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Conservation Program Contract Modifications: Evidence from USDA's Environmental Quality Incentives Program

Steven Wallander*, Economic Research Service, USDA
(swallander@ers.usda.gov)
Roger Claassen, Economic Research Service, USDA
(claassen@ers.usda.gov)
Alexandra Hill, University of California at Davis
(alihill@ucdavis.edu)

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Introduction:
Between 1997 and 2013, USDA's Environmental Quality Incentives Program (EQIP) and participating farmers signed over 560,000 contracts – which collectively specified 2.7 million conservation practices – to address environmental resource concerns on working agricultural lands. To cover a portion of the costs for these practices, USDA obligated more than $11.5 billion (in CPI-adjusted 2013 dollars) in financial assistance.

Many practices have not been implemented as planned. As per the rules of the program administered by USDA's Natural Resources Conservation Service (NRCS), practices that are not implemented may be "cancelled," "deleted," or "terminated." Prior research has found that – under the original 1997 program rules – non-implemented practices may result from strategic bidding behavior in which farmers add practices to the contract during the bidding ("auction") process to improve their score but then cut the high-scoring practices later (Cattaneo, 2003). While this finding suggests that changing the scoring mechanism may be necessary to reduce contract modifications, this study examines another policy lever for influencing contract modifications – contract structure. It also seeks to identify the extent to which changes to contracts may represent a desirable form of adaptive management as conservationists and farmers react to changing conditions on the ground or re-evaluation of resource concerns.

Methodology:
To identify factors that influence contract modifications, we examined the status in 2014 of practices from fiscal year 2010 contracts. We focused only on practices that were originally planned to be installed between 2010 and 2013. This grouping includes the large majority of practices, as the average contract length is about 2 years. Because our focus was on contract-level variables, we aggregated the practices to the contract level and developed an econometric model in which the dependent variable is binary and equals 1 if at least one practice is cancelled and 0 if no practice is cancelled. This definition relies heavily on the administrative definition of "cancelled" practices (see Findings section below). In addition, to focus on cases of potentially strategic behavior and/or adaptive management, we examined contracts in which at least one of the original practices was implemented.

Findings:
Most conservation practices are completed close to their planned year, but a substantial number of practices undergo modifications due to practice deletions, cancellations, and terminations. Based on NRCS rules, cancellations occur when a farmer requests that a practice be removed from a contract and NRCS agrees with the farmer's justification; deletions occur when NRCS (usually an NRCS conservationist) decides to remove a practice, often for purposes of replacing it with another; and terminations occur when NRCS removes a practice, often due to concerns about the ability of the farmer to implement it under the terms of the original contract. Of the 156,653 practices planned for implementation between 2010 and 2013, 83 percent were completed (certified) by 2014 and just over 7 percent were cancelled, usually at the request of the farmer (table 1). About 6 percent of practices in the same period were deleted. In contrast to both cancellations and deletions, terminations were relatively rare, accounting for only 1 percent of original practices.

To examine patterns in practice cancellation and terminations, we evaluated differences in cancellation and termination rates across categories that reflect the on-farm, production-related value of the practices to producers. The categories provide a measure of the extent to which conservation practices are impure public goods. As stated previously, this analysis covers practices on the original 2010 contracts that were planned to be implemented before 2014. Fish and wildlife-related practices had the highest cancellation rates (around 12 percent), which is compatible with the notion that these are some of the most pure public goods provided by the program with the lowest on-farm, production-related benefits (fig. 1). In contrast, highly impure public goods, such as irrigation practices with relatively large on-farm benefits, had much lower cancellation rates of around 6 percent. Perhaps surprisingly, air quality-related practices had the lowest cancellation rates, which may have stemmed from regulations mandating the installation of these practices.

Based on econometric analysis of cancellations and terminations, we estimated the impact of multiple factors on the probability that a contract with at least one completed (certified) practice would also have a cancelled or terminated practice. We found that contract structure – particularly the size and scope of contracts – and practice mixes significantly influence the likelihood that a practice on a given contract is cancelled (table 2). Contracts that include financial assistance for a written plan are more likely to have a cancelled practice, as are contracts that have structural practices. While complex contracts (with more practices or more years) are more likely to have a cancelled practice, large contracts (of higher total dollar value or acres treated) are less likely to have cancellations.

Lastly, to examine the role of adaptive management in practice cancellations, we developed an analysis of reasons given to justify contract-level modifications on contracts with cancelled practices. Common themes include financial hardships and personal health issues (table 3), both of which will affect the ability of farmers to meet their share of the financial burden of practice implementation.

Conclusion:

Despite dramatic changes in program design since initial studies examined the issue of practice cancellation in EQIP, practice cancellations remain an important source of information for evaluating program outcomes. In this study, we described recent patterns in practice cancellations, deletions, and terminations. We linked those patterns to both the extent to which practices have greater or lower private benefits for farmers, and we linked those patterns to the structure of contracts.

References:

Cattaneo, A. 2003. "The Pursuit of Efficiency and Its Unintended Consequences: Contract Withdrawals in the Environmental Quality Incentives Program." *Review of Agricultural Economics.* 25(2): 449-469.

Figure 1: Conservation practice cancellation rates by category, 2010-13

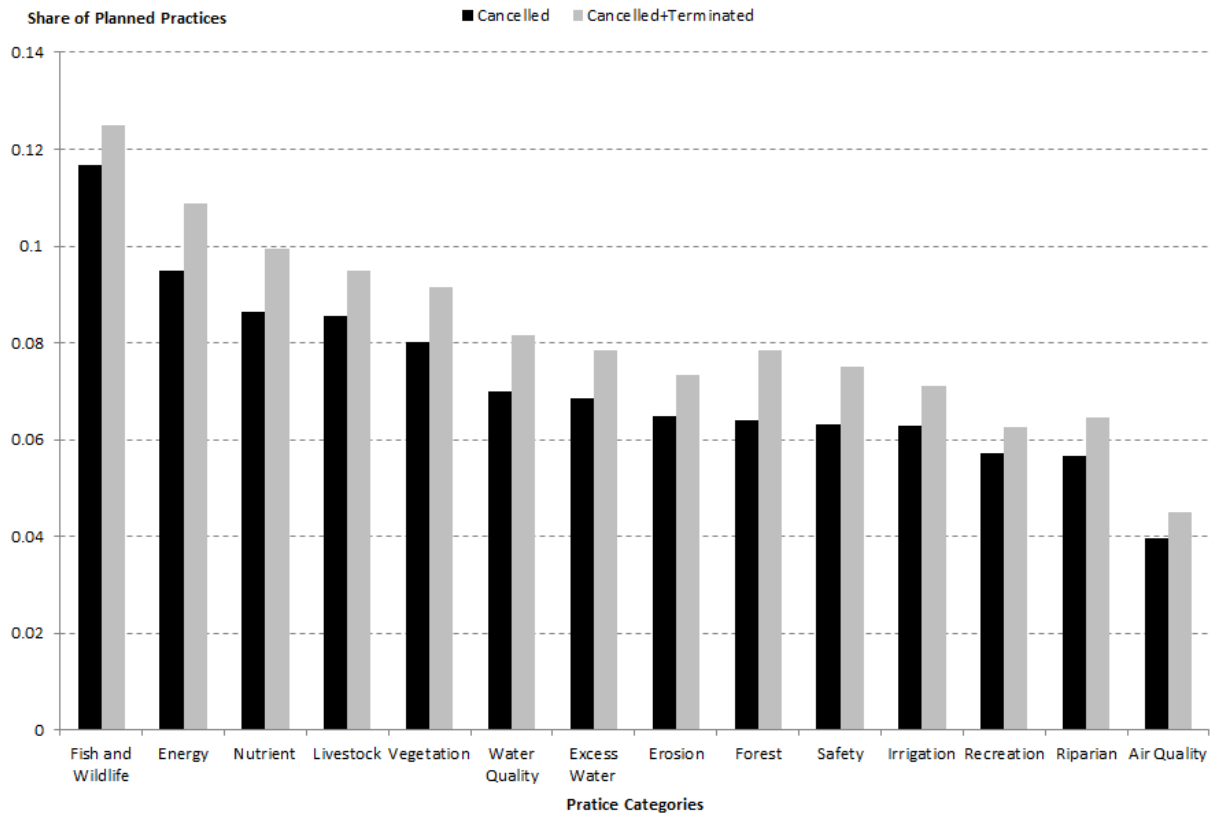

Table 1: Conservation practice status in 2014 for fiscal year 2010 EQIP contracts

Status in 2014	Planned 2010-13		Planned 2014 or later	
Cancelled	11,662	7.44%	552	5.16%
Certified	130,001	82.99%	1,912	17.87%
Deleted	8,864	5.66%	416	3.89%
Planned	4,429	2.83%	7,659	71.59%
Terminated	1,573	1.00%	88	0.82%
Totals	156,653		10,698	

Table 2: Estimated effects of contract structure on probability of at least one cancelled practice

Factor	**Change in expected probability that contract includes a cancelled practice**
Inclusion of certain written plans	5%
Inclusion of structural practices (relative to management practices)	5%
Large number of practices (10 versus 2)	29%
Additional year on the contract	2%
1-percent increase in dollars	-0.60%
1-percent increase in treated acres	-0.30%

Table 3: Most common phrases in "modification reason descriptions" for cancelled practices on contracts with at least one certified practice

Descriptive term or word	Frequency
"Hardship"	9,365
"Financial"	6,797
"Recovery"	6,151
"Expired"	3,927
"Liquidated"	2,875
"Land"	2,522
"Health"	2,313
"Personal"	2,200
"Unable"	1,815