Models/Examples Illustrating Land Protection Issues and Opportunities in Conservation Markets

Presented in this Appendix are brief descriptions of the following programs, transactions, and projects that help illustrate how conservation markets can affect (either positively or negatively) the protection of agricultural lands.

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Clean Water Services' Tualitin River Watershed Program – protection for riparian buffers[1]

The Tualatin River travels some 80 miles and drains some 712 square miles in Northwestern Oregon including some of the more heavily populated areas of the State as well as some of the most productive agricultural lands. Clean Water Services (CWS), a local public wastewater utility, serves some 500,000 customers in 12 local cities (Beaverton, Tigard, Tualatin, Hillsboro, King City, Forest Grove, Sherwood, Cornelius, Banks, Gaston, Durham, and North Plains) in the Portland suburban area and manages four treatment plants subject to NPDES permit.

A new TMDL issued in 2002 substantially limited CWS allowed pollution impacts on the Tualatin. (Chief among these was temperature, although bacteria, DO, ammonia, and phosphorus are also addressed). CWS had the option of spending as much as $150 million (and substantial annual operating cost) on an effluent refrigeration system. Instead, they decided on an approach that would pay farmers (and others) to plant trees in riparian areas to cool the water naturally. The program they created provides two agriculture-related components:

- Enhanced Conservation Reserve Enhancement Program (ECREP) substantially adds to payment levels currently available under the existing Conservation Reserve Enhancement Program (in view of higher land costs in the area). These increased payment levels, along with strong technical assistance and suitable plant materials, are designed to provide additional inducement for farmers to participate in establishing CREP buffers of 35 feet or more.
- Vegetated Buffer Areas for Conservation and Commerce (VEGBACC) is a less generous program that does not include CREP contributions but helps farmers plant trees in riparian buffers narrower than the 35 foot minimum under the CREP program.

CWS surveyed agricultural producers and designed the programs to address the concerns that were expressed in the survey. Both programs are voluntary – with the VEGBACC program designed to provide a less remunerative option for farmers who do not wish to live with some of the restrictions of CREP. Both programs provide suitable plant materials and technical assistance. Both offer conservation easement options, if desired, and offer possible services to transfer and protect water rights.

Among the advantages of these programs and of CWS's approach is that the result is much more beneficial for the overall health of this watershed, addressing a host of additional issues beyond the water temperature limitation that initially drove its creation. Many of the indirect benefits (like habitat creation, for example) are not easily quantifiable. Rather than spending $150 million on a refrigeration facility, between 2004 and 2008, CWA spent about $4.3 million on all four of its watershed programs (of which ECREP and VEGBACC are just the agriculture components), a substantial savings for ratepayers.[2]

Considerations:

The CWS program does not involve specific "trades" between point sources and non-point sources. Rather it is a regulated point source achieving compliance with its NPDES permit by establishing and funding a more effective voluntary, watershed-wide program designed to reduce load levels to a level that will allow it to operate. Nonetheless, it amounts largely to the same thing – providing financial and other incentives to non-point sources in exchange for their producing improved environmental quality.

From an agriculture perspective, CWS created a "souped up" version of CREP (ECREP) and a less restrictive version (VEGBACC) to interest additional farmers to participate. Until this program was in place, not one Multnomah County farmer had enrolled in CREP. There were, however, 27 ECREP projects in 2008,[3] testifying to the program's ability to meet the needs of farmers. The program uses known institutions (like the soil and water conservation districts and NRCS) and piggy-backs on known programs (like CREP) to build a system with which farmers can easily interact.

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New York City Watershed Program – land protection as an integral component of water quality protection[4]

New York City and its surrounding suburbs get their drinking water from reservoirs located further upstate in the Catskill and Delaware Watersheds. These watersheds cover some 1,900 square miles, but New York owns less than 10 percent of the land, the balance belonging to some 77,000 local and additional summer residents. There are some 350 farms in the area which represent an important economic base for the region. By 1993, it was apparent that action needed to be taken to protect the City's water supplies which had increasing evidence of microbial contamination. It was estimated that the cost of building a water treatment facility was between $3 and $8 billion. Annual operating costs would be in the hundreds of millions.

Thus motivated, New York City entered into negotiations with leaders in the communities in the Watershed to develop a program that would protect the City's water supplies while also supporting and improving the quality of life in the Watershed. This resulted in a multi-part program that, among other things, includes the following:

- Full compensation is provided to agricultural landowners for implementing BMPs that protect water quality. The Watershed Agricultural Council (http://www.nycwatershed.org/index.htm) works with the farm community and, as of June 2000, had 318 farms in the program or over 90 percent participation.[5]
- A purchase of development rights program allows farmers to keep their land in agriculture in the face of considerable development pressure from recreational, retirement, and other buyers and prevents the fragmentation of the land base which would make protection of water quality impossible.
- An economic development program is provided to improve farm profitability and help farmers remain in business and on the land.

- An enhanced CREP program that pays the full cost of CREP installation and provides a bonus for signing. (Riparian practices can pay as much as 150 percent of the cost of installation.)

Considerations:
By most standards, this program has been a success with over 90 percent of the farmers implementing BMPs in the Watershed. Why? A key consideration has to be money – with the drinking water of New York City at stake and $3 to $8 billion to be saved, clearly there was motivation to do this right. Still, less dramatic, but nonetheless very large savings have also been involved in other similar water quality trading programs included among the examples discussed here – but they did not necessarily produce the level of agriculture participation that occurred in the Catskill and Delaware Watershed communities.

A contributing feature of the NYC Watershed program was probably its comprehensiveness. The program deals with the direct BMPs needed to secure the needed water quality, but it also provides long-term guarantees through purchased easements assuring that land will remain in farming. This probably makes it easier for farmers to consider long-term BMP participation. At the same time, the program also greatly enhanced the payment for CREP participation. And it provides comprehensive economic development help to assure a profitable future for agriculture. All of these, taken together, have probably provided a confidence in the future needed to assure broad participation by farmers.

Finally, it clearly helps that the program can pay 100 percent (and, at times 150 percent) of the cost of BMP implementation. The actual, cost and effort involved in these practices probably exceeds the simple cost of initial installation. The Watershed Project had enough resources to place "cost-share" at a level that would insure broad participation by the community.

The analogy to our situation in Washington and Oregon may be imperfect. But we do have a strong desire to save our region's salmon. We also have considerable pressure to clean up Puget Sound. And our many 303(d) listed waterways and existing or likely TMDLs here would suggest that the will to make similar changes here might be possible.

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Hickory Pass Ranch, Hickory Pass Texas – use of agricultural easement to protect wildlife habitat [6]

The Johnston family of Hickory Pass Ranch faced a struggle to remain economically viable and pass their land on to future generations. The ranch is located in the Hill Country, near Austin, Texas. In addition to supporting a 3,000 acre cattle operation, the Ranch is also excellent habitat for the endangered golden-cheeked warbler and so of considerable interest to the U.S. Fish and Wildlife Service. Unfortunately, the Service did not have the funds to buy the property and the Johnston's didn't want to sell – preferring that it stay in ranching and pass intact to their three daughters.

Rather than selling the property, the landowner entered into a conservation easement and committed to using standard stewardship management practices protective of bird habitat. In exchange, U.S. Fish & Wildlife Service will certify the creation of "conservation credits" that can be sold to businesses, developers, and local governments that need to mitigate their impacts on other habitat areas in the region. A draft Regional Habitat Conservation Plan for Williamson County, TX, indicates that the Johnston family may receive payments for these credits through the HCP alone amounting to some $7 million over the next few years. In addition, it appears the bank has already received payments for adverse impacts of a key state highway, a major county road, and a private development.

Considerations:
The Hickory Pass Ranch case illustrates the possibility for a win-win that can help keep farms in profitable private ownership while also serving environmental needs. Had the U.S. Fish & Wildlife Service had the money, and had the landowner been inclined, this long-standing family ranching operation could have ended up in public ownership. Instead, using a conservation marketplace, it remained in private agriculture. Apparently the management required is somewhat detailed, but the landowner is receiving substantial payment – hopefully in amounts that are worth the effort. This is also an illustration of how an operating agricultural operation can itself potentially become a conservation bank.

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California habitat conservation– use of agricultural easements to protect wildlife habitat

The following habitat conservation transaction examples are grouped together because each arises largely because of regulatory pressure created by California's own State Endangered Species Act. They are, however, illustrative of how Federal ESA mitigation would occur.

- ***Van Vleck Ranch – Sacramento County, CA***[7]

The Van Vleck Ranch runs 1,500 to 1,700 head of cattle on some 10,000 acres (about ½ of which is leased) in Eastern Sacramento County, CA. The family has been in business here for 150 years. But with high feed costs, fewer grazing acres available with farmers planting grain crops on land previously in irrigated pasture, and a drought, the operation has been struggling.

To supplement their income, the family sold a conservation easement placing 775 acres into a conservation bank for the protection of wildlife habitat, a vernal pool, and Swainson's hawk migration habitat. The purchaser was Westervelt Ecological Services, a real estate development firm involved in conservation banking. With approval of the transaction by the U.S. Corps of Engineers and other regulatory authorities, Westervelt will, in turn, be able to sell conservation banking credits to offset their environmental impacts caused by projects in other parts of the region. The arrangement is a joint venture between Westervelt and the Van Vleck Ranch.

The family still grazes cattle on the land and, according to Stanley Van Vleck: "(This) allows us to continue using the land in the way that we have for 150 years. Here's something where we can create, in perpetuity, benefits for the community. It also benefits our operations."

Considerations:
The joint venture arrangement between an experienced conservation banker and a private landowner suggested by this example seems useful – allowing the landowner to get on with the business of agriculture while allowing the conservation banker to deal with the details of regulatory approval, sale of credits, etc, and still getting the landowner payment for the environmental services provided. And, the land stayed in agriculture.

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- ***Bryte Ranch Conservation Bank – Sacramento County, CA***[8]

The Bryte Ranch is a family operation in Sacramento County, CA. Their property contained one of the largest vernal pools in the region. Their grazing on the surrounding property helped maintain unique vernal pool vegetation. The family partnered with a real estate brokerage firm, Charter Properties of Sacramento, to establish a bank that would allow them to continue to use the land for agriculture while receiving income from the sale of conservation credits.

Considerations:
There isn't a great deal of information about this example, but what there is suggests that it might be useful to illustrate, again, mixed conservation and agricultural uses allowing the landowner to extract income from both. Another interesting feature is the involvement of a real estate broker as a professional consultant in arranging this transaction.

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- ***Campbell Ranch Conservation Bank***[9]

William and Buel Campbell, brothers now in their 70s, wanted to remain in sheep ranching while protecting their land for the long term. Their property is located in rural Solano County, CA and has been in their family for about 100 years. Fortunately, their land contains vernal pools and associated habitat which are an endangered ecosystem in California.

Working with a real estate firm: "Real Estate Solutions," they learned about conservation banking and were able to become certified by the U.S. Fish & Wildlife Service as a conservation bank by placing a conservation easement on 160 acres of their land and committing to the continued use of conservation management. They will continue to graze sheep on the land and saw this as a solution for earning capital on the property without hurting the ranch.

U.S. Fish & Wildlife Services spokesman Jim Nickles commented: "We've found that selectively done and managed in a way that's wildlife-friendly, grazing is good for vernal pool habitat."

Considerations:
This is another example of a real estate firm providing consulting services for the landowner's establishment of a conservation bank and of the possibilities for integrating active agriculture with the marketing of conservation values for an additional source of farm revenue.

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- ***Fitzgerald Ranch Conservation Bank***[10]

Marden Wilber was looking for ways to add to the income of his 803-acre California cattle operation located near Clements in San Joaquin County, CA. He learned that a conservation bank (Wildlands, Inc) would pay to set it up as a conservation bank for the protection of vernal pools on his property. Wilber decided not to establish easements on the surrounding lands as buffers, but did protect 37 acres of pools and surroundings ground on which he became eligible to sell mitigation credits. The bank is intended to protect California tiger salamander, western spadefoot toad, and vernal pool fairy shrimp as well as plants associated with vernal pool habitat. The easement does not apply to the surrounding lands. Those lands continue as grazing lands.

This bank was created by the landowner directly so the owner could realize the full value of the property while remaining in agriculture. Conservation banking was appealing because it allowed

continued ranching without additional restriction while and provided additional revenue. The owner received 62 credits on the 37 acres and will receive about of $65,000 per credit.

Considerations:
This landowner elected not to include the adjacent grazing lands in the easement but sold into the bank only protection for the pools themselves. Apparently there were delays and complications in dealing with the U.S. Fish & Wildlife Service that slowed the initial marketing of the credits.

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Gordon Dairy, Elma, WA – agricultural easement protecting wildlife habitat[11]

Jay Gordon, the highly respected Executive Director of the Washington State Dairy Federation, also owns a multi-generational family dairy near Elma WA. A patch of the farm turned out to be critical habitat for migratory trumpeter swans, whose numbers are declining. When two dams were removed from the Elwha River (in Olympic National Park, along the North shore of the Olympic Peninsula), trumpeter swan habitat was affected. Working with the Trumpeter Swan Society and using dam removal mitigation funding from the National Parks Foundation, the Gordon family sold a 55-acre easement on the key property. The easement basically requires that the land continue to be managed for sustainable livestock grazing in mostly the same way the family has been doing as long as they have been in operation.

Payment for the easement was made in a single lump sum, but Gordon wanted to translate that payment into a permanent, income-producing asset for the farm that would be of use, not just to him, but also to future generations who would also have to live with this easement. Accordingly, he invested the easement payment in a large working barn-storage structure that will be of continuing economic value to the farm business in the years to come.

Considerations:
Translating the lump sum payment into a farm income producing asset by the landowner was a creative way to address discomfort with the permanency of the easement, even though the requirements of the easement should not disrupt farming activities in the foreseeable future. This example also illustrates how habitat mitigation can be consistent with agriculture.

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Piasa Creek Watershed Project – outright land acquisition approach [12]

As a permit condition for the Illinois-American Water Company, the Illinois Environmental Protection Agency approved an agreement between Illinois-American and the Great Rivers Land Trust (GRLT) designed to prevent non-point sediment discharge into the Mississippi River through a combination of land acquisitions and BMPs. The Company avoided installing a costly lagoon opposed by the public and was allowed to discharge its residual back into the River.

The arrangement calls for non-point sediment reductions to be achieved through the use of such practices as stream bank stabilization, silt basins, dry dams, terraces, grassed waterways, filter strips, and grade control structures. It also involves land acquisitions by the Great Rivers Land Trust (GRLT) that were funded through the project. GRLT worked through the local county Soil & Water Conservation Districts to identify cooperating landowners and to estimate sediment reductions achieved through BMPs. Landowners are responsible for maintenance of the sediment control structures built on their land.

Considerations:
This program included the Great Rivers Land Trust as a partner to assist with the land acquisitions involved in the program. Some land was clearly taken out of agriculture, although it is not clear how much. In some cases, however, the program simply paid for the described conservation practices, working thorough the local conservation districts.

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PNW Direct Seed - impact of contract length in carbon contracts [13]

One of the earliest and clearest examples of farm community use of a carbon sequestration market is a local one. The contract was arranged by the Pacific Northwest Direct Seed Association (PNDSA) on behalf of its members, local growers using no-till/low-till agriculture.

In 2002, PNDSA entered into a contract with Entergy, a New Orleans-based energy company wishing to offset its corporate climate impacts. PNDSA, in turn, contracted with 77 of its Washington, Oregon, and Idaho members to use direct seed practices on some 6,470 production acres over a 10 year period. Direct seeding sequesters 0.55 tons of CO2 per acre per year (about 3,500 tons total per year) and, in return, each participating farmer receives a small annual payment. They are obligated to Entergy to sequester about 3,000 tons , providing some leeway in case of loss of acreage. The transaction helps Entergy comply with international standards (not yet required in the U.S.) for greenhouse gas emissions under the Kyoto accord and thus allows it to market its services and its stocks as environmentally responsible.[14] These payments

to the farmers are currently very small (perhaps a bit over $1 per acre) but as this market grows, they could become more significant in the years to come.

Considerations:
PNDSA's program "aggregated" the credits from many small individual producers so the final "bundle" of credits could be offered for sale in an efficient manner to a large offset producer like Entergy. This would have been impractical for Entergy to accomplish and far too difficult and time-consuming for each of the producers to do on their own – especially considering the small amounts they are receiving. In addition, PNDSA's close relationship with its member-producers made it possible to enlist their participation with an organization they already knew and could trust. The PNDSA website provides their explanation of the reasons for the success of this pioneering transaction:

> "PNDSA is in a unique position to aggregate carbon credits to the benefit of the buyer and the seller. It has unique access to a large grower pool that is directly involved in practices that could generate a large portion of the carbon storage benefit agriculture is anticipated to provide. Further, as an aggregator, potential purchasers could gain access to a constant, reliable supply of carbon credits. A grower group, such as PNDSA, could represent grower interests while providing efficient access to prospective purchasers, making it cost-effective for individual farmers to quantify their sequestration and sell offsets."

Because the per-acre value of this contract is small, it provides limited motivation for individual producers to participate – especially when participation involves a 10-year contract to continue a particular practice on their land. This means that the farmers using conservation tillage might likely use this practice regardless of the program. Since the carbon markets want to invest in practices that otherwise would not be used, the value of low-till in this program is heavily discounted, greatly reducing what farmers can get paid. According to PNW Direct Seed, they and their members are participating in this contract largely as a public education effort to highlight the environmental value of low-till agriculture. The use of a 10-year contract with the farmers also may be an issue. There was some hesitation by farmers to tie up their land in contract obligations for such a long period.

It should be noted that the carbon savings resulting from the greatly reduced use of diesel for tillage (a significant issue) was NOT included in the Entergy contract. It was made known to the buyer, but was not factored in to the price paid or tons of carbon saved by the transaction.

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Montana Wetland Legacy In-Lieu Fee Program – Using ranchland easements to help achieve wetland protection[15]

As its name suggests, the goal of the Montana Wetlands Legacy (MWL) program is the protection, restoration and enhancement of wetlands. MWL is a program managed by the Montana Department of Fish, Wildlife and Parks. In coordination with the wetlands protection effort, however, MWL also has other funding with which it works broadly across the landscape to assure that lands surrounding those wetlands are also healthy – including working with local farmers and ranchers using surrounding watershed lands. Some 800,000 acres of surrounding watershed lands have been protected or improved through use of leases, easements, cooperative agreements, and fee acquisition. Some examples of particular interest to agriculture include:

a. Gordon Ranch: To help protect the large areas of prairie grasslands needed for key species of prairie-dependant wildlife, MWL entered into a 15,000-acre conservation easement with the Gordon Cattle Company. This protects the large areas needed as well as some 400 acres of wetlands included in the easement. Under the easement, the Gordon family will continue with their traditional grazing management of the ranch.
b. McMaster Ranch: MWL participated in outright acquisition by BLM of the 5,636 acre McMaster Ranch. The conservation motive was protection of fish and wildlife habitat on the Ranch. But the BLM will also maintain a federally managed grass bank on the property that will provide a cattle grazing alternative for area ranchers using the public lands and improve grazing management on public leases in the Elkhorn Mountains.
c. Granger Ranch: Motivated by a desire to protect and restore a large wetland at the headwaters of O'Dell Creek, MWL is developing a conservation easement with the Granger Ranch, a Montana cattle operation that has been in the same family for five generations. The Granger easement will also facilitate continuation of livestock production and other traditional agricultural uses on the ranch.
d. Ward Ranchland Exchange: When the Ward family found it necessary to place their 2,200 acre ranch on the shore of Hauser Lake, near Helena, MT, on the market, MWL facilitated a multi-party transaction that also involved BLM, The Conservation Fund, and several local ranchers. BLM acquired the Ward property which had high conservation values. But in exchange, and to pay for the acquisition, BLM sold several smaller parcels that were already in public ownership to several private ranchers – usually to ranches that had grazing leases on the lands. The result for local agriculture was no net increase in public ownership and no net loss of agricultural land, while several farmers in the area got the chance to acquire range properties important to their operations.

MWL is funded through several sources, one of which is the Montana In-Lieu-Fee Aquatic Resource Mitigation Program (ILF Program) resulting from an agreement with agencies of the State of Montana and the U.S. Corps of Engineers (which oversees the national no-net-loss of wetlands policy). The goal of this agreement was:

> ". . . to establish an additional voluntary mechanism to compensate for aquatic resource impacts and losses resulting from regulated activities in Montana and to provide greater flexibility for project mitigation to permittees."

Under the agreement, the In-Lieu-Fee option is only made available to permittees after avoidance and minimization of wetland impacts have been accomplished and when there is no practical opportunity for on-site compensatory mitigation or when in-lieu-fee is environmentally

preferable to on-site compensatory mitigation. The agreement specifies that In-Lieu-Fee funds must be used for:

> ". . . activities directly related to physical aquatic habitat and resource establishment, restoration, enhancement, and protection to include the following: land acquisition, purchase of permanent easements, purchase of water rights, in-stream flow leasing, development of mitigation and monitoring plans, permit fees, implementation of physical mitigation and monitoring, administrative costs, and long -term management of mitigation parcels."[16]

Funds must be spent in the watershed in which they were generated and based on priority watershed needs determined by the In-Lieu-Fee committee, which reviews and recommends projects on a case-by-case basis. And the protection of sites funded through In-Lieu-Fee compensatory mitigation funds must be permanent.

Considerations:

The Montana In-Lieu-Fee program, together with its funding for the Montana Wetlands Legacy program – particularly as it plays out for agriculture – illustrates opportunities and limitations in the possible use of in-lieu-fees. Simply paying a fee – even a rather substantial one – can often be preferred by a developer over being responsible for creating and shepherding the performance of a compensatory wetland. On the other hand, as this agreement with the Corps of Engineers illustrates, there is natural concern that the environmental damage that is done by the development actually get replaced and ultimately functions as well as what was destroyed. So the agreement with the Corps of Engineers is fairly specific about how these funds will be spent.

Even so, however, the agreement also provides the In-Lieu-Fee program with some latitude to use various funds in ways that result in the broad protection of aquatic resources – using a variety of tools. The program, taken as a whole, does provide some clear benefit to agricultural landowners. It is not yet clear the extent to which arrangements of this kind may be able to free up, at least to a limited degree, some of the current spending that is now largely required to be simple acre-for-acre wetland replacement – but any such "freeing up" is certain to be controversial and, at times, simply not lawful under §404 the Clean Water Act.

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The Nature conservancy's Farming for Wildlife project – wetland protection on active farmland[17]

Skagit County farmers Dave Hedlin, Gail Thulen, and Alan Mesman will, together, earn some $350,000 for three years of labor, expense, and the use of 210 acres (70 acres each) of their land in an innovative integration of active agriculture with environmental services. Hedlin, Thulen, and Mesman farm the rich Skagit River Delta – an area of tidal estuary and wetland that was diked by settlers when the Valley was settled in the 1860s.

The land they have dedicated to this project has been planted with clover and grass to enrich the soil. About 1/3 will be flooded at appropriate depths to produce habitat that is critical for migratory birds which are in decline specifically because of loss of local wetlands. Another 1/3 will be mowed. And 1/3 will be grazed by livestock or planted with row-crops. These three areas will be rotated so that the birds have habitat available for their migratory stopover, and the farmers take advantage of what they believe will be a substantial increase in fertility and soil productivity in the years when the land comes back from wetlands.[18] In effect, the birds become another rotational crop for the farmers to manage and for which they receive payment. And, for Hedlin, the project will also allow him to shift his 70 acres into organic vegetable production while being paid for the use of the land during the delay required for certification.

This project is a pilot in partnership with The Nature Conservancy and is funded with private and public funds including a grant from the U.S. Environmental Protection Agency. If it proves out in practice to be productive for agriculture, the goal is to potentially interest other farmers in the Valley to participate as well.

Considerations:
This pilot project was funded through public and private conservation dollars, not through money generated by a formal marketplace. But if the practice of rotating agricultural lands with "walking wetlands" works as anticipated[19] – with the farmers reaping a significant enhancement in productivity – it could pay for itself in the normal marketplace. In addition, the project provides "green market" for these farmers to the extent that they participate in direct sales to consumers. It could prove to be a way to integrate certain types of wetlands and aquatic resource mitigation into traditional farming operations. And it could be a model for potential use of active farmland for flood detention as mitigation for other damaging development in a flood plain.

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Scott Meyers Sweet Grass project with KWIAHT – wetland protection on active farmland[20]

When Scott Meyers and his family began raising Kobe beef on their ranch on Lopez Island, WA, an early challenge was how to handle about 15 acres of seasonal wetland associated with a larger shallow lake that expands onto his land every winter. Scott instituted an intensive management regime for his cattle combined with restoration and protection for the wetland natural grasses. Under his management, the wetland has become highly productive, both as a wetland, and as a substantial producer of highly nutritious forage for his livestock – to the extent that he considers the maintenance of the wetland, as a wetland, to be a vital asset to his farm business.

With encouragement and help from the landowner, a local environmental organization, Kwiaht (Center for the Historical Ecology of the Salish Sea) has undertaken a scientific evaluation of the environmental productivity of Scott's wetland, with special focus on benefits or impacts on nearshore habitat in saltwater areas near the farm. The study hopes to find ways to refine and improve Scott's management so as to maximize both environmental and agricultural productivity. Results are still preliminary, but it appears that Scott's wetland, is working quite well as a wetland (particularly well at producing the insect group preyed upon by juvenile salmon) and its wetland functions are comparable (and in some regards superior) to other "control" wetland areas that are not grazed and managed.

Considerations:
This project demonstrates how active agriculture is not necessarily inconsistent with the maintenance of a highly effective wetland. There are a great many farmers who use wetland areas for grazing, grass harvest, and other agricultural uses. If these areas can be improved for a dual agricultural-wetland outcome, it seems at least possible there may be a way for their owners to earn wetland or flood mitigation credits while continuing in active ranching or farming.

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Klamath Basin rotational wetlands project – wetland protection on active farmland[21]

The Klamath Basin and San Joaquin River have been a battleground of competing agriculture and environmental interests in recent years. And wetlands (and their loss) are as critically important here as anywhere on the planet. One of these vitally important wetland areas is Tulelake – a large shallow lake/wetland area contained in a National Wildlife Refuge, much of which has been leased to farmers for agriculture for many years.

Some years ago, the Refuge managers decided to try the idea of rotating the leased wetlands with agriculture, leaving them in wetland for perhaps 3-4 years, and then in agriculture for a similar period, with the hope that the results might be beneficial for both the wetlands and for agriculture. The results of this "walking wetlands" project have been excellent.

The farmers have found that the land returns from its wetland cycle dramatically improved in fertility – with yields as much as $25% higher and with much reduced input costs. Prior to the program, it was impossible to grow potatoes in the Basin without fumigating for nematodes. But the wetland breaks the disease cycle allowing for organic production that would not have been possible previously. The farmers are delighted with the program.

Meanwhile, some 4,000 acres have been added to the system. There has been a 50-75% increase in waterfowl. The higher productivity and insulation from disease allows farmers to use less pesticide and fertilizer, improving water quality in the basin in downstream. And because the land is more productive, the farmers are willing to pay up to twice as much to lease the land within the refuge – also of benefit to refuge management.

Considerations:
This project was a predecessor to the Skagit Farming for Wildlife project, described above. It illustrates how possible it is for farmers to successfully farm on the same land that is also providing substantial wetland benefits by using the wetland, in effect, as a rotational crop.

The total quality and quantity of environmental values produced in such a wetland will probably not be equal to what would result from a total conversion from agriculture to wetlands. But the values that can be produced seem substantial. With appropriately conservative trading ratios, it would seem possible that the use of this system could generate increased total environmental benefits and provide a substantial environmental bargain.

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Whatcom Land Trust – land trust stewardship contract with farmland protection program[22]

When Whatcom County created a PDR program in 2002, the farmers in the county asked that the agricultural easements purchased under the program be stewarded by the Whatcom Land Trust – which had farmers on its board, and had a long history of positive relationships with the local agriculture community. Since the start of the program, the County has maintained a contract arrangement with the Whatcom Land Trust for easement stewardship. Under the contract, the County covers the Land Trust's cost for the initial baseline assessment and then funds a contribution, at the time of acquisition, to the Land Trust's easement stewardship endowment.

This contract relationship has now continued for about 6 years, and both County and Land Trust staff report that is has been very successful. Both feel that it provides substantial certainty for the protective easements as well as a friendly and consistent point of contact for affected landowners. There are some 12 farms now protected by easement, and included under this contract. The Land Trust is reflected as a co-holder of the easement interest along with the County and NRCS, where FRPP funding has been used.

Considerations:
One challenge of public PDR programs is the ongoing struggle for appropriations to consistently fund easement stewardship over time. This relationship with the Land Trust allows government

agency to make the stewardship endowment contribution at the outset, as a part of the cost of acquisition, and to avoid future appropriation struggles – a very nice, and secure, arrangement.

This contract arrangement suggests possibilities for conservation market arrangements which require protection of the land. Something similar might be established for a respected local land trust to take on stewardship responsibility for stewardship of easements acquired in compliance with permit requirements or voluntary market acquisitions of environmental values.

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Jefferson Land Trust – sale of timber carbon sequestration to fund land ownership[23]

When, 10 years ago, Jefferson Land Trust was donated a 26-acre working forest near Port Townsend, they expected that selective timber harvest would provide ongoing revenue for Land Trust operations. Recently the Land Trust entered a carbon contract with ShoreBank Enterprise Cascadia, a local environmental lender, to offset ShoreBank's carbon footprint. By slowing harvest of the trees, the Land Trust will reduce its timber production, but the contract will compensate for that with payments from ShoreBank - $8,000 of which was recently received.

Considerations:

This timber based transaction could also be a model for carbon or other ecosystem service transactions on farms and ranches. In this case, the land trust owns the property outright. But it also seems possible that the long-term commitment involved in such a transaction, plus the income to be received, could help a farm landowner justify the donation (or bargain sale) of an agricultural easement to a land trust, helping to finance the transaction.

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Puget Sound Partnership Fee In-Lieu Program – a potential opportunity to use watershed strategic mitigation acquisitions[24]

The 2007 Washington Legislature provided a $5 million appropriation for the Puget Sound Partnership to bank the start-up of a new "in-lieu fee" program for environmental mitigation in the Puget Sound Basin.[25] This program will allow developers to comply with their mitigation permit requirements by paying a fee to the mitigation program which will, in turn, take responsibility for providing the needed mitigation. The program will be a new option, available to permitting authorities as a potential alternative way for developers to provide mitigation. The permitting authority will need to agree that this alternative will represent appropriate mitigation. This is an option many developers greatly prefer to having to take responsibility for creating mitigation themselves.[26]

Fee in-lieu of mitigation programs provide the environmental advantage of being able to focus mitigation restoration spending on those locations and opportunities in a watershed where local watershed planning and characterizations have indicated that the need and the leverage is the greatest and the cost is the lowest. They represent a way to potentially improve the recent unsatisfactory performance of current mitigation projects.

Considerations:
An in-lieu fee program will need to be constrained to provide environmental restoration/replacement that is of the same type and produces the same values as that which was lost by reason of issuance of the permit. Even so, because the program will be looking (as it should) to minimize costs and maximize environmental performance on a watershed basis, it seems somewhat more possible, with such a program, that some of the spending, at least, may be sufficiently flexible to allow taking advantage of environmental services that can be provided on farms while the also land remains in active agriculture.

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Cascade Land Conservancy Flash Grazing on Buffers project in Kittitas County – active agricultural use of salmon buffer[27]

John Eaton, a Kittitas County Rancher, holds a long-term grazing lease on a portion of land along the Wilson Creek near the mouth of the Yakima River Canyon. Ownership of the property was being transferred from the Washington Department of Parks and Recreation to the Washington Department of Fish and Wildlife and WDFW wanted to undertake its restoration and improvement as salmon habitat. Mr. Eaton, of course, hoped to continue his lease and to graze the property. In cooperation with Cascade Land Conservancy, these owners and Mr. Eaton have undertaken a project to determine if careful, short term grazing of the riparian area along the Wilson Creek can contribute to its restoration and health as habitat for salmon.

The project treats about ¼ mile of the riparian area with traditional livestock exclusion. Along another ¼ mile, a technique of "flash grazing" with Eaton's cattle will be used to control invasive weeds. This system has, apparently, been shown to work in other areas.

Considerations:
Total exclusion of any natural resource extraction activities from salmon buffers clearly has economic impacts on agriculture[28] and has become a highly difficult issue in the salmon recovery debate. So the possibility that some limited grazing might not only be possible, but might be done in a way that can also result in positive improvement in the buffer's restoration and habitat function for salmon is highly significant. If this project works out as hoped, it suggests that, at least in some cases, riparian buffer areas could be protected and improved for salmon habitat, with those services paid for in conservation markets, while still retaining natural resource value for livestock grazing.

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Washington OFP's CCIP proposal to Washington NRCS – priority for protected active farmland in funding for conservation practices[29]

The Cooperative Conservation Incentives Program is a new, USDA, 2007 Farm Bill program that allows a small percentage of federal agricultural conservation cost-share funding to be set aside to fund specific natural resource priority concerns to be addressed in cooperation with other local groups or agencies. In 2009, the Washington State Conservation Commission (WSCC), and its Office of Farmland Protection (OFP), applied to USDA/Natural Resources Conservation for a set aside of funds from the federal EQIP, CSP and WHIP programs, to be prioritized for farmers whose land had been protected with an agricultural conservation easement.

The natural resource concern prioritized by the program was the loss of highly valuable farm and ranchlands to development. And the idea for the program was that giving improved access to conservation funding to easement protected properties would increase the landowner rewards for farmland protection and increase their motivation to protect the land. Secondarily, by focusing conservation cost-share funding on lands that are protected for agriculture, the practices implemented through that funding would be more likely to remain in place, on the ground, and providing public benefits over the long term. The program could identify lands or geographies where the priorities should be first applied. Potential partners would include all of the agencies and organizations working to preserve agricultural lands in Washington. The proposal was supported by land trusts, government purchase of development rights programs, and others with a desire to encourage protection of the land.

NRCS denied the proposal in the first year of its submission, but it is anticipated that WSCC and OFP may submit a revised proposal again in 2010.

Considerations:
This is a way to prioritize conservation for protected lands and increase the motivation that they be protected. It seems possible that mitigation or offset permit requirements, voluntary program funding, and other types of conservation incentives could establish similar priorities which, for example, might provide increased exchange credit for the purchase of ecosystem services from farmland that has been (or will be) protected in the long term.

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Skagit County Fish and Tidegates agreement – inter group exchange of support for ecosystem service restoration[30]

Skagit County's farms are protected by some175 miles of dikes and levees and drained by over 400 miles of drainage infrastructure and about 130 tide (and flood) gates. Under new Federal Rules, it was required that repair and replacement of these tidegates have re-approval of their environmental impacts. Perhaps 5 or 6 of them come up for permitting each year as they rust, wear out, become obsolete, or require work. These re-permitting processes became a major challenge for local drainage districts and a huge uncertainty for the farmers on the tens of thousands of acres they protect. Meanwhile, the Puget Sound Salmon Recovery Process, in the Skagit River Basin, had resulted in a Salmon Recovery Plan which had identified 2,700 acres of estuarine restoration considered to be necessary for salmon using the Basin.

Over a 2 ½ year period (2006–2008) farmers, tribes, environmentalists, and State and Federal agencies participated in developing an agreement for the approval of tidegate repair/replacement permits in proportion to the approval of estuarine restoration. A formula was agreed upon that provided credits for tidegate re-permitting for each acre of estuarine restoration completed, and that, in turn, provided credit for estuarine restoration for each acre of land protected by a re-permitted tidegate. The credits would be recorded in a "bank" which would track performance and help assure that each both the farms and the fish achieved the protection sought through the agreement. And, by virtue of the agreement, if would become possible for each "side" to support and encourage completion of the next "project" sought by the other side.

In April, 2008, NOAA, Washington Department of Fish & Wildlife, and the Western Washington Agricultural Association signed the agreement. NOAA then went about securing a biological opinion to make it possible. In September, 2009, NOAA Fisheries issued a final Biological Opinion[31] which contained several new requirements, not found in the May 2008 agreement. The farm community was unable to agree to these new requirements – at least not

without further negotiation, and, at the time of this writing, it is not clear that NOAA is willing to negotiate them, so the agreement is currently in abeyance.

Considerations:
This represents a type of ecosystem market and illustrates what is possible (hopefully) when ecosystem values can be quantified and exchanged. If successful, it will represent a clear inter-community deal that assures environmental gains for salmon habitat in exchange for assurances of continued economic opportunity on historic farmlands in Skagit County.

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San Antonio TX – Farmland protection for Aquifer recharge

The City of San Antonio, TX, created the Edwards Aquifer Protection Program to protect lands in the recharge and contributing zones of the aquifer that provides the primary water supply for the City. In 2000, voters initially approved a 1/8 cent local sales tax and collection of up to $45 million for outright purchase of lands in the area of the aquifer – of which $38 million was spent for this purpose. In 2005, this tax was renewed by the voters and authority provided to collect up to $90 million for the purchase of conservation easements.

The easements are not for the purpose of protecting agricultural lands and restrict many agricultural uses, but they do allow for managed livestock uses, cropping in specified fields, and other agriculture. Feedlots, poultry, and other intensive animal operations and horticultural nurseries are not allowed. The easement also restricts impervious surface cover. To date, the program has protected over 70,000 acres.

Considerations:
This program evolved into an easement program, but the water quality concerns drove managers to impose restrictions on agricultural uses of easement protected lands. It illustrates one way that it can be a challenge to provide for continued agriculture and environmental protection.

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Dakota County MN – Farmland natural areas protection

Dakota County MKN created a Natural Areas Program in response to public concern about the loss of farmland and natural areas around the growing Minneapolis/St. Paul urban areas. A significant part of the program's goal included protection of water quality and wildlife habitat benefits. The program, accordingly, targets high quality farmland that lies within ½ mile of designated rivers and streams. It also prioritizes lands with special significance for surface and ground water quality as well as their potential to create or enhance wildlife habitat.

As of June, 2008, the program had acquired 20 agricultural easements protection 2,224 acres at a cost of $11 million (including landowner donations). The program began with State legislation, but in 2002, local voters approved by referendum a $20 million bond to fully implement it.

Considerations:

This program is, essentially, a farmland protection program. But its environmental focus was clearly a large part of what drove the legislation and the ultimate voter approval. So it nicely illustrates how the environmental driver can result in long term protection of lands for agriculture.

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(Note: This document was originally written for and published by American Farmland Trust and is on line at: http://www.farmland.org/environmentalmarkets. The above version has been updated.)

Notes:

[1] Materials in this section are based upon: a) "Watershed-based Permitting Case Study: Tualatin River Watershed, Oregon" (EPA 2007) on line at: http://www.epa.gov/npdes/pubs/wq_casestudy_factsht4.pdf; b) Clean Water Services, "Sustainable Integrated Watershed Management in the Tualatin Basin", 2008; and, c) West Multnoma Soil & Water Conservation District website at: http://www.westmultconserv.org/swcd/index.php?id=183

[2] For a map and details on projects in the Tualatin Basin, see the CWS website at: http://www.cleanwaterservices.org/PlansAndProjects/Projects/default.aspx.

[3] Personal communication between Bobby Cochran, Environmental Marketplace Analyst for Clean Water Services, May 12, 2008 with Catherine Bombico of Evergreen Funding Consultants.

[4] Materials for this section were based upon: a) "Water Quality Trading and Offset Initiatives in the US: A Comprehensive Survey," Breetz, Vanden, Garzon, Jacobs, Kroetz, & Terry (Dartmouth College Hanover, New Hampshire, 8/5/04) and available on line at: http://www.dartmouth.edu/~kfv/waterqualitytradingdatabase.pdfl b) The New York City Watershed Agricultural Council website at: http://www.nycwatershed.org; c) "Watershed Progress: New York City Watershed Agreement," a description of the project at the EPA website at: http://www.epa.gov/OWOW/watershed/ny/nycityfi.html.

[5] Personal communication with Watershed Council Chair, Dick Combe.

[6] Texas's Hickory Pass Ranch program is discussed in a US Fish & Wildlife Services press release (4/11/08) at: http://www.fws.gov/news/NewsReleases/R2/BC6C6868-4DDC-4892-BC6B96EDA824DB4A.html, in the Williamson County, TX, Regional Habitat Conservation Plan at: http://www.williamson-county.org/Portals/0/Departments/Conservation_Foundation/RHCPExecSummary.pdf, and in Environmental News Service (4/12/02) at: http://www.ens-newswire.com/ens/apr2002/2002-04-12-09.asp#anchor7. Also see: "A Practical Guide to Habitat Conservation Banking Law and Policy" Ruhl, Glen, & Hartman (ABA, Natural Resources & Environment, Summer 2005) on line at: http://www.law.fsu.edu/faculty/profiles/ruhl/2005-HabitatBanking20NRESummer.pdf. Also see "Landowners Bank on Conservation" (ELR 8/04) on line at: http://www.forest-trends.org/biodiversityoffsetprogram/BBop%20library%202/United%20States%20-%20All%20Not%20Printed/Landowners%20Bank%20on%20Conservation.pdf.

[7] The Van Vleck conservation easement/bank story was reported in the Sacramento Business Journal for 9/19/08 at: http://www.bizjournals.com/sacramento/stories/2008/09/22/story8.html?b=1222056000^1703114&t=printable. Also see Westervelt site at: http://www.westerveltecologicalservices.com/projects/.

[8] See article in Outdoor California (May-June 2004 pg. 28) by Tina Bartlett at: http://www.dfg.ca.gov/ocal/archives/M_J_04_28-31.pdf.

[9] See article in San Francisco Chronicle, 5/6/05, Erin Hallissy, "Brothers turn ranch into conservation bank" at: http://www.sfgate.com/cgi-bin/article.cgi?f=/c/a/2005/05/06/BAGC8CL3NA1.DTL&type=printable. Also see Real Estate Solutions, Inc., website materials at: http://www.r-e-solutions.org/crcb.htm.

[10] See "A Nationwide Survey of Conservation Banks," (NOAA Fisheries, Northwest Fisheries Science Center, Prepared by: Stratus Consulting Inc., Boulder, CO), (303) 381-8000 Pg. A-25 at: http://www.st.nmfs.noaa.gov/st5/documents/Stratus%20Consulting_Conservation%20Banking_Final.pdf. Also see a broadcast by California Heartland "Conservation Cowboys" on the Marden Wilber Ranch at: http://www.californiaheartland.org/this_season/episode_911/transcript.htm.

[11] American Farmland Trust participated in developing this transaction. The best source of information would be making contact with Jay Gordon as indicated.

[12] Materials for this section were based upon: a) "Water Quality Trading and Offset Initiatives in the US: A Comprehensive Survey," Breetz, Vanden, Garzon, Jacobs, Kroetz, & Terry (Dartmouth College Hanover, New Hampshire, 8/5/04) pg. 110, available on line at: http://www.dartmouth.edu/~kfv/waterqualitytradingdatabase.pdfl; b) See also the website of the Great Rivers Land Trust: http://www.greatriverslandtrust.com/fall_2001.htm.

[13] See PNDSA website at: http://www.directseed.org/carbonhistory.html#carbonhistory. Some information for this section also came through personal communication with Russ Evans of PNDSA.

[14] See Entergy website regarding awards and recognition: http://www.entergy.com/about_entergy/awards.aspx.

[15] See generally, Montana Wetlands Legacy website at: http://www.wetlandslegacy.org/index.html. See specifically the Gordon Cattle Company Conservation Easement project at: http://www.wetlandslegacy.org/gordon.html; Public-Private Partnership: Protects Historic Working Ranchland, Wildlife Habitat, & Recreation Areas in Western Montana, found at: http://www.wetlandslegacy.org/public-private.html; Odell Creek Headwaters Wetland & Conservation Easement Project, at: http://www.wetlandslegacy.org/odell-creek.html; Ward Ranchland Exchange, at: http://www.wetlandslegacy.org/ward-ranch.html; and materials on Montana's In-Lieu-Fee Aquatic Resources Mitigation Program. See explanation at: http://www.wetlandslegacy.org/inlieunext.html. And see the Montana In-Lieu-Fee Program agreement at: https://www.nwo.usace.army.mil/html/od-rmt/pn/ilfdraftmoa.pdf.

[16] This language seems pretty typical of most such agreements. See: "The Status and Character of In-Lieu-Fee Mitigation in the United States" (Environmental Law Institute, June 2006) pg. 31-32. This report can be downloaded for free from the ELI website at: http://www.elistore.org/reports_detail.asp?ID=11151.

[17] The Farming for Wildlife project was written up in the New York Times article: "Farmers and Conservationists For a Rare Alliance," Jessica Kowal (New York Times, 12/27/06), at: http://www.nytimes.com/2006/12/27/us/27farm.html?partner=rssnyt&emc=rss.

[18] In the Tule Lake National Wildlife Refuge in Northern CA, a similar practice has been underway for several years. Farmers report better yields with fewer pest problems. New York Times article, Ibid. Also see article in

Sightings "Back to the Birds" (The Nature Conservancy) at: http://www.nature.org/magazine/summer2007/misc/art20866.html.

[19] Compare the Klamath Basin, Tulelake example, below.

[20] Material for this section was taken from the Sweet Grass Farm website at: http://www.sgfbeef.com/index.htm, from a presentation by Scott Meyers at the 2009 Focus on Farming Conference on November 5, 2009 at Marysville WA, and from the Kwiaht grant proposal (and follow up) to the Pioneers in Conservation Program, deadline November 10, 2008 funded by the National Fish and Wildlife Foundation and the Washington State Conservation Commission.

[21] See a 2000 description of a SARE assessment project in "Rotational Management of Wetlands and Cropland in the Tulelake Basin," Western SARE at: http://wsare.usu.edu/pro/fieldrep_00/pdf/refinal/aw94020.pdf. And see the 2009 broadcast and description: "Walking Wetlands (Klamath Basin)," Iowa Public Television at: http://www.klamathbasincrisis.org/walkingwetlands/walkingwetlandsIowapubtv051909.htm. Also see Klamath Basin National Wildlife Refuge site at: http://www.fws.gov/klamathbasinrefuges/tulelake/tulelake.html.

[22] Material for this section is based upon conversations with Dean Martin of Whatcom County PDS and Eric Carabba, Conservation Director for the Whatcom Land Trust.

[23] See: "Trees sold for carbon credits on Olympic Peninsula" Eric Hidle, Peninsula Daily News, in the Seattle Times for 12/23/09: http://seattletimes.nwsource.com/html/localnews/2010582146_carbontimber24.html.

[24] Material for this section was taken from: Q & A about the Proposed Puget Sound In-Lieu Fee Mitigation Program, at: http://www.psp.wa.gov/downloads/EC2009/0409/03_InLieuFee_Questions_and_Answers_Final_041509_a.pdf, and PSP staff advice on service area selection at: http://www.psp.wa.gov/downloads/EC2009/0709/03_ILF_ECB_Brief_7-09.pdf

[25] Fee in-lieu programs received additional encouragement in April 2008 with the adoption of new rules for compensatory mitigation by the U.S. Corps of Engineers which heightened the priority and acceptability of such programs. See the new Rules published at: http://www.epa.gov/owow/wetlands/pdf/wetlands_mitigation_final_rule_4_10_08.pdf.

[26] This program was also one of the recommendations of the Mitigation that Works forum convened by the WA Department of ecology. See: "Making Mitigation Work" report at: http://www.ecy.wa.gov/pubs/0806018.pdf.

[27] Material for this section was taken from the grant proposal by Cascade Land Conservancy to the Pioneers in Conservation Program, deadline November 10, 2008 funded by the National Fish and Wildlife Foundation and the Washington State Conservation Commission.

[28] See, e.g.: "Riparian Buffers: Function, Management, and Economic Implications for Agriculture" http://www.puyallup.wsu.edu/agbuffers/pdf/sare_2005_annual_report_full_text.pdf.

[29] Material for this section came from discussions with OFP staff and from the 2009 OFP-submitted CCPI proposal to NRCS Washington State Office.

[30] Material for this section is based on a review of a brochure: "Skagit Delta Tidegates and Fish Initiative," of May 2009, and the "Skagit Delta Tidegates and Fish Initiative – Implementation Agreement," of May 28, 2008. Both of these documents are available through the Western Washington Agricultural Association, see: http://www.fidalgo.net/~wwaa/homepage.htm. Materials also based on conversation with Mike Rundlett, Program Manager for Western Washington Agricultural Association.

[31] The NOAA Biological Opinion was issued September 25, 2009 and can be found, when available, on line at the Northwest Regional Habitat Office site under NOAA document tracking number 2008/03803 under the title "Skagit Delta Tidegates and Fish Implementation."