WAFFLE[SM] AGENCY ADVISORY BOARD (AAB) MEETING MINUTES
January 14, 2004
Marriott Hotel, Moorhead, MN
9:00–11:00 a.m.

AAB Members Present

Stacey Eriksen
John Giedt
Randy Gjestvang
Scott Jutila
G. Padmanabhan
Mike Sauer
Jim Schmidt
Bill Schuh
Gary Thompson
Genevieve Thompson

Energy & Environmental Research Center (EERC) Participants/Attendees

Beth Bolles
Barry Botnen
Lynette de Silva
Sheila Hanson
John Harju
Marc Kurz
Andy Manale
Wes Peck
Ed Steadman
Xixi Wang

Introduction

Beth Bolles welcomed the group and called the meeting to order, followed by project updates.

Progress Updates

- Three hydrologic models are now complete for the Minnesota Wild Rice, Marsh River, and Red Lake watersheds. Concurrently, models for the Elm River and Goose River watersheds are being developed and are nearly complete. All are calibrated to the 1997 flooding event and those of greater magnitudes. Additionally, these models will be reviewed by the Natural Resources Conservation Service.

- The Waffle[SM] field trial is under way, located in a 1-mi^2 section of land near Shelly, Minnesota. The actual storage volume capacity is between 50 and 400 acre feet, depending on the amount of free board desired between the top of the road surface and the top of the water storage elevation.

- The Waffle Web site is now established and accessible to the public. Several new marketing materials are available, including the newsletter, a frequently asked questions publication, and a landowner survey. Copies of these materials were provided as handouts.

Economics

Andy Manale presented the status of the economic analysis he is conducting for the Waffle project. The primary objective of his work is to develop economic measures for the Waffle concept as it pertains to the Red River Basin. This entails measuring the direct project costs; economic costs; and benefits to the farmer, society, and the environment. Further, he will assess how the costs and benefits compare to other alternative approaches to flood mitigation, determine what would cause farmers to participate in the Waffle concept, assess existing federal and state programs that might provide incentives to landowners, and explore a market-based approach. Bill Schuh stated that crop effects are a major component; consider what happens when variables change and other decisions have to be made.

Padmanabhan asked to what extent these items can be quantified, Andy indicated that not all can be quantified or put in terms of dollar amounts but can be compared with other options. So, relative comparisons are the key in some instances; exact quantities are not always needed. One first determines how much accuracy is required and works backward from that point. Beth Bolles indicated that some of the quantitative/hard data that Andy will be utilizing at the township level will come from Steve Shultz's economic component of the Waffle project. Steve is determining both the average rental values and productivity on a township level basinwide.

Field Trials

There was a general discussion of the current status of the field trial. This was followed by discussion of the concern by a Norman County Farm Service Agency officer regarding planting the area enrolled in the Conservation Reserve Program by the end of June. Waffle staff were able to alleviate this concern by explaining that there would be no problem in meeting that requirement, since there is a stipulation in the landowner agreement (of the field trial) specifying the release date of the water.

In response to a question about the development of a water quality component for the field trial, Marc Kurz reported that it would be completed within the next couple of weeks. Beth commented that the EERC has some results back from soil sampling, such as average nitrogen and phosphorus concentrations.

Andy commented that we are already learning from the field trials. Bill said that field trials provide a learning mechanism to determine the difficulties that need to be resolved. It reflects a microcosm of the entire study; for example, it might determine how to address the political aspects, perhaps shoot for subbasin units and look at intensive versus extensive.

Padmanabhan indicated that the purpose of the field trial should be clearly defined, as well as what is being demonstrated. Is it a hydrologic demonstration or economic benefits demonstration? And what is the time frame for the field trials? In answer to these questions, Beth indicated that both the hydrology and the economics are being studied. While the potential reduction in flooding is the basic concept of this project, the economic considerations include

many factors that need to be considered as well. Additionally, water quality and soil nutrients will also be monitored; it is realized, however, that more effective evaluations occur over a longer period of time. In effect, through these field trials, we are developing a methodology for the Waffle concept that can be represented on a larger scale.

The methodology of the current field trial will be scaled up for next year's field work. This will include several field trials in a localized area, possibly a hydrologic response unit. This will most likely occur in North Dakota, potentially with 12 sections that are a square mile each. We are contemplating the technical considerations, such as how best to set up this field trial to verify the modeling results and to accurately portray the results in flow reduction and flood mitigation benefits.

While it would be the ideal technical situation to have a single hydrologic response unit represent a field trial area, it was deemed unrealistic to get participation by every landowner in a designated region. It is perhaps more important to look at different areas of the basin, different topographic locations, weather variations, and various public attitudes in different communities. There is a compromise between the ideal technical or modeling scenario and the ideal political or social scenario.

Culverts

Regarding the design flow for the culvert capacity, it was noted by Waffle staff that culvert diameter is not going to change; it is just being gated using standpipes. The culverts will still have that flow capacity once the water reaches that level.

Storing Water

Beth noted that in North Dakota there is a law that roads cannot intentionally be used to store water, but asked who enforces that. It was suggested that the water resource districts, North Dakota State Water Commission, and road districts would be involved. Since the Waffle is not for long-term storage, would this be an issue? Andy mentioned that the term "storage" may imply a longer time frame than a couple of weeks and can not hold something up to a year.

LIDAR Collection

Beth reported that we anticipate receiving the same amount of funding next year – $1.5 million. Jim Schmidt thought it would be $1.4 million. It was suggested getting together to discuss this further later. Based on this anticipated funding, Waffle staff plan to have detailed light detection and ranging (LIDAR) data collected on the subwatershed scale. Beth indicated that the EERC is evaluating what level of detail is needed for elevation data for potential Waffle implementation. The model and storage volume results are being compared between the existing national elevation dataset and higher-level data. There would be multiple benefits to collecting the data in partnership with other entities within the basin. It would be conducted within a watershed used in the field trial. Scott indicated that data up to Fargo would be very useful for the Corps of Engineers. Beth commented that some of the watersheds range from 1000 to1500 square miles; funds would be available to do a whole watershed up to 1500 square miles or several smaller ones.

Genevieve Thompson inquired about the cost of continuous data. Wes Peck said continuous data collection is usually less expensive; by moving around the basin, preplanning is necessary, conducting ground verifications and benchmarks at every point. The more continuous the area, the more efficient the collection, and this approach keeps the costs down. Mobilization fees and data processing tend to incur the largest expense.

LIDAR has 6-inch vertical accuracy. The root mean-square error (RMSE) is based on a statistical subsampling, and 95% of the data have to be plus or minus 6 inches of the true elevation. These issues, along with quality control, should be discussed with the contractor. It was mentioned that precision is another critical component; if one is consistently wrong versus the random error, there was a general consensus that if the margin of error is random, then it should cancel out.

Recruitment of Landowners for Field Trials

Participation in the field trial is voluntary. Waffle staff are searching for ideal storage areas with landowners who are willing to participate. Beth indicated that it will be useful to have results from this year's field trial to recruit for next year.

Input regarding landowner recruitment strategies is needed for a smaller watershed or hydrologic response unit in a much more localized area. The interest is toward landowners with significant acreage (with multiple sections). In Ada, the community learned about the need for volunteers through a local radio station, newspaper, and public meeting. It was indicated that there is no substitute for one-on-one contact. People really need to go out, talk about it, and lay out the benefits.