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Stewardship Contracting: Implementation of an Innovative Resource Management Tool by Units of the U.S. Forest Service

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The U.S. Forest Service has an urgent need to restore forests to healthy conditions. To meet this need, in 2003 Congress authorized the agency to use the innovative stewardship contracting tool. However, eight years after authorization, implementation had not reached the expected or desired levels. This prompted this study, which asked "Why do some field units in the U.S. Forest Service implement and institutionalize stewardship contracting, while others do not?"

The author found 19 conditions that favor or constrain a unit's ability to implement the innovation. Four antecedent conditions provide a compelling motive for implementation. Four organizational conditions create a climate that fosters implementation. Eight moderating conditions inside the agency and three moderating conditions outside the agency favor or constrain implementation. These conditions highlight the inherent attributes of the innovation's flexibility and complexity.

Units that implement the tool at high levels recognize the relative advantage of using stewardship contracting in place of traditional timber and procurement contracts. Units get more work done "on the ground," achieving a sense of accomplishment. The tool enables the agency to achieve multiple objectives with one contract and a single entry, which is more efficient for the government and the contractor and better for the ecosystem. Using stewardship contracting helps the agency achieve its landscape-scale objectives, contribute to the local community, and stabilize and build timber industry capacity. The agency reaps an additional benefit by building intraorganizational collaborative capacity.

The author provides nine recommendations for the agency to improve implementation and achieve wider institutionalization of stewardship contracting. The agency should: (1) Increase capacity for intraorganizational collaboration; (2) Maximize how units can use retained receipts; (3) Devolve approval to the forest supervisor; (4) Expand the range of allowable projects; (5) Acknowledge that precluding use of retain receipts to pay salaries limits the extent to which stewardship contracts can be used; (6) Create a succession plan to ensure collaboration continues without a gap; (7) Identify a collaboration facilitator in each unit; (8) Clarify the definition of stewardship contracting; and (9) Analyze the socioeconomic contribution to the community.

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CHAPTER 1: INTRODUCTION

In 2003, Congress authorized the U.S. Forest Service to use a new type of contract, a stewardship contract, to buy and sell the products and services that it uses to manage and restore federal lands (*Consolidated Appropriations Resolution, 2003,* Pub. L. 108-7, § 323; 16 U.S.C. 2104 Note). The agency had been testing the innovative contract since 1998 on a short-term, trial basis (Red Lodge Clearinghouse, 2010). The 2003 authorization was semi-permanent; the agency had ten years to use the tool to restore federal lands to healthy conditions. (The text of the law is provided in Appendix A.) The agency operationalized the innovation through internal guidance documents and directed its employees to add the tool to their toolbox (U.S. Forest Service, 2014b).

Adoption of an innovation by an organization does not necessarily translate to implementation (Linton, 2002). An organization's employees must support management's vision for implementation to occur (Lin, 1998). Employees, however, often respond in unexpected or unpredictable ways (Klein and Sorra, 1996). Herbert Kaufman (1960/1993) recognized this when he observed that the success of Forest Service policies rested "on the performance of the men [sic] in the field" (1960/1993, p. 56). Decisions made in the field, by the line and staff charged with operationalizing the tool, ultimately determine whether implementation of stewardship contracting will be successful.

This research was conducted to discover why some national forests and ranger districts were implementing stewardship contracting at high levels while others were implementing the tool at lower levels. Clearly, contextual forces were involved on individual units. The answer could only be found by asking the individuals in the field charged with implementing the innovative tool.

Context: The U.S. Forest Service

Agency Structure

The setting for this research is the U.S. Forest Service, an agency within the U.S. Department of Agriculture. The U.S. Forest Service is a large, sprawling, long-established bureaucracy with responsibility for 193 million acres of public lands (U.S. Forest Service, n.d.-c). The agency employs about 24,000 people stationed at 155 national forests, 440 wilderness areas, 20 national grasslands, and 7 national monuments in 44 states and Puerto Rico (Partnership for Public Service, 2014; U.S. Forest Service, 2014a).

Functionally, the Forest Service is organized into six deputy areas, each of which reports to the Office of the Chief (U.S. Forest Service, n.d.-d). District Rangers and Forest Supervisors report up the

chain of command to one of the nine Regional Foresters, who in turn report to the Deputy Chief of the National Forest System. Acquisition management personnel report up a separate chain of command to the Chief Financial Officer.

Day-to-day operations on the national forests and grasslands are managed at the local level at the more than 600 ranger districts under the leadership of a district ranger assisted by a staff of 10 to 100 people (U.S. Forest Service, n.d.-a). The ranger districts operate under the overall direction of a forest supervisor. The agency is structured using a traditional line-staff model. District rangers and forest supervisors are line officers. Staff members assist the forest supervisor in coordinating activities among districts, allocating the budget, and providing technical support to the districts. The forest supervisor operates under the overall direction of one of the nine regional foresters. The agency devolves broad responsibilities to the regional foresters for coordinating activities among the various forests within the region, for providing overall leadership for regional natural resource and social programs, and for coordinating regional land use planning. However, the Washington, D.C.–based senior leadership establishes the overarching strategic guidance for the agency.

The ranger districts and national forests are supported by several administrative-type functions that operate from separate organizational silos. For this study, the most important of these functions is acquisition management (AQM), which administers procurement activities under the Federal Acquisition Regulations (FARs) (48 C.F.R. 1.101). Some AQM personnel are located at the forest, often in the supervisor's office, while others may be located at a "zone" office that supports several forests and grasslands.

Although the agency is within the U.S. Department of Agriculture, the Forest Service receives its budget through the Subcommittee on Appropriations—Interior, Environment, and Related Agencies (U.S. Forest Service, 2014a). The budget structure is oriented toward discrete functional areas. Line items in the budget constrain who can spend the money and what it can be spent on. "Line officers have cited the budget structure as a major impediment to the cooperative, integrated development of plans and projects" (U.S. Forest Service, 2002, p. 33). Merging of line items is difficult, creating barriers to implementing projects with multiple objectives.

As with all federal agencies, the U.S. Forest Service operates under the U.S. Code and the Code of Federal Regulations (U.S. Forest Service, n.d.-b). These laws help form the directives and policies to manage the national forests and grasslands. The Directives System, which includes Forest Service Manuals and Handbooks, codifies the agency's policies, practices, and procedures and serves as the primary basis for the internal management and control of all programs and the primary source of

administrative direction to Forest Service employees. The directives for stewardship contracting are contained in Chapter 60 of the Renewable Resources Handbook (2409.19 of the Forest Service Handbook) (U.S. Forest Service, 2014b). The pertinent guidance for this research is contained in Appendix B.

Need for Restoration

A significant swath of public lands managed by the Forest Service are in dire need of restoration (U.S. Forest Service, 2014a). The agency estimated in 2012 that up to 82 million acres – 42 percent of the forests it managed – needed restoration to return them to a healthy condition. The need for restoration affects not only the lands themselves but also the nearby communities. The Forest Service estimates that more than 70,000 communities are at risk from wildfire.

The agency has acknowledged the need to move more quickly and treat more acres. A 2002 internal report observed that "the Forest Service will ultimately fail to reverse rapid declines in forest health and increasing wildland fire risks unless the agency is able to more quickly achieve results on the ground" (U.S. Forest Service, 2002, p. 8). More recently, in 2012, the Chief of the Forest Service stated that the agency must scale up its activities (Wilent, 2012). Instead of individual, small-scale projects that cover a few thousand acres, the goal is for large-scale projects that treat tens of thousands of acres.

The agency is making significant progress. In FY 2013, the agency restored or enhanced more than 4.7 million acres of public and private forest lands (U.S. Forest Service, 2014a). Stewardship contracting projects represent a fraction of the restoration effort. In FY 2013, stewardship contracting projects covered just 171,000 acres, short of the agency's goals by 129,000 acres (Kittler, 2014).

The agency's mandate for restoration, which is what compels the need for stewardship contracting, and the agency's structure, budget, and internal guidance, are part of the agency's culture, which is one of the core facets that affects the implementation of stewardship contracting.

Agency Culture

Organizational culture is the "persistent, patterned ways of thinking about the central tasks of and human relationships within an organization" (Wilson, 1989). Every organization has a culture. When a culture is broadly shared and endorsed by its members, it becomes a mission. A mission gives organizational members a shared way to see and respond to the world.

A strong mission enables organizational members to coordinate their actions in uniform ways to stimuli giving leadership and employees confidence in how each other will carry out activities. The Forest Service mission of "Caring for the Land and Serving People" is a strong mission (Wilson, 1989).

Strong missions also have disadvantages. The first disadvantage is that tasks that are peripheral to the core mission are perceived as less important and treated accordingly. As a result, units assigned core tasks may seek to dominate other units. A second disadvantage is that institutional practices and procedures can become so embedded and routinized that the organization is unable to respond to changes in the external environment (Yin, 1998; Zmud and Apple, 2000). A third disadvantage is that organizational members may act in accordance with the culture rather than respond to the situation. A strong mission may depress individual perceptions of autonomy and motivation, which inhibit contextual responses. The fourth disadvantage is that organizations and their members may resist taking on tasks that seem incompatible with the organization's or their sub-unit's cultures.

The Forest Service's mid-twentieth century culture was based on its mission, which focused on the core tasks of the National Forest System, the organizational unit tasked with managing forests and rangelands and extensively populated by professional foresters (Apple, 2000; Wilson, 1989). As the mission was reinterpreted to respond to external pressures, like passage of the National Environmental Protection Act (42 U.S.C. 4321 et seq.) and the agency's employees became more diverse, due in part to affirmative hiring requirements, "the ambiguities became more important and divisive" (Wilson, 1989, p. 106). The agency began to transition its focus from what it took from the land – timber "outputs" – to what is left on the land and the condition those lands are in (D. Bosworth, personal communication, May 8, 2010). These changes have required a shift in orientation, and the transition "has been a long and difficult evolution for many public land managers" (Kennedy, Dombeck, and Koch, 1998).

Another aspect that forms the Forest Service's culture is its wide geographical distribution (U.S. Forest Service, n.d.-a). The organization benefited from the geographic distribution because specialists who might otherwise identify most strongly with members of their own profession instead form associations with employees posted to the same field location (Wilson, 1989). However, some employees, such as the line officers who transfer relatively frequently from location to location within the agency as part of their career progression, form strong identification with the agency as a whole (Kaufman, 1960/1993).

An agency's culture also is formed by the mandates and constraints imposed by Congress, the American public, and its context (Wilson, 1989). According to Wilson, one consequence for the Forest Service is that greater attention is paid to short-term processes, which are easy to measure, than to long-term outcomes, which are more difficult to measure. Institutional processes and practices are foregrounded while individual judgment may be backgrounded. Another consequence is that managers

become risk averse and discretionary authority is pushed upward. This leads to greater centralization and loss of unit autonomy.

A final aspect of the agency's culture relevant to this study is its decision-making processes, which traditionally have emphasized hierarchical management authority and de-emphasized group collaboration (Linden and Delaney, 2007). This tradition has been counteracted by legislation of the late 20th century and the agency's own internal guidance, which emphasized the importance of collaboration with the public and consultation internally. Some project-level decisions require up to 100 interactions and 800 individual activities, which requires close coordination internally for successful outcomes (U.S. Forest Service, 2002).

Today's Forest Service is conflicted (Dialogos, 2007). The agency's declared mission, the emphasis of institutional practices and procedures, and employees' own values and beliefs about the direction the agency should take are incongruent (Brown, Squirrell, and Harris, 2010). Employee morale is generally low (Partnership for Public Service, 2014). The growing importance of fire management has required the agency to redirect resources away from other programs, such as recreation or wildlife management, resulting in employee discontent. The seemingly endless stream of new initiatives and reorganizations has also reduced morale (Bontrager, 2009). The agency values consensus building and responsiveness to local publics, but does not reward those activities (Kennedy, Haynes, and Zhou, 2005). Some employees perceive that the agency values upward reporting more than serving the people (Davenport, Anderson, Leahy, and Jakes, 2007). An agency once noted for its strong mission and employee identification finds its formerly clear vision and mission has become clouded.

Summary of Context

The agency's early focus on timber has gradually widened over time to encompass multiple resource areas. Although the mission is strong, it is also relatively ill-defined. Thus, it is difficult for the agency to measure success. Multiple use enlarges the agency's stakeholder base but also introduces potential conflicts about what is the "best" use. The agency's employee base has diversified, from a population that privileged professional foresters, most of whom were white and male, to a population that embraces both genders and a variety of natural resource–oriented disciplines, resulting in new viewpoints and perspectives. The agency's budget has declined, in line with overall reductions in government spending, but more of those fewer resources have to be directed toward fire management activities. The agency and its employees must conduct their work and achieve their goals while facing ongoing tensions of contraction and expansion.

Four aspects of the Forest Service are particularly important to this research. First, the agency deals in massive scales: 193 million acres of public lands crossing thousands of social and political boundaries. Second, the organization is organized into silos according to function, geography, and specialization, each of which has created its own culture. Some of those silos have been traditionally more important than others, which increases the potential for internal conflicts when one resource area is privileged over others. Third, appropriations continue to diminish, while needs in areas like fire management have continued to grow. As a result, units focused on restoration have had to learn to make do with less. Faced with diminishing budgets, the agency has turned to initiatives like stewardship contracting that do not rely solely on appropriated dollars. Finally, even with the numerous sub-cultures and conflicts, the agency and its employees maintain a strong ethic of caring for the land (Kennedy, Haynes, and Zhou, 2007). The shared meaning and vision creates identification with the agency and helps to create a shared bond that holds the agency together (Pattakos, 2004).

Issue: Stewardship Contracting

History

The Forest Service first received authorization to use stewardship contracting in October 1998. Congress authorized the agency to test the tool on a pilot basis as part of an omnibus appropriations measure (Pub. L. 105-277 § 347 (1998)) (see Appendix A). Perhaps the most important authority that Congress gave the Forest Service was the ability to trade goods for contracted services; that is, to use the value of forest products sold to offset the cost of services (U.S. General Accounting Office, 2008). This authority allowed the agency to achieve more work using the same amount of appropriated dollars. Another important authority given to the agency was the ability to retain receipts from timber sales to re-invest in stewardship projects on the forest. Under traditional timber sales contracts, the agency was required to send the receipts to the U.S. Department of the Treasury general fund. These retained receipts gave the field units a means to pay for needed services without tapping into appropriated dollars. Additional authorities that were granted included less than full and open competition, best-value contracting, multi-year contracts, designation by prescription or description, and widening the range of eligible contractors. (All the authorities are discussed in more detail in the next part of this section, “Authorities.”)

Congress was specific about what the agency should use these authorities to accomplish, listing seven specific objectives:

- Road and trail maintenance or obliteration to restore or maintain water quality;

- Improvement of soil productivity, habitat for wildlife and fisheries, or other resource values;
- Setting of prescribed fires to improve the composition, structure, condition, and health of stands or improve wildlife habitat;
- Noncommercial cutting or removing of trees or other activities to promote healthy forest stands, reduce fire hazards, or achieve other non-commercial objectives;
- Watershed restoration and maintenance;
- Restoration and maintenance of wildlife and fish habitat; and
- Control of noxious and exotic weeds and reestablishing native plant species (16 U.S.C. 2104 Note).

The program was originally established as demonstration program and was scheduled to end in 2002, but Congress extended the authority for another ten years, to 2013, in a rider to the 2003 *Consolidated Appropriations Resolution* (Pub L. 108-7, § 323). As part of the 2003 resolution, Congress also removed the limit on the number of projects, added commercial tree removal as an objective, and extended the authority to the U.S. Bureau of Land Management.

Congress gave permanent authorization to stewardship contracting in 2014 in The Agricultural Act of 2014 (Pub. L. 113-79 (2014)). The 2014 legislation created a new Section 604 of the Healthy Forests Restoration Act of 2003 (HFRA) (Pub. L. 108-148, 16 U.S.C. §§ 6501–6591 (2003)). Under the permanent authorization, stewardship contracts must contain the same fire liability provisions used under the current timber sales program (Hoover, 2014).

Authorities

The "authorities" are the rules Congress established specifying what the agency can do using one of these contracts. The following discussion draws from a diverse set of sources including the Forest Service Handbook (U.S. Forest Service, 2014b); Forest Service brochures (U.S. Forest Service, 2009); tutorials designed for both internal, agency employee training and contractor training (U.S. Forest Service, n.d.-e); external auditors (U.S. General Accounting Office, 2004, 2008), and partners and stakeholders (Daly, 2006; Pinchot Institute, 2014; Red Lodge Clearinghouse, 2010).

Trading Goods for Services

The stewardship authority allows the Forest Service, within a single contract, to trade the value of goods removed by a contractor for services performed by that contractor. Prior to receiving this authority, the Forest Service wrote one contract to sell products, sent most of the money it received

from the sale to the U.S. Treasury, and then wrote a separate contract for services and paid for the services with appropriated dollars. Using a stewardship contract, the agency can write one contract which covers both the sale of goods and the performance of services, and the services can be paid for with both appropriated dollars and the receipts it retains from the sale. Using just one contract is designed to reduce the administration and management responsibilities and enables the agency and the contractor to plan the work to minimize the entries into a site, reducing adverse consequences to the ecosystem.

Retention of Receipts

Under stewardship contracting, the forest can keep the receipts from the sale of forest products and use those receipts for restoration projects. Prior to receiving this authority, receipts were divided between the National Forest Fund and various trust funds. Historically, National Forest Fund moneys were distributed to states in which forests are located, to a roads and trails fund, to the Forest Service for road-building purposes, and the remainder were sent to the U.S. Treasury (U.S. General Accounting Office, 1998). With stewardship contracting, the forest can retain this money and reinvest it into stewardship projects. Retained receipts generally are used on the same project or in the same area, but some receipts may be transferred to another area if the transfer is identified in advance and approved by the regional forester. Retained receipts can be used for the costs of work on the ground or for programmatic-level multi-party monitoring, but the Forest Service is not allowed to use retained receipts for program planning, environmental assessments, project-level monitoring, overhead, administrative, or indirect costs.

Less than Full and Open Competition

Stewardship contracts can be awarded with little or no advertising or bidding; that is, less than full and open competition. Previously, all timber sales valued at $10,000 or more followed the National Forest Management Act of 1976 (16 U.S.C. 1600(note)) guidance, including requirements to advertise and accept bids or proposals from all responsible contractors. With stewardship contracting, even when the timber is valued at $10,000 or more the agency can offer a contract with less than full and open competition, such as by using sole-source contracts or providing a set-aside or preference for small business. This authority is designed to help local businesses build new skillsets in a community and to increase investment and employment in areas that are economically distressed.

Best Value Contracting

Under stewardship contracting, contracts are awarded on the basis of achieving best value to the government; that is, the agency awards the contract to the bidder who provides the greatest benefit overall. Before stewardship contracting, all timber sales had to be awarded to the bidder offering the highest ("best") price. With stewardship contracting, the agency can consider a variety of criteria in addition to price, including the contractor's past performance, the quality of the contractor's past work, and the contractor's experience in doing the specific work called for in the contract. Consideration also may be given to bidders who offer to hire and purchase locally or who will add value to the forest products that are removed.

Multi-Year Contracts

Under stewardship contracting, the service portion of the contracts can be let for up to 10 years. Without using a stewardship contract, the term of a service contract can be for no more than 5 years, although timber contracts can be written for up to 10 years. Long-term contracts are beneficial because it gives the contractor the ability to adjust to market conditions, such as harvesting and selling when the markets are high, which can produce higher bids. In addition, it increases employment stability and provides more security to financial backers.

Designation by Prescription or Description

Under stewardship contracting, the agency determines the end result desired for the work, but the contractor can propose how to achieve the goal. Previously, the Forest Service was required to describe a timber sale in enough detail that any two contractors would harvest the same trees. Often, this was accomplished by having Forest Service personnel mark the precise trees to be cut or, conversely, the trees to remain. This authority allows the agency to describe or prescribe the end results and the contractor can propose the best ways to achieve those goals.

Use of Non-Department of Agriculture Personnel

Under stewardship contracting, non-Department of Agriculture personnel can prepare and administer timber sales. Previously, only Forest Service personnel were allowed to prepare and administer timber sales. This authority allows the agency to share responsibilities with, for example, state agencies.

Multi-Party Monitoring

The agency must evaluate its stewardship contracting projects through a multi-party monitoring and evaluation process that includes other cooperating agencies, tribes, and interested groups and individuals (Pinchot Institute, 2014). Under the pilot program, the agency was required to monitor individual projects as well as the program as a whole. However, the requirement for individual project-level monitoring was dropped for the temporary (2003) authorization, and only programmatic-level monitoring was required from that point forward. Individual project-level multi-party monitoring is being conducted for some projects, but not under the agency's aegis.

The Pinchot Institute for Conservation has coordinated the monitoring activities since their inception (Pinchot Institute, 2014). The institute and its partners convened five regional teams, which met annually through 2014, when they were terminated. The teams were responsible for synthesizing regional data, analyzing the effects of regional conditions on the success and outcome of stewardship projects, identifying lessons learned, and reporting on the benefits and obstacles of engaging communities in stewardship contracts in their region (Pinchot Institute 2008, p. 6). The the individual team reports were compiled into a single report to the agency, which then provided the information to Congress. The author participated on the Northern Region Monitoring Team from 2007 until 2014, first as an observer and, later, as a participant.

Multi-party monitoring has been the subject of extensive study and, thus, is outside the scope of this dissertation (see, e.g., Pinchot Institute, 2014). However, the understanding gained as a participant-observer informs this research.

Local Communities

Under stewardship contracting, the needs of rural, forest-dependent communities are specifically considered in planning, designing, and contracting for projects. The agency has always recognized the dependence of rural communities on Forest Service activities, especially in the western United States, but was limited in the extent to which decisions could be based on local conditions. Stewardship contracting emphasizes the importance of tailoring projects to local conditions and needs (Bosworth and Brown, 2010).

Contracts

Before authorization of stewardship contracting, the agency had two means to accomplish work on the ground: timber contracts and service contracts. Each contract was useful for its intended purposes, but the conditions were precisely and narrowly defined. It is possible to use a timber sale contract, modified to include a best-value award, or a service contract, or a combination of the two. But neither can be used for trading goods for services, so the agency created a new type of contract: the integrated resource contract.

The core of stewardship contracting is the contract:

> "Although 'stewardship' is commonly considered the most important word in 'stewardship contracting,' it might will be that 'contracting' is the word most affected by this innovative program. A major barrier to getting tasks accomplished in the past has been the arcane and calcified contracting processes of the federal government. For the good of the land, more interactive contracting processes were necessary to allow problems to be solved by the most capable businesses via a set of positive incentives. Opening up this box has already created innovations for accounting, accomplishment reporting, and 'bundling' of services to create efficiency. It's about time. … There has always been a tension between rule-based procedures, reflected in existing contract language, and flexible, innovative procedures, which better represent both the dynamics of ecosystem concerns and commodity markets. Maybe stewardship contracting has finally broken the ice" (Love, 2004).

The following sections describe all three types of contracts: timber, service, and stewardship. Information for the following discussion is drawn from the Forest Service Handbook (U.S. Forest Service, 2014b), Daly (2006), Moseley and Davis (2010), and the U.S. General Accounting Office (2008).

Timber Contracts

A timber sale contract is "an agreement entered into by the Forest Service and the purchaser with specific expectations of benefits to be received and obligations to be performed" (U.S. Forest Service, 2014b). The contract establishes the terms and conditions under which the agency agrees to sell the timber and the purchaser agrees to harvest and remove it. Unless the agency rejects all the bids it receives, it awards the sale to the highest bidder.

The agency has six "2400-type" contract formats for timber sales. Which contract form is used depends upon the volume and complexity of the sale, the length of the contract, and other factors. The

maximum length for a timber contract is ten years. Timber sales are regulated under the National Forest Management Act.

Prior to stewardship contracting, timber sales contracts were “the only feasible tool” the agency had to restore a forest to health (U.S. Forest Service 2002, p. 36). Local communities benefited from “the jobs that are created, taxes paid, and forest access opportunities gained” (pp. 416–417). However, timber sales are not always a feasible tool for restoration, for example, where the forest products do not have sufficient value to receive bids.

Service Contracts

All federal agencies use a solicitation process called procurement or acquisition to obtain the services it requires. (Federal agencies use the same process to purchase products, but this research is only concerned with services.) The contracts an agency uses in this process are called service contracts. The process is regulated under the Federal Acquisition Regulations (FARs) (48 C.F.R. 1.101). The agency specifies its requirements, its terms and conditions, and the factors it will use to evaluate bids and the relative importance of each factor. The agency can engage in limited negotiation with offerors before making an award. Unlike timber sales, nearly all Forest Service procurements are “set aside” for small businesses, as that term is defined by the U.S. Small Business Administration.

Several types of service contracts can be used. Firm, fixed price contracts specify a definite quantity of work to be accomplished. Indefinite-quantity contracts specify a minimum quantity the agency is required to order, an estimated quantity the agency believes it will order, and a maximum not-to-exceed quantity. Performance-based contracts specify what is to be accomplished, the quality standards, how the agency will measure the quality standards, and how the contractor’s performance will be monitored.

For procurements in excess of $100,000, the agency publishes a request for proposal (RFP) and bidders must submit a formal, written response that includes both a technical proposal and a price proposal. The agency evaluates the offers based on both price and non-price factors to determine the overall best value to the government, which may or may not be the lowest price offered. For procurements of less than $100,000, the agency may publish a request for quotation (RFQ). In this case, the agency has more latitude in determining whether to require a technical proposal and which factors it will evaluate.

Integrated Resource Contracts

Integrated resource contracts were created for use only on stewardship contracting projects. These contract forms combine aspects of both timber and service contracts. The agency created two types of integrated resource contracts: the Integrated Resource Timber Contract (IRTC), and the Integrated Resource Service Contract (IRSC). Integrated Resource Timber Contracts are used when the value of the timber exceeds the cost of the services. The IRTC does not allow the use of appropriated money; all of the service activities conducted under an IRTC must be paid for with receipts from the forest products sold under the contract.

Integrated Resource Service Contracts (IRSCs) are used when the cost of the services provided exceeds the value of the timber removed. As with a service contract, under FARS, the IRCS can be tailored to be firm, fixed-price contracts or indefinite-delivery, indefinite-quantity (IDIQ) contracts. Firm, fixed-price contracts allow the agency to purchase a fixed amount of services at a fixed price by a certain date. The IDIQ contracts allow the agency to use task orders to procure services at a future date.

Stewardship Credits

Stewardship credits are a unique feature of stewardship contracting. The contractor can earn credits on completion of each service activity, which can then be exchanged for timber of equal value. If the cost of the services provided exceeds the value of the timber, the Forest Service pays the contractor the difference. If, however, the value of the timber exceeds the total cost of the services provided, the contractor is either required to perform additional service work or make a cash payment for the additional timber value.

Problems with Implementation

The Forest Service expected it would take time for stewardship contracting to build momentum. Advocates recognized that it would be difficult for Forest Service employees to learn how to use the new tool (Braxton Little, 2000). The difficulties were greater than anticipated and affected not only the Forest Service but also its external partners. The tool was perceived by agency employees and observers to be time-consuming and complicated to use (Pinchot Institute, 2008). Externally, private-sector contractors wondered whether the work was “worth the costs and regulatory hassle” to them (Bontrager, 2007). Forest Service employees struggled to overcome resistance from contractors, and a lack of markets for small trees posed additional challenges (U.S. General Accounting Office, 2008). In some locations, low timber values and the lack of timber infrastructure prevented use of the tool, and in other locations,

small businesses struggled to provide the performance and payment bonds required for the contracts (Pinchot Institute, 2008; U.S. Forest Service, 2008).

The agency recognized these challenges and launched an internal diagnosis of barriers and challenges in April 2008 (Holtrop, 2008). Among the concerns identified were that agency personnel perceived "management controls (manual/handbook/field advice) as retrenching to tools of the past"; "conservative approaches and approval at the Regional Forester level were 'chilling' the environment for experimentation"; and partners were "uncertain of the Agency's interest and commitment to stewardship contracting."

In May 2008, the agency conducted listening sessions in Missoula, Montana, and Washington, DC (U.S. Forest Service, 2008b). Concerns expressed included the following:

- "Active leadership at all levels is needed to promote implementation";
- "Immediate training is imperative for line officers, the SO [supervisor's office], and district staff";
- "Effective communication [about] the purpose of this authority must be improved"; and
- "Stewardship contracting needs to be a program unto itself, not in any particular area (such as timber)" (U.S. Forest Service, 2008b).

By August of 2008, the agency had identified actions it needed to take to increase use of stewardship contracting (U.S. Forest Service, 2008a). "Comprehensive and inclusive training opportunities" would be provided and would emphasize "(a) the philosophy behind the stewardship contracting authority, (b) the value and benefits of its use, and (c) effective use of the tools and mechanisms for implementation." Communication would provide for "consistent messaging" to "line officers, staff, partners, contractors, and the general public." The third action focused on "overcoming current technical issues (including policy)." Among the specific technical issues identified were "fixes to existing instruments," "improved accountability," and "clearer direction on authority use." Other actions included senior leadership commitment to the tool, development of leaders at all levels of the organization to champion the tool, and motivation by leaders to integrate employee efforts to use stewardship contracting (U.S. Forest Service, 2008a). These measures focused on actions leadership could take, including improvements to institutional policies and procedures. The agency believed that carrying out these actions would be sufficient to result in "a change in Forest Service culture" (U.S. Forest Service, 2008a).

While the Forest Service was diagnosing internal barriers, stakeholders continued to learn from the annual programmatic monitoring required by Congress and conducted by the Pinchot Institute and

its partners (Pinchot Institute, 2014). The monitoring process involved surveys, conducted via telephone interviews, of agency employees, contractors, and other entities. The findings reinforce and expand on the agency's understanding of barriers. A sampling of concerns identified in 2008 (the same year the agency conducted its internal diagnosis) illustrates the layers of complexity and the number of actors involved in implementation:

- "stewardship contracting documents and requirements are overly complex and often do not enable the preferred contracting process …"
- "Stewardship contracts are considered by many local contractors to be overly complex, restrictive and as such may be viewed as a liability for small businesses. The contracting process is often lengthy and confusing to those outside the agency, which can lead to frustration."
- "The list of agency staff needed to develop and review a stewardship contract or agreement is long and requires significant time from resource staff, contracting officers and the regional office …"
- "For contracting officers, stewardship contracting blends the line between the very separate territories of procurement contracting and timber contracting. Knowledgeable and adept contracting officers are key to the success or failure of many stewardship contracts." (Pinchot Institute, 2008, p. 28).

These diagnoses largely represent top-down and outside-in understandings. The individual perspectives obtained from front-line agency employees were just that: individual perspectives without context. What was needed was an emic perspective – the collective, multi-vocal, shared meanings and understandings of the phenomenon by the people directly involved and charged with the responsibility for implementation (Van de Ven and Rogers, 1988). Local actors are critical to policy implementation, because ultimately, whether a policy succeeds of fails depends "on the response of the individual at the end of the line" (McLaughlin, 2005, p. 60).

What did the employees' themselves believe were the benefits and the barriers? What was helping them meet their goals, and what was hindering them? This was the research gap that needed to be addressed.

Summary of Issue

The flexibility of stewardship contracting results in its complexity. Three aspects of its complexity, in particular, are important to this research. First, stewardship contracting requires

numerous individuals within the agency from different geographic, functional, and specialized silos to come together in agreement at the appropriate times to allow a project to move forward. These individuals and groups must share a common vision that is both grand and long-term and, at the same time, narrow and short-term. The grand vision is necessary to encompass the landscape-scale needs for restoration, bundling activities to achieve goals from multiple disciplines and reduce entries into a project area, and seeing the whole out of the parts. The narrow is necessary for the myriad specialized activities necessary to move the project through the multiple, sequential gates to "make it work" in a timely fashion.

Second, stewardship contracting requires a depth of knowledge not just about stewardship contracting but also about timber sales, procurement, the local community, and restoration needs, as well. No one person can possess sufficient knowledge, so key personnel who are central to the project must have an attitude of learning, a tolerance for risk and uncertainty, and a disposition toward collaboration to bring together the appropriate others to develop and implement a project.

The third critical aspect is the nuts and bolts of making a stewardship project happen, including the numerous rules and procedures and the narrowly and precisely defined terms which must be adhered to and correctly applied. This aspect requires attention to detail, which employs different capabilities and cognitive abilities than the interpersonal skills required for the individuals and groups to work as a unified team.

Research Question

The primary goal of this research was to understand why some ranger districts and national forests were using stewardship contracting more than others. The initial research question that was posed asked "What factors affect adoption of stewardship contracting by units of the U.S. Forest Service?" However, that question narrowly focused on a unit's decision to adopt the innovation without considering how or whether the innovation was fully implemented. In contrast, this research sought not to quantify specific variables ("factors") but rather to understand the "how" and "why" of implementation and institutionalization (Yin, 2009). This study sought to add to our understanding of the inherent complexity of implementation and institutionalization by a geographically dispersed public-sector bureaucracy whose actions were largely dictated by the disparate ecosystems managed by individual units (Pressman and Wildavsky, 1973/1984; Van de Ven and Rogers, 1988; Wolfe, 1994). Modifying the research question is consistent with the epistemology and methodology that provide the foundation for this research and the in-depth, qualitative, interpretive case study approach widely used

in public administration research to explore this type of question (Brower, Abolafia, and Carr, 2000; Eisenhardt, 1989; Klein and Myers, 1999; Schwandt, 2001; Stake, 1995). Thus, the final research question that oriented this research was as follows:

> *Research Question:* Why do some field units in the U.S. Forest Service implement and institutionalize stewardship contracting, while others do not?

Purpose and Significance of the Study

An interesting question is not sufficient on its own to justify a research study. The question must also lead to knowledge that increases our understanding of the phenomena being studied, amplifies or builds theory, and provides concrete, pragmatic suggestions that can improve praxis. Thus, this research was designed to improve our understanding of the following:

- Which dimensions – including attributes of the innovation, the organization, and the individual employees – are critical to the implementation and institutionalization of stewardship contracting?
- How do participants' perceptions of this tool affect its implementation and institutionalization?
- Under what conditions is stewardship contracting useful and usable to meet a field unit's needs?

This research examined the individual, organizational, and environmental contexts of implementation and institutionalization of stewardship contracting.

This study will help us understand why some ranger districts and national forests implemented stewardship contracting more fully than others, and why and how some units were able to institutionalize the tool. The study also will add to empirical data on how innovations are disseminated and institutionalized into geographically remote units of a public agency. The study will extend theories of the attributes of innovations and of implementing organizations and the models of implementation.

Research Design

The research design answers the call for empirical, multi-disciplinary studies of implementation processes (Barrett, 2004). The methodology employed an interpretive case study approach (Denscombe, 2007; Stake, 1995). The unit of analysis was the ranger district (the "case"). Multiple cases within a single national forest were collectively analyzed as a "study site." Participant selection was purposive (Fossey et al., 2002). Interviews were the primary data collection method supplemented with artifact

analysis and observation (Rubin and Rubin, 2005). Transcripts of the interviews were analyzed using grounded theory methods (Miles, Huberman, and Saldaña, 2013).

Scope of Study

The boundaries of any scholarly effort must be clearly demarcated, not only because knowledge is infinite and our time and resources are limited, but also to ensure the research is fruitful. This study was designed to draw out the participants' perceptions of the antecedents and determinants of implementation and institutionalization of stewardship contracting. The following items were included in the scope of this study because of their relevance and importance to the implementation of stewardship contracting. Where appropriate, the list identifies the relevant section of the *Forest Service Handbook* (FSH), 2409.19 Renewal Resources, Chapter 60 Stewardship Contracting (U.S. Forest Service, 2014b).

- Projects initiated from FY 2003 to FY 2013;
- Authority to conduct stewardship contracting (FSH 60.1);
- Objectives of stewardship contracting (FSH 60.2);
- Internal Forest Service guidance (FSH 60.3);
- Forest Supervisors' and District Rangers' responsibilities (FSH 60.42a, FSH 60.42b);
- Identification and roles of local communities (FSH 61.13);
- Internal stewardship contracting project team (FSH 61.14);
- Use and limitations of stewardship contracting (FSH 61.2 and 61.21);
- Approval of stewardship contracting projects (FSH 61.6);
- Selecting stewardship contracts (FSH 62) and contract types (FSH 62.1, 62.11, 62.12, and 62.13), generally;
- Bundling activities (FSH 62.2), generally;
- Contract duration (FSH 62.3), generally;
- Best value (FSH 63.1, 63.13) (but not contractor selection or capabilities);
- Multi-year contracts (FSH 63.3), generally;
- Revenues (FSH 67), generally;
- Residual receipts (FSH 67.1), generally; and
- Retained receipts (FSH 67.2), generally.

It is important to note that each item listed above would lend itself, individually, to a research program, so this list represents the peripheries of what is included in the scope of this study. Many of these items were touched on only very generally.

Delimitations

Delimitations are aspects of the scope that are within the researcher's control but have been excluded intentionally from study. The rationale for exclusion was based on several considerations. Collaboration and multi-party monitoring have already been well researched and documented by others (see, e.g., Boetsch, n.d.; Moseley and Davis, 2010; Pinchot Institute, 2014). Cooperative agreements with nonprofits or other government entities were identified by participants as a separate experience or would have required extending the research to include additional, otherwise unrelated cases. Economic viability and payments to counties pose significant constraints but cannot be directly affected by participants. Congressional appropriations so thoroughly permeate the situation and context that they represent universal constants rather than variables in the context of this study. The U.S. Bureau of Land Management, which Congress also authorized to use stewardship contracting, has been excluded because of the researcher's time and resource limitations. Timber industry infrastructure was excluded due to time and resource limitations. Specific contract documents represent internal processes best studied by researchers who are or can be embedded for an extended period of time within the specific work units that conduct these operations. Other aspects excluded from study include

- Appeals (FSH 61.11);
- Collaboration (FSH 61.12);
- Compliance with existing plans and regulations (FSH 61.15);
- Identification of project areas (FSH 61.16); projects conducted in connection with the Tribal Forest Protection Act (FSH 61.18, 61.19, 61.6, 61.7, 62.14, and 62.5);
- Contractor requirements (FSH 61.22);
- Designation without marking (FSH 61.3);
- Estimating value and cost (FSH 61.4);
- Sale without advertisement (FSH 61.5);
- Tracking work progress (62.4);
- Contractor selection (FSH 63.12) and capabilities (63.14);
- Small Business Administration set-aside and Special Salvage Timber Sale program (FSH 63.2);
- Agreements (FSH 64.1 and 64.2);

- Administration of stewardship contracts (FSH 65), including required bonding (FSH 65.1) and contracting officers (65.2);
- Funding for stewardship contracting (FSH 66);
- Residual receipts collections (FSH 67.11);
- Retained receipts annual review (FSH 67.21);
- Receipts collected to cover volume prior to service work (FSH 67.22) or adjustment of existing cash balances (FSH 67.23);
- Other trust funds (FSH 67.3);
- Automated timber sale accounting (FSH 67.4);
- Minimum to principal accounts (FSH 67.41) and normal distribution accounts (FSH 67.42);
- Monitoring activities (FSH 68), including programmatic level multi-party process monitoring (FSH 68.1), project level multi-party process monitoring (FSH 68.2), and environmental monitoring (FSH 68.3); and
- Reporting activities (FSH 69), including annual report (FSH 69.1) and accomplishments reporting (FSH 69.2).

Definitions

The following definitions are used in this dissertation.

Adoption is the process that a targeted user, either an individual or a field unit, goes through from first hearing about an idea new to the organization to finally making a dichotomous yes/no decision about the innovation (Schneider, 2007).

Climate for implementation effectiveness is defined as the "targeted employees' shared perceptions of the extent to which their use of a specific innovation is rewarded, supported, and expected within an organization" (Klein and Sorra, 1996, p. 1060)

Collective innovation acceptance is "employees' shared positive views regarding the innovation and their belief that it will result in favorable outcomes for themselves and the agency" (Choi and Chang, 2009, p. 24).

Implementation is the process during which targeted users become increasingly skillful, consistent, and committed in their use of an innovation (Klein and Sorra, 1996, p. 1056).

Implementation effectiveness describes the consistency and quality of targeted users' use of the innovation (Klein and Sorra, 1996, p. 1057).

Implementation efficacy is "agency employees' collective perception of the extent to which agency members as a group are capable of implementing the innovation" (Choi and Chang, 2009, p. 247).

Innovation is a practice or process, generated either internally or externally, that is being used for the first time by members of an organization, whether or not other organizations have used it previously (Damanpour, 1991; Fernández, 2001; Nord and Tucker, 1987). Newness is defined not by how much time has elapsed since the innovation was conceived of or introduced but rather whether the innovation is new to the targeted user (Rogers and Kim, 1985; Zaltman, Duncan, and Holbek, 1973).

Innovation-values fit is the "extent to which targeted users perceive that use of the innovation will foster (or, conversely, inhibit) the fulfillment of their values" (Klein and Sorra, 1996, p. 1063).

Infusion is the "extent to which the full potential of the innovation has been embedded within an organization's operational or managerial work systems" (Zmud and Apple, 1992, p. 148).

Institutionalization is the process in which an innovation becomes embedded, routinized, and normalized and organizational members have become habituated and sustain its use (May and Finch, 2009).

Institutional policies and practices (IP&Ps) are the formal strategies the organization uses to put the innovation into use and the actions that follow from those strategies (Klein, Conn, and Sorra, 2001).

Routinization of an innovation occurs when (a) the innovation is subsumed in an organization's governance system and (b) overt intervention of champions or sponsors are no longer required to assure the innovation's continued use (Yin, 1978).

Targeted users are the individuals and organizational units who are expected either to use the innovation directly or to support the innovation's use (Klein and Sorra, 1996, p. 1057).

Organization of the Dissertation

This dissertation is organized as a traditional five-chapter dissertation (Paltridge, 2002). Chapter 2, Literature Review, considers theories of the diffusion of innovations; the attributes of innovations and adopting organizations and individuals; and the processes of implementation and institutionalization. Chapter 3, Methods, describes the researcher's epistemology, methodology, and methods. Chapter 4, Results, describes the major findings from the eight case studies conducted for this research. Chapter 5, Discussion and Conclusions, summarizes the dissertation, considers theoretical implications, and provides management recommendations. Chapter 5 also discusses the limitations of this research and the potential for future research.

CHAPTER 2: LITERATURE REVIEW

Diffusion theory focuses on how new concepts – innovations – spread through passive diffusion or active dissemination and are accepted (or rejected), implemented, and institutionalized (Klein and Sorra, 1996; May and Finch, 2009; Nord and Tucker, 1987; Rogers, 2003; Van de Ven, 1986; Yin, 1978; Zmud and Apple, 1992). The diffusion of innovations has been studied by numerous disciplines, including organization and management (Crossan and Apaydin, 2010), sociology (Wejnert, 2002), communication studies (Rogers, 2003), education (McLaughlin, 2005), engineering and technology (Linton, 2002), political science (Barrett, 2004), and health services (Greenhalgh, Robert, MacFarlane, Bate, and Kyriakidou). Historically, diffusion of innovations research has focused on products rather than processes; on individuals rather than organizations; and on the dichotomous yes/no adoption decision rather than the often long drawn-out process of implementing an innovation. Implementation in organizations is less well understood but is widely acknowledged to be a complex, context-sensitive, non-linear, dynamic, and emergent process (Repenning, 2002). Adoption in an organizational context may or may not lead to routinization of policies and practices (Yin, 1978), assimilation into the organization's social systems (Zmud and Apple, 1992), and institutionalization (May and Finch, 2009).

This chapter is in two parts. Part I focuses on the attributes of the innovation itself, the organizations that adopt innovations, and the individuals within the organizations who are tasked with implementing and institutionalizing the innovation. Part II of this chapter focuses on the messy post-adoption process that begins with the decision to implement the tool and may progress through routinization and infusion to reach institutionalization.

Part I: Attributes of Innovations, Organizations, and Individuals that Affect Dissemination

The topic of diffusion of innovations has been researched and reported on in thousands of articles, books, and other publications because of the importance of innovations to society, (Rogers, 2003). Scholars from more than two dozen disciplines, including agriculture, anthropology, sociology, education, health, business, political science, and economics, have contributed to this literature, examining how innovations diffuse in their areas of interest (Rogers, 2004). Modern diffusion research originated as a response to the observation that the mere existence of an innovation is not sufficient to produce adoption (Eveland, 1979). Marketers wanted to know how to get people to buy more goods and services (Rogers, 2004). Although the research tradition has its roots in the early twentieth century,

the seminal work in the field was done in mid- to late-century by communication studies scholar Everett Rogers (2003), who began publishing the first of five editions of his classic text *The Diffusion of Innovations* in the 1960s. Rogers' work focused primarily on adoptions by individuals, rather than implementation by organizations, which is the focus of this research. However, his work in codifying the characteristics of innovations and identifying patterns of adoption processes is helpful in understanding the context for implementation of stewardship contracting.

Attributes of Innovations

Numerous empirical studies have identified specific attributes common to both product and process innovations. The most common attributes cited are relative advantage, compatibility, complexity, trialability, and observability, which Rogers and Shoemaker (1971) identified based on their review of 1,500 diffusion of innovation studies. Additional attributes were identified by Zaltman, Duncan, and Holbek (1973) in their investigation of adoptions by organizations. The expanded list was separated into primary and secondary attributes (Downs and Mohr, 1976). Primary attributes have inherent, objectively measurable dimensions, whereas for secondary attributes, the dimensions are subjective, measurable only in terms of targeted users' perceptions. Much of the research that has been conducted studied adoption of innovations in the private sector and privileged product innovations over process innovations. The research reported in this dissertation focuses not on adoption of commercial products but rather on implementation of a single innovation in the public sector.

Relative Advantage

Relative advantage is the degree to which an innovation is perceived by a potential adopter as being better than the idea it supersedes (Ettlie and Vellenga, 1979; Moore and Benbasat, 1991; Rogers, 2003). Relative advantage may be the *sine qua non* for adoption; that is, a targeted user must perceive an advantage to adopting the innovation to consider it further (Greenhalgh et al., 2004). However, relative advantage is necessary but not sufficient for adoption.

Relative advantage is measured in terms of convenience, satisfaction, and cost. Innovations that the targeted user perceives present an advantage in terms of effectiveness, generally, or cost-effectiveness, specifically, are more likely to be adopted and implemented (Marshall, 1990; Meyer, Johnson, and Ethington, 1997; Rogers, 1995). Cost includes both the cost to implement the innovation and the return on investment to the organization (Downs and Mohr, 1976; Schneider, 2007; Tornatzky and Klein, 1982). Cost is especially critical for public sector organizations, which must obligate limited

resources and demonstrate cost-effectiveness to their constituents. The perception of advantage is subjective rather than objective, making this a secondary characteristic (Downs and Mohr, 1976). The greater the perceived relative advantage of an innovation, the more rapid its rate of adoption will be (Rogers, 2003). Incentives or subsidies awarded by the organization can increase the rate of adoption. A targeted user's perception of relative advantage is the result of extensive, protracted discourse about the innovation's meaning (Greenhalgh et al., 2004).

Compatibility

Compatibility is the degree to which the innovation is consistent with the past, present, and future experiences, values, and needs of targeted users (Moore and Benbasat, 1991; Rogers, 1983; Tornatsky and Klein, 1982; Zaltman, Duncan, and Holbek, 1973). Innovations that are compatible with both the targeted users' and the organization's norms, values, and needs are more readily adopted (Greenhalgh et al., 2004; Rogers, 1995). Congruency between the innovation and the organization increases the likelihood of adoption (Damanpour and Evan, 1984). Administrative innovations that are aligned with an organization's ideology are more readily adopted (Schneider, 2007).

Complexity

Complexity is the degree to which the innovation is easy to understand and use (Pelz, 1985; Rogers, 2003; Schneider, 2007; Tornatsky and Klein, 1982; Zaltman, Duncan, and Holbek, 1973). Innovations that are simpler to understand and use are adopted more rapidly than innovations that require potential adopters to develop new skills and understanding (Greenhalgh et al., 2004; Marshall, 1990; Meyers and Goes, 1988; Meyer, Johnson, and Ethington, 1997; Rogers, 1995). Complex innovations that are packaged as a composite of independent parts that can be implemented separately are more readily adopted (Greenhalgh et al, 2004; Pelz, 1985; Rogers, 1995; Tornatsky and Fleischer, 1990; Tornatsky and Klein, 1982; Zaltman, Duncan, and Holbek, 1973). Complex innovations that arise outside an organization are less readily adopted (Cohen and Levinthal, 1990). Adoption of innovations with high complexity is more costly to the organization (Zaltman, Duncan, and Holbek, 1973). Perceived complexity can be reduced through experience and application (Greenhalgh et al., 2004).

Complex innovations often have "fuzzy" boundaries. The innovation contains a "hard core," the inherent, irreducible properties of the innovation itself, as well as a "soft periphery," which describes the organizational structures and systems necessary for implementation (Greenhalgh et al., 2004). The hard core of stewardship contracting is the contracting form and procedures to implement the form.

The soft periphery of stewardship contracting includes the coordination and integration of multiple organizational structures and systems, many of which are outside the direct control of the function responsible for creating and administering the contract and, indeed, outside the control of the organization itself.

Trialability

Trialability is the degree to which the innovation may be experimented with on a limited basis before adoption (Moore and Benbasat, 1991; Rogers, 1983). Innovations with high trialability reduce uncertainty and risk for the potential adopter. Innovations that require little additional effort or resources are more likely to be trialed than those that require more effort or resources. Innovations that can be tried partially or temporarily will be adopted more quickly than innovations that are not partial or temporary. Innovations that are divisible, that is, that are packaged as a composite of independent parts that can be implemented separately have higher trialability (Pelz, 1985; Tornatsky and Fleischer, 1990; Tornatsky and Klein, 1982; Zaltman, Duncan, and Holbek, 1973). Innovations that can be tried on a small scale before they are adopted are more quickly adopted (Tornatzky and Klein, 1982).

Packaged innovations favor the deployer, while divisible innovations favor the adopter. Packaged innovations are most appropriate for innovations of limited scope and scale, such as commodities (Stasz, Bikson, and Shapiro, 1986). Packaging reduces deployment messiness, simplifying deployment by the innovator. Divisible innovations are most appropriate for complex innovations, which require significant social and organizational change for adoption. The larger the indivisible bundle, the more difficult the implementation of the innovation by the adopter. “Lumpy” innovations, which are innovations that affect large swaths of the organization over a long period of time, are harder for the organization to absorb (Tornatzky and Fleischer, 1990).

Observability

Observability is the degree to which the innovation and the results of using the innovation are observable, demonstrable, and/or communicable to others (Moore and Benbasat, 1991; Rogers, 1983; Tornatsky and Klein, 1982; Zaltman, Duncan, and Holbek, 1973). Innovations with benefits that are visible and observable to targeted users are more readily adopted (Greenhalgh et al., 2004; Meyer and Goes, 1988; Tornatzky and Klein, 1982). Initiatives that increase the visibility of benefits increase the likelihood of adoption (Greenhalgh et al., 2004). In addition, innovations are more readily adopted if

targeted users believe using the innovation would enhance their job performance (Moore and Benbasat, 1991).

Other Attributes of Innovations

To other attributes of innovations are useful for understanding stewardship contracting. The first concerns the type of innovation – administrative or product – and the second concerns the degree to which the innovation deviates from the organizational norms – its radicalness.

Administrative Innovations

Administrative innovations involve changes in organizational structure, administrative policy or processes, or organizational social systems (Daft and Becker, 1978; Damanpour, 1991; Damanpour and Evan, 1984; Kimberly and Evanisko, 1981; Nord and Tucker, 1987; Rogers, 2004; Wilson, Ramamurthy, and Nystrom, 1999). Technical innovations, in contrast, involve changes to the basic work activities and related technology and systems that produce products or services (Damanpour and Gopalakrishnan, 1999; Kimberly and Evanisko, 1981). Administrative innovations are more difficult and require more time to implement than technical innovations. Administrative innovations typically lead to improvements in organizational efficiency (Subramanian and Nilakanta, 1996).

Organizational Centralization. Organizational centralization is the degree to which power and control in a system are concentrated in the hands of relatively few individuals (Rogers, 1995). Centralized systems are characterized by power over decision-making by national leadership, a top-down push of innovations to local users, and a low degree of local adaptation. Decentralized systems are characterized by wide sharing of power and control, diffusion of innovations peer-to-peer through horizontal networks, local decision-making over whether to adopt an innovation, and a high degree of local adaptation. Rogers found that centralization is usually negatively associated with organizational innovativeness. The more that power is concentrated in an organization, the less innovative the organization tends to be. However, other researchers found that centralization is positively associated with innovativeness (Daft, 1978; Damanpour, 1991; Moch and Morse, 1977).

Centralization is one element used to distinguish organic from mechanistic organizational structures. Pierce and Delbecq (1977) found that an organic structure, which by definition has lower centralization, is positively associated with innovation, while a mechanistic structure, which by definition has higher centralization, is negatively associated with innovation (Pierce and Delbecq, 1977). Kimberly

and Evanisko (1981) found that as much as 50 percent of the variation in adoption of an innovation in organizations was explained by organizational structure.

An organization's structure affects its ability to adopt innovations (Daft, 1978). Administrative innovations are more easily adopted by organizations with mechanistic structures than those with organic structures. Mechanistic structures are marked by high formalization, high centralization, and high specialization. Organic structures are marked by low formalization, low centralization, and low specialization. The Forest Service's high formalization and high specialization places it toward the mechanistic end of the spectrum, but the devolution of power out to the regions and down to the individual field units results in low centralization (Dialogos, 2007; Kaufman, 1960/1993).

Individual, organizational, and contextual variables have little predictive power for administrative innovations (Kimberly and Evanisko, 1981). Administrative innovations are adopted more slowly than technical innovations because the organization must first make structural and cultural changes that result in a climate that is ripe for change (Damanpour and Evan, 1984).

Administrative innovations are subject to pro-innovation bias (Rogers, 2003; Van de Ven, 1986; Zaltman, Duncan, and Holbek, 1973). The underlying assumption is that all administrative innovations are "good" and desirable. This is, of course, a simplistic view based on the notion that newness equates to progress. Some innovations, however, may be abandoned when the adopter recognizes that it does not provide the hoped-for benefits or, in fact, results in an undesirable outcome.

Radicalness

Radicalness is the extent of change required to existing organizational systems, routines, or practices before the innovation can be adopted (Dewar and Dutton, 1986; Ettlie et al., 1984; Nord and Tucker, 1987; Pelz, 1985; Zaltman, Duncan, and Holbek, 1973). Radical innovations have features that are without precedent in the adopting organization. The more the innovation diverges from existing alternatives, the more radical it is (Zaltman, Duncan, and Holbek, 1973). Radical innovations are transformative, and often require completely new systems, routines, or practices or fundamental changes to existing ones. Because of their properties, radical innovations involve more uncertainties for potential adopters. Radical innovations require modification to organizational systems and the behaviors of organizational members. Radical innovations involve more uncertainties, increasing the perception of risk to the adopter. In addition, these innovations diffuse more slowly because the effort necessary for adoption and implementation is relatively high. Dewar and Dutton (1986) found that organizations with a more extensive depth of knowledge, as measured by the number of technical specialists, are more easily able to adopt radical innovations. The U.S. Forest Service has a high depth of

knowledge, but the relatively radical nature of the stewardship contracting innovation suggests that it will be adopted and implemented relatively slowly.

Attributes of Organizations

In addition to studying the attributes of innovations, researchers have researched whether specific characteristics of organizations affect the organization's ability to assimilate an externally generated innovation (Beyer and Trice, 1978; Daft, 1978; Damanpour, 1991; Meyer and Goes, 1988; Zaltman, Duncan, and Holbek, 1973). Two groups of attributes are of interest. The first group contains attributes of the organizational structure, and the second group contains attributes of the organizational culture.

Organizational Structures and Systems

Organizational Complexity. Organizational complexity is the degree to which an organization's members possess a relatively high level of knowledge and expertise (Rogers, 1995). Complexity is measured by the range of occupational specialties held by the members and their professionalism as expressed by formal training. Organizational complexity may make it difficult for organizational members to achieve consensus about implementing innovations (Rogers, 1995).

Organizational Size. Kimberly and Evanisko (1981) found that organizational size was the best predictor of diffusion of an innovation in their study of diffusion in a health care environment. The positive relationship between size and innovativeness is strongest in organizations with a culture that favors risk-taking (Nystrom, Ramamurthy, and Wilson, 2002). However, some studies found a no association or even a negative association (Moch and Morse, 1977; Mohr, 1969). In comparison to smaller organizations, larger organizations have higher rates of adoption but lower rates of implementation, whereas smaller organizations have lower rates of adoption but higher rates of implementation (Tornatzky and Fleischer, 1990).

Organizational Formalization. Organizational formalization is the degree to which an organization emphasizes following rules and procedures in the role performance of its members (Rogers, 1995). Rogers found that formalization encourages the implementation of innovations.

Organizational Slack. Organizational slack is the degree to which uncommitted resources are available to an organization (Rogers, 1995). Organizational slack provides an organization with a cushion of spare resources, including available personnel and finances. Greater slack provides organizations with

more resources to adopt innovations, to pursue more risk, to absorb more failure, and to afford the costs of adopting innovations (Nystrom, Ramamurthy, and Wilson, 2002).

Organizational Culture

Organizational culture has been identified as one of, if not the most, important determinant in the adoption of innovations (Tushman and O'Reilly, 1997; Zaltman, Duncan, and Holbek, 1973). Organizational culture was defined by Schein (1984) as

> "the pattern of basic assumptions that a given group has invented, discovered, or developed in learning to cope with its problems of external adaptation and internal integration, and that have worked well enough to be considered valid, and, therefore, to be taught to new members as the correct way to perceive, think, and feel in relation to those problems."

Organizational culture is manifested in both visible and invisible ways (Schein, 1984). Closed doors and uniforms, for example, are visible manifestations of culture. Taken-for-granted assumptions, which often can only be gotten to through interviews with key members or analysis of artifacts, are invisible manifestations.

Organizational culture is at the "heart" of innovation (Tushman and O'Reilly, 1997). It influences innovation through socialization and values, which are communicated through structures, policies, and day-to-day artifacts, practices, and procedures. An innovative culture rejects the behaviors that hinder innovation, such as rigidity, control, predictability, and stability (Jassawalla and Sashittal, 2003). Without cultural change that encourages innovation, innovations will fail (Cameron, 2004). Innovation is more likely in organizations with absorptive capacity for new knowledge (Greenhalgh et al., 2014).

Dobni (2008) identified four general dimensions of an innovative culture: (1) intention to be innovative, (2) infrastructure to support innovation, (3) knowledge and orientation of employees toward innovation, and (4) environment/context that supports implementation and that is willing to accept risk and rewards.

Hurley and Hult (1998) studied employees in 10 groups within a larger R&D organization in a U.S. federal agency. They identified four dimensions of organizational culture related to organizational innovativeness: (1) participative decision-making (the degree to which managers are open to and employees are involved in decision-making); (2) power sharing (the degree to which information, resources, and influence are shared between and among levels and work units of the organization); (3) support and collaboration (the degree to which employees actively support and help each other in their

work; and (4) learning and development (the degree to which learning and development are encouraged in the organization).

Employees in cultures that are supportive of innovation are tolerant of ambiguity; appreciative of diverse orientations, aspirations, and talents; willing to develop collaborative agendas; open to making their thoughts known in both formal and informal interactions and to proposing risky ideas; and willing to engage in constructive conflict (Jassawalla and Sashittal, 2003, p. 2).

Beyer and Trice (1978) argued that the attributes Rogers' and others had identified previously focused on the innovation but overlooked the behavioral changes that were required for successful adoption and implementation. The following attributes were identified from the literature as affecting the social systems within an organization and describing employee behaviors and values that are tightly connected to innovation.

Centrality to Mission. Centrality to mission is the degree to which the innovation is central to the day-to-day work of the organization and involves activities critical to execution of the organization's core mission (Nord and Tucker, 1987). Innovations that are perceived as enhancing the targeted users' achievement of their tasks goals are more readily adopted (Moore and Benbasat, 1991; Yetton, Sharma, and Southon, 1999).

Voluntariness. Voluntariness is the degree to which use of the innovation is perceived as being voluntary or of free will (Moore and Benbasat, 1991; Rogers, 2003). Organizational mandates increase the rate of adoption of innovations by targeted users, but the evidence is mixed as to the effects of voluntariness on implementation (Tolbert and Zucker, 1983). Where adoption of the innovation is not mandated, the primary determinant of adoption was social influence. Perceived voluntariness may be superseded by targeted users' perception of the need to conform to organizational norms. Administrators in public agencies often have significant discretion as to whether to adopt administrative innovations (Berry, 1994).

Ideological Alignment. Ideological alignment is the degree to which the innovation is perceived as aligning with organizational ideals; that is, the organization's values, norms, and mission (Schneider, 2007). Ideological alignment is strongly positively associated with adoption.

Pervasiveness. Pervasiveness is the degree to which using the innovation will require systemic changes in the organization, especially the number of individuals who must change their behaviors and how much of the time these individuals must behave in new ways (Beyer and Trice, 1978); Munson and Pelz, 1982; Zaltman, Duncan, and Holbek, 1973).

Permanence. Permanence is the degree to which the innovation is expected to persist within the organization (Beyer and Trice, 1978). This characteristic is also described as duration.

Magnitude. Magnitude is the degree to which the innovation requires change to or displacement of organizational life (e.g., structure, attitudes and behaviors, financial resources) (Beyer and Trice, 1978; Pelz, 1985; Zaltman, Duncan, and Holbek, 1973).

Adaptability. Adaptability is the degree to which the innovation can be easily modified to meet the targeted users' needs and objectives (Tornatsky and Fleischer, 1990; Tornatsky and Klein, 1982; Zaltman, Duncan, and Holbek, 1973). Adaptability also refers to the degree to which changes or adaptations must be borne by the user organization. The adopting organization must consider how much an innovation can be adapted before the organization will lose efficiencies gained from the adoption.

Commitment. Commitment requires consideration of attitudinal and behavioral acceptance (Zaltman, Duncan, and Holbek, 1973). Successful use of an innovation requires commitment by targeted users. Zaltman, Duncan, and Holbek (1973) observed that innovation requires partial behavioral changes on the part of employees before attitudinal changes occur. The behavioral change need not be voluntary. Commitment is especially relevant when the innovation requires participation among multiple organizational members.

Application of routines. Adoption is more likely when employees can apply routines already in use to the new innovation (Beyer and Trice, 1978). Routines can be drawn from the employee's own experiences or they may be part of the organization's collective knowledge. Application of existing routines to a new innovation increases the employee's ability to use the innovation.

Catalysts. Organizations may adopt innovations in response to external pressures, such as those applied by external stakeholders, especially activists (Briscoe and Safford, 2008; Schneiberg and Lounsbury, 2008). Organizations are more likely to adopt an innovation after a crisis or dramatic failure (Inkenberry, 1989).

External Orientation. External orientation refers to an organization's understanding of the external environment, including stakeholder needs (Tornatzky and Fleischer, 1990). Nystrom, Ramamurthy, and Wilson (2002) found that organizations with a high external orientation are more aware of the community's needs and are more innovative. External orientation moderates the effects of organizational size and organizational age on innovativeness.

Environment. Environmental influences from external stakeholders are associated with an organization's ability to adopt innovations (Baldridge and Burnham, 1975; Carson et al., 1999).

Organizations are more likely to adopt innovations that have been adopted by similar organizations (Meyer and Rowan, 1977, 1978). Exposure to institutional pressures from inside or outside the organization encourages the organization to conform to the responses, like adoption of an innovation, taken by other organizations (DiMaggio and Powell, 1983). Organizations are more likely to adopt innovations that have been adopted by similar organizations in geographic proximity (Berry and Berry, 1990, 1992; Walker, 1969). Organizations are more likely to adopt innovations that are congruent with local cultural systems and beliefs (Herbig and Miller, 1991). Organizations with lower public visibility are more readily able to adopt innovations (Becker, 1970; Wejnert, 2002). Public sector organizations may adopt innovations as a response to pressure to conform to norms.

Organizational Communication. Organizational communication includes organizational interconnectedness, interpersonal relationships, and internal and external communication.

Organizational interconnectedness is the degree to which the units in a social system are linked by interpersonal networks (Rogers, 1995). Ideas flow more easily in organizations with high interconnectedness, resulting in a positive relation to organizational innovativeness.

Interpersonal relationships are also important to adoption of innovations (Zaltman, Duncan, and Holbek, 1973). Rogers' (1995) describes these in terms of *social systems,* which are "the interrelated units that are engaged in joint problem-solving to accomplish a common goal" (p. 24). The units in a social system can be individuals, work groups, organizations, or even collections of organizations. Innovation requires and culminates in alterations in the structure and function of a social system. Because systems create safety, they also function to reduce uncertainty (Rogers, 2003). Systems also create norms for behavior that affect a unit's likelihood of adoption. For example, in a social system that privileges novelty, such as an R&D department, innovations may be seen as desirable and, thus, be more likely to diffuse. In a social system that privileges stability, however, system norms can create resistance and lead to barriers to change (Rogers, 1995).

Organizational communication includes both internal and external communication. Formal internal communication is moderately associated with innovation (Damanpour, 1991). Organizations with an external orientation have better communication with their customers (Nystrom, Ramamurthy, and Wilson, 2002). Internal and external collaboration positively affects innovation, especially internal collaboration among team members and external collaboration with stakeholders (Bessant, 2003; Jassawalla and Sashittal, 1999; Von Hippel, 1986).

Risk and Uncertainty. Innovation requires targeted users to take risks (Glor, 1997). Uncertainty is the degree to which links among the innovation's inputs, processes, and outcomes are known or

understood (Pelz, 1985; Zaltman, Duncan, and Holbek, 1973). Innovations that the targeted user perceives as having a higher degree of uncertainty are less likely to be adopted (Greenhalgh et al., 2004; Meyer and Goes, 1988; Meyer, Johnson, and Ethington, 1997). Risks and benefits of an innovation affect some parts of an organization more than others. The more the benefits enhance the organization's power base, the more readily the innovation will be adopted (Greenhalgh et al., 2004). Uncertainty is reduced over time as adoption by others legitimizes the innovation and organizations seek to increase their isomorphism (DiMaggio and Poole, 1983; Tolbert and Zucker, 1983).

Management Support. Management support is positively associated with innovativeness (Damanpour, 1991; Read, 2002). A culture supportive of innovation values employee participation, communication and teamwork, and structural flexibility (Tushman and O'Reilly, 1997). Managers in a supportive culture empower employees to take risks and tolerate occasional failures (Nystrom, Ramamurthy, and Wilson, 2002).

Attributes of Individuals that Affect Adoption

The literature on the attributes of individuals that affect adoption does not provide a clear list of attributes, such as we have for organizations. In their meta-review of the innovation literature, Crossan and Apaydin (2009) found only 5 percent of papers that focused at the level of the individual, versus more than half on the level of the organization. Most of the focus has been on creativity, that is, the generation of innovations, rather than adoption of innovations (see, for example, Anderson, Potočnik, and Zhou, 2014). Research that has focused on adoption has mostly focused on managers, rather than front-line workers (Damanpour and Schneider, 2006).

It is clear that individuals actively engage in adoption and innovation processes (Greenhalgh et al., 2014), and they do so in a variety of ways:

> "[T]hey seek innovations, experiment with them, evaluate them, find (or fail to find) meaning in them, develop feelings (positive or negative) about them, challenge them, worry about them, complain about them, "work around" them, gain experience with them, modify them to fit particular tasks, and try to improve or redesign them—often through dialogue with other users" (p. 598).

In short, individuals have unique and often unpredictable responses to innovation.

Individual traits associated with the use of innovations include tolerance of ambiguity, intellectual ability, motivation, values, learning styles, and tenure in position (Damanpour and Schneider, 2006; Greenhalgh et al., 2014). An individual's administrative role, rather than their personal

characteristics, may affect their inclination toward innovation (Baldridge and Burnham, 1975). Compatibility with values, beliefs, past history, and current needs are important factors in adoption (Berman, 2003). Education is positively correlated with adoption (DiMaggio and Powell, 1983; Hicks, 1978). Age and gender have no association with adoption; tenure has given mixed results (Damanpour and Schneider, 2006; Hicks, 1978). Individuals who do not feel constrained by societal norms and who accept job changes more readily adopt innovations (Becker, 1970).

Ultimately, though, an individual's traits may be less important than "the influences of the norms, values, and functions" of the group in which the individual operates (Hicks, 1978).

Champions

One type of individual is particular important to the successful adoption and implementation of an innovation: a project champion. A project champion is "an individual who enthusiastically supports an innovation project and who is personally committed to it" (Schon, 1963). A project champion can maintain progress and provide support when individuals encounter barriers during adoption. Four championing roles have been identified (Shane, 1995). The network facilitator develops cross-functional coalitions between managers in different functional areas of the organization. The organizational maverick has autonomy from the organization's policies and procedures. Transformational leaders persuade other members of the organization to support the innovation. Individuals who act as organizational buffers provide loose monitoring to allow targeted users to leverage organizational resources.

Interaction of Attributes

The attributes described in the previous pages interact in ways that are complex, unpredictable, and nongeneralizable (Greenhalgh et al., 2014). No one attribute is sufficient to motivate dissemination. Instead, dissemination is contingent on the interaction of multiple attributes. However, attributes interact and are moderated by other attributes in unpredictable ways. Even with this unpredictability, one attribute, organizational adoption, appears to be critical to understanding dissemination in an organization.

Part II: Dissemination of Innovations: Implementation to Institutionalization

Two streams of diffusion research are helpful to understanding how innovations are implemented and institutionalized by organizations (Wolfe, 1994). The first stream focuses on how an

innovation disseminates over time and/or space. This is one of the aspects of diffusion that Everett Rogers illuminated. The unit of analysis in this stream of research is the innovation. Typically, the research is quantitative, often uses surveys, and attempts to explain rates and patterns of adoption by individuals. This stream of research provided the basic pattern in which an innovation moves from initial adoption through implementation to institutionalization as well as attributes of innovations, described in the previous section (Rogers, 2003). The second stream focuses on the process through which organizations adopt and implement innovations (Wolfe, 1994). The unit of analysis in this stream is the *process* rather than the innovation itself. Both qualitative and quantitative methods are used by researchers in this stream to understand the life-cycle of an innovation, from emergence through growth to termination. Qualitative research in this vein typically uses inductive methodologies; methods include interviews, artifact analyses, and observation (Wolfe, 1994). This stream is the focus of this Part II.

The models that have emerged from research on the process of dissemination view innovation as complex, messy, non-linear, and iterative (Schroeder et al., 1989; Tornatzky and Fleisher, 1990; Van de Ven and Angle, 1989; Van de Ven and Rogers, 1988). Divergent and convergent activities cycle repeatedly over time and at different organizational levels as part of a dynamic system (Van de Ven et al., 2007).

Many life-cycle models have emerged from this stream (Wolfe, 1994). The model that is most widely cited is Rogers' (1983) five-stage model of individual innovation. The stages he identified are knowledge, persuasion, decision, implementation, and confirmation. Meyer and Goes (1988) identified three stages with nine individual steps. As shown in Table 1, in Stage 1, knowledge-awareness, targeted users learn about the innovation, consider its feasibility, and discuss the innovation with colleagues. In Stage 2, evaluation-choice, targeted users formally evaluate the innovation, especially vis-à-vis political and strategic concerns. If the innovation meets the evaluation criteria, then it moves into Stage 3, adoption-implementation, where it is subjected to a trial period, at the conclusion of which targeted users evaluate the results. Targeted users can reject the innovation at any step in the process. For an innovation to be assimilated, it must pass through all nine steps and then, at the conclusion of the ninth step, be accepted. This model shows that multiple decisions must be made by multiple individuals in an organization.

Davenport, Prusak, and Wilson (2003) describe adoption as a series of six evolutionary steps: (1) progenitor (assessment and build-up), (2) pilot scheme (test it out in the environment), (3) project (full-

scale application), (4) program (extended throughout organization), (5) perspective (included in all operations), and (6) pervasiveness (becomes a way of life). The Forest Service's adoption of implementation maps well onto these steps. The original land-management services contracts

Table 1. Decision-making stages in the assimilation of innovations (adapted from Meyer and Goes, 1988).

Stage	**Step**
Knowledge-Awareness	1. Apprehension – Targeted users learned of the innovation's existence
	2. Consideration – Targeted users consider the innovation's suitability for their organization
	3. Discussion – Targeted users engage in conversations concerning adoption.
Evaluation-Choice	4. Adoption proposal – Targeted users formally propose adoption of the innovation.
	5. Management evaluation – Management evaluates the innovation according to management criteria.
	6. Political-strategic evaluation – Management evaluates the innovation according to political and strategic criteria.
Adoption-Implementation Stage	7. Trial – Targeted users try the innovation for the first time.
	8. Acceptance – Targeted users accept the innovation use it frequently.
	9. Expansion – Targeted users expand use of the innovation or replace it with a next-generation innovation.

used from 1984 to 1991 and described by Ringgold and Mitsos (1996) was the "progenitor" (Step 1). Congressional authorization from 1998 to 2002 to test the authorities was the "pilot scheme" (Step 2). Congressional authorization in 2003 triggered full-scale application (Step 3, "project"). The Forest Service is currently grappling with extension throughout the organization (Step 4, "program") and has not yet achieved Steps 5 and 6, "perspective" and "pervasiveness."

The decision to adopt and the actual use of the innovation is not a sequence or process but rather two separate events (Fichman and Kemerer, 1999). The interval between adoption and use is the "assimilation gap," during which organizational members gradually overcome adoption and knowledge barriers. Assimilation is the stage that is the focus of this research. These models illustrate the complexity of the process and the often unique pattern of stages and iterations that is the result of the interaction of the innovation itself, the organization, and the context for adoption. The post-adoption process is a dynamic, non-linear, non-sequential, iterative, messy process that is likely to be expressed differently in different units of the same organization and even within an organizational unit in different ways by different individuals.

Implementation

Implementation is the process by which policies and innovations are assimilated into an organization (Klein and Sorra, 1996; May and Finch, 2009). It is "the user process that leads to the successful adoption of an implementation" (Voss, 1988). Implementation is a complex, dynamic process shaped by many factors (Piening, 2011; Van de Ven, 1999). This research focuses specifically on implementation of an innovation by an organizational unit, which requires the active and coordinated use by multiple organizational members (Nord and Tucker, 1987).

Implementation studies are common in two research traditions: policy analysis and diffusion of innovations research (Barrett, 2004; Linton, 2002). This section begins with a discussion of the Rand Corporation Change Agent Study and the follow-on Context Center study. These studies not only provide context for implementation studies but also inspired the research orientation and strategies used in this research. The majority of this section, though, focuses on implementation research in the diffusion of innovations tradition, which is the basis for the majority of the research that has been conducted.

Policy Analysis Approach to Implementation Research

Policy analysts began studying the implementation "problem" in the 1970s (McLaughlin, 2005). One of the earliest and more widely read implementation studies was Pressman and Wildavsky's (1973/1984) *Implementation: How Great Expectations in Washington are Dashed in Oakland; Or, Why It's Amazing that Federal Programs Work at All.* During the same time period, McLaughlin was participating in the Rand Change Agent Study, which studied how federal educational policies were ignored in the "'black box' of local practices, beliefs, and traditions" (p. 5). The Rand study employed mixed methods. Fieldwork asked "how" and "why" to unpack local perspectives. The Change Agent Study found that adoption did not equal implementation. Many innovations were adopted, few were successfully implemented, and even fewer were continued over the long-term. Key findings of the Change Agent Study included the following:

- The "nature, amount, and pace of change at the local level was a product of local factors that were largely beyond the control of higher-level policy makers" (p. 59);
- Local choices, especially individual responses, were the most significant factor driving the implementation outcome;
- "The presence of the will or motivation to embrace policy objectives or strategies is essential to generate the effort and energy necessary" for success (p. 60);

- Local capacity and will change over time. Capacity and will that may be present at the beginning of implementation may fade or be terminated or eliminated over time;
- An individual's motivations and actions are embedded within a larger social and political context;
- Local variability is the rule; uniformity is the exception; and
- Implementation requires mutual adaptation between policy and local realities; and
- It is necessary to link macro, system-level factors, especially regularities of process and organizational structures, with micro, individual-level factors, which can be unpredictable and autonomous.

These findings are not exceptional but, instead, common to many implementation scenarios.

These findings led the researchers to ask, "What are the factors that affect teachers' responses to policies aimed at changing classroom practices?" (McLaughlin, 2005, p. 61).[1] That question became the focal question for a follow-on study, the Context Center research, which began in 1987.

What is important about the Context Center study is that the researchers quickly realized after beginning the study that their methods would not elicit the information they sought: they had to move from an "outside in" (etic) perspective to an "insiders" (emic) perspective. The researchers next tried a backward-mapping perspective, but abandoned that strategy when they realized that the questions it asked were phrased in terms of policy analysts' interests. What needed to be asked were questions that the insiders, the teachers, would ask. That is, to get at participants' understandings, researchers must frame questions that the participants themselves would ask and that an insider's (emic) perspective employ different conceptual schemes and analytic frames and different theoretical perspectives and understandings than do researchers.

McLaughlin (2005) writes that "Once we asked 'what's it like to teach here,' and 'what are the factors that influence how you feel about yourself as a teacher,' teachers enabled us to see school-teaching from their view" (p. 62). The implications for their research were profound. Four of their findings are particularly relevant to this research. First, relationships "between research and practice, or between theory and practice [are] not one way" (p. 66). Research and practice and theory and practice are tightly inter-related and each has the potential to inform the other. Second, "any single theoretical perspective by definition can provide only partial understanding" of the phenomenon being studied (p.

[1] I include the full text of the question because I first read the article shortly before engaging on my research project. I admired the language used by the Rand researchers so much that I copied the initial wording for my original research question, "What factors affect adoption of stewardship contracting?")

67). A single theoretical lens not only produces a fragmentary result but also acts to obscure other perspectives and results. Third, research must be contextualized because policy is implemented in a complex, highly variable local context. Context can be created through dialogue and interpretation of evidence in practice. Fourth, because teaching is enacted in a social setting, the collective experience of the group is more important than the experience of the individual. The researcher must remain sensitive to multiple meanings and interpretations (Klein and Myers, 1999).

Diffusion of Innovations Approach to Implementation Research

The diffusion of innovations research tradition has largely focused on adoption rather than implementation (Klein and Sorra, 1996; Rogers, 2003; Voss, 1988; Zaltman, Duncan, and Holbek, 1973; Zmud and Apple, 1992). Scholars favored studies of adoption because the dichotomous yes/no decision to adopt was easily quantified. Developers of innovations favored studies of adoption because they measure success (i.e., a sale) when the targeted user makes the "yes" decision. What takes place after the initial "yes" is less quantifiable and, for the developer, often less relevant.

Implementation studies, on the other hand, can be considerably more difficult to accomplish (Voss, 1988). Measuring successful adoption of innovative *processes* is especially difficult because process implementation typically takes place over a long time-frame. Academic articles analyzing implementation first appeared up to 10 years after the initial adoption and often lagged by 15 years. Long-term experience with the innovation is often necessary before scholars can analyze whether implementation has been achieved.

In addition, innovation processes often fail during implementation or fail to achieve sustained use (Borins, 2001; Helfrich, Weiner, McKinney, and Minasian, 2007; Klein and Sorra, 1996; Linton, 2002; Piening, 2011; Repenning, 2002). The literature is rife with examples of these innovation adoption failures (see, e.g., Lawler and Mohrman, 1987). Even when a product or process innovation succeeds in one place, it may fail in others (Voss, 1988).

Adoption by an organization is far more complex than adoption by an individual. Adoption by an organization requires the collective action of multiple users and, often, coordination across intraorganizational and interorganizational boundaries (Choi and Chang, 2009; Jassawalla and Sashittal, 1999; Klein and Sorra, 1996; Zmud and Apple, 1992).

In the late 1980s, scholars began intensifying calls for studies of implementation. Voss (1988) called for three types of research into implementation to fill the knowledge gap. First, he called for a study of process, specifically developing knowledge of the implementation process for specific innovations, antecedents of implementation, interactions between the implementation process and the adopting organization's environment, and comparisons of implementation in multiple organizations. Second, he called for research on successes and failures of implementation. Third, he called for studies identifying specific factors influencing the implementation process. The present research answers this call by studying the process, comparing high- and low-implementing units, and identifying the factors influencing implementation of stewardship contracting.

Three-Factor Linear Model of Implementation Process

Meyer and Goes (1988) conceptualized implementation as a process of *assimilation.* Assimilation represents a series of choices, unique to the setting and the participants, which trigger different results in different organizations and, by extension, organizational sub-units. Meyer and Goes recognized that implementation occurred in some places but not others.

Meyer and Goes (1988) developed a conceptual model in which three factors determine assimilation: attributes of the innovation, attributes of the organization, and attributes arising from the combination of the two, as shown in Figure 1. Implementation occurs as a complex interaction between multiple attributes and actors. This model suggests that differences in how units of the Forest Service implement stewardship contracting should be expected and are the result of contextual factors unique to each field unit.

Meyer and Goes (1988) created a simple model that emphasizes the interaction of the innovation with the context. The next section examines is a more complex model adapted from Klein and Sorra's (1996) implementation effectiveness theory.

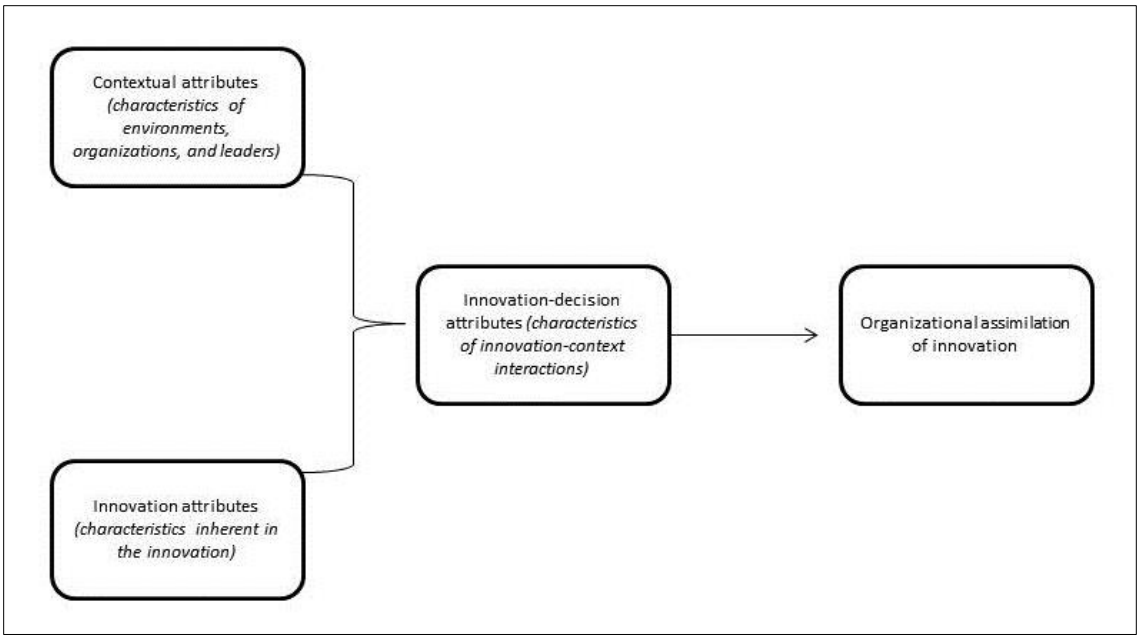

Figure 1. Conceptual model of innovation assimilation by an organization (adapted from Meyer and Goes, 1988).

Implementation Effectiveness

Klein and Sorra (1996) focused on the assimilation stage. They argued that the fundamental challenge for an organization is to obtain consistent, high-quality use by targeted users. To that end, they built a model of *implementation effectiveness*, which they defined as the consistency and quality of targeted users' use of a specific innovation (p. 1058). The model, which is shown in Figure 2, suggests that two determinants are necessary for implementation effectiveness: climate for implementation and innovation-values fit.

Climate for implementation effectiveness is defined as "targeted employees' shared perceptions of the extent to which their use of a specific innovation is rewarded, supported, and expected within an organization" (Klein and Sorra, 1996, p. 1060). The concept of climate is limited to the innovation and does not include employee views of the organization generally, the innovation itself, the employee's job, or the organization's openness to change or the innovation. A strong implementation climate (a) ensures that employees have the necessary skills to use the innovation, (b) provides employees with incentives for using the innovation and disincentives for nonuse, and (c) removes obstacles to use (p. 1060). Empirical evidence has demonstrated that an organization's emphasis on creating a specific

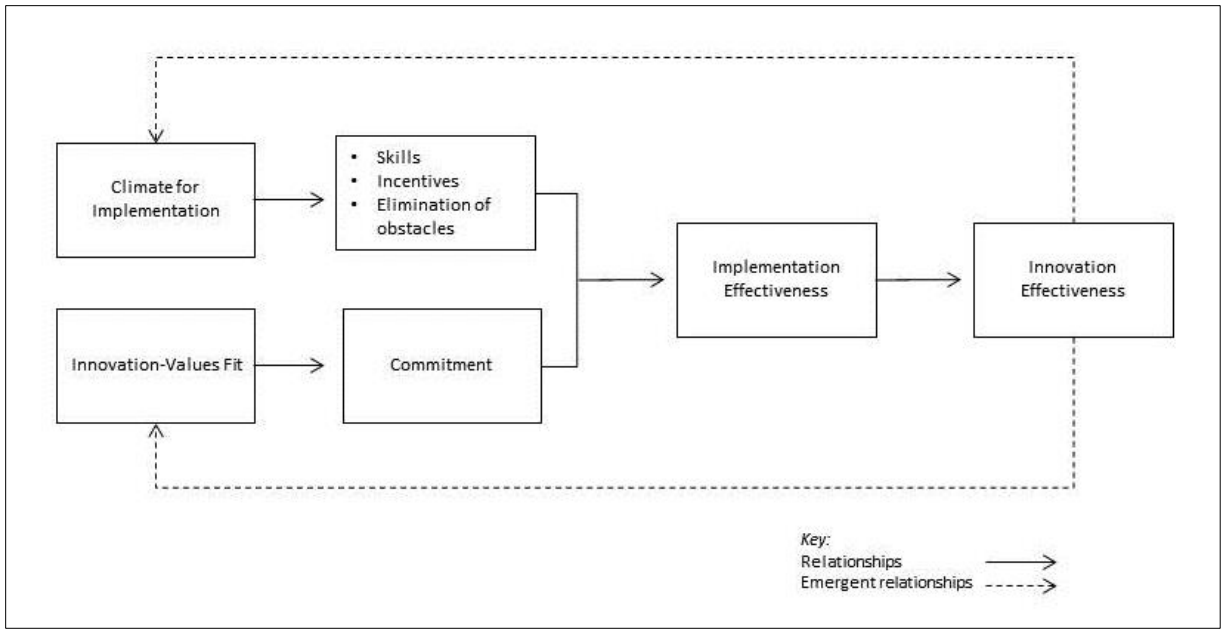

Figure 2. Determinants and consequences of implementation effectiveness (adapted from Klein and Sorra, 1996).

climate can result in that climate. For instance, an organization can create a climate for safety. A climate is self-reinforcing. The stronger an organization's climate for implementation of an innovation, the more likely employees are to implement that innovation.

Innovation-values fit is the "extent to which targeted users perceive that use of the innovation will foster (or, conversely, inhibit) the fulfillment of their values" (Klein and Sorra, 1996, p. 1063). Targeted users' commitment to using an innovation is a function of their perception of the innovation's fit with their own individual values, their group's values, and the organization's values. If the innovation is a good fit with these values, then employees internalize use and become committed and enthusiastic. If the innovation is not congruent, the employees are merely compliant and use the innovation only to avoid negative consequences.

Implementation effectiveness results when these two determinants are combined. When targeted users' perceive a strong organizational climate for implementation *and* the innovation is perceived to be congruent with their values, then the organization will obtain significant benefits from the innovation (Klein and Sorra, 1996). Effectiveness of the innovation is the organization's goal. One of the advantages of this model is its equifinality. Strong climates and strong values-fit can be achieved from different combinations of practices and procedures. Thus, researchers can focus on the cumulative

influence of organizational practices and procedures rather than attempting to identify and measure critical determinants. Another benefit to researchers is the focus on targeted users' perceptions of congruence.

However, Klein and Sorra (1996) caution researchers that innovation-values fit is a necessary but not sufficient condition for implementation effectiveness. Although the values-fit must be congruent, the targeted users must also perceive a strong organizational climate for innovation. Second, even if the values-fit is high and the climate for implementation strong, targeted users' consistent and appropriate use is not guaranteed. Third, even when implementation effectiveness is achieved, the organization may not receive all the expected benefits of the innovation.

Klein and Sorra (1996) provide several ways to use the model. First, they suggest examining the role of local managers in creating a strong implementation climate. If adoption decisions are made solely by senior leadership, local managers may not have sufficient investment in the outcome to create a strong climate. Also, local managers may delegate implementation activities to individuals without the sufficient resources and authority to create the required strong climate. Second, the authors suggest examining the role of targeted users in fostering implementation, especially in flattened hierarchies or participative organizational units. Third, Klein and Sorra ask to what extent organizations can foster a good innovative-values fit. In some organizations, targeted users' participation in adoption decisions may result in changes in their values to be more congruent with the innovation. Targeted users should be explicitly educated about the value of the innovation to the organization. Finally, targeted users may shift their values during the frequently long process of implementation; the shift can increase targeted users' understanding of the benefits to the organization, although this can be a risky strategy if there is not a good innovation-values fit.

Determinants of Implementation Effectiveness

Helfrich, Weiner, McKinney, and Minasian (2007) adapted Klein and Sorra's (1996) model to use in their comparative case studies of four cancer clinical research networks. Helfrich et al.'s model adds management support and resource availability, which are mediated by implementation policies and practices (IP&Ps). Implementation policies and practices are the building blocks for routinization (Yin, 1978). Helfrich et al. (2007) also add the influence of champions on implementation climate and show a feedback loop from implementation climate to implementation effectiveness as an emergent relationship. Their model, adapted for this research, is shown in Figure 3.

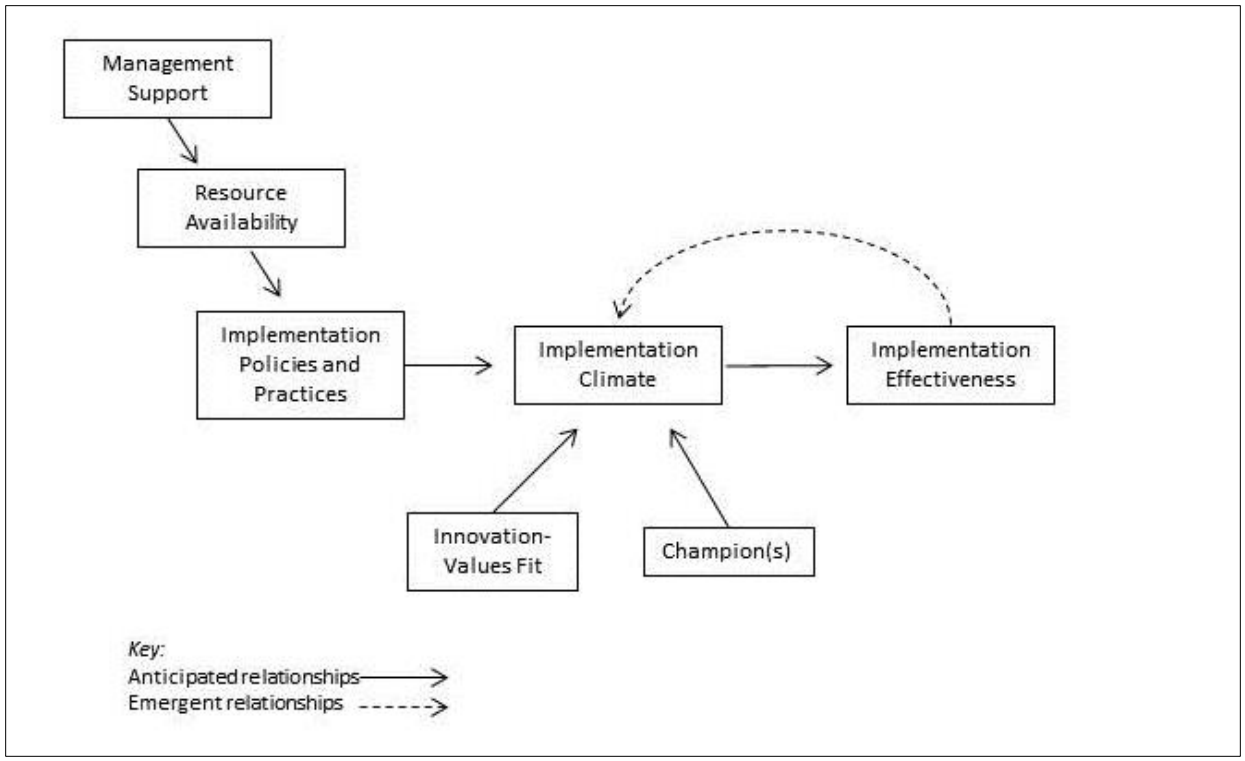

Figure 3. Conceptual framework of complex innovation implementation (adapted from Helfrich et al., 2007).

The additional terms added into this model require definition. *Management support* is managers' commitment to conduct transformation of the organization and to invest in quality IP&Ps to implement the innovation (Klein, Conn, and Sorra, 2001, p. 814). *Resource availability* is a "cushion of actual or potential resources" required to conduct implementation activities (Helfrich et al., 2007, citing Bourgeois, 1981, p. 30), which allows an organization to adapt successfully. As shown in the model, resource availability mediates the relationship between management support and IP&Ps. A c*hampion* is a "charismatic individual who throws his/her weight behind the innovation, thus overcoming the indifference or resistance that a new idea often provokes in an organization (Rogers, 2003, p. 414). *Institutional policies and practices (IP&Ps)* are the formal strategies the organization uses to put the innovation into use and the actions that follow from those strategies (Klein, Conn, and Sorra, 2001).

Helfrich et al. (2007) found that resource availability mediates the relationship between management support and IP&Ps. They also found that management is central to implementation effectiveness, and not just top-level management but also managers closer to the implementation tasks. In this research, these would be the forest supervisors and, possibly, district rangers. This finding of the centrality of management is supported by Nutt (1986), Damanpour (1991), and Van de Ven et al. (1999).

In their study, Helfrich et al. (2007) found that implementation climate was a function of innovation-values fit. Perhaps more important is that the most important source of organizational values was the organizational mission and the organization's core competencies. These sources, they found, were more important than normative values. This finding suggests that the innovation attribute of *compatibility* is key to creating a strong innovation-values fit (Rogers, 2003). Finally, Helfrich et al. (2007) argue that implementation is highly contextual, and, thus, no single prescription will be useful in ensuring implementation.

This model is still relatively simple since it suggests implementation is linear and that management can "tweak" antecedents to ensure implementation effectiveness. The next model illustrates the recursive, iterative nature of implementation.

Dynamics of Implementation

Repenning (2002) argues that innovation implementation is a complex, dynamic process with multiple feedback and feed-forward loops and interconnections. He identified three parsimonious feedback processes as key to understanding implementation: reinforcement, difference, and normative pressure. He fed these into a model using causal loop diagramming methodology (see Figure 4). He notes that the model greatly simplifies the process, leaving out many variables. The model is explained, loop by loop, in the following paragraphs.

The first feedback process is reinforcement (shown in the loop in the lower left of the figure). This loop represents targeted users' commitment (attitudes) to reach the goal of implementation. Increased commitment leads to increased efforts (behaviors), which lead to increased results. The loop's completion shows that an increase in results leads to an increase in commitment. The reinforcement loop (R1) illustrates the self-reinforcing nature of the cycle. Direct learning activities, thus, reinforce the outcomes. However, Repenning reminds us that experiences can be positive or negative. Positive experiences will increase commitment, effort, and results. Negative experiences can lead to the opposite results.

The second feedback process is diffusion (shown in the loop in the top left of the figure) (Klein and Sorra, 1996; Van de Ven and Poole, 1995). The process of observing leads to learning and reinforces norms; learning leads to increased motivation (Repenning, 2002). This loop illustrates the innovation

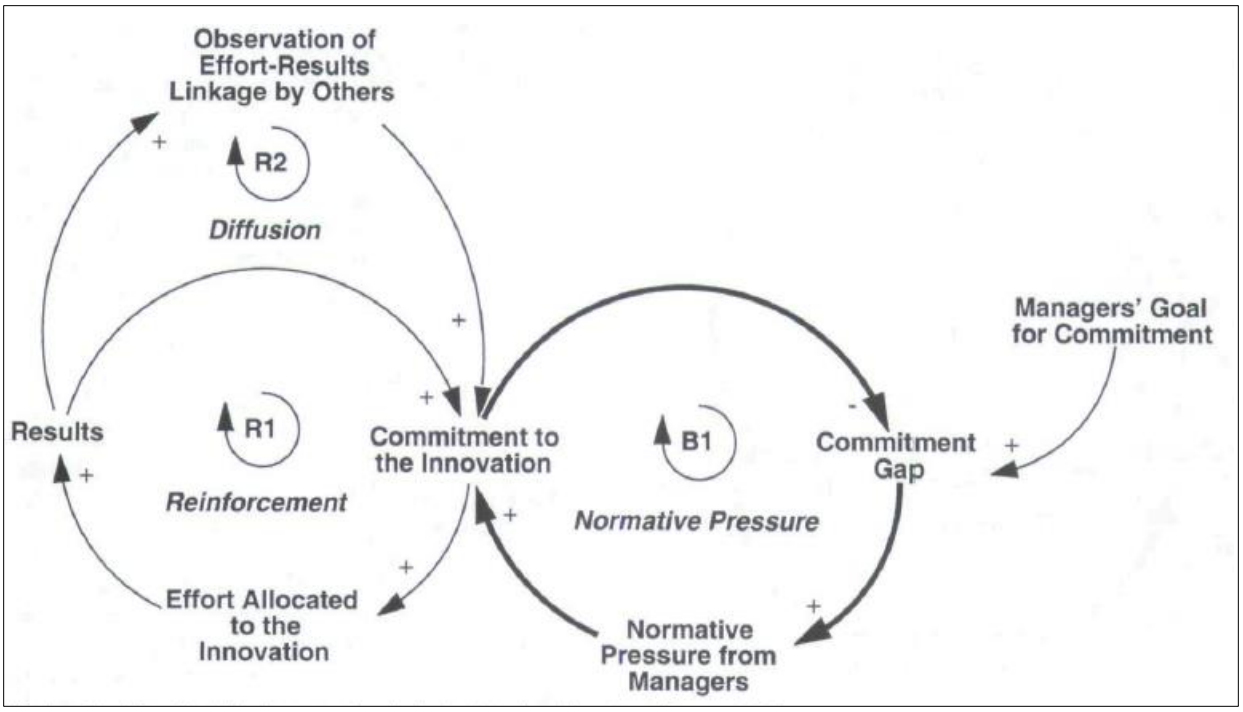

Figure 4. Dynamic model of innovation implementation (Repenning, 2002, p. 112–114). Arrows indicate the direction of causality. The signs ('+' or '-') at the arrowheads indicate the polarity of relationships: a '+' denotes that an increase in the independent variable causes the dependent variable to increase, ceteris paribus (and a decrease causes a decrease). Similarly, '–' indicates that an increase in the independent variable causes the dependent variable to decrease. The loop identifiers R1 and R2 indicate a positive (self-reinforcing) feedback. The loop identifier B1 indicates a negative (balancing) feedback loop (see Sterman, 2000).

characteristic of *observability* (Rogers, 2003). Observers can see the linkage between efforts and results, which inspires increased commitment (attitudes) toward innovation use. Observers include users who are implementing the innovation as well as targeted users who have not yet implemented the innovation. The reinforcement loop (R2) again illustrates the self-reinforcing nature of this loop. This feedback process shows how vicarious learning leads to commitment and motivation (positive or negative).

The third feedback loop is normative pressure (shown in the loop on the bottom right of the figure) (Repenning, 2002). This loop illustrates how managers can apply pressure to increase commitment which, in turn, increases results. Managers can also use this loop to identify implementation gaps when users' commitment is not commensurate with leaders' desired results, such as management targets (Van de Ven and Poole, 1995).

Although it is not shown in Figure 4, Repenning's (2002) model also includes one more loop for experts. Organizations allocate resources based on observations of results from efforts of multiple organizational units. Repenning argues that where resources are scarce, allocation of resources is coupled: allocation of resources to one area reduces allocations that can be made to another area. Where resources are abundant, allocation of resources is uncoupled: allocations can be increased to both areas.

Repenning (2002) identified three implications relevant to this research. First, the reinforcement process occurs over time. Thus, managers must be committed and patient. Anything less, Repenning argues, will lead to implementation failure. Second, managers should focus on motivation rather than results. He observes that "less aggressive goals are unequivocably better" (p. 125). In other words, if targets are set, they should be set low. "Aggressive objectives have *costs* as well as benefits" (p. 125, emphasis in original). Overly aggressive goals weaken reinforcement and diffusion processes. Finally, early results do not necessarily indicate success. In fact, managers may reduce resources based on early results when insufficient commitment has been achieved. Instead, Repenning recommends allocating resources based on the *possibility* of results.

Repenning (2002) notes that the model lacks the richness and complexity of implementation in an organizational setting. Research can provide the organizational context it lacks as well as identifying additional feedback loops and alternative formulations of feedback processes.

Another way to model implementation is using network theories, which is the subject of the next section.

Network Perspectives on Implementation

Linton's (2002) contribution to implementation research comes from his identification of the importance of social relationships. The social relationships most important to this research are:

- management buy-in (although Linton notes this may be retrospective and merely indicate confirmation bias);
- champions, who reduce employee resistance;
- training, which decreases the threat and risks of newness;
- team involvement, which introduces different skill sets;
- communication, which reduces resistance and assists with the acquisition of resources; and

- interactions with external actors, which reduces risk and increases confidence.

Social relationships are best illustrated through network models, and the best network model for complex relationships are web models (Linton, 2002). Web networks are especially useful when large numbers of actors are critical to successful implementation and there is uncertainty regarding which actors are critical path. Four aspects of web networks may be particularly useful in this research. First, web networks show *who* is involved. The diversity and strength of ties are especially important (Granovetter, 1982). The presence of many weak ties indicates that some actors have access to resources unavailable to other colleagues. Second, web networks show *why* the actors are involved; that is, it illuminates their roles and responsibilities, both formal and informal. Third, web networks can show *when* the actors are involved. The fluctuation of a tie between weak and strong may indicate a critical-path relationship. Finally, a web networks can indicate an organization's maturity. This is especially important if ossification is preventing the organization from reaching full incorporation.

Web networks are useful in complex, non-linear processes like implementation (Linton, 2002). Although they can provide too much richness for generalization, they expose the social relationships that can facilitate successful implementation and full incorporation.

Collective Processes in Implementation

The final aspect of implementation critical to this research is that of collective processes. Holahan, Aronson, Jurkat, and Schoorman (2004) studied the implementation of computer technology in science education at 69 public schools. Holahan et al. applied Klein and Sorra's (1996) model and found that the climate for implementation was a key predictor of implementation effectiveness. The antecedent for an innovative climate was organizational receptivity toward change. They found that management actions that demonstrated that change and adaptation were important and valued by the organization resulted in targeted users' perceptions that the organization was open to change. This, in turn, facilitated implementation. Holahan et al. suggest that management should focus, not on institutional practices and procedures but on creating an appropriate climate for implementation. This finding confirms Zmud and Apple's (1992) assertion that routinization is necessary but not sufficient, and that management should focus on the work and social systems for an innovation to be fully incorporated.

Choi and Chang (2009) investigated how collective processes, both employees and institutions, influence implementation effectiveness. They studied the implementation of e-government by 47

agencies of the Korean government. Their study is one of the few in the literature that reports on an analogous situation; that is, the intraorganizational dissemination and implementation of an administrative innovation within a public agency. They define *implementation efficacy* as "agency employees' collective perception of the extent to which agency members as a group are capable of implementing the innovation" (p. 247). The authors tested whether antecedents of implementation effectiveness could be identified. They were particularly interested in institutional factors that give employees the resources and opportunities for successful use of the innovation.

Choi and Chang (2009) found that management support was a strong predictor of employee acceptance. Senior management support, in particularly, increased *collective innovation acceptance*, which they defined as "employees' shared positive views regarding the innovation and their belief that it will result in favorable outcomes for themselves and the agency" (p. 24).

Routinization of an Innovation

Routinization is one of two aspects that lead to institutionalization. Routinization of an innovation occurs when (a) the innovation is subsumed in an organization's governance system and (b) overt intervention of champions or sponsors is no longer required to assure the innovation's continued use (Yin, 1978). One of the most useful, early comprehensive studies of the routinization of innovations was conducted by Yin (1978).[2] The study examined the 10–15 year life histories of innovations adopted by urban bureaucracies, such as the use of computer-assisted instruction and closed-circuit television systems in education. Data were collected from 19 primary sites and corroborated with data collected from 90 additional sites.

Routinization occurs within an organization's governance systems (Yin, 1978) as a series of three stages: improvisation, expansion, and disappearance. The point at which routinization occurs cannot be defined absolutely. Instead, routinization is identified in terms of degree. Yin categorized these degrees as marginal, moderate, and high.

Yin (1978) identified two types of organizational events critical to successful routinization of innovations: *passages*, which are "transitions from one organizational state to another," and *cycles*,

[2] Berman and McLaughlin (1977, 1978) had sharply different findings in their studies of federal organizational innovations in education. They found that innovations persisted only as long as federal funding was provided; when federal funding ended, so did use of the organizational innovation. However, a federal agency's use of transfer payments to encourage separate (local) organizations to use an innovation is a much different scenario than in the present study, in which the federal agency is seeking use within its own organization and, thus, controls its own purse strings.

which is “survival over periodic organizational events” (p. v). Of the 10 types of events he identified as critical, 4 may be relevant to this research:

- Attainment of widespread use (cycle event)
- Turnover in key personnel (cycle event)
- Internalization of training programs (passage event)
- Promotion of personnel acquainted with innovation (cycle event).

Several of Yin’s (1978) findings are relevant to this study. First, how long the innovation had been within the bureaucracy did not correspond to routinization. That is, some bureaucracies routinized innovations early in their life history while other bureaucracies were unable to achieve routinization even after a decade or more. Second, routinization was a result of internal conditions specific to the organization, such as whether the adopting individuals or teams had support from agency management and whether they had developed the skills and resources necessary for operation of the innovation. In addition, routinization was the result of a practitioner’s frequent use of the innovation, especially when that use was a part of regular, day-to-day practices central to her work and not a “special project.”

To achieve routinization, the innovation must become part of the organization’s core practices (Yin, 1978). This is achieved by either displacing and terminating old practices that the innovation replaces or by expanding the organization’s array of services. Yin found that organizations that achieved routinization through expansion of the array of services did so through formal recognition via revisions to the agency’s mandate; for example, by incorporating the innovation into the organization’s governance rules.

Innovations that were routinized received increasing support throughout their early life history (Yin, 1978). Support was a result of the innovation’s incorporation into the organization’s core practices and the practitioners’ perceptions of their ability to effectively operate the innovation. In fact, internal practitioners’ perceptions were more important than those of external evaluators. Finally, top management support was critical to successful routinization, especially support demonstrated through adopting and implementing the innovation and providing dedicated staff (as opposed to ad hoc availability) and necessary funds. Without management support, implementation failed.

Yin (1978) found that external financial and technical assistance was unrelated to the degree of routinization. External assistance is important only insofar that it is a function of meeting local needs and agendas.

Yin (1978) suggested the following strategies to promote routinization:

- Using the innovation on a daily basis, even if use requires limiting the scope of the innovation;
- Identifying concrete benefits for internal users, which may be different than the benefits to external users;
- Creating specific steps to eliminate the old ways of accomplishing those activities, if the innovation is meant to replace a previous activity;
- Expanding the innovation to its fullest logical extent to avoid perceptions the innovation is a "special project," which reduces support, if the innovation is meant to expand on current activities; and
- Recognizing there will be time lags between adoption and routinization, so an early start is preferential to reaching routinization.

Routinization can be measured through the amount of coordination, ongoing support, policies, budget, and training directed to sustained the routine use of the innovation (Zmud and Apple, 1992).

Infusion and Incorporation of an Innovation

Routinization describes how innovations are implemented into the managerial and operational aspects of an organization. The usual strategies for implementation success, including education and training and the availability of complementary assets, are all aimed at increasing routinization (Zmud and Apple, 1992). But routinization is only one piece of implementation, since managerial and operational aspects represent only one aspect of an organization. The other aspect of an organization is the work and social systems, and that is the focus of infusion. *Infusion* is the "extent to which the full potential of the innovation has been embedded within an organization's operational or managerial work systems" (p. 148). Infusion requires a succession of configuration changes, each of which incrementally builds on prior configurations and each of which creates greater interconnectedness of work flows.

Only when an innovation is fully routinized into the organization's managerial and operational aspects *and* infused into the organization's work and social systems can the organization reap the full

benefits of the innovation (Zmud and Apple, 1992). To achieve that goal, the organization must invest in *incorporation activities*, which are "directed toward embedding an adopted innovation within an organization" (p. 148). The authors measured these activities in a mixed methods study that measured both the routinization and infusion of electronic scanners, a technical innovation, in supermarket chains.

The organizational changes required for incorporation of an innovation pose a greater impact to the organization than the design changes required for the initial adoption of the innovation (Zmud and Apple, 1992). These changes must take into account the potential positive and negative consequences of incorporation. Positive consequences of incorporation include the bonding process that occurs, which has the potential to transform the innovation, the adopter, or both. Enhancements to an innovation, such as modifications or reinvention, can also bring positive consequences. However, incorporation can also result in negative consequences, including dysfunctional events that affect bonding. Dysfunctional consequences of incorporation include active or passive resistance and changes to resource allocations as well as redirection necessary to resolve technical problems with the innovation.

Zmud and Apple (1992) found that routinization and infusion increased as the organization gained experience with the innovation. Second, while it is possible to achieve high routinization without infusion, an organization cannot achieve high infusion without high routinization. Third, routinization occurs more quickly than infusion. This is because managerial and operational systems can be changed more rapidly than work and social systems. These findings suggest that organizations should focus on developing and achieving routinization in the early stages of implementation so that routinization is in place and ready while the organization is building infusion.

Zmud and Apple (1992) observe that infusion requires fabrication of a new reality. "[B]efore individuals can apply [an innovation] at a higher level of use, they must be able to envision and appreciate the new organizational reality enabled through that use" (p. 154). The task of transforming employees' perspectives about an innovation often falls to the organizational members charged with introducing and controlling the innovation. Zmud and Apple suggest these may not be the best people to help organizational members achieve the new reality. The authors challenge researchers to identify successful ways organizations can instill systems of shared beliefs regarding the value and benefits of the innovation in organizational members. For radical innovations, this task may be best entrusted to internal opinion leaders.

Zmud and Apple (1992) also call for research into complex contexts that involve multiple work units. Each work unit must explicitly or implicitly adopt and incorporate processes of routinization, but infusion can only occur when a new reality is created that stretches across organizational boundaries. The authors note the difficulty of creating a consistent, acceptable vision compliant with the overarching organizational needs since each unit has distinct environments within the larger organization.

Institutionalization

The final stage in the life-cycle of innovation is implementation, the point where the practice becomes generally habituated (May and Finch, 2009). Whereas diffusion describes the spread of an innovation, institutionalization describes the stickiness of an innovation (Colyvas and Jonsson, 2011). Material practices are what people do to perform activities and meet goals. These practices become embedded as a result of people working individually and collectively to implement those activities and goals (May and Finch, 2009). Embedding of material practices requires continuous actions over time and space. The actions must have coherence, they require cognitive participation, they must be collective, and they require reflexive monitoring. Institutionalization will be achieved when the organizational unit has a consistent, internalized, shared understanding of the innovation and has systematic, automatic routines for carrying out the innovation (May and Finch, 2009; Yin, 1978; Zmud and Apple, 1992).

Institutionalization is achieved when the practices are fully integrated into the social order of the organization (Colyvas and Jonsson, 2011). The routines and practices must be reproduced and reproducible. The practices are no longer contested, and the values required for the innovation have been integrative. The innovation, in effect, becomes the organizational norm, which in turn legitimates the innovation. This requires a close connection to organizational culture because the innovation must become “taken for granted.”

Institutionalization occurs over three stages (Berger and Luckmann, 1967; Colyvas and Jonsson, 2011). First, the innovation must be externalized, and organizational members must produce shared meanings. Second, the innovation must be objectified; that is, the commonly shared reality must become “fact.” Finally, the innovation must be internalized through socialization of organizational members.

Institutionalization can occur at multiple levels in different ways (Colyvas and Jonsson, 2011). For example, the Washington Office institutionalized stewardship contracting when it promulgated

guidance (the Forest Service Handbook). It is unclear what symbols or artifacts are sufficient to demonstrate that a field unit or a regional office has institutionalized the innovation.

Colyvas and Jonsson (2011) identified 12 propositions related to institutionalization, 7 of which are relevant to this research. First, institutionalization requires not just legitimacy but also reproduction. Neither is sufficient on its own. Second, innovations are risky and targeted users are vulnerable. The more risk involved in the innovation, the greater the need for inducement. Third, the more an innovation is reproduced, the stronger the institutionalization. Fourth, the more an innovation is integrated into the everyday activities of an organizational unit, the stronger the institutionalization. Fifth, the more varied the interpersonal, interorganizational, and intraorganizational linkages, the stronger the institutionalization. Sixth, institutionalization can be thin (shallow) or thick (deep), depending on which rules and routines it enters. Finally, institutionalization transforms the social order and the structures of the organization.

Institutionalization of an innovation can affect the diffusion of other innovations or practices. Diffusion and institutionalization can mutually reinforce each other. For example, training can enhance diffusion but it also reinforces institutionalization.

Summary of Attributes and Dissemination of Innovations

The inherent attributes of the innovation and the attributes of organizations and adopting individuals (targeted users) have been thoroughly studied since the early twentieth century. Five attributes – *relative advantage*, *compatibility*, *complexity*, *trialability*, and *observability* –can be identified in most if not all innovations. Additional attributes, such as the nuances of administrative versus technical innovations and the radicalness of the innovation may be useful to understanding why and how an innovation is disseminated. Less well defined are the attributes of organizations and individuals that affect dissemination. The effects of organizational structures on dissemination are inconsistent and highly contextual. Organizational social systems, especially organizational culture, are critical in dissemination, but what makes for a supportive organizational culture is difficult to quantify. Similarly, it is difficult to quantity the attributes of individuals in more than general terms. Thus, diffusion scholars tend to rely most heavily on the attributes of innovations although they recognize the critical importance of organizational culture and individual attributes in dissemination of innovations.

Diffusion research has primarily focused on the adoption decision, leaving the post-adoption stages of implementation through institutionalization under-theorized. It is recognized that

implementation, especially of administrative innovations, is a lengthy process that often results in failure. Initial implementation may not result in sufficient assimilation, infusion, and routinization to achieve institutionalization of the innovation. Implementation itself is a dynamic, non-linear, non-sequential, messy process. Even for the same innovation, implementation is likely to occur differently in different units of an organization, adding to the messiness and complexity. Some research traditions (e.g., political science) have largely abandoned implementation studies because of their lack of predictability, although others (e.g., education, information technology) persist in their focus. Although implementation studies may not be predictive, they do have the potential to expand our understanding of the complex dynamics at play within organizations, which can help us understand why innovative tools like stewardship contracting achieve high levels of implementation in some units but only low levels of implementation in other units.

CHAPTER 3: METHODS

This chapter describes the epistemology, methodology, and methods the researcher uses to plan and conduct this research and which the reader uses to evaluate the results (Carter and Little, 2007). The framework for this research is illustrated in Figure 5. The chapter begins by describing the epistemology, which led to selection of an interpretive case study approach to the research (Denscombe, 2007; Stake, 1995; Yin, 2009). The second section describes the case study methodology. In the third section of this chapter, the research design is presented along with details of how the tasks identified in the research proposal were completed by the investigation. A specific discussion of the methods used to complete each step and the rationale for choosing those methods is provided in the fourth section. Finally, this chapter concludes with a description of the study sites at which the case studies were carried out.

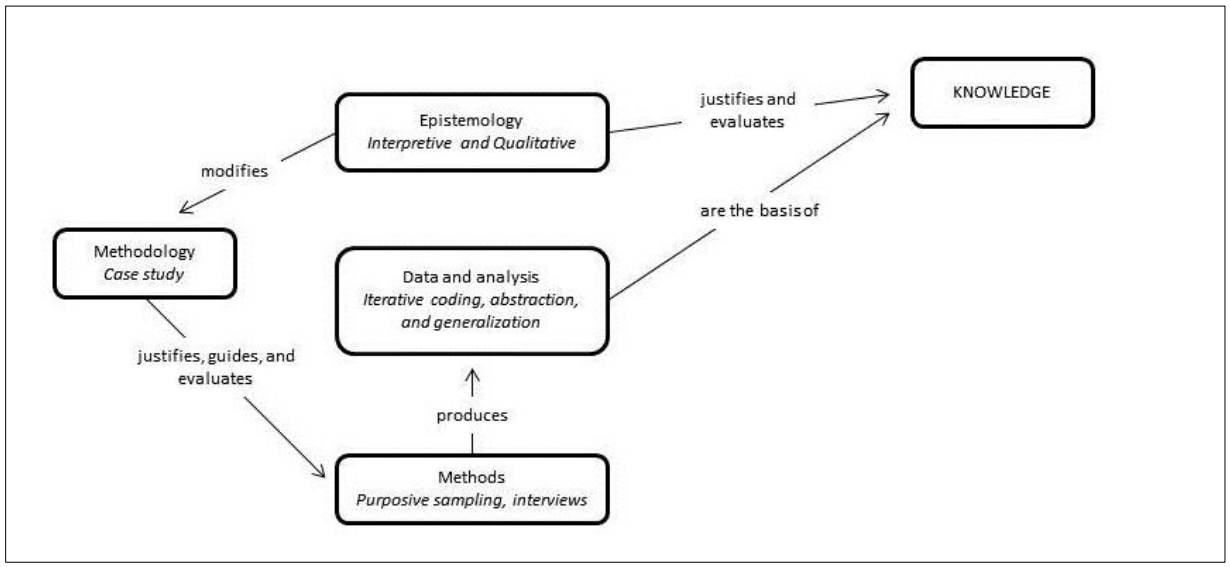

Figure 5. Framework of epistemology, methodology, and methods (adapted from Carter and Little, 2007).

Epistemology

Epistemology is "the study of the nature of knowledge and justification" (Schwandt, 2001, p. 71). It is our justification of knowledge (Carter and Little, 2007). The epistemology for this research is interpretive and qualitative.

Interpretivism

Interpretivism starts from the recognition that most or all of human knowledge of reality is gained only through social constructions, such as language, shared meanings, and artifacts (Klein and Myers, 1999). "Interpretive research does not predefine dependent and independent variables, but focuses on the complexity of human sense making as the situation emerges…; it attempts to understand phenomena through the meanings that people assign to them" (p. 69). The principles of interpretive methods and how those principles were applied in this investigation are provided in Table 2.

Table 2. Principles of interpretive methods used in this study (adapted from Klein and Myers, 1999).

Principles	**Methodological emphasis**	**In this study …**
Hermeneutic Circle	The researcher approaches the study with the belief that all human understanding is achieved by iterating between considering the interdependent meaning of parts and the whole that they form. This principle of human understanding is fundamental to all the other principles.	The researcher iterated between the separate meanings provided by participants, the individual cases, and the literature (the parts) and the theory and interpretation that emerged (the whole).
Contextualization	The researcher provides critical reflection of the social and historical background of the research setting to allow the reader to understand how the situation being investigated emerged.	The researcher provided situational context for the phenomenon by summarizing the necessity for restoration, which drove adoption of the stewardship contracting tool; the opportunities that the tool's adoption provided to field units; and the barriers and concerns identified early in the tool's implementation. The researcher situated the phenomenon as a complex, dynamic problem that necessitated an interdisciplinary, interpretive approach to uncover the multiple understandings and explanations. Theoretical context was provided by critically describing and analyzing literature on the diffusion and implementation processes that lead to institutionalization of innovations.
Interaction between the researcher and participants	The researcher documents their critical reflection on how the data were socially constructed through the interaction of the researchers and participants.	The researcher used semi-structured and conversational interviews and participant observation to enable participants to co-construct the process and co-create the meanings that emerge through a mutual dialogic construction. The researcher recognized that naming the phenomenon and calling participants' attention to it influenced the meanings and accounts participants' gave of the phenomenon.

Principles	**Methodological emphasis**	**In this study …**
Abstraction and generalization	The researcher reveals the idiographic details of their interpretation of the data through application of the hermeneutic circle and contextualization (principles 1 and 2) to result in a theory that describes the nature of human understanding and social interaction of the phenomenon.	The researcher developed theory through an iterative process that cycled between the data (both the parts and the whole), the literature, and a theory that was parsimonious, testable, and logically coherent (Eisenhardt, 1989, citing Pfeffer, 1982).
Dialogical reasoning	The researcher maintains sensitivity to possible contradictions between the theoretical preconceptions guiding the research design and the actual findings via subsequent cycles of revision.	The researcher described the dialectic tension of imposing meaning and order on the data through linear, deductive logic and allowing meanings to emerge through iterative, expansive inductive and abductive logics.
Multiple interpretations	The researcher remains sensitive to possible differences in interpretations among the participants as expressed in multiple and varied narratives of the same sequence of events.	The researcher appreciated that the understandings and interpretations provided by participants and the researcher are always partial and represent an elusive, specific moment in time. Contradictory and unique results were valued as they expose the multiplicity of interpretations that are inherent in the human condition.
Suspicion	The researcher remains sensitive to the possible biases and systematic distortions in the narratives collected from the participants.	The explicit and tacit expressions of control and resistance inherent in the systems and structures were recognized and explored along with accounts of the phenomenon. The researcher weighed a variety of possible explanations and interpretations and exposed the researcher's own positional biases and the possibilities for distortion.

An interpretivist approach understands that people make sense of their worlds based on their historical and social perspectives. To understand these perspectives, the researcher visits the participant's context and setting and invites the participant to co-construct the meaning and interpretation of the phenomenon under study. Because the researcher is a participant in the construction of meaning, the interpretation is shaped by the researcher's own experiences and background. Meaning is co-created and "enacted" through communication: words (written or oral), emphasis (paralanguage), and gestures (non-verbal) (Weick, 1979). Researchers with an interpretive epistemology appreciate the complexity of views rather than attempting to narrow the meanings to one or a few. They rely on participants to co-construct and make sense of the meanings others have about the world. Finally, an interpretive epistemology allows theory to emerge through the process of data gathering, analysis, and interpretation.

Qualitative Research

Qualitative research relies on text data (rather than numerical data) and analyzes it as text (rather than converting text phrases to numbers) with the goal of understanding the meaning of human actions (Schwandt, 2001). A qualitative approach is appropriate for complex phenomena in a natural setting for which there are multiple variables that cannot be manipulated or controlled and when the goal is a native's view and the desired outcome is an emic understanding (Creswell, 2009; Denscombe, 2007; Geertz, 1977; Lincoln and Guba, 1985; Morse, 1991; Yin, 2009).

Researchers employing a qualitative approach are interested in understanding how things occur, so they collect data from a natural setting from participants who experience the phenomenon under study (Creswell, 2009; Merriam, 1988). The focus is on the perceptions and experiences of the human participants; therefore, the goal is to understand multiple realities (Lincoln and Guba, 1985). The instrument used for data collection is the researcher. Multiple forms of data are collected, such as interviews, artifacts, and observations. Data are descriptive, idiographic, and tacit (Creswell, 2009; Lincoln and Guba, 1985). The data are collected, analyzed, and reported in words (Merriam, 1988). The process is iterative, recursive, and emergent (Bryman, 2001; Creswell, 2009). The researcher may modify the process after fieldwork begins to accommodate conditions that could not be predicted or expected beforehand. The goal of qualitative research is to create a holistic account of the participants' realities by completing a hermeneutic circle (Creswell, 2009; Lincoln and Guba, 1985; Merriam, 1988). The outcome of qualitative research is evaluated through a process of validation (Angen, 2000). The main steps of qualitative research are shown in Figure 6.

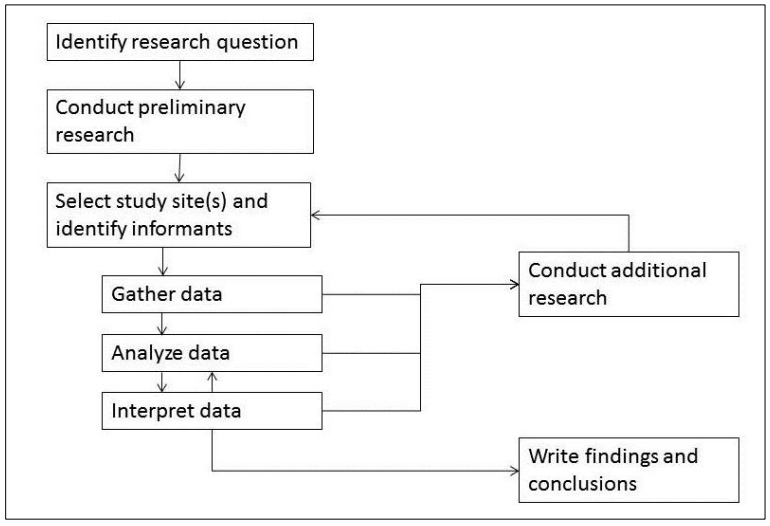

Figure 6. Main steps in qualitative research (adapted from Bryman, 2001).

The qualitative epistemology has many parallels to the interpretive paradigm. For example, the data is collected from a natural setting, the researcher is the instrument, the focus is on the participants' meanings of the phenomena, and the research process is emergent (Creswell, 2009). The goal of a qualitative epistemology is to develop a holistic account, a "complex picture of the problem or issue under study" (p. 176). The researcher seeks believability based on coherence, insight, utility, and trustworthiness.

Logic

The logic of both interpretive and qualitative approaches is inductive and abductive (Charmaz, 2008; Roulston, 2010). "Qualitative researchers build their patterns, categories, and themes from the bottom up, by organizing the data into increasingly more abstract units of information" (Creswell, 2009, p. 175.). Inductive and abductive reasoning begin with the premises. Inductive reasoning develops inferences by examining empirical data for patterns and commonalities that contribute to the generation of theory. Abductive reasoning develops inferences by examining empirical data for multiple theoretical explanations and then systematically tests those explanations against the data to identify the most plausible explanation.

Rationale for an Interpretive/Qualitative Approach

Local actors are critical to implementation of stewardship contracting because, ultimately, whether a tool succeeds or fails depends on the targeted user who is tasked with using that tool (McLaughlin, 2005). The goal was to obtain a native view of the phenomenon. "A native view captures the emotional life, the frustrations, and the tactics and strategies involved in public service" (Brower, Abolafia, and Carr, 2000, p. 389).

An interpretive, qualitative epistemology enables the researcher to gain an emic perspective by exposing the collective, multi-vocal, shared meanings and understandings of the phenomenon by the local actors directly involved and charged with the responsibility for implementation (Van de Ven and Rogers, 1988).

Methodology

Methodology is the theory of how we should proceed. It is the set of "assumptions, principles, and procedures" that guide our approach (Schwandt, 2001, p. 161). The methodology employed in this research is an interpretive case study approach (Denscombe, 2007; Stake, 1995).

Case Study Approach

A case study approach enables the researcher to explore a contemporary process or program in a natural setting through a variety of data collection procedures (Denscombe, 2007; Stake, 1995; Yin, 2009). This is especially useful in natural resources management where there are "many more variables of interest than data points" (Yin, 2009, p. 18). The variables in each case are assumed to be interactive and multi-collinear (Clarke, 2007). Cases are bounded by time and location, and the researcher focuses on a small number of cases selected because of their theoretical or substantive importance (Clarke, 2007; Stake, 1995). The *n* is small. The goal is not parsimony but rather a full and accurate understanding of the trends and meanings attributed by the participants.

The malleability of the case study approach allows it to be used by researchers using a variety of epistemological and methodological approaches (Creswell, 2009; Stake, 1995; Yin, 2009). Case studies have been used frequently to analyze what government agencies do, why they operate the way they do, and how they might become more responsible and effective (see, e.g., Wilson, 1989). An interpretive case study approach, such as that used in this research, allows the researcher to focus on the human actions that lead to the outcome being studied (Denscombe, 2007).

Case studies can be used to achieve various goals, including understanding and describing a phenomenon and generating theory (Eisenhardt, 1989; Yin, 2009). To achieve this goal, the researcher allows the theoretical issues being studied and the data being collected to continuously interact, not just during data gathering activities but throughout analysis and interpretation (Yin, 2009).

The researcher's first step when using a case study approach is to build an analytic framework that is used to select cases for study and identify factors of potential importance (Clarke, 2007). For this research, the researcher planned three phases, as shown in Figure 7. The analytic framework was built during Phase 1 through analysis of artifacts and briefing interviews and a literature review. This background information was used to design Phase 2. Analysis took place in Phase 3. Although there is no ideal number of cases, a number between four and ten usually works well (Eisenhardt, 1989).

This research used a complex embedded case study approach (Stake, 1995; Yin, 2009). An embedded design means that several analysis units are analyzed. During data collection, the primary unit of analysis was the ranger district. Each of the eight ranger districts studied represented a single case. The districts were chosen not because they were "typical" but rather to illustrate a range of stewardship contracting activities and a variety of political and socioeconomic contexts.

The pilot case study was chosen based on analysis of Forest Service artifacts indicating comparatively high levels of use of stewardship contracting in terms of numbers of contracts and

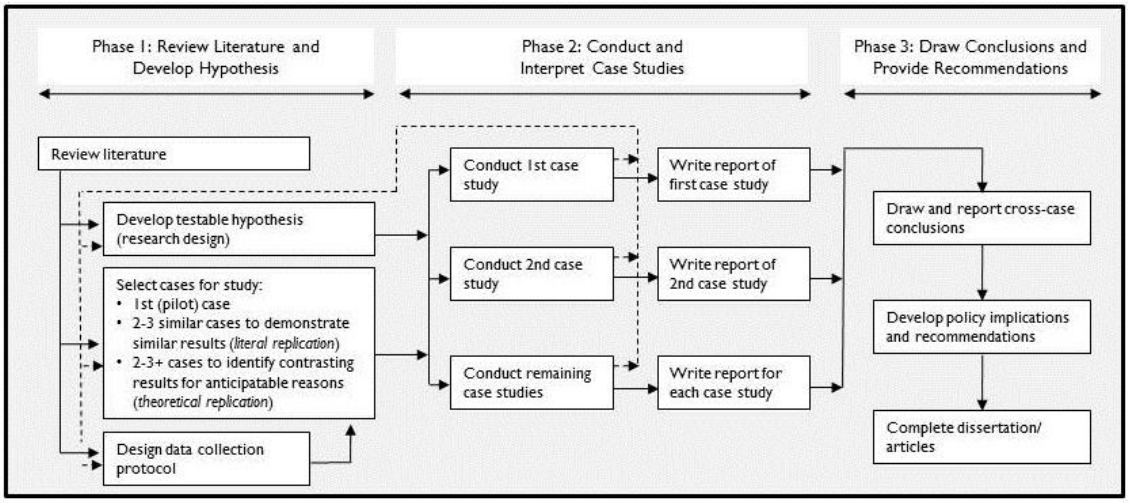

Figure 7. Three-phase case study approach (adapted from Yin, 2009).

acreage treated. Selection also was based on convenience, access, and geographic proximity, which Yin (2009) recommends for pilot cases. Preliminary understanding of the pilot case was constructed from artifact analyses and two key informants. During repeated trips to the study site, interviews were conducted with the district ranger, the forest supervisor, the natural resources staff officer, the timber and procurement contracting officers, and other key staff and specialists. Interviews also were conducted with industry participants, elected officials, representatives from conservation and environmental interests, and other external stakeholders involved in stewardship contracting at this location. Interviews with individuals representing these roles and responsibilities were sought for each subsequent case study. At the pilot case, the researcher also was a participant-observer at a public meeting convened by the Forest Service and a local community collaborative group to discuss ongoing stewardship contracting activities. Two additional case studies were conducted at districts within the same forest. Together, these three case studies comprised Study Site 1.

The five additional case studies were conducted at two national forests chosen to provide the widest possible range of geographical location, land management needs, and sociopolitical cultural variation given the researcher's limited resources. These case studies were conducted in adjacent states with a similar regional socioeconomic culture but different statewide sociopolitical cultures. The cases were selected because they represented two extremes for use of stewardship contracting. Two of the cases were at districts with high levels of use. The remaining three cases were at districts with low levels of use. The two cases with high levels of use were chosen to provide literal replication (same results for similar reasons), which Yin (2009) recommends for multiple case studies. The three cases with low levels of use were chosen to provide theoretical replication (different results for expected reasons) (Yin, 2009).

The majority of the interviews for these two sites were conducted during one 10-day field trip. Interviews included current employees as well as external stakeholders representing timber industry, conservation, and political interests. Additional interviews were conducted with current and former personnel stationed at these sites by telephone from the researcher's home base.

Description of Study Sites

Case Studies 1, 2, and 3 were conducted at a national forest located in the inland northwest U.S. Collectively, these three cases are referred to as Study Site 1. To protect participants' confidentiality, the names and precise locations of the locations of the case studies are not provided (Lofland and Taylor, 2002). The Study Site 1 forest has four ranger districts, two of which are combined for administrative purposes. The combined districts were treated as one case study. The forest is in an economically depressed area that was affected by a region-wide downturn in the timber industry in the 1980s and 1990s. The forest has significant needs for restoration driven by the potential for fire in the wildland-urban interface. The sociopolitical climate is relatively conservative and citizen participation is relatively low. The local timber industry has large, medium, and small businesses. The large businesses are national or regional in scope. The small and medium businesses are regional or local. Some parts of the timber industry rely heavily on timber products from public lands. The districts represented by Case Studies 1, 2, and 3 had received regional approval to conduct more than 20 stewardship contracts at the time research began, which placed it among the highest users of stewardship contracts in that region.[3] The site was selected for the pilot study because of the high levels of use; the site's geographic location in an area within a reasonable travel distance for the researcher, which allowed her to make several, prolonged trips to the site; and potential participants' accessibility and openness to being part of the research.

Case Studies 4 and 5 were conducted at Study Site 2, a national forest located in the northeastern U.S. The forest has two ranger districts. The forest had recently restarted its timber program after suspension of timber activities due to the listing of an endangered species. The forest's need for restoration is largely driven by wildlife habitat considerations. The sociopolitical climate is strongly progressive, and the local culture emphasizes citizen participation in governance. The timber industry is dominated by small businesses. The timber industry is willing to purchase timber products from the national forest, although industry does not rely on the national forest to meet its timber needs. The forest's location near population centers gives it moderately high public visibility. The districts

[3] Precise numbers of stewardship contracts are not provided since they would enable readers to easily identify the locations of the case studies, breaching participants' confidentiality.

represented by Case Studies 4 and 5 had received regional approval to conduct more than five stewardship contracts at the time research began, which placed it among the highest users of stewardship contracts in that region. The researcher chose this study site based on its ability to meet Yin's (2009) criterion for literal replication (that is, same results for similar reasons as identified in Case Studies 1, 2, and 3) and the researcher's ability to access this site within the limited time and funds that were available.

Case Studies 6, 7, and 8 were conducted at Study Site 3, a national forest also located in the northeastern U.S. The forest has three ranger districts. The forest has an active timber program. The forest's need for restoration is driven by wildlife habitat and recreation needs. The sociopolitical climate is conservative, and the local culture emphasizes citizen participation in governance. The local timber industry has both small and medium businesses; local contractors rely primarily on private forests for its products. The forest's location near major population centers gives it extremely high public visibility. The districts represented by Case Studies 6, 7, and 8 had received regional approval to conduct fewer than five stewardship contracts at the time fieldwork commenced, which placed it among the lowest users of stewardship contracts in that region. This study site was chosen based on its ability to meet Yin's (2009) criterion for theoretical replication (that is, different results from Case Studies 1–5 for expected reasons) and its convenience to Study Site 2, which rendered it within the researcher's access due to budgetary constraints.

Research Design

A research design operationalizes the researcher's epistemology and methodology. The specific steps and methods are chosen to best allow the researcher to achieve her goals. The design used for this research contained three phases. Specific details of the process and methods used to complete those steps are provided in the next section.

The research plan used for this study was inquiry-guided. It relied on "the dialectic interplay of theory, methods, and findings" (Mishler, 1990, p. 416). The dialectic took place when data collected suggested the need for additional theory or refinement of the research methods. All phases of the research built on earlier phases of the study, and the analysis guided the final literature review.

Phase 1: Preparation for Fieldwork

The goals for Phase 1 were to build situational and contextual understanding of the phenomenon (what Strauss and Corbin [1998] call "theoretical sensitivity") and work out the details of the field protocol. Written texts obtained from the national stewardship contracting coordinator and

one regional stewardship contracting coordinator were analyzed to assess frequencies of use across the nation. Briefing interviews with key informants were conducted to confirm what was known and unknown about the phenomenon and to collect recommendations for study sites and identify individuals at those study sites who potentially could be interviewed (Lofland and Taylor, 2002). Details of the field protocol were worked out, and approval to commence fieldwork was obtained from the researcher's university institutional review board (IRB). Copies of the IRB-approved forms are provided in Appendix C. Phase 1 concluded when the locations for the first three cases were selected.

Phase 2: Fieldwork

The primary goal for Phase 2 was to complete six to nine case studies to understand why some districts had high levels of use of stewardship contracting while others had low levels of use. A secondary goal for this phase was to complete initial analysis of the data gathered during the case studies and prepare a written description of each case. Phase 2 data gathering continued concurrently with data analysis until interviews had been completed with all the individuals identified as critical for understanding the phenomenon at the three study sites. Phase 2 included data management and first and second-cycle coding activities (Saldaña, 2012). Phase 2 concluded when data gathering, initial analysis, and an initial descriptive interpretation of the findings from the eight case studies was completed.

Phase 3: Cross-Case Analysis and Interpretation

Phase 3 analysis and interpretation began concurrently with Phase 2 data gathering. The goal for Phase 3 was to complete the data analysis and interpretation started during Phase 2, prepare a cross-case analyses of the findings, and conduct validation processes for the interpretations. Phase 3 concluded when the findings from this research were complete.

Methods

Methods are the specific "procedures, tools, and techniques" used to gather evidence (Schwandt, 2001). The specific methods used to conduct and complete this study are described in the following paragraphs.

Unit of Analysis

The interaction of the unit of analysis and the case is a constitutive element of case study research (VanWynsberghe and Khan, 2007). The unit of analysis is granular and represents a subset of

the larger phenomenon under study. The researcher adjusts the unit of analysis as the research "comes into focus" (p. 90).

The unit of analysis identified during Phase 1 was the individual ranger district, which Section 60.42C of the Forest Service Handbook (FSH) identifies as the location where stewardship contracting projects are developed (U.S. Forest Service, 2014). The district ranger is supported by contracting officers (FSH §§ 65.2, 65.21), an internal project team (FSH §61.14) and a contract administration team (FSH § 65.3). Members of these teams may be located at the ranger station or the supervisor's office or, in some instances, at "zoned" offices that support multiple forests. For this reason, data was gathered at the participant's duty station, which was frequently not the ranger station. Although district rangers described their use of stewardship contracting in terms of their district, employees located at the supervisor's office or a zoned office usually described stewardship contracting in terms of the forest rather than the district. Where data could be attributed to a specific district (such as data emerging from the interview of a district ranger), that level of analysis was carried forward. Where data could not be attributed to a specific district, the level of analysis was the forest.

Interview Guide

Before commencing fieldwork, an interview guide was prepared containing the topics and questions the researcher anticipated asking participants (Lofland and Taylor, 2002). The interview guide was tested during Phase 1 briefing interviews prior to the start of the in-depth Phase 2 informant interviews. A copy of the interview guide and other IRB-approved forms are provided in Appendix C. The interview guide was modified during field research to group topics and questions to be more meaningful to participants; to eliminate questions that did not prove fruitful; and to add additional lines of inquiry to deepen and extend understanding of the phenomenon.

Participants

Selection of participants was purposive and theoretical and designed to achieve maximum variation, or "theoretical sampling" (Creswell, 2009; Fossey et al., 2002; Miles and Huberman, 1994).

Recruitment Process

Generally, initial contact with potential participants was made through email using the text of a recruitment letter approved by the IRB. Some individuals were initially contacted by phone, which was then followed by the recruitment letter. Details of the interview, including time and location, were arranged via email. Most (63 of the 78) interviews were conducted face-to-face in the participant's

office at their duty station. Three interviews were conducted face-to-face in public locations of the participant's choice. One of those three interviews began at a restaurant and was continued at a work site. Fifteen interviews were conducted by telephone. The day after the interview, thank you notes were mailed to participants. Copies of the IRB-approved initial recruitment letter, informed consent form, and interview guide are provided in Appendix C.

For the first case study (the first ranger district), the researcher began by contacting an external stakeholder who had been identified by a key informant as having intimate knowledge of the use of stewardship contracting at that district. An in-depth briefing/semi-structured interview was conducted with the individual, during the course of which the participant was asked for recommendations of other individuals who would have intimate knowledge of the phenomenon. These recommendations were the basis for the first wave of recruitment. Additional participants were added during the case study through snowball sampling methods to achieve the range necessary to understand the expression of the phenomenon at that district and the two co-located districts. All participants were selected purposively for their knowledge and involvement or potential involvement with stewardship contracting projects.

Initial participant selection at Case Studies 4–8 was based on recommendations by the regional stewardship contracting coordinator informed by a search of the agency's employee directory and a review of the specific forests' websites. Purposive and snowball sampling techniques were used to identify additional participants for Case Studies 4–8.

Roles Recruited

Participants included forest service employees, industry representatives, and other external stakeholders. Forest Service participants in the case studies included both line and staff. Specific job roles represented in this study included forest supervisors, district rangers, natural resource/ecosystem officers, timber and procurement (AQM) contracting officers, and individuals from coordinating disciplines such as fuels, wildlife, public affairs, and regulatory compliance (i.e., NEPA). The researcher attempted to recruit individuals filling these roles for all eight case studies; however, due to vacancies and other factors outside the researcher's control, some roles could not be recruited for all cases.

Industry representatives included mill owners, procurement agents, contractors, and industry consultants. External stakeholders included representatives from non-governmental and non-profit organizations involved or interested in stewardship contracting, and local elected officials or their representatives.

Additional participants were recruited from the U.S. Forest Service Washington Office, regional and zoned offices, other national forests and ranger districts, and from other sources including former employees, agency partners, the timber industry, and collaborators.

Participant Confidentiality

To protect participants' confidentiality, the specific forests and districts that were the locations of the case studies are not revealed. Except where an individual specifically asked to be on record as the source of the information, individuals are identified only as "participant." When the individual's role as an agency employee, industry participant, or other external participant is germane to understanding her observations, information identifying her role is provided. The feminine pronoun is used to provide consistent gender-neutrality and additionally help protect all participants' confidentiality. Where a participant has identified a specific year in which an event occurred and the year could be used to identify the participant, the year has been replaced with "2xxx."

Data Gathering and Initial Analysis

Interviews were the primary data collection method supplemented with artifact analysis and participant observation. Additional briefing interviews were conducted during data gathering and data analysis (Lofland and Taylor, 2002).

Interviews

The technique most used in this research was the interview, which is one of the most important sources of information in case study research (Yin, 2009). Three types of interviews were conducted. *Briefing interviews* were used during Phase 1 to build contextual and situational understanding (Lindlof and Taylor, 2002). *Informal conversational interviews* were used during Phase 2 when a spontaneous opportunity presented itself to discuss stewardship contracting with an individual who may or may not have been the subject of a longer, formal interview (Patton, 1990). Formal *informant interviews* were conducted throughout Phase 2 for primary data collection (Fontana and Frey, 2003; Kvale, 2007; Lindlof and Taylor, 2002; Rubin and Rubin, 2005).

All interviews were semi-structured and designed to explore participants' perceptions of stewardship contracting via a series of open-ended questions (Kvale, 2007; Lofland and Taylor, 2002). Semi-structured interviews are conversational and emergent and allow the researcher to understand the participant's life-world from the participant's own perspective. The researcher's stance is subjective,

the perspective is from the participant's perception (e.g., emic), and the exchange is based on reciprocity. The questions followed the interview guide prepared at the end of Phase 1 and modified during Phase 2.

Interviews were guided by the principles of active interviewing, in which the participant actively co-constructs the emerging knowledge and the interviewer, through the "naming" of the phenomenon and the questions posed influences the outcomes (Fontana, 2002; Holstein and Gubrium, 1995; Kvale, 2007; Rubin and Rubin, 2005). Each interview was adapted to the participant's specific experiences and understanding of the phenomenon. Interviews generally began by asking participants about their experiences with stewardship contracting. Beginning this way identifies the topic of conversation and allows the participant to identify the dimensions of the topic that are important to her. This opening also allows the participant to choose the point at which the story begins (Yanow, 2003). The researcher probed for elaboration and clarification as necessary to gain detailed accounts. As the interview progressed, the researcher proffered alternative situations or interpretations to prompt discussion and reflection. Frequent paraphrasing and "repeat backs" were used to confirm understanding of the participant's accounts. In this way, interviews move beyond a description of events or experiences to become a co-constructed experience that considers both the "what" and the "how" of the phenomenon being studied.

Interviews focused on the participant's understanding of stewardship contracting and their perceptions of its use and usefulness for achieving agency and societal goals as well as the challenges and tensions that affected its use. The researcher also probed for perceptions of how the agency's organizational climate and culture affected implementation. Researchers "learn about culture by asking about ordinary events and deducing the underlying rules or definitions from these descriptions" (Rubin and Rubin, 2005, p. 29). Specific word choices and usages and narratives often contain tacit cultural assumptions. The goal of each interview was to invite the participant to reflect on their conceptual and practical understanding of how stewardship contracting was being implemented by field units and to identify potential future scenarios, especially whether continued implementation and institutionalization was likely and possible. A participant's "accounts" about stewardship contracting contain the meanings and interpretations the participant attaches to her actions, which allow the researcher to elucidate the participant's decisional premises and the sources of those premises (Harré and Secord, 1973; Tompkins and Cheney, 1983). The researcher also probed for personal experiences on which participants based their perception of stewardship contracting as desirable or undesirable. This probe produced rich understanding of the antecedents of implementation.

A total of 78 participants were interviewed over the course of the research. Of these, 53 were informant interviews. The remainder were briefing or informal conversational interviews. Most of the informant interviews were 30 to 60 minutes long. Seven interviews were between 61 and 120 minutes. Sixty-three of the interviews were conducted face-to-face. Fifteen were conducted by phone or teleconference (i.e., Skype). Nineteen participants were interviewed more than once to verify the researcher's interpretations and understanding. The list of participants by role is provided in "Roles Recruited," above.

All but six informant interviews were recorded for later transcription. Two unscheduled interviews took place when the researcher did not have access to recording equipment; three interviews took place in noisy restaurants or in the field where heavy equipment was operating and the participant's words would have been inaudible; and the researcher's equipment malfunctioned during one interview. Notes were taken during all interviews and reviewed and elaborated on immediately following the interview.

Immediately after the interview concluded or that evening, the researcher wrote "scratch notes" recording her impressions and observations of the conversation as well as completing an initial, preliminary analyses of the data gathered (Lofland and Taylor, 2002). As each set of interviews was completed, the researcher wrote brief memos synthesizing impressions of the study site and initial explanations for the why and how of stewardship contracting at that site (Lofland and Taylor, 2002). Scratch notes and memos were also used to focus the interview guide used with subsequent participants at that study site and as prompts for exploration in briefing interviews with key informants, which continued throughout the data-gathering phase.

Artifact Analysis

Artifacts were gathered prior to and during fieldwork (Phases 1 and 2). Artifacts gathered before the beginning of fieldwork were used to guide the researcher's selection of study sites and cases. Pre-fieldwork artifacts included data compiled by the national and regional stewardship contracting coordinators. The national coordinator provided an Excel spreadsheet listing the name of each project that had been approved by the regional forester, the fiscal year, the region, the forest, and the project acreage for Fiscal Years 2003–2010. This data was used to identify the regions and forests with the highest and lowest rates of use in terms of numbers of stewardship contracts and acreage treated. One regional coordinator provided all the stewardship contracting proposals that had been approved for that region for Fiscal Years 2003–2011. No other regions were able to supply similar data. The proposals was

analyzed to determine which districts in that region had the highest and lowest rates of use; the project objectives, project size (acreage), activities proposed to be conducted, and the authorities that were being used for each project; and the names of the proposing and approving line officers and the interdisciplinary team involved during the planning stage for possible recruitment. These artifacts were used to understand the extent of implementation to that point in time.

Artifacts were gathered during fieldwork to triangulate information provided by participants. Contract files for several contracts completed or in progress at the Case Study 1, 2, and 3 district offices and at the Case Study 6 district office were reviewed by the researcher to independently confirm information provided by participants about the project size and objectives, the authorities used, the names of the line officers and interdisciplinary team members, and the contractor of record.

Participant Observation

As part of the data gathering for Case Studies 1, 2, and 3, the researcher attended a joint meeting of the Forest Service and external collaborators during a field trip to that study site. The opportunity provided access to a local elected official, additional external collaborators, and a Forest Service employee who was unavailable for a formal interview. The information gathered during these informal conversational interviews was used to confirm and amplify data gathered from formal interviews conducted for those case studies.

In addition, prior to the beginning of fieldwork and through October 2013, the researcher participated in a regional team convened by the Pinchot Institute to meet the Congressional mandate for multi-party programmatic monitoring. Initial involvement as an observer evolved into full participation. Participation on the team contributed to the researcher's understanding, especially of the role external collaborators played in the development and implementation of stewardship contracting.

Data Analysis

The goal of data analysis was to categorize and winnow the large quantity of data accumulated in Phase 2 to prepare a description of the findings. Data analysis and interpretation employed interpretivist methods (Miles and Huberman, 1994; Schwandt, 2003; Wolcott, 1994).

The researcher began analysis by reviewing her notes while listening to the interview recordings shortly after each interview was completed. The researcher also listened to the recordings repeatedly during commutes to and from the study sites and during Phase 3 analysis and interpretation. Repeated listening was used to uncover tacit meanings within their accounts.

Transcripts

Transcripts allow the researcher and, later, the reader to "hear" the participant's accounts in the participant's own words and on the participant's own terms (Tompkins and Cheney, 1983). Two modes of transcription were used: naturalism and denaturalism. In naturalistic transcripts, "every utterance is transcribed in as much detail as possible; in denaturalized transcripts, "idiosyncratic elements of speech (e.g., stutters, pauses, nonverbal, involuntary vocalizations) are removed" (Oliver, Serovich, and Mason, 2005, p. 1273). Naturalized transcripts reveal the non-verbal and paralanguage codes used to coordinate conversations (Littlejohn and Foss, 2010). Non-verbal and paralanguage tools include laughter ("HHhhh"), overlapping speech ("//"), and response/non-response tokens (like "Uhhh…," um..") (Lapadat and Lindsay, 1999; Oliver, Serovich, and Mason, 2005). These signals provide insights into a participant's affect; that is, the participant's feelings or emotions. Figure 7 is an example of a naturalized transcript revealing how the participant uses laughter ("HHhhh"), response and non-response tokens ("<h", "Uhhh.."), and paralanguage ("*involved-d-d..*") to augment the meanings of the words.

Participant:	I'll do my best. … HHhhh. No promises, other than I'll do my best. Hhhh
Interviewer: contracting?	*<h That's all I ask for. So – when did you get involved with stewardship*
Participant:	Uhhh… Depends on how you define *involved-d-d…* um..stewardship contracts has been around for how long?

Figure 8. An example of a transcript using naturalized conventions.

The benefit of a naturalized transcript is that it adds contextual understanding that is lost when only words are captured on paper (Lapadat and Lindsay, 1999; Oliver, Serovich, and Mason, 2005). One drawback is that the nuances captured in naturalized transcripts may be a distraction or may not be necessary for understanding a particular phenomenon. Another drawback is that naturalized transcripts can take a transcriptionist three to four times longer to complete. Naturalized conventions are especially useful in early stages of research, when the researcher is still working out her protocol and verifying her understanding. Later in the research process, denaturalized transcripts may be sufficient.

For this research, the first 10 interviews were transcribed using naturalized methods. The conventions used for the transcripts were chosen to allow the researcher to evaluate the interviewing technique and results achieved (Lapadat and Lindsay, 1999; Oliver, Serovich, and Mason, 2005). For example, a review of the naturalized transcripts reveals a fair amount of "latching"; that is, a very rapid and smooth transition from one speaker to the other. This suggests that the researcher and participants were able to quickly develop rapport or even that the researcher was able to build a feeling of "trust"

that the researcher understood the participants. The structure evidenced by the naturalized transcript provided independent validation that participants were relatively openly sharing meanings and understandings. It also indicated co-construction of the interview. After the first 10 interviews, the remaining interviews were transcribed using denaturalized methods.

For all the transcripts, the researcher validated the accuracy and completeness of the transcript by listening to the recording while carefully reading and correcting the text. Although the majority of the transcripts used denaturalized methods, the researcher used margin notes during the validation process to indicate where and how the participant used non-word language (e.g., volume, pauses) to emphasize important points in their accounts.

Coding

The textual data was analyzed through a process of coding and extraction. Coding involves labeling text units to identify constructs or themes of interest. Extraction involves cutting-and-pasting excerpts into descriptive tables and narrative reports.

Transcripts of the interviews were analyzed using iterative first- and second-cycle methods (Saldaña, 2012). First-cycle coding was used to index the data and identify the universe of terms and ideas contained in the transcripts (Wolcott, 1994).

Second-cycle coding included grounded theory methods, which enable the researcher to develop new theory about the phenomenon being studied (Eisenhardt, 1989; Saldaña, 2012). The researcher constructed a general, abstract theory grounded in the meanings attributed by participants to get at the participant's emic points-of-view of the phenomenon under study (Charmaz, 2008; Oliver, Serovich, and Mason, 2005). Grounded theory is appropriate when the research focus is explanatory, contextual, and process oriented (Eisenhardt, 1989).

As meaningful units were identified in the transcripts, the researcher applied four-character alphanumeric identifiers to provide an audit trail. The first character signified the type of artifact from which the excerpt was extracted (e.g., "T" for transcript). The three numbers that followed were assigned sequentially, beginning with the number 1. The identifiers were attached to the excerpts as a permanent label the researcher used throughout the analysis for verification and cross-checking.

Interpretation and Evaluation

The analysis and interpretation conducted during Phase 3 was designed to unpack the meanings the participants ascribed to the phenomenon under study and to generate a substantive theory of the

phenomenon (Eisenhardt, 1989). Wolcott's (1994) three-step process of description, analysis, and interpretation was used. The researcher began by using excerpts of participants words, treating their words as "fact," to create a "thick" description (Geertz, 1977). The second step was analysis, in which the researcher systematically identified key factors and relationships within the description (Wolcott, 1994). The third step was interpretation, when the researcher drew on the description (the "facts") and the analysis to make sense of what is going on. Interpretation goes beyond the limits of what can be explained with the degree of certainty associated with analysis (Wolcott, 1994).

The goal of interpretation was to identify the conditions that participants' perceived as affecting their unit's ability to implement and institutionalize stewardship contracting. The researcher began by identifying common themes that emerged across cases. Those themes were used to build an explanatory model, to which the researcher fit the excerpts. The model and coding were iterated until a good fit was achieved.

Validation

The criteria on which this study should be evaluated are validation and the principles of interpretive field studies (Angen, 2000; Klein and Myers, 1999).These are different than the criteria used to judge quantitative studies because the purposes and procedures used are not comparable (Creswell, 2009). The word validation is used "to emphasize the way in which a judgment of the trustworthiness or goodness of a piece of research is a continuous process occurring within the community of researchers" (Angen, 2000, p. 387). Validation is a process and must be made visible. The researcher's accounts should be "compelling, powerful, and convincing" (p. 391). There must be evidence of self-reflexivity. Interpretation must be supported by sufficient evidence that the reader can determine for herself that the meanings the researcher reached are trustworthy. The results of an interpretive study should lead to a new, more generative understanding. The word validation is used "to emphasize the way in which a judgment of the trustworthiness or goodness of a piece of research is a continuous process occurring within the community of researchers" (Angen, 2000, p. 387). Validation is a process and must be made visible. The researcher's accounts should be "compelling, powerful, and convincing" (p. 391). There must be evidence of self-reflexivity. Interpretation must be supported by sufficient evidence that the reader can determine for herself that the meanings the researcher reached are trustworthy. The results of an interpretive study should lead to a new, more generative understanding.

Assessment of qualitative interpretive case studies is based on the strength of the methods used and the evidence that grounds the theory that is developed (Eisenhardt, 1989). Evidence must, on its

face, adequately support the theory. The researcher provides enough evidence of each construct that the reader can make their own assessment of the fit, and the researcher provides sufficient information to instill confidence in the reader that the theory is valid. The researcher balanced the need to provide sufficient evidence with the need for parsimony.

CHAPTER 4: RESULTS

Part 1 of this chapter describes the conditions that affect a Forest Service unit's ability to implement stewardship contracting. A concept map of the conditions is provided in Figure 9. The conditions are divided into four groups corresponding to the location where they arise.

- **Antecedent Conditions** are external or internal to the unit and were present prior to the unit's decision to initiate stewardship contracting. These conditions were identified by participants as important to their decision to implement the tool. The antecedent conditions are not necessary or sufficient for a unit to implement the tool but in all the cases examined, at least one antecedent condition was present at the units that achieved high levels of implementation.
- **Organizational Conditions** are internal to the unit and were present during the unit's initiation of stewardship contracting. Organizational conditions create a climate that can constrain or foster implementation. These conditions were not explicitly identified by participants but emerged through analysis of the data.
- **Moderating Conditions Within the Agency** are the result of policies promulgated above the level of the unit, at either the regional or national level. These conditions were identified by participants as reasons to justify their use or non-use of the tool. Like organizational conditions, these may favor or constrain a unit's ability to implement the tool.
- **Moderating Conditions Outside the Agency** are outside the unit's and agency's direct control. These conditions may favor or constrain a unit's ability to implement the tool. These conditions were identified by participants as affecting the ability of a unit or of the agency as a whole to use the tool.

Part 2 of this chapter describes the benefits achieved from using stewardship contracting by high-implementing units. These benefits were often described as "efficiencies" that were gained by the unit, the agency, and the public. The benefits also positively affect the resource. The tool's benefits are only perceived as a result of implementation. Units that implemented the tool at low levels did not identify benefits gained.

These findings are described and illustrated through the use of excerpts from interviews with participants. Excerpts are selected for their illustrative value and represent the complete range of participants at all eight units that were studied. As noted in Chapter 3, Methods, to protect participants'

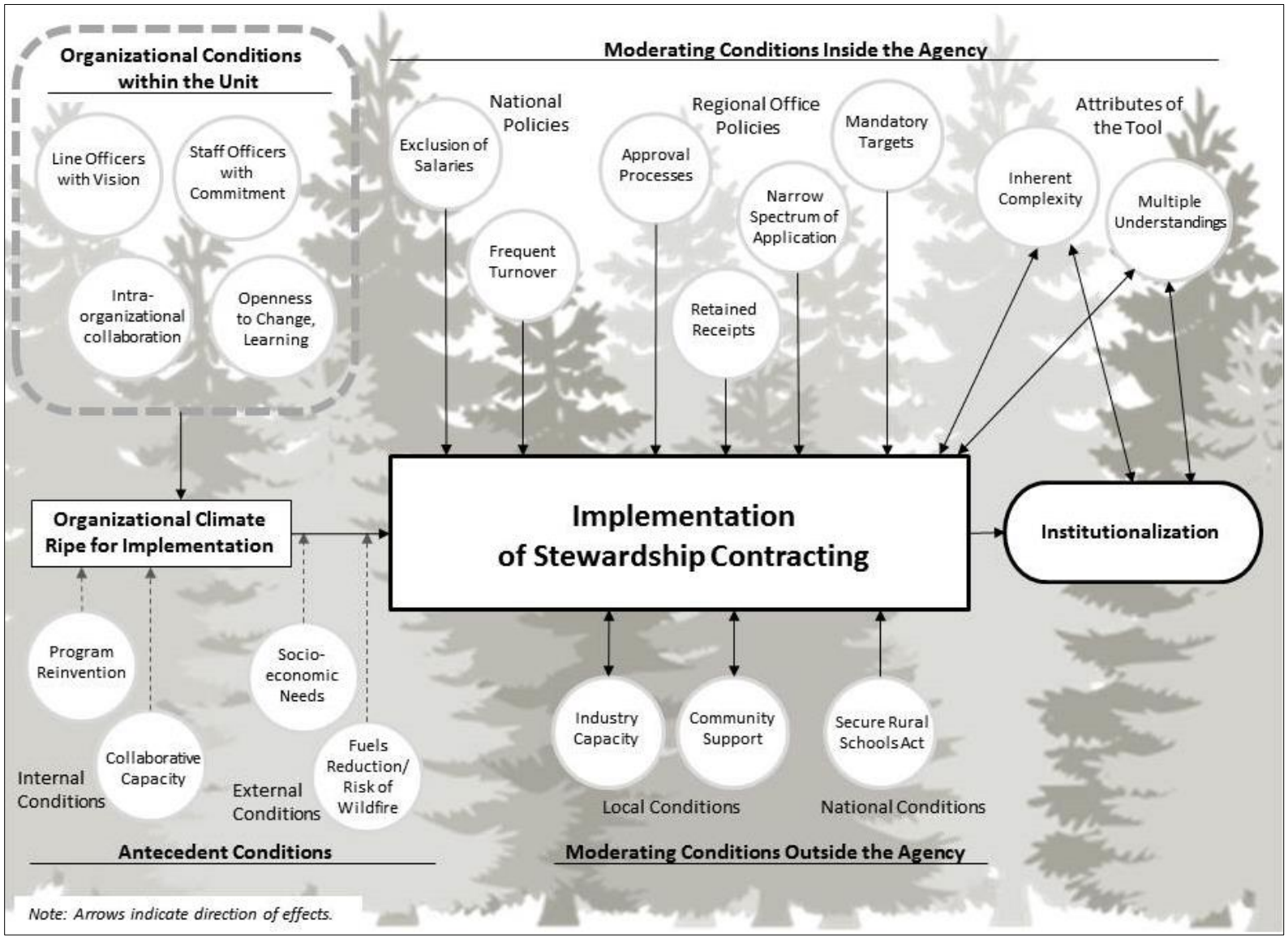

Figure 9. Concept map of conditions that affect a unit's ability to implement stewardship contracting.

confidentiality, the forests and districts where participants were located are not identified. All individuals are described as participants regardless of their role, and the feminine pronoun is used to provide consistent gender-neutrality and additionally help protect participants' confidentiality. Where a participant has identified a specific year in which an event occurred and the year could be used to identify the participant or the unit, the year has been replaced with "2xxx."

Part I: Conditions That Affect Implementation

Antecedent Conditions Compatible with the Tool Create a Climate Ripe for Change

One or more antecedent conditions compatible with the tool were identified at the units that had implemented stewardship contracting at high levels. These antecedent conditions provided a strong driver for the unit to implement the tool. Two of the antecedents originated inside the agency, and two outside the agency. Three of the four conditions served to create momentum in the local community to collaborate with the units on stewardship contracts.

Four antecedent conditions that were compatible with stewardship contracting were identified at Study Sites 1 and 2. Both of these study sites had implemented stewardship contracting at high levels.

No antecedent conditions were identified at Study Site 3, which had low levels of implementation. The low-implementing units at Study Site 3 were able to meet their needs through traditional contracting methods, so they lacked a driver to try the tool. In addition, the low-implementing units lacked a strong external push for stewardship contracting since the tool was not compatible with external collaborators' needs.

1. Socioeconomic Needs of the Local Community Motivated Implementation

Mill closures provided a compelling reason for many people, both inside and outside the agency, to begin using stewardship contracting. This condition was most pronounced at Study Site 1, where the closing of a local mill provided a catalyst for industry, environmentalists, and the agency to collaborate. Participants at the other study sites also mentioned mill closures and industry downturns as a catalyst for many forests to begin using stewardship contracting. In Excerpt 1.1, a participant in the northeast U.S. describes her understanding of how mill closures in many Western communities triggered the agency to begin using stewardship contracting.

Excerpt 1.1

My recollection … at that time, the [names Western forest] was eking by a little bit of program,

> but the [names another Western forest] was completely shut down, and, and it was just… tumbling out into communities, and all that… stuff was going on. So… and mills closing and… So, we didn't have that here as one of our impetus ... [T11]

The participants at Study Site 1 had a shared narrative about how the closing of a large locally owned mill, along with the risk of wildfire in the WUI, triggered these units to try stewardship contracting.[4] Even more remarkable is that participants who arrived at the study site long *after* the initiating events occurred also knew and shared this story, showing how the mill's closing became not only an important way to explain how stewardship contracting got its foothold but also demonstrating the participants' shared beliefs and values regarding their community.

In Excerpt 1.2, an external participant describes how the shutdown of a local paper mill where she lived previously affected the entire community. Her conclusion that human lives must take precedence when jobs and environmental concerns are in conflict resulted in her support for stewardship contracting because it would provide economic stability for her local community.

Excerpt 1.2

> … They shut the paper mill down, … And I looked at the community and the devastation it caused? My [spouse is] a teacher. You can see it in the kids. You know what happens when dad loses his job? And all those kinds of things? And I thought, I'm not going to let that happen again on my watch, if I can do it. … [T110]

In Excerpt 1.3, a Forest Service participant says that she has always lived in a "small logger town" where the community depends for jobs on timber extracted from both private and public lands. She describes the pathos of having people in the local community come to her, asking for work. Like the participant quoted in the previous excerpt, this participant also views stewardship contracting as a way to provide economic stability for her local community. But she views stewardship contracting as a win-win opportunity to create local jobs *and* improve forest health.

Excerpt 1.3

> I've been in a small logger town forever. And to have people be so poor, and they come to you

[4] An excerpt of the narrative is not included here because it contains identifying information that would breach confidentiality. However, the gist of the story is that a local family had to close one of its mills, laying off several hundred employees. The closure was blamed on a local environmentalist, who had often filed appeals and litigation to halt timber sales on the forest. The environmentalist, who lived in the same town as the shuttered mill, received death threats. The mill owner, recognizing that her other mills could also meet the same fate, invited the environmentalist and other industry and environmental representatives to meet to discuss a path forward. The mill owner suggested they form a collaborative group and begin working with the Forest Service to initiate a pilot stewardship contract. The rest, as they say, is history. This location has achieved one of the highest levels of implementation in the country.

> and beg you for work. People do that here. They beg me for jobs. For work. And it just breaks your heart. And if we can put people to work, and – and – get more resource, and make the forest healthy, -- [T201]

In Excerpt 1.4, an industry participant describes the importance of a federal agency like the Forest Service to a local economy that is largely dependent on that agency's activities. She believes that the agency should increase its contracting activities even more during a recession to offset loss of jobs in other sectors. This participant has weathered many recessions over her long career and believed that stewardship contracting provided an opportunity to level out the peaks and valleys inherent in the timber industry. However, she expressed concern that local use of the tool was being adversely affected by changes made at the regional and national levels, as discussed in more detail for Conditions 9 through 16.

Excerpt 1.4

> It's very difficult to make a living when you're in recessionary times if there's no governmental work. [T113]

Downturns in the timber industry do not just affect jobs in the private sector. The Forest Service also is adversely affected. In Excerpt 1.5, a participant describes how, on more than one prior duty station, she went through reduction-in-force actions when the forest curtailed timber activities. She mentions that her family was able to move to another forest. Her departure allowed another employee on that forest to avoid a layoff and the attendant consequences.

Excerpt 1.5

> [W]e were going through reduction in force, where about 60% of the work force was reduced over about five years' time. It does affect you. It's… I was lucky. I was able to, my [partner] and I … we're able to pick up stakes. We weren't committed to any, you know, living in any one place for the rest of our lives, so we were able to, like you say, dodge the bullet, and pick up stakes. And also, not to be too altruistic-sounding, but it helped other people who weren't as mobile as we were. So we raised our hands a couple a times and took transfers… [T388]

Participants who had lived experience with the socioeconomic effects of timber industry downturns and threatened and endangered species (TES) issues were keenly aware of the potential for negative socioeconomic effects in the local community. All these participants were strongly supportive of stewardship contracting as a means to provide economic stability. Many participants at Study Sites 1 and 2, the two study sites with high levels of implementation of stewardship contracting, said they saw stewardship contracting as a means to avoid adverse socioeconomic effects to the local community.

None of the participants at Study Site 3, which had low levels of implementation, discussed similar prior lived experience or expressed concerns about socioeconomic effects in the local community. However, Study Site 3 had not been significantly affected by timber industry downturns widely experienced throughout the West, so participants there may have been insulated from these issues. In any case, the desire to avoid adverse socioeconomic effects to the local community was an antecedent condition that drove implementation of stewardship contracting at two of the three study sites. It seems likely that avoidance of adverse socioeconomic effects may drive implementation of stewardship contracting at other units as well.

2. Need for Fuels Reduction to Decrease Risk of Catastrophic Wildfire Motivated Implementation

Stewardship contracting provides a means to reduce excess fuels which, in turn, reduces the risk of catastrophic wildfire. Concerns about fuels loading and wildfire were widespread among the participants, and many Forest Service employees identified stewardship contracting as an opportunity to reduce the fuels in the wildland-urban interface. In Excerpt 2.1, a participant says that, in addition to reducing the possibility of a catastrophic wildfire, stewardship contracting also provided a means for several disciplines in her unit to meet their objectives. Thus, stewardship contracting was a means to achieve positive outcomes and to avoid negative outcomes.

Excerpt 2.1

> The stewardship contracting authority came along, and … it met a lot of people's objectives, and yet it was also something that was pretty important. And… recognizing… that if we didn't get started, we were going to up the probability or possibility of some catastrophic impacts to folks that bordered us… [T309]

In Excerpt 2.2, another participant says the tool reduces fire risk and helps her unit achieve timber targets. Combining multiple objectives is a more efficient use of taxpayer dollars.

Excerpt 2.2

> [The timber folks] get timber target, … and fuels, … – this is – this is all fuel money that [fuels folks] would have spent anyway, in order to – prevent catastrophic fire. [T200]

Stewardship contracting enables units to achieve multiple objectives and be proactive rather than reactive. In Excerpt 2.3, a participant says the tool reduces fire risk and treats the forest at a lower cost than using traditional mechanisms.

Excerpt 2.3

> We can be proactive and spend up to [$2-3 thousand less] an acre for treatments, and be proactive about it, and then we don't have the fire problem. [T188]

In Excerpt 2.4, a participant describes how she internalized the experience she gained from an assignment on a forest that had experienced catastrophic fire. She returned to her permanent duty station determined to take whatever actions available to avoid a similar experience on her unit. Stewardship contracting provided a means to reduce the risk of a catastrophic fire and, at the same time, help her unit achieve their other goals.

Excerpt 2.4

> What happens when you're in a fire forest, when you're a forest that burns every year, and you have catastrophic things happen to you, and the public, and then when some of your firefighters burn up, and then you're sued personally, then that twists your brain a little bit. … [T196]

The Forest Service participants at Study Site 1 who had worked under the previous supervisor said their supervisor's that individual's experience with catastrophic wildfire at her previous duty station was a significant factor in her determination to use stewardship contracting at their units. When the supervisor arrived at her new forest, she found they had already begun using stewardship contracting to reduce fuels loading in the wildland-urban interface. In Excerpt 2.5, the participant says one reason the new supervisor supported implementation was that the tool would allow her forest to reduce the potential for wildfire.

Excerpt 2.5

> [The supervisor] had endured a large fire there in [names place], and so … she saw … what those people went through… and … with their houses burning… and the significant event that the [] fire was, so she had that. She brought that here with her, in her mindset. And so … I think she came here – and you'd have to ask her – but she probably came here with some objectives of that nature. And when she came here and found out we were started [with stewardship contracting] and on our way- So she was very encouraging… [T307]

Stewardship contracting also allows units to achieve landscape-scale objectives by incorporating multiple needs in one project. In Excerpt 2.6, the participant says the tool allows her unit to reduce wildfire risks and encourages the separate disciplines to work together to achieve mutual goals.

Excerpt 2.6

> They [the fuels specialists] come … and say, 'Please find me ways to clean up all this mess from logging and to reduce fuels on the forest so we won't have catastrophic fires!' [T188]

External participants interviewed at Study Site 1 also mentioned wildfire potential as an important reason to support the Forest Service's use of stewardship contracting. In Excerpt 2.7, an external participant describes how citizens in the local community are aware of the risks wildfire poses to their homes and businesses. In Excerpt 2.8, an industry participant compares the activities on her local forest to other forests in and outside the region and, beyond that, to other agencies. This participant, like many of the participants from industry and environmental interests, compares local Forest Service management strategies to those used on other forests and even by other agencies.

Excerpt 2.7

External Participant: We … got that energy built up in the communities too… with the community wildfire protection plans, and … [and we had local folks] buy into those community wildfire protection plans… [T311]

Excerpt 2.8

Industry Participant: And - if you look at – at Region 1, … and – you just go back to the Bitterroot fires – and even prior to that – but if you look at the – let's say, from 2000 on, they didn't do any type of restoration work of any sort, while the Montana DNRC did a tremendous amount, um… those areas have been – you know, replanted, refurbished, they've been able to do streamside restoration work, in – the small amount of land, you know, compared to the rest of that fire…that the state foresters had done a better job. [T318]

Stewardship contracting enabled the three units in Study Site 1 to reduce fuels and the risk of wildfire in the wildland-urban interface (WUI) and to pool resources to accomplish multiple goals more efficiently and at less cost to the government. Although this antecedent condition was strongest at Study Site 1, other participants interviewed during the course of this research described similar rationales for using stewardship contracting at their current or previous duty stations.

3. Development of Collaborative Capacity Encouraged Implementation

The third antecedent condition identified was the development of the capacity for collaboration at Study Site 2. Although collaboration is not explicitly required by the authorizing legislation, national guidance requires units to develop stewardship contracts in collaboration with the local community. Study Site 2 had recently completed a forest planning process in which they built strong collaborative capacity internally and had realized the benefits of thoroughly engaging their public. At the same time, they were rebuilding three program areas central to stewardship contracting: timber, wildlife, and

vegetation management. (The reinvention of these programs is a separate antecedent.) Engagement of the community was a good fit with the local culture and with the management approach at the study site.

The participants at Study Site 2 provided a shared narrative to explain and provide justification for their initiation of stewardship contracting. In Excerpt 3.1, the participant says that their partners were "ready to engage." This participant said that, at the time the planning process was conducted, her forest had an "open management process," which likely contributed to the unit's ability to build the collaborative capacity.

Excerpt 3.1

> Great thing about how stewardship contracting developed – by the time we had made decisions on early [plans], we had partners, organizations ready to engage in implementing the proposed action. We had a very open, process management in place at the time. [T389]

In Excerpt 3.2, the participant describes stewardship contracting as a "logical" way to continue the collaboration and two-way communication her unit had developed during the forest planning process.

Excerpt 3.2

> [T]hat is really the, the foundation of how we talk and communicate with the public and how they have the process or the ability to … let us know what they'd like to see on, on their public lands here. So with that, you know very um… communicative or very community-based culture tied in with uh how we wanted to do business… you know, the stewardship contract was a-, contracting was a logical approach because it had, you know, goods for services and an opportunity to engage our neighbors here, communities, in this work in their backyard. [T356]

Finally, in Excerpt 3.3, the participant compares her forest's capacity for collaboration to other forests, suggesting that the collaborative culture her forest has achieved is not as "common" on other forests. She ends by observing that stewardship contracting is a "natural fit" for Study Site 2.

Excerpt 3.3

> But, you know, just thinking back on the factors that were present … in the past … that I know about… over here they expect collaboration. And so, I think that that's allowed us to do some… some things… levels of work that weren't as common in other forests… collaboration and, and working together working across landscape boundaries before other forests got, really got, up the steam to … to really start doing that … they were doing that here. And um, so… I think stewardship contracting was just a natural fit … for that atmosphere. [T340]

The intensely collaborative forest planning process fostered a capacity for and atmosphere of collaboration with the community. As a result, the forest had partners ready and willing to engage when it began implementing stewardship contracting. Study Site 2 was the only place where this antecedent condition was identified; however, it seems likely that other forests who have built a similar capacity for collaboration also may have found that stewardship contracting was a good fit.

4. Reinvention of a Timber Program Provided an Opportunity for Implementation

The fourth antecedent condition identified was the temporary halt to the timber program at Study Site 2. Restarting and restaffing the program provided an opportunity for reinvention. This condition was wholly internal to the Forest Service. The timber program at this study site had been suspended temporarily in connection with a TES concern. When the timber program was restarted, the forest was able to add new approaches to its timber management activities. Stewardship contracting offered an alternative to business as usual. In Excerpt 4.1, the participant describes how the unit reinvented the timber program to incorporate stewardship contracting.

Excerpt 4.1

> One of the reasons why we have gotten so involved in stewardship contracting was because we didn't have a program for a while because we had pretty much stopped everything when [species name] got listed … so it [the timber program] pretty much ground down to zero a few years ago. And the program is building itself back up. So we're at a stop point … so we could reconstruct it any way… you know we wanted to. [T340]

The participant in Excerpt 4.2 echoes the language used by other participants at this study site, saying the program "ground down to nothing." The repetition of this turn of phrase shows how staff at this forest have built a shared narrative explaining their use of stewardship contracting. In Excerpt 4.2, the participant observes that because her forest is small, they will never have a large timber program. This smallness may be a factor in their ability to reinvent how they managed their program, which in turn allowed them to begin using stewardship contracting.

Excerpt 4.2

> [W]e didn't have a timber program at all. … I think it was about 2xxx where we ground down to nothing. … We're never gonna have a big, we don't have a big forest, so we're never gonna have a huge timber program here. … [T353]

In Excerpt 4.3, the participant describes the sequence of events that resulted in a climate suitable for the initiation of stewardship contracting. The timber program stand-down resulted in a loss

of both staff and resources in three programs: wildlife, vegetation, and timber management. Bringing in new staff and redesigning the program allowed the forest to transform its organizational climate in line with the supervisor's vision. The new climate also incorporated the organization's expanded collaborative capacity (Condition 3), which had been built during the forest planning process.

Excerpt 4.3

> [W]e were pretty much at parade rest in terms of our, our veg management and our timber program. … [After the new forest plan was] revised and approved … … that's when we started to say, okay we're, we're back in business, … let's look at the, you know, the breadth of our programs, and let's look where we have opportunities, and the nature of what we were putting into place with the revision is a much, was a much more … community or collaborative approach.
>
> ... We started to rebuild our programs, particularly the wildlife and vegetation programs that were, you know, hinge on, on, uh… the management of, of vegetation… uh… to achieve their goals, we, we had to ramp up. And that included not only staffing that we lost over that *x*-year period that we were at parade rest … at the same time build, build our budget-- so that we could deliver. So that's why we… we thought that stewardship contracting would fit in nicely…uh, with our efforts here. It gives us another tool in our toolbox to… um…work with the public and, and also, uh, implement our forest plan. You know the management on the ground. [T356]

It is interesting to note the similarities in wording and tone used by all three participants. Employees at this study site have created a shared narrative that explains and justifies their use of stewardship contracting. That narrative is embraced not only by participants who were present during these events but also by participants who arrived several years after the program's reinvention.

The restart and reinvention of the timber management program was an antecedent condition that enabled Study Site 2 to implement stewardship contracting. This condition was not identified at the other two study sites, although Study Site 3 was also affected by the same TES concern. It is unclear why the timber program at Study Site 3 was not halted. It may be that the TES concern was more localized at Study Site 3, affecting only a portion of that forest, as opposed to the whole forest as was the case at Study Site 2.

Summary of Antecedent Conditions

The theme of antecedent conditions emerged at Study Sites 1 and 2, both of which had implemented stewardship contracting at high levels. The four antecedent conditions identified were socioeconomic needs of the local community, need for fuels reduction to decrease the risk of catastrophic wildfire, development of collaborative capacity, and reinvention of a timber program. The first two conditions were most prominent at Study Site 1, although participants at Study Site 2 also

identified concerns about socioeconomic needs. The last two conditions were identified only at Study Site 2. No antecedent conditions that were compatible with the use of stewardship contracting were identified at Study Site 3, which has low levels of implementation of the tool.

Organizational Conditions Compatible with the Tool Create a Climate Ripe for Change

Organizational conditions combine to create an environment that fosters or constrains implementation. Organizational conditions that affect use of the tool include line officers that create a supportive climate and encourage use of the tool; committed staff officers; openness to learning and change; and intraorganizational collaboration. These conditions were strongest at Study Sites 1 and 2. Both of these study sites had implemented stewardship contracting at high levels. Weaker levels of these conditions were identified at Study Site 3, which had implemented the tool at low levels.

5. Line Officers Create a Climate for Implementation

Stewardship contracting flourishes when there is a climate compatible with implementation. At all three study sites, the current and previous supervisors supported stewardship contracting and most or all of the rangers also supported use of the tool. However, mere support is not enough to trigger high levels of implementation. At the high-implementing units, the supervisor was perceived by employees as a strong proponent of stewardship contracting, whereas at the low-implementing units, the supervisor was not perceived to be a strong proponent.

In Excerpt 5.1, a participant links the adoption of stewardship contracting to her forest supervisor's vision, above all, although the entire forest leadership team was also supportive. Among the supervisor's reasons were the tool's good fit with the unit's organizational climate and their landscape-level approach as well as with the local community's preferences for collaboration. (The ability to work at the landscape-level is one of the benefits of using stewardship contracting and is described in Part 2 of this chapter.)

Excerpt 5.1

Int: Whose idea was it to get it started, to put together this team? [W]as that your *supervisor?*

Yes, the for-, well, the forest leadership team: the district rangers, the staff officers, and the forest supervisor.

Int: Why is it that you decided you needed this?

Well, the forest supervisor at the time was… was a real proponent of working with the public. … I think she saw how [this local community] operates under this, you know, sharing, working across lines--community involvement… and thought it was a… would be a very good fit for us.

And… also I, I think… you know, selfishly… I think we saw, and she saw, and we likewise saw, uh…

> a niche for us on [this forest]. You know we're not a big player in the region. We're not big widget producers. We're a little tiny forest in the hinterlands …. And… you know, we could raise our visibility and our… stature… by being successful in this. And… I think it, you know, it worked for us 'cause, I mean we actually had the Washington Office team that was looking at how to, you know, do not only stewardship work but this whole landscape approach—to management. … So it was really, you know, the vision of [the supervisor] …combined with the culture and how things operate here that … It was a real, a good fit—we thought. So it was- worth our investment. [T362]

Line officers who strongly encourage the use of stewardship contracting help maintain high levels of use. In Excerpt 5.2, a participant on a different forest emphasizes that the high levels of implementation were the result of the supervisor's encouragement. She echoes Excerpt 5.1 in noting that all the rangers that were present on her forest at that time were proponents.

Excerpt 5.2

> [T]his forest is probably one of the fores– like I said, one of the forests that's really engaged, and that has a lot to do with [the supervisor]. And the rangers we had at the time. They were both – all of them – were proponents of the program. [T77]

Requiring staff to use the tool can tip the balance toward implementation. In Excerpt 5.3, a participant describes how, at her previous duty station, she was given the option of using the tool and chose not to. In contrast, at her new duty station, she was told that she would be using it. Because it was required, she learned how to make the tool work for her "wobbly" program. She is now a strong proponent of the tool.

Excerpt 5.3

> You know I dismissed, earlier in my career, I dismissed stewardship. I didn't want to be bothered with it. I didn't have to do it. [When I arrived,] my boss, the forest supervisor, said "You're doing it."
>
> Uh, on this forest, it [the mandate] really came from the forest supervisor. [She] … was big on stewardship. And I remember a conversation with her when I was first here. She said, "… I want to do 100% stewardship." And I thought, oh jeez, don't mess up this program. It's just barely, it's wobbly as it is, you know. … [B]ut that was her thought. It was a grand scheme … [T385]

External participants also recognize the importance of the supervisor and rangers to implementation of stewardship contracting. In Excerpt 5.4, an external participant ascribes her local forest's high levels of use to the supervisor in place at the time, who she describes as a "pioneer."

Excerpt 5.4

> External Participant: Well we were able to do a lot because – [the supervisor] wanted to … –

> [She's] very much a – a pioneer when it came to trying new things– ... [T166]

Supervisors recognize that using stewardship contracting has an opportunity cost. They must balance their desire to encourage use of the tool with other needs and resource availability. In Excerpt 5.5, the participant explained that her supervisor did not push stewardship contracting because the unit had higher priorities. The participant acknowledges that when her unit used a stewardship contract, they were satisfied with the results. But because her unit is already at its limits, the supervisor has let them stay with the familiar tools instead of pushing them to move forward with more stewardship contracts. As long as stewardship contracting is perceived as out of the ordinary course of business for the implementing unit, employees will continue to resist its use.

Excerpt 5.5

> … [I]t just probably hasn't become a priority in, in a, in a world of many priorities. … [We] have a timber organization that's barely surviving. You know, … we've… reorganized, reshaped, um… and we're going to do it again in the next couple years. [The supervisor tries] not to give them one more thing to, you know… 'I got you another great priority here.' Uh…
>
> Well they, you know, they would tell you, you know, [the supervisor] sing[s] the song about stewardship, because … when we've done it, … and we've found the time to do it, we've gotten some great work done on the, on the forest …. [T21/22]

The agency climate is changing in response to external pressures and internal hiring decisions. In Excerpt 5.6, a participant describes how hiring practices have changed the agency's culture.

Excerpt 5.6

> [W]hen I became a Ranger, I had to change because I couldn't… I couldn't expect myself to get things done. I had to hold other people accountable, but I had to be more willing to be flexible and, and, you know, deal with the surprises that were going to come out of here every day. … But, um, so… so that was a kind of interesting transition. [T348]

The agency's new leadership brings a diversity of experience and, thus, may be more open to change than in the past. However, this participant also acknowledges that the metamorphosis has created tensions. In stewardship contracting, this tension may be expressed as resistance to using the tool, as described in Condition 9. The participant quoted in Excerpt 5.6 was at a unit with high levels of implementation.

A climate that supports stewardship contracting is built not just locally, by the supervisor and the district rangers, but on up through the vertical chain of command to the regional office and the

Washington Office, as illustrated in Excerpt 5.7. This participant was at a unit with high levels of implementation.

Excerpt 5.7

> I think you're … uncovering in these questions some of the cultural barriers – that we might have, as an agency, about why it works in some places, and why… why not others… Support up and down the line has to be there, too. I mean, you do take some risks in doing this, and it is costly, and…you make yourself vulnerable, so it's very important that not just the forest supervisor wants to do that, but – the ranger, obviously, and – clear up the line… [T301]

Leadership must demonstrate the benefit and value of stewardship contracting, not only inside the unit but also outward to the local community. In Excerpt 5.8, a participant observes that both her unit and the local community were equally unconvinced that the tool had value. Her unit had relatively low levels of implementation.

Excerpt 5.8

> I think part of that is that whole cultural… how things, how people use new tools, how do they see the value of new tools. [W]e just had a long meeting about, you know, the, the financial, um, side of this thing, and what it may or may not mean to us …
>
> But the whole idea of the benefit and the benefit from the public's understanding of how stewardship could be useful, I think we're still, you know, some of that still has to be proven to people… uh, relative to change internally… and, and maybe as important to some of our external partners … [T10]

The climate for implementation should persist beyond any individual's tenure. At several high-implementing units, the supervisor and the ranger who helped the unit initiate stewardship contracting and achieve high levels had since moved to new duty stations. New supervisors and rangers had joined the unit and were able to maintain the supportive climate created by their predecessors. In Excerpt 5.9, a participant describes the importance of creating an organizational climate that would ensure support for stewardship contracting to persist regardless of who occupied the leadership position. This individual recognizes that the public builds relationships with the agency as much as with individuals. If a climate persists, then those relationships can carry forward, regardless of any changes in personnel.

Excerpt 5.9

> The continuity – those relationships are so important. So – I think that's huge, what we lose in terms of – the relationship aspect… because it takes so long to build trust and – and establish those good relationships….
>
> I'm hoping that we can create a resilient enough organization and – that someone can come in behind, … and even though they might – they'll be their own individual – there's enough of a cultural appreciation for collaborative work we've done… that that carries forward, regardless of

> who's sitting here – that it's not person dependent. And I think that's the fear, with our partners especially, is that – our success will be dependent on the person who sits in this chair, and that – I hope that – I see it as my job to build a culture around that support, so it's a continually ongoing – um – relationship. [T295]

The absence of leadership support makes a difference. In Excerpt 5.10, the participant describes how her previous duty station was not doing stewardship contracting, although the unit was surrounded by forests that had high levels of implementation. She reflects back on why her unit was not using stewardship, but cannot provide a reason. Given that she was serving in a position that has been given the authority to initiate projects, it becomes clear that this ranger needed additional encouragement from her supervisor to implement stewardship contracting. In this case, the supervisor had not created a sufficient climate for implementation.

Excerpt 5.10

> No – we didn't do it [stewardship contracting] on the [forest] … (pause) I don't know, there wasn't a lot of support – … I never did figure out - why we didn't – . I was a ranger down there. … [T]hat was always a question in my mind, about why we didn't … [T286]

Once the supervisor creates an appropriate climate, the district ranger's role is then to determine if the ecosystem needs identified by the interdisciplinary (ID) team mesh with the climate of the local community and the ability of her staff to carry out the project using the stewardship authorities. This is described in Excerpt 5.11.

Excerpt 5.11

> [T]hose are the ideas you have, you know, as a line officer and you're carrying to launch a project… and knowing your community and what your needs are, you can start to see matches probably up front. You know, and through your ID process, then you're going to ground those out and then develop them. But you know, I'm also talking, you know, with my staff… trusting them and, uh… you know, putting expectations out there for where we're going to go. [T43]

As we saw in Excerpts 5.1 and 5.7, the tool must fit with the local community. The tool also must fit with the capabilities of the staff. In Excerpt 5.12, the participant describes how she wanted to begin using the tool but determined that, at that time, it would be too difficult for her staff, who were already being challenged by the need to restart a timber program. This participant echoes the concerns expressed in Excerpt 5.5, above, in which the line officer must balance the agency's desire to increase stewardship contracts with the realities of what her staff can reasonably be expected to accomplish. A Forest Service budgets continue to shrink and personnel are required to take on additional

responsibilities, the perception of agency employees as overworked and stressed will become more pronounced.

Excerpt 5.12

> … [T]he district I – was asked to lead didn't have much of a program – timber program. … didn't do a lot of vegetation management. Umm, it did in its day. It was one of those districts the region went to when they needed more boards. … So, uh, my job when I was there was to develop a program, where we could actually uh, manage, um.. – manage the landscapes – … So I spent [xx] years there, and we took baby steps, and we did sell some contracts. But they weren't stewardship contracts. Umm… It would have been new for the district, and I didn't want to complicate it. [T143]

Supervisors have an important role in promoting the implementation of stewardship contracting. The supervisors at Study Site 1 and Study Site 2, when stewardship contracting was first initiated at these sites, were strong, vocal supporters of using the tool. In addition, their staff had the capacity to implement the innovation. In contrast, although the supervisor at Study Site 3 also supported using the tool, she tempered her encouragement because she recognized that employees in her units were not in a position to take on the additional burden of learning a complex new process. Supervisors balance their enthusiasm for a new tool with pragmatic realities.

The leadership of supervisors is one of several critical points along the continuum of agency leadership that is necessary for units to achieve high levels of use. The supervisor takes her cues from the regional office. In turn, the supervisor's level of support is an important cue for her district rangers. Rangers are more likely to encourage their units to use the tool if their supervisor is encouraging its use. At the same time, district rangers also must consider whether the employees on their units have the time to implement the process while completing their other responsibilities. Creating a climate that enables use of the tool is not enough, though, to ensure implementation. The tool must be operationalized, and that task falls to the staff.

6. Staff Officers are the Key to Successful Implementation

While line officers, especially the supervisor, create the vision, assess the needs and fit, and provide encouragement to staff to use stewardship contracting, staff officers are the key to high levels of implementation. Implementation of stewardship contracting requires staff to operationalize the tool as part of their day-to-day activities. This is described eloquently by the participant quoted in Excerpt 6.1.

Excerpt 6.1

> [Line officers are] operating at a different landscape. You know, they have to look over the bigger picture. And [staff officers] have to figure out how to pull the levers and throw the switches and keep the… you know, the motor running. [T386]

Perhaps the most important reason that implementation requires commitment of the staff is that the contracting officers must sign off on the contracts. In Excerpt 6.2, the participant says that although contracting officers must have the line officer's approval, the decision to use a stewardship contract ultimately rests with the contracting officers.

Excerpt 6.2

> [T]hey're the ones that have the authority to sign off on the stewardship contracts. [The timber CO] if the timber sale covers most of the expenses that are included in the stewardship contract. And if it didn't, then it would have to go to the other type of contracting officer who handles acquisitions and getting services done. So the timber CO is the one that would look at how feasible things were, and she would always go to the line officer for– getting her recommendation. But ultimately, it was the CO who decided which way it would go, 'cause she's the one with the authority. [T86]

The interaction between the line officer and the staff officers is critical to successful implementation. As in any management situation, the line officer must run interference to allow the staff officer to focus on the details. In turn, the staff officer must communicate effectively with the line officer so that the line officer knows and can then help the staff officer avoid potential bottlenecks. In Excerpt 6.3, the participant describes the resilience and focus of her staff officer, qualities that help her implement this complex tool.

Excerpt 6.3

> This force is really good at getting things done…. … [I]t really is good that we have good leadership over the staffs. [I]t's been easier for [new rangers] to transition because the staffs have been so strong … [T349]

Both the acquisition management (AQM) contracting officer and the timber contracting officer must be committed to implementing the tool. In addition, participants said that these two individuals must collaborate. In Excerpt 6.4, the participant describes how her AQM CO is open to trying new ideas and is willing to collaborate with the timber CO to accomplish the necessary tasks. These participants maintain high levels of implementation at their unit.

Excerpt 6.4

> [S]he fortunately is another one that likes to push – the boundaries – trying new things. And I was thankful for that too. So she and [the timber CO] would talk together and figure out a way to get things done. And that was – awfully nice. [T93]

Some employees resist using stewardship contracting because of the inherent uncertainties in any innovation. In Excerpt 6.5, the participant describes the barriers to implementation.

Excerpt 6.5

> Fear. (laughing) At [previous district] - people were afraid of it. It- it's just something different: "I don't have time to understand it… what we're doing works *fine*…" [T159]

Barriers to adoption exist not only where staff officers hesitate to try the new tool but also where they have become steeped in existing traditions and approaches. In Excerpt 6.6, the participant describes how quickly stewardship contracting became accepted once staff began working collaboratively. The process grew exponentially; both the habit of teamwork and use of the new tool fed the cycle of success.

Excerpt 6.6

> [W[e were a great team, in the fact that we were educating and promoting and trying to get people to accept the fact – look: We can hold hands and it's not a, (laughing), it's not a violation of anything sacred. [T183]

The opportunity to achieve desired results within a limited budget motivates some staff to try the tool. In Excerpt 6.7, a participant says that use of the tool led to increased collaboration both inside the unit and with the local community, creating a positive feedback loop that was, in turn, reinforced by a line officer who championed the process.

Excerpt 6.7

> [T]he authority came into existence and we started, looking at opportunities. It seemed like it made sense to … explore … what it meant and how to use it, and how to use the stewardship authority from a fuels treatment standpoint… it looked like a really good opportunity, to get that sort of work *done*.
>
> And that matched up in a lot of ways. I mean, the environmental community liked it from the standpoint that it did allow them to work with us and understand, and it was sold fairly well and understood that hey, this is something we need to do. It also was … a lot of areas [are] dry forest that … we're way more obvious about what to do there – as far as the treatments go, and as far as industry goes they were behind the idea, and they could see the benefits that – us – being able to work with everybody… on those urban interface areas. That made sense… and… you know it kind of all came together that way. It wasn't just one thing, that caused it to work [T309]

Individuals who serve as champions enable units to achieve high levels of implementation. Line and staff perform different functions as champions. As described in Condition 5, line officers who champion the innovation serve as transformational leaders. In contrast, staff officers provide the day-to-day operational championship necessary for implementation to continue and institutionalization to occur. Several participants identified themselves as champions, such as the participant quoted in Excerpt 6.8.

Excerpt 6.8

> I'm very passionate about the stewardship program … I've actually tried to champion things, and blast through barriers… [T179]

The most effective champions are people who work inside the agency and serve on a unit, either at the supervisor's office or a district office, as described in Excerpt 6.9.

Excerpt 6.9

> Stewardship contracting needs a champion—an internal person. … Stewardship needs a bunch of people on the ground, internally. … Someone who cares. The best location for the champion is at the forest or district. Not at the region. They have to have local contact. And a collaborative attitude. It has to be a district ranger or staff type. But all that's for naught without worker bees in the background—COs, etc., to troubleshoot. But the most important person is on the ground, selling people, strengthening connections. [T272/274]

Champions model behaviors that others can learn from. In Excerpt 6.10, a participant describes an individual who was instrumental to her unit's success. The employees in this high-implementing unit learned to collaborate by shadowing this individual.

Excerpt 6.10

> [Name] was really the spark plug for stewardship on this forest. She was, you probably heard of the [x] project? That's one where we have I think 14 contracts, mostly stewardship, … [Name] was the person who'd spend her weekends knocking on doors, talking to neighbors and saying, you know, this is a Forest Service parcel back here, would you be interested in if we, you know, sent you a notice of we're having a meeting or get-together? And so she just basically did that. She used the Peace Corps model that she was familiar with. … And she just used that Peace Corps model of, you know, it's, it's three cups of tea, it's getting to know your neighbors. Uh, getting to know people on a… on a personal basis before you engage in business activities. [T378]

It is unclear over the long-term whether turnover by line officers will adversely affect staff's ability to maintain high levels of use. Although turnover is often perceived negatively by the local community, turnover among line officers within high-implementing units appeared to have had little

effect at the time this fieldwork was conducted. (Turnover is discussed in Condition 16.) The relative stability of staff officers provides the necessary continuity to enable the high-implementing units to maintain their use of the tool. Staff officers are able to quickly bring new line officers up to speed on their arrival. Although line officer support is beneficial, especially during early stages of initiation, it seemed to have had little effect on a unit's ability to continue using stewardship contracting.

Staff committed to use of the tool are critical for implementation to succeed. Units with high levels of implementation have multiple, committed staff officers who are willing to navigate its complexities and operationalize it to meet their units' needs. These staff officers are identified as champions. At units with low levels of implementation, no staff were identified as committed to the use of the tool, and no members of their unit were identified as champions. At units with low levels of use, participants were more likely to describe reasons why stewardship contracting would not work at their unit. For stewardship contracting to be implemented at high levels, staff members must be committed to the success of the tool.

7. Openness to Learning and Change Aids Implementation

Participants at high-implementing units were open to learning and change. Both line and staff were especially interested in using the tool to complete their tasks in "better" ways, as illustrated in Excerpt 7.1 where the participant says she will try a new idea if it appears to provide a better way to accomplish her tasks than current methods.

Excerpt 7.1

I loved it! (laughing). I like anything that's new, and possibly could be a better way of getting things done. [T95]

Participants are attracted by the opportunity for learning but only implement the tool if they think it will be an improvement over the status quo, as described by the participant in Excerpt 7.2.

Excerpt 7.2

There's a certain amount of complexity that I think attracts- people. This one's been attractive to me in that… it's a different way of doing things. I've had to stop and take a deep breath and look back and say, "Well, yeah, the way I'd done it before worked, seemed to work pretty well, but, there's something to this." [T387]

In Excerpt 7.3, an industry participant describes the procurement CO as "creative" and "enthusiastic" about the opportunities provided by stewardship contracting. The participant says that

when the CO first began implementing the tool, she started with small projects that were simple for new users, both agency employees and industry. Over time, the CO was able to build capacity internally and externally. The participant also identifies a concern that the agency's culture suppresses employees' ability to be creative and dampens their enthusiasm.

Excerpt 7.3

Industry Participant: Now, [the AQM CO] – is – creative, and – enthusiastic about doing new things, but – she is losing that, because – she's – working in an environment where that is not – uh, it- she's not rewarded for that. She's not, uh – (…) pat on the back for it, so she's --. Just in the last few years, -- when she – came [to this forest] and she was like, 'Oh right, this stewardship, I'm all over this small-scale stewardship contracts, and service contracting, we'll do a bunch of little ones, and everybody can get them, we'll give them to timber people, and it's going to be great!' Awesome … That's cool, (…) When can we–?

And then, the machine was like, no, you go in this little box, and you do this. And she's still trying to do neat things, but – they won't let her.

... I long for people that are enthusiastic and creative … [T138]

Several participants mentioned they took the initiative to begin learning about the tool before they were in a position to begin using it. In Excerpt 7.4, the participant says that she learned about the tool through completing the agency's web-based tutorials. In Excerpt 7.5, the participant says that she learned about the tool through reading and listening to others who had used the tool. Then, when she served in an "acting" capacity, she gained firsthand familiarity when her job required her to sign off on project proposals.

Excerpt 7.4

I was the District Ranger at [names District]. And, umm, had a – some, some crash course on stewardship contracting that I taught myself… through web-based stuff. … Just to find out what it was. Because it was new! … Brand new to me! [T143]

Excerpt 7.5

Like I said, I've never gone to any formal stewardship contracting to learn the ins and the outs…. But when we'd have, you know, uh, like continuous learning days or whatever—people were sharing about stewardship—that's what I was getting out of it… you know. And then I did some … assignments where I had to pull the trigger on a few stewardship projects.

[A] lot of it … you learn from case studies. When I see projects come through, this was a stewardship project and it's uh… And there's a Regional Forester "Spotlight"; I read those and see what people are doing. [T43]

People are likely to make mistakes as they learn a new process, especially one as complicated as stewardship contracting. In Excerpt 7.6, the participant says it is important to accept and learn from mistakes.

Excerpt 7.6

It's like, that person has learned so much from their mistakes. You don't learn from your successes. [T301]

Stewardship contracting was cobbled together from existing processes. Some parts of the tool may be familiar to new users, while other parts, which come from the "other side of the house," will be entirely new. In Excerpt 7.7, the participant describes how contract administrators have to learn "two sets of rules." Although the tool had been in place for many years at that time, the participant expressed concern that the agency had not yet developed internal procedures to test and certify employee proficiency.

Excerpt 7.7

I just, I just thought of a, a context of, to think of why stewardship has been slow… in… in… uh… why there's uh, adoption of it or adaptation of stewardship's been so spotty, in that, it's a big investment in learning two sets of rules. We send our contract administration workforce -- and I'm the forest service representative, so I'm the person who reviews the harvest, inspections and the service work items and, and identifies, okay, this needs done or payment needs to be made… um… and I have to learn two sets of books and it's doubly … hard, not quite that way, but it's, it's quite a bit more… uh… more difficult. And last fall, we had a… uh, a field exam for one of our contract administrators, our sale administrator, and we asked, 'Well he's, he's working mostly with stewardship contracts, can we have him tested on a stewardship contract?' And the answer that came back was, 'No, we don't have any… we don't have any exam for that.' So y-, you think about the time lag, and it's been eight years hence. We still do not have an exam-basis to test people on stewardship like we do with timber sale contracts. [T368]

One of the most important aspects in the acquisition of learning is to allow sufficient time for it to take place. Learning must happen not only at the individual level but also at the unit level. For an innovation to become fully routinized and institutionalized, the unit must use the tool repeatedly in sufficiently different ways to become proficient. This takes time. In Excerpt 7.8, a participant concludes that 10 years, the duration of the initial, temporary authorization, was not sufficient to achieve the widespread use desired by the Forest Service.

Excerpt 7.8

[T]hey probably had been doing timber sale contracts pretty similar in 1965, you know. We bid 'em, you … you, so… So think about how long you have almost two generations of Forest Service employees that had been doing that. And then you have all these people on the outside that are built up around that. Um, so you- it's probably, uh, ten years is probably not that long. [T28]

Participants at high-implementing units were open to change and learning and relished navigating a complex new tool. Some individuals adapted more quickly to the innovation than others. Line officers help staff make the transition by identifying staff who are ready and willing to learn how to use the new tool. These staff may become champions and lead the way for their entire unit. This process takes time, however, and cannot be rushed.

8. Intraorganizational Collaboration Fosters Implementation

Units with high levels of implementation have the capacity for intraorganizational collaboration; that is, collaboration within the agency across functional boundaries. A similar capacity for intraorganizational collaboration was not identified in units with low levels of implementation.

The agency historically has had strongly demarcated lines between disciplines. The participant quoted in Excerpt 8.1 describes these divisions as "fiefdoms." Stewardship contracting, however, requires disciplines to work together. In Excerpt 8.2, a participant says that for stewardship contracting to flourish, the agency must break down the barriers between disciplines and specialties. She says the barriers can be overcome and provides an example of how, on a previous unit, she and her counterpart in timber learned to work as a team, in her words "educating" colleagues about and "promoting" stewardship contracting in their unit.

Excerpt 8.1

It's the Forest Service culture … Fiefdoms. [T259]

Excerpt 8.2

[W]hat we found, initially was, when it got down to it, that it really was a turf war, and it really was a, a barrier to – to trying something new, and I'm not sure if it was the employees' fault, it was more of, their set-up from a cultural standpoint in the fact that timber regulations and timber business has emulated everything that 99% of the rest of the federal government does, but then they kind of put it off in a little box over here and made it their own. [T183]

Units with high levels of implementation presented strong evidence of intraorganizational collaboration. In Excerpt 8.3, the participant, a timber CO, describes her close working relationship with the AQM CO, a collaboration that is facilitated by their offices being "across the hallway." Being nearby increases their opportunities for dialogue, but the key to their ability to collaborate is their willingness to admit their lack of knowledge about the other person's area of expertise and their openness to asking questions.

Excerpt 8.3

> Because she doesn't know anything about timber, I know nothing about procurement, so – we can work out – we work close together that way. … So, if I have questions on – because best value is new to me, so – And she's been doing it for years, so -… And she used to work on the [names Forest], but then she moved to– to here – which makes it a lot easier for me. I just have to go across the hallway. [T75]

In Excerpt 8.4, another employee on the same unit describes how the collaboration of the two COs enables her unit to "get things done."

Excerpt 8.4

> [The acquisition management (AQM) contracting officer] fortunately is another one that likes to push – the boundaries – trying new things. And I was thankful for that too. So she and [the Timber CO] would talk together and figure out a way to get things done. And that was – awfully nice. [T93]

Participants described barriers separating other "fiefdoms," as well. In Excerpt 8.5, the participant describes how she built a working relationship with her colleagues in fuels and then helped those same colleagues build a strong working relationship with the timber CO.

Excerpt 8.5

> [I]t's all about breaking down barriers, and getting people to talk to each other. … [N]ot only is there barriers between acquisition and timber, there's the barriers between timber and fuels, … When you think about it, if we were proactive, and got fuels guys to go [to] the timber guys, and-d-d-d – why don't we talk? [T188/T198]

One benefit of collaboration is that the team can continue to move forward even when a member is absent. In Excerpt 8.6, a participant describes how her unit has built a strong understanding of each other's needs and priorities. This participant works on a unit with high levels of implementation.

Excerpt 8.6

> [W]e used to … you know, "This is a timber sale, don't worry about that, I'll do that. Just tell me what your mitigations are and I'll avoid those things." And now it's kind of like, okay, we've got

> some wildlife work, we've got some in-stream fisheries work we want to do, we want to pull some non-native plants, invasive plants here… So we kind of huddle as a group and say, "Okay, you're doing that. I'll do this one." And so we build the thing, kind of as a collective body. And any one of us from these different disciplines can talk about what the other person's doing if they're missing that day. [T378]

Small field units use their lack of "bench strength" as an advantage. In Excerpt 8.7, another participant says that being on a small forest means that she and her colleagues must work as an integrated, interdisciplinary team. This participant also speaks to the importance of the local community to implementation of stewardship contracting.

Excerpt 8.7

> We're one person deep.… So… we need to collaborate internally. We really share at, and we really work together as an interdisciplinary, integrated team quite well. And we share our resources across programs all the time. It's an inherent part of how we work, and the culture on the forest. Combine that with how the state operates, in terms of the culture of people, it's a very good fit. In a way, we kind of acclimated … to the culture of our surroundings. Not necessarily by design, but by working with what we have and doing things that we're gonna be successful in, in implementing our forest plan on the ground. [T363]

Another way to build collaboration skills is to participate in a self-directing team. These teams were part of a relatively short-lived Forest Service experiment that has since been abandoned. However, while they were in use, one forest involved in the pilot was able to build a cohesive, collaborative, participative culture. In Excerpts 8.8 and 8.9, participants describe how they built their communication and collaboration skills by working on a self-directed team. These skills have helped the units achieve high levels of implementation.

Excerpt 8.8

> We were for many years, self-directed, self-managed, a team-based organization. And so we operated under that, those principles. So we did have quite a bit of training from consultants early on when we started, about how to make decisions, and how to work in that kind of environment, how to listen to people and how to really engage in good teaming practices … [T363]

Excerpt 8.9

> [O]rganizationally this forest, for about 15 years was, was self-directed teams-- And so employees were pretty much running things. … [S]ome areas that has really benefitted us. So like stewardship contracting and getting on board and really being able to launch on that, it's benefitted us that way. … So, and the employees are used to working across landscape boundaries outside the forest and, and collaboratively. [T341]

Unfortunately, the experiments with self-directed teams have been abandoned, and these units have returned to a more traditional authoritative management style, as the participant says in Excerpt 8.10. It remains to be seen whether these units can sustain their high levels of implementation.

Excerpt 8.10

> Self-directed teams were a beautiful way to run forest collaboration. It automatically trains you and enables you to collaborate with the public. I think we're losing that skill set. We no longer engage across resource areas internally. It's pretty much top-down. It's very frustrating for us. For some, it's downright demoralizing. Productivity has suffered, morale. It's quite sad. [T247]

Employees recognize that integration among the disciplines is critical to achieving the agency's landscape-scale objectives. In Excerpt 8.11, a participant says that the agency needs to do more to increase intraorganizational collaboration. In Excerpt 8.12, a participant says that high levels of integration are critical to the success of stewardship contracting.

Excerpt 8.11

> People need to interact more inside the Forest Service…. We need to get people integrated more, to help each other. [T229]

Excerpt 8.12

> The whole stewardship success of implementation is very dependent on the amount of upfront collaborative work that we conduct with staff during the planning and environmental analysis phase. If we cut back on that approach, the whole process starts falling apart. [T247]

Many units have used stewardship contracting one or a few times, but relatively few units have fully assimilated the innovation. Units with high levels of intraorganizational collaboration have achieved high levels of implementation. For some employees, like the participant quoted in Excerpt 8.13, integration is a benefit above and beyond the other benefits achieved from stewardship contracting.

Excerpt 8.13

> And that's, that's the thing that I, that I really enjoy about it, bringing the ID teams or the, the practitioners together from different departments, that, that we all… we all have uh… uh… a pony in the race. And so, it's… yeah, it's kind of interesting when you look over and see, can I give you a hand doing that? So there's a lot of integration. [T382]

Units with high levels of implementation also have high levels of intraorganizational collaboration. In contrast, there was little or no evidence of intraorganizational collaboration at units with low levels of implementation. Participants at units with low levels of intraorganizational collaboration had not yet bridged the traditional divides between timber and the other disciplines and acknowledged they did not collaborate as much as they would prefer.

Stewardship contracting is enhanced through integration of disciplines. At Study Site 1, which achieved high levels of implementation, key staff were centralized. Collocation enables these staff to have frequent, informal interactions, helping them build the interpersonal relationships critical to high-functioning collaborative teams. At Study Site 2, which also achieved high levels of implementation, staff were not as centralized, but the small numbers of staff helped the employees achieve high levels of interpersonal communication. In contrast, at Study Site 3, which had low levels of implementation, staff were dispersed, reducing their opportunities for informal, frequent interactions. It seems likely that successful implementation of stewardship contracting will be more easily achieved at units with high levels of intraorganizational collaboration and in which staff are collocated.

Summary of Organizational Conditions

The theme of organizational conditions emerged from interviews conducted at Study Sites 1 and 2, both of which had implemented stewardship contracting at high levels. The four organizational conditions identified are creation by line officers of a climate for implementation, commitment by staff officers, openness to learning and change, and intraorganizational collaboration. All four conditions were present at units with high levels of implementation. In contrast, only one of these elements – support by line officers – was identified at the units with low levels of implementation.

Moderating Conditions Inside the Agency Affect Implementation

Moderating conditions that occur inside the agency affect a unit's ability to implement stewardship contracting. Some of these conditions, such as inherent complexity, are endemic to the tool. A second source of these conditions, such as how and where retained receipts can be used, is

variability in regional office interpretations. A third source of these conditions, such as limitations on the types of restoration that can be performed, comes from the agency's Washington Office. Eight moderating conditions created within the agency were identified. These conditions can favor or constrain implementation of stewardship contracting.

9. Inherent Complexity of Tool Creates Obstacles and Opportunities

Units must overcome the inherent complexity of the tool to be able to use stewardship contracting effectively. Potential barriers created within the agency include approval processes, policies regarding retained receipts, incompatible restoration needs, and meeting targets. Participants at all units, regardless of whether they had achieved low or high levels of use, cited these issues. At units with high levels of use, these issues were acknowledged but participants found ways to navigate around the barriers and use the tool. In contrast, at units with low levels of implementation, the barriers created obstacles, and participants at these units were unable to use the tool.

Adjacent units, even on the same forest, respond differently to the barriers. In Excerpt 9.1, the participant cites four barriers that prevented her former unit from using the tool: higher costs; additional training; requirement to integrate disciplines; and lack of community support. The first three of the four barriers were also present when she arrived on her current unit. However, her current unit found a way to overcome these barriers and has achieved high levels of implementation. The participant is now a champion of the tool.

Excerpt 9.1

I was on the district that was dragging its feet in doing stewardship. So kind of- my context, I have a… I have a multi-region view of stewardship. We didn't do it because, one, it was more expensive. It would require additional training. We didn't have the pieces in place. And so… And… um… typical timber sales and service contracts to do the same things that stewardship does were easier to do and independent, or separate houses. … So we did that. It didn't seem to bother or annoy our publics, citizens most interested. And so why would you change something that works well for you? Um, the neighboring district, though, it worked beautifully for 'em because it fit their local community. … And they adopted stewardship much more readily than my, my uh… uh… outfit….[T367]

In Excerpt 9.2, the participant lists multiple reasons why her previous unit was not able to use the tool, in large part because of her lack of familiarity with the tool. Adjoining units were successfully using the tool but this participant's unit was not. This participant is now at a unit that is implementing the tool at high levels, and the participant regrets the lost opportunity.

Excerpt 9.2

I just think it was – what I saw, from the outside looking in, it was just… you know, unfamiliar territory? We already had a lot to do… boy, to get in this was a lot of work… learning… what would … would we be able to… follow through? … that kind of thing. … [B]ut that would mean we'd have to give up stuff. Give up a little control, or whatever.

… And I regret – I wish I had that – viewpoint. Now that I'm up here, I'm seeing it work – very well, it seems, and we can do more – umm. I'm regretting – you know – that I didn't – I wish I'd had this knowledge – of how it can work, and how – what a no-brainer it is - because it is. [T286]

The lack of knowledge about stewardship contracting and the need for additional training to be able to use this tool is expressed by participants in terms of risk and uncertainty. In Excerpt 9.3, the participant reveals an awareness that the new tool requires the individual, the unit, the agency, and even the counties to step out of their comfort zone and accept a certain amount of risk. Resistance to the tool is justified through the rationale that status quo methods are sufficient to meet a unit's needs, the agency's goals, and the county's expectations.

Excerpt 9.3

[T]here's a learning curve to it… They know how to do this, and it's worked, so why do I do something that I don't know much about? Or take a risk? Or use some [anecdotal] sort of information, or evidence, to say, "No, we don't want to do that here. We know better" … and that sort of thing -? [T316]

Stewardship contracting requires a high degree of trust by the disciplines. In Excerpt 9.4, the participant describes concerns that giving away control to other disciplines inside the agency will result in unwanted outcomes.

Excerpt 9.4

[W]here that came under question was when we had stuff that put a lot of the engineering and design of roads or road-type work on the timber sale contractor rather than having our engineers, uh, weigh it out, determine things, and … stuff like that, and handle it through a service contract. I think there … it … was just they weren't quite used to it yet, and concerned that it might be a runaway thing from them and how we fix it now that -- if it wasn't done right. [T88]

The tool's inherent complexity requires agency employees to develop collaborative, cross-cutting relationships both inside and outside the agency. However, this subverts the agency's traditional culture of narrow, close, and absolute control. Specialists must be willing to give control over their projects to someone in another discipline. They must accept a lack of certainty that their activities will be completed under the stewardship contract. If their activities are at the bottom of the list, retained

receipts may be used up before their activities are completed. Because stewardship contracts can take several years to complete, an activity can be left in limbo. It seems likely that specialists will retain their most pressing issues to be funded with allocated dollars and contribute their least pressing issues to the stewardship contracting. In this way, the activities completed under a stewardship contract may not be the most important. Stewardship contracting requires the agency to give some control to the contractor.

External participants concurred that a unit's willingness to give up control played an important role in implementation. In Excerpt 9.5, an external participant describes the agency's resistance to change and resistance to letting go of control.

Excerpt 9.5

External Participant: The cultural issues relative to forest management have a lot to do with uh – what's been done; what people like to do; how they're used to doing it; and they don't like being *told* what to do.

And then it goes down to the individual level. 'I'm in control,' 'I'm the … the TMA, I'm the Timber Management - person,' 'I'm in charge,' 'This is what I want to *do*…'

The industry liked it much better right off, conservation liked it much better right off, and so right away the Forest Service is … (chuckles), is like, 'Well then, we *don't* like it!' Yknow, it's everybody … that yknow, that- that defensive mechanism I suppose – survival mechanisms. [T165]

Another aspect of complexity that poses a barrier is the increased time and effort required to learn and use the tool. This barrier was cited by participants at units with both high and low levels of implementation. In Excerpt 9.6, a participant says that a stewardship contract can take double the time of a traditional timber sale. This is especially true during early stages of implementation, before routines and institutionalization can be established.

Excerpt 9.6

Stewardship projects take time.. It takes time to get the project going. … A stewardship contract can take three to four years per project compared to two years per project for timber sales. [T245]

Level of effort also increases when units are unable to incorporate stewardship into larger projects and, instead, break out the stewardship portion and conduct it as a separate sale, as described by the participant quoted in Excerpt 9.7. Even when the stewardship piece is retained as part of a larger project, administration requirements can increase the work load, as illustrated in Excerpt 9.8.

Excerpt 9.7

[T]his year we're in the unfortunate position where we're offering four sales, four small sales …

> Now, that's a lot less work to offer one sale of … than four sales of …. And one of them's a stewardship. And that's one of the reasons that we have that, have that small a sale. So, that… it's not four times the work… but, but I tell you what, it's a lot more work. [T74]

Excerpt 9.8

> [W]e have a staffing issue. Stewardship contracts do take more time. Uh… both in terms of getting them out the door and administering them after. And there's a lot of small work that involves time, too, you know … [T358]

Even units that have achieved high levels of implementation agree that stewardship requires more time and effort than traditional timber and service contracts. However, the extra work pays off. In Excerpt 9.9, the participant compares stewardship contracting to a marriage, a metaphor that links the effort and time invested by participants, especially early on, to the achievement of long-term benefits that can only be reached because of the significant initial investment. The participant quoted in this excerpt is a champion and worked on a unit with high levels of implementation.

Excerpt 9.9

> It takes work, like a marriage. … The general attitude is that stewardship contracting is new, hard, labor-intensive. That stewardship contracts are hard. … It's not that we're lazy bureaucrats -- we're learning a new, esoteric process. [T250/255]

With repeated use, however, the time required for a stewardship contract can be reduced. In Excerpt 9.10, the participant says that her unit has achieved efficiencies by planning at larger scales.

Excerpt 9.10

> And you don't like to do a little contract when you can do something bigger. It takes as long a time to make a very small—a 10-acre—contract than a hundred-acre—same amount of time. [T383]

The unique conditions and needs of each individual unit can create situational barriers to use. In Excerpt 9.11, the participant perceives the tool as being a better fit for Western than for Eastern forests.

Excerpt 9.11

> … So you know I'm kind of looking at it from the periphery, but it is just another tool. I'm not hung up that that's the only thing we should be doing ... And there are places, nationally, that it might make sense that that's what you do. Um, you know, I know the [names Eastern forest] has a much different situation with, you know, a lot of their high-dollar veneer logs that they're selling. Um… they have a lot, they could build up a lot of money pretty quick, um, with stewardship, or also, you know, mixing it up. So each forest is a little different. [T43]

In Excerpt 9.12, another participant also describes the tool as being better suited for Western forests than Eastern forests but describes financial constraints as a more serious challenge to overcome. The participant is especially frustrated by what she sees as a lack of understanding of the financial constraints by regional office employees.

Excerpt 9.12

I've talked with regional people that are involved heavily with stewardship and they really lack the understanding of why there are financial constraints to stewardship. There's very little understanding of that. [T73]

Units who are not using high levels of stewardship contracting find it difficult to use the tool at more than the required levels. In Excerpt 9.13, a participant agrees that the tool is useful in some places. This participant admits that she does not understand why other units have embraced the tool so wholeheartedly.

Excerpt 9.13

[A]ll of these kinds of things would tell you that stewardship is a great tool in some locations; it's a good tool in other locations; and in other locations, it… it's, you know, kind of marginal… if you have these opportunities, we'd really like you to take advantage of them. [T57]

Participants at low-implementing units cite multiple reasons for not using stewardship contracting. The tool's inherent complexity creates potential barriers for all units. High-implementing units have found ways to work through the complexity while low-implementing units are still finding ways to overcome the barriers.

10. Multiplicity of Understandings Reveal Inherent Flexibility and Complexity

How participants describe and define stewardship contracting provides insights into how some participants see barriers while other participants see challenges that can be overcome or that do not even exist. Participants often focused on the aspects with which they were most familiar. For example, line officers may focus on how the tool allows their unit to maximize appropriated funds and improve collaboration with the local community, while staff officers may focus on the ability to integrate disciplinary objectives into one contract. Where units are still learning to use the tool, definitions focus on the complexity of this multi-purpose tool. Units that have implemented stewardship contracts more often and more fully appreciate its effectiveness even while they still struggle to sum up its nature in one word.

Participants' responses to the question "What is stewardship contracting?" reveal the complexity that both enables and constrains use of the tool. The tool benefits the resource and the local community, according to the participant quoted in Excerpt 10.1. Benefits include the transparency of keeping receipts within the unit and greater engagement with local communities. For this participant, then, the benefits revolve around the tool's immediate and local value.

Excerpt 10.1

> I would say that is, um, utilizing the efforts of the timber sale and the revenues from the timber sale to also accomplish other natural resource work. It allows us to, um, work with communities. It allows us to, to get the communities engaged with what's going on in the forests, and, um, it's, it also allows revenues to come back to do actually good work that's going to benefit the American public on the land. So, instead of getting sucked up into the Treasury and going somewhere else where you can't see it… [T351]

The tool allows units to get more work done than can be accomplished using just timber or service contracts. Units using the tool can accomplish more work on the ground than can be achieved using just appropriated dollars. In Excerpt 10.2, a participant describes her arrival at a unit that was already using stewardship contracting. The unit had proceeded past initial implementation and was moving into institutionalization. For this participant, the core asset of stewardship contracting is trading goods for services.

Excerpt 10.2

> [When] I moved to the [names Forest]. … Ummm… Old hat, here. Been doing stewardship contracting for quite a while! You know, not – not – not new! And, um… I think it's pretty cool. Because we can get so much more work done that we couldn't otherwise get done, by trading the value of – of the product. For – for services. [T143]

In Excerpt 10.3, a participant also describes the core asset of stewardship contracting as trading goods for services. In this case, the line officer highlights that the county foregoes its share as does the U.S. Treasury. She describes the needed work as not having an inherent value and then clarifies that this is work that is not otherwise covered by appropriated dollars. She ends by acknowledging that the money is spent based on prioritization of needs, suggesting that she is cognizant of the trade-offs she must make when deciding how and where to spend appropriated dollars and conduct service work paid for with retained receipts.

Excerpt 10.3

> [I]t's an opportunity for us to manage public lands where we trade the value of a product for a service that we need completed. Rather than selling the product, taking the money, giving 25 percent to the county, and sending the rest to the Treasury… we're able to keep that money and turn it back to the contractor to do other work that there – there isn't a value – a monetary value for. Like thinning plantations, um.. repairing– reconstructing roads – what- whatever it may be, that we don't have the money to do. [T156]

In Excerpt 10.4, a participant highlights the efficiencies that can be gained by using one contract instead of two. This individual focuses on the benefits to the Forest Service rather than the resource.

Excerpt 10.4

> I'd say… it's an authority we have to – include some of the services we want – in an area that contains a timber sale, that's in the- timber sale contract, so we don't have to sep- we don't have to issue separate contracts. It makes it more efficient for the government. [T94]

In Excerpt 10.5, a participant highlights the benefits of combining multiple resource management projects into one contract, which benefits the Forest Service, but also mentioned the benefits to the industry contractor who does the work. This officer describes the tool as a means to an end.

Excerpt 10.5

> I would just say it's a contractual process that we enter into that allows us to do integrated vegetation management work as the objective, and it has some commercial harvest to it, some noncommercial treatments to it, it allows us to run a spectrum of resource management projects, on a piece of ground and that's what the mechanism, or the vehicle, for doing the work, is – the basis for the work, and – I would explain, that there's an economic return to the contractor, and that's just the mechanism where we get this sort of work done. [T315]

Several participants struggled to articulate a definition. In Excerpt 10.6, the participant begins by acknowledging the complexity of the tool and then focuses on the benefits to the land of trading goods for services to accomplish more work on the ground.

Excerpt 10.6

> I'd try to explain it the easiest way possible and… (laughing)… I would start out with saying something like it's a goods-for-services program. I would give an example … if the value of this timber on the forest gets cut and harvested, the dollars from that get used to do restoration or improvement work. So instead of the dollars going to the Treasury, the dollars stay here on the forest to do wildlife improvement work, water quality work. So those dollars get used to do other stewardship and natural resource work. [T363]

In Excerpt 10.7, a participant said that she believes the tool is "intertwined" with collaboration. That is, her unit believes that they are so closely couple that neither can be accomplished without the other.

Excerpt 10.7

That's kind of a loaded question… I get kind of wrapped around the axle when I try to break off what we've done with stewardship contracting and collaborative work because they're, in my mind, intertwined now. They weren't before. They were separate sort of items off the menu. But… we do stewardship. And when we say that, we mean we're open, transparent; we're in a collaborative approach. That we don't want to do something just top down. That isn't necessarily what stewardship is, in a black-and-white form, but it's our twist on it. [T379]

The lack of a sufficient shared understanding and clarity about the tool was described by one of the participants. In Excerpt 10.8, the participant begins by describing her difficulties in persuasively explaining the benefits of the tool to community members. When she describes the internal message, she phrases it as a command, reinforcing that the agency is mandating the tool's use, which the literature suggests can be counterproductive to increasing implementation. However, she says when she explains the tool to the community, she focuses on the economic benefits to the community. Later in the conversation, we see some resistance. The participant begins by describing the collaboration opportunities and then goes on to say that their partners would like to collaborate but that her unit's primary need for restoration is recreation-related, which is no longer approved under current institutional policies. She concludes by saying she has difficulties encouraging her partners to participate in a tool that she still has doubts about. On the one hand, she knows the tool provides opportunities for collaboration, but she is not permitted to use it for the needs she and her partners have identified as most important. She wants to build a "buzz," but she herself is not convinced of the value. Her descriptions show perception of two opposing aspects, a "carrot" and a "stick," and she had not yet decided which is more central to the tool, or how to merge both perceptions into a new, more integrated definition.

Excerpt 10.8

if you read a lot of the language that's in the budget directions, which I have to read, it's about, you know, 'Use stewardship. Retain receipts to get this work done on the ground.' So that's a, that's a very strong internal message. So then, we kind of have to step outside that and say, 'Okay. Well what's the collaboration value?' Well, we get to keep those receipts, more of those receipts locally in the community than we would otherwise keep in the community.

We have tons of partners who want to do things with us on the national forest, a lot of it organized around recreation… uh, not so much around watersheds and very little of it around

> vegetation. And um, you can't use stewardship for recreation, uh, you know, unless it affects an ecosystem, which I think is a flaw in this, uh, this whole thing, [T52]

Even employees who perceive the benefit and claim it is "easy to describe" seem to have difficulties translating their understanding into words, as is illustrated by the hesitations in Excerpt 10.9.

Excerpt 10.9

> Oh, I think this is relatively easy to describe. It's just an exchange of our goods—timber—for a service on the ground. And it can be, uh… it can be 100%. It can be… we can have them take a portion of the goods and put toward service, and the rest would be, uh, we would collect receipts, um… Or, it might be a situation where we have x amount of goods but the service is worth more than the goods, so… but the goods are going to help offset our costs, so we're going to pay you and you're going to take the goods. And uh, so that's… that's… [T71]

External participants also had difficulty defining the tool. In Excerpt 10.10, a participant says that stewardship contracting allows the agency to do "good things."

Excerpt 10.10

> External Participant: I think stewardship is just a matter of keeping the dollars that come off a project and putting them right back into the projects. You need to incentivize, and I think stewardship - that's what it's all about. It's supposed to be – it's supposed to incentivize the process, to put dollars back into the next project and to do other good things with it. And I think part of that is again, you know, maintaining recreation infrastructure – that is huge for the public, who mostly use national forests for recreation. And fixing problems that were created in the past, like watersheds in particular. [T176]

Several external participants focused on the benefits gained from retaining receipts. The participant in Excerpt 10.11 and focuses on the operational aspects of stewardship contracting.

Excerpt 10.12

> External Participant: Moneys that are generated from those sales go back in the forest to do things like pre-commercial thinning, culvert replacement, etc. And also accomplishing needed mechanical operations in the process by reducing fuels, ladder fuels, and crown bulk density. [T123]

11. Retained Receipts Create Opportunities and Constraints

Units base their decision on whether to use a stewardship contract on the amount of receipts they expect to receive from the timber sale. If the value is sufficient, the unit will offer the project as a stewardship contract. If the value is not sufficient to accomplish the services needed in the project area,

the unit will offer the project as a timber sale and look to other funding sources to complete the needed services, as illustrated in Excerpt 11.1. Participants view stewardship as a way to essentially create a new source of funds to accomplish their activities rather than a way to maximize the appropriated funds already received to accomplish these activities.

Excerpt 11.1

> The stewardship contracts – I know when we were trying to – figure out which ones to use them on… or to what extent… is we tried to… predict – how much – funding was going to come back, or how much profit the timber sale would make. Yknow… in some locations, they have … they have timber sales that barely break even. And so the thought was, okay, if we offer this timber sale up as a stewardship contract, … about how much do we think it'll bid up over what we have to have in order to take care of some of the mandatory stuff, and the roads, and all that kind of thing. And then based on that, if it was very much money, we'd go okay, let's make it a stewardship contract. Otherwise, it's not worth going out that way. We'll just find another, work some other way. [T85]

Receipts in excess of costs are retained and used within the project area to accomplish needed services. In Excerpt 11.2, a participant explains the process she uses to determine how many services to include.

Excerpt 11.2

> Well, we will put a, a contract together. And we'll have, what we call, mandatory service work items. Not knowing what the, the bids will be in their proposals, we think, and we have a rule of thumb, but we don't want to have more than about 70% of the total value of the contract in, in the service work items. So we make out what we call the government's best estimate of that. And if they come in pretty close to that, that's fine. You do all those work items. We have… we have the ability to pay for those with the value of, in our case, the timber. [T382]

Services are prioritized; those at the top of the list are more likely to be completed than those at the bottom of the list, as described in Excerpt 11.3. This can create issues for the disciplines whose projects are at the bottom of the list and, thus, are in limbo pending determination of whether enough receipts remain to accomplish these projects.

Excerpt 11.3

> But when it goes through the stewardship contract – you know, you have things that are mandatory terms – and then… at the bottom you have optional – uh, it's optional for Uncle whether we get enough funding. If we can go down there, we can add some of those optional things. [T88]

Receipts can be used only for on-the-ground work; receipts cannot be used to pay salaries, as the participant in Excerpt 11.4 states.

Excerpt 11.4

… now you asked about the retained receipts, now that can only be spent, um… we put it out on contracts… can't be spent on Forest Service salaries at all. [T382]

Regions, however, have different interpretations of what they consider a salaried activity. One area of confusion is burning. Excerpt 11.5 shows that in one region, retained receipts cannot be used to pay for in-house staff to burn. In contrast, the participant in Excerpt 11.6 describes how another region allows units to use retained receipts to pay its seasonal employees to burn. In Excerpt 11.7, another participant says that her unit uses retained receipts to pay in-house people to burn, and says that is preferable because contractors do not have sufficient liability insurance.

Excerpt 11.5

Retained receipts can't be used to pay salaries. [My region] interprets retained receipt policy as *not* okay to use for burning since that would be paying for salaries. Retained receipts in [my region] are only used for external contracts. There's no way to use them internally. It's cheaper to send the work out to a contractor. It avoids overhead. [T244]

Excerpt 11.6

But for quite a few of the projects this spring, they'll go out and they'll use retained receipts to burn. So … we're kind of carrying folks, and doing the prep work, and the infrastructure stuff, and then we go spend the retained receipts to do the actual burning … [T314]

Excerpt 11.7

What we use retained receipts on is the implementation on the fire side, because it's so hard to get other people to do that kind of work, because of liability. So, I can pay my fire folks to go burn piles, or under-burn –with retained receipts. [T157]

Where and when receipts can be used varies from region to region. On most projects, there is more need than receipts. However, some regions allow forests to use receipts retained from one project to accomplish objectives on another project within the same forest. In Excerpt 11.8, a participant says that her unit is aware of the possibility but has never had the opportunity to do this. In Excerpt 11.9, another participant questions whether this procedure can realistically be accomplished.

Excerpt 11.8

> And there is of course the provision where you can take stewardship dollars from one sale and move them to another one. … I'm trying to remember whether I ever saw that happen or not. It may have, but it's not clicking in my head that we've done it that way over there. Yknow, it seems like there's always more projects within the timber sale boundary than the funding ever is… [T85]

Excerpt 11.9

> If we're to generate retained receipts, and which you typically do with the timber sale, then you, you have to describe and get permission, and how are you going to move that to another project, and then it's like, 'Well…' It just seems process-laden. [T7]

Where the regional office has narrowly construed where retained receipts can be used, units may be precluded from using the funds in the areas of greatest need. In Excerpt 11.10, an external participant questions whether units are using retained receipts as effectively as they could be.

Excerpt 11.10

> External Participant: [T]he stewardship – program – was a great – is a great idea, because of the goods for services – idea. Keeping things [like] retained receipts on the forest could be used to do a variety of things – was a great idea, but, I mean, it immediately got neutered into, you can use these receipts only for a very specific kind of items, instead of – wow, I'll do this – forest health project, and we'll build this new – horse loading ramp – and, uh, you know, we'll pave this road because it's always dusty, and uh, we'll put up a bike rack over here. They says, no no, you can't do anything fun with the money – because of – people will think it's – too cool. So – you have to do really boring things, like – *important* things, but boring things – like, replacing culverts – and fixing some stream banks…. [T130]

Confusion about what, where, and how retained receipts can be used is one complication of this authority. A second complication concerns *when* retained receipts become available to the unit to use. In Excerpt 11.11, a participant says that her unit wanted to start the services work but had to delay because of concerns over defaults. In Excerpt 11.12, another participant says that it has taken her unit several years to accumulate sufficient retained receipts.

Excerpt 11.11

> I can't remember exactly how many we, how much we have in there. But you know that's also, that's part of what I understand is some of the, one of the hitches, is that, it depends on whose managing those funds … as far as when they're going to let 'em loose. And contracting is like: Whoa, the contract's not done, so we're not going to let that loose because what if they default? So we weren't able to get to them … either. So, um, you know that was one of the hang-ups, cause we, you know, we could have used … you know, got started on things. [T345]

Excerpt 11.12

So the stewardship receipts are really held in trust for a long time, until you're comfortable enough to release some of those funds to be spent back on the ground. … We have to know that we're far enough along that we're not going to have a default on a contract; the operator's not going to leave without doing the service work. And so, if we're only a year or so into it, and they've only harvested 10% of the value of the timber, we're not going to have enough to feel comfortable to … start doing that habitat work over here with the retained receipts. [T382]

One of the little-noticed benefits to the unit of using the Integrated Resource Timber Contract, one of the two forms of a stewardship contract, is that the unit is not assessed for overhead. As is the case in many administrative processes, astute employees find ways to leverage the tool to maximize the benefits to the resource. In Excerpt 11.13, a participant contrasts the benefits to her unit of using a stewardship contract instead of a timber contract.

Excerpt 11.13

[T]here's a wonderful thing called retained receipts. Which means, anything that the services don't eat up, that we would have got paid, we get to keep – [the timber CO] does – … So now suddenly [the timber CO] has money coming in … and [she has her] own pot of gold. What's interesting is, there's no overhead assessed against, uh, IRTCs. The retained receipts actually goes to the region for- on behalf of the [forest]. So that's even better.

As opposed to a timber sale. That money comes in, the RO gets – they control the budget for the timber organizations for [the region]– and- they get this big chunk, and then everything else goes back to the Treasury. [T186]

Although external participants may question how and where retained receipts are being used, overall they believe the advantages outweigh any concerns. In Excerpt 11.14, an external participant describes what would be lost if her local unit stopped using stewardship contracts. She concludes that retained receipts allow the unit to accomplish more work on the ground.

Excerpt 11.14

Int: [W]hat do you see as the immediate things that you would give up if you didn't have stewardship contracts?

External Participant: Some of the service work – the receipt retention – because of the – the stumpage from the timber sales would go to – to DC and be gone. And so the Forest Service would need additional funding to set those sales up, and to do any of the restoration work that now could be funded.

I hadn't – I haven't looked at the – I don't get down to the budget level that the Forest Service, but it – it would have to be – they've been able to do more work on the ground recently. [T132]

Retained receipts offer an opportunity to units using stewardship contracts. However, they can also be challenging to use because different regions apply different standards as to how, where, and when retained receipts can be used. Constraints on what they can be used for limit some units' ability to use the tool. Confusion over retained receipts affects not only agency employees but reduces the agency's credibility among external participants, especially those who have a multi-region view.

12. Approval Processes May Hinder Implementation

Regional office approval processes hinder implementation when they take too long or when signatories contradict each other's determination of a project's appropriateness. Participants in both high- and low-implementing units expressed frustrations with the regional approval process. In Excerpt 12.1, a participant describes her frustration with the amount of time it took her regional office to review and sign off on a stewardship contract. This frustration is echoed in Excerpt 12.2 as something that may hinder use, even when the region is supportive.

Excerpt 12.1

[W]e're pulling together a contract package right now. And we're still waiting for their approval from… it's in the Regional Office now; we're waiting for the approval from the regional office.

Int: Has that been a problem, just the delay in getting it through…?

Absolutely. And I mean, the first one we sent up … was about six months in the regional office. … it's just been a tedious, slow process to get through some of these signatures and approvals. And they, they didn't approve of a lot of the work that we had identified in the original … project. The original proposal had some, what we thought was good work, but it wasn't, didn't fit… it fit some folks' idea of what was appropriate, but not other folks' idea of what was appropriate [T5]

Excerpt 12.2

… if they want it to be a tool that's functioning, um… streamline it… keep it simple… and flexibility and freedom down at the lowest level is great, so that we… You know, there are great people working for the agency. They will come up with very creative ways to solve natural resource problems with tools that enable them to do it. [T41]

Although the regional office has an important role in the stewardship contracting process, moving some of the responsibilities downward would provide more flexibility and reduce the amount of time between inception and award, as suggested by the participant in Excerpt 12.3.

Excerpt 12.3

Yeah, and other thing I would say is bring the, delegate the authority down to the forest supervisor. You know if there's trust to be in the system that we can do that. But right now, it is an incredibly slow process… and tedious, and… uh… difficult I would say, going up to the regional forester. [T7]

Devolving approval to the supervisor was suggested by participants at all the units studied, although the delays that were identified were limited to just a few units. However, the units at which the greatest delays occurred have low levels of implementation, so this condition exacerbated already precarious implementation of the tool at those units.

13. Narrow Spectrum of Application Limits Opportunities and Decreases Efficiency

Prohibitions on using stewardship contracting for restoration needs other than vegetation preclude many units from using the tool. Participants at several units said the narrow restrictions on what the tool could be used for made it difficult for them to design projects that would be approved by their regional office. The most common request regarded restoration related to recreation, such as trail maintenance to reduce soil erosion or moving crossings to reduce impacts to water resources. Not everyone agrees that the approved uses should be expanded. In Excerpt 13.1, a participant specifically mentions that the tool should only be used for vegetation work and that recreation should be excluded.

Excerpt 13.1

I would question the appropriateness of spending money that Congress intended to be spent doing veg work – hazardous fuels and timber – on recreation things. … [T146]

However, units on which recreation dominates the multiple-use spectrum have difficulty using stewardship contracting since nearly all their restoration projects have a recreation component. In Excerpt 13.2, the participant says that her unit's proposals to use stewardship contracting have not been approved by the regional office because they do not allow restoration connected to recreation.

Excerpt 13.2

The other big stumbling block for us… that I see… is that this is, you know, an urban recreation wilderness national forest. And stewardship doesn't view recreation as a resource, um… and you probably already heard this from others. But… you know, uh… it views watershed and those kind of things as resources. I certainly understood the reason why Congress, or whoever wrote the rules, didn't want to have us go build a bunch of new things. But you can get a lot of ownership in our programs by maintaining trails. And though we do some of that and, related to watershed protection, but we've had a number of good projects go in and get knocked out. Or, the whole

> project falls apart because recreation and wilderness are not viewed as a resource… [T14]

Participants perceive stewardship as a tool for only the Western U.S. because it privileges fuels reduction and support to the local timber industry, issues that are important in many parts of the West but have less or no importance in other parts of the country. In Excerpt 13.3, a participant says that the conditions stewardship contracting is ideally suited to address – local sawmills, fire danger, wildlife habitat – are not present on her unit. What is present is a need for recreation-related restoration, which was not a driving issue in the West.

Excerpt 13.3

> So we might cut a small amount of timber. We might do a little bit of wildlife work, probably do more extensive recreation work… um, in that kind of situation I think there would be extremely limited opportunities for, uh, stewardship, because we'd be generating almost no timber receipts. [T56]

External participants thought some amount of recreation-related restoration could be acceptable. In Excerpts 13.4, an external participant observes that the public's primary use is recreation.

Excerpt 13.4

> External Participant: I think stewardship is just a matter of keeping the dollars that come off a project and putting them right back into the projects. You need to incentivize, and I think stewardship - that's what it's all about. It's supposed to be – it's supposed to incentivize the process, to put dollars back into the next project and to do other good things with it. And I think part of that is again, you know, maintaining recreation infrastructure – that is huge for the public, who mostly use national forests for recreation. And fixing problems that were created in the past, like watersheds in particular. [T176]

Allowing recreation-related restoration would reduce the agency's costs to conduct analysis and planning as a separate process. In Excerpt 13.5, a participant says that planning recreation-related restoration separately from stewardship projects is not a good use of resources. Greater efficiencies may be possible if recreation is an allowed use.

Excerpt 13.5

> So I've got to go get recreation money, do the analysis to make a different decision – And it lacks efficiency. And it's more costly. The – the – the alternative is, to include a purpose and need that's much broader. [T147]

Extensive habitat restoration has also been excluded as an appropriate use of the tool. In Excerpt 13.6, the participant says that her forest has need for habitat improvement but she would be

creating rather than restoring habitat. Thus, this need does not meet the requirements for use of stewardship contracting.

Excerpt 13.6

> When we go out and do a clearcut, you can't really call it restoration. We're creating early successional habitat. We're not restoring a habitat; we're creating a habitat. … So, what we're really doing is manipulating the vegetation to try to bring back a variety, as we analyzed in our forest plan, a variety of these habitat types. Well, that's not a restoration objective in and of itself…. [T47]

Participants suggested expanding the spectrum of use would enable units to achieve even more internal integration. In Excerpt 13.7, the participant describes her vision for broadening the scope of who is included, and concluded that this would also facilitate landscape-level projects.

Excerpt 13.7

> Internally, I would like to see, you know, what we're, who we're missing at the table are folks like recreation, engineering,… um… to the extent that the seven guiding principles or whatever-- they're called-- don't incorporate opportunities, per se, for them. So… to, to [have] stewardship contracting, encompass all the, the things that we do on the national forest— Um… you know, the natural resource, the social, and the… you know, the… uh… cultural aspects--of, of national forest management, it would be nice to broaden it to include them. [T364]

Although the use of stewardship contracting for recreation-related restoration objectives was, at one time, an acceptable use of the tool, that interpretation is no longer supported by the Forest Service. Participants at Study Site 3 said their primary need was recreation-related restoration, which is not allowed. As a result, the three units at Study Site 3 had difficulty creating stewardship contracting projects that were accepted by their regional office. Although the forest had some need for development of clearings for wildlife habitat, participants said that these needs were not restoration *per se* and, thus, were not appropriate for use of stewardship contracting. Recreation was also identified as a need at Study Sites 1 and 2, but those sites have other needs that are a better fit with the allowed uses of stewardship contracting.

14. Mandatory Targets may Increase Use but Decrease Long-Term Effectiveness

Units are required to complete a set number of stewardship contracts. The number is set by the regional office. Participants expressed frustration that targets appeared to be arbitrarily set by the regional office without consideration of local ecosystem needs or conditions. The greatest resistance to

targets appeared at units with low levels of implementation. However, even units with high levels of targets were impacted.

Most targets are set by the regional office. Setting targets removes the voluntariness of using the innovation, which may increase resistance to implementation. Other units may comply albeit by pounding a square peg into a round hole. In Excerpt 14.1, the participant recognizes why the regional office is setting targets but realizes that compliance with the target may not be the preferred action for the resource.

Excerpt 14.1

> I'd like to see it expanded, but it certainly is an appropriate tool in the right place. What I, uh, was saddened to see was the target associated with it… in that, each, uh… each unit shalt have one, uh, you know, stewardship project. So what we're… So you end up trying to work out, work on stewardship. You know, you get a stewardship project, you know like, 'Well, I guess possibly it might fit here.' And, as opposed to, 'This would be a great opportunity for stewardship.'
>
> But I can see the other side of the coin in that, okay, you know some people don't like to get outside of the nine dots, and people will never use this if we don't encourage them to. So, it, there… that's the balancing act. And I certainly can appreciate that. [T65]

Targets may increase implementation to achieve the minimal levels required by the region, but reducing the voluntariness of implementation may ultimately deter units from achieving committed and effective use.

15. Exclusion of Salaries Caps Number of Stewardship Contracts that can be Offered

Because units cannot use retained receipts for salaried activities, they must find other funding sources to pay for employee time spent on stewardship contracts. Units typically pay for these salaries out of trust fund accounts. Participants in both high- and low-implementing units described their concerns about funding salaries while continuing to use stewardship contracting. Many participants said they used the monies accumulated in the trust funds to pay for salaries incurred in planning and administering stewardship contracts. In Excerpt 15.1, a participant describes how her unit typically uses brush-disposal (BD) and Knutson-Vandenberg (KV) funds to pay for salaries.

Excerpt 15.1

> [T]he value of the timber pays for the work that gets on the ground. However, there's no money allocated to administer the projects being done. The harvest part, you know, my folks do – the sale administrator, harvest inspectors, you know – they do … do that … that's their own part of the job that they get paid for. But normally, for the restoration work, which is usually done under a BD – you know, brush disposal – or the KV work, we usually collect money for our overhead – our salaries – our personnel salaries for inspectors. COR's and stuff. And with

> stewardship you don't have any of that. So, trying to fund those inspectors is a little bit of heartache for some of those specialists. I mean, how are you going to get those people paid?
>
> *Int: So, how do you get them paid?*
>
> Pretty much… using BD… using KV – and … appropriated dollars, which is not the best, but it's the only way you can do it. Because … because the law says – or maybe not the law, the – the policy – the policy says, no salaries. [T78]

In Excerpt 15.2, a participant agrees that salaries should not be used for stewardship contracting but observes that the bills must be paid somehow. In Excerpt 15.3, a participant says that she would like to use nothing but stewardship contracts but recognizes that is not feasible.

Excerpt 15.2

> I understand why Congress didn't want to fund more planning, right? … But at the same time, you have to, uh, you have to turn on the lights, you have to pay the bills. [T25]

Excerpt 15.3

> I don't personally, from a land manager's standpoint, don't see any downside. … I'd love to see all stewardship contracting. I can't think of –
>
> *Int: If you can fund them?*
>
> If we can fund them. Right. That's a limiting factor, for sure. But in theory – you know, like I – there's no downside, except for the budgeting piece. [T299]

Agency leadership may not fully appreciate the challenge they have given units to fund salaries while conducting high levels of stewardship contracts. In Excerpt 15.4, a participant describes her frustration with the regional office's lack of understanding regarding how the unit would fund stewardship at a landscape scale.

Excerpt 15.4

> So… my last stewardship proposal that I sent in I got back saying, 'Oh, you should have done your whole entire landscape for 12 million feet, done that all in stewardship.' And, I don't think there's a very good understanding from… um, uh, leadership in this Agency as to the, the… you know, the economic issues that we're dealing with on a District. … in KV, where we- we rely on those funds to fund our employees on District. But yet, we can't use any of the, the dollars for stewardship for any of the planning process.
>
> So, at some point in time, you're going to hit a cliff and not have any money to keep the people you need for planning… in… in… So, it's… and we can't uh… Yeah, so that becomes a challenge, a significant challenge. So we're supposed to prepare, be planning for the sale, do all the preparations for the sale… Oh, and by the way, none of those receipts can be retained to help for the next one. That's a big problem. … [W]e're offering about [x] million feet this year off this District. So that's about 25% of all the volume that we're putting into stewardship. And, that is significant. That's very significant… and yet, we were asked to take not 25% of this year's, but

> five years worth of all the timber offered on this District.
>
> Now, how can you even…? How can such an outlandish suggestion even be made? I'm like, 'Why you got to be kidding me.' So that's, that's uh… there's not a lot of understanding there, I don't, I don't think. [T66]

Stewardship contracts place additional burdens on the timber staff. In Excerpt 15.5, a participant describes how the timber staff manages planning the contract and expenses associated with operationalizing a project and questions whether other disciplines, who benefit from the stewardship contract, could contribute oversight.

Excerpt 15.5

> And that's, that's another heartache that we deal with, with stewardship, is that timber seems to get saddled with the planning, the, and the, and the uh, prep work and the implementation. Oh, we can go out there and cut this little teeny bit of wood, get these dollars and put it into this work.' But who, who is really, who's doing the diary, who's doing the inspections, and…? And for stewardship to be successful, it needs to be embraced by other disciplines. And currently, I think our, 'Great, have at it.' But we don't really have, we barely have, the manpower… uh, we don't have the manpower—person power, I should say—to, to implement large projects. [T74]

Even high-implementing units are precluded from using more stewardship contracts because of the impact of funding constraints on salaries. In Excerpt 15.6, the participant says that her unit is just barely getting by with the current levels of funding and muses about how much more work she could complete if she were able to find another source of funding for salaries. However, the participant also recognizes that limiting what retained receipts can be used for maximizes the on-the-ground work that can be accomplished.

Excerpt 15.6

> So yes, if there was a way to retain receipts and to um… uh, fund that, that we could pay for our own salaries, at least for prep, I mean, planning and prep…
>
> What's great about stewardship is, dollar for dollar, it puts the most money on the ground. I mean, if we collect $50,000 from a sale, we can put $50,000 right back, right back onto the ground and get the biggest bang for our buck. [T67]

All the high-implementing units said they would continue using some percentage of timber contracts so they could fund salaries for stewardship contracts. In Excerpt 15.7, a participant says that salaries are one of four reasons her unit continues to use timber contracts.

Excerpt 15.7

The sweet spot that we think for us, is, you know uh… somewhere in that 60/40 range. And it's, it's going to vary from year to year. 60% stewardship. 40% traditional sales.

Int: … Why do you still need those timber contracts?

[W]ell, there are a few things. One, uh… I think to… to get a suite of… opportunities for the public out there, I think a mix of stewardship and… and sales makes sense. Given the logging community, the types of contractors, etc. we have… mom-and-pops to bigger output. So the more diversity we can put out to them… the more it engages… the suite of people interested in doing work on the national forest. … So we need, we need some KV dollars to augment a very small timber budget to begin with, relatively small wildlife budget. So… of course with stewardship, we can't use stewardship retained receipts for salary. So in order to maintain the capacity, the human resource capacity, we need to have those tools… on a small forest. [T358]

Finding and maintaining the balance between timber and stewardship contracts is critical to maintaining the proper amounts in each fund. Several staff officers said ensuring sufficient funds are available to pay salaries was an ongoing concern, especially for high-implementing units. Units are struggling to find a balance of stewardship to timber contracts that allows them to fund salaries but also meet agency expectations for use of the tool. This moderating condition is the only one that poses a greater challenge to units with high levels of implementation than to units with low levels of implementation.

16. Frequent Turnover Provides Opportunities for Learning but Damages Relationships

Employee transfers and retirements provide both an opportunity and a challenge. Several participants became champions only after they transferred to high-implementing units. Having a first-hand opportunity to observe how the tool works allows employees to build a comfort level with this complex tool, but personnel changes damage relationships with the community. Many participants, both internal and external, used the interview as an opportunity to discuss their concerns about the affect frequent turnover and retirements have on the agency and the community.

External participants understood how transfers benefit the agency and its people, but also identified the damage it causes. In Excerpt 16.1, the participant questions whether employees can effectively manage the resource when they do not have sufficient time to learn about it before they are transferred yet again. This participant also expresses frustration with the delays in implementation caused by the turnover.

Excerpt 16.1

Industry Participant: [T]here's no continuity with the supervisors or rangers… there's a reason that they don't really engage with the community, it's because they're not going to be part of the community for any length of time.[Y]ou're working with one ranger as he or she moves through the system and is out the door, and the next one --. They aren't here long enough to gain – from a forestry sense – uh, t-to gain an understanding of what the community wants, or what the ecosystem's like from the fire standpoint. The fire folks aren't here long enough to learn about the fuel models and the wind patterns, and how to fight fire --. It's very inefficient. It's like I jumped into the milk industry for three years, and then – hopped into – you know, auto body repair. It's really weird. Granted, that's a, kind of an exaggeration but – there's no continuity. You can't get – keep things rolling.

… Actually, it's got to be frustrating, you're – collaborating with somebody, and they're out the door, and you spend – six months getting somebody else up to speed – [T137/138]

Humans need time to assimilate change, whether it is adopting an innovation, moving to a new duty station, or even accepting a new boss.

In Excerpt 16.2, a participant recognizes that frequent turnover damages carefully built relationships or decreases willingness to build them at all.

Excerpt 16.2

[T]here's a fear. Internally and externally, whenever there's a change in leadership… [T153]

Turnover increases the opportunity to spread knowledge of stewardship contracting which benefits the agency and the resource. But turnover also poses significant challenges to the agency and to implementation. Internally, turnover can lead to internal power vacuums. It also increases employee uncertainty, which hinders implementation. Externally, turnover damages the agency's ability to create long-term trusting relationships. For individuals, frequent turnover increases identification with the agency but prevents development of an intimate knowledge of the local resource, community, and industry, which requires time to create. Maintaining credibility with the public, generally, and the local community and industry, specifically, is necessary for the agency to meet its restoration goals.

Summary of Internal Moderating Conditions

Moderating conditions inside the agency can favor use in one unit but constrain use in another unit. Eight moderating conditions created within the agency were identified. These moderating conditions generally posed lower barriers to implementation at sites that had implemented stewardship contracting at high levels, although paying for salaries poses a greater challenge for units with high

levels of implementation. At units that had low levels of implementation, these conditions generally were cited as reasons those units found it difficult to use the tool.

Moderating Conditions Outside the Agency Can Favor or Constrain Implementation

The final set of conditions that affect a unit's ability to implement stewardship contracting are moderating conditions that occur outside the agency. These include local industry capacity, local community support, and concerns about appropriate scale and reauthorization of the Secure Rural Schools Act. These conditions occurred to some extent at all the units that were studied. Some of these conditions may pose formidable challenges and would require extensive, creative collaboration with local industry and community partners to find ways to use stewardship contracting.

17. Local Industry Capacity Necessary for Implementation

In many areas of the country, such as the West, industry relies on timber products from Federal lands. Industry participants in some areas said they relied on Forest Service timber products to stay open. In Excerpt 17.1, an industry participant discusses the importance of a steady flow of timber from public lands. In her area, contractors and purchasers have embraced stewardship contracts because they rely on federal timber. They have and have built the capacity to bid on and perform the services required in those contracts.

Excerpt 17.1

> Um – if we don't – get Forest Service timber, then we don't exist. I mean, even if it's *xx*% of our consumption. It- it needs to be more than that. I mean, we're- we're sitting here with – if we had more timber, and could keep our log prices in check, which we should be able to do, … we would be happy to invest millions in our facility … And – um – that's a frustration … [T320]

However, in other parts of the country, industry procures timber products from their own forests, private forests, or state forests. In these areas, the Forest Service is unable to generate interest in stewardship contracts because industry does not require Forest Service projects to remain economically viable.

Another reason for lack of interest by industry is that they have lost the capacity to perform the types of service work the Forest Service wants completed. In Excerpt 17.2, the participant explains that the capacity that once existed in her area has disappeared as a result of changes in the timber industry.

Excerpt 17.2

> [If] stewardship had come about as a big push 15 years ago here, and we still had industrial owners bidding… they were all set up, all set up to, to, to knock out the planting, to knock out … you know, a lot of your [xxx]-type work. [They were] all set up to do that work. Because at that time, you didn't have your TIMOs, and forest industry was managing their lands like they were going to be hanging onto them for a long time, like the forests, like the Forest Service. But… now that's changed and they've gradually transitioned away from that type of flavor, that sort of investment in the land. And so there aren't a lot of players out there to do some of the things that, that we need to do, that we should be doing or could be doing, on stewardship. [T70]

Two industry participants who serve units in Case Studies 6, 7, and 8 confirmed what agency employees in those areas had said; Industry in that area had no interest in stewardship contracts for the simple reason that their business model focused on self-owned, private, and state lands, and they had no need or interest in Forest Service projects or products.

Without industry participants capable of meeting the needs identified as appropriate for a stewardship contract, the tool may not be viable. Local contractors must have the capacity to complete the requested service. Several participants said that, for stewardship contracting to be successful, the needed services must be within the capabilities of a winning bidder. In Excerpt 17.3, a participant says that awareness of the external environment is, thus, important to success with the tool.

Excerpt 17.3

> I think initially there was some concern – on the timber industry – that – 'Wait a minute. Look guys, we know how to build roads, put in culverts, fix roads, cut timber, and all that kind of stuff. Now you want us to also go and … ' – Let's use an example of, uh – … making sure these noxious weeds get treated for the next five or eight years -? 'That's not normally what we do!' [T91]

Even where the benefits to industry are understood and potential purchasers have both the need for Forest Service timber and the capacity to meet Federal requirements, potential bidders may not have the capacity to prepare a bid for a stewardship contract. Responding to a Federal RFP can be complicated. In Excerpt 17.4, an industry participant describes the challenges of preparing a stewardship contracting proposal. The agency's creation of two separate contract forms – the Integrated Resource Timber Contract (IRTC) and the Integrated Resource Service Contract (IRSC) – adds a further layer of complication. In Excerpt 17.5, an industry participant estimates how long it takes her organization and how many people are required to put together a bid.

Excerpt 17.4

Industry Participant: So, the IRTCs – generally take – require a little less work than an IRSC. Just because… it seems to take more time – to write a proposal – involving a lot of service work … It seems to. And initially the Forest Service said, this is exactly what you're going to do – now writing a proposal is – telling us what you're going to do. And my thought was… well – here you go. You usually said, we'll do this. And then you said, well, this isn't very creative. (Laughs) But - we needed to go through that. Now this latest one, well – here's the area – here are the units we're thinking we'd log this way, but – you tell us. And – that's what we suggested they do.

But now we have to do it – it's really a pain. Because we have to get out on the ground and walk the units, and – they know what they want, so we're kind of having to try to guess – what we think they wanted to see ... [T131]

Excerpt 17.5

Industry Participant: [W]e spend a couple weeks. … Two or three of us. The logging manager, a forester, and me. … It's probably about 80 hours. The three of us working on it part-time for probably a couple weeks. [T141]

These organizations have sufficient overhead to be able to devote this amount of time and money. Other potential bidders may not have the resources to prepare a complex stewardship contracting proposal. If potential bidders cannot devote the resources to prepare a proposal, then a Forest Service RFP will not receive bids. In Excerpt 17.6, a participant acknowledges that bidding on a Forest Service job can be burdensome.

Excerpt 17.6

[O]ur typical timber operators … were really opposed to us putting a lot in stewardship contracting. They viewed it as a giant, extra headache. They threatened to not bid on our sales. There was a lot of angst from the logging community about it. They don't know how to do some of these other projects. They don't know how to contract them. There is a sense sometimes from the loggers that, if they do a FS job, it's unlike any other job. We have so many regulations, and clauses in the contract. It is so burdensome. [T204]

Smaller operators are not the only potential participants to shy away from stewardship contracts. In Excerpt 17.7, a participant says that even some large organizations will not bid on stewardship contracts.

Excerpt 17.7

[I]t was one particular forester that works for a TIMO, and he was going to bid on our first stewardship sale, but the TIMO wouldn't support him in doing that. … But he didn't have any support from [his] TIMO because of the complexity. [T]hey just want to cut wood and go. They don't want to have to be on the string for anything else. [T71]

Stewardship contracting is predicated on having an industry partner willing to learn and collaborate on the process.

Even where local industry perceives the benefits and needs the products, contractors are available to provide the requested services, and someone can be found to manage the bidding and performance, there must be a mill – suitably tooled to use the harvested products – within viable transport distance. Many areas, especially parts of the West, no longer have mills close enough to the Forest to handle the harvested products. In Excerpt 17.8, a participant contrasts her unit, which has a good number of local mills tooled for the products that come off her unit, to two other forests who do not have the same quantity of infrastructure. In Excerpt 17.9, a different participant states that infrastructure is the key to successful implementation of stewardship contracting. She describes trying to use stewardship contracting at a previous duty station where there was not sufficient infrastructure, and her frustration that her unit was unable to offer stewardship contracts. She contrasts that with her present situation, where the unit has supported the local infrastructure, recognizing the importance of maintaining that infrastructure to achieving the unit's land management goals. In the second half of this excerpt, she describes the haul distances that allow the industry to remain profitable. Haul distances and fuel costs are two aspects of the external environment that units must consider when preparing a stewardship project.

Excerpt 17.8

[W[e are lucky here – compared to some places … where they have little or no infrastructure. We have a real good infrastructure here. [T81]

Excerpt 17.9

Int: So you have to have enough infrastructure?

There you go – there you go. That's the key. Now, if you can solve the infrastructure problem, that's the key … [T194]

It is not enough for the Forest Service to offer a stewardship contract, industry must have or be able to develop the necessary infrastructure.

Another challenge is posed by the types of timber products available from stewardship contracts. Several participants, both inside the Forest Service and in industry, said stewardship contracts often yield low-value products, such as biomass. Mills may have difficulty using these low-value products. In Excerpt 17.10, an industry participant says that competitors in her area are unwilling to bid on a stewardship contract when they cannot use all the products. Industry is frustrated by offers of

volume it cannot use. For a stewardship contract to be cost-effective for the purchaser, the product mix must be attractive to the purchaser. Contracts with unusable volume may not receive bids.

Excerpt 17.10

> [T]he other mills want bigger logs, and generally, stewardship projects don't have a high percentage of large logs … [The other mills in the area are] frustrated because the Forest Service isn't putting out timber sales the way it used to, and they think they should… the way I think it should. Because for them [the other mills] to go through all the work of preparing a stewardship project proposal where it – there's a significant portion of volume they can't use, you know, that is – it isn't worth it. [T135]

It is not enough for a Forest to have harvestable timber products. For stewardship contracting to be operationalized, local timber industry providers must perceive the benefits of stewardship contracts and rely on Forest Service projects and products; provide the land management services needed by the Forest Service; successfully bid on and perform to Federal requirements; and use and/or add value to the harvested products. Some of these obstacles have been surmounted. However, unless these obstacles are overcome, the lack of local capacity narrows the list of units for which stewardship contracting is possible.

18. Local Community Support Increases Implementation

Participants in units where stewardship contracting has achieved high levels of implementation described how the tool was perceived to be compatible with the local community's needs and values.

In Excerpt 18.1, an external participant describes her local community's enthusiasm for stewardship contracting.

Excerpt 18.1

> External Participant: The industry and conservation recognize the value in doing stewardship contracting, and we embrace it wholeheartedly and we told the agency to embrace it wholeheartedly and [the supervisor] saw the advantage and um, … um … yknow and – yeah. I think that's why. That's why [we] ended up with a high number of stewardship projects going through. [T168]

In Excerpt 18.2, the participant observes that stewardship contracting works for her forest because the agency has built strong relationships with the public.

Excerpt 18.2

> It goes all right back to when we were doing the forest plan revision, in the early part of 2xxx. … During the process, the forest embraced a collaborative approach with the public and stakeholders in and around [the area]. We had no less than 50 meetings… really intensive collaboration. … By time we got to end of that planning process we had established new relationships with the public and our partners and nurtured ones already in existence that were already in place before planning had started. We felt we knew what folks were wanting. [T246]

In Excerpt 18.3, the participant says that the forest conducts its planning processes with the community early on, before starting the NEPA process and, as a result, the public and the agency feel there are "fewer surprises, fewer issues, … less contention."

Excerpt 18.3

> Five things were high priorities … What we wanted to do was replicate the collaborative process we had established in the forest planning process in a site-specific planning process.… We wanted to replicate the collaboration – an up-front approach. A site-specific collaborative approach. Spend more time in the planning phase of project development, working with public in a pretty focused, intense way. By the time we were ready to start NEPA, everybody knew what it was we were planning to do. No surprises. Fewer surprises, fewer issues, less time you need to take to do environmental analysis, less issues to address. Less contention…. [T246]

External participants identified collaboration with local stakeholders – and the lack of appeals and litigation – as critical to the agency's ability to successfully implement stewardship contracting. In Excerpt 18.4, an external participant describes the importance of collaboration.

Excerpt 18.4

> External Participant: [T]he Forest Service can implement things better if they don't have everybody battling them over it. And so if you've already got people battling you over every timber sale, it's got to be harder for them – to say well let's try something new! And – and people will go, well that's just the same old thing… in different clothing. It's still logging.
>
> Whereas for us… it was like – whatever! We would – we'd approve it, and you could call it a timber sale, or a stewardship contract… but after you – you know, we either approve it or we don't –approve of it – but… once you kind of get in working with the agency and the timber people, you realize there really are some advantages to stewardship contracting over traditional timber sales. …. Retained receipts… and, you know, things like that. [T99]

Where industry relies on Forest Service timber, the benefits of stewardship contracting are understood. In Excerpt 18.5, the participant describes how both the local environmental community and timber industry liked stewardship contracting. Not only did the use of the tool increase timber sales but also it reduced appeals and litigation by the environmental community. For the timber industry, this increased their confidence that projects could go forward as planned, giving them more security in

managing their human, equipment, and financial resources. In this location, stewardship contracts receive bids because everyone benefits, not just the Forest Service.

Excerpt 18.5

[T]he environmental community liked it from the standpoint that it did allow them to work with us and understand, and it was sold fairly well and understood that hey, this is something we need to do. It also was … a lot of areas [are] dry forest that … we're way more obvious about what to do there – as far as the treatments go, and as far as industry goes they were behind the idea, and they could see the benefits that – us – being able to work with everybody… on those urban interface areas. That made sense… and… you know it kind of all came together that way. It wasn't just one thing, that caused it to work, …. [T309]

Industry participants, not surprisingly, would like the agency to increase scales because it often translates into greater profitability. However, many industry participants are able to move beyond dollar figures to consider the health of the land. In Excerpt 18.6, an industry participant says she wants larger scales because more can be accomplished on the land. She identifies the potential of retained receipts but says that institutional policies have limited how retained receipts can be used; thus limiting the amount of restoration that can be accomplished.

Excerpt 18.6

Industry Participant: My dream is… is to expand receipts so that it can self-fund and also use- do these forest health projects, you know, fuels reduction… And then use the receipts to fund further projects and also build an infrastructure for recreation – you know? Uh.. So that – multiple user groups can really enjoy the forest. Use it to pick up trash. You know, make the forest a better healthy – healthier place so that everybody can recreate… For wildlife manage- … You know there's just a lot – a lot of neat programs that aren't funded. Weed control. There's not – there's not funding for that, and we have this great resource that needs – help and the – the trees are worth something and we can take that money – and take – take care of the forest. It seems so simple to me.

… [If]ithe scale was larger, and – and – the Forest Service gained the economies of that scale, and also got more efficient, they also – there'd be more retained receipts so they could do more work on the ground. [T131]

This participant Landscape-scale projects are more desirable for many reasons. In Excerpt 18.7, another industry participant said that larger scales created efficiencies for industry. The environmental groups also support larger-scale projects to improve wildlife habitat. In Excerpt 18.8, another industry participant describes efficiency for the Forest Service as a benefit of designing larger-scale projects.

Excerpt 18.7

Industry Participant: The other thing about these large – contracts – is you get – um, you get the guys that are able to move into one area? Focus on their operational efficiencies - not have to move their equipment constantly? That's a problem with the way the Forest Service likes to do things?

They make these micro-projects? And – you can't live when you're moving your equipment around all the time, or walking it a mile down the road to the next unit, when the forest in between the two units needs as much treatment as the- the spots that they've got for their units. [T174]

Excerpt 18.8

Industry Participant: [Y]ou know, we don't have to hit one or … a thousand acres really hard, we can do much more light-touch restoration on 5,000, or 10,000 acres, and uh … you know, you've got a beautiful looking forest out there, all the time. You know? It can be done. It can be done. (Laughing) [T175]

19. Secure Rural Schools Act Critical to Continued Community Acceptance

The 10-ton gorilla in the room is the Secure Rural Schools Act. Local communities will continue to accept stewardship contracting as long as they continue to receive subsidies to offset their inability to collect tax revenue on federal lands. However, if local communities lose those subsidies, then support for stewardship contracting will not only evaporate but communities are likely to request the agency to shift the balance from the current focus on stewardship contracts to a return to privileging timber contracts.

Counties will support stewardship contracting if they believe it provides benefits that offset the revenue lost by performing sales under the stewardship contracting authority rather than as a timber sale. In Excerpt 19.1, a participant describes how the county and public believe that stewardship contracts provide economic benefits to the local community.

Excerpt 19.1

I said [to the county commissioners], 'Hey, look … These funds that go to stewardship contracting – that money – is not part of the 25% return receipts to the county. So however, right now, you're at a point where we have a guaranteed return – uhmmm – (…) the Secure Schools funding act.' So I said – whether we do this or not, you'll get the same amount of money. And one of the guys said, you know – because this money will go to hiring – more localized contractors… I kind of wonder in the long run, he says, if we won't see that money coming back to our coffers anyway, because of the revenues it generates, because it's going to – flip over, you know, 4–6 times. [T90]

Agency employees who interact with the communities have heightened awareness of their communities' concerns. In Excerpts 19.2 and 19.3, two participants observe that stewardship contracting will be supported as long as the community continues to receive sufficient economic benefits.

Excerpt 19.2

[I]f you went to all stewardship, what would they do? I mean, those… again, those communities rely on those funds… And that's the way our forest can be seen in a positive light in supporting those communities. Uh, as… where if that's taken away, that's one more negative, uh, against us. And we certainly don't need that. [T66]

Excerpt 19.3

If that's [Secure Rural Schools Act] in place, it's – no biggie. But if that goes away, then – the commissioners may have a – different viewpoint. [T80]

Communities have accepted the loss of the 25% trust fund moneys because they believe retained receipts offset those losses. If local communities no longer received these moneys, local support for stewardship contracting would be jeopardized, as described by the external participant in Excerpt 19.4 and the agency participant in Excerpt 19.5.

Excerpt 19.4

External Participant: That card hasn't been flipped over yet, because we keep re-funding, or re-appropriating, money for the Secure Rural Schools thing. When that – if that ever doesn't get reauthorized, the counties are going to say – oh, you know, you don't get any of the stewardship money. That'll be interesting. [T142]

Excerpt 19.5

[The county commissioners are] lookin', and askin', is it better to have our – our communities working in the woods, doing that service work, or would it be better to get our 25%? To put into roads and schools?

The answer – there is no answer yet. But they're asking… themselves. Umm… So I think we're going to be (at) a crossroads in a year or two, to where the [Forest offers fewer stewardship contracts and more timber contracts. … Because of the economics of it. [T144]

Several participants questioned whether the benefits to the community of stewardship contracting were as significant as has been suggested. In Excerpt 19.6, a participant mentions that low-value timber results in relatively little retained receipts, thus limiting the cash flow to the local

community. She questions whether stewardship contracting really does provide a benefit over traditional subsidies.

Excerpt 19.6

> [W]hat do you gain? Well, you gain m-, in theory, if you got a high-margin sale, you're going to get more out of those stewardship dollars. We don't get a lot of margin out of ours. We have… we are, have expensive… we're in the black, but they're expensive sales to pull together— [T3]

As long as Secure Rural Schools remains a source of subsidies for local communities, those communities will continue to accept stewardship contracting. If the Act is not reauthorized, however, and no substitute is created to offset a community's inability to collect taxes on federal lands, then support for stewardship contracting will likely evaporate.

Summary of External Moderating Conditions

Moderating conditions outside the agency can favor use in one unit but constrain use in another unit. Three external moderators were identified: local industry capacity, local community support, and the Secure Rural Schools Act. All the units in this study had sufficient local infrastructure. Units that had high levels of implementation had willing industry partners. Units with low levels of implementation lacked industry support. Units with high levels of implementation also received strong support from the local community, whereas units with low levels of implementation had little or no support from the local community.

Both local industry and the local community identified project scale as a concern. This condition did not appear to affect a unit's current ability to use the tool but may affect future projects. More importantly, this condition affects the agency's credibility as a wise and effective user of taxpayer dollars. The final condition that was identified as critical to the ongoing use of stewardship contracting is the Secure Rural Schools Act. All the participants expressed concern about the future of stewardship contracting if the Act is not reauthorized.

Summary of Conditions that Affect Implementation of Stewardship Contracting

In all the case studies, participants identified specific conditions that favored and/or constrained implementation of stewardship contracting. Four sets of conditions emerged in this research.

- **Antecedent conditions**, such as risk of catastrophic wildfire and the creation of capacity for collaboration, provide a compelling motive for the unit to implement stewardship contracting. These conditions also create momentum in the local community to collaborate with the agency

to find solutions to forest health problems. Four antecedent conditions were identified: risk of catastrophic wildfire, adverse socioeconomic effects to the local community, timber program reinvention, and development of collaborative capacity. At least two antecedent conditions were identified at each of the units that had high levels of implementation. No antecedent conditions were present at the units that had low levels of implementation.

- **Organizational conditions**, such as leadership encouragement and an openness to change, create a climate that fosters or constrains implementation. Individually these conditions are insufficient to maintain implementation; in combination, however, these conditions create a climate that enables a unit to achieve and sustain high levels of implementation. Four organizational conditions were identified: leadership that creates a climate for change, staff officers committed to implementation, employee openness to change and learning, and intraorganizational collaboration. All four conditions were strongly evident at the units that had high levels of implementation. In contrast, only one of the four conditions – encouragement by leadership – was identified at the units with low levels of implementation.
- **Moderating conditions within the agency** affect a unit's ability to implement stewardship contracting. Some of these conditions, such as inherent complexity, are endemic to the tool. A second source of these conditions, such as how and where retained receipts can be used, is variability in regional office interpretations. A third source of these conditions, such as limitations on the types of restoration that can be performed, comes from the Washington Office. Eight moderating conditions created within the agency were identified: retained receipts, paying for salaries, employee turnover, approval processes, limits on use, mandatory targets, inherent complexity, and multiplicity of understandings. Most of these moderating conditions posed lower barriers for units that had high levels of implementation, and higher barriers for units with low levels of implementation. The effects of one condition, though, are reversed; paying for salaries poses a greater challenge where units have high levels of implementation.
- **Moderating conditions outside the agency** also affect a unit's ability to implement stewardship contracting. Three external moderators were identified: local industry capacity, local community support, and the Secure Rural Schools Act. Presence of the first two of these conditions was identified as a factor allowing units to achieve high levels of implementation, whereas their absence reduced a unit's ability to implement the tool. The final condition, Secure Rural Schools Act, is critical to the success of stewardship contracting. The future of the tool is in jeopardy if the Act is not reauthorized.

Part II: Benefits Realized from Stewardship Contracting

Implementation of Stewardship Contracting Provides Benefits

At the units that had implemented stewardship contracting at high levels, participants said that stewardship contracting provided benefits over the traditional mechanisms of timber and service contracts. These benefits were often described in terms of "efficiencies." In contrast, at the units that had low levels of implementation, participants did not believe the tool provided sufficient benefits to justify its use. These units were able to meet their needs through continued use of timber and service contracts.

One of the benefits of stewardship contract is the ability to combine into a single contract both the timber sale and the procurement, as described in Excerpt 20.1. Using one contract instead of two or three reduces the costs to the government.

Excerpt 20.1

> [I]t's an authority we have to – include some of the services we want – in an area that contains a timber sale, that's in the- timber sale contract, so we don't have to sep- we don't have to issue separate contracts. It makes it more efficient for the government. [T94]

Another aspect of the efficiency gained from using a single contract is that it can offset the reductions in human and financial resources, which is especially important in this era of budget and workforce reductions. In Excerpt 20.2, a participant describes how stewardship allows her unit to do more with less.

Excerpt 20.2

> We're small. And timber sales take a lot of resources – people, time, money. Because of the type of timber we manage. … They have a lot of value. It takes time to set up sales. We don't do clearcutting, which is the most efficient. We do selection harvest, individual tree harvesting. We have to cover a larger land base to get the same amount of timber volume. That results in money coming into the Treasury.
>
> We looked at it [stewardship] because we do take more money to set up same amount of volume. We can't compete with forests who can produce more cheaply, especially the lake states. We thought the stewardship model was a good way to diversify funding on our forest. Money that comes out of sales is retained. That would help us supplement our budgetary problems.
>
> We knew the investment up front would not be fully realized for several years. But it's finally starting to pay off. We are able to do things and fund things that under normal circumstances we would not be able to do. Because of retained receipts, which is the whole concept of stewardship in the first place. [T247]

Staff officers who deal with the day-to-day operationalization of stewardship contracts have heightened awareness of the efficiencies gained from using a single contract. Line officers, who focus on the management aspects, perceive the advantages in terms of employee morale. In Excerpt 20.3, a line officer claims she does not benefit directly but includes herself when she uses the word "we" to describe her unit's enthusiasm for stewardship contracting.

Excerpt 20.3

Knowing that we can get work done that we otherwise couldn't get done, and that really excites employees. [T162]

Another reason for the increase in employee morale is the improved relationships with the community, as described by the participant quoted in Excerpt 20.4.

Excerpt 20.4

It, it has been a lot, it has been more work, I will say. But now we're at a point where it feels really good because it's starting to pay off. We're not in litigation. We don't have appeals on our projects. We work collaboratively. We added an extra year to our planning cycle so that we could slow down and have that conversation. [T386]

Another efficiency is gained when the local community supports agency actions, instead of filing appeals or litigation. In Excerpt 20.5, the participant describes how the agency benefits not only from the avoidance of delays as well as using a single contract. In addition, the participant mentions the benefit of retaining receipts, which her unit can use to complete more restoration activities. However, the unit has had to defend its high levels of use of the tool to personnel in the timber organization at the regional level.

Excerpt 20.5

The very nature of stewardship contracting on collaboration, you invite the environmentalists to the table and we work out the forest restoration issues and concerns there. On stewardship contracting, it's very very very seldom you get a block on the NEPA. So seldom.

You go in, and do you do – your fuel reduction, and all your other stuff, and you're logging, all at the same time – with the same guys? My goodness, you're saving money. And if you can get retained receipts too – even if you're paying for services – your – we're – there's just – it's just hugely efficient. [T195]

The efficiencies gained from using stewardship contracts do not necessarily occur during a unit's early use but only emerge over time. In Excerpt 20.6, a participant observes that the complexity of this

tool means that it cannot be fully grasped quickly or easily, and the agency should expect a long learning curve before units and the local community can achieve the full benefits of using the tool.

Excerpt 20.6

> Certainly the more it becomes more institutionalized and how we do business and the more that our vendors or our contractors out there, know how to submit good bids. …
>
> So it's, as that knowledge and those connections out there start to happen… and they're starting… we see some efficiencies and some gains there. [T361]

Shifting decision-making from the Washington or regional offices to the local unit is also perceived as a benefit to the agency and the resource. In Excerpt 20.7, an external participant says that devolution of decisions and budgets to the units increases the likelihood appropriations will be allocated according to actual resources needs rather than politics.

Excerpt 20.7

> I think stewardship – stewardship contracting is the best because […] this is the cultural problem in a big way, is the budget control is out of the WO and the RO, and… and… it's like, they don't want to give up their prerogative to take the money and put it around and do whatever they want to with it, but what we *ne-e-eed* is a more efficient system: it doesn't make sense, you know, to have this bureaucracy spread all over the place and, you know it's taking a lot of money to make it function… [T176]

Whereas units with high levels of implementation perceive multiple benefits from using the tool, units where the tool has not been used frequently did not see an advantage to using the tool. Instead, the tool is seen as incompatible with the unit's needs and environment. These units continue to use timber and service contracts to meet their needs. In Excerpt 20.8 a participant argues persuasively that the local community would not reap any more benefit from using a stewardship contract than the traditional mechanisms because the work and the money are already being kept locally, an argument against relative advantage. Another reason she gives is that the tool was developed in the West to ameliorate Western problems in the timber industry, problems which do not exist in her unit's location. For each project, her unit weighs the tradeoffs of using a stewardship contract. This unit has not yet identified in what ways stewardship contracting is better than timber and service contracts.

Excerpt 20.8.

Int: What's the outlook for stewardship here? …

… I think one thing is that our current tools have been great. And we saw that this is a new tool in the toolbox, and it's good to have the tool, but… that there is no one… it's not like a best tool for us. And one of the… there's several drawbacks here: one is industry has been pretty much against it and they don't, they have not embraced it as a tool that they wanted to get involved in. Um, two, I would say the towns in the county have not been against it; they, there's no receipts collected for the towns and counties so, and they see that as a huge drawback… you just have to think about each project that's coming along and saying, "Does it fit here? Does it fit with this community? With this, with the potential collaborators that we've got here or not?' [T1]

Summary of Benefits of Stewardship Contracting

Units that implemented stewardship contracting at high levels describe the benefits of accomplishing work on the ground and achieving efficiencies. The efficiencies are derived from bundling projects and issuing a single contract, rather than multiple contracts. Using a single contract reduces the amount of human and financial resources required to complete activities. External participants viewed stewardship contracting as increasing efficiency because it moved decision-making out to the units. Another benefit of stewardship contracting is the increased goodwill with the public, although this may be tempered when projects are delayed or collaboration suffers as a result of limited budgets and over-extended staff.

In contrast, at the units that had low levels of implementation, participants did not believe the tool provided sufficient benefits to justify its use. The tool was seen as being useful in a range of conditions not present at the low-implementing units, or to fill needs that similarly were not present at these units. These units are able to meet their needs through continued use of timber and service contracts and will use stewardship contracting to meet targets but not because it is seen as the best tool for the job.

CHAPTER 5: DISCUSSION AND CONCLUSIONS

In 2003, Congress authorized the Forest Service to use stewardship contracting (*Consolidated Appropriations Resolution, 2003*, Pub. L. 108-7, Division F, Title III, Section 323). The innovative tool provides several advantages. First, it gives flexibility to Forest Service contracting for products and services. Instead of the multiple contracts, multiple entries, and administrative inefficiencies resulting from separate timber sale and service contracts, a stewardship contract allows the agency to combine sale of products and purchase of services into one contract, reducing the number of entries onto the land and increasing administrative efficiency (Moseley, 2010). Second, the tool enables the Forest Service to help rural communities by creating jobs and contributing to economic growth. Instead of awarding sales to the highest bidder and purchasing services from the lowest bidder, stewardship contracts can be awarded on the basis of best value, including preference to bidders who offer to hire and purchase locally (U.S. Forest Service, 2014b). Third, the unit selling the product can keep the receipts to use to complete work "on the ground." Under traditional timber sale contracts, receipts from sale of products are sent to the U.S. Treasury general fund, and work on the ground is paid for through appropriated dollars (U.S. General Accounting Office, 2008). Other advantages include collaboration with communities and stakeholders and contract durations of up to 10 years.

However, although the innovation provided multiple benefits, implementation of the tool has not met expectations (Pinchot Institute, 2014). This study examined why some national forests and ranger districts implemented stewardship contracts at higher rates than others.

This chapter begins with a synthesis of the empirical findings from the study with prior research to show how these converge to answer the research question. Next is a discussion of how the information gained from this study has clarified our theoretical understanding of the diffusion process. The third section provides management recommendations for implementation and achieving institutionalization based on the findings. The chapter concludes with a discussion of limitations and directions for future research.

Synthesis of Empirical Findings

This study identified 19 conditions that favor or constrain a unit's ability to implement and, ultimately, institutionalize this innovation. The conditions are grouped into four sets: antecedent, organizational, moderating inside the agency, and moderating outside the agency. (A concept map of the conditions is provided as Figure 9 in Chapter 4.)

Antecedent Conditions Compatible with the Tool Create Incentives for Implementation

Units that implemented stewardship contracting at high levels had an antecedent condition compatible with the tool. This concurs with the finding in prior research that organizations adopt innovations in response to external pressures, crises, and dramatic failures (Briscoe and Safford, 2008; Ikenberry, 1989; Schneiberg and Lounsbury, 2008). The four antecedents present at the high-implementing units were:

- Avoidance of adverse socioeconomic impacts to the local community;
- Avoidance of wildfire in the wildland-urban interface;
- Reinvention and restaffing of a unit's timber program; and
- Development of a unit's capacity for intraorganizational collaboration.

Strong evidence for the first two antecedents was identified at Study Site 1. Strong evidence for the third and fourth antecedent, and weak evidence for the second antecedent was identified at Study Site 2. No antecedents were identified at Study Site 3.

Organizational Conditions Compatible with the Tool Create a Climate Suitable for Implementation

Units that implemented stewardship contracting at high levels also had an organizational climate that meshed with the tool's complexity. This agrees with prior research showing that implementation of an innovation is enhanced when a suitable culture exists (Beyer and Trice, 1978; Damanpour, 1991; Tushman and O'Reilly, 1997; Zaltman, Duncan, and Holbek, 1973). The four organizational conditions present at the high-implementing units were:

- Transformational leaders who created the vision and determination for implementation;
- Staff officers committed to implementation who maximized the tool's use;
- Employees who embraced the uncertainties inherent in all innovations; and
- Employees who built strong intraorganizational collaborative social systems.

The first organizational condition was identified at all three study sites. Strong evidence for the other three organizational conditions was identified at Study Site 1 and at Study Site 3. Evidence for the second, third, and fourth organizational conditions were not identified at Study Site 3.

A few aspects of culture and climate for this research are particularly noteworthy. Previous research that pointed to the importance of organizational culture for implementation was confirmed. High-implementing units embraced participative decision-making, freely shared information across

functional silos, and provided support and collaboration, in line with three of Hurley and Hult's (1998) dimensions of organizational innovations. Evidence of power-sharing, Hurley and Hult's fourth dimension, was not clearly identified. Two of Dobni's (2008) four dimensions were also strongly supported at the high-implementing study sites: employee orientation toward innovation, and a supportive environment that accepts the risks and rewards of implementation. This study did not specifically seek evidence for Dobni's other two dimensions: intention to be innovative and infrastructure to support innovation.

Participants at the high-implementing study sites embraced ambiguity, were willing to develop collaborative agendas, and shared their thoughts and concerns openly, in line with Jassawalla and Sashittal's (2003) findings. This study did not seek evidence for those author's other findings of appreciation for diverse orientations and willingness to engage in constructive conflict.

Other previous studies' findings that were strongly confirmed were those of *centrality to mission*, which is defined as the degree to which an innovation is perceived as enhancing a user's achievement of their tasks (Moore and Benbasat, 1991; Yetton, Sharman, and Southon, 1999) and *commitment,* which is particularly important when the innovation requires coordination among multiple organizational members (Zaltman, Duncan, and Holbek, 1973). More problematic were the results for *voluntariness*, which is the degree to which the user believes implementation is voluntary or of free will, (Rogers, 2003). Results from prior research indicate that as voluntariness increases, implementation decreases. At the high-implementing units, line officers strongly encouraged implementation of stewardship contracting, which reduced the perception of voluntariness but did not reduce use of the innovation. Mandatory targets set by the regional office also act to reduce voluntariness. At Study Site 2, the targets did not have an adverse impact. However, at Study Site 3, the mandatory targets were contested by participants.

Permanence is the degree to which the innovation is expected to persist within the organization (Beyer and Trice, 1978). At the high-implementing sites, participants were aware of the temporary nature of the 2003 Congressional authorization but believed the authorization would be extended or even made permanent. At the low-implementing sites, participants were less certain of the permanence of the tool, which appeared to support their resistance to implementation.

Prior research indicated that organizational culture would be an important determinant in implementation, which was supported in this study (Tushman and O'Reilly, 1997). However, organizational structures and systems did not appear to be important to implementation in this study. That may be because prior research focused on innovation rather than implementation, or because

prior research used quantitative methods on a large statistical sample, in which these effects are more likely to be identifiable.

One finding in this study that could cause confusion is what this author would entitle "centralization of personnel." Rogers (1995) uses the term *centralization* to describe centralization of power in an organization. In this study, centralization describes the location of key employees vis-à-vis each other; that is, whether they are centrally located. At the high-implementing Study Site 1, staff officers with essential responsibilities for the tool were centrally located at the supervisor's office. This enabled these individuals to consult each other frequently to determine how best to design a stewardship project. The contracting officers, especially, frequently sought counsel from their counterpart when dealing with a contract issue that was foreign to them (i.e., the AQM officer consulted the timber officer when she encountered questions about timber contracting procedures, while the timber officer consulted the AQM officer when she had questions about FARs-related procedures). This attribute has not been described in prior research, but it was critical to the successful implementation at the high-implementing Study Site 1. Although employees at Study Site 2 were physically located at multiple duty stations, it may be that their participation in self-managing teams resulted in frequent meetings at a central location, which functioned in the same way as co-location.

Centralization of the key employees at the high-implementing Study Site 1 is closely linked to the cultural aspect of organizational interconnectedness that was also found at these units. *Organizational interconnectedness* refers to degree to which units are linked by networks of interpersonal relationships (Rogers, 1995). A strong interpersonal relationship had been built among the two mission-critical employees even while one was still working on another forest. When that employee relocated to the units studied, the close proximity her office to that of her counterpart allowed the two employees to increase the strength of the interpersonal links they had already built.

Another aspect of organizational climate – internal collaboration – also contributed to the ability of employees at the three units at Study Site 1 to implement stewardship contracting at high levels. The Forest Service has strongly endorsed the importance of external-facing collaboration (U.S. Forest Service, 2014a). Those same skills can be profitably turned inward to bridge the boundaries between disciplines. Deputy Regional Forester for Region 5 Barnie Gyant recently noted that the organization is in silos (Brenner, 2015). Each silo has its own culture, and some of those silos have been traditionally more important than others, which increases the potential for internal conflicts when one resource area is privileged over others. Employees at Study Sites 1 and, to a lesser extent, at Study Site 2 described how

they bridged those boundaries, leveraging each other's resources to help all of them accomplish their objectives.

Although the two high-implementing units at Study Site 2 had only moderate levels of centralization, they also had high organizational interconnectedness and higher levels than Study Site 1 of internal collaboration. These units had used self-managing teams, which created strong organizational interconnectedness and very strong internal collaboration capacity. In addition, they had recently completed intensive collaboration during their forest planning process, led by a former Peace Corps volunteer who was now a Forest Service employee. That individual modeled what one participant referred to as a "three cups of tea … getting to know your neighbors approach." Several participants said they learned how to collaborate by shadowing their colleague and going out into the community. The employees then brought those skills in-house, using them to forge strong interpersonal relationships.

In contrast, in the three low-implementing units at Study Site 3, no evidence was found for any of these three aspects. Employees with key roles in stewardship contracting were distributed throughout the ranger stations and the supervisor's office. No evidence was found of the strong organizational connectedness or internal collaboration that was present in the units with high levels of implementation. These three units appeared to be much more stand-alone and independent of one another. Mentions of colleagues in other units were less frequent and contained less of the casual camaraderie that was found at the units with high levels of implementation. It seems that stewardship contracting is sufficiently complex and complicated that it requires an adequate intensity of organizational interconnectedness and internal collaboration to provide the necessary support to the individuals involved.

Units that had high levels of implementation also had several staff and line officers with prior experience and who self-identified as being open to change and tolerant of the inherent risk and uncertainty associated with innovations. Compatibility with past history, tolerance of ambiguity, and learning styles are identified in the literature as individual traits associated with the use of innovations (Berman, 2003; Damanpour and Schneider, 2006; Greenhalgh, et al., 2014).

At the three high-implementing units at Study Site 1, three agency employees with key roles in the implementation of stewardship contracting had prior experience with the tool or similar initiatives. Five employees (including the three with prior experience) described themselves as eager to learn about and try new ideas; all of these employees identified themselves as champions of the tool. Champions enthusiastically support and demonstrate personal commitment to the innovation (Shane, 1995). In addition, most of the line officers in place when the units began intensive implementation of

stewardship contracting were identified by colleagues as champions or proponents of the tool. This finding was likely influenced by the then–forest supervisor who, by all accounts, was a persuasive advocate for stewardship contracting. The line officers, especially the then–forest supervisor, served as transformational leaders.

None of the participants at the high-implementing units at Study Site 2 or the low-implementing units at Study Site 3 had significant prior experience with the tool before beginning duties at those units. However, even though they had no prior experience, the participants at the two high-implementing units at Study Site 3 described themselves as champions. They also described their colleagues at the time the tool was initiated, especially the then–forest supervisor and the two district rangers, as being proponents. As with the three units at Study Site 1, the line officers served as transformational leaders (Shane, 1995). One participant said she originally hesitated to use the tool but, over time, she became one of the tool's fiercest advocates.

In contrast, only one employee at the three low-implementing units at Study Site 3 described herself as a strong advocate for the tool. Although that person served in a leadership role, she had not persuaded other members of the organization to support the innovation, a necessary step to become a champion (Shane, 1995). In fact, one person suggested that employees at the high-implementing units at Study Site 2 had "drunk the Koolaid," a pejorative expression suggesting a person or group has an unquestioned belief in something that they have not critically examined. It is not surprising that these units have implemented the tool at only low levels given their lack of belief in its relative advantage.

Staff officers, even more than line officers, are the key to successful implementation of stewardship contracting. Staff officers serve in two of the roles Shane (1995) identified as particularly important to implementation: project champions and network facilitators. Project champions support the tool's use and demonstrate their personal commitment. Network facilitators develop cross-functional coalitions between specialists in different disciplines. Staff officers carry out the management vision set by line officers, who serve as transformational leaders, a third role Shane (1995) identified.

At the high-implementing units, staff officers were project champions and network facilitators. What is particularly important is that they carried out these roles as part of their day-to-day activities. In contrast to line officers, who are focused on the "big picture," staff officers "pull the levers and throw the switches and keep the … motor running." In contrast, at the low-implementing units, the staff officers were more likely to describe barriers and obstacles to implementation and describe the difficulties they had when carrying out the few projects they had conducted.

Resistance to implementation of the tool stems from three sources: the person, the system, or the context (Markus, 1983). All three of these sources of resistance are present in low-implementing units. Some employees resist implementing the tool because of their own internal factors. A second source is system design, especially regional office policies, which also leads to user resistance. A third source is the interaction between the system and the organization, which leads to resistance. Some combination of these three sources of resistance are present in all human endeavors, but at high-implementing units, the individuals' disposition toward innovation, a suitable organizational climate, and supportive regional policies allowed these units to embrace and institutionalize the innovation.

For an innovation to become institutionalized in an organization, it must achieve widespread use, become a part of regular daily activities, and displace old practices (Yin, 1978; Zmud and Apple, 1992). At the high-implementing units, stewardship contracting is not only used regularly and repeatedly, it is used more frequently than the two mechanisms it replaced, timber and procurement contracts. At the low-implementing units, stewardship contracting is used only enough to meet targets set by the regional offices and, even then, reluctantly and on small-scale projects. That is not to say that these units do not want to use the tool, but rather that they have yet to find a means to do so that fits with their culture and needs.

Moderating Conditions Inside the Agency Favor or Constrain Opportunities for Implementation

Units that implemented stewardship contracting at high levels were able to overcome barriers posed by moderating conditions inside the agency. In contrast, low-implementing units were not able to overcome the barriers posed by these conditions. Moderating conditions inside the agency arise from the tool itself, are imposed top-down by national and regional office guidance and interpretations, or stem from conditions outside the agency in the local community. The eight conditions that were identified are: retained receipts, paying for salaries, turnover, regional office approvals, limits on use, mandatory targets, inherent complexity, and multiplicity of understandings.

Retained Receipts. Region-specific policy interpretations regarding how and where and when retained receipts can be used create potential barriers for both high-implementing and low-implementing units. Changes to interpretations over time as well as discrepancies between regions cause frustration among both internal Forest Service employees and external collaborators. Retained receipts are one of the most complex aspects of stewardship contracting and one of the most problematic. The lack of transparency and consistency in how and where retained receipts can be used

reduces the agency's credibility among its employees as well as external collaborators. This issue posed a potential barrier at all eight units that were studied.

Salaries. Paying for salaries creates a continual source of concern for units and limits the extent to which stewardship contracting can be used. This is the only condition that creates a higher barrier for high-implementing units than for low-implementing units since high-implementing units must balance the constant need to replenish trust funds to pay for salaries to conduct stewardship contracts with the desire to maximize the benefits gained from using stewardship contracts.

Turnover. Frequent turnover creates both opportunities and challenges for implementation. Assignment to new duty stations that have embraced stewardship contracting provides opportunities for agency employees to observe and use stewardship contracts. Observability and trialability are two of the five core attributes identified by Rogers (2004). However, loss of transformational leaders and committed staff officers through reassignment or retirements may damage a unit's ability to sustain high levels of implementation.

Regional office approvals. Regional-level approval processes and mandatory targets can impede a unit's ability to use a stewardship contract. Units lose enthusiasm for the tool when interactions with the regional office result in delays, limitations, or denials of use. This issue was most pronounced for the low-implementing units, although the concern was expressed in all the units that were studied. In addition, many of the additional participants consulted beyond the case studies also expressed concerns about the interaction of regional office personnel and policies in terms of the viability of stewardship contracting. The most extreme example was a project which required six months at the regional level to obtain signatures, in part because the signature process was conducted sequentially but also because regional-level employees' individual interpretations resulted in numerous revisions to the proposed project that were then countermanded by other regional employees.

Limits on Use. Limitations on the types of projects stewardship contracting can be used for significantly lowers the ceiling of what can be achieved with this tool. The prohibition on using the tool for recreation-driven restoration precluded the three low-implementing units from fully implementing the tool. The primary need for restoration at those units was associated with recreation, such as trail maintenance to avoid erosion and water quality issues. However, those units had difficulty designing projects that received regional approval. This prohibition had also created some difficulties at the three high-implementing units at Study Site 1. However, those units had been able to design their projects around accepted needs, such as fuels reduction, and thus surmounted this potential barrier.

Mandatory Targets. Regional offices are now setting targets to mandate a minimum usage by each forest in an effort to increase implementation. Implementation of an innovation by edict is the least successful way to increase use (Nutt, 1986). Setting targets increases initial adoption but reduces implementation (Tolbert and Zucker, 1983). Since the agency has met its goal of adoption, which was reinforced in 2013 with the permanent authorization by Congress, the current goal must be to increase implementation. Targets, then, may be counterproductive to the agency's goals. Targets are widely believed to be arbitrarily established, perhaps as a result of political obligations, and without consideration of local ecosystem needs and conditions. Targets created the biggest obstacle for the three low-implementing units at Study Site 3 because these units were precluded from using the tool to achieve their primary restoration needs, which are recreation-driven. These units were required to use the tool but, at the same time, prevented from using it. Until this contradiction is reconciled, it appears unlikely these units can achieve more than a minimal level of use at minimal scales.

Inherent Complexity. One of the most daunting barriers to implementation of stewardship contracting is its inherent complexity. To use the tool, a unit must be willing to apply considerable resources, especially early in the implementation process, when stewardship contracts take more time and effort than the alternatives of timber and service contracts. The tool poses considerable uncertainty to the unit, the agency, and even the local community. All of these parties must be willing and able to work through the steep learning curve, develop the necessary intraorganizational and extraorganizational relationships built on trust, and be willing to suspend control over the final outcome.

Multiplicity of Understandings. The multiplicity of understandings of what stewardship contracting is and how it works creates an initial barrier to implementation. Participants' responses to the question, "What is stewardship contracting?" call to mind the analogy of blindfolded people describing an elephant. Each person describes the elephant in terms of the one part they touch – a sharp hard tusk, a soft flexible trunk, a rough muscular leg, a thin ropy tail – as though these were all separate animals. They fail to grasp that the complete animal includes all these different parts, and that the impressive uniqueness of the elephant is a result of how all these parts work in combination; that is, that the elephant is greater than the sum of the parts.

In the same way, the stewardship contracting tool is greater than the sum of any single aspect of it. By design, it enables the agency to carry out multiple tasks, which may make it more complex to learn to use but also makes it more effective. Unlike timber and service contracts, which are single-function tools, stewardship contracting is a multi-function, multi-use tool. It is a "Swiss army knife" that allows the unit to carry out multiple operations in one contract, in one entry onto the land, and in one team,

rather than a one-blade knife that can only be used for one task and must then be swapped out for another tool for the next task, and so on.

Those who have implemented stewardship contracts more often and more fully appreciate the tool's effectiveness even where they still struggle to sum up its nature in one word. They may simply say it is "cool." On units that are still learning to use the tool, however, definitions may focus more on the complexity without appreciating what this innovative multi-purpose tool can do. The multiple definitions in play show that one of the key features of stewardship contracting is not simply that it is new but that it is truly innovative: a multi-use tool in keeping with the Forest's multiple missions managing complex ecosystems for multiple users and local community needs.

Moderating conditions inside the agency affect a unit's ability to use the tool. At the high-implementing units, except for the restrictions on paying salaries, barriers posed by these conditions have been overcome. In contrast, these conditions pose significant barriers to implementation at the low-implementing units. As with organizational conditions, it is not that the low-implementing units do not want to use the tool, but rather that they have yet to find a way to do so that meets the limitations imposed by higher levels of the organization.

Moderating Conditions Outside the Agency Also Favor or Constrain Opportunities

Units that implemented stewardship contracting at high levels interacted with an external climate that favored use of the tool, whereas low-implementing units did not have a supportive external climate. The three moderating conditions outside the agency that favored or disfavored implementation were:

- Local industry capacity for implementation , which provided a profitable market for the unit's resources and a willingness to perform the services requested;
- Local community support for implementation, which provided the external impetus and collaborative environment in which stewardship contracting thrives; and
- Subsidies to counties via the Secure Rural Schools act, which supplant the revenue stream lost when the unit uses stewardship contracts instead of timber contracts.

Strong evidence for all three conditions was identified at the three high-implementing units at Study Site 1 and the two high-implementing units at Study Site 2. Evidence for the first two conditions

was not identified at the two low-implementing units at Study Site 3, although these units recognized the benefits of continued authorization of the Secure Rural Schools Act.

Local timber industry providers must be interested in and capable of partnering with the Forest Service for stewardship contracting to be viable. The three high-implementing units at Study Site 1 have local industry providers who are enthusiastic about the benefits of stewardship contracts; rely on Forest Service projects and products; provide the land management services needed by the Forest Service; successfully bid on and perform to Forest Service specifications; and use and/or add value to the harvested products. Timber industry providers near the two high-implementing units at Study Site 2 and the three low-implementing units at Study Site 3 had much lower levels of reliance on Forest Service projects and products. However, at the two high-implementing units at Study Site 2, local timber industry providers were enthusiastic about partnering with the Forest Service on stewardship contracts and willing to purchase products from the Forest Service. In contrast, at the three low-implementing units at Study Site 3, timber purchasers were unwilling to participate in stewardship contracting.

Local government institutions and collaborative processes that support not only the Forest Service, generally, but stewardship contracting, specifically, positively affect a unit's use of the tool. At the three high-implementing units at Study Site 1, the local community is relatively disengaged in terms of public participation. However, a local collaborative that formed in response to the mill closure in that location has been a factor in the success of stewardship contracting at that location. The collaboration exerts significant pressure on the Forest Service to continue with high levels of stewardship contracting, which may contribute to the number of projects that are completed by those units.

In contrast, the states in which the units at Study Sites 2 and 3 are primarily located have strong traditions of public participation in local governance. However, the two high-implementing units at Study Site 2 have received significant support for stewardship contracting, while the three low-implementing units at Study site 3 have received relatively little support for stewardship contracting. In addition, while all five units at Study Sites 2 and 3 have built strong partnerships with groups interested in forest management, the three low-implementing units at Study Site 3 have received very little interest in or support for stewardship contracting. Their partners focus, instead, on other aspects of forest management, especially recreation-related needs.

Returning the focus to the three high-implementing units at Study Site 1, the presence of the collaborative may become even more important over time as the Forest Service employees who championed the tool during early stages of implementation depart for other duty stations or retire. Unless those employees are replaced by equally motivated employees who champion the tool, it is likely

that these units will experience more difficulties maintaining high levels of implementation. The same issue, of course, could also occur at any unit that experiences turnover or retirements.

The importance of the Secure Rural Schools Act and federal revenue sharing to the continued use of stewardship contracting cannot be overstated. Local communities have accepted the agency's use of stewardship contracting in large part because they continue to receive subsidies to offset their loss of tax revenue from federal lands. Local communities that are heavily dependent on those subsidies will not support stewardship contracting in the absence of the revenues received as a result of the Secure Rural Schools Act.

Summary of Antecedent, Organizational, and Moderating Conditions Inside and Outside the Agency. Units that find the tool compatible with their needs and can overcome the complexity are able to achieve high levels of implementation. Compatible antecedent conditions provide the impetus for a unit to initiate implementation. Compatible organizational conditions create a climate in which implementation can be sustained and the tool's use institutionalized. While antecedent and organizational conditions are described in terms of compatibility, moderating conditions are described in terms of complexity. These moderating conditions inside and outside the agency favor or constrain use of the tool. Ultimately, a unit's ability to implement and institutionalize stewardship contracting depends on the complex, dynamic interaction of these conditions as well as the specific restoration needs of the forest resource.

Units at Study Sites 1 and 2 have achieved high levels of implementation and have institutionalized the tool, while the units at Study Site 3 have lower levels of use, and have not yet been able to institutionalize the tool. The specific conditions that favored and constrained implementation at each of the eight units (case studies) are listed in Tables 3, 4, and 5.

Table3. Conditions Identified for Study Site 1 (Case Studies 1, 2, and 3).

Conditions that Favored Use	**Conditions that Constrained Use**
• Recognized potential for catastrophic wildfire (*antecedent condition*) • Concerns about adverse socioeconomic effects *(antecedent condition)* • Supervisor encouragement *(organizational condition)* • Stability of staff officers *(organizational condition)* • Personal experience with the adverse consequences of wildfire at other forests *(organizational condition)* • Prior experience with adverse socioeconomic effects due to timber industry work stoppages *(organizational condition)* • Prior experience with the tool *(organizational condition)* • Penchant for innovation *(organizational condition)* • Collaboration across functional boundaries *(organizational condition)* • Industry need for and ability to derive value from timber products produced by stewardship contracting *(moderating condition outside the agency)* • Industry willingness to learn and participate *(moderating condition outside the agency)* • Industry ability to collaborate and share outputs *(moderating condition outside the agency)* • Local community interest in collaboration *(moderating condition outside the agency)*	• Internal funding of salaries, etc. *(moderating condition inside the agency)* • Line officer turnover *(moderating condition inside the agency)* • Inherent complexity *(moderating condition inside the agency)* • Multiplicity of understandings *(moderating condition inside the agency)* • Project scales *(moderating condition outside the agency)* • Continued authorization of Secure Rural Schools *(moderating condition outside the agency)*

Table 4. Conditions Identified for Study Site 2 (Case Studies 4 and 5).

Conditions that Favored Use	**Conditions that Constrained Use**
• Concerns about adverse socioeconomic effects *(antecedent condition)* • Capacity for intraorganizational collaboration as a result of using self-directed teams *(antecedent condition)* • Collaborative local culture *(antecedent condition)* • Prior experience with and knowledge of benefits of external collaboration derived from forest planning process *(organizational condition)* • Supervisor encouragement *(organizational condition)* • Stability of staff officers *(organizational condition)* • Staff with prior experience with collaborative processes prior to arriving at this forest *(organizational condition)* • Prior experience with adverse socioeconomic effects due to timber industry work stoppages *(organizational condition)* • Penchant for innovation *(organizational condition)* • Collaboration across functional boundaries *(organizational condition)* • Industry need for and ability to derive value from timber products produced by stewardship contracting *(moderating condition outside the agency)* • Industry willingness to learn and participate *(moderating condition outside the agency)*	• Internal funding of salaries, etc. *(moderating condition inside the agency)* • Use of retained receipts *(moderating condition inside the agency)* • Line officer turnover *(moderating condition inside the agency)* • Inherent complexity *(moderating condition inside the agency)* • Multiplicity of understandings *(moderating condition inside the agency)* • Project scales *(moderating condition outside the agency)* • Continued authorization of Secure Rural Schools *(moderating condition outside the agency)*

Table 5. Conditions Identified for Study Site 3 (Case Studies 6, 7, and 8).

Conditions that Favored Use	**Conditions that Constrained Use**
• Collaborative local culture *(antecedent condition)* • Supervisor encouragement *(organizational condition)* • Turnover among line officers bringing fresh perspectives *(organizational condition)*	• Lack of motivating driver *(antecedent condition)* • Leadership recognition of employee limits *(organizational condition)* • Use of retained receipts *(organizational condition)* • Internal funding of salaries, etc. *(moderating condition inside the agency)* • Use of retained receipts *(moderating condition inside the agency)* • Limitations on use *(moderating condition inside the agency)* • Internal funding of salaries, etc. *(moderating condition inside the agency)* • Inherent complexity *(moderating condition inside the agency)* • Multiplicity of understandings *(moderating condition inside the agency)* • Local community support *(moderating condition outside the agency)* • Local industry support *(moderating condition outside the agency)* • Continued authorization of Secure Rural Schools *(moderating condition outside the agency)*

Implementation of Stewardship Contracting Provides a Relative Advantage

Units that implemented stewardship contracting at high levels receive multiple benefits from using stewardship contracting. The benefits are defined in terms of "efficiencies" achieved by bundling projects. The resource benefits from reduced entries and increased restoration accomplished. The agency benefits when stewardship contracting is institutionalized because human and financial resources can be stretched to accomplish more work with the same or fewer resource expenditures. The agency also benefits from the increased goodwill with the public, in large part due to the increase in true collaboration in which the agency accepts and benefits from the knowledge and advice of the public. External participants welcomed the increased interaction with the agency and the opportunity to meaningfully contribute to maintenance and improvement of public lands. The local community and local industry appreciate the economic benefits. All participants, internal and external, benefit from the increased learning and the improved relationships. These benefits, however, are tempered when projects are delayed or collaboration suffers as a result of limited budgets and over-extended staff.

In contrast, at the units that had low levels of implementation, participants did not believe the tool provided sufficient benefits to justify its use. The tool was seen as being useful for Western forests

which have resource conditions and socioeconomic needs that are not present at the low-implementing units. Low-implementing units are able to meet their needs through the status quo use of timber and service contracts and use stewardship contracting to meet targets but not because it is seen as the best tool for the job.

Participants define the tool in multiple ways. Generally, line officers defined the tool in terms of their unit's ability to achieve restoration goals, especially through trading goods for services and retaining receipts, and to collaborate with local communities. This understanding was generally shared with external participants, who focused on the economic benefits to the local community of trading goods for services and retaining receipts, and the opportunity for public participation. The focus by line and external participants on trading-goods-for-services corresponds to what the Pinchot Institute has found in its annual programmatic monitoring (see, e.g., Pinchot Institute, 2014). In contrast to line and external understandings, staff officers tended to focus on the operational aspects, especially the efficiencies gained from bundling services into one contract.

It seems likely that employees' roles and responsibilities influence their perceptions of the tool. Line focuses on organizational, "big picture" objectives, whereas staff focus on the day-to-day activities necessary to achieve those objectives. This is not to say that line is not aware of the individual activities required to carry out the objectives or that staff is not cognizant of the agency's overarching objectives, but rather that each role has a specific focus based on their roles and responsibilities. However, this may lead to unit members' confusion about the benefits and challenges of implementing the tool. Moreover, if employees do not have a coherent, shared understanding of the tool, it will be difficult to persuade colleagues and the local community of its benefits.

In short, the perceived lack of compatibility of this tool combined with its complexity has affected its implementation. The lack of a clear shared understanding as to the tool's benefits for a particular unit makes it more difficult for agency employees to internalize and persuasively convince themselves and others of its value and benefits. Even participants who self-identify as champions struggle to define the tool. They overcome this struggle by highlighting the aspects that they perceive as most beneficial, such as "getting work done on the ground," the "efficiency" of bundling multiple contracts, and the economic benefits to the local community. These participants are able to identify a relative advantage to their unit, the forest, and the community.

Theoretical Implications

Attributes of Innovations

Rogers' (2003) list of five attributes of innovations is widely cited in the diffusion of innovations literature. The five attributes are *relative advantage, compatibility*, *complexity*, *trialability*, and *observability*. These five attributes usually appear in this order, suggesting there is a rationale for listing them in this way, and all five attributes usually appear in the list. For many adoption scenarios, this ordering and the listing of all five is undoubtedly appropriate. However, only three of the five attributes apply in the implementation scenario in this study, and the attributes need to be ordered differently. More theorizing is appropriate for these attributes.

The two attributes that are not present in implementation of stewardship contracting are *trialability* and *observability*. Trialability refers to the user's ability to experiment with the innovation before adoption. Observability refers to the user's ability to watch others using the innovation before adoption. Much of the early diffusion of innovations research considered product innovations in agriculture, where it was easy to examine (observe) seed corn, or to test (trial) the latest harvester. A farmer could drive (trial) a new harvester in field conditions or watch (observe) how a new implement operated before purchasing it. Administrative innovations like stewardship contracting are less trialable and observable. This is one important reason why administrative innovations are more difficult and require more time to implement then technical innovations (Damanpour and Gopalakrishnan, 1999). Stewardship contracting is not realistically trialable, since the innovation cannot be used partially or temporarily. Although the *results* of a stewardship contract are observable, as shown by the many field trips the Forest Service has sponsored to sites that have been restored using a stewardship contract, the process and effort required to achieve those results are not observable. This lack of trialability and observability has rendered implementation more difficult since the user must take it on faith that the tool works as promised. Units implementing the tool must completely commit themselves to its use, taking on considerable uncertainty for multiple years.

The remaining three attributes of *relative advantage, compatibility*, and *complexity* are important to understanding implementation of stewardship contracting. Relative advantage describes the user's perception that the innovation is better than the idea it supersedes (Moore and Benbasat, 1991). Compatibility describes the innovation's congruency with the past, present, and future experiences, values, and needs of the organization and the user (Schneider, 2007). Complexity describes how easy the innovation is to understand and use. These three attributes usually appear in this order,

but for the implementation of stewardship contracting, compatibility and complexity precede relative advantage. A user only perceives the relative advantage after the tool is fully implemented, because only then does the accomplishment and the efficiency obtained become apparent.

In the implementation of stewardship contracting, targeted users must first deal with the innovation's compatibility and complexity. Stewardship contracting requires more than just congruency between the organization, the individual, and the innovation. For a Forest Service unit to use the tool, the innovation must be congruent with the organization as a whole (the agency), the organizational sub-unit (the district and/or the forest), the ecosystem, the local community, and local industry. Compatibility is difficult to achieve for this administrative process because it is affected by complex, intertwined external human and natural factors.

Compatibility also is determined by the innovation's fit with the unit's human systems and the ecosystem needs. The tool must be a good fit for the personnel who are tasked with using the innovation. Even if stewardship contracting has a good fit with the personnel, the unit must also have suitable restoration needs. At units with high levels of implementation, stewardship contracting is a good fit with the unit's human systems and the ecosystem. At units with low levels of implementation, stewardship contracting may not have a good fit with the unit's personnel or the unit may not have suitable restoration needs. In this case, the unit may use stewardship contracting not because it is compatible but merely to meet mandatory targets.

The attribute of complexity is also more byzantine than suggested by prior research. Unlike many products, which are designed to be as simple as possible, stewardship contracting was designed to be complex because only through complexity could the innovation be used in as many ways and for as many purposes as the designers had in mind. The only opportunity the Forest Service had to simplify the tool was to create a single contract form. When that was determined not to be possible because of legal requirements, the agency was left with four different forms, each of which merged two completely separate processes: timber contracting and service contracting, each of which has its own highly detailed and extremely precise set of rules and guidelines. Another aspect of complexity is the multiplicity of understandings, which are formed because of the many purposes for which the tool can be used. In essence, stewardship contracting is like a Swiss army knife, with multiple implements, each of which has a primary job but each of which can also be used for other non-standard purposes.

Only after stewardship contracting is determined to be compatible and the complexity is satisfactorily resolved can the unit then ascertain the relative advantage.

Models of Implementation

Five models of implementation were presented in Chapter 2: Meyer and Goes' (1988) three-factor model (Figure 1), Klein and Sorra's (1996)model of implementation effectiveness (Figure 2); Helfrich et al.'s (2007) framework of complex implementation (Figure 3), Repenning's (2002) dynamic model of implementation (Figure 4), and Linton's (2002) network model (not illustrated). All of these models were at least partially confirmed by this research; however, only Repenning's and Linton's address the complexity of implementation in the public sector. Meyer and Goes' model provides a simplistic understanding of the interaction of the context (the organization and the environment) with the innovation. To fit implementation of stewardship contracting to this model, the antecedent and organizational conditions would generally map on to Meyer and Goes' contextual attributes. Their model, however, does not illustrate the complex interactions with moderators throughout the implementation process. It also assumes that assimilation is inevitable, which this and previous studies demonstrate is not always attainable.

Klein and Sorra's (1996) model focuses on the interactions within the organization, highlighting the importance of organizational climate and innovation-values fit. To fit implementation of stewardship contracting to this model, the organizational conditions would map on to both the climate for implementation and innovation-values fit. As with the previous model, this model does not illustrate either the antecedent conditions that help to create the climate and innovation-values fit nor does it consider the moderating conditions that favor or constrain implementation effectiveness. However, it does show the self-reinforcing feedback loop of innovation effectiveness.

Helfrich et al.'s (2007) model builds on Klein and Sorra's (1996) model of implementation effectiveness, adding management support, resource availability, implementation policies and practices (IP&Ps), and champions. These additions begin to illustrate the complexity found in the implementation of stewardship contracting. The line officer's vision and leadership maps onto management support, although regional office policies would also partially feed into that box. Salary policies, retained receipts, and industry capacity are important factors in resource availability. The formalization of guidance at the national and regional levels maps on to IP&Ps, and both line and staff perform as champions. Helfrich et al.'s model identifies implementation effectiveness as the endpoint, rather than innovation effectiveness as shown in Klein and Sorra's (1996) model, looping implementation effectiveness back into climate. While this self-reinforcing feedback loop was confirmed in the study of implementation of stewardship contracting, Helfrich et al.'s model, like the two before it, does not show the effects of

moderating factors outside the organizational unit nor how implementation can lead to institutionalization.

The fourth model, Repenning's (2002) dynamic model of implementation, provides a much better fit then the previous models for implementation of stewardship contracting. In line with Repenning's call to researchers to identify additional feedback loops and alternative formulations of feedback processes, the model has been modified. The modified model is shown in Figure 10.

A new feedback loop, B2, was added to illustrate the normative pressure provided by observers outside the unit. This loop captures the observation by the local community and timber industry providers who are intimately involved in the tool's use and their subsequent normative pressure on unit managers.

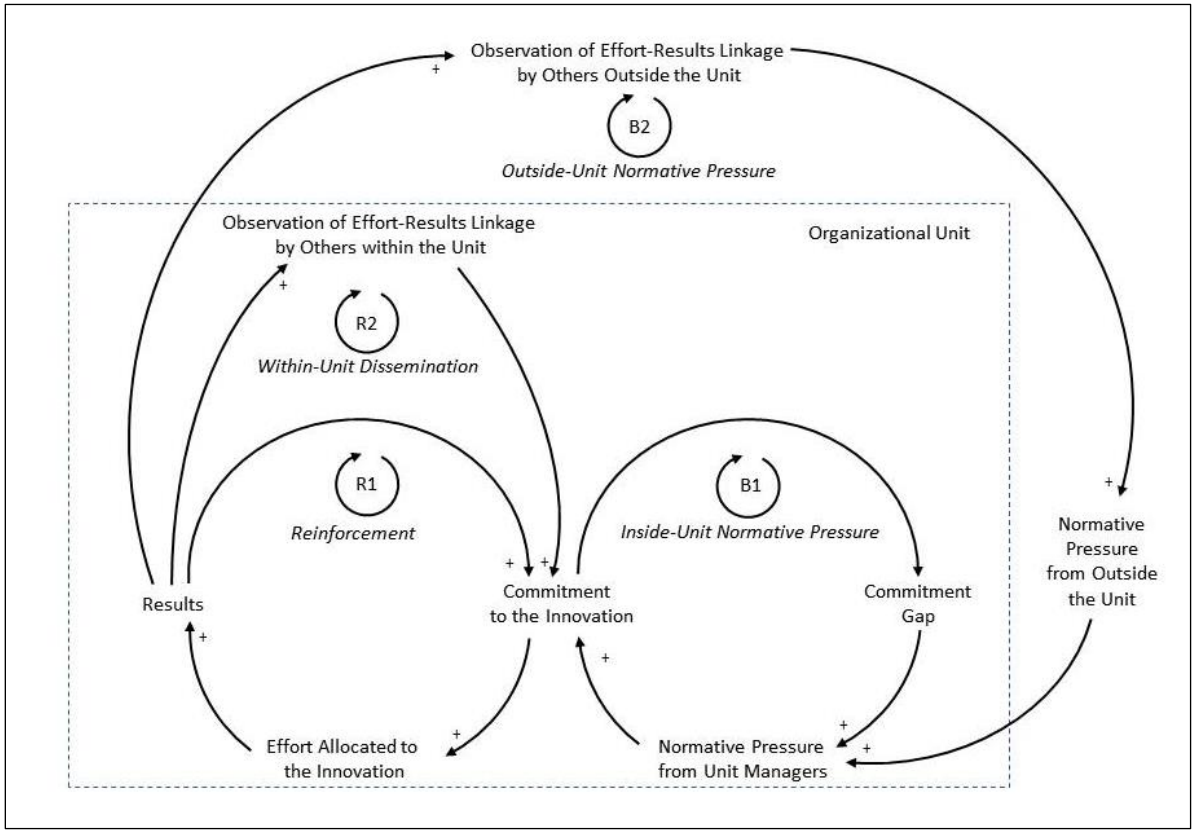

Figure 10. Modified model of innovation implementation. Arrows indicate the direction of causality. A The signs ('+' or '-') at the arrowheads indicate the polarity of relationships: a '+' denotes that an increase in the independent variable causes the dependent variable to increase, ceteris paribus (and a decrease causes a decrease). Similarly, '–' indicates that an increase in the independent variable causes the dependent variable to decrease. The loop identifiers R1 and R2 indicate a positive (self-reinforcing) feedback. The loop identifier B1 indicates a negative (balancing) feedback loop (see Sterman, 2000).

Two modifications were made to the R2 loop. First, the loop was retitled dissemination, rather than diffusion, in line with this study's focus on implementation of an already-adopted innovation. Second, the loop was modified to include only observers inside the unit. Observation of the effort-results linkage took place inside the unit but not outside the unit. Stewardship contracting is an administrative innovation. As discussed in Chapter 2, administrative innovations are more difficult and require more time to implement than technical innovations (Damanpour and Gopalakrishnan, 1999; Kimberly and Evanisko, 1981). While observation of the effort-results linkage leads to vicarious learning with technical innovations and simple, short-term administrative innovations, Forest Service employees outside the unit were unable to fully appreciate the effort-results linkage.

The B1 loop was limited to managers within the unit, who were positioned to observe the efforts–results linkage and could apply direct normative pressure to increase commitment. Managers outside the unit (i.e., at the regional or Washington office levels) apply normative pressure from outside the organizational unit, attenuating their ability to apply normative pressure and increase commitment or results.

Linton's (2002) web network is not illustrated in Chapter 2 since it is widely understood in its generic form. Figure 9, the concept map illustrating the implementation of stewardship contracting, is in essence a web network. As Linton observed, the limitation of a web network is that it can provide too much richness for generalization. The concept map developed for this study (see Figure 9) would certainly be difficult to generalize to innovations outside the Forest Service, although it may be useful to understand the U.S. Bureau of Land Management's implementation of stewardship contracting.[5] The purpose of a web network, though, is not necessarily to generalize but illustrate the complex, non-linear dynamics of implementation and reveal the unique social relationships that are necessary for an organization to implement and institutionalize an administrative innovation, like stewardship contracting. Measured by those standards, the web network suggested by Linton is the best way to visually illustrate the messy, complex relationships of the 19 conditions that favor or constrain implementation of stewardship contracting. In addition, many of the conditions identified as favoring or constraining implementation of stewardship contracting may apply to other administrative innovations adopted by the Forest Service. The concept map developed for this study may be useful to researchers studying dissemination of other innovations within the agency.

[5] The U.S. Bureau of Land Management (BLM) was also authorized by Congress in 2003 to use stewardship contracting. However, the BLM was able to implement the policy more easily and fully (see, e.g., Pinchot Institute, 2008).

Management Implications

Implementation of stewardship contracting benefits the agency and local communities. The Forest Service has already taken numerous steps to increase implementation, as a result of its own learning and recommendations by others (see, e.g., Holtrop, 2008; Pinchot Institute, 2014). The results of this study point to several additional steps the agency should take to increase implementation and achieve institutionalization of stewardship contracting. The first recommendation focuses on enhancing organizational conditions within the unit to improve the climate for implementation. The remaining recommendations focus on the moderating conditions inside the agency that constrain implementation.

Recommendations Focusing on Organizational Conditions Within the Unit

Recommendation 1: Increase capacity for intraorganizational collaboration.

Intraorganizational collaboration (Condition 8) is one of four organizational conditions within the unit that combine to create a climate for implementation. The Forest Service has expended significant energy building its capacity for collaboration outside its organizational boundaries. It appears to have overlooked the opportunities that arise from intraorganizational collaboration. Tools like stewardship contracting require significant inter-disciplinary dialogue and resource sharing. To increase implementation of stewardship contracting and other strategic initiatives designed to address landscape-scale activities, the agency must increase its capacity for intraorganizational collaboration. Specific skills needed to effectively engage in collaborative processes include listening, small-group dialogue and decision-making, and interpersonal communication. Capacity-building should especially focus on staff officers, who carry out the day-to-day operations, which increasingly require interdisciplinary responses. The agency has already developed the resources to build collaborative capacity; it need only turn those resources inward to re-position itself to tackle complex problems.

Recommendations Focusing on Moderating Conditions Inside the Agency

Recommendation 2: Maximize how units can use retained receipts.

Regional office policies on the use of retained receipts (Condition 11) is one of the moderating conditions inside the agency that can constrain implementation. Regions have developed their own interpretations for where, how, and why retained receipts can be used. This has created confusion and reduced the agency's credibility among employees and external partners. Rather than constricting the

use to the narrowest interpretation, the agency should expand the use of retained receipts to the broadest possible interpretation. The agency should incorporate the learning from regional variations in the use of retained receipts, lifting the limitations wherever possible to maximize how units can achieve their on-the-ground objectives. If regional ecosystem variations or laws require differential treatment of retained receipts by region, then a clear explanation of why retained receipts are handled differently should be provided to reduce confusion and frustration and increase transparency and perceptions of the agency's forward thinking. The agency must create a consistent, predictable policy with the greatest possible latitude to reduce guessing games and maximize the agency's ability to efficiently and effectively accomplish work on the ground.

Recommendation 3: Devolve approval to the forest supervisor.

Regional approval processes (Condition 12) are a moderating condition inside the agency that can constrain implementation of stewardship contracting. Although the regional office has an important role in the stewardship contracting process, moving some of the responsibilities downward to the forest supervisor would provide more flexibility and reduce the amount of time between inception and award. Regional-level employees may not be fully cognizant of the conditions and needs at the unit level. Devolving the approval to the forest supervisor would streamline the process, enhance its inherent flexibility, and demonstrate the agency's trust in its line officers.

Recommendation 4: Expand the range of allowable projects.

The current narrow spectrum to which stewardship contracting can be applied (Condition 13) is a moderating condition inside the agency that constrains the types of projects for which the tool can be used. Units with recreation-driven restoration needs are precluded or limited in how much they can use stewardship contracting because of the agency's narrow interpretation of the authorizing legislation. Without allowing these projects, some units will continue to have difficulties using the tool. These units may use the tool on very small-scale projects while larger-scale needs are unmet. Meanwhile, stakeholders question why the agency no longer allows stewardship contracting to be used on recreation-related projects when its mission calls for multiple use. The agency should maximize the scope of allowable projects and work closely with local communities and stakeholders to identify appropriate projects that meet the requirements of the legislation and maximize restoration of the resource.

Recommendation 5: Acknowledge that precluding use of retained receipts to pay salaries limits the extent to which stewardship contracts can be used.

Excluding salaries (Condition 15) is a moderating condition inside the agency. It is generally agreed that limiting the use of retained receipts to work on the ground is good. However, units rely on trust fund moneys to pay salaries for planning and execution of stewardship contracts. As units increase their use of stewardship contracts, they decrease the amounts replenishing the trust funds. This is the only moderating condition that constrains high-implementing units from using even more stewardship contracts. Agency leadership may not fully appreciate the challenge they have given units to fund salaries while conducting high levels of stewardship contracts. This recommendation is not to change the current policy, which is generally viewed as appropriate, but to acknowledge that the current policy prevents units from using stewardship contracts as much as they may prefer. However, agency management may be able to identify creative ways in which units can pay for salaries while increasing their use of stewardship contracts.

Recommendation 6: Create a succession plan to ensure collaboration continues without a gap.

Frequent turnover of agency personnel (Condition 16) is a moderating condition inside the agency that provides opportunities for learning but damages relationships with external stakeholders. As Herbert Kaufman (1960/1993) identified more than 50 years ago, turnover among agency personnel creates many benefits for the agency and the individual who transfers. However, turnover significantly and severely damages the relationships built by agency employees with local communities and individuals. Collaborative processes are stalled until a replacement arrives; even then, processes continue to be delayed until the replacement can form new relationships and establish a new shared understanding with local participants. Human relationships are highly nuanced. Even the most well-trained and psychologically sensitive leader must develop a “feel” for the human landscape. This can take months or years, reinforcing the public’s view that the agency cannot keep pace. When a new line officer does not share the same vision as the previous line officer, significant uncertainties arise among staff, industry participants, and the public. The time required for a new employee to come up to speed is a significant concern; the power vacuum left behind when an employee transfers to a new duty station is equally or more significant. Collaborative processes rely on relationships, which can only be solidified over time. Regular transfers of personnel to new duty stations may benefit the agency but it seriously harms the agency’s ability to be a reliable partner.

Recommendation 7: Identify a collaboration facilitator in each unit.

The agency should identify a collaboration facilitator for each unit. Given the frequent turnover among line officers, the agency should consider appointing a staff officer, who is more likely to persist at the unit for many years. The facilitator would not have decision authority but rather have the authority to convene the group, plan appropriate group processes, create and sustain a participatory environment, guide the group to appropriate and useful outcomes, and maintain a group memory to ensure decisions are carried out, even if a decision-maker is transferred or retires (International Association of Facilitators, 2015). To ensure collaboration continues without a gap, the agency should create a succession plan for the unit collaboration facilitator.

Recommendation 8: Clarify the definition of stewardship contracting.

The multiplicity of understandings (Condition 10) is a moderating condition inside the agency that favors or constrains implementation. Forest Service materials do not define stewardship contracting but rather describe the outcomes of using the tool. This is confusing and suggests the Forest Service itself has not yet embraced the expansive nature of this "Swiss army knife" of contracting. Stewardship contracting represents a twenty-first century tool designed for multiple uses, which is closely aligned with the agency's own mission. Defining what stewardship contracting is, instead of leaving it to the end-user to figure it out for herself, will reduce uncertainty and increase knowledge about and credibility of the tool. This is not to suggest that stewardship contracting should be narrowly defined. Rather, the definition should embrace the tool's flexibility, its multiplicity of uses, and its adaptability to a wide range of ecosystems and restoration needs as important, inherent attributes.

Recommendations Focusing on Antecedent Conditions and Moderating Conditions Outside the Agency

Recommendation 9: Analyze the socioeconomic contribution to the community.

Stewardship contracting provides socioeconomic support to rural communities (Conditions 1 and 17) and leads to local community support for the tool (Condition 18 and 19). These are antecedent conditions and moderating conditions outside the agency. However, these benefits are not well quantified. It is unclear to many stakeholders to what extent stewardship contracting benefits the community, especially in comparison to federal revenue sharing, which is quantified. The agency should

commission research that quantifies the economic benefits to local communities of using stewardship contracts. The research should also measure social benefits to local communities.

Limitations and Future Directions

The following limitations have to be considered. First, given the usual limitations of the case study approach in terms of generalizability and parsimony, further research is required to corroborate these findings. The dynamic interaction of personnel, timber infrastructure, local community, and the resource creates unique circumstances for each national forest and ranger district. Second, direct observation of the actual enactment of implementation was not possible. Participants' accounts are partial and retrospective. Additional details that would add to our understanding would undoubtedly emerge if more individuals involved in operationalizing the implementation of stewardship contracting could have participated. Third, the data was collected before the Congress gave permanent authority to the agency. Permanent authorization may have reduced resistance to implementation of what was, at the time, perceived as a temporary addition to the toolbox.

Future studies should compare more units across more regions to add to the list of antecedent conditions, confirm the core set of four organizational conditions, and verify whether additional moderating conditions exist inside or outside the agency. Mixed methods or quantitative testing of the theory developed in this study would be useful in expanding and sharpening the list of conditions. Another question is whether turnover and changes to management processes in high-implementing units affects a unit's institutionalization of the tool and its capacity for collaboration. An in-depth longitudinal study of high-implementing units over time to track changes in implementation under different leadership would be useful in understanding the permanence of institutionalization. It would also be useful to study how crises affect a unit's ability to maintain high levels of implementation, which could be done through an in-depth longitudinal study. A cross-regional analysis of policy interpretations, such as interpretations of retained receipts, and how those interpretations affect implementation, would also be useful to understand the extent to which variations among regions affect implementation and institutionalization. Finally but perhaps more importantly, given the agency's focus on building collaborative relationships with external parties, studies should be conducted to understand the effects of personnel turnover on both internal and external relationships and the agency's ability to meet its goals for forest management.

Conclusion

Stewardship contracting provides an opportunity for the agency to achieve its restoration goals more efficiently and build goodwill with local communities. Sustained use is necessary for units to achieve the benefits of the tool and overcome its complexity. To achieve high levels of implementation not only of stewardship contracting but any complex administrative process, leadership in the unit must create a climate that supports the uncertainty inherent in the implementation of any innovation, staff must take ownership of and fully embrace the innovation, regional office policy interpretations must respect the individual nature of each forest, and the local community must be willing to partner with the agency in improving the health of the resource.

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APPENDIX A: AUTHORIZING LEGISLATION

The following list summarizes the Congressional acts authorizing the U.S. Forest Service to use stewardship contracting. The complete text of the original 1998 authorization is provided as Table A-1. The text of the 2003 ten-year extension is provided as Table A-2. The text of the 2014 permanent authorization is provided as Table A-3.

Section 347 of Public Law 105-277, the *Omnibus Consolidated and Emergency Appropriations Act, 1999* (Pub. L. 105-277). Grants the Forest Service authority to enter into no more than 28 contracts, at least 9 allocated to Region 1, with private persons and entities to perform services to achieve National Forest System (NFS) land management goals that meet local and community needs. (The complete text of this law is provided in Table A-1).

Section 341 of Public Law 106-113, the *Consolidated Appropriations Act, 2000,* amending Public Law 105-277, sec. 347 (Pub. L. 106-113). Grants the Forest Service authority to use agreements as well as contracts to implement stewardship contracting projects.

Section 338 of Public Law 106-291, H.R. 4578, *FY2001 Appropriations Act for Interior and Related Agencies.* Expands the authority to enter into an additional 28 contracts; allocates at least 9 stewardship contracts to Region 1 and at least 3 to Region 6.

Section 332 of Public Law 107-63, the *Interior Appropriations Act, 2002,* amending Public Law 105-277, sec. 347 (Pub. L. 107-63). Expands the authority to end into an additional 28 contracts, at least 9 of which are allocated to Region 1 and at least 3 to Region 6.

Section 323 of Public Law 108-7 (16 U.S.C. 2104 Note, as revised February 28, 2003 to reflect sec. 323 of J.J. Res. 2 as enrolled), the *Consolidated Appropriations Resolution, 2003,* amending Public Law 105-277, sec. 347. Grants the Forest Service and the Bureau of Land Management authority until September 30, 2013, to enter into stewardship contracting projects for up to 10 years with private persons or public or private entities, by contract or by agreement, to perform services to achieve land management goals for the national forests or public lands that meet local and rural community needs. Section 323 supersedes the original authority granted to the Forest Service in Section 347 of Public Law 105-277.

Title 16, United States Code, Section 2104 Note (c) (4). Exempts stewardship contracts and agreements from sections 14(d) and (g) of the National Forest Management Act (16 U.S.C. 472a). Products with an appraised value in excess of $10,000 may be sold without advertisement and that persons other than those employed by the Secretary of Agriculture may mark or determine the trees to leave or to be cut and removed to meet restoration objectives.

Section 8205 of Public Law 113-79, the Agricultural Act of 2014. Grants the Forest Service and the Bureau of Land Management authority to enter into stewardship contracting projects for up to 10 years with private persons or public or private entities, by contract or by agreement, to perform services to achieve land management goals for the national forests or public lands that meet local and rural community needs. Section 8205 supersedes the authority granted to the Forest Service in Section 347 of Public Law 105-277.

Table A-1. Text of the original 1998 Congressional authorization to demonstrate stewardship contracting, the Omnibus Consolidated and Emergency Supplemental Appropriations Act, 1999 (Pub. L. 105-277 (1998)). The law is codified at 16 U.S.C. 2104 § 2104 Note.

STEWARDSHIP END RESULT CONTRACTING DEMONSTRATION PROJECT.

(a) IN GENERAL.—Until September 30, 2002, the Forest Service may enter into no more than twenty-eight (28) contracts with private persons and entities, of which Region One of the Forest Service shall have the authority to enter into nine (9) such contracts, to perform services to achieve land management goals for the national forests that meet local and rural community needs.

(b) LAND MANAGEMENT GOALS.—The land management goals of a contract under subsection (a) may include, among other things—

(1) road and trail maintenance or obliteration to restore or maintain water quality;

(2) soil productivity, habitat for wildlife and fisheries, or other resource values;

(3) setting of prescribed fires to improve the composition, structure, condition, and health of stands or to improve wildlife habitat;

(4) noncommercial cutting or removing of trees or other activities to promote healthy forest stands, reduce fire hazards, or achieve other non-commercial objectives;

(5) watershed restoration and maintenance;

(6) restoration and maintenance of wildlife and fish habitat; and

(7) control of noxious and exotic weeds and reestablishing native plant species.

(c) CONTRACTS.—

(1) PROCUREMENT PROCEDURE.—A source for performance of a contract under subsection (a) shall be selected on a best value basis, including consideration of source under other public and private contracts.

(2) TERM.—A multiyear contract may be entered into under subsection (a) in accordance with section 304B of the Federal Property and Administrative Services Act of 1949 (41 U.S.C. 254c), except that the period of the contract may exceed 5 years but may not exceed 10 years.

(3) OFFSETS.—

(A) IN GENERAL.—In connection with contracts under subsection (a), the Forest Service may apply the value of timber or other forest products removed as an offset against the cost of services received.

(B) METHODS OF APPRAISAL.—The value of timber or other forest products used as offsets under subparagraph (A)—

(i) shall be determined using appropriate methods of appraisal commensurate with the quantity of products to be removed;

(ii) may be determined using a unit of measure appropriate to the contracts; and

(iii) may include valuing products on a per-acre basis.

(4) RELATION TO OTHER LAWS.—The Forest Service may enter into contracts under subsection (a), notwithstanding subsections (d) and (g) of section 14 of the National Forest Management Act of 1976 (16 U.S.C. 472a).

(d) RECEIPTS.—

(1) IN GENERAL.—The Forest Service may collect monies from a contract under subsection (a) so long as such collection is a secondary objective of negotiating contracts that will best achieve the purposes of this section.

(2) USE.—Monies from a contract under subsection (a) may be retained by the Forest Service and shall be available for expenditure without further appropriation at the demonstration project site from which the monies are collected or at another demonstration project site.

(3) RELATION TO OTHER LAWS.—The value of services received by the Secretary under a stewardship contract project conducted under this section, and any payments made or resources provided by the contractor or the Secretary under such a project, shall not be considered to be monies received from the National Forest System under any provision of law. The Act of June 9, 1930 (16 U.S.C. 576 et seq.; commonly known as the Knutson-Vandenberg Act), shall not apply to stewardship contracts entered into under this section.

(e) COSTS OF REMOVAL.—The Forest Service may collect deposits from contractors covering the costs of removal of timber or other forest products pursuant to the Act of August 11, 1916 (39 Stat. 462, chapter 313; 16 U.S.C. 490); and the next to the last paragraph under the heading ''Forest Service.'' under the heading ''Department of Agriculture'' in the Act of June 30, 1914 (38 Stat. 430, chapter 131; 16 U.S.C. 498); notwithstanding the fact that the timber purchasers did not harvest the timber.

(f) PERFORMANCE AND PAYMENT GUARANTEES.—

(1) IN GENERAL.—The Forest Service may require performance and payment bonds, in accordance with sections 103–2 and 103–2 of part 28 of the Federal Acquisition Regulation (48 C.F.R. 28.103–2, 28.103–3), in an amount that the contracting officer considers sufficient to protect the Government's investment in receipts generated by the contractor from the estimated value of the forest products to be removed under contract under subsection (a).

(2) EXCESS OFFSET VALUE.—If the offset value of the forest products exceeds the value of the resource improvement treatments, the Forest Service may—

(A) collect any residual receipts pursuant to the Act of June 9, 1930 (46 Stat. 527, chapter 416; 16 U.S.C. 576b); and

(B) apply the excess to other authorized stewardship demonstration projects.

(g) MONITORING, EVALUATION AND REPORTING.—The Forest Service shall establish a multiparty monitoring and evaluation process that accesses each individual stewardship contract conducted under this section. Besides the Forest Service, participants in this process may include any cooperating governmental agencies, including tribal governments, and any interested groups or individuals. The Forest Service shall report annually to the Committee

on Appropriations of the House of Representatives and the Committee on Appropriations of the Senate on—

(1) the status of development, execution, and administration of contracts under subsection (a);

(2) the specific accomplishments that have resulted; and

(3) the role of local communities in development of contract plans. (Pub. L. 105-277, 112 Stat. 2681-300).

Table A-2. Text of the 2003 temporary, ten-year Congressional authorization to conduct stewardship contracts, contained in Section 323 of Title III, General Provisions, of the Consolidated Appropriations Resolution, 2003 (Pub. L. 108-7, Section 323 (2003)).

Section 347 of the Department of the Interior and Related Agencies Appropriations Act, 1999 (as contained in section 101(e) of division A of Public Law 105–277; 16 U.S.C. 2104 note), is amended—

(1) in subsection (a), by striking ''September 30, 2004'' and all that follows and inserting ''September 30, 2013, the Forest Service and the Bureau of Land Management, via agreement or contract as appropriate, may enter into stewardship contracting projects with private persons or other public or private entities to perform services to achieve land management goals for the national forests and the public lands that meet local and rural community needs.'';

(2) in subsection (b)(4)—

(A) by striking ''noncommercial cutting or removing of trees'' and inserting ''removing vegetation''; and

(B) by striking ''non-commercial objectives'' and inserting ''land management objectives'';

(3) in subsection (c), by adding at the end a new paragraph as follows:

''(5) CONTRACTING OFFICER.—Notwithstanding any other provision of law, the Secretary of Agriculture or the Secretary of the Interior may determine the appropriate contracting officer to enter into and administer an agreement or contract under subsection (a).'';

(4) in subsections (c)(3), (d), (f), and (g), by inserting ''and the Bureau of Land Management'' after ''Forest Service'' each place it appears;

(5) in the section heading, by striking ''DEMONSTRATION PROJECT'' and inserting ''PROJECTS'';

(6) in subsections (d)(2) and (f)(2)(B), by striking ''demonstration'' each place it appears;

(7) in subsection (d)(3), by striking ''the Secretary'' both places it appears and inserting ''the Forest Service or the Bureau of Land Management'' and by inserting ''or the public lands'' after ''National Forest System''; and

(8) in subsection (g), by striking ''each individual stewardship pilot project'' and inserting ''the stewardship contracting projects'' (Pub. L 108-7, 117 Stat. 11).

Table A-3. Text of the 2014 permanent authorization of stewardship contracting, in Section 8205 of Public Law 113-79, the Agricultural Act of 2014 (Pub. L. 113-79 § 8205 (2014)).

AGRICULTURAL ACT of 2014

Section 8205

STEWARDSHIP END RESULT CONTRACTING PROJECTS

(a) IN GENERAL.—Title VI of the Healthy Forests Restoration Act of 2003 (16 U.S.C. 6591) (as amended by section 8204) is amended by adding at the end the following:

''SEC. 604. STEWARDSHIP END RESULT CONTRACTING PROJECTS.

''(a) DEFINITIONS.—In this section:

''(1) CHIEF.—The term 'Chief' means the Chief of the Forest Service.

''(2) DIRECTOR.—The term 'Director' means the Director of the Bureau of Land Management.

''(b) PROJECTS.—The Chief and the Director, via agreement or contract as appropriate, may enter into stewardship contracting projects with private persons or other public or private entities to perform services to achieve land management goals for the national forests and the public lands that meet local and rural community needs.

''(c) LAND MANAGEMENT GOALS.—The land management goals of a project under subsection (b) may include any of the following:

''(1) Road and trail maintenance or obliteration to restore or maintain water quality.

''(2) Soil productivity, habitat for wildlife and fisheries, or other resource values.

''(3) Setting of prescribed fires to improve the composition, structure, condition, and health of stands or to improve wildlife habitat.

''(4) Removing vegetation or other activities to promote healthy forest stands, reduce fire hazards, or achieve other land management objectives.

''(5) Watershed restoration and maintenance.

''(6) Restoration and maintenance of wildlife and fish.

''(7) Control of noxious and exotic weeds and reestablishing native plant species.

''(d) AGREEMENTS OR CONTRACTS.—

''(1) PROCUREMENT PROCEDURE.—A source for performance of an agreement or contract under subsection (b) shall be selected on a best-value basis, including consideration of source under other public and private agreements or contracts.

''(2) CONTRACT FOR SALE OF PROPERTY.—A contract entered into under this section may, at the

discretion of the Secretary of Agriculture, be considered a contract for the sale of property under such terms as the Secretary may prescribe without regard to any other provision of law.

''(3) TERM.—

''(A) IN GENERAL.—Except as provided in subparagraph (B), the Chief and the Director may enter into a contract under subsection (b) in accordance with section 3903 of title 41, United States Code.

''(B) MAXIMUM.—The period of the contract under subsection (b) may exceed 5 years but may not exceed 10 years.

''(4) OFFSETS.—

''(A) IN GENERAL.—The Chief and the Director may apply the value of timber or other forest products removed as an offset against the cost of services received under the agreement or contract described in subsection (b).Agricultural Act of 2014 Sec. 8205

''(B) METHODS OF APPRAISAL.—The value of timber or other forest products used as an offset under subparagraph (A)—

''(i) shall be determined using appropriate methods of appraisal commensurate with the quantity of products to be removed; and

''(ii) may—

''(I) be determined using a unit of measure appropriate to the contracts; and

''(II) may include valuing products on a per-acre basis.

''(5) RELATION TO OTHER LAWS.—Notwithstanding subsections (d) and (g) of section 14 of the National Forest Management Act of 1976 (16 U.S.C. 472a), the Chief may enter into an agreement or contract under subsection (b).

''(6) CONTRACTING OFFICER.—Notwithstanding any other provision of law, the Secretary or the Secretary of the Interior may determine the appropriate contracting officer to enter into and administer an agreement or contract under subsection (b).

''(7) FIRE LIABILITY PROVISIONS.—Not later than 90 days after the date of enactment of this section, the Chief and the Director shall issue for use in all contracts and agreements under this section fire liability provisions that are in substantially the same form as the fire liability provisions contained in—

''(A) integrated resource timber contracts, as described in the Forest Service contract numbered 2400–13, part H, section H.4; and

''(B) timber sale contracts conducted pursuant to section 14 of the National Forest Management Act of 1976 (16 U.S.C. 472a).

''(e) RECEIPTS.—

''(1) IN GENERAL.—The Chief and the Director may collect monies from an agreement or contract under

subsection (b) if the collection is a secondary objective of negotiating the contract that will best achieve the purposes of this section.

''(2) USE.—Monies from an agreement or contract under subsection (b)—

''(A) may be retained by the Chief and the Director; and

''(B) shall be available for expenditure without further appropriation at the project site from which the monies are collected or at another project site.

''(3) RELATION TO OTHER LAWS.—

''(A) IN GENERAL.—Notwithstanding any other provision of law, the value of services received by the Chief or the Director under a stewardship contract project conducted under this section, and any payments made or resources provided by the contractor, Chief, or Director shall not be considered monies received from the National Forest System or the public lands.

''(B) KNUTSON-VANDERBERG ACT.—The Act of June 9, 1930 (commonly known as the 'Knutson-Vanderberg Act') (16 U.S.C. 576 et seq.) shall not apply to any agreement or contract under subsection (b).

''(f) COSTS OF REMOVAL.—Notwithstanding the fact that a contractor did not harvest the timber, the Chief may collect deposits from a contractor covering the costs of removal of timber or other forest products under—

''(1) the Act of August 11, 1916 (16 U.S.C. 490); and

''(2) the Act of June 30, 1914 (16 U.S.C. 498).

''(g) PERFORMANCE AND PAYMENT GUARANTEES.—

''(1) IN GENERAL.—The Chief and the Director may require performance and payment bonds under sections 28.103–2 and 28.103–3 of the Federal Acquisition Regulation, in an amount that the contracting officer considers sufficient to protect the investment in receipts by the Federal Government generated by the contractor from the estimated value of the forest products to be removed under a contract under subsection (b).

''(2) EXCESS OFFSET VALUE.—If the offset value of the forest products exceeds the value of the resource improvement treatments, the Chief and the Director may—

''(A) collect any residual receipts under the Act of June 9, 1930 (commonly known as the 'Knutson-Vanderberg Act') (16 U.S.C. 576 et seq.); and

''(B) apply the excess to other authorized stewardship projects.

''(h) MONITORING AND EVALUATION.—

''(1) IN GENERAL.—The Chief and the Director shall establish a multiparty monitoring and evaluation process that accesses the stewardship contracting projects conducted under this section.

''(2) PARTICIPANTS.—Other than the Chief and Director, participants in the process described in paragraph (1) may include—

''(A) any cooperating governmental agencies, including tribal governments; and

''(B) any other interested groups or individuals.

''(i) REPORTING.—Not later than 1 year after the date of enactment of this section, and annually thereafter, the Chief and the Director shall report to the Committee on Agriculture, Nutrition, and Forestry of the Senate and the Committee on Agriculture of the House of Representatives on—

''(1) the status of development, execution, and administration of agreements or contracts under subsection (b);

''(2) the specific accomplishments that have resulted; and

''(3) the role of local communities in the development of agreements or contract plans.''.

(b) CONFORMING AMENDMENT.—Section 347 of the Department of the Interior and Related Agencies Appropriations Act, 1999 (16 U.S.C. 2104 note; Public Law 105–277) is repealed.

APPENDIX B: KEY ELEMENTS OF FSH 2409.19 CHAPTER 60

Topic	Guidance	Reference
Roles and Responsibilities		
Regional Foresters' responsibilities	• Approve and disapprove, in writing to Forest Supervisor, stewardship contracting projects • Review and approves the transfer of residual receipts to other approved projects. • Review annual reports of retained receipts balances. • Set priorities for stewardship contracting projects in the region. • Designate a procurement contracting officer when one of the IRSC contract forms or the service contract form are used, or a timber sale contracting officer when one of the IRTC contract forms are used. • Approve the use of retained receipts for project level monitoring.	FSH §§ 60.3, 60.42, 61.6, 65.2, 67.1
Forest Supervisors	• Review proposals for stewardship contracts and recommend proposals to the regional forester for approval. • Identify forest priorities for stewardship contracting projects. • When less than full and open competition is used for contractor selection, submit to the regional forester the reasons for the selection process used, including the level of competition to be used in the contracting process. • Approve monitoring activities and determine the appropriate levels of use of retained receipts and appropriated funds in support of project level multi-party monitoring.	FSH § 60.42b, 63.13, 67.1
Line Officers' responsibilities	• Use stewardship contracting as a tool to achieve restoration objectives that have been identified through the normal planning and NEPA processes. There is no specific, separate direction to follow in planning of stewardship contracting projects. • Develop projects collaboratively with cooperating Federal, State, and local government agencies; tribal governments; non-governmental organizations; and interested groups or individuals. Project proposals may be initiated from external sources as well as from within the agency. • Group stewardship contracting projects and resource activities into segments to allow efficient use of equipment. • Use public input from a collaborative group and other stakeholders to guide the agency in determining specific lands to be treated and types of restoration work activities to be conducted. Inform agency staff and the ID team of the recommendations and underlying rationale of the collaborative group, if one exists. • As appropriate, approve projects that can be approved as stewardship projects and that have completed NEPA analysis but that were originally designed to implement land management objectives using either a standard service contract or timber sale. The Purpose and Need of the decision document should indicate that the work activities have a restoration basis and are consistent with 16 U.S.C. § 2104 Note, (b). • Direct agency staff to complete the stewardship contracting proposal. • Include the mitigation measures in the NEPA document and/or decision notice that are required to be completed as mandatory items in the contract. • Holds ultimate determination whether to use stewardship contracting as a tool. • Makes the determination of local community based on consultation with appropriate sources. • Involve an "Internal Stewardship Contracting Project Team" early in the development of stewardship contracting projects.	FSH §§ 61, 61.2, 61.13, 61.14

Topic	Guidance	Reference
District Rangers	• Develop stewardship contracting projects. • Ensure the appropriate technical specialists are involved early and throughout stewardship contracting projects. • Make a determination of the local community appropriate to a project and work in collaboration with interested parties during project design, as well as implementation. • Consider the project planning interdisciplinary (ID) team's analysis and advice and the information generated during collaboration. • Ensure stewardship contracting projects are clearly related to needs identified in NEPA documentation and the goals of 16 USC 2104 Note (sec. 61.1). • Combine projects, where appropriate, to maximize use of equipment, supplies, and people to benefit a variety of resources. • Consult with the forest supervisor to resolve any questions regarding appropriate use of stewardship contracting residual receipts • Prepare plans for use of residual receipts as appropriate.	FSH § 60.42c
Contracting officers	• Regional foresters shall designate a procurement contracting officer when either of the two IRSC contracts or the service contract form are used, or a timber sale contracting officer when either of the two IRTC contract forms are used. • Contracting officers complete at least 24 hours of training related to stewardship contracting prior to being delegated as a contracting officer on a stewardship contracting project. Training may include national, regional, or forest sponsored stewardship sessions and hands-on training in the planning and implementing a stewardship project.	FSH § 65.2, 65.21
Internal Project Team	• The "Internal Stewardship Contracting Project Team" comprises appropriate contract or agreement specialists, financial management specialists, and resource management specialists. • Line officers shall involve the team early in the development of stewardship contracting projects. Early involvement of the team facilitates development of stewardship contracting projects that are feasible and may be implemented in accordance with appropriate authorities. Development of feasible projects helps to maintain credibility with the local community. • The team may work in collaboration with the public, coordinate the needs and roles of various Forest Service staffs, and provide recommendations on decisions relative to a project.	FSH § 61.14
Contract administration team	• For stewardship projects using IRSCs, the contract administration team includes: ✓ Procurement Contracting Officer (CO), ✓ Timber Sale Contracting Officer, ✓ Contracting Officer Representative (COR), ✓ Certified Sale Administrator (SA) and/or Harvest Inspector, ✓ Inspectors as appropriate (harvest, engineering, wildlife, fuels, etc.). • Contract administration teams for stewardship projects using IRTCs include: ✓ Timber Contracting Officer (CO); ✓ Procurement Contracting Officer; ✓ Forest Service Representative (FSR); ✓ Certified Sale Administrator (SA); ✓ Contracting Officer Representative (COR); ✓ Engineering Representative, as needed (ER); ✓ Inspectors as appropriate (harvest, engineering, wildlife, fuels, etc.).	FSH § 65.3

Topic	Guidance	Reference
Contracts		
Contract types	• Five contract types are approved for use in stewardship contracting projects: ✓ Integrated resource timber contract—scaled, ✓ Integrated resource timber contract—tree measurement, ✓ Integrated resource service contract—scaled, ✓ Integrated resource service contract—tree measurement, and ✓ Service contract. • Selection of the contract type should be appropriate for the planned restoration activities and meet restoration and community objectives.	FSH § 62.1
Contract length	• Contracts can be up to 10 years in length. • Multi-year contracts are encouraged because they provide incentives to potential contractors to invest in long-term landscape improvement projects. • The rationale for the duration of a contract considers factors such as: ✓ the scope of the project; ✓ the type of material to be treated; ✓ the amount of road construction; ✓ the production rates of potential contractors; ✓ the availability of local capacity to process and use the material removed, and the potential development of new markets for small diameter material; and ✓ operational factors such as local weather patterns, sensitive wildlife species habitat use cycles, and seasonal restrictions for wildfire prevention.	FSH § 62.3
Difference between stewardship contracts and timber sales	• Stewardship contracts must be selected on a best value basis, contracts may use a performance-based format to meet end result objectives, and the service contract length may exceed 5 years but must not exceed 10 years. • The Forest Service unit may apply the value of timber or other forest products removed as an offset against any services received. • Designation and marking of trees, portions of trees, or special forest products may be done by persons not employed by the Secretary of Agriculture in accordance with 16 USC § 2104 Note. • Trees and special forest products may be sold without advertisement regardless of value in accordance with 16 USC § 2104 Note (sec. 61.5). • Monies received from the sale of forest products or vegetation removed under a stewardship contract may be applied at the project site or at another stewardship contracting project site without further appropriation. • The Knudsen-Vandenberg (K-V) Act (16 USC 576) does not apply to monies received from the sale of forest products or vegetation removed under a stewardship contract. However, K-V collections may be made and expended on appropriate K-V projects in accordance with FSH chapters zero code, 10, and 20. K-V funds cannot be collected to administer activities funded with residual receipts from stewardship contracts. • Deposits may be collected pursuant to the Deposits from Brush Disposal Act (16 USC 490) and the Cooperative Funds Act (16 USC 504) even if the trees were removed through a service contract (contract logging).	FSH § 61
Integrated Resource Timber Contracts (IRTCs)	• The Integrated Resource Timber Contract (IRTC) formats (FS-2400-13 and 13T) were developed for exclusive use in implementing stewardship contracting projects. • IRTCs are used when the value of goods exceeds the value of services. • IRTCs combine product removal and service work. • Only the IRTC can be used to generate receipts for use on another stewardship contracting project. • Use and preparation of IRTCs are the same as in Timber Sale contracts (FS-2400-6 and FS-2400-6T) and procurement contracts. • Use of the IRTC requires adherence to the same laws, regulations, policy, and direction applicable to procurement contracts and timber sales.	FSH § 62.11

Topic	Guidance	Reference
Integrated Resource Service Contracts (IRSCs)	• The Integrated Resource Service Contract (IRSC) formats were developed for exclusive use in implementing stewardship contracting projects. • IRSCs are used when the value of services exceeds the value of the goods. • IRSCs may trade goods for services and use receipts from another stewardship contracting project to pay for service work. • IRSCs combine service work and product removal and are patterned after the standard procurement contract. • IRSCs contain procurement clauses and national, regional, and forest provisions used in the FS-2400-6 and 6T contracts. • Use and preparation of the IRSC are the same as procurement contracts. • Use of the IRSC requires adherence to the same laws, regulations, policy and direction applicable to procurement contracts and timber sales. • Use of receipts in the service contract must also be approved by the regional forester prior to use. • Products removed from the project area must meet national, regional, and forest accountability requirements (paint, hammer branding, product removal receipts, etc.).	FSH § 62.12
Service contracts	• A service contract cannot trade goods for services, but can use receipts from an approved stewardship contracting project to pay for service work or use appropriated dollars. • Work activities to be completed within a service contract must be part of a stewardship project(s) previously approved by the regional forester. • Use of receipts in the service contract must be approved by the regional forester prior to use.	FSH § 62.13
Other topics		
Allocation of monies collected	• Allocation of monies collected through receipts from trading goods for services is prioritized as follows: ✓ Paying for the service work within the IRTC or IRSC contract; ✓ Additional collections for the K-V fund, brush disposal fund, and cooperative work; ✓ Reimbursement of any salvage sale fund expenditures incurred in preparing the project; ✓ Retained receipts to be applied to other stewardship projects; ✓ Any remaining receipts are excess receipts to be returned to the U.S. Department of Treasury.	FSH § 67
Best value	• All stewardship contracts are awarded on a best value basis, considering criteria other than cost or price. • Non-price criteria include ✓ the contractor's past performance, ✓ the contractor's work quality, ✓ existing public or private agreements or contracts, ✓ the contractor's on-time delivery, ✓ the contractor's experience, ✓ the contractor's technical approach, and ✓ benefits to the local community. • The following are *not* considered in determining best value: monetary contributions to the local community, collaborative group, or other financial arrangements and/or inducements in support of collaboration, project level monitoring, paying for a non-profit to manage application process for use of retained receipts, or other activities that do not accomplish on the ground treatments.	FSH §§ 63.1, 63.12

Topic	Guidance	Reference
Bundling	• Several work items can be included in (bundled into) one contract. • The number and types of work activities that are bundled can affect the contract type selected for the project, the economics of the project, the number of potential contractors, and the benefits to local and rural communities. • Projects with work activities requiring specialized equipment or equipment not readily available should occur at a sufficient frequency or on a sufficient scale to assure an adequate return on investment to support purchase and maintenance of the equipment. • The mix of work activities in a particular contract should meet the following criteria: ✓ Accomplish restoration objectives in the most efficient and cost effective manner. ✓ Result in the least impact on the resources. ✓ Benefit local and rural communities. ✓ Utilize local workforce to the extent practical. ✓ Provide training opportunities to increase number of contractors and/or number of workers. ✓ Provide products that can be used economically in local, regional and national markets.	FSH § 62.2
Compliance with 16 USC § 2104 Note, (b)	• Projects proposed to use stewardship authorities must be consistent with the land management goals stated in 16 USC § 2104 Note, (b).	FSH § 61
Contractors	• Nontraditional contractors or recipients, such as counties, private persons, or other private entities may be selected by the contracting officer when awarding a stewardship contract. • Contractors' financial and logistical capabilities to fund and complete the contract are reviewed as part of a best value determination. Contractors with no or limited experience contracting with the government, or completing required work, may be required to post a performance bond to protect the interests of the government.	FSH § 63.12, 63.14
Contractor default	• In the event of a default by the contractor, receipts paid by the contractor and deposited into the SDNG fund code or that are guaranteed by a payment bond in an IRTC or a performance bond in an IRSC can be used to complete required restoration activities. • The required work can be added to the contract of another approved stewardship project, or completed under a separate service contract using the receipts from the original contract.	FSH § 67.1
Costs of preparation	• Stewardship contracting preparation, overhead, and monitoring costs are normally funded through appropriated funds, similar to other contracting efforts, such that the primary purpose determines the funding source as intended in the budget restructuring included in the Interior and Related Agency Appropriations Act of 1995. • The rationale used for identifying the source and the budget line items available for use, which one(s) were selected, and the rationale for the funding decision are documented in the project work plan. • During actual project implementation, any service (stewardship project) costs that are not offset by goods (forest products) received are funded by the project's primary purpose. • When a stewardship contracting project contains multiple contracts, the specific purpose and need associated with each contract serve as a basis for funding, as opposed to a using a single budget line item for all contracts. • Additional funds for projects may be obtained from cooperators, other agencies, and local donations. • Any additional funds that are obtained are used for project implementation activities. • Road, trail, or facility maintenance, construction, or reconstruction items must be expensed and not capitalized	FSH § 66

Topic	Guidance	Reference
Form of requests for approval	• The request for approval must include appropriate information about: ✓ the land management goals, ✓ stewardship contracting authorities, ✓ the method of contracting to be used, ✓ the value of products to be removed, ✓ the value of services to be received, ✓ the value of goods to be exchanged for services, ✓ contributed funds or work to be received, and ✓ expected residual receipts from the project.	FSH § 61.6
Inclusion in stewardship contracts	• Only the projects and associated work activities approved by the regional forester with completed NEPA analyses are to be included in stewardship contracts.	FSH § 61.6
Initiation by external sources	• Project proposals may be initiated from external sources as well as from within the agency.	FSH § 61
Less than full and open competition	• When less than full and open competition is used for contractor selection, the reasons for the selection process used, including the level of competition to be used in the contracting process, are documented by the forest supervisor and submitted to the regional forester.	FSH § 63.13
Local community	• The parameters of local community must be defined for each stewardship contracting project and used consistently across all contracts and/or agreements used to accomplish the goals of the project. • The definition of local varies significantly depending on the unique and varying scope of each stewardship contracting project. The definition must be considered in relation to the effect it would have on local and rural resource availability, geographical reasonableness, and the location of work under the stewardship contracts or agreements. • The determination of local community is made by the local line officer based on consultation with appropriate sources. • Unit Acquisition Management staffs routinely define local for procurement purposes using the Federal Acquisition Regulation (FSH 6309.32-FAR) as a guide and, therefore, can assist in determining the definition for stewardship contracting projects during the early stages of project development. Feedback from collaboration should also be considered in the determination of local community.	FSH § 61.13
Multi-year contracts	• Multi-year contracts are used primarily to acquire known requirements over a longer-than-1-year-period using either an IRSC or a service contract. • The following factors are considered for multi-year contracts: ✓ The land management to be accomplished requires multiple years or steps to complete; ✓ The need for the supplies or services is reasonably firm and continuing over the period of the contract; and ✓ A multi-year contract serves the best interests of the U.S. government by encouraging full and open competition or promoting economy in administration, performance, and operation of the agency's programs.	FSH § 63.3
NEPA	• Projects must be included in the environmental documents and decisions developed under National Environmental Policy Act (NEPA) requirements. • Stewardship contracting is a tool for meeting resource objectives. It is not included in the NEPA document and decision notice as a requirement of the project. • All stewardship contracting projects must comply with the National Environmental Policy Act (NEPA). • Multiple NEPA documents may be used for a single stewardship contracting project.	FSH §§ 60.3, 61, 61.1

Topic	Guidance	Reference
Residual receipts	• When the value of the products generated by a stewardship contracting project exceeds the cost of the services rendered, excess offset value results and residual receipts are generated. • Residual receipts may be used on the same stewardship contracting project by adding other service work. • Residual receipts may be transferred to another stewardship contracting project (when approved in advance by the regional forester) or directed to trust funds. • The design of stewardship contracting projects that trade goods for services should balance the value of products removed with the cost of services received, so that pools of retained receipts are not created and maintained. • If salvage sale funds are spent to plan, layout, or administer a stewardship contracting project, the funds are to be replenished. • Essential K-VJ and K-V other work that would extend beyond the timeframe of a stewardship contract should be included in a sale area improvement plan. • Excess residual receipts should be used for additional approved stewardship contracting projects.	FSH § 60.3, 67.1
Retained receipts	• Retained receipts can be: ✓ Used on another stewardship contracting project in the same project area. ✓ Transferred outside the original project area, provided the transfer is identified in advance, made known to interested parties, and approved in advance by the regional forester. Residual receipts normally are used on the same administrative unit where they were generated. ✓ Used to fund national multi-party programmatic process monitoring. ✓ Used to support project-level multi-party process monitoring when there is interest and support from local collaborative partners. Retained receipts may defray the direct costs of local multi-party process monitoring and support the collaborative process by paying for facilitation, meeting rooms, travel, incidental expenses, data collection, and dissemination of monitoring findings to the public. • Retained receipts cannot be used for Forest Service salary, overhead, administrative, or indirect costs, or for the completion of environmental studies or other planning and analysis. • Retained receipts may be transferred to collaborators through reimbursements, including services contracts, agreements, and other approved mechanisms for monitoring purposes. • Items to be monitored and monitoring protocols, as agreed upon within the collaborative group and recommended to the line officer, may be funded with retained receipts.	FSH § 67.1
Revenues from sale of products	• Deriving revenue from the sale of products designated for removal through stewardship contracting projects is a secondary objective to achieving land management goals. • The value of services received, payments made, or resources provided under a stewardship contract are not considered to be monies received from the National Forest System for the purpose of calculating payments to States. Therefore, stewardship contracts do not require a minimum deposit to National Forest Fund (NFF).	FSH § 67
Timber removal	• Timber and other forest products, including biomass, may be removed	FSH § 60.3

Topic	Guidance	Reference
Trust funds	• The Forest Service may direct stewardship contracting receipts to the following trust funds: ✓ K-V Funds, ✓ Salvage Sale Funds (SSF), ✓ Brush Disposal (BD) Funds, and ✓ Cooperative Work—Other Funds. • Many of the activities typically accomplished through Knutson-Vanderburg (K-V) collections can be incorporated into the stewardship contract. There are instances where it may be appropriate to collect K-V funds for treatments that exceed the contract length, such as for noxious weed control, prescribed burning, or for projects that require complex oversight, such as for tree planting. • Stewardship contracting projects may use salvage sale funds (SSF) when they meet the qualifications of a salvage sale. Salvage sale funds can be used for sale preparation and administration only when it is anticipated that sufficient receipts can be collected to reimburse the salvage sale fund. • Brush disposal (BD) funds may be collected even though the trees were removed through a service contract (contract logging). • Cooperative work may include road maintenance, rock replacement, erosion control, and contract scaling. Road maintenance and erosion control are included in a stewardship contract whenever possible.	FSH § 67.3

APPENDIX C: INSTITUTIONAL REVIEW BOARD–APPROVED FORMS

The University of Montana

College of Forestry and Conservation/
Montana Forest & Conservation Experiment Station
32 Campus Drive
Missoula, Montana 59812

Phone: (406-243-5521)
Fax: (406-243-4845)
www.cfc.umt.edu

January __, 2011

Dear [Name]:

I am a graduate student working on my dissertation at The University of Montana on the topic of stewardship end-results contracting. Because you have been involved in a stewardship contract, I wanted to talk to you about your experiences with the tool and how the Forest Service culture affects the tool's adoption. Before I began my Ph.D. research, I helped federal employees meet public involvement requirements, so I am sensitive to the often-conflicting demands placed on agency personnel. I am especially interested in how employees such as yourself successfully manage potential tensions between environmental and societal goals.

I will be talking to a number of other people who have been involved with stewardship contracting, beginning on [date] in [location]. Would you be willing to see me sometime that week? Ideally, I would need no more than an hour of your time. Any time at your convenience would be fine. I will give you a call next week.

Your participation is entirely voluntary and all of your responses will be kept confidential. No personally identifiable information will be associated with your responses in any reports of this data.

I appreciate your time and consideration in allowing me to interview you. If you have any questions about the project or about me, please e-mail me at cassandra.hemphill@umontana.edu or give me a call at 406-370-8344.

Sincerely,

Cassandra J. Hemphill
Ph.D. Candidate, Forestry

The University of Montana
COLLEGE OF FORESTRY AND CONSERVATION
Where Ideas Take Flight

An Equal Opportunity University

Figure C-1. Recruitment letter.

SUBJECT INFORMATION AND INFORMED CONSENT

Title: Adoption of Stewardship Contracting within the USDA Forest Service

Project Director:

Cassandra Hemphill
Department of Society and Conservation
Forestry Building, Room 103B
The University of Montana
Missoula, MT 59812
Phone: 406-370-8344 (cell)
E-mail: cassandra.hemphill@umontana.edu

Faculty Supervisor:

Jim Burchfield, Ph.D.
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Missoula, MT 59812
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E-mail: james.burchfield@umontana.edu

Special Instructions: This consent form may contain words that are new to you. If you read any words that are not clear to you, please ask the person who gave you this form to explain them to you.

Purpose: You are being asked to take part in a research study investigating the adoption of the stewardship end-results contracting (Public Law 108-7). You have been chosen because you are (a) a current or former employee of the Forest Service or (b) you were or potentially could be involved in a stewardship contract as a private-sector contractor in the timber industry, an elected official in a community affected by the timber industry, a representative of an affected tribe, or a collaborator or other individual interested in and potentially affected by a stewardship contract. The purpose of this research study is to understand the factors leading to adoption of stewardship contracting.

Procedures: If you agree to take part in this research study, you will be asked about your knowledge of stewardship contracting including personal experiences you have had in connection with the policy. You may also be asked some demographic questions including length of service in your present job or capacity related to stewardship contracting, disciplinary background, knowledge of or participation in other collaborative processes, and reactions to the policy.

The interview will take place in person at your office or other location of your choice or by telephone. After completion of the interview, you may also be asked to complete a computer-based survey. Most interviews will take approximately 30-60 minutes.

Interviews Audiotaped: An audio recording may be made of the interview, with your prior approval. Recordings will be erased following transcription, and no identifying information will be included in the transcripts. Your initials indicate your permission to audio record the interview.

Initial here to indicate permission to audio record:

_____

Payment for Participation: No payment will be made for your participation.

Risks/Discomforts: Participants may express opinions or attitudes that differ from that of their employers or other group with which they are affiliated. In the event of a breach of confidentiality, it is possible, although unlikely, that such opinions or attitudes could potentially cause problems with employers or supervisors. Answering the questions may cause participants to think about feelings that make them sad or upset. Participants will be able to end the interview at any time, should they experience discomfort.

Benefits: It is unlikely you will benefit directly from taking part in this study, although it may result in conclusions and recommendations that could be applied by the Forest Service and/or considered during potential Congressional reauthorization or permanent authorization.

Confidentiality: Your responses will be kept private and will not be released without your consent except as required by law. Only the researcher and her faculty supervisor will have access to the files. Your identity will be kept confidential. If the results of this study are written in a scientific journal or presented at a scientific meeting, your name will not be used. The data will be stored in a locked file cabinet. Individually identifying data will be destroyed at the conclusion of

Figure C-2. Informed Consent Form.

the study, or earlier as possible. Your signed consent form will be stored in a cabinet separate from the data. The audio recording will be transcribed without any information that could identify you. The data will then be erased.

Compensation for Injury: Although we foresee only minimal risk in taking part in this study, the following liability statement is required in all University of Montana consent forms.

> In the event that you are injured as a result of this research you should individually seek appropriate medical treatment. If the injury is caused by the negligence of the University or any of its employees, you may be entitled to reimbursement or compensation pursuant to the Comprehensive State Insurance Plan established by the Department of Administration under the authority of M.C.A., Title 2, Chapter 9. In the event of a claim for such injury, further information may be obtained from the University's Claims representative or University Legal Counsel. (Reviewed by University Legal Counsel, July 6, 1993.)

Voluntary Participation/Withdrawal: Your decision to take part in this research study is entirely voluntary. You may refuse to take part in or you may withdraw from the study or skip questions at any time without penalty.

Questions: If you have any questions about the research now or during the study, you may contact Project Director Cassandra Hemphill either by e-mail (cassandra.hemphill@umontana.edu) or phone (406-370-8344) or her Faculty Supervisor, Jim Burchfield, by e-mail (james.burchfield@umontana.edu) or phone (406-243-6650). If you have any questions regarding your rights as a research subject, you may contact the Chair of the IRB through The University of Montana Research Office at 406-243-6670.

Statement of Consent: I have read the above description of this research study. I have been informed of the risks and benefits involved, and all my questions have been answered to my satisfaction. Furthermore, I have been assured that any future questions I may have will also be answered by a member of the research team. I voluntarily agree to take part in this study. I understand I will receive a copy of this consent form.

_____
Printed (Typed) Name of Participant

_____
Participant's Signature

_____
Date

Page 2 of 2

Figure C-2 (cont.).

Name: _____
Date: _____
Job Title/Affiliation: _____

INTERVIEW GUIDE: FOREST SERVICE – FOREST HAS USED STEWARDSHIP CONTRACTS

Preliminaries:

- Explain confidentiality
- Read and sign the *Informed Consent* form.
- Give them my business card
- Start the recorder

Question: Why have some Forests adopted stewardship contracting – and others haven't?

Item 1: **Experience with Tool**

1.a How **did you come to use** a stewardship contract? **Whose idea** was it? **Why** did you use the tool?

1.d Which **authorities** did you use? Why?

1.e What did you achieve with a SC that you couldn't with a timber / services contract? What were the downsides?

1.b How did other folks in your District/Forest **react**? What **concerns** did they have?

1.c How did local **elected officials react?** What about the **public?** And the **Tribes**?

1.f What would you **change** about stewardship contracting? How could it be **improved**?

1.g If someone new to the community asked you, "**What is stewardship contracting**," what would you tell them?

Other Questions:

-
-
-
-
-

Figure C-3. Interview Guide for Forest Service participants, with room for notes.

Item 2: **Questions about You.**

2.a Year **born**

2.b Academic **field/discipline/training**?

2.c How many **years in current position**?

2.d **Years with FS?**

2.e Current **position** (job title)

2.f What **unit(s)** do you support (e.g., District, Forest)

Item 3: What **question didn't I ask that I should have**? Or that you expected me to ask?

Item 4. **Who else should I talk to?**

Thank you for your time. The information you have provided is **very valuable** to us. If you think of anything else, here is a copy of **my business card**. Please **feel free to call or e-mail** me if you think of anything else that you want to share.

Figure C-3 (cont.).

Name: _____
Date: _____
Job Title/Affiliation: _____

INTERVIEW GUIDE FOR NON-FOREST SERVICE EMPLOYEES

Intro: The objective of my research is to understand adoption of the stewardship end-results contracting policy (Public Law 108-7) within the Forest Service. Before we begin, I will ask you to read and sign the *Subject Information and Informed Consent* form that I have provided.

Item 1: **Have you participated on a stewardship contract?**

- If YES, go to Item 2.
- If NO, go to Item 3.

Item 2: **YES**

2.a Tell me about the **most recent time** you participated on a stewardship contract. How did it come about? **Whose idea** was it? Did **anyone resist** it? How did other **local people** (**elected officials / public / tribes) react**? How **long** did it take? Which **authorities** were used?

2.b Would you participate on a **stewardship contract again**? If so, under **what conditions**? If not, why not?

2.c What would you **change** about stewardship contracting? Is there **something better** out there? If so, what is it? If not, **what would it look like**?

2.d If someone new to the community asked you, "**What is stewardship contracting**," what would you tell them?

Item 3: **NO**

3.a **Why haven't you** participated in a stewardship contract?

3.b What was **used in place** of a stewardship contract?

3.c Do you think you were able to **accomplish the same goals** without a stewardship contract?

3.d **What would make you want to** use a stewardship contract? **What thing or things would you change** – or **what doesn't it have** that it needs?

Figure C-4. Interview Guide for non–Forest Service participants, with room for notes.

Item 4: **Questions about You.**

4.a Job title (e.g., County Commissioner, logger, mill-owner, conservation rep)
If elected official/timber industry, conservation rep: how many **years** have you served **in your current position**?

4.b What do you consider to be **local** (e.g., is it your county boundaries, your town, a watershed)? Approximately **how many people live/work in the area**?

4.e Year **born**

4.f Education or **training**

Item 5. **Who else should I talk to** about stewardship contracting (e.g., on the Forest, in the community).

Item 6: Do you have any **additional information or comments** that you would like to share?

Thank you for your time. The information you have provided is **very valuable** to us.
If you think of anything else, here is a copy of **my business card**.
Please **feel free to call or e-mail** me if you think of anything else
that you want to share.

Figure C-4 (cont.).