Linking Farm Plans to Ecosystem Markets

A report prepared for USDA Natural Resources Conservation Service
May 2011
The Willamette Partnership is a non-profit coalition of diverse leaders dedicated to increasing the pace, scope and effectiveness of restoration. Linking Farm Plans to Ecosystem Markets was produced by Mac Martin. Layout and design by Joni Shaffer.

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Acknowledgements: Linking Farm Plans to Ecosystem Markets was funded by the USDA Natural Resources Conservation Service and advised by a Technical Group of Oregon Soil and Water Conservation District staff and Natural Resources Conservation Service program staff.

The Willamette Partnership thanks everyone for all the hard and thoughtful work that has brought years of experience and discussion into Linking Farm Plans to Ecosystem Markets.

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The best opportunities for integrating Farm Plans with ecosystem service credit creation occur at the beginning of each process: combining credit eligibility determinations and the collection of data about existing conditions needed by each approach.

The most challenging elements of integration occur during and after project design when crediting requires additional field work, third-party reviews, registration procedures, and monitoring.

The credit quantification tools themselves can be a valuable addition to a Farm Plan, or in helping Soil and Water Conservation Districts or Natural Resource Conservation Service communicate the environmental outcomes of practices implemented.

Farm planners who have participated in the Willamette Partnership’s training program will have the skills needed to integrate Farm Plans and credit creation where and when possible. Implementation for them may only be constrained by time.

Integration will depend, in part, on accounting for local differences in the generally standardized Farm Plan and credit creation procedures. The Willamette Partnership is ready and able to provide the guidance needed to overcome these differences, on a case by case basis, when demand for credits increase.

Technology will aid Farm Planners with credit creation, but may preclude comprehensive integration unless future software development efforts address the need more directly.

Key Findings
The USDA Natural Resources Conservation Service’s (NRCS’s) Conservation Planning Process (commonly referred to as a Farm Planning) allows land managers to maintain a healthy working landscape and to evaluate their land’s potential to participate in one of NRCS’s many farm-based programs. This free service creates opportunities for land managers to, among other things, receive payments for preserving and enhancing the natural resources under their control. The Willamette Partnership created its Ecosystem Credit Accounting System to achieve a similar and supporting environmental objective. This system, developed through the Willamette Partnership’s Counting on the Environment process, allows for restoration actions taken on the ground to be translated into multiple types of ecosystem service credits. These credits may then be purchased by those with environmental compliance obligations, or by those with a voluntary interest in environmental protection. Due to their procedural similarities, it appears possible that significant portions of the Ecosystem Credit Accounting System could be integrated into the Farm Planning process.

The end goal of integration would be a single work-flow through which a farm plan and ecosystem credits could both be produced. Further investigation conducted over the last three months supports this conclusion, with some important caveats.

Integration at the front-end of the two approaches is readily achievable and likely to be beneficial to landowners interested in knowing the potential of their property to generate ecosystem service credits. Additional integration through to the tail-end of each approach is also achievable, but will depend on the capabilities of individual Soil and Water Conservation Districts (SWCDs), a careful review of the farm practices they employ, and a thoughtful evaluation of how much support SWCD’s can lend to the pursuit of credits. The integration of some existing and pending technologies might also be beneficial. The ultimate objective of both the NRCS and the Willamette Partnership is an improved natural environment that promotes sustainable local economies. It is clear that even a small amount of integration between the Farm Planning process and the Ecosystem Crediting Accounting System will facilitate farmers, foresters, and ranchers in accomplishing this goal.

I. Introduction
II. Overview: Farm Planning Process and Credit Creation

Farm Planning and Ecosystem Credit Accounting function very similarly when it comes to evaluating the potential of a property to deliver improved environmental outcomes. Each begins with a broad consideration of a landowner’s objectives and a property’s opportunities. They both then carry on to a critical examination of existing conditions, develop plans of action that improve these conditions, guide the execution of these plans, and then provide for the monitoring and maintenance of post-action conditions. Moving through the work-flow of each approach requires similar types of work. Research, data collection, analysis, and design work are required by both, as are clear lines of communication with landowners. However, the shared work-flows and work practices of these approaches to conservation are only part of the story. The fact that the people creating farm plans possess the expertise and community standing needed to create credits is equally, if not more, important. The NRCS and SWCD staff members who are generally responsible for Farm Planning occupy unique positions. No other group of people interacts as much or as often with rural landowners who have conservation, restoration and agricultural production interests as their primary concerns. As a result, they are ideally-suited to introduce the concept of ecosystem service credits and to evaluate their appropriateness for a given property. In the Willamette Valley, seven SWCD staff are already trained in applying the Ecosystem Crediting Accounting System with more waiting to attend training sessions planned in the future.

Comparing Approaches

A traditional Farm Plan includes three major phases and a variety of supporting steps. The credit accounting system, while not explicitly defined as such, may also be broken down into similar major phases and supporting steps (see Table 1).

The Willamette Partnership’s General Crediting Protocol lays out the rules and process for credit creation under the Ecosystem Credit Accounting System (Willamette Partnership, 2009). It provides the larger framework in which individual credit types are created. This is analogous to the NRCS’s National Planning Procedures Handbook guiding the farm planning process, with individual farm practices implemented within its greater overall structure (NRCS, 2010). The Willamette Partnership has currently developed five credit types for trade in Oregon. They include: Wetlands, Prairie, Salmon Habitat, Water Quality: Nutrients, and Water Quality: Temperature. Additional credit types are being developed for biodiversity and other geographies. Application of the General Crediting Protocol remains consistent regardless of credit type; much like the farm planning process remains the same regardless of the farm practices ultimately selected.
### Table 1: Comparing Farm Plans and Ecosystem Crediting

<table>
<thead>
<tr>
<th>General Process Description</th>
<th>Farm Planning</th>
<th>Ecosystem Credit Accounting</th>
</tr>
</thead>
</table>
| **Consideration of Landowner Objectives and Opportunities** | Phase I: Data Collection and Analysis  
- Identify Problems and Opportunities  
- Determine Objectives  
- Inventory Resources  
- Analyze Resource Data | Phase I: Determine Demand and Eligibility |
| **Examination of Existing Conditions** | Phase II: Decision Support  
- Formulate Alternatives  
- Evaluate Alternatives  
- Make Decisions | Phase II: Establish Baseline Conditions  
- Define Project Boundary  
- Define Sub-unit Boundaries  
  Based on Habitat Types  
- Select Credit Types  
- Complete Field Data-sheets  
- Submit Baseline Data for Review |
| **Planning Actions** | Phase III: Application and Evaluation  
- Implement the Plan | Phase III: Project Design  
- Define actions  
- Refine Map-Units  
- Estimate Credits  
- Execute Design |
| **Monitoring and Maintenance** | Phase III (continued):  
- Evaluate the Plan  
- Adaptation | Phase IV: Project Verification and Certification  
- Conduct Verification  
- Conduct Certification |
|                           |               | Phase V: Credit Issuance and Monitoring  
- Submit credits to Registry  
- Monitor credits over time |

Despite similarities in how they function, and the ability to leverage the existing skills and connections of farm planners to create credits, significant deviations exist between the Ecosystem Credit Accounting System and Farm Planning. For instance, generating ecosystem credits requires additional preliminary evaluation work; entails a more robust and situation-specific inventory analysis; has the potential for more substantial and expensive restoration work; and demands more intense and prolonged monitoring than a Farm Plan. These points of departure are called out in the following paragraphs and accompanied by guidance to farm planners on what options they have when each point of departure is reached.
A farm planning professional on the verge of Farm Plan development and also advising a landowner on the merits of ecosystem credit production needs to look first at potential demand for these credits. If there is no demand for purchasing credits, and no demand likely in the foreseeable future, then the generation of credits will not be a lucrative endeavor for a landowner (although nothing prohibits the landowner from still producing them). The Willamette Partnership, acting as the Local Market Administrator in the Willamette Valley, maintains current information on existing and likely future demand and can provide guidance to farm planners and landowners. A farm planner would simply need to query the Willamette Partnership, via phone or email, to learn about demand for a specific credit type in a specific area.

Making a landowner aware that demand exists for ecosystem credits generated from the conservation and restoration of natural resources in his or her area is the first of many likely benefits to emerge from the integration of Farm Planning with credit creation. Not all landowners will be interested in producing credits for ecosystem services, even if there is a strong demand for credits. The levels of commitment, time, and expense are often higher than other restoration alternatives. However, the characterization of credits as a viable alternative by a Farm Planner will greatly assist in the general acceptance and trust of ecosystem crediting systems in local communities, setting the stage for broader acceptance and participation in future years when demand grows and price information matures.

Guidance: By contacting local market administrators, farm planners may inform landowners that demand for certain credit types exists, provide educational material about credits and provide contact information for their Local Market Administrator and other participating parties. In the face of unclear or missing demand, the Willamette Partnership is advising landowners to clearly document pre-restoration conditions to preserve their future options to generate credits. The credit quantification tools themselves can be valuable additions to a Farm Plan or in helping SWCDs or NRCS communicate the environmental outcomes of practices implemented.

1For the record, the Willamette Partnership cannot be held responsible for the purchasing choices of other parties or the price at which credits may be sold. After all, the production of ecosystem service credits, like the production of traditional agricultural commodities, is an entrepreneurial activity subject to market forces outside any administrator’s control.
Identify Problems, Concerns, and Opportunities

Farm Planners begin their work by identifying problems, concerns, and opportunities through discussions with a landowner. Planners then compare these considerations using all of the tools that they have at their disposal to correct problems, allay concerns, and capitalize on opportunities. This big-picture evaluation dovetails nicely into the credit creation process. Should the outlook on demand for a certain credit type at a certain property appear favorable, and should the farm planner identify a conservation opportunity that might be addressed by producing credits, then credit production may be one of many alternatives suggested for the landowner to pursue.

Guidance: Planners may select the production of ecosystem credits as an option for addressing landowner problems, concerns, or opportunities. Credit production may address problems with resources (like planting buffers to reduce erosion), concerns about finances (by diversifying revenue sources), or allow landowners to capitalize on opportunities (like enhancing existing habitat for rare or endangered species).

Determining Objectives

Farm Planning converts problems, concerns, and opportunities into actionable objectives that the planner and landowner can then work towards achieving. Assuming that credit development is agreed upon as one of the things that a landowner would like to engage in, farm planners will need to coordinate a more comprehensive assessment of the proposed property’s eligibility to participate in markets. To do this, a “Self-Validation Checklist” form must be completed and submitted to the Local Market Administrator (see Addendum #1). This form may be filled-out by the landowner or by the Farm Planner on the landowner’s behalf. In the second case, the Willamette Partnership recommends a Farm Planner acquire written permission to share information from the landowner before proceeding, as the form shares the landowner’s personal information with third-parties (like the Willamette Partnership). Filling out the “Self-Validation Checklist” also initiates the planning process for credit creation by identifying what credits the landowner is interested in producing and where he or she plans to produce them (down to the
Guidance: Landowners that select credit creation as a tool to be used during farm planning need to collaborate with their planner to establish the roles each will take going forward. A project lead will need to be selected. With roles established, a “Self-Validation Checklist” form must be completed and submitted to the Market Administrator. Upon receipt of a “Notice of Validation” back from the Market Administrator, the landowner or designated “Project Developer” should open an account on the Ecosystem Crediting Platform. This web-based tool manages the work flow of all credits generated under the Willamette Partnership’s standards.
Inventory Resources / Analyze Data

A key step towards completing any Farm Plan objective is to identify and record current conditions. Farm planners conduct an inventory at every property where they intend to work. This inventory is a broad one that captures both natural and man-made resources as well as current land-based practices. Different states use different inventory standards, but all of them use the same tools to catalogue information and conduct analysis. The Ecosystem Credit Accounting System demands a more specific inventory of natural resources at the areas in which credits are sought using tools specific to the area. This baseline evaluation examines distinct geographic areas through the lens of specific credit types to establish and record the condition of natural resources relevant to specific credit types. It is the improvement of these natural resources, from this established level, that will be translated into credits. Baseline conditions are recorded on the Ecosystem Crediting Platform in the form of user-generated maps, completed field-data sheets per credit type, and calculations that summarize existing conditions numerically.

Ideally, Farm Planners could fulfill the inventory needs of the Farm Plan and the baseline needs of the Ecosystem Credit Accounting System at the same time. Having to conduct multiple evaluations of the same resource is inefficient. To do this, however, farm planners would need evaluation protocols that marry the two approaches, collecting the shared information each approach needs as well as the information that is unique to each of them.

After reviewing the NRCS National Planning Approach handbook, and speaking with Certified Farm Planners and National NRCS staff, accomplishing such a seamless and comprehensive integration here is not readily possible. The central reason for this is that some of the natural resources measured by the credit accounting system, and the way that they are measured, fall outside the scope of the typical farm planning approach.

The baseline determination for some credit types under the Ecosystem Credit Accounting System demands specific training and technical knowledge to execute. For instance, Salmon Habitat credits require in-depth assessments of hydrology and stream geomorphology. The Willamette Partnership, with support from NRCS, has created a training program targeted specifically at SWCD staff and other resource professionals. Trying to seamlessly integrate credit assessments
into the standard Farm Plan inventory forms and training, would demand changes to the state inventory standards and nationally established analysis tools. It would also demand that any location specific inventory techniques be reconciled with all location specific crediting protocols. This is all doable, but not likely necessary until demand for ecosystem credit becomes more ubiquitous.

Guidance: Planners and landowners that have agreed to pursue ecosystem service credits must consider their ability to capture baseline information at the project site for the specific credits being pursued (with consideration given to their technical ability to use assessment tools and whether or not they have the time and money to do it). Some credit types will be easier than others (e.g. a nutrient calculation may take 30 minutes, and a salmon credit assessment may take two days). Farm planners who have undergone the Willamette Partnership’s training program will have the skills needed to do the work, and may only be constrained by the time needed to use them. Market Administrators may produce documents that facilitate baseline assessments for certain credits—minimizing the need for additional time to be spent or resources to be used.

Formulate Alternatives

Another challenge that makes the seamless integration of Farm Plans and Ecosystem Service Credit Accounting difficult involves the design and execution of restoration scenarios. As mentioned above, the NRCS Conservation Planning Course produces certified farm planners using a standardized curriculum. The NRCS also sets national farm practice standards. However, when it comes to the actual farm practices that compose a farm plan, loads of geographic variation exists. The most relevant example of this variation is manifest by the NRCS’s Field Office Technical Guides (FOTG’s). These primary reference tools provide the technical information that guide, among other things, where different practices may be applied and the exact specifications that need to be followed when doing so. These practices are based on national standards, but are often changed and refined at the county level to account for local environmental differences. Accounting for all of the variation in farm practices, as presented by every district’s FOTG, to match them with crediting protocols that the Willamette Partnership has developed (at least the most straightforward ones) would be an enormous effort. Consider the planting of native vegetation in riparian areas. Different SWCDs often employ multiple practices that include the planting of riparian vegetation. They may all define what species are appropriate, where they need to come from, what pre-treatments need to be done to the land prior to planting, and what appropriate planting density and mixes are slightly differently. For credit accounting to work in the context of farm planning, each of the relevant practices for riparian planting would need to be reviewed and compared to the approved planting specifications for Water Quality: Temperature and other types. Any additional work required for crediting would need to be highlighted and accounted for on a case by case basis.
In a similar vein, the protocols that define what counts as a credit may vary regionally as well. While the core elements of a General Crediting Protocol guiding the overall process will not change, different regions may develop refinements to it by adjusting some of the rules or adding new ones that account for their needs and unique context. Furthermore, different areas will most certainly develop unique or varying credit protocols that reflect environmental conditions specific to their locale. For instance, the specifications for a Water Quality: Temperature Credit in the heavily-vegetated damp of Western Oregon will be different from that of the more sparsely-vegetated aridity of Eastern Oregon. All of this suggests integration at the national level will be limited to general guidance and principles.

Even with these challenges, however, some basic steps may be taken to reduce inefficiency and promote integration between the two approaches. First, a Farm Planner may be able to isolate those areas in which credits are being pursued from those areas that other standard Farm Plan practices are being applied. This would lead to the application of multiple evaluation techniques, but avoids redundancy on an acre by acre or field by field basis, thereby allowing the planner to generate a credit estimate and move through the farm planning process unhindered. Such a choice may be manifest in the conservation plan map produced for all farm plans, denoting which fields intend to produce which credits. Second, some credits are more likely to be produced by landowners through Farm Planning than others. In such cases, where the action to create the credit is relatively simple to track and similar to farm practices already in place, the additional work needed to capture baseline conditions may be simple. Credits related to water quality fit into this category nicely.

As mentioned above, many SWCD’s have one or more defined farm practices that guide planting riparian shade. The Willamette Partnership also recognizes riparian planting as an approved action to generate temperature credits for water quality. Assuming credit demand exists, developing guidance documents for specific districts would be easy for a Market Administrator and SWCD to accomplish. These guidance documents would highlight any missing baseline data that needed collection during the inventory stage and articulate the additional specifications that need to be followed.
during design and execution. To date, the specifications for actions that can create credits are more demanding than those for similar farm practices. National NRCS have advised that, as long as these crediting standards are higher, there should be no problems with local SWCD and NRCS staff promoting them as restoration or conservation alternatives under a Farm Plan. Planners could therefore continue to work with their standard farm practice job-sheets and then meet the additional requirements of crediting by fulfilling the demands articulated by the appropriate guidance document.

As it stands now in the Willamette Valley, incorporating the baseline data for water quality credits (like temperature and nutrients) into a Farm Plan inventory is readily feasible. Approved restoration actions for these credit types include things like native plantings and non-structural measures like fertilizer management. These activities are encompassed in existing farm practices so developing supplementary guidance documents that bridge any differences between the crediting protocols and farm practices would not be difficult. For reference, the Water Quality: Temperature credit uses riparian planting specifications that build off those in Conservation Reserve Enhancement Program (CREP). The Water Quality: Nutrients credits are derived from the Nutrient Tracking Tool, a run-off model developed for the NRCS. Collecting baseline information for Prairie credits also appears relatively simple in the context of farm planning, mainly due to the simplicity of the evaluation method (relying mostly on plant identification). On the other hand, Wetland and Salmon Habitat credits do not lend themselves to easy integration, as the assessment tools are more sophisticated and the approved restoration actions are more likely to be different than those of standard farm practices.

Importantly, the Willamette Partnership views the recording of baseline conditions by farm planners as tremendously beneficial to the overall credit creation process. As it currently stands, the General Crediting Protocol does not require baseline conditions to be verified by third-parties (mainly because of the time and expense associated with doing so). Having SWCD or NRCS staff conduct these baseline determinations provides much greater assurance that they will be done correctly, with due consideration given to the desired environmental objectives of crediting.

**Guidance:** If Farm Planners agree to be develop credits on behalf of the landowner they must record baseline conditions using credit-specific field data-sheets downloaded from the Ecosystem Crediting Platform. It is likely that the information required by some of these field data-sheets has already been captured during the farm inventory. It is also likely that, in areas of high demand, the Market Administrator will have developed guidance documents that bridge any differences between farm planning and credit accounting for a specific credit type. Completed field data-sheets must be uploaded into the ECP and submitted to the Market Administrator for review and approval.
Evaluate and Make Decisions

The NRCS National Planning Handbook makes it very clear that farm planners assist landowners in making decisions about what shall ultimately be done on their property, ensuring landowners have a clear understanding of the impacts of all of the alternatives available. If credits are being pursued, then additional steps that generate credit estimates from the property owner will be needed if this goal is to be reached—placing credits on the level other farm practices. The Ecosystem Credit Accounting System calculates credit estimates by comparing baseline conditions to a restoration design scenario. Ecosystem Crediting Platform users develop these design scenarios using the mapping tool and field data-sheets included in the software and then compare the final calculations of each design to baseline to determine ecological “uplift” in the form of credits. With a credit estimate in hand, a farm planner would be able to provide a landowner with a clear understanding of what the impact of pursuing credits would be, both in terms of the time and finances needed to restore the resources and the outcomes likely to occur.

Guidance: Farm planners that have established baseline conditions, submitted them to their Local Market Administrator for review, and received approval may continue on through the credit creation workflow. Upon notice from the market Administrator planners may move on to producing a credit estimate by entering design data into the ECP, which includes new maps and re-running the field data-sheets for every desired credit type using design information. The end results will be inputted into a “Credit Estimate Form”, generated by the ECP, and eventually submitted to the Market Administrator for third-party verification and public agency certification. Landowners should be notified that the third-party verifiers will need access to their property and that there are additional expenses associated with these steps that they will need to bear. Landowners should also be aware that public agencies other than the NRCS will be reviewing credit documentation and may visit sites if needed.
Implement the Plan

Farm planners may not execute all of the actions required to generate credits for a variety of reasons. They may lack the needed expertise and resources, they may simply not have the time, or the organization they work for may be reluctant to participate in such activities. As SWCDs and other farm planners consider their role in the production of ecosystem service credits, they also need to reconsider how they provide services to landowners. If helping a landowner generate credits costs an SWCD more than a standard farm plan, then that SWCD might consider charging for those services.

Practically speaking, integration of the implementation phase of a Farm Planning and of crediting will be situation specific. Farm planners, if they are carrying forward with both, can look for efficiencies in site preparations, ordering plant materials, doing the actual planting, or doing any structural improvements common to each approach. These case by case integration opportunities could create substantial savings for landowners when compared to those who are seeking to create credits outside of a farm plan.

Guidance: Farm planners that take a leading role helping landowners generate credits will need to guide execution according to differing specifications than standard farm plans. They will also need to coordinate verification activities with the landowner and prepare him or her for the steps they will need to take to bring their credits to market. The Willamette Partnership can help farm planners think through how they build the capacities to work with these different requirements.

Monitoring

The Ecosystem Credit Accounting System requires that, once credits are certified by public agencies and listed on a registry where they can be traded, they must be monitored annually. Monitoring must continue through to the end of the active life of the credits attached to the project. The intensity of this monitoring varies, but includes desk-audits and field-audits conducted by third-parties. Resources committed to credits will be encumbered by restrictions far longer than farm practices. For example, many Wetland credits will require a permanent easement and a non-wasting endowment set aside to manage the land over time. Farm planners may find the monitoring requirements of crediting advantageous. Such a requirement places a natural resource professional (most likely another SWCD employee) on the property on a consistent basis providing new opportunities for SWCD’s to engage and help landowners.
Agriculture Water Enhancement Program (AWEP) and Temperature Credits

Over the last two years, the Willamette Partnership, Tualatin Basin SWCD, and Clean Water Services (CWS) have worked in concert to streamline how credit generation may be integrated into a specific NRCS program. Clean Water Services, a public utility, is responsible for providing wastewater and stormwater management services in the Tualatin Basin. CWS currently pays some area landowners to grow riparian shade that offsets waste water discharge that adds heat to the Tualatin River. The organization is looking at more efficient ways to manage such efforts. This new integration effort is occurring around the NRCS’s Agricultural Water Enhancement Program (AWEP). While much work remains in aligning AWEP with the needs of CWS, the situation is illustrative of the challenges and benefits of joining an NRCS program with credit creation, and is a useful point of departure for building a hypothetical example of integration.

The NRCS characterizes AWEP as a “voluntary conservation initiative that provides financial and technical assistance to agricultural producers to implement agricultural water enhancement activities on agricultural land for the purposes of conserving surface and ground water and improving water quality” (NRCS, 2011). AWEP begins with an eligibility assessment and ranking of proposals, managed by the Tualatin SWCD, to figure out which properties are best-suited to fulfill the needs of the program. It then carries on through a typical Farm Plan development process where practices and places of implementation are defined and cost-shares are determined.

AWEP’s objectives for improved water quality are shared by CWS. As implemented in the Tualatin Basin, AWEP incentivizes a variety of practices or actions that may be conducted on a farm to achieve improvements to water quality. One of these approved practices, the planting of riparian buffers, allows landowners to be reimbursed by the federal government for 75% of the expense associated with implementation. CWS may then provide an additional payment to landowners in exchange for ecosystem credits to make the activity even more attractive. CWS may require that additional planting specifications be followed to receive the additional payment, or CWS may assess the ecological benefits of the proposed actions and then adjust payment accordingly.
The Ecosystem Credit Accounting System demands a higher level of accountability than the more informal arrangement outlined above. To align this approach with AWEP, the following steps could be taken. First, an assessment of demand and completion of the Willamette Partnership’s “Self-Validation Checklist” could be combined with the AWEP eligibility analysis, thereby allow landowners and CWS to identify each other as likely buyers and sellers. Second, the Willamette Partnership could generate guidance documents that SWCD staff could take into the field with them during the inventory stage to ensure they collect the additional data required for filling out field data-sheets required by specific credits (in this case Water Quality: Temperature and Nutrient Credits). Third, SWCD staff could submit baseline information to the Willamette Partnership through the Ecosystem Crediting Platform and complete a credit estimate for the pre-selected areas or field. Fourth, SWCD staff could implement the practices or design scenarios using guidance created by the Willamette Partnership, and carry on through the additional steps needed to trade any resulting credits. The end result being: the fulfillment of AWEP objectives; the sale of credits which provides some additional income to the farmer; and the ability of CWS to meet its objectives through a tenable crediting program.

One of the specifications being followed by the Tualatin SWCD to prepare the land, plant the vegetation, and monitor the work is outlined in Table 2 below along with the specifications for the Willamette Partnership’s Water Quality: Temperature Credits.
Willamette Partnership Report for USDA Natural Resources Conservation Service

Table 2 shows some of the basic challenges of pairing Farm Plans with crediting. The practice specifications in the table are not very different as there are only so many things that can be considered when planting vegetation. However, important distinctions in terminology along with the crediting protocol’s need for reference sites and more standardized widths make the immediate reconciliation of the two approaches difficult; particularly for an SWCD staff member who may be faced with multiple practices that include this type of planting that might be included in a Farm Plan. The generation of a guidance document by the Willamette Partnership that bridges differences in terminology, replaces the reference site requirement with more standard spacing and plant diversity language, and includes a few other tweaks would allow for SWCD staff to move forward with a recommendation to the landowner on what additional work (if any) would be required to qualify for credits. It would also provide the information during implementation and monitoring to maintain credits over time.

**Table 2:**

<table>
<thead>
<tr>
<th>Credit Type: Water Quality: Temperature (Willamette)</th>
<th>AWEP Farm Practice: Tree and Shrub Planting (Tualatin SWCD)</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Evaluation:</strong></td>
<td></td>
</tr>
<tr>
<td>Assess existing conditions (baseline):</td>
<td>Address a problem, concern, or opportunity: In this case the opportunity may be AWEP?</td>
</tr>
<tr>
<td>• Wetted Width</td>
<td></td>
</tr>
<tr>
<td>• Length</td>
<td></td>
</tr>
<tr>
<td>• Aspect</td>
<td></td>
</tr>
<tr>
<td>• Tree Class (select from pre-established list)</td>
<td></td>
</tr>
<tr>
<td><strong>Specifications:</strong></td>
<td></td>
</tr>
<tr>
<td>Prepare site: mowing, application of herbicides, soil preparation and other activities</td>
<td>Prepare site: mowing, application of herbicides, soil preparation and other activities</td>
</tr>
<tr>
<td>Locally sourced plant materials</td>
<td>Locally-sourced plant materials</td>
</tr>
<tr>
<td>Density as is appropriate based on reference site conditions</td>
<td>Spacing between rows: 3-5 feet</td>
</tr>
<tr>
<td>Mix: 20% or more of stems are trees and 20% or more of stems are shrubs</td>
<td>Spacing between trees: 3-5 feet</td>
</tr>
<tr>
<td>Width of planted area from stream must be greater than 30 feet</td>
<td>Tree vs. Shrub Ratio: 2.5/1</td>
</tr>
<tr>
<td>All trees and shrub types will be selected from pre-approved lists of native species</td>
<td></td>
</tr>
<tr>
<td>Width of planted area can be variable.</td>
<td></td>
</tr>
<tr>
<td><strong>Monitoring</strong></td>
<td></td>
</tr>
<tr>
<td>Control weeds</td>
<td>Control noxious weeds.</td>
</tr>
<tr>
<td>Replant as needed to maintain specifications.</td>
<td>Review for a year or two</td>
</tr>
<tr>
<td>Review for life of credit (20 years up to perpetuity);</td>
<td></td>
</tr>
</tbody>
</table>
VII. Integration In Stages

Through meetings with SWCD and NRCS staff familiar with Farm Plans it became clear that, while major steps might be taken to foster a closer connection between farm planning and the creation of ecosystem credits, many barriers exist. The best strategy at this point may be a staged approach that integrates early steps in the process, and allows for latter stages to be run parallel so they can occur at roughly the same time, even if they cannot use the same tools and forms. As markets mature, and the roles of market administrators, SWCD’s, and the NRCS become clearer, it may be possible to facilitate more comprehensive forms of integration. In the meantime the following steps, and resulting benefits, are readily achievable.

Education

The continued education of natural resource professionals responsible for Farm Plans on the General Crediting Protocol and individual credit types is crucial. The Willamette Partnership has developed a training curriculum for crediting. Given all of the existing and prospective variation that may need to be accounted for, professionals with an understanding of how each credit type works will be critical to figuring out how to make Farm Planning Crediting as complimentary as possible. Educating these professionals also has the effect of placing the knowledge needed to create credits in the heads of people ideally situated to disseminate it. No one group of people is better suited to engage and educate landowners about ecosystem service credits. Encouraging or supporting SWCD staff to complete the Willamette Partnership training curriculum would help with integration.

Baseline Determinations and Inventory

Encouraging SWCD staff to deliver baseline determinations for credits during the inventory stage of a Farm Plan would be beneficial to the crediting procedure—creating greater assurance that baseline assessments are done correctly and creating efficiencies as the planner is already assessing the relevant natural resources. For some credit types, particularly those centered around water quality, locally-specific guidance documents that help planners review and record conditions or resources not covered by a standard inventory would be a simple, effective, and expedient way for the Willamette Partnership to help make this happen. Generally, it is easier for the Willamette Partnership to add an additional form to its process than have the NRCS add one to theirs. But, at some point in the future, the integration of an actual credit protocol into the inventory process might be accomplished by augmenting the Environmental Evaluation Information Worksheet (Form NRCS CPA -52) used by most Farm Plan professionals.
Design and Execution

Farm practices, and their associated “job-sheets,” articulate the exact specifications of how NRCS-approved restoration and conservation activities may be implemented. The same guidance documents that the Willamette Partnership developed to aid with baseline assessments should also include instruction on what is required to implement design. The local differences between farm practices and protocols will make this a local exercise, but one that could be supported at the national level. As the actions that result in credits currently are more strict and intense than approved farm practices, this will result in higher ecological outcomes that would not be difficult for NRCS to support. Providing the Willamette Partnership with clear instruction on how their guidance documents might be included in the farm planning process, on a credit by credit basis, would be essential for consistent application.

Technology

The Willamette Partnership developed the web-based Ecosystem Crediting Platform (ECP) to lead project developers through the ecosystem credit creation process, translating actions on the ground into credits on a registry. As currently envisioned, all credits will need to be produced through this software and, as this software does not directly consider farm planning, the need for parallel process is a systematic necessity. The fact that the ECP provides all of the field data-sheets needed at the front-end, and guides all of the interactions at the back-end, will diminish how time-intensive it is for farm planners to run them in tandem.
A lot of the additional work required to generate credits in the context of a Farm Plan might simply be completed through the investment of additional time. But there is a practical limit to how much new work NRCS or SWCD professionals may do to generate credits for a landowner. Such staff already carry full workloads and the additional evaluation and planning work, interactions with new tools and organizations, and new procedures that come with credit creation demand investments of staff resources. Luckily, there are many actions, shy of delivering credits to a registry, which greatly assists with the creation of ecosystem service credits. By integrating eligibility assessments, baseline determinations, and credit estimates into Farm Plans, SWCD and NRCS staff are poised to dramatically increase the familiarity of the public with crediting and the ability of buyers to find suitable sellers.

The objective of the Willamette Partnership’s Ecosystem Credit Accounting System, produced by the Counting on the Environmental program, is an improved set of environmental outcomes from restoration and conservation actions implemented by farmers, ranchers and foresters. This system aligns well with NRCS’s objectives of promoting environmental conservation and nurturing new business opportunities for agricultural landowners, particularly as these objectives are met through Farm Planning. Working to integrate these two approaches to conservation makes intuitive sense, and appears minimally disruptive at the front-end, but will require policy decisions and changes to standard practices to do much more.