



**INCREASING THE PACE, EXPANDING THE SCOPE, AND
IMPROVING THE EFFECTIVENESS OF CONSERVATION**

UNDERSTANDING SUPPLY AND DEMAND FOR ENVIRONMENTAL OFF-SET CREDITS IN THE WILLAMETTE RIVER BASIN

INTRODUCTION

Assessing supply and demand for the potential Willamette Ecosystem Marketplace is challenging. Supply and demand work differently in ecosystem markets than in markets for other kinds of goods and services. Supply is driven by the existing natural resource base and the willingness of landowners to manage their lands to produce ecosystem services or leave a portion of the landscape to function naturally without interference. Demand is largely linked to rules and regulations requiring people who impact the environment to buy credits to offset those damages, but in some cases can emerge from voluntary action such as carbon offset demand or a chance for avoided costs such as the New York City water supply headwaters restoration example.

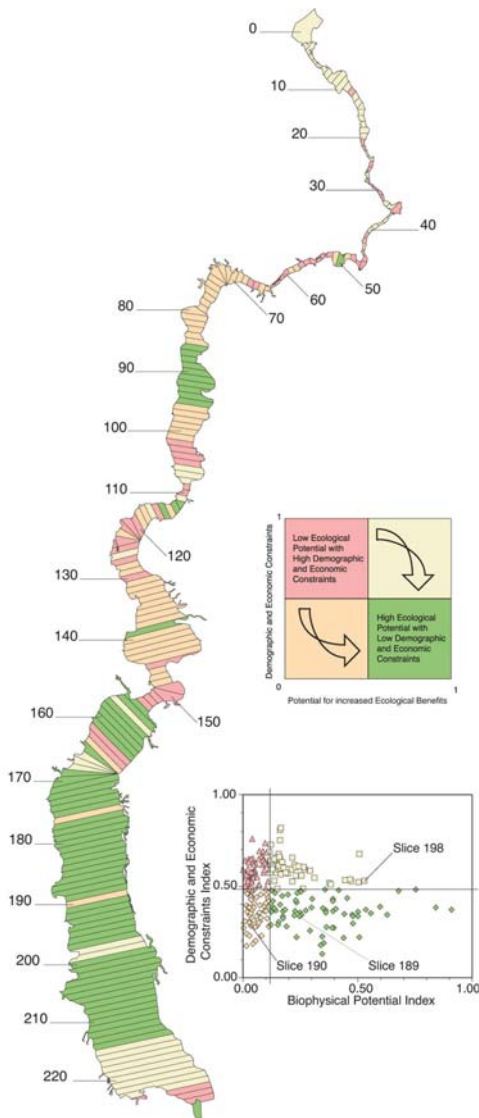
There are many factors in ecosystem markets shaping supply and demand beyond the exchange value of ecosystem credits. These include transaction costs, uncertainty, ecosystem dynamics, and politics. With these factors in mind, the market appraisal explored supply and demand, investigating the initial buyers in the market for the Willamette Ecosystem Marketplace, what their drivers are, and where there is the most likely availability of credits for these stakeholders.

Surveying supply

We thoroughly assessed several options for to the best way to identify the priority restoration areas in the Willamette River Basin to assess supply of potential ecosystem credits. There have been a number of efforts to set priorities by different groups in the basin (The Nature Conservancy, Oregon Department of Fish and Wildlife, Oregon State Parks, and Oregon State University to name just a few). After meeting with The Nature Conservancy, Oregon State University, and the Institute for Natural Resources, it seemed there was consensus that the layers compiled by Oregon State University for the Willamette River Basin Planning Atlas (2004) and subsequent work provide the most comprehensive dataset for priority restoration areas.

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We focused on providing a quick inventory based on this dataset of the potential supply of restoration areas in the Willamette River Basin. We initially focused on whether there is available supply to serve the very immediate need of municipalities responding to the temperature TMDL. We used the Atlas dataset to survey potential supply in the WRB. The Atlas includes those areas within the floodplain of the mainstem of the Willamette River, but does not include information about uplands, which have been taken into account by other prioritization efforts. It is our understanding that The Nature Conservancy is proceeding with work to compile priority restoration areas including those outside of the floodplain into a single synthesis map available for future phases of this project.

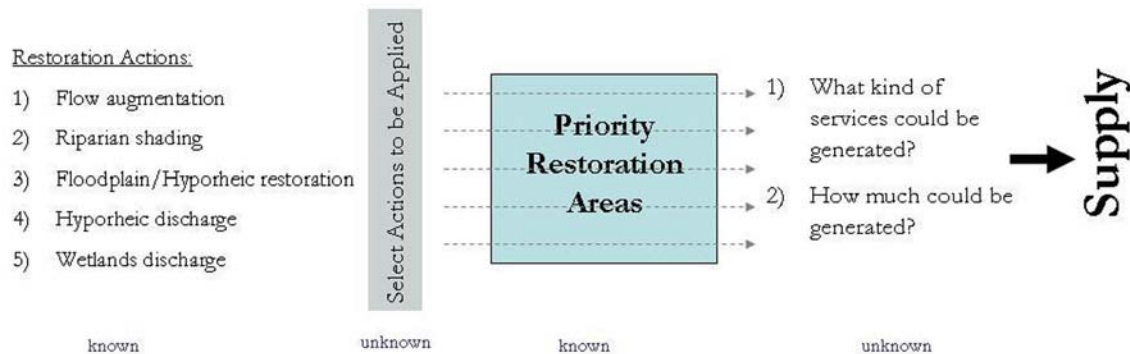
The Atlas identifies all of the high, medium and low priority restoration areas in one kilometer increments (identified as slices) along the entire length of the Willamette River spanning the floodplain.

The methodology for defining priority restoration areas is explained in detail in the Atlas and demonstrates these areas were selected based on the potential for maximizing biological, social, and economic interests. For quick identification, the high and medium priority slices were compiled in a spreadsheet. There are 65 kilometers of high priority restoration areas and 108 kilometers of medium priority restoration areas identified. The majority of high priority areas are upstream of the Salem/Keizer area and the majority of medium priority areas are downstream of Salem/Keizer.

Quantifying supply requires identifying restoration activities that would be applied to priority areas and what benefits these activities would generate relative to desired credits such as water temperature reduction (kilocalories), wetland creation (acres), habitat creation (acres), and carbon sequestration (tons of CO₂) (See the simple diagram of this assessment of supply below). A matrix was created listing the five restoration actions identified by the Willamette Partnership and describing the general benefits that could be quantified when these actions are applied to priority restoration areas.

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Green Island has been flagged for consideration as the potential location of Transaction #1 and falls within the high priority areas identified in the Atlas. Working with the McKenzie River Trust, information was gathered on current and future conditions. The ecosystem benefits potentially generated by the restoration activities identified for Green Island are being assessed relative to desired credits (e.g. water temperature reduction (kcal), wetland creation (acres), habitat creation (acres), flood control, carbon sequestration (tons of CO₂), and air pollution reduction.) By testing this assessment of ecosystem benefits for a specific restoration site, we will be able to calibrate assessment tools and conduct a more comprehensive assessment of the potential supply of ecosystem credits in the basin. This will require a base set of assumptions about the future restored condition and applying the method quantifying benefits used for Green Island.

Digging into demand

In Oregon, and specifically the Willamette Basin, there are certain regulatory drivers generating demand for ecosystem credits and this demand is being met to varying degrees by market mechanisms already established:

- Wetland and stream mitigation banking (very active)
- Carbon emissions trading (active)
- Renewable energy credits and green tags (active)
- Water quality trading (one example)
- Endangered species mitigation banking (one example)
- Water supply trading (one example)

The Partnership has developed a primer on each of these markets, which will be included in analysis of trading frameworks under Task 4. Overall, it seems that most potential ecosystem buyers need small increments of credits at irregular intervals. This fluctuation in demand can lead to mismatches with supply in new markets. Most buyers are looking to transfer regulatory liability and their demand is tied closely to their estimates of complying with regulations on their own. Demand in the Willamette River Basin is characterized below in terms of the regulatory drivers to which potential buyers are currently responding.

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Significant Regulatory Drivers

Demand for water quality credits to meet Clean Water Act standards is driven by newly established Total Maximum Daily Loads in Oregon for water quality parameters such as temperature, dissolved oxygen, bacteria, and more. To evaluate demand for water temperature reduction, the Partnership with its consultants evaluated the Final TMDL (Oregon DEQ, September 2006) in relation to the temperature wasteload allocations (WLAs) for point sources and load allocations (LAs) for nonpoint sources. These allocations are expected to serve as the baselines for thermal credit trading in the Willamette basin. This evaluation of the TMDL assists in understanding demand for thermal load credits, as well as supply that may be created for sources named in the TMDL that might achieve loadings below their assigned caps. Thus, this effort identifies, evaluates, and summarizes temperature related responsibilities outlined in the final TMDL as defined by assigned WLAs and LAs.

Point Sources (WLAs)

The key information associated with this TMDL evaluation is a spreadsheet summary of point source WLAs, their existing “excess” thermal loads (ETLs), and their thermal loads to offset (see Tables 1 through 4 below). The thermal load to offset for each point source is calculated by subtracting the WLA from the ETL. A negative number indicates that offset credits might be available for trading. A positive value indicates that offset credits may need to be acquired via trading.

Table 1 shows actual existing thermal loads for each point source as calculated and listed in the TMDL itself. Table 2 shows future anticipated ETLs for Albany, Corvallis and MWMC. Information on future loads was only readily available for these three point sources based on their petitions to DEQ for allocation of some of the reserve capacity.

The WLAs are substantially different for the “ $a=0$ ” case and “ $a>0$ ” cases (“ a ” is an adjustment factor in the TMDL that is applied when the 7-day maximum river temperature exceeds the biological criteria but the 7-day mean river temperature does not). The adjustment factor reduces the WLAs, making them more stringent.

The WLAs in Tables 3 and 4 (one with “ $a=0$ ” and one with “ $a>0$ ”) pertain when river flows are at or below the 7-day, 10-year flow low flow (7Q10) condition. Thus, this evaluation of possible offset credits needed or generated is based on critical low flows. Because the WLAs are river flow tiered (higher, less stringent WLAs at higher flows), the need to trade will largely be driven by the need to prepare to meet WLAs during lower flow conditions. Also note that the WLAs do not become substantially greater until very high river flows; thus this approach to identify likely debtors and creditors is appropriate.

This evaluation indicates which point sources will likely need to reduce loads or acquire credits, and the magnitude of the reductions or credits needed (in units of million kilocalories per day [mill. kc/d]), based directly on methods and data in the final TMDL. In general, the analysis suggests that all the major point sources in the Upper Willamette reach (upstream of river mile 108) have ETLs that exceed WLAs and thus may have an interest in acquiring

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thermal credits. Another way to think about this is that all the major point sources on the Upper Willamette will need to reduce or offset their loads, and those that are able to reduce loads more than required by their WLAs could generate credits for others. On the other hand, point sources in the middle and Lower Willamette reaches have ETLs at or below their WLAs. A more detailed evaluation of how point source trading might occur, including temporal and spatial considerations, is included in the TM for Subtask 2.2.

Nonpoint Sources (LAs)

Nonpoint sources for the Willamette TMDL consist of landowners where existing riparian shade is less than would be present under Natural Thermal Potential (NTP) shade conditions. For these nonpoint sources ODEQ simply calculated the LA based on river flow and an assumed portion of the Human Use Allowance (HUA). The lumped LA is shown in the TMDL figure below. DEQ's expectation is that LAs will be met by each landowner by restoring or protecting riparian shade to meet effective shade targets. The opportunity and precedent in terms of supply and demand for thermal credit trading for riparian shade restoration has been established for the Tualatin Basin, and is described in the TM for Sub-Task 2.2.

Table 4.17 Load allocations available to nonpoint sources.

	Rearing Upstream Santiam River (Billion Kcal/Day)	Spawning Upstream Santiam River (Billion Kcal/Day)	Rearing Upstream Yamhill River (Billion Kcal/Day)	Spawning Upstream Yamhill River (Billion Kcal/Day)	Migration Downstream Yamhill River (Billion Kcals/Day)
Background ⁽¹⁾	61.85	20.36	67.44	24.73	135.72
Allocation ⁽²⁾	0.34	0.36	0.69	0.80	0.38

(1) Background is based on solar loading with complete restoration of riparian vegetation. River reaches where rearing and migration fish use apply is calculated in August. River reaches where spawning fish use apply is calculated in October.
(2) The portion of the HUA allocated to is based on an in-river temperature increase at 7Q10 river flow in the Albany area where spawning and rearing fish use apply, and in the Portland harbor where migration fish use apply.

Major reservoirs in the basin that alter temperature conditions compared to NTP temperatures are also considered to be nonpoint sources. Reservoirs were not assigned LAs in thermal load units (for example, mill. kc/d), but instead in terms of temperature targets to meet downstream of the reservoir for each month, as shown in the TMDL figure below for the Corps reservoirs. How this might be translated into supply and demand, and how credits might be defined, is further discussed in the TM for Subtask 2.2.

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Table 4.18 Monthly target temperatures (seven day average temperature) for USACE Willamette Basin Reservoirs (°C)

Subbasin:	Coast Fork Willamette	Coast Fork Willamette	Middle Fork Willamette	Middle Fork Willamette	Middle Fork Willamette	McKenzie	McKenzie	South Santiam	North Santiam	Upper Willamette
Reservoirs:	Cottage Grove	Dorena	Hills Creek	Dexter/ Lookout Pt	Fall Creek	Cougar	Blue	Foster/ Green Peter	Big Cliff/ Detroit	Fern Ridge
Jan	No Allocation Necessary									
Feb										
Mar										
Apr	9.4	8.8	5.8	6.5	6.5	5.5	5.5	6.1	5.4	9.0
May	11.4	10.8	7.8	8.6	8.6	7.7	7.6	8.2	7.3	10.8
Jun	15.5.0	16.5	11.0	13.2	12.2	10.0	9.9	12.4	9.7	14.6
Jul	19.9	22.3	14.2	17.4	15.9	11.7	11.2	18.4	12.8	16.7
Aug	18.3	20.4	13.6	16.5	15.8	10.9	10.6	18.0	12.8	16.0
Sep	16.4	18.2	12.5	13.9	13.5	9.5	9.5	15.5	10.9	14.0
Oct	13.5	15.3	9.6	10.2	10.6	7.2	7.2	12.6	7.7	8.0
Nov			9.6	10.2	10.6	7.2	7.2	12.6	7.7	
Dec	No Allocation Necessary									

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TABLE 1
 Summer Actual Current Thermal Loads, million kcal/day

Point Source	River Flow		River T	Effluent T	Effluent Flow	Actual ETL
	RM	7Q10, cfs	Trc, C	Tps, C	Qps, cfs	
Small PSs	0-50					
Siltronics	6.3	6290	20	24.7	1.55	18
Kellogg Cr	18.7	6290	20	23.3	10.36	84
Oak Lodge	20.1	6290	20	23.5	3.87	33
Tryon Cr	20.2	6290	20	21.8	9.59	42
Tri-City	25.5	5440	20	24.8	10.57	124
Blue Heron Paper	27.5	5440	20	32.2	16.24	485
West Linn Paper	27.7	5440	20	28.7	8.2	175
Wilsonville	39.0	5460	20	24.3	2.94	31
Newberg	49.7	5460	20	24.9	2.94	35
Sp Newsprint	49.8	5460	20	28.5	21.04	438
Small PSs	50-108					
Salem	78.1	5630	18	23	46.72	572
Small PSs	108-186					
Wah Chang	116.5	3980	18	29.1	4.8	130
Weyerhaeuser Albany	116.5	3980	18	30	13.3	391
Albany	119.0	3980	18	23.7	8.51	119
Corvallis	130.8	3670	18	22.9	11.29	135
Evanite	132.2	3670	18	25.7	0.93	18
Pope and Talbot	148.3	3670	18	28.5	18.1	465
Fort James Halsey	148.4	3670	18	30	6.19	182
MWMC	178.0	1310	18	22.7	36.82	423
U of O Heat Plant	181.7	1310	18	24.1	15.78	236
Spawning Actual Current ETLs						
Small PSs	50-108					
Salem	78.1	6540	13	21	46.72	915
Small PSs	108-186					
Wah Chang	116.5	4160	13	27.1	4.8	166

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TABLE 1
Summer Actual Current Thermal Loads, million kcal/day

Point Source	River Flow		River T	Effluent T	Effluent Flow	
	RM	7Q10, cfs	Trc, C	Tps, C	Qps, cfs	Actual ETL
Weyerhaeuser Albany	116.5	4160	13	28	13.3	488
Albany	119.0	4160	13	21.7	8.51	181
Corvallis	130.8	3810	13	20.9	11.29	218
Evanite	132.2	3810	13	23.7	0.93	24
Pope and Talbot	148.3	3810	13	26.5	18.1	598
Fort James Halsey	148.4	3810	13	28	6.19	227
MWMC	178.0	1340	13	20.7	36.82	694
U of O Heat Plant	181.7	1340	13	22.1	15.78	351

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TABLE 2
 Summer Actual Future ETLs, million kcal/day

Point Source	RM	River	River T	Effluent T	Effluent	Actual ETL
		Flow	Trc, C	Tps, C	Flow	
		7Q10, cfs			Qps, cfs	
Small PSs	0-50					
Siltronics	6.3	6290	20			
Kellogg Cr	18.7	6290	20			
Oak Lodge	20.1	6290	20			
Tryon Cr	20.2	6290	20			
Tri-City	25.5	5440	20			
Blue Heron Paper	27.5	5440	20			
West Linn Paper	27.7	5440	20			
Wilsonville	39.0	5460	20			
Newberg	49.7	5460	20			
Sp Newsprint	49.8	5460	20			
Small PSs	50-108					
Salem	78.1	5630	18			
Small PSs	108-186					
Wah Chang	116.5	3980	18			
Weyerhaeuser Albany	116.5	3980	18			
Albany	119.0	3980	18	23.7	19.07	266
Corvallis	130.8	3670	18	22.9	26.43	317
Evanite	132.2	3670	18			
Pope and Talbot	148.3	3670	18			
Fort James Halsey	148.4	3670	18			
MWMC	178.0	1310	18	22.7	91.45	1052
U of O Heat Plant	181.7	1310	18			
Spawning Actual Future ETLs						
Small PSs	50-108					
Salem	78.1	6540	13			
Small PSs	108-186					

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TABLE 2
 Summer Actual Future ETLs, million kcal/day

Point Source	RM	River Flow	River T	Effluent T	Effluent Flow	Actual ETL
		7Q10, cfs	Trc, C	Tps, C	Qps, cfs	
Wah Chang	116.5	4160	13			
Weyerhaeuser Albany	116.5	4160	13			
Albany	119.0	4160	13	21.7	19.07	406
Corvallis	130.8	3810	13	20.9	26.43	511
Evanite	132.2	3810	13			
Pope and Talbot	148.3	3810	13			
Fort James Halsey	148.4	3810	13			
MWMC	178.0	1340	13	20.7	91.45	1723
U of O Heat Plant	181.7	1340	13			

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TABLE 3
Current Conditions (a=0)

Point Source	Summer @7Q10 & a = 0 (mill. kc/d)				Spawning @7Q10 & a = 0 (mill. kc/d)		
	RM	WLA	Actual ETL	Load to Offset	WLA	Actual ETL	Load to Offset
Small PSs	0-50	193			NA	NA	NA
Siltronics	6.3	22	18	-4	NA	NA	NA
Kellogg Cr	18.7	105	84	-21	NA	NA	NA
Oak Lodge	20.1	42	33	-9	NA	NA	NA
Tryon Cr	20.2	52	42	-10	NA	NA	NA
Tri-City	25.5	156	124	-32	NA	NA	NA
Blue Heron Paper	27.5	485	485	0	NA	NA	NA
West Linn Paper	27.7	197	175	-22	NA	NA	NA
Wilsonville	39.0	39	31	-8	NA	NA	NA
Newberg	49.7	44	35	-9	NA	NA	NA
Sp Newsprint	49.8	546	438	-108	NA	NA	NA
Small PSs	50-108	95			216		
Salem	78.1	714	572	-142	1372	915	-457
Small PSs	108-186	93			56		
Wah Chang	116.5	111	130	19	93	166	73
Weyerhaeuser Albany	116.5	332	391	59	271	488	217
Albany	119.0	111	119	8	173	181	8
Corvallis	130.8	127	135	8	213	218	5
Evanite	132.2	15	18	3	14	24	10
Pope and Talbot	148.3	395	465	70	337	598	261
Fort James Halsey	148.4	155	182	27	126	227	101
MWMC	178.0	398	423	25	428	694	266
U of O Heat Plant	181.7	200	236	36	210	351	141
Future Conditions							
Small PSs	0-50	193			NA	NA	NA
Siltronics	6.3	22			NA	NA	NA
Kellogg Cr	18.7	105			NA	NA	NA

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TABLE 3
Current Conditions (a=0)

Point Source	RM	Summer @7Q10 & a = 0 (mill. kc/d)			Spawning @7Q10 & a = 0 (mill. kc/d)		
		WLA	Actual ETL	Load to Offset	WLA	Actual ETL	Load to Offset
Oak Lodge	20.1	42			NA	NA	NA
Tryon Cr	20.2	52			NA	NA	NA
Tri-City	25.5	156			NA	NA	NA
Blue Heron Paper	27.5	485			NA	NA	NA
West Linn Paper	27.7	197			NA	NA	NA
Wilsonville	39.0	39			NA	NA	NA
Newberg	49.7	44			NA	NA	NA
Sp Newsprint	49.8	546			NA	NA	NA
Small PSs	50-108	95			216		
Salem	78.1	714			1372		
Small PSs	108-186	93			56		
Wah Chang	116.5	111			93		
Weyerhaeuser Albany	116.5	332			271		
Albany	119.0	111	266	155	173	406	233
Corvallis	130.8	127	317	190	213	511	298
Evanite	132.2	15			14		
Pope and Talbot	148.3	395			337		
Fort James Halsey	148.4	155			126		
MWMC	178.0	398	1052	654	428	1723	1295
U of O Heat Plant	181.7	200			210		

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TABLE 4
Current Conditions (a > 0)

Point Source	RM	Summer @7Q10 & a > 0 (mill. kc/d)			Spawning @7Q10 & a > 0 (mill. kc/d)		
		WLA	Actual ETL	Load to Offset	WLA	Actual ETL	Load to Offset
Small PSs	0-50	193			NA	NA	NA
Siltronics	6.3	20	18	-2	NA	NA	NA
Kellogg Cr	18.7	98	84	-14	NA	NA	NA
Oak Lodge	20.1	39	33	-6	NA	NA	NA
Tryon Cr	20.2	49	42	-7	NA	NA	NA
Tri-City	25.5	144	124	-20	NA	NA	NA
Blue Heron Paper	27.5	485	485	0	NA	NA	NA
West Linn Paper	27.7	197	175	-22	NA	NA	NA
Wilsonville	39.0	36	31	-5	NA	NA	NA
Newberg	49.7	40	35	-5	NA	NA	NA
Sp Newsprint	49.8	503	438	-65	NA	NA	NA
Small PSs	50-108	95			216		
Salem	78.1	635	572	-63	1019	915	-104
Small PSs	108-186	97			56		
Wah Chang	116.5	93	130	37	35	166	131
Weyerhaeuser Albany	116.5	277	391	114	101	488	387
Albany	119.0	95	119	24	105	181	76
Corvallis	130.8	108	135	27	129	218	89
Evanite	132.2	13	18	5	6	24	18
Pope and Talbot	148.3	331	465	134	126	598	472
Fort James Halsey	148.4	129	182	53	47	227	180
MWMC	178.0	339	423	84	159	694	535
U of O Heat Plant	181.7	167	236	69	78	351	273
Future Conditions							
Small PSs	0-50	193			NA	NA	NA
Siltronics	6.3	20			NA	NA	NA
Kellogg Cr	18.7	98			NA	NA	NA

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TABLE 4
 Current Conditions (a > 0)

Point Source	RM	Summer @7Q10 & a > 0 (mill. kc/d)			Spawning @7Q10 & a > 0 (mill. kc/d)		
		WLA	Actual ETL	Load to Offset	WLA	Actual ETL	Load to Offset
Oak Lodge	20.1	39			NA	NA	NA
Tryon Cr	20.2	49			NA	NA	NA
Tri-City	25.5	144			NA	NA	NA
Blue Heron Paper	27.5	485			NA	NA	NA
West Linn Paper	27.7	197			NA	NA	NA
Wilsonville	39.0	36			NA	NA	NA
Newberg	49.7	40			NA	NA	NA
Sp Newsprint	49.8	503			NA	NA	NA
Small PSs	50-108	95			216		
Salem	78.1	635			1019		
Small PSs	108-186	97			56		
Wah Chang	116.5	93			35		
Weyerhaeuser Albany	116.5	277			101		
Albany	119.0	95	266	171	105	406	301
Corvallis	130.8	108	317	209	129	511	382
Evanite	132.2	13			6		
Pope and Talbot	148.3	331			126		
Fort James Halsey	148.4	129			47		
MWMC	178.0	339	1052	713	159	1723	1564
U of O Heat Plant	181.7	167			78		

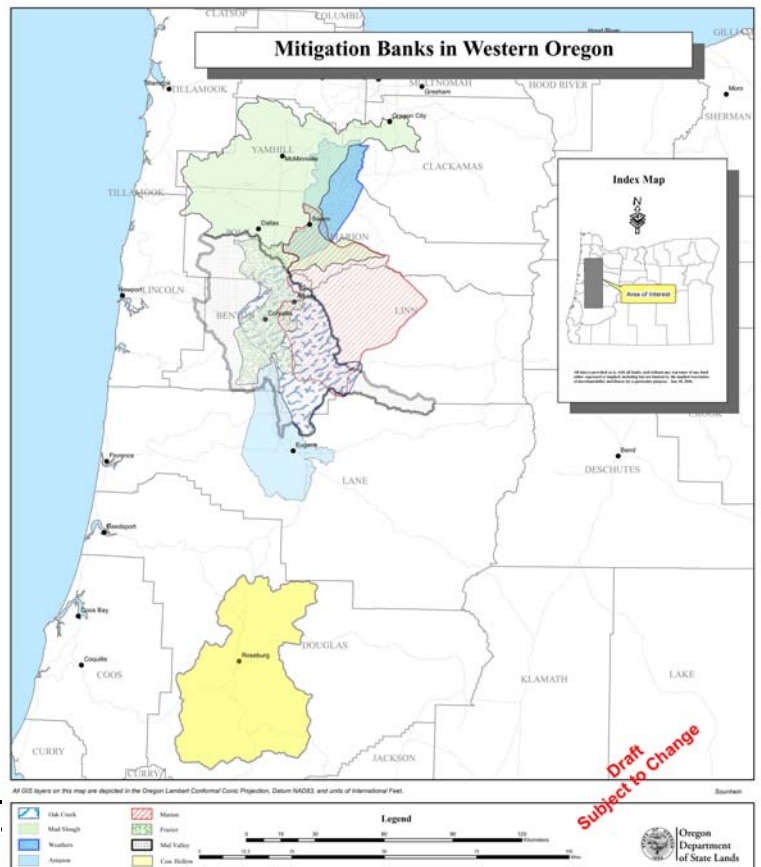
Demand for wetland mitigation credits in Oregon is driven by various forms of development such as industrial site development, high density residential development, and public infrastructure projects, which are required by section 404 of Clean Water Act and State Removal-Fill Law to mitigate permanent impacts to wetlands. One tool being used to project demand is using the state Industrial Site Certification Program. The program, administered by Oregon Economic and Community Development Department, certifies sites as being “project ready” (i.e., able to initiate development within 180 days) once barriers to development have been substantially addressed. Site assessment for wetlands is a key element of the program. The current queue of industrial sites seeking state certification indicates that

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the demand for wetland mitigation is generally, and will continue to be, concentrated along the I-5 corridor between Salem and Eugene, particularly around Corvallis, Albany, and Lebanon. The current queue of sites additionally suggests the northwestern segment of Clackamas County and the western segment of Multnomah County as areas with potentially high demand and limited supply.

If all industrial sites currently in the certification queue within the Willamette Valley developed all delineated and estimated wetland areas within them, then approximately 1,700 acres of wetland impact would result. Cursory estimates from the regional Economic Revitalization Team suggest that after considering practicable impact avoidance and minimization options, the current queue of industrial certification sites may result in a total a potential mitigation demand of nearly 900 acres, concentrated largely in the Upper Willamette around Eugene, Lebanon, and Corvallis. A significant portion of this demand is for mitigation within the next five years, and primarily for palustrine emergent wetland. The Oregon Department of Transportation is in the process of estimating its potential demand over the next 5-7 years, and communities in the West Cascades Council of Governments are working to collect their anticipated need for mitigation credits. In the next few years, these three sources are likely to represent the largest consolidated demand for mitigation credits. Current demand for credits tends to come in small increments of less than 1 acre. Credit transactions need to be embodied within a removal/fill permit, so buyers are restricted from acquiring and holding additional credits. Credit prices range significantly across the valley based on land values. State Land's current Payment to provide price is \$60,000/acre of wetland impact, which reflects the average credit price in the state. This price is a ballpark figure for credit prices. Unconfirmed negotiation prices for the Foster Creek bank hover around \$175,000. The prices in the Willamette valley range from \$50,000 at the West Eugene Wetlands to \$76,000 per acre at Frazier bank. Existing banks and banks in process are scheduled to generate 292 acres of wetland credits. Considering just the demand potentially generated from candidate industrial certification sites in the Valley, this suggests a shortfall of about 600 acre-credits. At an assumed average value of \$60,000 per acre, this equates a total unmet demand value of \$36 million. There are some significant policy changes on the horizon for wetland mitigation. The Economic Revitalization Team and cities are anxious to get quality mitigation in place quickly to facilitate industrial



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development where there are unavoidable wetland impacts. One option the Economic Revitalization Team is exploring is a resale program similar to the North Carolina Ecosystem Enhancement program, where the state or other third party would buy credits and hold them in advance of demand from buyers. The desired outcome is to create a more stable (in terms of both quantity and price) and higher quality supply of wetland bank credits for projects of regional or statewide economic importance. New federal mitigation rules due out in the next year are also likely to increase demand for wetland mitigation credits.

Emerging Sources of Demand

Demand for carbon offset credits is emerging in Oregon. Growing out of the carbon dioxide emissions standards for new energy facilities as regulated by the Energy Facility Siting Council, the Climate Trust has purchased greenhouse gas emission offsets for new power plants. Although Oregon is not likely to see new power plants in the near future, demand for carbon offsets nationally is developing quickly. Regionally, California is leading with new legislation that includes trading. The Pacific Forest Trust has a program to buy forest carbon sequestration. The Climate Trust is actively seeking new sources of investment.

The Governor convened The Carbon Allocation Task Force in August 2005 to develop a proposed cap-and-trade system and legislative proposal in time for the 2007 legislative session. They have put in a very rough placeholder that mimics some of the earlier markets in sulfur dioxide trading. Members of the Partnership have had little contact with members of this Task Force, but have talked preliminarily with the Climate Trust. Another source of funds for carbon credits may come from a proposal introduced for the 2007 legislative session by the Dept. of Forestry. The bill authorizes payments for ecosystem services, which may be targeted at carbon sequestration.

Demand for endangered species habitat conservation credits is being generated by state and federal species listings under the Endangered Species Act (ESA). It is unclear how strong a driver this will be and how much investment in conservation banking is likely given limited reach of ESA regulations and fish and reluctance to accept trading to comply with ESA. Conservation banking broke into Oregon with the Dept. of Transportation's banks for Oregon chub. The Oregon office of the US Fish and Wildlife Service is developing banking policy for the entire state that is due to be complete in the next year. On the anadromous fish side, National Marine Fisheries Service is still hesitant about trading, but they are closer to authorizing a salmon habitat accounting system under the Dept. of Transportation's bridges program. Salmon banks have been formed in California.

Demand for stormwater infiltration and treatment credits is looming on the horizon as growth of impervious area increases, regulation of municipalities and other entities to control quantity and quality of stormwater becomes more onerous, and costs to manage stormwater runoff increase. The City of Portland is exploring the feasibility of using a marketplace to more cost effectively meet stormwater compliance challenges. The OR Dept. of Transportation has convened a group to explore options for meeting regulatory requirements. The demand for stormwater offsets is likely to be very high, but there are institutional challenges to trading stormwater credits.

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Implications

The markets with open check books today are wetlands mitigation banking and hopefully, water quality trading. In terms of the demonstration project, the most marketable projects will be geared toward generating credits for these markets. “Reserve” areas or actions in the project could be held for carbon, species, or other credits, but the economic return will not be immediate. There may be specific opportunities to meet the ecosystem credit needs of a particular “client.” For example, the Port of Portland has a simultaneous need to mitigate for wetland impacts, species impacts, and natural resource damages. The Willamette Partnership could define a role there or not.

The priority, policy-level dialogues that will shape market demand into the future and where the Partnership might be able to participate are the Governor’s Economic Revitalization Team, the Governor’s Carbon Allocation Task Force, and US Fish and Wildlife Service’s upcoming conservation banking policy. Partnership roles in each of these efforts could range from tracking progress, commenting on draft proposals, to actively shaping program designs. Each option requires commitment of staff time, but investing time now could reduce costs created by inconsistent structures and rules later on.

Next Steps

- Complete quantification of ecosystem benefits generated by restoration actions and apply method to other restoration priority areas to assess basin-wide supply
- Get more detailed information on demand surrounding the area of selected demonstration projects
- Complete work with the Dept. of Transportation, State Lands, and valley cities to get information on projected demand for wetland credits
- Continue engaging US Fish and Wildlife Service on design of conservation banking program

Trends to Track

- Watch for other large “clients” like the Port of Portland
- Get updates from the Carbon Allocation Task Force
- Get updates from the City of Portland’s stormwater trading pilot
- Track national policies on wetlands mitigation and carbon
- Track developments in Washington state related to wetlands banking, conservation banking, and transferable development rights
- Watch how new Farm Bill might impact trading