Assessing the Long-Term Impacts of Water Quality Outreach and Education on Landowners

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Little Bear River Project History

- "Significant water quality impairments"
- 1992-1997:Multi-Agency Water Quality Project
  - To educate local producers and landowners
  - To promote use of BMPs throughout watershed
- Provided Cost-Share and Technical Assistance to Help Landowners Adopt BMPs

Research Questions

- How Effective Were Outreach & Education Efforts at:
  1) Motivating Landowner Participation
  2) Increasing Landowner Awareness and Understanding of Water Quality Problem

Methods

- Interviews with Project Staff
- Annual Reports (1992-1997)
- Semi-Structured Interviews with Participants
  - 90 Participants in LBR Watershed
  - 55 Interviews

LITERATURE:
Recommended Education Practices

Most Common Sources of Information

- Family, Friends, & Neighbor
- Agencies & Extension
- Farm Magazines & Publications
- Newspaper, Radio, TV
- Agricultural Business Representative

Sources: Gamon, Harrold and Creswell (1994); Napier and Brown (1993); Gamon, Bounaga and Miller (1992)

LITERATURE:
Recommended Education Practices

Most Effective Outreach Strategies

- Face-to-Face
- On-Farm Demonstrations or Workshops
- Fieldtrips and Tours
- Newsletter
- Newspaper and Magazine
- Encourage Peer Information Exchange

Sources: University of Wisconsin Extension (2004); Conway et al. (2003); Ribaudo and Horan (1999); Nowak et al. (1997); Osmond and Gale (1995); Gamon, Bounaga and Miller (1992); Nowak (1987)

LITERATURE:
Motivating People to Participate

- Financial Incentives
- Threat of Regulation
- Pressure from Neighbors

- Heightened Awareness of Problem
  - More likely to participate if they
    - *Believe* there is a WQ problem
    - Understand that *their* actions impact WQ
    - Perceive the WQ problem as a *threat* to their family's health

Sources: Ribaudo and Horan (1999); Osmond and Gale (1995); Napier and Brown (1993); Nowak (1987)

LITERATURE:
Education Models

Attitude-Behavior Model

- Beliefs…determine behavior.

- Changes in beliefs, and therefore behavior, are brought about by exposing a person to new information.

Source: Ajzen and Fishbein (1975)

LITERATURE:
Education Models

Adoption-Diffusion Model

- Information-seeking and information-processing
- Importance of social networks
- Important attributes of an innovation:
  - Relative Advantage
  - Observability

Source: Rogers (1995)

LBR Project Organization

- 5 Technical Working Groups
  - Hydrology, Sediment, Range
  - Cropland
  - Wildlife & Recreation
  - Monitoring & Evaluation
  - Information & Education

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LBR Project Information & Education Work Group

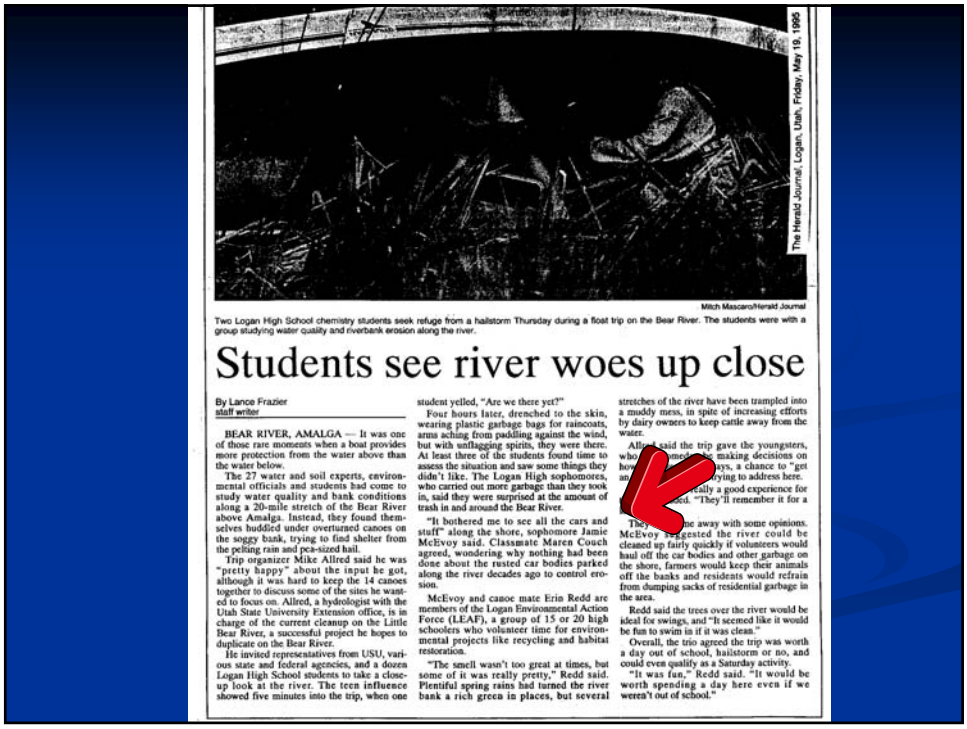
"Specifically geared to **educating** and **informing** the public of the water quality problems that exist or could potentially exist within the watershed."

Goals and Objectives

- "To **attack the problem** of NPS water pollution at the local level and use **education** as a force for increasing understanding and changing current behavior"
- "Achieve an **informed and educated community**…concerning NPS pollution and the importance of managing natural resources within the watershed"
- "Prepare **multi-media** presentations for use within and outside the project area including a **newsletter**."
- "Develop and conduct **training sessions** for the purpose of improving water quality in the Little Bear River Watershed."

Summary of Outreach Efforts (1992-1997)

General Public	Land-owners	Civic Groups	Public Schools	USU	Other
- Newspaper Articles - Radio/TV Spotlights - Fieldtrips & Tours - Volunteer Restoration Project - Annotated Bibliography - LBR Webpage	-Fieldtrips & Tours - Personal Visits (100+ landowner visits/year to discuss conservation ideas) -LBR Newsletter (350 individuals) -Animal Waste Seminar (53 cooperators) -Pesticide Training (offered annually) -Satellite Broadcast on Pasture Mngmt (12 landowners) -Satellite Broadcast on Groundwater Protection (24 participants) -Workshops on Riparian Enhancement and Bank Stabilization - Landowner Meeting to discuss requirements	-Satellite Broadcast (4H) -Workshop (4H) -Conference Activities (4H) -Poster Presentation (4H) -WQ Skit by 4H Teens -Presentations and Volunteer with Boy Scouts -Presentation to 89 teens at Winter Retreat -4H Agent Training -Lecture to N. Logan Cub Scouts -Project with Boy Scouts and other civic club (60 particpants) -Presentation to Lions Club - Tour with Audubon Members (24 particpants)	-Presentations and Classroom Visits (1st-12th grade) -Workshop with 1,500 Fifth Graders and Teachers/ year in Logan Canyon -Cache Valley Environmental Youth Summit (200 middle school students) -Visit LBR Sites with Eighth Graders (15 students) -Fieldtrip with Eighth Graders (120 students) -Presentation at Cache Valley Learning Center (55 students) -Float trip with Cache Valley Learning Center (9 students) -Cutler Reservoir Visit (12 LHS students) -Canoe trip with LHS students -Field Day with LHS (32 students) -Clean-up with Earth Resources Club- Teacher In-Service Training & Ednet Broadcast -Adopt-A-Watershed Training & Curriculum Integration in CA with Local Teachers - Developed 3 videos to use in Utah Schools	-Tours for USU Students, CNR Faculty, USU President, VP, Director of Extension -USU Guest Lectures, Lab Sessions, Fieldtrips and NR Field Camp - Several USU masters projects on LBR	-Tours for Agency Specialists, SCS Board -Quarterly Updates to Political and Community Leaders - Historic Pictures Presentation -Work with DEQ on Monitoring Project -Finished interactive computer program -Satellite Broadcast on Community Water Education for Youth -Study Plots at McMurdie Hollow -Conference Presentations - Presentations at Festivals and Fairs - EPIC computer simulations



The Herald Journal, Logan, Utah, Friday, May 19, 1995

Mitch Mascaro/Herald Journal

Two Logan High School chemistry students seek refuge from a hailstorm Thursday during a float trip on the Bear River. The students were with a group studying water quality and riverbank erosion along the river.

Students see river woes up close

By Lance Frazier
staff writer

BEAR RIVER, AMALGA — It was one of those rare moments when a boat provides more protection from the water above than the water below.

The 27 water and soil experts, environmental officials and students had come to study water quality and bank conditions along a 20-mile stretch of the Bear River above Amalga. Instead, they found themselves huddled under overturned canoes on the soggy bank, trying to find shelter from the pelting rain and pea-sized hail.

Trip organizer Mike Allred said he was "pretty happy" about the input he got, although it was hard to keep the 14 canoes together to discuss some of the sites he wanted to focus on. Allred, a hydrologist with the Utah State University Extension office, is in charge of the current cleanup on the Little Bear River, a successful project he hopes to duplicate on the Bear River.

He invited representatives from USU, various state and federal agencies, and a dozen Logan High School students to take a close-up look at the river. The teen influence showed five minutes into the trip, when one student yelled, "Are we there yet?"

Four hours later, drenched to the skin, wearing plastic garbage bags for raincoats, arms aching from paddling against the wind, but with unflagging spirits, they were there. At least three of the students found time to assess the situation and saw some things they didn't like. The Logan High sophomores, who carried out more garbage than they took in, said they were surprised at the amount of trash in and around the Bear River.

"It bothered me to see all the cars and stuff" along the shore, sophomore Jamie McEvoy said. Classmate Maren Couch agreed, wondering why nothing had been done about the rusted car bodies parked along the river decades ago to control erosion.

McEvoy and canoe mate Erin Redd are members of the Logan Environmental Action Force (LEAF), a group of 15 or 20 high schoolers who volunteer time for environmental projects like recycling and habitat restoration.

"The smell wasn't too great at times, but some of it was really pretty," Redd said. Plentiful spring rains had turned the river bank a rich green in places, but several stretches of the river have been trampled into a muddy mess, in spite of increasing efforts by dairy owners to keep cattle away from the water.

Allred said the trip gave the youngsters, who [illegible] making decisions on how [illegible] ys, a chance to "get an [illegible] ying to address here.

[illegible] ally a good experience for [illegible] ed. "They'll remember it for a [illegible]

The [illegible] e away with some opinions. McEvoy suggested the river could be cleaned up fairly quickly if volunteers would haul off the car bodies and other garbage on the shore, farmers would keep their animals off the banks and residents would refrain from dumping sacks of residential garbage in the area.

Redd said the trees over the river would be ideal for swings, and "It seemed like it would be fun to swim in if it was clean."

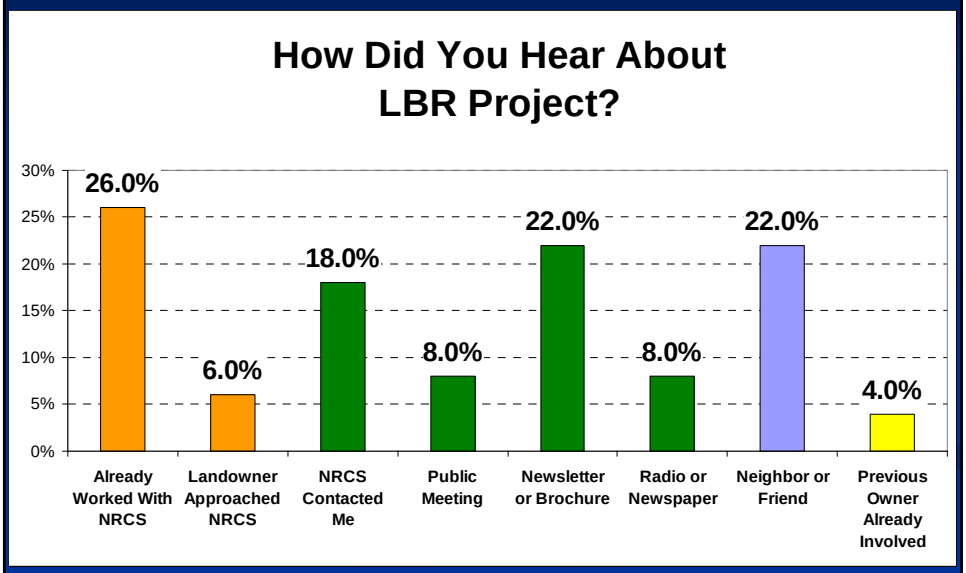
Overall, the trio agreed the trip was worth a day out of school, hailstorm or no, and could even qualify as a Saturday activity.

"It was fun," Redd said. "It would be worth spending a day here even if we weren't out of school."

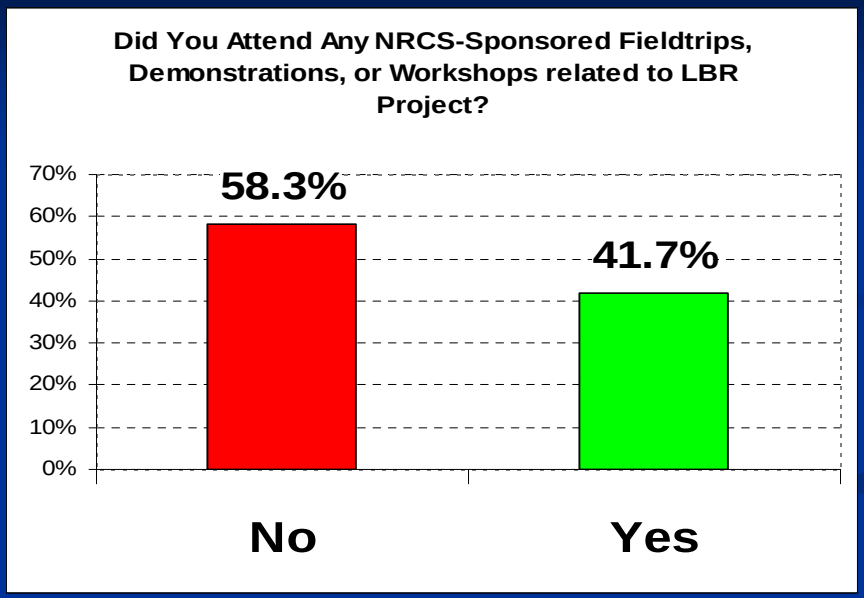
Outreach Efforts (1992-1997)

General Public	Landowners
Newspaper Articles	**Personal Visits** (100+ landowner visits/year)
Radio/TV Spotlights	**LBR Newsletter** (350 individuals)
Fieldtrips & Tours	**Fieldtrips & Tours**
Volunteer Restoration Project	**Workshops and Training Seminars**
Annotated Bibliography	Animal Waste Seminar (53 cooperators)
LBR Webpage	Pesticide Training (annually)
	Riparian Enhancement
	Bank Stabilization
	Pasture Mgt (12 landowners)
	Groundwater Protection (24 participants)
	Landowner Meeting

Participant Responses
N = 50

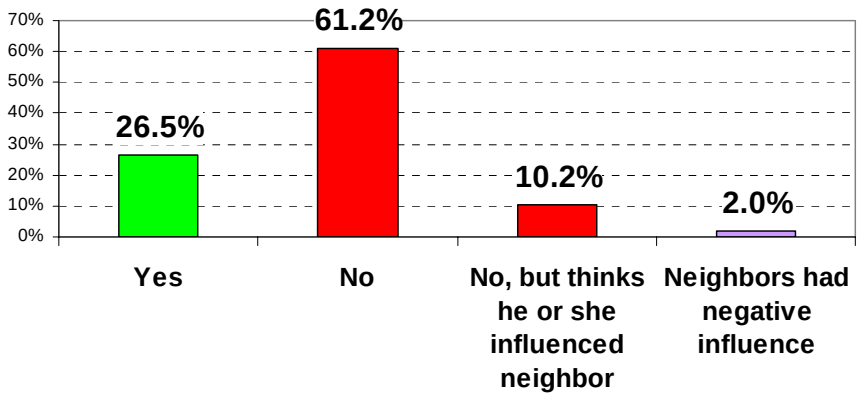


Participant Response
N = 36



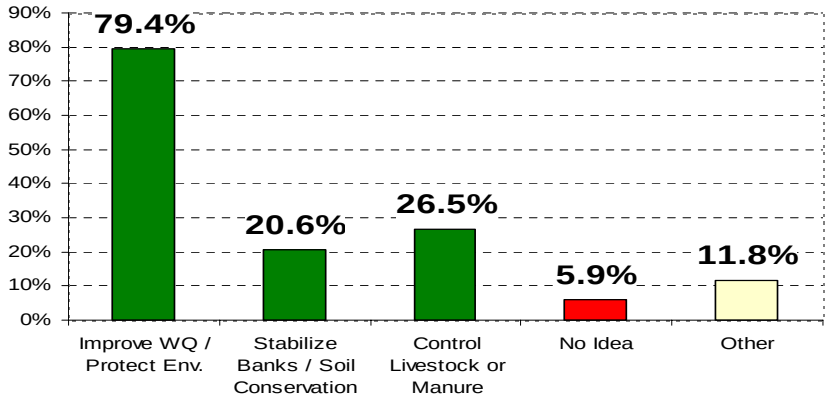
Participant Responses
N = 49

Did Other Farmers Influence Your Decision to Sign-Up for LBR Project?

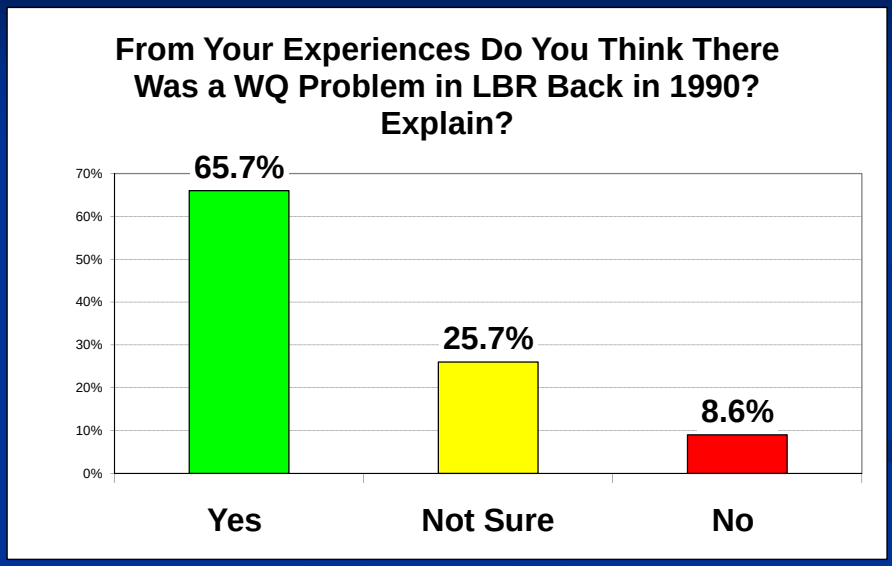


Participant Responses
N = 34

What Do You Think the NRCS Was Trying to Accomplish?



Participant Responses
N = 35



"Strong Yes, Ag"

"Yeah. I think there were **too many feed yards** along the river—up and down the river—and too much stuff falling in it."

"I think there was. A lot of runoff was carrying a lot of pollutants. And I think **a lot of it was from farms**."

"Yes, Ag but…

Dairy herds polluted. Properties like his were not a concern.

Yes- in certain areas. He didn't feel his operation made too much of a difference. His neighbor has 600 cattle, which still have access to the water.

"Yes, Non-Ag Source"

"Oh yeah, the color of the water at some points is bad. Some places area allowed to dump huge amounts of waste. For example Logan city sewer."

Yes, he thinks there was a WQ problem because there was a garbage dump below him. The water ran through the dump in Paradise.

Yes, no mention of source

"Oh yeah. I wouldn't drink from it."

Yes, and he thinks water WQ has improved a lot.

"Weak Yes"

"I don't think it was a terrible one but needed to be addressed."

"Yeah, a little maybe, but not very much."

He thought there was a problem, but wasn't sure if was as bad as people said it was.

"Not Sure"

"I don't know. I couldn't answer that. I imagine there was or they wouldn't have done it."

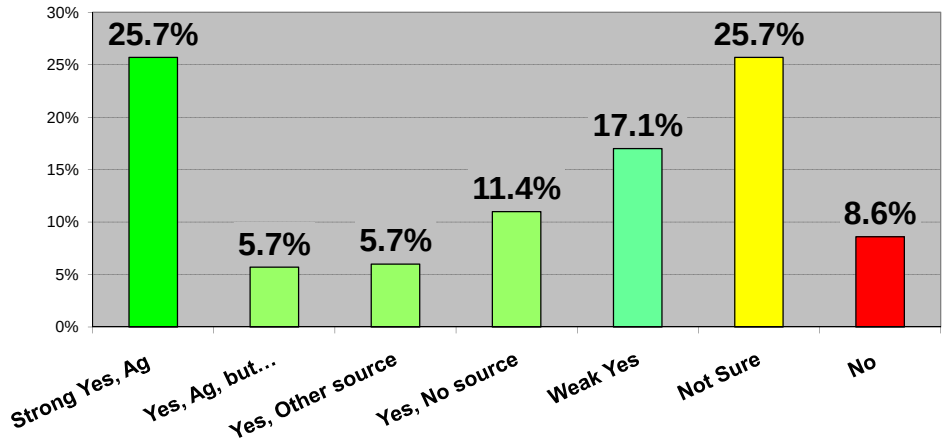
He's not sure if there was a "problem," but he knows there were some practices occurring that were not so good. He is sure water quality has improved.

"No"

"I guess I didn't. The neighbor baptized all of his kids in the river and they grew OK."

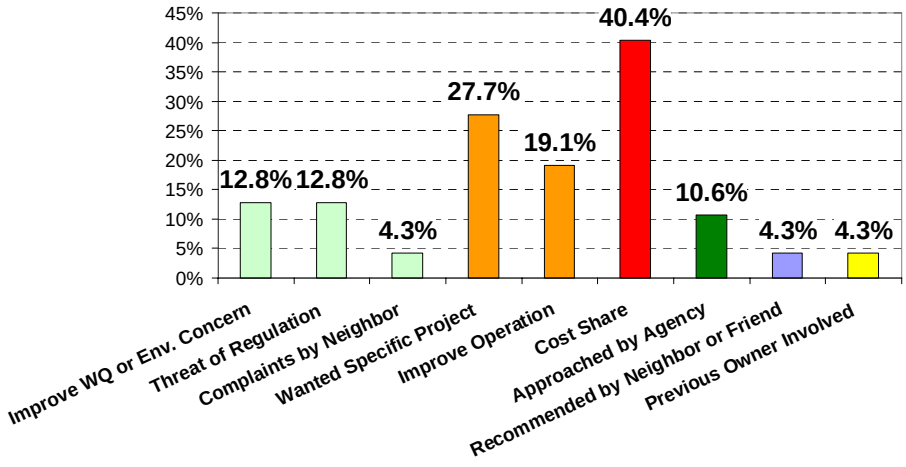
Participant Responses
N = 35

From Your Experience, Do You Think There Was a WQ Problem Back in 1990? Explain?

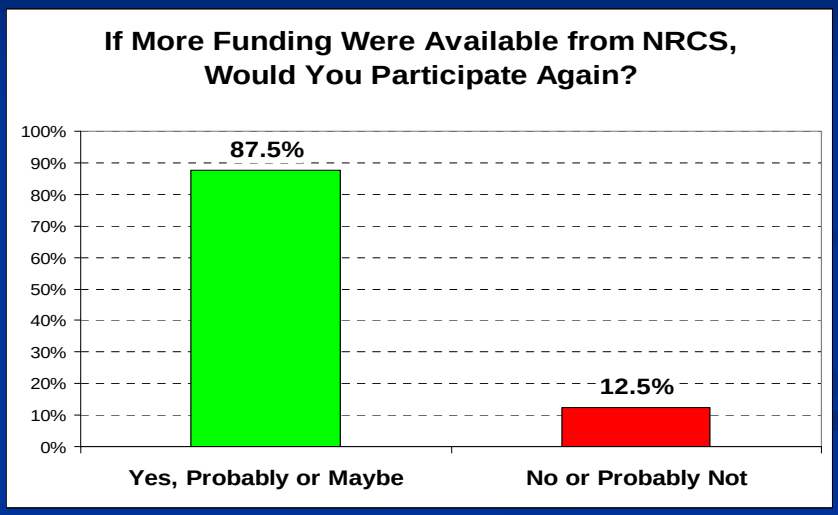


Participant Responses
N = 47

What Motivated You to Apply for the Program?



Participant Responses
N = 32



Conclusions

- Outreach efforts fit with BEPs in literature
- Past relationships are important
- WQ goals were less important than cost-share and practical considerations
- Demonstrations were not a motivating factor
- Participants understood project goals, but didn't have strong buy-in of the "Problem"

Recommendations for Future Outreach / Education Efforts

- Can demonstrations and fieldtrips be improved to facilitate social diffusion?
- Can producers be made more aware of how they affect and are affected by the WQ problem?

OR

- Should outreach efforts focus more on the cost-share benefits and practical considerations, and less on environmental benefits?

Thank You

USU Team

Lorien Belton
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Nancy Mesner
Ron Ryel
David Stevens
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Questions?

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