



National Association of Conservation Districts Market-Based Conservation Initiatives White Paper December 2008

INTRODUCTION

Market-based solutions to natural resource challenges are emerging as new tools for public and private entities seeking improvements in air, soil and water quality. Related benefits such as open space/working lands preservation, wildlife habitat enhancement, wise land use and recreational opportunities are also drivers. In addition to providing new tools for achieving conservation goals, market-based strategies have the potential to highlight and assign economic value to the ecological services society derives from wise stewardship of natural resources.

This paper seeks to offer insights on market-based engagement opportunities for conservation districts, Natural Resources Conservation Service (NRCS) field staff and other interested conservation practitioners. While market-based initiatives are not magic bullets in and of themselves, they can be important additions to existing strategies and initiatives.

Included here are a review of current market-based activities, brief case studies showing where conservation districts and/or NRCS field staffs are already engaged and a set of references for further information.

ROLES FOR FIELD STAFF

Many of the roles for conservation district and NRCS field staff in the area of market-based conservation will be similar to or expand upon duties they currently perform. These include technical assistance for and installation of best-management practices and monitoring/verification of these practices. As noted in this paper, revenue streams supporting these activities can be generated from new sources.

Education will be another major area of involvement for conservation districts, including linking cooperators to markets and informing the larger public and policy-makers about the potential of market-based approaches for conservation.

Several practices and activities within the agriculture and forestry sectors lend themselves to market-based tools for achieving conservation gains. We will provide examples in this paper.

WHAT IS MARKET-BASED CONSERVATION?

There are various definitions of market-based conservation. Some are broad, others narrow. Here is one definition used by the U.S. Department of Agriculture:

Market-based conservation is an innovative way to stretch resources, to take conservation beyond the boundaries of the farm, ranch and forest, while preserving productivity, maintaining and enhancing landowner livelihoods and producing environmental benefits.

Market-based solutions generally provide flexibility to undertake actions that have the lowest cost and result in more cost-effective achievement of natural resource conservation and environmental goals compared to traditional command and control approaches.¹

Honing the definition down for field staff, their cooperators and local communities, we offer this brief statement:

Market-based conservation quantifies economic values for natural resource conservation strategies and develops or enhances public and private markets in which these values can be sold and/or traded to achieve natural resource and environmental goals. In lay parlance, market-based initiatives use an economic driver to cause implementation.

Major categories for market-based systems include:

- Green payments from public funds, including programs such as the Conservation Stewardship Program, which rewards producers for good conservation practices.
- Direct private sector payments for ecosystem services, in which the private sector defines and purchases benefits.
- Market-based environmental standards and certifications that add value to products and services, such as those that promote farming practices that reduce pesticide use and enhance biodiversity.

¹ USDA Natural Resources Conservation Service, PowerPoint presentation prepared by Carl Lucero, national leader for clean water

- Environmental credits for strategies that provide ecological services, such as carbon and water quality credits.

In this paper, we focus primarily on ongoing activities and emerging opportunities in the areas of air and water quality credits, but also touch on potential in other categories.

Why Market-Based?

Conservation district and NRCS staff know all too well that there aren't enough public dollars in traditional conservation programs to meet the needs of cooperators and the public. In addition, many people who walk in the door of district offices seeking assistance for conservation activities don't qualify for state and federal programs. Market-based conservation has the potential to offer new avenues for funding and opportunities for innovation. As this paper will show, market-based systems sometimes allow conservation districts to serve cooperators who do not qualify for existing programs. Market-based solutions also provide flexibility to the private sector as it seeks to meet its stewardship responsibilities.

Following is a brief look at where we are today.

CURRENT LANDSCAPE

Public and private markets are emerging in areas of water quality and air quality trading, green payments and other ecosystem services. Following is a brief summary of activities with particular attention to areas that will be of interest to conservation districts, NRCS field staff and other interested parties at the local level.

Air Quality

Carbon markets are developing worldwide due to concerns about global climate change. While carbon credit trading is more advanced in some other nations, especially those with established carbon-reduction targets, there is a degree of active trading in the U.S. The Chicago Climate Exchange, www.chicagoclimateexchange.com, established in 2002, provides a legally binding system for the sale/purchase of carbon and other greenhouse gases. It operates as a cap-and-trade system. In a carbon cap-and-trade system, entities that produce emissions below a mandatory cap earn carbon credits — which they can then sell to entities that don't meet the cap. This rewards those who invest in ways to reduce pollution and penalizes those who don't. Strategies to reduce pollution might include upgrades to reduce emissions at their source, or investing in agricultural or forestry best-management practices (BMPs) that offset the release of carbon into the atmosphere by trapping or otherwise reducing emissions.

Both presidential candidates in the 2008 election supported cap-and-trade, with mandatory targets for reduction of carbon and other greenhouse gases. President Barack Obama's administration can be expected to propose a cap-and-trade system at some point in the next four years.

Meanwhile, groups of states and Canadian provinces are setting up regional markets for the buying and selling of greenhouse gases. Various “aggregators” collect blocks of credits from land managers and sell them in blocks. One example is the Iowa Farm Bureau’s Carbon Credit Aggregation Pilot Project, www.iowafarmbureau.com/special/carbon, which purchases credits from farmers who employ no-till strategies or plant grass cover to sequester carbon. The Illinois Conservation and Climate Initiative is another example. Local soil and water conservation districts, including the Iroquois County SWCD, actively promote the program to landowners and producers who may benefit from carbon crediting.

Under such trading schemes, blocks of credits are sold to buyers seeking to reduce their own greenhouse gas footprints. Current payments in the U.S. average about \$5.80 per metric ton of carbon equivalent.² In the European Union, where mandatory cap-and-trade targets have been set, payments average about \$35 per ton.

Greenhouse gas emission markets are still in early stages of development, but momentum is growing. Managers of working farm and forest lands in the United States who employ best-management practices will likely see new opportunities to derive economic benefits from the ecological services their lands provide. Conservation district and NRCS field staff should anticipate being called upon to provide education, technical assistance, planning, project implementation, cost-share administration, monitoring and verification, and other activities.

Estimates for the potential of U.S. Agriculture for mitigating carbon range up to 270 million metric tons of carbon (mmtc) per year, including cropland, Conservation Reserve Program land, rangeland, biofuel production offsets and reduced carbon emission from eroded sediment.³ Total U.S. emissions are estimated at 1,750 mmtc per year.

Sustainable forestry practices offer some of the greatest opportunities for carbon sequestration. Groups such as the Pacific Forest Trust www.pacificforest.org bank forestry credits on private forestlands in the Pacific Northwest. Permanent conservation easements assure that the forests will not be cleared or converted to other uses and provide guarantees that only forest management that enhances carbon stocks will take place on the properties.

Energy companies and other entities concerned about air emissions purchase blocks of carbon credits.

Air Quality Roles for Conservation Districts and NRCS Field Staff

Roles for conservation district and NRCS field staff to help achieve this potential are many. Some are obvious: Reducing soil erosion through a variety of best-management practices has been a central mission of conservation districts and NRCS field staff since

² Suzie Friedman, agricultural project manager, Environmental Defense , 2008

³ Rattan Lal, et al, 2003

the inception of the conservation partnership. Practices such as filter strips, riparian buffers and wetlands restoration also sequester carbon, providing the potential for an add-on value beyond traditional payments. Districts and NRCS staff have also been leaders in assisting producers who convert from conventional tillage to no-till or conservation tillage, which also sequester carbon.

Other opportunities for involvement are developing as carbon markets expand. Cliff Lundin, chair of NACD's Natural Resources Policy Group, was among participants in the 2008 Conservation Agriculture Carbon Offset Consultation sponsored by the United Nations Food and Agriculture Organization and Conservation Technology Information Center in West Lafayette, Indiana, in October 2008.

Lundin sees an enhanced role for conservation districts and NRCS field staff in educating producers about how to achieve maximum greenhouse gas mitigation. Conservation districts are already engaged in educational efforts in some states. The Kansas Association of Conservation Districts is a member of the Kansas Coalition for Carbon Management, www.oznet.ksu.edu/kccm, a group whose mission is "to inform, educate and motivate land managers to apply management practices that result in reduced amounts of carbon levels."

Greenhouse gas markets will rely heavily on monitoring and verification. Lundin identifies this as a natural role for conservation districts. Verification technologies and methods are still evolving, and they can be costly, he cautions. But if a cap-and-trade system emerges, verification strategies will likely benefit from federal dollars spent on research and technology transfer. Conservation districts choosing to become verifiers will be in a position to provide an important service for which they can be reimbursed. In addition, periodic visits to cooperators' working lands for monitoring and verification offer other benefits, including familiarization with land use patterns, opportunities to promote related conservation practices and programs and maintaining strong connections with cooperators.

In the area of forestry, conservation districts have opportunities to assist in the development of forest cooperatives and other groups capable of aggregating forestry credits. Districts can convene meetings of forest landowners and groups interested in such an approach and help to facilitate formation of aggregator entities.

The 2001 NACD Survey of Conservation District Involvement in Forestry showed that a majority of America's 3,000 conservation districts are engaged in forestry activities. District roles range from technical assistance and equipment rental to education and outreach. Districts have the opportunity to promote sustainable forestry practices that maximize a forest's natural carbon-sequestering capacity. Sustainable forest management can also provide an array of other ecological and social services, ranging from fuels reduction in fire-prone western forests to enhanced fish and wildlife habitat, watershed protection and increased biodiversity.

As with agriculture, conservation district staffs may be natural fits for forest carbon storage monitoring and verification.

Do districts have potential roles as aggregators that acquire and sell carbon credits for a fee? Their status as sub-units of state government may preclude districts from taking advantage of this opportunity. But districts serve as excellent “connectors” because of the high level of trust they enjoy with cooperators and other local decision-makers.

Water Quality

Concerns about global climate change dominate many discussions of market-based conservation strategies. But market-based strategies for water quality offer great potential to help improve water quality in both urban and rural settings. Excellent models that value the ecological services provided by sound conservation on agriculture and forestry working lands are already in place.

Promoting, planning, installing and monitoring BMPs on these lands are natural activities for conservation district and NRCS field staffs.

Water Quality Trading

Perhaps the most frequently cited model of water-quality trading is the New York City Watershed. Since the early 1990s, the city has avoided costly water filtration technologies to assure safe drinking water for 9 million people by focusing on watershed management, including BMPs on agriculture and forestry lands. The city has provided funding for these and other activities. Several conservation districts and NRCS staff have provided technical assistance and other services for an array of services, including whole-farm planning, developing comprehensive nutrient management plans and conducting annual reviews of conservation plans. Private contractors are engaged to install conservation practices. The degree of adoption by land managers has been impressive: In the Catskill/Delaware Watershed where districts are among partners, 247 farms, or 95 percent of all farms in the watershed, participate.⁴ Payments they receive for establishing BMPs are an example of green payments, which reward land managers for wise stewardship that achieves measurable conservation gains.

The New York City Watershed is best known, but not the only model of this sort. We cite two case studies in this paper – water quality trading in Pennsylvania and Ohio, as examples of similar market-based programs in which municipal utilities seek to protect drinking water supplies by funding BMPs and other wise land-use strategies in watersheds that provide drinking water for urban residents.

It is worth noting that when water utilities apply rates paid by users to fund activities that protect water quality, they are doing so because it is less expensive to protect water quality at its source than it is to treat it later. This not only saves rate-payers money in the

⁴ Dewing, Dale, “Balancing Ag Viability and Water Quality in the New York City Watershed.” Dewing is nutrient management team leader for Cornell Cooperative Extension of Delaware County.

long-run, but it assigns a market value to ecological services and results in water-quality improvements throughout a watershed.

The Montana Conservation Reserve Enhancement Program (CREP), adopted in 2003, provides an example of a public-private partnership that seeks to enhance water quality in the Missouri River watershed through a form of green payments. CREPs rely on a state match for federal dollars. Montana's \$12 million state match was provided almost entirely by the private electrical utility PPL, which operates dams in the watershed. In exchange for benefits it derives from electrical generation by those dams, PPL's Federal Energy Regulatory Commission license calls for it to fund water-quality enhancement and wildlife habitat protection in the watershed. Conservation districts and NRCS field staff have been involved in establishing riparian buffers, native grasses and other practices as part of the CREP.

In today's difficult economic climate, private entities with stewardship responsibilities and goals are a potential funding source to achieve conservation goals. Montana's state government was operating at a deficit in 2003, and officials there said the state match for the CREP would not have been possible without the infusion of funds by PPL.⁵ From the market-based perspective, these partnerships can also help private entities meet their stewardship and environmental compliance goals.

Other Water Quality Opportunities

Nutrient loading from agricultural activities is a concern in many watersheds across the country. The New York City example cited above employs a nutrient management credit program that pays farmers who follow nutrient management plans using acreage and animal unit formulas.

As with other market-based opportunities, quantifying reductions in nutrient loading is important. NRCS and the USDA Agricultural Research Service have developed a nitrogen trading tool prototype that is expected to be of value to field staffs charged with verifying gains.

Among animal agriculture's biggest challenges is managing manure and its potential impact on water quality. Animal confinement facilities that concentrate manure employ an array of strategies to minimize impacts on ground water.

On-farm digesters that convert animal waste into energy not only achieve water quality goals, but also reduce the release of the potent greenhouse gas methane into the atmosphere and provide a source of renewable energy that can be used on-site and sold back to utilities.

Digesters are costly, and paybacks from utilities for renewable energy sold to utilities vary from state to state. Still, the potential of these systems to achieve multiple

⁵ NACD BufferNotes newsletter, October 2002

conservation goals, reduce energy usage on-site and provide renewable energy to private firms makes digesters attractive options in some cases.

While small- and medium-sized farms are sometimes unable to afford the cost of digesters, we have models for community digesters that serve several small farms at a time. One such example is the community digester that was promoted by the Cayuga County Soil and Water Conservation District in New York. See NACD's "Energy Conservation Opportunities in Agriculture" publication, www.nacdnet.or/resources/reports, for more information on the project and on community digesters.

Water Quality Roles for Conservation Districts and NRCS Field Staff

As with air quality, many of the traditional duties of conservation districts and NRCS field staff transfer well to market-based approaches for achieving water quality gains.

In addition, conservation districts have opportunities to use their outreach and education expertise to inform local populations and the water utilities that serve them about the benefits of protection versus treatment. In some cases, funding for water quality improvements from water utilities and other water users and/or dischargers may allow districts to serve landowners who do not qualify for state and federal programs.

As water-quality trading matures, assuring that BMPs are designed according to established standards will be necessary. Districts and NRCS field staff can expect to play leading roles in assuring correct installation of practices. Monitoring and verification can be costly, and funding streams from water-quality trading programs will need to be designated for these tasks.

Conservation districts can also lead efforts to develop community digesters that treat animal and plant wastes. This can include convening discussions, identifying sites and users and helping identify local, state and federal programs and entities that can defray development and operation costs.

Other Market-Based Opportunities

Examples of market-based conservation solutions and opportunities are accruing as the concept matures. We cite a few here.

Conservation Easements: Conservation districts are often asked to hold easements when development rights are transferred or purchased, leading to protection of working farms and forests. Private companies such as Plum Creek Timber are increasingly interested in strategies such as transfer of development rights (TDR) to achieve multiple goals. King County, Washington, and Plum Creek Timber recently announced a TDR that gives the county a conservation easement on nearly 45,500 acres of forestland at no cost to taxpayers. In exchange, Plum Creek will continue to manage the land as a working forest, and will receive 514 development credits that allow for increased density of development

in urban areas. Plum Creek plans to eventually sell these credits to developers. The protected watershed provides drinking water to the city of Tacoma and neighboring communities and is prime wildlife habitat.

Biodiversity Offsets: The setting aside of an area to compensate for the disturbance of biodiversity of another has emerged as a strategy for developers and other businesses and nongovernmental organizations. Examples of activities in the U.S. include those undertaken by the state of Washington Biodiversity Project, www.biodiversity.wa.gov, a program of the governor's Biodiversity Council. Activities include a cooperative effort with the nonprofit Business and Biodiversity Offset Program (BBOP), www.forest-trends.org in which the rapidly developing city of Bainbridge Island serves as a BBOP pilot project to demonstrate how local government incentive policies can encourage biodiversity offsets for real estate development impacts. BBOP will provide advice and technical assistance as Bainbridge develops incentive-based policies to ensure conservation of forests, wildlife habitat, and biodiversity.

Wildlife Habitat Payments: Wildlife groups such as Pheasants Forever, Ducks Unlimited and the Wild Turkey Federation represent the interests of private citizens who seek enhanced wildlife habitat. These groups frequently support conservation through a range of activities, including enhancements to various programs and services provided by entities such as conservation districts. Support includes enhanced payments to landowners for conservation practices, funding for establishment of practices and equipment to install practices. The groups also fund staff positions in conservation district offices that promote, plan and install conservation practices with wildlife emphasis. Relationships with wildlife groups can help conservation districts and the groups achieve mutual goals that provide an array of conservation services.

Added Value for Environmental Standards and Performance: Agricultural producers increasingly benefit from value-added strategies that inform consumers about the conservation values they nurture in addition to the products they sell. Examples include the Healthy Grown Potatoes Program in Wisconsin, www.healthygrown.com, a cooperative effort among growers and environmental groups that seeks to develop increased market values for products by informing consumers about reduced pesticide use, wildlife habitat enhancement and ecosystem restoration undertaken by participating growers. A similar program is the Sustainable Wine Growing Alliance of California, www.sustainablewinegrowing.org, which promotes sustainable growing techniques embraced by some California vintners. Conservation districts are finding opportunities to share expertise with growers in programs such as these.

ON THE HORIZON

A key to making market-based conservation work is marketplace accountability. The 2008 Farm Bill addresses this issue by requiring the USDA secretary to establish technical guidelines for measuring environmental services from conservation and other land management activities. Specifically, requires the secretary to develop a procedure

for measuring environmental services benefits; a protocol to report these benefits; and a registry to collect, record and maintain information on benefits measured. Priority is to be given to establishing guidelines for participation in carbon markets.

These are important pieces of the puzzle, but not the only ones. Conservation districts and NRCS field staff have already undertaken efforts to develop market-based solutions. They are cooperating with more partners today than ever before in these efforts. The work must continue because the stakes are high.

Current economic challenges and ongoing strains on energy resources caused by growing populations and resource demand worldwide require conservation practitioners to embrace vision and innovation to achieve success. We must be willing to deploy new techniques to solve old problems. Market-based solutions offer new tools to assist in our ongoing efforts.

Recession occurring across many sectors of the economy in America and the world is leading to a fundamental reordering and revaluing of goods and services. In this new economy, the value of America's vast land and water resources cannot be overstated. Sustaining and enhancing these resources is a central goal of conservation districts and NRCS and thousands of producers and land managers across the country. The ecological services provided by these resources can help solve conservation challenges at home and across the world. It is our task to meet this challenge, and we need every available tool to accomplish it.

CASE STUDIES

Water Quality Trading in Ohio

A USDA Conservation Innovation Grant and funding from wastewater treatment plants in the Dayton, Ohio, metropolitan area have helped conservation districts serve populations that impact water quality but would not have otherwise been eligible for practice payments. Treatment plants are involved because reducing nutrient and chemical loads saves millions of dollars on plant upgrades.

Soil and water conservation districts in Clark, Darke, Green, Miami and Preble counties are among groups participating in efforts to enhance water quality in the Great Miami River watershed, the drinking water source for the Dayton metropolitan area. Traditional programs such as the Environmental Quality Incentives Program have helped, but many landowners and producers don't qualify. That's where the program administered by the Miami Conservancy District kicks in. The program focuses on paying landowners over a five-year period for reducing nitrogen and phosphorus loading. Landowners chosen in the competitive program receive about \$1.50 per year, per pound of nitrogen and phosphorus. Districts help landowners establish practices such as grassed waterways and wetlands and to convert to no-till. Districts write plans, design systems and monitor for compliance. They charge a flat rate of \$25 per hour for these services.

When the 2006 USDA grant ended, the Ohio Environmental Protection Agency stepped in to partner with treatment plants. Kreig Smail, district manager in the Miami SWCD, says the program helps treatment plants avoid spending millions of dollars on upgrades.

For more information, contact Smail at kmail@miamiswcd.org.

Ecological Services in Idaho

America's farms and ranches possess great potential for providing an array of ecological services. Energy conservation is one such service, and an Idaho utility has recognized that by funding hundreds of thousands of dollars in BMPs.

Rocky Mountain Power partners with the Franklin Soil and Water Conservation District to develop and operate a water and energy resource management program. It focuses on helping farmers improve energy efficiency in their irrigation system. As of 2007, the program led to more than 3.2 million kilowatt hours of energy savings. In the water-parched west, big gains also result from reduced water demand. On-site consultations by district staff helps farmers focus on water scheduling and soil moisture monitoring and determine what types of upgrades are needed. Farmers receive financial incentives to make the changes.

For more information, contact Franklin SWCD District Manager Lyla Dettmer at administrator@IEsavers.net.

Nutrient and Carbon Trading in Pennsylvania

A state Department of Environmental Protection grant has helped likely partners in nutrient and carbon trading learn about potentials and pitfalls, says Brenda Shambaugh, government relations/policy specialist with the Pennsylvania Association of Conservation Districts (PACD). PACD also received a grant to push the concept along.

Individual districts received from \$30,000 to \$50,000 to encourage nutrient trading. Grant funds went to farmers who made nutrient credits available by installing BMPs such as no-till, cover crops, riparian buffers and stream-bank fencing. One successful trade of credits resulted, between a farmer in Lancaster County and the Mount Joy Municipal Water Authority. The trade involved about 100,000 nutrient credits, each of them representing a pound of nitrogen. Since then, a couple of other trades have occurred.

In 2009, the Pennsylvania Association plans to sponsor two workshops to train conservation districts and farmers to become more involved with nutrient and carbon trading. Workshops will include information on how to use a state Department of Environmental Quality on-line calculation tool. The workshops will also seek to educate the agricultural community about trading and explore how to combine nutrient and carbon trading.

Trading may be suited to Pennsylvania because it has many point-source emitters and dischargers. In addition to assisting with BMPs, districts are in a position to serve as verifiers, says Shambaugh. Meanwhile, PACD is exploring serving as an aggregator for credits generated in the state's 64 conservation districts. DEP has been working with stakeholders to set up a central banking system that aggregators would feed. It would be operated by an independent authority.

For more information, contact Shambaugh at brenda-shambaugh@pacd.org.

These are only a few examples. We would welcome hearing from other projects.

References and Resources

NACD MARKET-BASED CONSERVATION WHITE PAPER

Following is a list of resources to assist conservation districts and their partners seeking to learn more about the emerging field of market-based conservation. Note: The US Department of Agriculture's Office of Ecosystems Services was established in late 2008, and the office had not established a Web site at the time of this publication.

FORESTRY

USDA Forest Service ecosystem services Web pages

<http://www.fs.fed.us/ecosystems-services/>

The Forest Service was among agencies that pioneered the concept of ecosystem services. This Web site captures much of that work and offers practice information in a variety of topic areas.

Pacific Forest Trust

www.pacificforest.org

The group banks forestry carbon credits on private forestlands in the Pacific Northwest.

AGRICULTURE

American Farmland Trust Environmental Solutions: Ecosystems Services Markets

<http://www.farmland.org/programs/environment/issues/ecosystems-services.asp>

The nonprofit group provides information on emerging ecosystem services markets that pay farmers and ranchers for the environmental benefits produced on their land, such as clean water, carbon sequestration and wildlife habitat.

California Dairy Power Production Program

<http://www.energy.ca.gov/2006publications/CEC-500-2006-100/CEC-500-2006-100.PDF>

This document explains the basis of a grant program initiated to encourage development of anaerobic digesters to help California dairies offset the purchase of electricity and provide environmental benefits.

Healthy Grown Potatoes

<http://www.healthygrown.com/>

National marketing effort to highlight use of best-management practices, preservation of biodiversity and wildlife habitat and other natural systems in the production of potatoes. i

Iowa Farm Bureau Carbon Credit Aggregation Pilot Project

www.iowafarmbureau.com/special/carbon

One of first such efforts in the nation, the project aggregates credits from Iowa farms and beyond.

Kansas Coalition for Carbon Management

www.oznet.ksu.edu/kccm

The group, which includes the Kansas Association of Conservation Districts, seeks “to inform, educate and motivate land managers to apply management practices that result in reduced amounts of carbon levels.”

NRCS Ecosystem Information

<http://www.nrcs.usda.gov/technical/ecosystem.html>

Web page provides links to agency’s guidance and background papers on ecosystem services.

Sustainable Wine Growing Alliance of California

www.sustainablewinegrowing.org

Marketing program stresses use of best-management practices in growing grapes for wine.

University of Wisconsin-Extension Market-Based Web Cast

http://www.extension.org/pages/Market_Based_Conservation_Webcast

Excellent resource for livestock producers seeking information on market-based conservation opportunities. Approximately 1 ½ hours in length.

BIODIVERISTY CREDITS

Washington Biodiversity Project

www.biodiversity.wa.gov

The project seeks to develop biodiversity credits through wise land use and other practices.

GENERAL

Environmental Defense Fund Center for Conservation Incentives

<http://www.edf.org/article.cfm?contentID=7033>

Environmental Defense has taken a leading role in developing strategies for market-driven conservation.

Goldman Sachs Center for Environmental Marketing

<http://www2.goldmansachs.com/citizenship/environment/center-for-environmental-markets/index.html>

Goldman Sachs, a global financial services firm, established the Center for Environmental Markets to work with partners in academic and nongovernmental organizations to examine market-based solutions to environmental challenges. Reports and other information focus attention on market-driven conservation in the U.S. and beyond.

EPA Water Quality Trading Web site

<http://www.epa.gov/owow/watershed/trading.htm>

The agency provides information on water-quality trading opportunities and programs already in place.

EPA Water Quality Trading Assessment Handbook: Can Water Quality Trading Advance Your Watershed’s Goals

http://www.epa.gov/owow/watershed/trading/handbook/docs/NationalWQTHandbook_FINAL.pdf

A tool to help producers and other stakeholders explore the possibilities of water quality trading as part of a watershed plan.

Chicago Climate Exchange

www.chicagoclimateexchange.com

Established in 2002, provides a legally binding system for the sale/purchase of carbon and other greenhouse gases.

NACD's "Energy Conservation Opportunities in Agriculture" publication

www.nacdnet.org/resources/reports

The report includes information on community biodigesters with links to other publications and more detailed information.

NACD "Market-Driven" Approaches to Conservation Fact Sheet

<http://www.nacdnet.org/resources/reports/factsheets/market.phtml>

Background and links for conservation districts exploring market-driven approaches.

Woods Hole Research Center

<http://www.whrc.org/>

Information on development of a carbon data set for verification.