

Performance Standard	PC Area	South Marsh	North Marsh	NE Forest	West Forest
Dominated by 70% or more desireable plants	65% Cover 80% FAC or wetter 61% Native*	67% Cover 81% FAC or wetter 78% Native*	51% Cover 54% FAC or wetter 69% Native*	59% Cover under closed canopy 83% FAC or wetter 86% Native*	64% Cover under closed canopy 88% FAC or wetter 86% Native*
80% survival of planted trees and shrubs		NA	NA	NA	NA
Less than 15% listed noxious invasives	0%	0.7%	0.4%	0%	5.7%

*the proportion of FAC or wetter species comprised of native species

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OVERVIEW OF VEGETATION DATA
and
PERFORMANCE STANDARDS

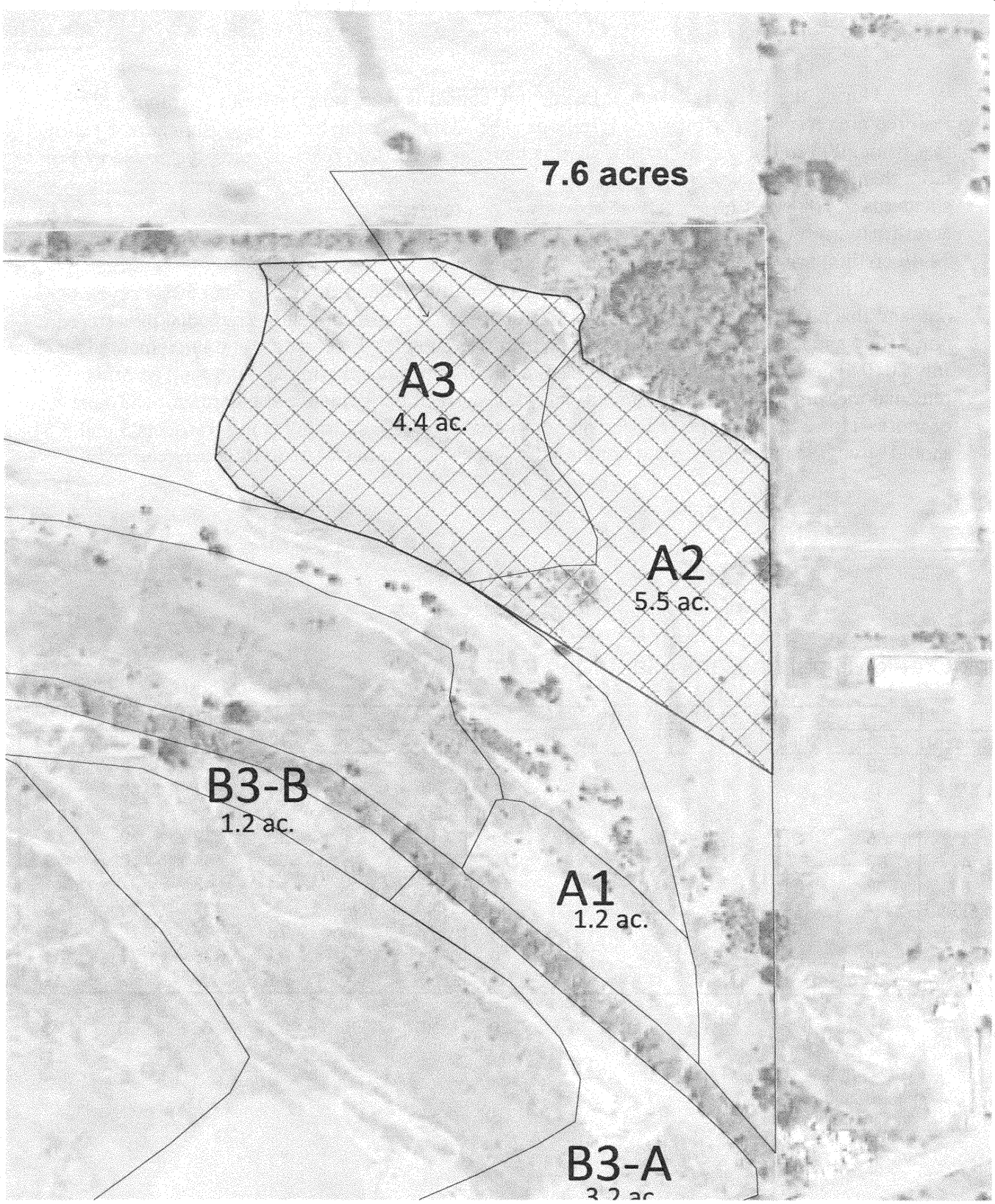
During the 2010 IRT Annual Inspection, concerns were raised about the amount of restored area meeting performance standards. The summary table below (see Appendix 4) shows that from 2005 to the present most transects have improved and reached stability between 70 to more than 90% FAC or wetter. Transects 5 and 5.5 provide exception. These met or nearly met standards in 2008, but have declined recently. The area represented by transects 5 and 5.5 is 7.6 acres (map on reverse side) representing 3.8 credits. The remaining 64.84 acres (representing 34.46 credits) are meeting performance standards.

Although most transects are dominated by native vegetation (more than 50%) several are not, and this prompted the DSL, COE, and IRT to require us to develop a remedial plan to reduce non-native and increase native species. The plan was submitted, accepted, and implemented in July 2010. The Agencies accepted that as a result of required spraying and mowing or other remedial measures, the plant community may fall short of performance standards for the next year or more. However, the intense focus on non-native species (especially along transects 5 and 5.5) should strengthen the native plant community over the entire bank site in the next year or two.

Oak Creek Mitigation Bank Plant Monitoring, 2010

	Percent FAC and better						Percent native					
Transect	2005	2006	2007	2008	2009	2010	2005	2006	2007	2008	2009	2010
1	59	S	71	64	76	94	12	S	65	54	56	45
1.5/2.5	NA	NA	81	87	87	81	NA	NA	83	84	80	70
2	77	S	82	67	86	90	37	S	89	62	63	49
3	65	S	54	87	96	94	16	S	80	72	79	77
4	88	87	92	88	79	79	46	43	66	57	56	53
5	62	S	59	66	56	44	3	S	54	43	37	21
5.5	NA	NA	63	71	61	54	NA	NA	60	67	71	48
6	78	89	79	82	80	83	74	69	76	78	78	79
7	75	70	75	82	84	88	61	58	63	75	77	81
8	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	31
Means:	72	82	73	77	78	79	35	56	71	66	66	55

S = sprayed



OAK CREEK MITIGATION BANK
Hill Creek Road
12S02W26 800
Lebanon, Oregon 97355

200 0 200 400
Feet
Scale: 1:2,400

TRANSECT 5 & 5.5 AREA
Scale: 1" = 200'
Source: 2009 NAIP ortho 1 meter resolution
Flown: 6/29/09
Revised: 1/25/11

NORTH

Geo Resources

2010 MONITORING REPORT
for
OAK CREEK MITIGATION BANK
LEBANON, OR

This is the twelfth monitoring report for the Oak Creek Wetland Mitigation Bank Site near Lebanon, OR. Maureen Stellrecht and R.P. Novitzki and Associates, Inc. compiled and edited this report and designed and participated in monitoring activities. Maureen Stellrecht conducted or supervised weed management and other site maintenance and monitored pond, stream, and ground water levels. Michael Bollman sampled vegetation in May. The vegetation sampling and reporting was modified to document vegetation structure in riparian and forested habitats as recommended by John Marshall.

Site Management Activities

At the 2010 inspection of the OCWMB, a conclusion was reached that a new remedial action plan would be developed with the help of Ray Fiori, Allen Martin, and Pat Thompson. Appendix 1 shows this remedial plan that was created on July 27, 2010. As of December 2010, the treatment areas have been sprayed, and plans are set in place to continue spraying in the spring of 2011. This remedial action plan is aimed at removing the seed bank of non-native invasive, and preparing the site for seeding more desirable species in the near future.

In September 2006 berms were created both north and south of Oak Creek to retain water longer and create shallow marsh habitats. A delineation performed in March 2010 found that an approximate gain of eight acres of wetland from said construction were created. This confirms a total of 77.22 acres of restored wetland at the site.

Hydrology Monitoring

Ground water levels were measured in 17 observation wells (Figure 1) and at the USFWS reference site. Data for wells 1 through 15, measured monthly, are presented in Table 1.Water levels are recorded daily in well 16 and those data are presented in Appendix 2. Water levels in 13 shallow wells, installed to help define the extent of wetland, are presented in table 2. These wells are less than 36 inches deep and have a small screen at the bottom which provides data comparable to digging shallow pits. They were higher, and saturation lasted longer in 2010 than in 2009. Precipitation (Table 3) in 2010 was above average in all months except February, July, August, and November. The annual precipitation was 7.83 inches above average. As a result, ground water levels in observation wells in 2010 were noticeably higher than those observed in 2009. Saturated conditions persisted through July. Wells meeting hydrology criteria (water levels within 12 inches of the surface for more than 15 days during the growing season) are highlighted

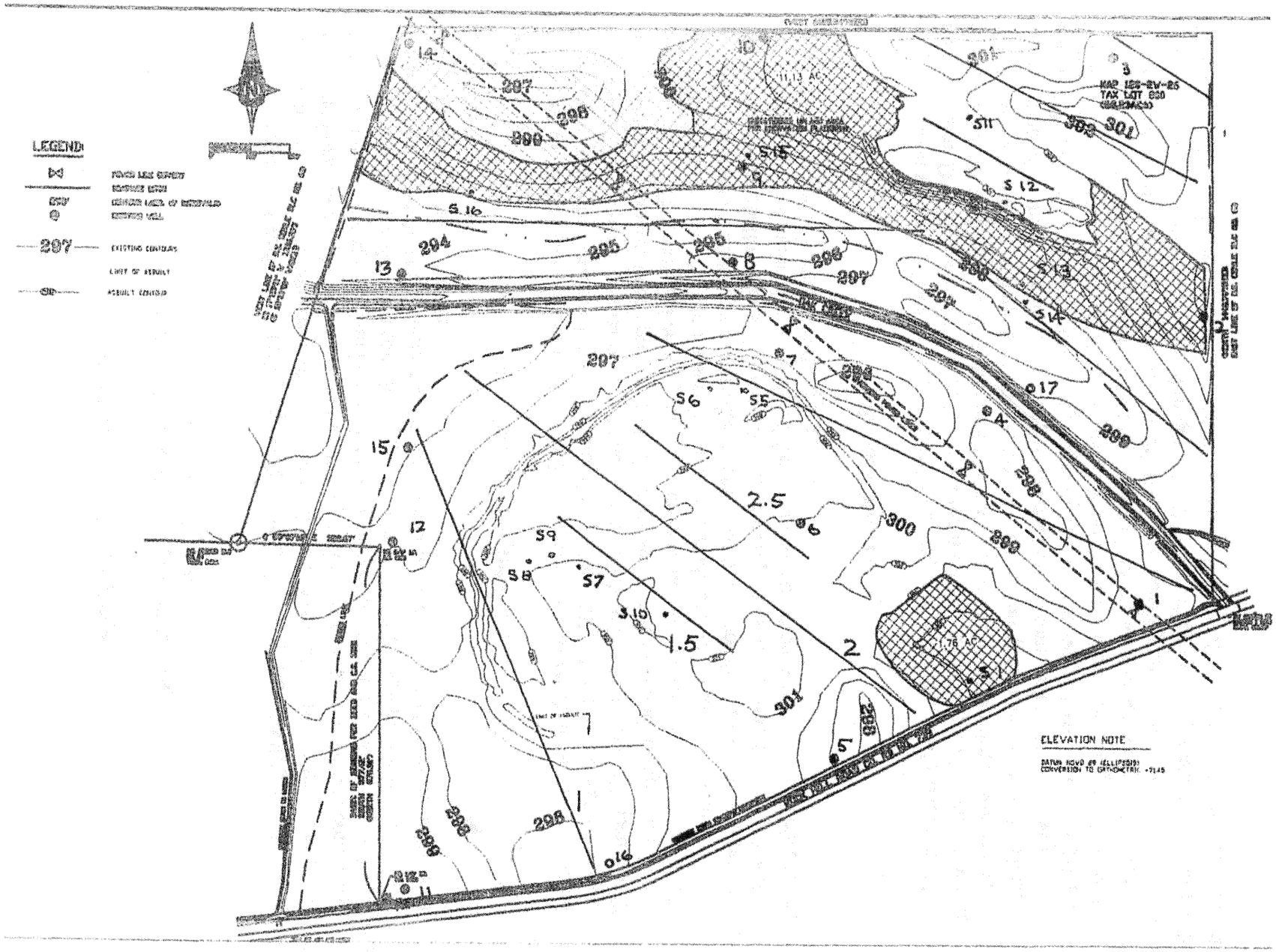


Figure 2. Map of Oak Creek Mitigation Bank site showing observation wells and vegetation sampling transects.

				Observation Well Numbers												
Date	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	reference 1
1/15/10	12	9	13	6	8	11	8	6	11	21	15	14	2	23	12	1
2/17/10	2	8	0	+1	1	2	+2	7	8	18	2	2	+8	16	1	0
3/15/10	3	16	5	+3	2	1	+1	+1	10	23	6	1	+6	10	4	2
4/1/10	2	8	0	+4	2	2	+5	1	+3	21	5	+2	+7	14	1	1
4/15/10	3	11	2	3	6	3	0	5	6	20	10	5	1	19	5	5
5/1/10	6	21	5	10	13	4	1	12	10	23	10	6	17	23	6	1
5/17/10	17	25	11	14	28	12	3	16	15	42	13	6	25	29	7	18
6/15/10	22	20	7	8	22	3	+2	7	31	32	10	4	10	22	1	15
7/15/10	28	47	27	31	36	27	16	14	38	32	28	32	46	39	27	31
8/15/10	47	73	87	44	77	62	43	43	57	32	48	55	52	94	52	54
9/15/10	60	89	94	53	88	72	14	56	76	32	57	61	60	101	62	64
10/1/10	46	93	95	43	83	68	49	49	72	32	62	59	49	101	56	60
10/15/10	42	95	—	38	81	64	42	43	63	31	62	55	44	101	53	56
11/1/10	1	95	64	0	11	4	0	18	14	84	+1	4	+7	101	4	2
11/15/10	3	23	15	12	11	+7	+1	8	28	29	3	4	+7	22	4	1
12/16/10	0	6	+1	+2	5	1	+3	+3	2	20	+2	1	4	11	0	1

Table 1. Depth to water (in inches) below land surface in 2010 in Observation Wells.

				Shallow Well Numbers									
Date	S1	S5	S6	S7	S8	S9	S10	S11	S12	S13	S14	S15	S16
1/15/10	4	2	0	9	7	4	3	9	11	2	6	7	11
2/17/10	7	+6	+5	10	9	3	+3	6	15	8	4	11	16
3/15/10	11	0	+2	12	10	7	10	2	10	10	1	5	10
4/1/10	10	+8	+5	0	10	4	4	1	11	12	2	6	7
4/15/10	15	4	11	18	13	9	7	5	13	12	3	4	11
5/1/10	12	12	15	21	10	15	11	12	14	10	7	10	14
5/17/10	__	19	17	26	12	17	14	__	18	13	12	12	__
6/15/10	__	8	11	20	17	13	10	__	__	__	11	__	__
7/15/10	__	__	19	__	__	__	__	__	__	__	__	__	__
8/15/10	__	__	__	__	__	__	__	__	__	__	__	__	__
9/15/10	__	__	__	__	__	__	__	__	__	__	__	__	__
10/1/10	__	__	__	__	__	__	__	__	__	__	__	__	__
10/15/10	__	__	__	__	__	__	__	__	__	__	14	__	__
11/1/10	12	18	25	24	15	19	7	26	12	18	12	20	17
11/15/10	12	0	+1	18	12	7	9	5	11	10	7	12	16
12/16/10	8	+6	+3	14	9	2	7	4	3	+12	2	4	13

Table 2. Depth to water (in inches) below land surface in 2010 in shallow observation wells

in Table 1 and table 2. Precipitation was below normal in July and August, but was above normal in September, and ground water levels rose quickly in response to early fall rains.

Water levels in observation well 17 were recorded four times each day (Appendix 3) to record ground water levels within 44 inches below the surface and to record over-bank flooding up to 36 inches above the surface. In response to the heavy rains in January and September, Oak Creek overflowed its banks 35 times in 2010, and over-bank flooding lasted from 1 to 50 days. There were also periods of 30 days and 27 days of continuous flooding. Observation well 17 data showed that in 2010, there were 227 days of over-bank flooding. This confirms that wetland function has been restored at this site.

Table 3. Monthly precipitation in inches in 2010 at the weather station in Corvallis, OR.

	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC	YEAR
Observed	6.76	4.38	6.08	4.38	3.30	2.75	0.10	0.53	2.59	4.85	5.52	10.25	51.49
30-Year Normal	6.46	5.71	4.59	2.98	2.30	1.46	0.57	0.73	1.47	3.02	6.94	7.43	43.66

The small ponds (vernal pools) began to fill in November 2009 and they contained water from January into July 2010 (Table 3). Several ponds refilled for a short period in June as a result of heavy rains in May and then they were dry until October when they refilled. It was observed at the site that Oak Creek ceased flowing between 8-15-10 and 8-20-10, which is much later than usual.

Table 4. Depth of water (in feet) in selected ponds in 2010 at Oak Creek.

Ponds are identified by the well nearest to the pond (near well 8; between wells 8 and 13).

Pond # (nearest well):	3	4-7	4-7-1	7	8	8-13	12	13	15	7-15	17	Pond	Pond 6
Date													
01-15-10	.52	.30	. 44	.72	.86	1.10	.50	.94	.46	.42	.88	2.74	.72
02-17-10	.50	.28	.42	.64	.84	1.16	.62	1.60	.68	.74	1.22	2.60	1.18
03-15-10	.46	.22	.34	.58	.68	1.00	.60	.92	.62	.70	.70	2.20	.76
04-01-10	.48	.26	.44	.64	.84	1.06	.62	.86	.34	.72	.74	2.42	1.12
04-15-10	.26	.24	.30	.30	.44	.76	.48	.84	.30	.46	.56	2.32	.72
05-01-10	.14	.22	.08	.12	.36	.68	.30	.52	.48	.52	.50	1.78	.56
05-17-10	.10	-	.05	-	.30	.62	.15	.10	-	.70	.42	1.15	.22
06-15-10	-	.12	.20	.26	.68	.42	-	.90	-	.70	-	1.50	.36
07-15-10	-	-	-	-	.20	-	-	.12	-	-	-	.42	-
					Ponds dry during summer								
10-15-10	.12	.20	.24	.46	.68	1.02	.68	.70	.52	.42	.38	.46	.56
11-15-10	-	.30	.40	.68	.70	1.08	.74	.88	.65	.68	.70	1.11	1.12
12-16-10	.48	.28	.42	.65	.87	1.15	.75	.95	.80	.70	.74	2.55	1.25

Sediment Monitoring

Sediment deposition or scour was measured at nine stations along Oak Creek in 2009 and 2010. The differences between measurements (the amount of deposition or scour) is presented in Table 4. Scour occurred at 4 stations, ranging from 0.25 to 2.60 inches, and deposition occurred at 4 stations, ranging from 0.75 to 2.75 inches. Because the stations were located randomly along both sides of the stream, they represent the entire riparian zone and the average sediment change is the arithmetic total (-0.3 inches) divided by the number of stations (9) for a net loss of 0.03 inches within the riparian zone. These data confirm that the function of the riparian wetland has been restored.

Table 5. Measurements at sediment monitoring stations in the Oak Creek riparian zone
(Measurements are inches below the top of a 5/8 inch rebar.)

Station:	**1**	**2**	**3**	**4**	**5**
Left Bank (2009)	**22.00**	**20.50**	**29.00**	**18.40**	**21.50**
Left Bank (2010)	**21.25**	**20.50**	**21.50***	**21.00**	**22.60**
Change	**+.75**	**0**	**N/A**	**-2.60**	**-1.10**
Right Bank (2009)	**17.00**	**21.00**	**12.75**	**23.75**	**22.75**
Right Bank (2010)	**14.25**	**20.25**	**13.35**	**23.50**	**22.75**
Change	**+2.75**	**+.75**	**-0.60**	**-0.25**	**0**

*Station 3 on the left bank was damaged with equipment, the bar has been reset and measured for a more accurate comparison in the future, but the difference this year was left out of the average

Vegetation Monitoring

Because ponding and saturation persisted into July, vegetation sampling occurred in late May and early June. The seven permanent sampling transects (Figure 1) previously established at the site were sampled to document the plant community in the open and forested areas. A new transect (#8) was added in 2010 in the northwest upland area. Transect #8 consists of 10 sample plots, approximately 40 meters apart, and runs E-W through the center of the upland area. Sample plot flags were labeled with permanent marker for easier identification in the field. This will allow the IRT to locate each sample plot during the annual field inspection.

The dominant plant species in the open prior converted (PC) areas-transect 1-5 were *Agrostis exarata* (spike bentgrass), *Holcus lanatus* (common velvetgrass), *Hordeum brachyanttherum* (meadow barley), *Juncus tenuis* (slender rush), and *Mentha polegeum* (pennyroyal). Cover was 65%. FAC or better species accounted for 80% of the cover and of these, 61% were native species. The moisture index is 2.43. *Plagiobothrys* (popcorn flower), *Eliocharis aricularis* (needle spikerush), *Montia linearis* (narrow-leaved montia), and *Juncus bufonius* (toad rush) are well established since the

burn. The woody species are doing very well and areas of Deschamsia cespitosa (tufted hairgrass) were noted, but so far not showing up in many of the sample plots.

Three transects (Figure 2) were established to sample the wetland created from upland by the berms constructed in September 2006. For the newly-constructed shallow marsh area south of Oak Creek (transects 1.5 and 2.5) the dominant species were *Juncus tenius* (slender hairrush), Deschamsia cespitosa (tufted hairgrass), *Anthoxanthum odoratum* (sweet vernalgrass), and *Juncus bufonius* (toad rush). Cover was 67%, FAC or better species accounted for 81% of the cover and 70% of the cover was native. The native species accounted for 78% of the FAC or better species. The moisture index is 2.45.

For the newly-constructed shallow marsh area north of Oak Creek (transect 5.5), the dominant plant species were *Agrostis exarata* (spike bentgrass), *Anthoxanthum odoratum* (sweet vernalgrass), *Hordeum brachyanttherum* (meadow barley), and *Lotus micranthus* (small-flowered lotus). Cover in this area is 51% with 54% of the cover being comprised of FAC or better species and 48% of the cover being native species. Native species account for 69% of the FAC and better species. The moisture index was 3.17.

In the northeast forested area (transect 6) the dominant species were *Fraxinus latifolia* (Oregon ash), *Cammassia leichtlinii* (great camas), *Poa trivialis* (roughstalk bluegrass), and *Allium nigrum* (black garlic). Cover was 59% (under a closed canopy), species FAC or better accounted for 83% and 79% was native. Native species account for 86% of the FAC or better species. The moisture index was 2.54.

In the west forested area (transect 7) the dominant species were *Fraxinus latifolia* (Oregon ash), *Cammassia leichtlinii* (great camas), *Lysimachia nummularia* (creeping jenny), *Myosotis laxa* (small flowered forget-me-not), and *Veronica scutellata* (marsh speedwell). The cover was 64% (no including the canopy layer), 88% of species were FAC or wetter, and 81% of the species were native. Native species account for 86% of the FAC or better species. The moisture index was 2.30.

A new transect (#8) was created in 2010 in the NW upland area. The dominant species were *Holcus lanatus* (common velvet grass), *Elymus glaucus* (blue wildrye), *Rumix acetosella* (sheep sorrel), *Leucantheum vulgare* (oxeye daisy), *Festucca occidentalis* (western fescue), and *Anthoxanthum odoratum* (sweet vernalgrass). Cover accounted for 85% of the area with native species covering 31%.

We evaluated survival of the 1667 shrubs and trees planted in the riparian area in February 2007 by examining 578 of the 1300 plants that had been flagged. We found 467 of the 578 alive, for a survival of 81%. Although we are meeting the performance standard, we have decided to re-plant 250 trees in 2009 and another 250 in 2010. We will again do a survival evaluation in spring 2011 and hope to surpass our performance standard by a larger margin.

Summary

Oak Creek Mitigation Bank continues to demonstrate wetland hydrology, confirming successful site restoration. Saturated conditions persisted through June. Small shallow depressions (vernal pools) at the site held water into June. Oak Creek flooded out onto its re-connected flood plain five times in 2004. four times in 2005, forty-six times in 2006, fifty-five times in 2007, sixty times in 2008, 12 times in 2009, and 35 times in 2010 with longer flooding periods than in previous years. This suggests that the vegetation is encroaching into the channel and that the stream may cut a new channel segment and abandon a segment of its old channel- a natural phenomenon occurring in undisturbed streams and wetlands. When this occurs, it will further confirm that the re-connection of Oak Creek to its flood plain and the wetland restoration have been successful. The flooding resulted in an average sediment scour of -.03 inches in the riparian zone during the year.

The site was burned in 2005 and mowed and sprayed in 2006. Vegetation sampling found the plant community in the open PC area is 80% FAC or better, 51% of the cover is comprised of native species, and the moisture index is 2.43. South of Oak Creek the wetland created from upland in 2006 is 70% FAC or better, 78% native, and the moisture index is 2.45. North of Oak Creek the wetland created from upland is 54% FAC or better species, 48% native, and the moisture index is 3.17. The plant community in the north east forested area is 83% FAC or better, 79% native, and the moisture index is 2.54. In the west forest the plant community is 86% FAC or better, 81% native, and the moisture index is 2.30. The new transect in the NW upland area contains a plant community with native species totaling 31% of the total cover.

The remedial treatment plan established in July 2010 will undoubtedly lead to more bare area in the next year or more of aggressive site preparation, in order to remove seed bank of non-native invasives, but will establish a greater abundance of native FAC and wetter species . This plan will make the site more self-sustaining in the future. The plan entails at least two follow-up site visits by Ray Fiori and Pat Thompson per year to establish how well the treatments are progressing, and to evaluate if any mid-course corrections need to be made.

The wildlife survey that was conducted in previous years was suspended in 2010. We believe that the surveys done in the past have established OCWMB as a functioning component of the local ecosystem. As the population at this site has met or exceeded the numbers for the reference site in the past 3 years, we have proved stability of wildlife using this site. We would like to concentrate our efforts and resources on establishing a greater abundance of native flora.

References

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CREDIT SALES — 2010

10-14-10 6.23Credits City of Philomath P.O. Box 400
Philomath, OR 97370-0400
DSL Permit 43699RF COE Permit 2000-00626

Balance:0.20 Credits

Oak Creek Wetland Mitigation Bank (OCWMB)

Addendum Remedial Action Plan

This document specifies what actions are recommended for continuing remediation to assure success in meeting the performance standards agreed upon for the OCWMB by the bank sponsor, the Department of State Lands (DSL) and the U.S. Army Corps of Engineers (USACOE).

A site reconnaissance was conducted on July 27, 2010, by the Bank Sponsor, Dick Novitzki, Ray Fiori of RTF consulting, Pat Thompson of Patrick S. Thompson Consulting, Allen Martin of Geo Sources Inc. and Maureen Stellrecht, biologist for OCWMB. The purpose of this reconnaissance was to map problem areas where non native species were gaining the upper hand on native desirable species and agree on a treatment strategy for each area identified, decide the critical timing for the treatment, and exactly who would be in charge of providing the treatment for each area.

Pat Thompson and Allen Martin outlined nine treatment areas and assigned each one an identification number. Allen Martin then created a GPS map of the areas on an aerial photo to show the locations of each area. At the end of the document, the general weed control guidelines are outlined, so they don't need to be repeated in each section, as well as a general wet prairie mix and emergent marsh mix recommendation. Where different planting mixes are recommend they are outlined in the prescription. A prescription for treatment was agreed upon by the entire team for each of these areas and the prescriptions are as follows.

Area A-1 (1.2 acres)

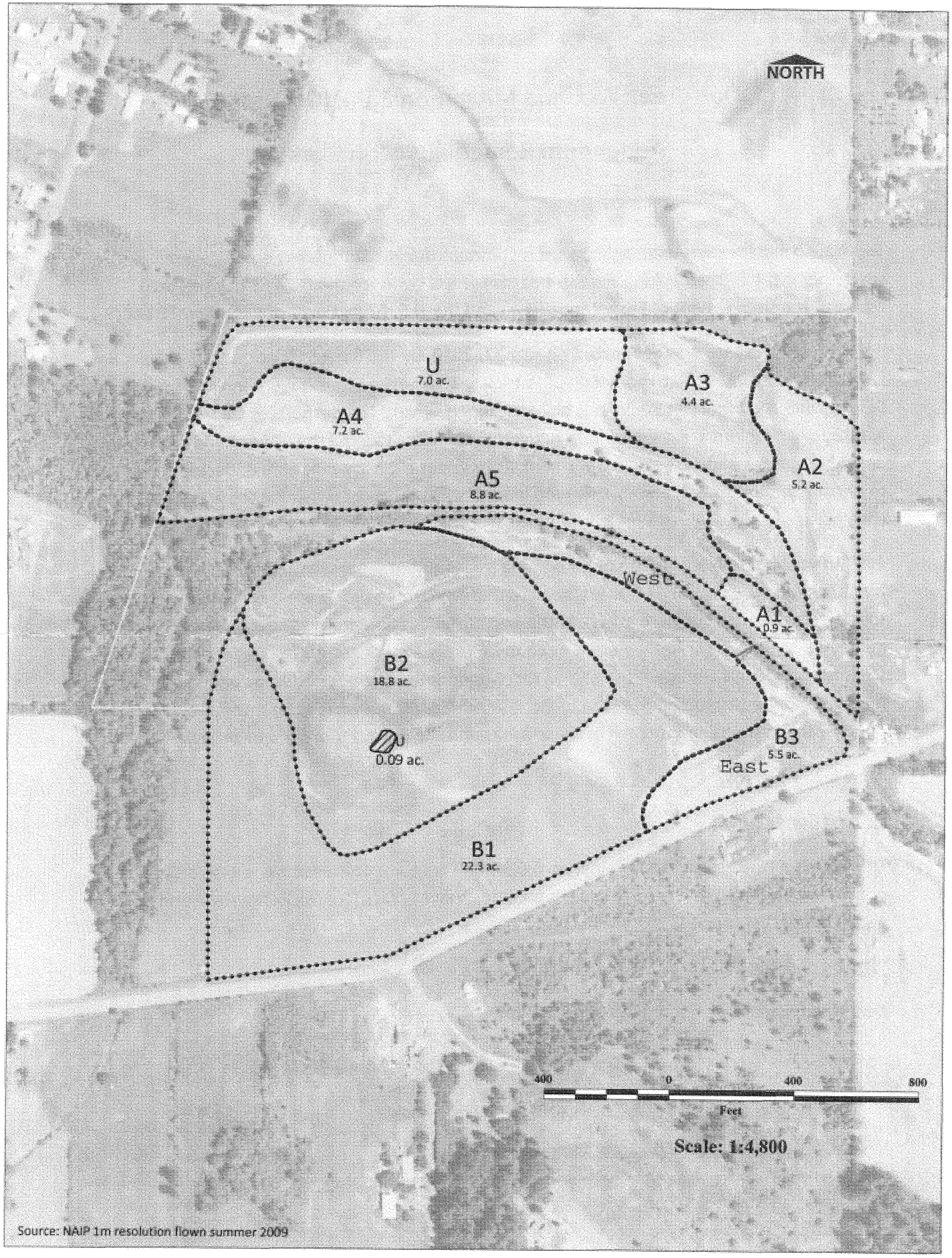
Existing Conditions:

This area is a small open canopy riparian wetland. There are scattered trees with a significant non-native understory. Problem species include: Velvet grass, Teasel, Pennyroyal and non-native bent grass species.

Target Conditions:

A forested riparian wetland dominated by native species.

Recommendations to Reach Target Conditions:



Source: NAIP 1m resolution flown summer 2009

- This entire area should be sprayed out ASAP, while avoiding the existing trees.
- Area should be sprayed again following the fall of 2010 green up, prior to heavy winter rains.
- Watch this area closely in spring of 2011, spraying should occur after significant germination occurs, but prior to any non-native species beginning to flower.
- During summer of 2011 this area should be monitored often to detect any new problems. Thistles, Pennyroyal, Queen Anne's lace and St John's wort can all germinate with very little moisture and should be treated if needed.
- During fall of 2011 this area should be assessed for planting. If there is significant rains (2"-3") followed by warm temperatures to get weeds germinated, the site should be planted followed by a broad spectrum herbicide treatment. If rains come rapidly, the area should be sprayed when weather allows and planted in the spring of 2012.

Area A-2 (5.5 acres)

Existing Conditions:

This area is prairie with a few scattered trees. This area has a significant population of non native grasses and forbs. Target same species as A-1 for grasses as well as sweet vernal grass, and target the following non native forbs: Pennyroyal, St. Johns wort, Centurion, Queen Anne's lace, prickly sow thistle, Cats ear dandy lion and parentucellia.

Target Conditions:

Wet prairie dominated by native facultative or wetter species with scattered woody vegetation.

Recommendations to Reach Target Conditions:

- This entire area should be sprayed out ASAP.
- Area should be sprayed again following fall of 2010' green up, prior to heavy winter rains.
- Watch this area closely in the spring of 2011, spraying should occur after significant germination occurs, but prior to any non-native species beginning to flower.
- Depending on spring rains, this area will likely need sprayed again in June. If there is still significant dead organic matter (over 50% ground cover) the area should be mowed with a 4 blade rotary mower (mulching type) or a flail mower.
- During the summer of 2011 this area should be monitored weekly to detect any new

problems. Thistle, Pennyroyal, Queen Anne's lace and St Johns wart can all germinate with very little moisture and should be treated if needed.

- During the fall of 2011 this area should be assessed for planting. If there is significant rains (2"-3") followed by warm temperatures to get weeds germinated, the site should be planted followed by a broad spectrum herbicide treatment. If rains come rapidly, the area should be sprayed when weather allows and planted in spring of 2012.

Area A-3 (4.4 acres)

Existing Conditions:

This area is a combination of emergent and wet prairie. The emergent is in fair condition, but the wet prairie is being invaded by non native species. Problem species for grasses include sweet vernal grass, Velvet grass, and non-native Bent grass spp. Problem species for non native forbs include: Pennyroyal, Curly dock, Oxeye daisy, St. Johns wort, Centurion, Queen Anne's lace, prickly sow thistle, Cats ear dandy lion and parentucellia.

Target Conditions:

A combination of emergent and wet prairie dominated by native facultative or wetter species.

Recommendations to Reach Target Conditions:

- This area should be sprayed out ASAP with the exception of the two wetter areas near each side of the existing berm. A combination of a broad spectrum and broadleaf herbicide should be utilized to control established hard to kill weeds.
- The emergent areas are sparsely vegetated. They should be spot sprayed for non natives and re-planted to a mix of Dowingia, Popcorn flower, and Ovate spike-rush.
- The constructed dike along the north side of this area should be breached to allow surface flows to enter site from the adjoining property to the north. This berm should be sprayed out ASAP and then replanted with upland species such as blue wildrye, slender wheatgrass and California oatgrass once non-natives are under control (likely late fall of 2011).
- Follow recommendation in A-2.

Upland Area (6.9 acres)

Existing Conditions:

The upland area is in fair shape with ~ 50-60% native species. Blue wildrye is the dominant native species, and velvet grass is the dominant non-native species. Weeds in this area present a contamination problem for adjacent wetland areas if not managed. The following option

appears to be the preferred option discussed in a meeting on September 7, 2010 by the bank sponsor, Pat Thompson and the regulatory agencies to limit the contamination issue.

Target Conditions:

Native upland prairie if buffer credits are sufficient to warrant the work it will take to keep it that way.

Recommendations to Reach Target Conditions:

If restoring this area is the goal, follow site preparation measures outlined in A-2, with final planting in the fall of 2012. Due to abundant bio-mass, mowing will be necessary here this fall to accomplish full restoration. Re-plant to a combination of the following seed mix, which is in order of the highest percentage of mix first: blue wild rye, slender wheatgrass, Roemer's fescue, and California oatgrass. Follow planting with 2 years of broad-leaf weed control. Once broad-leaf weeds are under control, plant to a native forbs mix of aggressive habitat generalists such as: Common yarrow, Meadow checkermallow, Streamside lupine, and Bi-color lupine.

This area will be deemed successful if at least 50 percent of the vegetation is native upland prairie, with not more than 15 percent non native invasives and the remainder either native or non intrusive non native species (eg. Parentucellia, curly dock and centurion).

Area A-4 (7.2 acres)

Existing Conditions:

This area is mostly wet prairie with a few scatter trees. The vegetation is mostly non native grasses and forbs such as bent grass, velvet grass, cats ear dandelion, oxeye daisy, and pennyroyal.

Target Conditions:

A combination of forested wetland, scrub/shrub wetland and wet prairie.

Recommendations to Reach Target Conditions:

- This entire area should be sprayed out ASAP. The existing trees and shrubs should be avoided during spraying when possible.
- Area should be sprayed again following fall of 2010' green up, prior to heavy winter

- Watch this area closely in the spring of 2011, spraying should occur after significant rains germination occurs, but prior to any non-native species beginning to flower.
- Depending on spring rains, this area will likely need sprayed again in June. If there is still significant dead organic matter (over 50% ground cover) the area should be mowed with a 4 blade rotary mower (mulching type) or a flail mower.
- During the summer of 2011 this area should be monitored weekly to detect any new problems. Thistle, Pennyroyal, Queen Anne's lace and St John's-wort can all germinate with very little moisture and should be treated if needed.
- During the fall of 2011 this area should be assessed for planting. If there is significant rains (2"-3") followed by warm temperatures to get weeds germinated, the site should be planted followed by a broad spectrum herbicide treatment. If rains come rapidly, the area should be sprayed when weather allows and planted in spring of 2012.

Area A-5 (9.8 acres)

Existing Conditions:

This area is approximately half wet prairie and half emergent wetland. The wet prairie area is nearly dominated by non native undesirable species such as bent grass, velvet grass, cats ear dandelion, oxeye daisy, and pennyroyal.

Target Conditions:

A combination of emergent wetland and wet prairie dominated by facultative or wetter native wetland species.

Recommendations to Reach Target Conditions:

- This area needs intensive spot spraying for pennyroyal and curly dock. Due to the hardiness of these species, a mix of broad spectrum and broadleaf specific herbicides should be utilized. Boom spraying will likely be more efficient in areas of heavy infestation.
- Re-plant emergent marsh areas this fall if non-natives are prevented from going to seed this year or if infestations limited enough for spot spraying to be effective next year (ie) less than 25% non-native cover).
- The entire wet prairie portion should be sprayed out ASAP and follow site prep protocols outlined in A-2.

Area B-1 (22.3 acres)

Existing Conditions:

This area is fairly good native wet prairie for the most part, however, if left unattended this area will eventually be overtaken by non native species, predominately velvet grass.

Target Conditions:

Wet prairie dominated by at least 70% native facultative or wetter species.

Recommendations to Reach Target Conditions:

- In this area target those areas where the velvet grass is approaching approximately 15% or more cover and spray these areas out with Round-up® as needed through fall of 2011. Re-plant sprayed out areas to wet prairie.
- The areas that are less than 15% velvet grass should be spot sprayed. All pennyroyal should also be spot sprayed and other non-natives that are encountered.

Area B-2 (18.8 acres)

Existing Conditions:

This area is a combination of emergent wetland behind a dike and wet prairie. This area is also in fair condition, but in danger of becoming overtaken by non native velvet grass in the wet prairie and pennyroyal in the emergent areas.

Target Conditions:

A combination of emergent wetland and wet prairie dominated by at least 70% native facultative or wetter species.

Recommendations to Reach Target Conditions:

- The area east of the berm needs to be spot sprayed targeting barnyard grass and pennyroyal. This area would greatly benefit from additional emergent planting to increase native plant cover and diversity.
- In the area west of the dike, intensive spot spraying needs to target pennyroyal, velvet grass and bent grass. If sufficient cover of these species is not reduced by early June, the area should be mowed prior to seed set, and spot spraying should continue as seed heads appear to aid in identification.

Area B-3-A (3.2 acres & Area-B-3- B 1.2 acres)

Existing Conditions:

The western portion of this area is wet prairie in fairly good condition; the eastern portion is wet prairie in very poor condition as far as native species is concerned.

Target Conditions:

Wet prairie in the short term, transitioning into riparian forested along Oak Creek.

Recommendations to Reach Target Conditions:

- The western portion of this area needs to be spot sprayed for velvet grass, cat's ear dandelion, and pennyroyal.
- The eastern portion should be sprayed out ASAP, and follow site prep/planting protocols outlined in A-2 followed by wet prairie seeding.
- Once the herbaceous layer is established, plant a mix of native trees and shrubs along Oak Creek.
- The small upland area that remains in the southern upland area delineated by Pacific Habitat Services in 1997 should be sprayed out for 2 growing season and planted with native species.

Conclusion

This plan is designed to correct vegetative deficiencies within the Oak Creek Mitigation Bank. Every attempt was made to define BMP's (best management practices) for each area and the anticipated timing of each activity. These recommendations are based on many years of experience and typical weather patterns. Timing/quantity of precipitation, Soil temperatures, and various other environmental variables will ultimately dictate the timing of management activities, and there effectiveness. This should be accomplished through field visits by an experienced professional. Contracts should be drawn up as soon as possible for the critical spraying that needs to take place this fall and the spring of 2011 to assure meeting the recommended critical time frames.

In follow-up to this plan, a minimum of three yearly inspections will be conducted by Ray Fiori and Pat Thompson, or other wetland professionals. The first site visit should take place in the early spring (March-April) the second in mid-June to assess how treatments are progressing and the third in August to determine if or what additional treatments are necessary. A memo

outlining this information will be immediately passed on to the bank sponsor, DSL and the USACOE for review and comment.

General Weed Control Guidelines

Broadcast/Spot Spraying

- For areas that are designated to be sprayed out and for spot spraying, a broad spectrum herbicide such as Glysophate should be utilized. Round-up™ power max with 5.5 Lbs of active ingredient has proven to be the most effective on established perennial species, and should be utilized whenever possible.
- When broadcast spraying, utilizing well calibrated equipment with adequate spray volume is absolutely necessary for complete control. For broad spectrum herbicides like Round-up™, a minimum of 7 gal/ac. total solution should be utilized, with higher volumes for dense foliage. For broad-leaf specific herbicides such as Garlon 3A™, a minimum of 10gal/ac total solution should be utilized, with higher volumes for dense foliage.
- When spot spraying, a high visibility dye (red works best) should be utilized. This aids in follow up treatments, and also allows for evaluation of herbicide effectiveness on target species.
- In order for this plan to be successful, it is critical in areas designated for management that no non-native species are permitted to seed throughout this intensive management period.
- It is also critical to monitor herbicide success following each treatment. Using a broad spectrum herbicide does not guarantee all plants will be killed and broadleaf herbicides are very selective. Weather conditions, spray equipment, and stage of plant growth all play important roles in success, and corrective measures may need to be taken.

Velvet Grass (*Holcus lanatus*)

- Once established a Round-up® product with 5.5Lbs of active ingredient is necessary for control
- For areas designated for spot spraying, foggy mornings in early spring or a heavy dew aid in identification as the fuzzy leaf surface collects water droplets and distinguishes it from desirable native species.
- During its first growing season following germination this species can be difficult to identify until late June when seed heads begin to appear. This is the best time for spot

treatment control, but it is imperative to cover these areas multiple times to ensure no plants produce viable seed.

Non-Native Bent grass species (*Agrostis species*)

- Once established a Round-up™ product with 5.5Lbs of active ingredient is necessary control.
- Although spring treatments are necessary to keep these species from producing seed, fall application are best for rhizome control.
- These species tend to germinate in late fall, several weeks after significant precipitation, so a late herbicide application just prior to heavy winter rains is very advantageous.

Sweet vernal grass (*Anthoxanthum odoratum*)

- Although this species is a perennial, it remains fairly small in poor soils with limited nutrients.
- The best defense is to eliminate the seed bank through site prep.
- During its first season after germination, it is difficult to distinguish from other natives. Spot spraying is best after seed heads begin to appear, but prior to producing viable seed.
- Mowing can help prevent it from going to seed and subsequent spot spraying, but has little benefit for long term control.
- Once established, spot spraying is the best control. It can be mistaken for meadow foxtail (which should be controlled) as well as Blue wildrye and Meadow barley

Oxeye daisy (*Leucanthemum vulgare*)

- Once established, it can be difficult to kill with a broad spectrum herbicide.
- When using broadleaf specific herbicides, Milestone™ is the most effective.
- Mixing the two together is best for spot spraying.

Teasel (*Dipsacus sylvestris*)

- Once established, it creates abundant seed and spreads rapidly, but since It is a biennial, it takes 2 years to go to seed
- Most herbicides are effective on it in the rosette stage, before it starts to bolt, and should be controlled at that stage.

- Mowing is ineffective for long term control, but will delay seed production.

Pennyroyal (*Menthe pulegium*)

- This species spreads rapidly from existing roots and seed, and is mostly associated with emergent drawdown zones, and similar habitats.
- Hand pulling and mowing have no effect on control.
- Depending on the year, plants can begin to appear in late June, and continue into the fall. Control should begin as soon as flowers appear to aid in detection, but areas should be covered at least once weekly to prevent seed production.
- Due to its spreading nature, areas of previous infestations should be checked frequently.
- When spot treating, a Round-up™ product with 5.5Lbs of active ingredient is necessary control.
- Garlon 3A™ is fairly effective as a broad-leaf specific treatment, but stage of growth and weather play a big role.

Curley dock (*Rumex crispus*)

- Once established, it can be difficult to kill with a broad spectrum herbicide.
- When using broadleaf specific herbicides, Milestone™ is the most effective.
- Mixing the two together is best for spot spraying.

Thistle Species (*Cirsium arvense*)

- These species can germinate most months of the year with little moisture necessary.
- They are fast to reproduce when stressed during hot weather and early detection and control is the best defense. Once vegetation is established, competition from native species is the best long-term strategy, with limited ground disturbance.

Wet Prairie Planting List

Common Name	Latin Name	LBS/ Acre
Tufted hairgrass	*Deschampsia cespitosa*	0.25
Water foxtail	*Alopecurus geniculatus*	o.5

Spike bentgrass	*Agrostis exarata*	0.25
Western mannagrass	*Glyceria occidentalis*	0.5
Meadow barley	*Hordeum Brachyantherum*	1
Slender hairgrass	*Deschampsia elongata*	1
Annual hairgrass	*Deschampsia danthonioides*	1
American sloughgrass	*Beckmania syzigachne*	1

Emergent Marsh Planting Mix

Common Name	Latin Name	LBS/ Acre
Water Plantain	*Alisma plantago aquatica*	1
American sloughgrass	*Beckmania syzigachne*	2
Water foxtail	*Alopecurus geniculatus*	1
Western mannagrass	*Glyceria occidentalis*	1
Ovate spike rush	*Eleocharis ovate*	0.5
Creeping spike rush	*Eleocharis palutris*	0.5
Showy downingia	*Downingia elegans*	0.25
Fragrant popcorn flower	*Plagiobothrys figuaratus*	1

Oak Creek Well 16 2010 Data (12.0 inches have been subtracted so data listed are inches below land surface.) Serial # - 02B25C5 Data logged Fri Jan 07 2011

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Oak Creek Well 17 2010 Data
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Oak Creek Mitigation Bank Vegetation Monitoring - 2010

Introduction and Methods

Vegetation monitoring was conducted in 2010 at the Oak Creek Mitigation Bank site on May 28th and 29th, and June 5th. The monitoring protocol followed was that used in 1999 through 2009 at the site and described in detail in the report for the 1999 vegetation monitoring. In brief, it consisted of 10 equally spaced sampling stations along each of 7 transects at the site, with 5 transects in the Prior Converted Wetland area and one transect each in the Forested areas in the northeast corner and along the west edge of the site. Sample stations were marked in 1999 with 5/8-inch steel rods, which were recovered in later years using descriptions of station locations, flags placed near the rods, and a magnetic locator if needed. In addition, in 2007 three new transects consisting of 5 sample stations each were added in areas of new construction, one each (Transects 1.5 and 2.5) placed 50 meters on either side of Transect #2 and parallel to it, and one (Transect 5.5) placed 50 meters south of Transect #5 and parallel to it. Also, in 2010 one new transect (Transect 8) consisting of 10 sample stations was added in the upland area in the NW portion of the site. This transect runs E-W through the center of the upland area (60 m south of the north boundary of the site) with stations 40 m apart.

Species found in a one-square meter rectangular quadrat placed at each of the sampling stations were recorded and the cover of each was estimated as a percent of the quadrat area. In addition to the cover data in quadrats, other species encountered along transects were recorded as being present in the area. As in previous years, these latter data were not used in the calculations of average cover. Estimates of bare ground and other non-vegetated space were made at each quadrat. Estimates of overstory cover (canopy) were also included, when present. Sample stations with over 16 inches of water at sampling time and with no emergent or aquatic vegetation (i.e. vernal pools) were not included in the vegetation analyses.

Data were entered into a spreadsheet and cover was averaged by species for each transect. Tables are included for the Prior Converted Wetlands area (Transects #1 through #5) as a whole and for the Forested areas (Transects #6 & #7) as a whole, which include summary data for all transects. Data for the added transects in the new construction areas are presented separately for the south side of Oak Creek (Transects 1.5 and 2.5), for the north side of Oak Creek (Transect 5.5), and for the NW upland area (Transect 8).

To calculate the relative proportion of typical wetland species, those with an indicator status of FAC or better were considered. Species were assigned the indicator status for the Northwest region from the USFWS 1996 list. The most conservative National indicator status was used when the indicator status for the Northwest region was "NI" or blank. In determining proportions of cover for FAC and better species, the cover of those species was calculated as a percentage of the total cover. Calculations were also made which included: 1) the proportion of native taxa, 2) the proportion of FAC and better

species comprised of native taxa, and 3) a Moisture Index.

Results and Discussion

The following paragraphs describe the overall cover for the Prior Converted Wetlands area, for the south side and north side new construction areas, for the Forested areas, and for the NW upland area. The separate transects within the Prior Converted Wetlands area are not discussed individually.

In 2010, the dominant species found in the Prior Converted Wetlands area (Transects #1 through #5) were *Holcus lanatus* (common velvetgrass), *Agrostis exarata* (spike bentgrass), *Hordeum brachyantherum* (meadow barley), *Mentha pulegium* (pennyroyal), and *Juncus tenuis* (slender rush). Species with an indicator status of FAC or better accounted for about 80% of the total cover in this area. Native species accounted for about 51% of the total cover in this area. Native species accounted for about 61% of the FAC or better cover in this area. The Moisture Index for this area was 2.43, and non-vegetated ground accounted for 35% of the area.

For the south side new construction area (Transects 1.5 and 2.5), the dominant species were *Juncus tenuis* (slender rush), *Deschampsia cespitosa* (tufted hairgrass), *Juncus bufonius* (toad rush), *Anthoxanthum odoratum* (sweet vernalgrass), and *Holcus lanatus* (common velvetgrass). Species with an indicator status of FAC or better accounted for about 81% of the total cover in this area. Native species accounted for about 70% of the total cover in this area. Native species accounted for about 78% of the FAC or better cover in this area. The Moisture Index for this area was 2.45, and non-vegetated ground accounted for 33% of the area.

For the north side new construction area (Transect 5.5), the dominant species were *Anthoxanthum odoratum* (sweet vernalgrass), *Agrostis exarata* (spike bentgrass), *Hordeum brachyantherum* (meadow barley), *Holcus lanatus* (common velvetgrass), and *Lotus micranthus* (small-flowered lotus). Species with an indicator status of FAC or better accounted for about 54% of the total cover in this area. Native species accounted for about 48% of the total cover in this area. Native species accounted for about 69% of the FAC or better cover in this area. The Moisture Index for this area was 3.17 and non-vegetated ground accounted for 49% of the area.

For the northeast Forested area (Transect #6), the dominant species were *Fraxinus latifolia* (Oregon ash), *Camassia leichtlinii* (great camas), *Allium nigrum* (black garlic), *Poa trivialis* (roughstalk bluegrass), and *Lolium perenne* ssp. multiflorum (annual ryegrass). Species with an indicator status of FAC or better accounted for about 83% of the total cover in this area. Native species accounted for about 79% of the total cover in this area. Native species accounted for about 86% of the FAC or better cover in this area. The Moisture Index for this area was 2.54 and non-vegetated ground accounted for 41% of the area (not including the canopy layer).

For the west Forested area (Transect #7), the dominant species were *Fraxinus latifolia*

(Oregon ash), *Camassia leichtlinii* (great camas), *Veronica scutellata* (marsh speedwell), *Lysimachia nummularia* (creeping jenny), Crataegus douglasii (black hawthorn), Geum macrophyllum (large leaved avens), and *Myosotis laxa* (small flowered forget-me-not). Species with an indicator status of FAC or better accounted for about 88% of the total cover in this area. Native species accounted for about 81% of the total cover in this area. Native species accounted for about 86% of the FAC or better cover in this area. The Moisture Index for this area was 2.30 and non-vegetated ground accounted for 36% of the area (not including the canopy layer). The ground cover at three of the stations along this transect had been completely sprayed with herbicide in 2009, and those stations were still partly non-vegetated as a result.

For the NW upland area (Transect #8), the dominant species were *Holcus lanatus* (common velvetgrass), *Elymus glaucus* (blue wildrye), *Rumex acetosella* (sheep sorrel), *Leucanthemum vulgare* (oxeye daisy), *Festuca occidentalis* (western fescue), and *Anthoxanthum odoratum* (sweet vernalgrass). Native species accounted for about 31% of the total cover in this area, and non-vegetated ground accounted for about 15% of the area.

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	Percent FAC and better						Percent native					
Transect	**2005**	**2006**	**2007**	**2008**	**2009**	**2010**	**2005**	**2006**	**2007**	**2008**	**2009**	**2010**
1	59	S	71	64	76	94	12	S	65	54	56	45
1.5/2.5	NA	NA	81	87	87	81	NA	NA	83	84	80	70
2	77	S	82	67	86	90	37	S	89	62	63	49
3	65	S	54	87	96	94	16	S	80	72	79	77
4	88	87	92	88	79	79	46	43	66	57	56	53
5	62	S	59	66	56	44	3	S	54	43	37	21
5.5	NA	NA	63	71	61	54	NA	NA	60	67	71	48
6	78	89	79	82	80	83	74	69	76	78	78	79
7	75	70	75	82	84	88	61	58	63	75	77	81
8	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	31
Means:	72	82	73	77	78	79	35	56	71	66	66	55

S = sprayed

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Prior Converted Habitat Type - Transect 1

Cover (%)

						Sample Station											
Species	**Common Name**	**Native**	**Indicator**	**Wet**	**MTI**	**1**	**2**	**3**	**4**	**5**	**6**	**7**	**8**	**9**	**10**	**Mean**	**Habitat**
Holcus lanatus	common velvetgrass		FAC	y	3	45	sp	60				23	35	28	4	19.5	
Agrostis exarata	spike bentgrass	yes	FACW	y	2	25	sp	8	28		18	3	2	3	30	11.7	
Alopecurus geniculatis	water foxtail		OBL	y	1	2	sp		80	10	2				2	9.6	
Juncus tenuis	slender rush	yes	FACW-	y	2		sp	4				5	2	48		5.9	
Deschampsia cespitosa	tufted hairgrass	yes	FACW	y	2	2	sp				12	17				3.1	
Anthoxanthum odoratum	sweet vernalgrass		FACU		4		sp	18					5	7		3.0	
Hordeum brachyantherum	meadow barley	yes	FACW-	y	2	5	sp	8	3		1	13				3.0	
Epilobium ciliatum ssp. watsonii	Watson's willowherb	yes	FACW-	y	2		sp	1					12	1	1	1.5	
Carex feta	green-sheathed sedge	yes	FACW	y	2		sp					10				1.0	
Lythrum portula	spatulaleaf loosestrife		OBL	y	1		sp			1	8					0.9	
Carex unilateralis	one-sided sedge	yes	FACW	y	2		sp								8	0.8	
Beckmannia syzigachne	American slough grass	yes	OBL	y	1		sp			1	3					0.4	
Parentucellia viscosa	parentucellia		FAC-		3		sp						2	1	1	0.4	
Hypochaeris radicata	hairy cat's ear		FACU		4		sp						1	1	1	0.3	
Bidens frondosa	leafy beggar's ticks	yes	FACW+	y	2		sp				2					0.2	
Festuca rubra	red fescue		FAC+	y	3		sp					2				0.2	
Mentha pulegium	pennyroyal		OBL	y	1		sp			1	1					0.2	
Montia linearis	narrow-leaved montia	yes	NOL	u	5	1	sp						1			0.2	
Gratiola ebracteata	bractless hedgehyssop	yes	OBL	y	1		sp				1					0.1	
Juncus bufonius	toad rush	yes	FACW	y	2		sp						1			0.1	
Rorippa curvisiliqua	western yellowcress	yes	OBL	y	1		sp						1			0.1	
Rumex acetosella	sheep sorrel/ sour dock		FACU+		4		sp					1				0.1	
Cirsium vulgare	bull thistle		FACU		4		sp										x
Eleocharis ovata	ovate spikerush	yes	OBL	y	1		sp										x
Eleocharis palustris	creeping spikerush	yes	OBL	y	1		sp										x
Fraxinus latifolia	Oregon ash	yes	FACW	y	2		sp										x
Ludwigia palustris	waterpurslane/ marsh seedbox		OBL	y	1		sp										x
Populus balsamifera ssp. trichocarpa	black cottonwood	yes	FAC	y	3		sp										x
Rosa pisocarpa	clustered rose	yes	FAC	y	3		sp										x
Rubus discolor	Himalayan blackberry	invasive	FACU		4		sp										x
Salix sp.	willow	yes	---	u	5		sp										x
Spiraea douglasii	Douglas' spiraea/ hardhack	yes	FACW	y	2		sp										x
Veronica scutellata	marsh speedwell	yes	OBL	y	1		sp										x
moss, duff, dead vegetation, etc.	DOES NOT INCLUDE CANOPY, IF ANY					15	98	10	10	2	2	30	35	8	40	25.0	
bare (soil, mud, rock)	"					15	2	3	10	80	55	1	5	2	5	17.8	
standing water (inches)						0.5		0.5	1	12	2		1	0.5	0.5		

sp = sprayed

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Prior Converted Habitat Type - Transect 2

Cover (%)

									Sample Station								
Species	**Common Name**	**Native**	**Indicator**	**Wet**	**MTI**	**1**	**2**	**3**	**4**	**5**	**6**	**7**	**8**	**9**	**10**	**Mean**	**Habitat**
Holcus lanatus	common velvetgrass		FAC	y	3	15	40	w	w		35	75	25		6	24.5	
Juncus tenuis	slender rush	yes	FACW-	y	2	25	13	w	w		1		28		10	9.6	
Carex feta	green-sheathed sedge	yes	FACW	y	2	55		w	w							6.9	
Hordeum brachyantherum	meadow barley	yes	FACW-	y	2			w	w		30	1			8	4.9	
Agrostis exarata	spike bentgrass	yes	FACW	y	2		2	w	w		2		5	18	8	4.4	
Anthoxanthum odoratum	sweet vernalgrass		FACU		4	5		w	w		8	5	1			2.4	
Parentucellia viscosa	parentucellia		FAC-		3	1	5	w	w		7	2	1		1	2.1	
Deschampsia cespitosa	tufted hairgrass	yes	FACW	y	2			w	w		4	1	4		3	1.5	
Mentha pulegium	pennyroyal		OBL	y	1		1	w	w	7						1.0	
Hypochaeris radicata	hairy cat's ear		FACU		4		5	w	w		1				1	0.9	
Montia linearis	narrow-leaved montia	yes	NOL	u	5	1		w	w		1	1	1	1	2	0.9	
Rosa pisocarpa	clustered rose	yes	FAC	y	3			w	w						6	0.8	
Epilobium ciliatum ssp. watsonii	Watson's willowherb	yes	FACW-	y	2	2	1	w	w						2	0.6	
Carex unilateralis	one-sided sedge	yes	FACW	y	2		1	w	w					3		0.5	
Beckmannia syzigachne	American slough grass	yes	OBL	y	1			w	w	3						0.4	
Centaurium erythraea	European centaury		FAC	y	3	1	1	w	w				1			0.4	
Rumex acetosella	sheep sorrel/ sour dock		FACU+		4			w	w		1				1	0.3	
Lythrum portula	spatulaleaf loosestrife		OBL	y	1			w	w	1						0.1	
Populus balsamifera ssp. trichocarpa	black cottonwood	yes	FAC	y	3		1	w	w							0.1	
Rorippa curvisiliqua	western yellowcress	yes	OBL	y	1		1	w	w							0.1	
Carex stipata	awl-fruited sedge	yes	OBL	y	1			w	w								x
Fraxinus latifolia	Oregon ash	yes	FACW	y	2			w	w								x
Geum macrophyllum	large leaved avens	yes	FAC+	y	3			w	w								x
Gratiola ebracteata	bractless hedgehyssop	yes	OBL	y	1			w	w								x
Leucanthemum vulgare	oxeye daisy		UPL		5			w	w								x
Lotus corniculatus	birdsfoot trefoil		FAC	y	3			w	w								x
Myosotis discolor	yellow and blue forget-me-not		FACW	y	2			w	w								x
Phalaris arundinacea	reed canary grass	invasive	FACW	y	2			w	w								x
Plagiobothrys figuratus	fragrant popcornflower	yes	FACW	y	2			w	w								x
Poa trivialis	rough [roughstalk] bluegrass		FACW	y	2			w	w								x
Rubus discolor	Himalayan blackberry	invasive	FACU		4			w	w								x
Rumex crispus	curly dock		FAC+	y	3			w	w								x
Salix sp.	willow	yes	---	u	5			w	w								x
Spiraea douglasii	Douglas' spiraea/ hardhack	yes	FACW	y	2			w	w								x
Veronica scutellata	marsh speedwell	yes	OBL	y	1			w	w								x

moss, duff, dead vegetation, etc.	DOES NOT INCLUDE CANOPY, IF ANY					12	25	NA	NA	5	12	20	30	75	55	29.3	
bare (soil, mud, rock)	"					2	5	NA	NA	85	1	2	5	3	2	13.1	
standing water (inches)							0.5	>16	>16	4			1	0.5			
								w = deep water									

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Prior Converted Habitat Type - Transect 3

Cover (%)

						Sample Station											
Species	**Common Name**	**Native**	**Indicator**	**Wet**	**MTI**	**1**	**2**	**3**	**4**	**5**	**6**	**7**	**8**	**9**	**10**	**Mean**	**Habitat**
Hordeum brachyantherum	meadow barley	yes	FACW-	y	2	40	38	62	48	40	32	50	10	2	45	36.7	
Agrostis exarata	spike bentgrass	yes	FACW	y	2	20		6	32	12	30	17	18	15	10	16.0	
Holcus lanatus	common velvetgrass		FAC	y	3	5	4	5	4	20	1	1	12	10	1	6.3	
Juncus tenuis	slender rush	yes	FACW-	y	2			15	8				27			5.0	
Mentha pulegium	pennyroyal		OBL	y	1			2	17	9	1	1			2	3.2	
Poa trivialis	rough [roughstalk] bluegrass		FACW	y	2	20	12									3.2	
Anthoxanthum odoratum	sweet vernalgrass		FACU		4								25		2	2.7	
Epilobium ciliatum ssp. watsonii	Watson's willowherb	yes	FACW-	y	2	1		1			1	1	1	8	2	1.5	
Deschampsia cespitosa	tufted hairgrass	yes	FACW	y	2			1	8		5					1.4	
Agrostis castellana/capillaris	highland/colonial bentgrass		FAC	y	3	5									8	1.3	
Montia linearis	narrow-leaved montia	yes	NOL	u	5			1		1	1	2	4	2	2	1.3	
Lotus corniculatus	birdsfoot trefoil		FAC	y	3					8						0.8	
Gratiola ebracteata	bractless hedgehyssop	yes	OBL	y	1							1		1	2	0.4	
Juncus bufonius	toad rush	yes	FACW	y	2							1		1	1	0.3	
Plagiobothrys figuratus	fragrant popcornflower	yes	FACW	y	2						3					0.3	
Daucus carota	Queen Anne's lace		NOL	u	5				1						1	0.2	
Fraxinus latifolia	Oregon ash	yes	FACW	y	2		1	1								0.2	
Geranium carolinianum	Carolina geranium	yes	NOL	u	5		1	1								0.2	
Myosotis discolor	yellow and blue forget-me-not		FACW	y	2			1				1				0.2	
Rumex crispus	curly dock		FAC+	y	3					1	1					0.2	
Vicia tetrasperma	slender vetch		NOL	u	5	1									1	0.2	
Alopecurus geniculatis	water foxtail		OBL	y	1										1	0.1	
Centaurium erythraea	European centaury		FAC	y	3									1		0.1	
Gnaphalium palustre	western marsh cudweed	yes	FAC+	y	3							1				0.1	
Leucanthemum vulgare	oxeye daisy		UPL		5		1									0.1	
Parentucellia viscosa	parentucellia		FAC-		3									1		0.1	
Rorippa curvisiliqua	western yellowcress	yes	OBL	y	1									1		0.1	
Alopecurus pratensis	meadow foxtail		FACW	y	2												x
Beckmannia syzigachne	American slough grass	yes	OBL	y	1												x
Carex feta	green-sheathed sedge	yes	FACW	y	2												x
Carex unilateralis	one-sided sedge	yes	FACW	y	2												x
Cerastium glomeratum	sticky chickweed		UPL		5												x
Dipsacus fullonum	common teasel		FACW-	y	2												x
Phalaris arundinacea	reed canary grass	invasive	FACW	y	2												x
Populus balsamifera ssp. trichocarpa	black cottonwood	yes	FAC	y	3												x
Rosa pisocarpa	clustered rose	yes	FAC	y	3												x

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Prior Converted Habitat Type - Transect 3																	
Cover (%)																	
									Sample Station								
Species	**Common Name**	**Native**	**Indicator**	**Wet**	**MTI**	**1**	**2**	**3**	**4**	**5**	**6**	**7**	**8**	**9**	**10**	**Mean**	**Habitat**
Rubus discolor	Himalayan blackberry	invasive	FACU		4												x
Rumex acetosella	sheep sorrel/ sour dock		FACU+		4												x
Spiraea douglasii	Douglas' spiraea/ hardhack	yes	FACW	y	2												x
Veronica peregrina ssp. xalapense	hairy purslane speedwell	yes	OBL	y	1												x
moss, duff, dead vegetation, etc.	DOES NOT INCLUDE CANOPY, IF ANY					10	45	7	5	12	38	30	22	60	20	24.9	
bare (soil, mud, rock)	"					2	8	8	4	3	4	10	2	1	3	4.5	
standing water (inches)						tr	1				0.5	tr		0.5	0.5		

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Prior Converted Habitat Type - Transect 4

Cover (%)

						Sample Station											
Species	**Common Name**	**Native**	**Indicator**	**Wet**	**MTI**	**1**	**2**	**3**	**4**	**5**	**6**	**7**	**8**	**9**	**10**	**Mean**	**Habitat**
Mentha pulegium	pennyroyal		OBL	y	1	15	17	48	35	40	38	6	22	42		26.3	
Eleocharis acicularis	needle spikerush	yes	OBL	y	1					1		50	95			14.6	
Carex unilateralis	one-sided sedge	yes	FACW	y	2			18	20	23	8	42	8	12		13.1	
Agrostis exarata	spike bentgrass	yes	FACW	y	2	20	30		1		2	5	4	60		12.2	
Leucanthemum vulgare	oxeye daisy		UPL		5										68	6.8	
Vicia tetrasperma	slender vetch		NOL	u	5	38			5		5				18	6.6	
Bromus hordeaceus ssp. hordeaceus	soft brome		FACU		4	18									35	5.3	
Deschampsia cespitosa	tufted hairgrass	yes	FACW	y	2			4		15		6		10		3.5	
Juncus tenuis	slender rush	yes	FACW-	y	2	2			8		25					3.5	
Beckmannia syzigachne	American slough grass	yes	OBL	y	1			25				2	2	1		3.0	
Alopecurus geniculatis	water foxtail		OBL	y	1	3	25					1				2.9	
Epilobium ciliatum ssp. watsonii	Watson's willowherb	yes	FACW-	y	2		2	2	1	1	8			15		2.9	
Montia linearis	narrow-leaved montia	yes	NOL	u	5	3	3		15		4					2.5	
Myosotis discolor	yellow and blue forget-me-not		FACW	y	2	7		1	10		3				2	2.3	
Poa trivialis	rough [roughstalk] bluegrass		FACW	y	2	20										2.0	
Epilobium brachycarpum	autumn [tall annual] willowherb	yes	UPL		5				12		7					1.9	
Polygonum hydropiperoides	waterpepper	yes	OBL	y	1				8		7					1.5	
Holcus lanatus	common velvetgrass		FAC	y	3	5			1		1				7	1.4	
Hordeum murinum ssp. glaucum	smooth barley		NOL	u	5	12										1.2	
Eleocharis palustris	creeping spikerush	yes	OBL	y	1					10						1.0	
Myosotis laxa	small flowered forget-me-not	yes	OBL	y	1				7	1	2					1.0	
Gratiola ebracteata	bractless hedgehyssop	yes	OBL	y	1		2		1	4	2					0.9	
Plagiobothrys figuratus	fragrant popcornflower	yes	FACW	y	2		6					1				0.7	
Spiraea douglasii	Douglas' spiraea/ hardhack	yes	FACW	y	2							7				0.7	
Parentucellia viscosa	parentucellia		FAC-		3	2			1		1				1	0.5	
Daucus carota	Queen Anne's lace		NOL	u	5	1				1	1				1	0.4	
Veronica scutellata	marsh speedwell	yes	OBL	y	1		1	2	1							0.4	
Anthoxanthum odoratum	sweet vernalgrass		FACU		4						3					0.3	
Fraxinus latifolia	Oregon ash	yes	FACW	y	2										3	0.3	
Hordeum brachyantherum	meadow barley	yes	FACW-	y	2	2							1			0.3	
Lolium perenne ssp. multiflorum	annual ryegrass		FAC	y	3	3										0.3	
Rumex crispus	curly dock		FAC+	y	3		1		1						1	0.3	
Cerastium glomeratum	sticky chickweed		UPL		5						1				1	0.2	
Lotus corniculatus	birdsfoot trefoil		FAC	y	3	1	1									0.2	
Bidens frondosa	leafy beggar's ticks	yes	FACW+	y	2					1						0.1	
Centaurium erythraea	European centaury		FAC	y	3										1	0.1	
Geranium molle	dovefoot geranium		NOL	u	5										1	0.1	
Lythrum hyssopifolia	hyssop loosestrife		OBL	y	1		1									0.1	
Mimulus guttatus	seep monkeyflower	yes	OBL	y	1						1					0.1	
Poa compressa	Canada bluegrass	yes	FACU+		4						1					0.1	

Oak Creek Mitigation Bank Plant Monitoring, 2010																	
Prior Converted Habitat Type - Transect 4																	
Cover (%)																	
									Sample Station								
Species	**Common Name**	**Native**	**Indicator**	**Wet**	**MTI**	**1**	**2**	**3**	**4**	**5**	**6**	**7**	**8**	**9**	**10**	**Mean**	**Habitat**
Danthonia californica	California oatgrass	yes	FACU		4												x
Dipsacus fullonum	common teasel		FACW-	y	2												x
Galium parisiense	creeping [wall] bedstraw		UPL		5												x
Juncus effusus	common rush	yes	FACW	y	2												x
Populus balsamifera ssp. trichocarpa	black cottonwood	yes	FAC	y	3												x
Ranunculus alismifolius	water-plantain buttercup	yes	FACW	y	2												x
Salix sp.	willow	yes	---	u	5												x
Valerianella locusta	Lewiston cornsalad		NOL	u	5												x
Veronica americana	American speedwell [brooklime]	yes	OBL	y	1												x
moss, duff, dead vegetation, etc.	DOES NOT INCLUDE CANOPY, IF ANY					7	20	5	10	5	10	4	1	5.0	6	7.3	
bare (soil, mud, rock)	"					1	8	5	8	10	4	3	1	1.0		4.1	
standing water (inches)						tr	2	8	0.5	4	tr	0.5	0.5	2.0			

Oak Creek Mitigation Bank Plant Monitoring, 2010

Prior Converted Habitat Type - Transect 5

Cover (%)

						Sample Station											
Species	**Common Name**	**Native**	**Indicator**	**Wet**	**MTI**	**1**	**2**	**3**	**4**	**5**	**6**	**7**	**8**	**9**	**10**	**Mean**	**Habitat**
Hypochaeris radicata	hairy cat's ear		FACU		4	60	55	62	12		7		3	1		20.0	
Anthoxanthum odoratum	sweet vernalgrass		FACU		4	27	38	35			2		15	18		13.5	
Holcus lanatus	common velvetgrass		FAC	y	3	5	6	1	4				60	40	2	11.8	
Epilobium ciliatum ssp. watsonii	Watson's willowherb	yes	FACW-	y	2						45					4.5	
Juncus bufonius	toad rush	yes	FACW	y	2	4	1	1		2	35		1			4.4	
Juncus tenuis	slender rush	yes	FACW-	y	2			1						3	20	2.4	
Mentha pulegium	pennyroyal		OBL	y	1									10	8	1.8	
Lythrum portula	spatulaleaf loosestrife		OBL	y	1					9	1					1.0	
Rumex acetosella	sheep sorrel/ sour dock		FACU+		4		5		1				3			0.9	
Agrostis exarata	spike bentgrass	yes	FACW	y	2					5			1	2		0.8	
Parentucellia viscosa	parentucellia		FAC-		3	1	4		1		1		1			0.8	
Carex unilateralis	one-sided sedge	yes	FACW	y	2									2	1	0.3	
Centaurium erythraea	European centaury		FAC	y	3			1	1				1			0.3	
Montia linearis	narrow-leaved montia	yes	NOL	u	5				1				1	1		0.3	
Gratiola ebracteata	bractless hedgehyssop	yes	OBL	y	1					1	1					0.2	
Lotus unifoliolatus var. unifoliolatus	Spanish clover	yes	UPL		5			1					1			0.2	
Gnaphalium palustre	western marsh cudweed	yes	FAC+	y	3						1					0.1	
Myosotis discolor	yellow and blue forget-me-not		FACW	y	2	1										0.1	
Camassia leichtlinii	great camas	yes	FACW-	y	2												x
Carex feta	green-sheathed sedge	yes	FACW	y	2												x
Daucus carota	Queen Anne's lace		NOL	u	5												x
Fraxinus latifolia	Oregon ash	yes	FACW	y	2												x
Juncus effusus	common rush	yes	FACW	y	2												x
Juncus ensifolius	daggerleaf rush	yes	FACW	y	2												x
Leucanthemum vulgare	oxeye daisy		UPL		5												x
Populus balsamifera ssp. trichocarpa	black cottonwood	yes	FAC	y	3												x
Rorippa curvisiliqua	western yellowcress	yes	OBL	y	1												x
Rosa pisocarpa	clustered rose	yes	FAC	y	3												x
Rubus discolor	Himalayan blackberry	invasive	FACU		4												x
Spiraea douglasii	Douglas' spiraea/ hardhack	yes	FACW	y	2												x
moss, duff, dead vegetation, etc.	DOES NOT INCLUDE CANOPY, IF ANY					5	10	8	80	75	20	95	12	35	70	41.0	
bare (soil, mud, rock)	"					25	12	10	2	12	3	5	10	2	2	8.3	
standing water (inches)										3				1	2		

Oak Creek Mitigation Bank Plant Monitoring, 2010

Prior Converted Habitat Type - South Side New Construction - Transects 1.5 and 2.5

Cover (%)

						Sample Station											
Species	**Common Name**	**Native**	**Indicator**	**Wet**	**MTI**	**1.5-1**	**1.5-2**	**1.5-3**	**1.5-4**	**1.5-5**	**2.5-1**	**2.5-2**	**2.5-3**	**2.5-4**	**2.5-5**	**Mean**	**Habita**
Juncus tenuis	slender rush	yes	FACW-	y	2		3	10	8	9	w		65	7	28	14.4	
Deschampsia cespitosa	tufted hairgrass	yes	FACW	y	2	75	18	5		2	w			2	20	13.6	
Juncus bufonius	toad rush	yes	FACW	y	2				2	57	w	1				6.7	
Anthoxanthum odoratum	sweet vernalgrass		FACU		4	1	25	10			w			13	10	6.6	
Holcus lanatus	common velvetgrass		FAC	y	3	1	2	8		16	w			12	20	6.6	
Mentha pulegium	pennyroyal		OBL	y	1						w			57		6.3	
Agrostis exarata	spike bentgrass	yes	FACW	y	2			1	32	7	w		10	3		5.9	
Lotus unifoliolatus var. unifoliolatus	Spanish clover	yes	UPL		5		38				w					4.2	
Hordeum brachyantherum	meadow barley	yes	FACW-	y	2		5		5		w		1	15	7	3.7	
Hypochaeris radicata	hairy cat's ear		FACU		4		2	2		8	w				1	1.4	
Carex feta	green-sheathed sedge	yes	FACW	y	2						w			8		0.9	
Juncus ensifolius	daggerleaf rush	yes	FACW	y	2				8		w					0.9	
Bidens frondosa	leafy beggar's ticks	yes	FACW+	y	2					5	w	1				0.7	
Rubus discolor	Himalayan blackberry	invasive	FACU		4			6			w					0.7	
Gratiola ebracteata	bractless hedgehyssop	yes	OBL	y	1					5	w					0.6	
Montia linearis	narrow-leaved montia	yes	NOL	u	5				1	1	w			3		0.6	
Gnaphalium palustre	western marsh cudweed	yes	FAC+	y	3					1	w	2				0.3	
Parentucellia viscosa	parentucellia		FAC-		3	1					w			1	1	0.3	
Rumex acetosella	sheep sorrel/ sour dock		FACU+		4			1			w			2		0.3	
Lotus micranthus	small-flowered lotus	yes	NOL	u	5		2				w					0.2	
Lythrum portula	spatulaleaf loosestrife		OBL	y	1					1	w	1				0.2	
Cerastium glomeratum	sticky chickweed		UPL		5						w				1	0.1	
Beckmannia syzigachne	American slough grass	yes	OBL	y	1						w						x
Betula occidentalis	water birch	yes	FACW	y	2						w						x
Carex unilateralis	one-sided sedge	yes	FACW	y	2						w						x
Epilobium ciliatum ssp. watsonii	Watson's willowherb	yes	FACW-	y	2						w						x
Juncus effusus	common rush	yes	FACW	y	2						w						x
Leucanthemum vulgare	oxeye daisy		UPL		5						w						x
Populus balsamifera ssp. trichocarpa	black cottonwood	yes	FAC	y	3						w						x
Rorippa curvisiliqua	western yellowcress	yes	OBL	y	1						w						x
Salix sp.	willow	yes	---	u	5						w						x
Senecio jacobaea	tansy ragwort		FACU		4						w						x
Spiraea douglasii	Douglas' spiraea/ hardhack	yes	FACW	y	2						w						x
Veronica scutellata	marsh speedwell	yes	OBL	y	1						w						x
moss, duff, dead vegetation, etc.	DOES NOT INCLUDE CANOPY, IF ANY					25	10	55	28	1	NA	1	30.0	3	10	18.1	
bare (soil, mud, rock)	"					1	2	2	25	5	NA	95		2	1	14.8	67
standing water (inches)									1		>16	2					

Oak Creek Mitigation Bank Plant Monitoring, 2010

Prior Converted Habitat Type - South Side New Construction - Transects 1.5 and 2.5

Cover (%)

									Sample Station								
Species	**Common Name**	**Native**	**Indicator**	**Wet**	**MTI**	**1.5-1**	**1.5-2**	**1.5-3**	**1.5-4**	**1.5-5**	**2.5-1**	**2.5-2**	**2.5-3**	**2.5-4**	**2.5-5**	**Mean**	**Habita**
											w = deep water						
											Total cover:					75	
											FAC and better cover:					61	
											Native cover:					53	
											FAC and better native cover:					48	
											Percent FAC and better of total:					81	
											Percent native of total:					70	
											Percent native of FAC and better:					78	
											Moisture Index:					2.45	

Oak Creek Mitigation Bank Plant Monitoring, 2010												
Prior Converted Habitat Type - North Side New Construction - Transect 5.5												
Cover (%)												
							Station					
Species	**Common Name**	**Native**	**Indicator**	**Wet**	**MTI**	**1**	**2**	**3**	**4**	**5**	**Mean**	**Habitat**
Anthoxanthum odoratum	sweet vernalgrass		FACU		4	10	45	10		1	13.2	
Agrostis exarata	spike bentgrass	yes	FACW	y	2	3			24	15	8.4	
Hordeum brachyantherum	meadow barley	yes	FACW-	y	2	4	7		8	18	7.4	
Holcus lanatus	common velvetgrass		FAC	y	3	10	12	3		1	5.2	
Lotus micranthus	small-flowered lotus	yes	NOL	u	5		23	1			4.8	
Agrostis castellana/capillaris	highland/colonial bentgrass		FAC	y	3		8	6	3		3.4	
Deschampsia cespitosa	tufted hairgrass	yes	FACW	y	2	2		8	2	3	3.0	
Hypochaeris radicata	hairy cat's ear		FACU		4	2	6	4		2	2.8	
Rumex acetosella	sheep sorrel/ sour dock		FACU+		4	5	2				1.4	
Juncus tenuis	slender rush	yes	FACW-	y	2	1	2	1		1	1.0	
Parentucellia viscosa	parentucellia		FAC-		3	3		1		1	1.0	
Lotus unifoliolatus var. unifoliolatus	Spanish clover	yes	UPL		5		1	1		1	0.6	
Cerastium glomeratum	sticky chickweed		UPL		5			1		1	0.4	
Lotus corniculatus	birdsfoot trefoil		FAC	y	3					2	0.4	
Rubus discolor	Himalayan blackberry	invasive	FACU		4		2				0.4	
Alopecurus geniculatis	water foxtail		OBL	y	1					1	0.2	
Epilobium brachycarpum	autumn [tall annual] willowherb	yes	UPL		5					1	0.2	
Gnaphalium palustre	western marsh cudweed	yes	FAC+	y	3				1		0.2	
Juncus bufonius	toad rush	yes	FACW	y	2				1		0.2	
Juncus effusus	common rush	yes	FACW	y	2					1	0.2	
Leucanthemum vulgare	oxeye daisy		UPL		5		1				0.2	
Lythrum portula	spatulaleaf loosestrife		OBL	y	1				1		0.2	
Montia linearis	narrow-leaved montia	yes	NOL	u	5				1		0.2	
Veronica peregrina ssp. xalapense	hairy purslane speedwell	yes	OBL	y	1				1		0.2	
Beckmannia syzigachne	American slough grass	yes	OBL	y	1							x
Carex unilateralis	one-sided sedge	yes	FACW	y	2							x
Daucus carota	Queen Anne's lace		NOL	u	5							x
Fraxinus latifolia	Oregon ash	yes	FACW	y	2							x
Gratiola ebracteata	bractless hedgehyssop	yes	OBL	y	1							x
Populus balsamifera ssp. trichocarpa	black cottonwood	yes	FAC	y	3							x
Rorippa curvisiliqua	western yellowcress	yes	OBL	y	1							x
Rosa pisocarpa	clustered rose	yes	FAC	y	3							x
Salix sp.	willow	yes	---	u	5							x

Oak Creek Mitigation Bank Plant Monitoring, 2010

Prior Converted Habitat Type - North Side New Construction - Transect 5.5

Cover (%)

						Station						
Species	**Common Name**	**Native**	**Indicator**	**Wet**	**MTI**	**1**	**2**	**3**	**4**	**5**	**Mean**	**Habitat**
Solidago canadensis var. salebrosa	Canada [salebrosa] goldenrod	yes	FAC-		3							x
Trifolium dubium	small hop-clover		UPL		5							x
Trifolium subterraneum	subterranean clover		NOL	u	5							x
Vicia pannonica	Hungarian vetch		NOL	u	5							x
moss, duff, dead vegetation, etc.	DOES NOT INCLUDE CANOPY, IF ANY					55	5	65	4	50	35.8	
bare (soil, mud, rock)	"					5	1	3	55	3	13.4	51.0
						Total cover:					55	
						FAC and better cover:					30	
						Native cover:					26	
						FAC and better native cover:					21	
						Percent FAC and better of total:					54	
						Percent native of total:					48	
						Percent native of FAC and better:					69	
						Moisture Index:					3.17	

Oak Creek Mitigation Bank Plant Monitoring, 2010

Forested Habitat Type - Transect 6

Cover (%)

									Sample Station								
Species	**Common Name**	**Native**	**Indicator**	**Wet**	**MTI**	**1**	**2**	**3**	**6**	**7**	**8**	**9**	**4**	**5**	**10**	**Mean**	**Habitat**
Fraxinus latifolia (canopy)	Oregon ash	yes	FACW	y	2	98	95	98	90	95	60	85	99	85	70	87.5	
Camassia leichtlinii	great camas	yes	FACW-	y	2	85	12	2	7	20	10	12	30	25		20.3	
Allium nigrum	black garlic		NOL	u	5		15	2		20	60	3				10.0	
Poa trivialis	rough [roughstalk] bluegrass		FACW	y	2	5	5	1	2	4	12	7	6	10	40	9.2	
Lolium perenne ssp. multiflorum	annual ryegrass		FAC	y	3										60	6.0	
Galium aparine	cleavers	yes	FACU		4	5					4		4	20		3.3	
Prunus sp.	cherry, plum	NA	---	u	5								30			3.0	
Amelanchier alnifolia	serviceberry	yes	FACU		4	25										2.5	
Carex leptopoda	Dewey's sedge	yes	FAC	y	3		15	7								2.2	
Rubus ursinus	trailing blackberry	yes	FACU		4							10	6	4		2.0	
Geum macrophyllum	large leaved avens	yes	FAC+	y	3		18					1				1.9	
Ranunculus uncinatus	hooked [small-flowered] buttercup	yes	FAC	y	3		2					3	10			1.5	
Sanicula crassicaulis	Pacific blacksnakeroot [sanicle]	yes	NOL	u	5									15		1.5	
Solanum dulcamara	bittersweet nightshade		FAC+	y	3							15				1.5	
Lapsana communis	nipplewort		FAC	y	3						2		6	5		1.3	
Poa compressa	Canada bluegrass	yes	FACU+		4			2					10			1.2	
Prunella vulgaris	self-heal	yes	FACU+		4								12			1.2	
Vicia sativa	garden vetch/ tare		UPL		5								7	5		1.2	
Stachys rigida	rigid betony	yes	NOL	u	5									10		1.0	
Rumex conglomeratus	clustered dock		FACW	y	2			1			2				4	0.7	
Crataegus douglasii	black hawthorn	yes	FAC	y	3	5										0.5	
Cardamine oligosperma	little western bittercress	yes	FAC	y	3									3		0.3	
Saxifraga oregana	Oregon [bog] saxifrage	yes	FACW+	y	2		3									0.3	
Symphoricarpos albus	snowberry	yes	FACU		4	3										0.3	
Epilobium ciliatum ssp. watsonii	Watson's willowherb	yes	FACW-	y	2		1		1							0.2	
Taraxacum officinale	dandelion		FACU		4	1							1			0.2	
Vicia hirsuta	tiny vetch		NOL	u	5								2			0.2	
Torilis arvensis	spreading hedgeparsley		NOL	u	5									1		0.1	
Hedera helix	English ivy		NOL	u	5												x
Rubus discolor	Himalayan blackberry	invasive	FACU		4												x
Sidalcea campestris	meadow checkerbloom	yes	NI	u	5												x
Veronica scutellata	marsh speedwell	yes	OBL	y	1												x
moss, duff, dead vegetation, etc.	DOES NOT INCLUDE CANOPY, IF ANY					5	35	85	90	60	17	65	40	3	10	41.0	
bare (soil, mud, rock)	"					1	2									0.3	
standing water (inches)							0.5	3	2	1	0.5	6	0.5				

Oak Creek Mitigation Bank Plant Monitoring, 2010

Forested Habitat Type - Transect 7

Cover (%)

						Sample Station											
Species	**Common Name**	**Native**	**Indicator**	**Wet**	**MTI**	**1**	**2**	**3**	**4**	**5**	**6**	**7**	**8**	**9**	**10**	**Mean**	**Habitat**
Fraxinus latifolia (canopy)	Oregon ash	yes	FACW	y	2	18	85	100	98	40	75	100	95	75	98	78.4	
Camassia leichtlinii	great camas	yes	FACW-	y	2						2	50	2	5	95	15.4	
Veronica scutellata	marsh speedwell	yes	OBL	y	1					80						8.0	
Lysimachia nummularia	creeping jenny		FACW	y	2	4		4	70							7.8	
Crataegus douglasii	black hawthorn	yes	FAC	y	3						75					7.5	
Geum macrophyllum	large leaved avens	yes	FAC+	y	3		60	2		2	2			3		6.9	
Myosotis laxa	small flowered forget-me-not	yes	OBL	y	1	60					3					6.3	
Rubus discolor	Himalayan blackberry	invasive	FACU		4					8	4	7	6	1	28	5.4	
Galium aparine	cleavers	yes	FACU		4		3					1		30	10	4.4	
Lapsana communis	nipplewort		FAC	y	3			4			3		1	25		3.3	
Geranium lucidum	shining geranium		NOL	u	5		30									3.0	
Agrostis stolonifera	creeping bentgrass		FACW	y	2	1					20					2.1	
Rumex conglomeratus	clustered dock		FACW	y	2			1	15	2		1	2			2.1	
Carex leptopoda	Dewey's sedge	yes	FAC	y	3			2	3	10		5				2.0	
Poa trivialis	rough [roughstalk] bluegrass		FACW	y	2					10	8					1.8	
Lotus corniculatus	birdsfoot trefoil		FAC	y	3						15					1.5	
Dipsacus fullonum	common teasel		FACW-	y	2	3	10									1.3	
Oenanthe sarmentosa	Pacific water-parsley	yes	OBL	y	1					12			1			1.3	
Oemleria cerasiformis	indian plum	yes	FACU		4						12					1.2	
Ranunculus uncinatus	hooked [small-flowered] buttercup	yes	FAC	y	3			3				1	8			1.2	
Epilobium ciliatum ssp. watsonii	Watson's willowherb	yes	FACW-	y	2	5			2		2		1			1.0	
Symphoricarpos albus	snowberry	yes	FACU		4							10				1.0	
Rubus ursinus	trailing blackberry	yes	FACU		4					2		1	6			0.9	
Festuca rubra	red fescue		FAC+	y	3										8	0.8	
Heracleum maximum	cow parsnip	yes	FAC+	y	3		5				1					0.6	
Poa compressa	Canada bluegrass	yes	FACU+		4	4		1					1			0.6	
Torilis arvensis	spreading hedgeparsley		NOL	u	5		2				1		2		1	0.6	
Agrostis gigantea	redtop		FAC	y	3				5							0.5	
Eleocharis acicularis	needle spikerush	yes	OBL	y	1						5					0.5	
Juncus tenuis	slender rush	yes	FACW-	y	2						5					0.5	
Geranium carolinianum	Carolina geranium	yes	NOL	u	5						2				2	0.4	
Leucanthemum vulgare	oxeye daisy		UPL		5						4					0.4	
Prunella vulgaris	self-heal	yes	FACU+		4						4					0.4	
Rosa nutkana	Nootka rose	yes	FAC-		3								4			0.4	
Vicia sativa	garden vetch/ tare		UPL		5			1			1		2			0.4	

Oak Creek Mitigation Bank Plant Monitoring, 2010

Forested Habitat Type - Transect 7

Cover (%)

						Sample Station											
Species	**Common Name**	**Native**	**Indicator**	**Wet**	**MTI**	**1**	**2**	**3**	**4**	**5**	**6**	**7**	**8**	**9**	**10**	**Mean**	**Habitat**
Gratiola ebracteata	bractless hedgehyssop	yes	OBL	y	1	3										0.3	
Mentha pulegium	pennyroyal		OBL	y	1	1					2					0.3	
Rubus laciniatus	evergreen blackberry	invasive	FACU+		4					1	2					0.3	5.7
Tellima grandiflora	fringecup	yes	FACU		4									3		0.3	
Anagallis arvensis	scarlet pimpernel		FAC	y	3						2					0.2	
Carex densa	dense sedge	yes	OBL	y	1						2					0.2	
Hypochaeris radicata	hairy cat's ear		FACU		4						2					0.2	
Juncus bufonius	toad rush	yes	FACW	y	2						2					0.2	
Mentha arvensis	field mint	yes	FACW-	y	2						2					0.2	
Rumex crispus	curly dock		FAC+	y	3	2										0.2	
Veronica peregrina ssp. xalapense	hairy purslane speedwell	yes	OBL	y	1	1					1					0.2	
Vicia hirsuta	tiny vetch		NOL	u	5					1	1					0.2	
Centaurium erythraea	European centaury		FAC	y	3						1					0.1	
Juncus articulatus	jointed rush	yes	OBL	y	1						1					0.1	
Parentucellia viscosa	parentucellia		FAC-		3						1					0.1	
Sidalcea campestris	meadow checkerbloom	yes	NI	u	5						1					0.1	
Veronica americana	American speedwell [brooklime]	yes	OBL	y	1					1						0.1	
Alopecurus pratensis	meadow foxtail		FACW	y	2												x
Glyceria striata	fowl mannagrass	yes	OBL	y	1												x
Hypericum perforatum	St. John'swort		NOL	u	5												x
Juncus patens	spreading rush	yes	FACW	y	2												x
Lythrum portula	spatulaleaf loosestrife		OBL	y	1												x
Mentha piperita	peppermint		FACW+	y	2												x
Myosotis discolor	yellow and blue forget-me-not		FACW	y	2												x
Phalaris arundinacea	reed canary grass	invasive	FACW	y	2												x
Physocarpus capitatus	Pacific ninebark	yes	FACW	y	2												x
Ranunculus orthorhynchus	straight-beaked buttercup	yes	FACW	y	2												x
Salix sitchensis	Sitka willow	yes	FACW	y	2												x
Sisyrinchium idahoense	Idaho blue-eyed grass	yes	FACW	y	2												x
Sonchus asper	prickly sowthistle		FAC-		3												x
moss, duff, dead vegetation, etc.	DOES NOT INCLUDE CANOPY, IF ANY					30	1	85	28	8	40	35	75	32	2	33.6	
bare (soil, mud, rock)	"					10				1	5	1	2	2	1	2.2	
standing water (inches)						0.5											

Oak Creek Mitigation Bank Plant Monitoring, 2010

Upland Habitat Type - Transect 8

Cover (%)

			Sample Station										
Species	**Common Name**	**Native**	**1**	**2**	**3**	**4**	**5**	**6**	**7**	**8**	**9**	**10**	**Mean**
Holcus lanatus	common velvetgrass		3	22	60	65	38	15	27	4		20	25.4
Elymus glaucus	blue wildrye	yes	28	12	2	2				90	85	5	22.4
Rumex acetosella	sheep sorrel/ sour dock			18	50	12	2	68	40				19.0
Leucanthemum vulgare	oxeye daisy						10			12	45	70	13.7
Festuca occidentalis	western fescue	yes	20	12	10	8				35	25	5	11.5
Anthoxanthum odoratum	sweet vernalgrass		2	50		1	2	25	25	2			10.7
Daucus carota	Queen Anne's lace		20	1	1	1	7			1	3	11	4.5
Avena fatua	wild oat											15	1.5
Poa trivialis	rough [roughstalk] bluegrass						12						1.2
Hordeum brachyantherum	meadow barley	yes	5										0.5
Rubus discolor	Himalayan blackberry	invasive						1	3				0.4
Galium parisiense	creeping [wall] bedstraw						1				2		0.3
Brassica rapa	wild mustard						2						0.2
Bromus sterilis	barren brome		1	1									0.2
Cerastium glomeratum	sticky chickweed						1	1					0.2
Hypochaeris radicata	hairy cat's ear										2		0.2
Anagallis arvensis	scarlet pimpernel						1						0.1
Bromus hordeaceus ssp. horde	soft brome						1						0.1
Myosotis discolor	yellow and blue forget-me-not											1	0.1
moss, duff, dead vegetation, etc.	DOES NOT INCLUDE CANOPY, IF ANY		22	6	5	25	30	8	10	1	1	1	10.9
bare (soil, mud, rock)	"		3	4	5	10	6				5	3	3.6
												Total Cover:	112.2
												Native Cover:	34.4
												Percent Native:	31

Oak Creek Mitigation Bank Plant Monitoring, 2010

Prior Converted Habitat Type - Transect Means

Cover (%)

						Transect						
Species	**Common Name**	**Native**	**Indicator**	**Wet**	**MTI**	**1**	**2**	**3**	**4**	**5**	**Mean**	**Habitat**
Holcus lanatus	common velvetgrass		FAC	y	3	19.5	24.5	6.3	1.4	11.8	12.70	
Agrostis exarata	spike bentgrass	yes	FACW	y	2	11.7	4.4	16.0	12.2	0.8	9.02	
Hordeum brachyantherum	meadow barley	yes	FACW-	y	2	3.0	4.9	36.7	0.3	0.0	8.98	
Mentha pulegium	pennyroyal		OBL	y	1	0.2	1.0	3.2	26.3	1.8	6.50	
Juncus tenuis	slender rush	yes	FACW-	y	2	5.9	9.6	5.0	3.5	2.4	5.29	
Anthoxanthum odoratum	sweet vernalgrass		FACU		4	3.0	2.4	2.7	0.3	13.5	4.38	
Hypochaeris radicata	hairy cat's ear		FACU		4	0.3	0.9	0.0	0.0	20.0	4.24	
Carex unilateralis	one-sided sedge	yes	FACW	y	2	0.8	0.5	0.0	13.1	0.3	2.94	
Eleocharis acicularis	needle spikerush	yes	OBL	y	1	0.0	0.0	0.0	14.6	0.0	2.92	
Alopecurus geniculatis	water foxtail		OBL	y	1	9.6	0.0	0.1	2.9	0.0	2.52	
Epilobium ciliatum ssp. watsonii	Watson's willowherb	yes	FACW-	y	2	1.5	0.6	1.5	2.9	4.5	2.21	
Deschampsia cespitosa	tufted hairgrass	yes	FACW	y	2	3.1	1.5	1.4	3.5	0.0	1.90	
Carex feta	green-sheathed sedge	yes	FACW	y	2	1.0	6.9	0.0	0.0	0.0	1.58	
Leucanthemum vulgare	oxeye daisy		UPL		5	0.0	0.0	0.1	6.8	0.0	1.38	
Vicia tetrasperma	slender vetch		NOL	u	5	0.0	0.0	0.2	6.6	0.0	1.36	
Bromus hordeaceus ssp. hordeaceus	soft brome		FACU		4	0.0	0.0	0.0	5.3	0.0	1.06	
Poa trivialis	rough [roughstalk] bluegrass		FACW	y	2	0.0	0.0	3.2	2.0	0.0	1.04	
Montia linearis	narrow-leaved montia	yes	NOL	u	5	0.2	0.9	1.3	2.5	0.3	1.04	
Juncus bufonius	toad rush	yes	FACW	y	2	0.1	0.0	0.3	0.0	4.4	0.96	
Parentucellia viscosa	parentucellia		FAC-		3	0.4	2.1	0.1	0.5	0.8	0.79	
Beckmannia syzigachne	American slough grass	yes	OBL	y	1	0.4	0.4	0.0	3.0	0.0	0.76	
Myosotis discolor	yellow and blue forget-me-not		FACW	y	2	0.0	0.0	0.2	2.3	0.1	0.52	
Lythrum portula	spatulaleaf loosestrife		OBL	y	1	0.9	0.1	0.0	0.0	1.0	0.41	
Epilobium brachycarpum	autumn [tall annual] willowherb	yes	UPL		5	0.0	0.0	0.0	1.9	0.0	0.38	
Gratiola ebracteata	bractless hedgehyssop	yes	OBL	y	1	0.1	0.0	0.4	0.9	0.2	0.32	
Polygonum hydropiperoides	waterpepper	yes	OBL	y	1	0.0	0.0	0.0	1.5	0.0	0.30	
Agrostis castellana/capillaris	highland/colonial bentgrass		FAC	y	3	0.0	0.0	1.3	0.0	0.0	0.26	
Rumex acetosella	sheep sorrel/ sour dock		FACU+		4	0.1	0.3	0.0	0.0	0.9	0.25	
Hordeum murinum ssp. glaucum	smooth barley		NOL	u	5	0.0	0.0	0.0	1.2	0.0	0.24	
Eleocharis palustris	creeping spikerush	yes	OBL	y	1	0.0	0.0	0.0	1.0	0.0	0.20	
Lotus corniculatus	birdsfoot trefoil		FAC	y	3	0.0	0.0	0.8	0.2	0.0	0.20	

Oak Creek Mitigation Bank Plant Monitoring, 2010

Prior Converted Habitat Type - Transect Means

Cover (%)

						Transect						
Species	**Common Name**	**Native**	**Indicator**	**Wet**	**MTI**	**1**	**2**	**3**	**4**	**5**	**Mean**	**Habitat**
Myosotis laxa	small flowered forget-me-not	yes	OBL	y	1	0.0	0.0	0.0	1.0	0.0	0.20	
Plagiobothrys figuratus	fragrant popcornflower	yes	FACW	y	2	0.0	0.0	0.3	0.7	0.0	0.20	
Centaurium erythraea	European centaury		FAC	y	3	0.0	0.4	0.1	0.1	0.3	0.18	
Rosa pisocarpa	clustered rose	yes	FAC	y	3	0.0	0.8	0.0	0.0	0.0	0.15	
Spiraea douglasii	Douglas' spiraea/ hardhack	yes	FACW	y	2	0.0	0.0	0.0	0.7	0.0	0.14	
Daucus carota	Queen Anne's lace		NOL	u	5	0.0	0.0	0.2	0.4	0.0	0.12	
Fraxinus latifolia	Oregon ash	yes	FACW	y	2	0.0	0.0	0.2	0.3	0.0	0.10	
Rumex crispus	curly dock		FAC+	y	3	0.0	0.0	0.2	0.3	0.0	0.10	
Veronica scutellata	marsh speedwell	yes	OBL	y	1	0.0	0.0	0.0	0.4	0.0	0.08	
Rorippa curvisiliqua	western yellowcress	yes	OBL	y	1	0.1	0.1	0.1	0.0	0.0	0.07	
Bidens frondosa	leafy beggar's ticks	yes	FACW+	y	2	0.2	0.0	0.0	0.1	0.0	0.06	
Lolium perenne ssp. multiflorum	annual ryegrass		FAC	y	3	0.0	0.0	0.0	0.3	0.0	0.06	
Cerastium glomeratum	sticky chickweed		UPL		5	0.0	0.0	0.0	0.2	0.0	0.04	
Festuca rubra	red fescue		FAC+	y	3	0.2	0.0	0.0	0.0	0.0	0.04	
Geranium carolinianum	Carolina geranium	yes	NOL	u	5	0.0	0.0	0.2	0.0	0.0	0.04	
Gnaphalium palustre	western marsh cudweed	yes	FAC+	y	3	0.0	0.0	0.1	0.0	0.1	0.04	
Lotus unifoliolatus var. unifoliolatus	Spanish clover	yes	UPL		5	0.0	0.0	0.0	0.0	0.2	0.04	
Populus balsamifera ssp. trichocarpa	black cottonwood	yes	FAC	y	3	0.0	0.1	0.0	0.0	0.0	0.03	
Geranium molle	dovefoot geranium		NOL	u	5	0.0	0.0	0.0	0.1	0.0	0.02	
Lythrum hyssopifolia	hyssop loosestrife		OBL	y	1	0.0	0.0	0.0	0.1	0.0	0.02	
Mimulus guttatus	seep monkeyflower	yes	OBL	y	1	0.0	0.0	0.0	0.1	0.0	0.02	
Poa compressa	Canada bluegrass	yes	FACU+		4	0.0	0.0	0.0	0.1	0.0	0.02	
Alopecurus pratensis	meadow foxtail		FACW	y	2							x
Camassia leichtlinii	great camas	yes	FACW-	y	2							x
Carex stipata	awl-fruited sedge	yes	OBL	y	1							x
Cirsium vulgare	bull thistle		FACU		4							x
Danthonia californica	California oatgrass	yes	FACU		4							x
Dipsacus fullonum	common teasel		FACW-	y	2							x
Eleocharis ovata	ovate spikerush	yes	OBL	y	1							x
Galium parisiense	creeping [wall] bedstraw		UPL		5							x
Geum macrophyllum	large leaved avens	yes	FAC+	y	3							x
Juncus effusus	common rush	yes	FACW	y	2							x

Oak Creek Mitigation Bank Plant Monitoring, 2010													
Prior Converted Habitat Type - Transect Means													
Cover (%)													
							Transect						
Species	**Common Name**	**Native**	**Indicator**	**Wet**	**MTI**	**1**	**2**	**3**	**4**	**5**	**Mean**	**Habitat**	
Juncus ensifolius	daggerleaf rush	yes	FACW	y	2							x	
Ludwigia palustris	waterpurslane/ marsh seedbox		OBL	y	1							x	
Phalaris arundinacea	reed canary grass	invasive	FACW	y	2							x	
Ranunculus alismifolius	water-plantain buttercup	yes	FACW	y	2							x	
Rubus discolor	Himalayan blackberry	invasive	FACU		4							x	
Salix sp.	willow	yes	---	u	5							x	
Valerianella locusta	Lewiston cornsalad		NOL	u	5							x	
Veronica americana	American speedwell [brooklime]	yes	OBL	y	1							x	
moss, duff, dead vegetation, etc.	DOES NOT INCLUDE CANOPY, IF ANY					25.0	29.3	24.9	7.3	41.0	25.49		
bare (soil, mud, rock)	"					17.8	13.1	4.5	4.1	8.3	9.57		65
	Total cover:					62	62	82	122	63	78		
	FAC and better cover:					58	56	77	96	28	63		
	Native cover:					28	31	64	64	13	40		
	FAC and better native cover:					28	30	62	60	13	38		
	Percent FAC and better of total:					94	90	94	79	44	80		
	Percent native of total:					45	49	77	53	21	51		
	Percent native of FAC and better:					48	53	80	62	46	61		
	Moisture Index:					2.26	2.58	2.20	2.18	3.27	2.43		

Oak Creek Mitigation Bank Plant Monitoring, 2010

Forested Habitat Type - Transect Means

Cover (%)

Species	Common Name	Native	Indicator	Wet	MTI	Transect 6	Transect 7	Mean	Habitat
Fraxinus latifolia (canopy)	Oregon ash	yes	FACW	y	2	87.5	78.4	82.95	
Camassia leichtlinii	great camas	yes	FACW-	y	2	20.3	15.4	17.85	
Poa trivialis	rough [roughstalk] bluegrass		FACW	y	2	9.2	1.8	5.50	
Allium nigrum	black garlic		NOL	u	5	10.0	0.0	5.00	
Geum macrophyllum	large leaved avens	yes	FAC+	y	3	1.9	6.9	4.40	
Crataegus douglasii	black hawthorn	yes	FAC	y	3	0.5	7.5	4.00	
Veronica scutellata	marsh speedwell	yes	OBL	y	1	0.0	8.0	4.00	
Lysimachia nummularia	creeping jenny		FACW	y	2	0.0	7.8	3.90	
Galium aparine	cleavers	yes	FACU		4	3.3	4.4	3.85	
Myosotis laxa	small flowered forget-me-not	yes	OBL	y	1	0.0	6.3	3.15	
Lolium perenne ssp. multiflorum	annual ryegrass		FAC	y	3	6.0	0.0	3.00	
Rubus discolor	Himalayan blackberry	invasive	FACU		4	0.0	5.4	2.70	
Lapsana communis	nipplewort		FAC	y	3	1.3	3.3	2.30	
Carex leptopoda	Dewey's sedge	yes	FAC	y	3	2.2	2.0	2.10	
Geranium lucidum	shining geranium		NOL	u	5	0.0	3.0	1.50	
Prunus sp.	cherry, plum	NA	---	u	5	3.0	0.0	1.50	
Rubus ursinus	trailing blackberry	yes	FACU		4	2.0	0.9	1.45	
Rumex conglomeratus	clustered dock		FACW	y	2	0.7	2.1	1.40	
Ranunculus uncinatus	hooked [small-flowered] buttercup	yes	FAC	y	3	1.5	1.2	1.35	
Amelanchier alnifolia	serviceberry	yes	FACU		4	2.5	0.0	1.25	
Agrostis stolonifera	creeping bentgrass		FACW	y	2	0.0	2.1	1.05	
Poa compressa	Canada bluegrass	yes	FACU+		4	1.2	0.6	0.90	
Prunella vulgaris	self-heal	yes	FACU+		4	1.2	0.4	0.80	
Vicia sativa	garden vetch/ tare		UPL		5	1.2	0.4	0.80	
Lotus corniculatus	birdsfoot trefoil		FAC	y	3	0.0	1.5	0.75	
Sanicula crassicaulis	Pacific blacksnakeroot [sanicle]	yes	NOL	u	5	1.5	0.0	0.75	
Solanum dulcamara	bittersweet nightshade		FAC+	y	3	1.5	0.0	0.75	
Dipsacus fullonum	common teasel		FACW-	y	2	0.0	1.3	0.65	
Oenanthe sarmentosa	Pacific water-parsley	yes	OBL	y	1	0.0	1.3	0.65	
Symphoricarpos albus	snowberry	yes	FACU		4	0.3	1.0	0.65	
Epilobium ciliatum ssp. watsonii	Watson's willowherb	yes	FACW-	y	2	0.2	1.0	0.60	
Oemleria cerasiformis	indian plum	yes	FACU		4	0.0	1.2	0.60	

Oak Creek Mitigation Bank Plant Monitoring, 2010

Forested Habitat Type - Transect Means

Cover (%)

Species	Common Name	Native	Indicator	Wet	MTI	Transect 6	Transect 7	Mean	Habitat
Stachys rigida	rigid betony	yes	NOL	u	5	1.0	0.0	0.50	
Festuca rubra	red fescue		FAC+	y	3	0.0	0.8	0.40	
Torilis arvensis	spreading hedgeparsley		NOL	u	5	0.1	0.6	0.35	
Heracleum maximum	cow parsnip	yes	FAC+	y	3	0.0	0.6	0.30	
Agrostis gigantea	redtop		FAC	y	3	0.0	0.5	0.25	
Eleocharis acicularis	needle spikerush	yes	OBL	y	1	0.0	0.5	0.25	
Juncus tenuis	slender rush	yes	FACW-	y	2	0.0	0.5	0.25	
Geranium carolinianum	Carolina geranium	yes	NOL	u	5	0.0	0.4	0.20	
Leucanthemum vulgare	oxeye daisy		UPL		5	0.0	0.4	0.20	
Rosa nutkana	Nootka rose	yes	FAC-		3	0.0	0.4	0.20	
Vicia hirsuta	tiny vetch		NOL	u	5	0.2	0.2	0.20	
Cardamine oligosperma	little western bittercress	yes	FAC	y	3	0.3	0.0	0.15	
Gratiola ebracteata	bractless hedgehyssop	yes	OBL	y	1	0.0	0.3	0.15	
Mentha pulegium	pennyroyal		OBL	y	1	0.0	0.3	0.15	
Rubus laciniatus	evergreen blackberry	invasive	FACU+		4	0.0	0.3	0.15	
Saxifraga oregana	Oregon [bog] saxifrage	yes	FACW+	y	2	0.3	0.0	0.15	
Tellima grandiflora	fringecup	yes	FACU		4	0.0	0.3	0.15	
Anagallis arvensis	scarlet pimpernel		FAC	y	3	0.0	0.2	0.10	
Carex densa	dense sedge	yes	OBL	y	1	0.0	0.2	0.10	
Hypochaeris radicata	hairy cat's ear		FACU		4	0.0	0.2	0.10	
Juncus bufonius	toad rush	yes	FACW	y	2	0.0	0.2	0.10	
Mentha arvensis	field mint	yes	FACW-	y	2	0.0	0.2	0.10	
Rumex crispus	curly dock		FAC+	y	3	0.0	0.2	0.10	
Taraxacum officinale	dandelion		FACU		4	0.2	0.0	0.10	
Veronica peregrina ssp. xalapense	hairy purslane speedwell	yes	OBL	y	1	0.0	0.2	0.10	
Centaurium erythraea	European centaury		FAC	y	3	0.0	0.1	0.05	
Juncus articulatus	jointed rush	yes	OBL	y	1	0.0	0.1	0.05	
Parentucellia viscosa	parentucellia		FAC-		3	0.0	0.1	0.05	
Sidalcea campestris	meadow checkerbloom	yes	NI	u	5	0.0	0.1	0.05	
Veronica americana	American speedwell [brooklime]	yes	OBL	y	1	0.0	0.1	0.05	
Alopecurus pratensis	meadow foxtail		FACW	y	2				x
Glyceria striata	fowl mannagrass	yes	OBL	y	1				x
Hedera helix	English ivy		NOL	u	5				x

Oak Creek Mitigation Bank Plant Monitoring, 2010											
Forested Habitat Type - Transect Means											
Cover (%)											
						Transect					
Species	**Common Name**	**Native**	**Indicator**	**Wet**	**MTI**	**6**	**7**	**Mean**	**Habitat**		
Hypericum perforatum	St. John'swort		NOL	u	5				x		
Juncus patens	spreading rush	yes	FACW	y	2				x		
Lythrum portula	spatulaleaf loosestrife		OBL	y	1				x		
Mentha piperita	peppermint		FACW+	y	2				x		
Myosotis discolor	yellow and blue forget-me-not		FACW	y	2				x		
Phalaris arundinacea	reed canary grass	invasive	FACW	y	2				x		
Physocarpus capitatus	Pacific ninebark	yes	FACW	y	2				x		
Ranunculus orthorhynchus	straight-beaked buttercup	yes	FACW	y	2				x		
Salix sitchensis	Sitka willow	yes	FACW	y	2				x		
Sisyrinchium idahoense	Idaho blue-eyed grass	yes	FACW	y	2				x		
Sonchus asper	prickly sowthistle		FAC-		3				x		
moss, duff, dead vegetation, etc.	DOES NOT INCLUDE CANOPY, IF ANY					41.0	33.6	37.30			
bare (soil, mud, rock)	"					0.3	2.2	1.25		59	64
	Total cover:					161	173	167			
	FAC and better cover:					133	153	143			
	Native cover:					128	141	134			
	FAC and better native cover:					115	131	123			
	Percent FAC and better of total:					83	88	86			
	Percent native of total:					79	81	80			
	Percent native of FAC and better:					86	86	86			
	Moisture Index:					2.54	2.30	2.42			

OAK CREEK MITIGATION BANK

DATE	NAME	LOCATION	PERMIT	ADD	SOLD	BALANCE
8/4/1999	DSL/COE UNCERTIFIED 30%			9.350		9.350
10/13/1999	RANCO	MILLERSBURG, OREGON	FP14608		0.420	8.930
10/15/1999	CENTRAL TRAINING TRUST	TANGENT, OREGON	FP17275/1999-00935		0.420	8.510
1/13/2000	GORDON VOGT	CENTER ST.,ALBANY, OR	FP18135/		0.360	8.150
3/15/2000	GARY HARTALOO	COVEY RUN, NORTH ALBANY, OR	RF17655		0.360	7.790
5/19/2000	CLEAR CHANNEL BROADCASTING	2840 MARION RD.ALBANY, OR	RF18955		0.260	7.530
8/16/2000	WESTERN WEBB PRESS	263 29TH AVE., ALBANY, OR	FP22718/2000-00581		0.110	7.420
8/16/2000	PAHLISCH NEILSON HOMES	GRAND OAKS SUBDIVISION, CORVALLIS, OR	RF22756		0.130	7.290
9/8/2000	CLOUDBURST DEVELOPMENT	5TH AND MAIN STS., LEBANON, OR	RF22824/2008-00659		0.470	6.820
9/20/2000	L&H BUILDERS	FIR CT SWEET HOME, OR	RF22478/2000-00365		0.130	6.690
10/5/2000	CAMAS COMMONS	53RD AND COUNTRYCLUB, CORVALLIS, OR	2255-1RF/2000-00467		0.450	6.240
10/20/2000	CONIFER PL APARTMENTS,LLC	3403 NW 60TH ST.,CORVALLIS, OR	22351/20000492		1.520	4.720
10/20/2000	TIMBERHILL HOMES, LLC	29TH ST., CORVALLIS, OR	DSL22349		0.351	4.369
11/1/2000	DSL/COE CREDITS CERTIFIED			6.24		10.609
12/11/2000	ALL STATE PROPERTIES	SKYVIEW ESTATES, LEBANON, OR	FP18844		0.740	9.869
1/8/2001	WEYERHAEUSER COMPANY	AMERICAN CEMWOOD SITE, ALBANY, OR			0.270	9.599
1/27/2001	CITY OF MILLERSBURG	KUMPULA PROPERTY MT VIEW PL	RF22934		0.105	9.494
2/18/2001	MONACO COACH	COBURG, OREGON	FP17425/99-00778		3.680	5.814
3/15/2001	CITY OF LEBANON	VIOLATION	VIOLATION		0.339	5.475
6/8/2001	PAHLISCH NEILSON HOMES	THE PARK AT TIMBERHILL	2001-00207		0.017	5.458
7/27/2001	HARRISON INDUSTRIES	KNOX BUTTE RD AND TIMBER ST., ALBANY, OR	24201RF/2001-00724		0.120	5.338
9/22/2001	LINN COUNTY AFFORDABLE HOUSING	LINN COUNTY AFFORDABLE HOUSING	24434FP/2001-00724		0.020	5.318
5/25/2002	THE SANDERS DO/TC2 INVESTMENT	45TH STREET NEAR COUNTRY CLUB DR	25203FP/2002-00179		0.190	5.128
2/7/2003	CITY OF ALBANY	OAK CREEK DRAINAGE AT 53RD AVENUE	26256/2002-00901		0.480	4.648
2/17/2003	BENTON COUNTY PUBLIC HEALTH	CHAPEL DRIVE NEWTON CR. BRIDGE	26401GA/2002-00993		0.060	4.588
3/8/2003	CITIES OF ALBANY AND MILLERSBURG	WATER INTAKE, SCAVEL HILL ROAD	25849RF/2000-00720		0.105	4.483
11/3/2003	OREGON DEPT OF TRANSPORTATION	I-5 N. JEFFERSON TO N. ALBANY, OR	31156RF/2003-00622		0.300	4.183
1/14/2004	BBF DEVELOPMENT, LLC	NE 1/4 SEC. 20,T11S,R3W W. ALBANY, OR	3106FP/2003-00570		0.080	4.103
3/11/2004	STILLWATER ASSOC, A WASH LP,WA	T12S,R2W TAX LOT 1400 LEBANON, OR	30822FP/2003-00473		0.466	3.637
3/27/2004	LINN COUNTY ROAD DEPARTMENT	CALAPOOIA RIVER (DRIVER ROAD) BRIDGE TANGENT, OR	31618GA/NA		0.047	3.590
5/26/2004	OREGON DEPT OF STATE LANDS	WETLAND MITIGATION BANK REVOLVING FUND			0.167	3.423
6/7/2004	TIMBERHILL CORPORATION	KINGS BLVD. EXT. N OF WALNUT BLVD.,CORVALLIS, OR	30514FP/2000-00320		2.464	0.959
7/20/2004	ROTH BUILT AND BASIC HOMES INC	NW/NE 1/4 SEC.3&4 T11S R3W IN ALBANY, OR	32195FP/2004-00280		0.980	-0.021
5/2/2007	OREGON DEPT OF TRANSPORTATION	I-5 CROSSING OF SODOM DITCH MP221.13 NEAR HALSEY,OR	38105GA/2004-0035		0.052	-0.073
4/4/2008	DSL/COE CREDITS RELEASED			3.000		2.927
9/17/2008	CONSUMERS POWER	AIRPORT SUBSTATION SITE NEAR 36394 AIRPORT DR.,LEBANON,OR	40366RF/2008-00241		0.191	2.736
9/15/2008	DSL/COE CREDITS RELEASED			4.000		6.736
12/3/2008	JUSTIFICATION HOLDINGS, LLC	T13S,R1E,SEC29,TAX LOT 6500,SWEETHOME,OR	40059RF/2008-00153		0.059	6.677
10/8/2009	CITY OF JEFFERSON	700 N 2ND ST,JEFFERSON. OR	39627/RP/1994-989-1		0.250	6.427
10/14/2010	CITY OF PHILOMATH	SEC 18,19,20TS23SR5/6W TAX LOT 801	43699RF/2009-00626		6.230	0.197