NORTH DAKOTA'S

Nutrient Reduction Strategy

Agriculture/NPS Workgroup Meeting Summary

June 17, 2014 • Bismarck, ND • 9:30 a.m. – 3:30 p.m.

Background

As follow up to the December 19, 2013 ND Nutrient Reduction Strategy Stakeholder meeting and to the North Dakota Department of Agriculture and Agriculture Groups Meeting which was held on April 16, 2014, the Agriculture/NPS Workgroup met in person at the Comfort Inn, Bismarck, ND on Tuesday, June 17, 2014. The following is a list of those in attendance.

List of Attendees:

Name	Affiliation
Britt Aasmundstad	North Dakota Department of Agriculture
Al Basile	USEPA Region 8
Mary Berg	NDSU Carrington Research Extension Center
Tom Bodine	North Dakota Department of Agriculture
Larry Cihacek	NDSU-Department of Soil Science
Jim Collins	North Dakota Department of Health, Division of Water Quality
Eric Delzer	North Dakota Department of Agriculture
Mike Ell	North Dakota Department of Health, Division of Water Quality
Scott Elstad	North Dakota Game and Fish Department
Paulo Flores	NDSU Carrington Research Extension Center
Dave Franzen	North Dakota State University Extension
Jim Gray	North Dakota Department of Agriculture
Trace Hanson	Wild Rice Soil Conservation District
Liz Hiett	Tetra Tech, Inc.
Jen Klostreich	Richland Soil Conservation District
Gary Knutson	North Dakota Agriculture Association
Greg LaPlante	North Dakota Corn Growers
Paul Mathiason	Red River Valley Sugarbeet Growers
Kendall Nichols	North Dakota Soybean Council
Mike Noone	North Dakota State Water Commission
Kayla Pulvermacher	North Dakota Farmers Union
Greg Sandness	North Dakota Department of Health, Division of Water Quality

Name	Affiliation
Kristi Schlosser-Carlson	North Dakota Farmers Union
Eric Sikora	North Dakota State Water Commission
Eric Steinhaus	USEPA Region 8
Kathy Tweeten	North Dakota State University Extension
Skip Vecchia	US Geological Society
Leo Walker	Dakota Resource Council
Rick Warhurst	Ducks Unlimited
Pete Wax	North Dakota Department of Health, Division of Water Quality
Gregg Wiche	US Geological Survey
Abbey Wick	North Dakota State University
Susan Danzl	SHE, Inc.
Sherwin Wanner	Houston Engineering, Inc.

Mike Ell with the North Dakota Department of Health opened the meeting with introductions. Mike then provided a summary of previous nutrient reduction planning team and stakeholder meetings. Mike said that he realizes that a number of people have expressed an interest in the Agriculture/NPS workgroup and that he has been sending out information on this workgroup as well as the other workgroups to all of stakeholders and planning team members. Mike said that he would like to narrow membership on the workgroups a bit and will be using the folks in attendance at this meeting as the basis for the core Agriculture/NPS Workgroup. He will make one last request to other stakeholders to see if they want to formally be part of the Agriculture/NPS Workgroup. After that he will limit Agriculture/NPS Workgroup emails and correspondence to a core group.

The following sections provide a summary of the agenda items discussed during the workgroup meeting. Copies of all of the presentations used by the presenters during the meeting are available on the North Dakota Department of Health's North Dakota Nutrient Reduction Strategy website. (http://www.ndhealth.gov/WQ/SW/Z6_WQ_Standards/Nutrient_Management/Nutrient_Management.htm).

Nutrients in North Dakota

Mike began this agenda topic by introducing Skip Vecchia, USGS North Water Science Center. Skip gave a presentation entitled "Nutrient Characteristics for Streams in North Dakota." Skip said the results he presented were from a report prepared for the ND Department of Health and the ND State Water Commission. The purpose of the report was to examine data collected from 1970-2008 to: 1) provide descriptive statistics and summaries of water-quality data from sites throughout the state; 2) determine trends and loads for selected constituents and sites with sufficient concentration and streamflow data; and 3) determine an efficient state-wide network sampling design for monitoring future water-quality conditions. A copy of the USGS report is available at http://pubs.usgs.gov/sir/2012/5216/ .

Skip then presented several figures depicting spatial trends in ammonia, nitrate-nitrite and dissolved phosphorus concentrations in terms of median concentrations at each site. In summary, there was no discernible spatial pattern to ammonia concentrations in the state, although concentrations tended to be

higher in the winter as compared to the spring and summer. Spatial patterns in nitrate-nitrite concentrations showed higher concentrations in the Red River basin when compared to other basins in the state. Nitrate-nitrite concentrations were also higher in the winter in the Missouri River basin and lower in the winter in the Red River basin. Phosphorus concentrations tended to be higher in the Red River basin during all times of the year with generally higher concentrations in the summer at all locations in the state.

Skip then provided a comparison of median ammonia, nitrate-nitrite and phosphorus concentrations for the Red River and Missouri River basins in North Dakota to those reported by Mueller and Spahr (2006). Mueller and Spahr compiled results from the USGS's National Water Quality Assessment Program by land use category. Land use categories reported by Mueller and Spahr included undeveloped, partially developed, agriculture, urban, mixed, and "large" watersheds. When compared to the land use categories reported by Mueller and Spahr, ammonia concentrations for both the Red and Missouri River basins in North Dakota were similar to those reported for the partially developed land use category. Nitrate-nitrite concentrations for both the Red and Missouri River basins in North Dakota were similar to the undeveloped land use category. Phosphorus concentrations in the Red River basin were similar to the agricultural land use category, while phosphorus concentrations in the Missouri River basin were similar to the undeveloped and partially developed land use categories.

Based on nutrient concentration data and flow, Skip then presented nutrient load and yield results for 34 sites located across the state. For all of the nutrients (ammonia, nitrate-nitrite, total phosphorus and dissolved phosphorus), yields were greatest in the Red River basin.

Finally, Skip presented results of some trend analyses. It was determined that of the sites used for the USGS's analysis in the report, only 10 sites had sufficient nutrient data to compute trends. Also, of the nutrients analyzed, trends could only be determined for nitrate-nitrite and total phosphorus. Based on the USGS's analysis, the only site with a significant trend was the Red River at Grand Forks site. This site had a significant increasing trend. For the remaining 7 sites (Wild Rice River at Abercrombie, Sheyenne River near Cooperstown, Souris River near Sherwood, Little Missouri River near Watford City, Knife River near Hazen, Heart River near Mandan and Cannonball River near Breien) there was no discernible increasing or decreasing trend. For total phosphorus, 4 sites (Spring Creek at Zap, Knife River near Hazen, Heart River near Mandan and Cannonball River near Breien) had significant decreasing trends and one site, the Red River at Grand Forks, had a significant increasing trend. Skip reiterated that we are not trying to determine potential causes at this time, just looking at trends.

Mike Ell then gave a presentation which looked at total nitrogen and total phosphorus concentrations by 8-digit sub-basin (i.e., HUC) and by ecoregion in the state. For this analysis Mike compiled North Dakota Department of Health and USGS data collected in North Dakota from January 1, 2004 through December 31, 2013 (10 years). Results were summarized using box and whisker plots by 8-digit HUC and by ecoregion. Mike explained that there is a lot of nutrient data available for North Dakota. For example, of the 50 8-digit sub-basins located in North Dakota, there were sufficient data to compute box and whisker plots for 39 sub-basins. For his analysis, Mike compared the results to several nutrient thresholds developed by EPA for ecoregions in North Dakota. These included the EPA nutrient ecoregion thresholds for total nitrogen (N) and total phosphorus (P) and the N and P thresholds developed for the Western EMAP Pilot Project.

In general, both median total N and total P concentrations varied by ecoregion and by sub-basin and reflected the differences in the thresholds developed by EPA. In addition, median N and P concentrations for most sub-basins were near or below the threshold values developed by EPA.

The Nutrients in North Dakota Session concluded with presentations by Skip and Mike on the SPARROW model and results. Skip was the first to speak. SPARROW is an acronym for SPAtially Referenced Regression on Watershed Attributes. This is not a dynamic model, but shows us what is spatially happening. For a full description of the model the reader is referred to the following web site **http://water.usgs.gov/nawqa/sparrow**. Currently, there are eight (8) SPARROW models which cover the US. North Dakota is covered by two models, the Missouri River Basin model and the Great Lakes-Red-Souris-Rainey River model. Each of these models provides estimates of average annual total nitrogen and total phosphorus loads and yields. These loads and yields are provided as a total for the entire contributing watershed above a point on a river or stream or as the incremental load or yield for the catchment represented by the point on the river or stream. The model also partitions the total/incremental load or yield into various source categories (e.g., point sources, fertilizer, manure, atmosphere, urban areas, and natural). Skip then provided several examples of N and P SPARROW model results for both the Missouri River basin and for the Great Lakes/Red/Souris/Rainey rivers at different spatial scales and for both incremental and total load and yield. As an example of some of the results provided through SPARROW, Skip showed a ranking of state contributions of N and P loading to the Gulf of Mexico. Based on the SPARROW model, of all the states in the Mississippi River/Gulf of Mexico drainage, North Dakota ranks 23rd in terms of N loading and 25th in terms of P loading.

Skip also mentioned that there are other methods to demonstrate results and help guide decisions using other parts of the SPARROW model. These tools allow you to obtain more specific and in-depth information.

- SPARROW Mapper – easy and simple way to get SPARROW results, especially by hydrologic and political boundaries (http://wim.usgs.gov/SparrowMRB3/SparrowMRB3Mapper.html#, http://wim.usgs.gov/SparrowGL/Sparrow/GLMapper.html#, http://wim.usgs.gov/SparrowMARB/SparrowMARBMapper.html#)
- Decision Support System – capable of using to visualize SPARROW output and run various scenarios (http://cida.usgs.gov/sparrow/

Q: Jim Gray: I would think there is a lot of the state with phosphorus rich soil at the bottom of lakes/waterbodies from natural deposition. Does the model take this into account?

A: Skip: No. We would have to develop a model specifically for the Red River and input that information.

Keep in mind these are estimates.

C: Mike Ell: Vegetation plays a role in phosphorus delivery. We might see some increase in dissolved phosphorus but if we improve soil infiltration the net yield on some of these lands may be lower. We need to build buffers to provide a lot of benefits. We need to think about how we can better manage vegetation in these areas. There are complex issues related to nutrients. Vegetation research may be a part of uptrends in the Red River Valley.

Mike then gave his presentation on land use and SPARROW results for North Dakota. Land use summaries for North Dakota data were based on two different datasets: 1992 USGS National Land Cover and 1997 NRCS NRI. The results from these two datasets show that agriculture is the predominant form of land use. If you breakdown the data into river basins, based on the 2012 North Dakota Agriculture Statistics Service, the trend remains the same. For the majority of the river basins, the three predominant land uses are cropland, grassland, and water.

C: A lot of areas are close to water or tributaries. To account for this, there is a decay component to the model.

Q: Jim Gray: How does the model estimate fertilizer use?

A: Mike Ell: All the information is documented in the model documentation.

A: Skip: Believe that fertilizer data is based on county estimates reported through Agriculture Statistics.

C: Keep in mind the SPARROW model is calibrated to 2002. Therefore, results are based on all the variables inputted at that time. There are a lot of variables so it is built on a regression model.

Next, Mike discussed the total nitrogen and total phosphorus allocations for the Souris River, Red River, Missouri River, and James River basins. The data varies between basins, but the model gives us something to reference to determine the major causes for nonpoint and point source allocations. Among the river basins, fertilizer and manure were dominant sources, with atmospheric deposition a significant source of N. In the Missouri River basin , channel sourcewas also a significant source of P.

Summary of North Dakota Department of Agriculture and Agriculture Groups Meeting

Jim Gray provided the group with a summarization of the meeting that took place April 16, 2014. Jim began by stating that they had good representation from the agricultural groups where they came together to discuss agricultural interests and talk about nutrient management. They discussed national interests in reference to some of the impact of nutrient loading to some of the national priority waterbodies (e.g., Chesapeake Bay, Gulf of Mexico). The group spent time discussing approaches being used to date to reduce agricultural sources, brainstormed, and prepared for this face-to-face meeting.

Some of the approaches they discussed that are used by other states for nutrient management included:

- *Florida's use of TMDLs*. For agricultural nonpoint sources, they use BMPs for reduction. Florida requires agricultural producers to show they are complying with BMPs. Florida requires mandatory use of voluntary BMPS. They must also develop a site-specific conservation plan. For non-agricultural nonpoint sources, the state is leaving it up to local jurisdictions to develop their own local ordinances. Information can be found on Florida's website.
- *Iowa's mathematical approach to reach goals*. For point source nutrient reduction, they have to reduce nitrogen and phosphorus by 41% and 29%, respectively. To achieve these goals they must comply with NPDES permits. For nonpoint sources, they are looking at voluntarily adopting BMPs that will eventually result in lower nitrogen and phosphorus loadings to the state's rivers

and lakes. Iowa has also provided cash incentives to explore the use of BMPS. All this information can be found on the website www.cleanwateriowa.org.

- *Chesapeake Bay's (Maryland's) regulatory approach*. Instead of using voluntary BMPs, they take on a more regulatory approach requiring Maryland agricultural producers to have a nutrient management plan, mandatory soil sampling, certification to apply synthetic fertilizers on 10 acres of land or greater, and record keeping. They follow a step-wise implementation strategy. For nonagricultural sources, they look to using phosphorus-free fertilizers and the establishment of blackout dates prohibiting application in winter.
- *Other Examples*. Delaware's approach to the Chesapeake Bay is similar to Maryland's approach. They also require a plan, certification and record keeping. Ohio's approach requires certification to apply at a minimum threshold. Minnesota's approach prohibits fall applications of fertilizers.

In conclusion, Jim stated that there were two themes he came away with for this group. First, it is imperative that any of the approaches that are decided upon to deal with agricultural issues are scientifically based and based on the best available data. Second, our growers really like the concept of a voluntary approach. Eric Delzer, ND Department of Agriculture, handed out a document that listed draft general BMPs. The ND Department of Agriculture started with the Iowa general BMPs, sent them to NDSU Extension for review, and drafted the list of general BMPs based on that feedback. Jim stated that the list of general BMPs is meant to spur discussion on practices we can implement to better utilize nutrients and reduce nutrient losses. We need to determine how feasible they are for North Dakota. The information has been sent to the pertinent agricultural people to review and the next step is for the agricultural group to reconvene and discuss.

Summary of Prioritization and Nutrient Criteria Workgroup Meetings

The final presentation for the morning session was given by Mike Ell. Mike provided the group with a summarization of the Prioritization and Nutrient Criteria Workgroup meetings held April 15th and 16th, respectively.

Prioritization Workgroup

For the Prioritization workgroup, there were five topics the group touched upon:

- Nutrient results;
- What is a Watershed?;
- What is a TMDL?;
- Prioritization methods; and
- Basin framework and management.

Mike very briefly discussed the topics while referring to slides in his presentation. Mike touched on the Hydrologic Unit Hierarchy (HUC) and explained the different codes ranging from regions (2 digit codes) all the way down to subwatersheds (12 digit codes).

<u>Total Maximum Daily Load (TMDL)</u>

For TMDLs, Mike presented more background information. Mike explained that under the Clean Water Act (CWA) states are required to develop Water Quality Standards (WQS), or pollution limits, to protect their waters. These WQS include beneficial use designations for the rivers, streams, lakes and reservoirs in a state. Beneficial uses of North Dakota's waters include drinking water, recreation, aquatic life, agriculture, and industrial. The state WQS then describe the maximum levels in which a pollutant can occur and still protect beneficial use(s). When a waterbody like a lake or river does not meet WQS (i.e., beneficial uses are impaired), it is then listed on North Dakota's Section 303(d) List of Impaired Waters Needing a TMDL. Once a lake or reservoir, or a river or stream segment is listed on the Section 303(d) list as impaired, a Total Maximum Daily Load analysis and report is required under the CWA. An equation is used to determine the amount of pollutant a waterbody can receive and still meet its threshold.

Prioritization Methods

Mike then provided an overview of three possible methods that can be used for prioritization. The methods that were reviewed included the decision tree method, the score card method, and the Recovery Potential Screening Tool method. The decision tree method involves a series of questions that are answered and steer you to a decision based on the responses. The score card method considers a series of indicators that are scaled and you come up with the scale and score. Prioritization is based on the scores given. The Recovery Potential Screening Tool was developed by EPA. The tool uses three different indices (ecological, stressor, and social) of a watershed, plugs the information into an equation and prioritizes based on the recovery potential of the waterbody.

Basin Framework for Prioritization

Following the prioritization methods presentations, Mike discussed a basin framework concept. Mike described the basin framework as something the Health Department has been discussing internally for a few months and is a new way to organize and implement their water quality management programs. This would include monitoring and assessment, TMDLs, Section 319 NPS and nutrients. Mike explained that currently, the Health Department for the most part implements their water quality management programs on a statewide basis. Through the basin framework, the state would be divided into 5 major basins (e.g., Red River, Souris River, James River, Upper/Lower Missouri River). The Health Department would then implement basin water quality planning, monitoring, assessment, TMDLs and Section 319 NPS implementation within each basin over a 2-3 year time frame, then move on to the next basin where the process would be repeated. Mike then stated that this basin framework may be a good way to organize the nutrient reduction strategy. Through the basin framework, nutrient priorities would be set for each basin, rather than on a statewide basis.

Following the discussion on the Basin Framework, Mike presented a slide (Figure 1) showing a flow diagram for nutrient reduction or management which would be implemented within the basin framework. The process would start with monitoring, make assessment decisions based on the data, TMDL development if it's an impaired waterbody, then implementation. If TMDLs were identified, you need to identify allocations for point sources and nonpoint sources, and then move to monitoring. During the process, if it's determined that implementation isn't getting us to the threshold needed to restore water quality, then we may need to refine our criteria. Mike then concluded this presentation by pointing out that in the diagram, prioritization is in the middle and is required for each element in the conceptual framework.

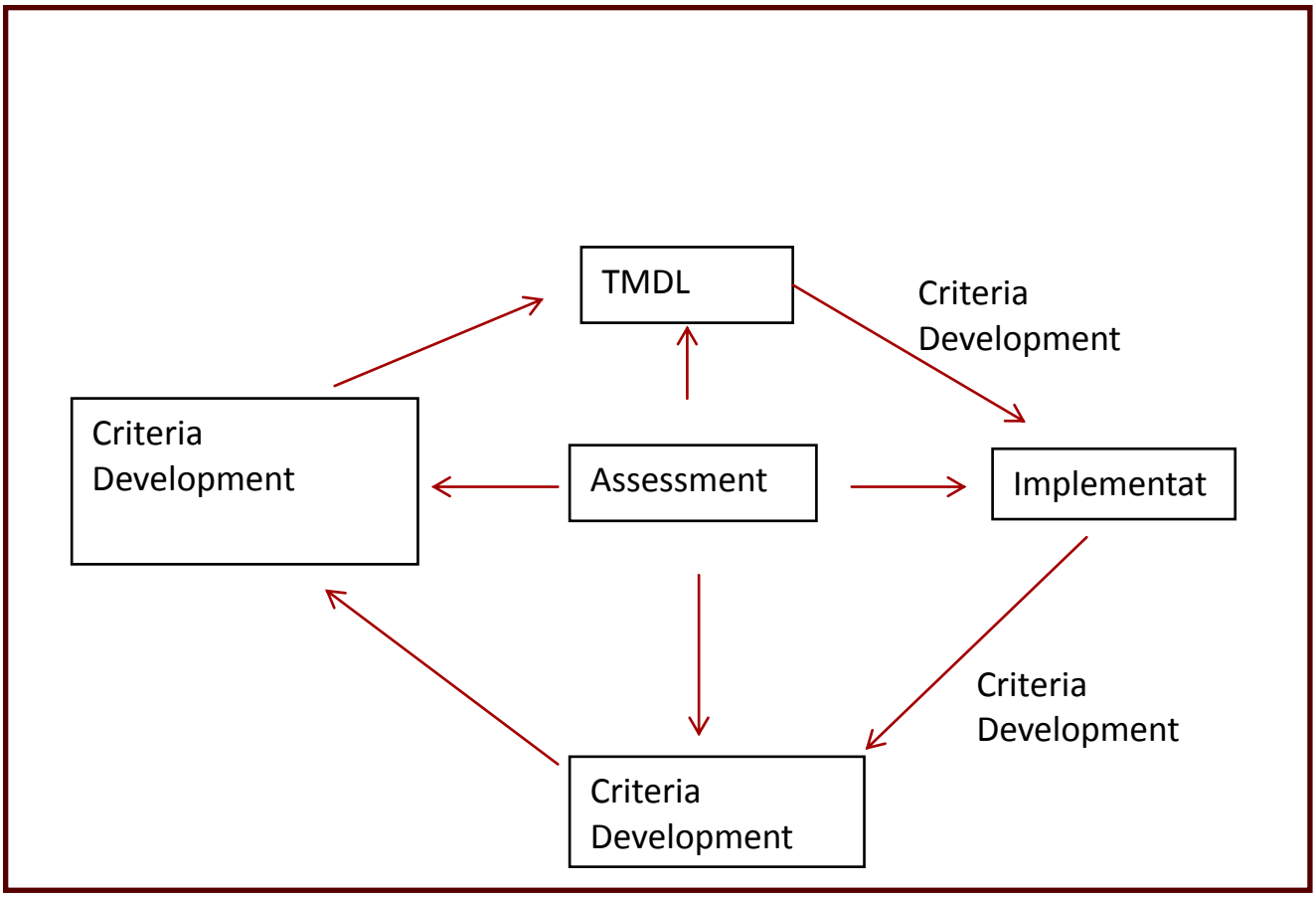

Figure 1. Nutrient Reduction/Basin Management Framework (as presented at the April 15, 2014 Prioritization Workgroup meeting).

Mike reported that the Prioritization Workgroup came away from the April 15th meeting recommending that the Department pursue the recovery potential screening tool as the main prioritization method for nutrient reduction and water quality management. It was also the consensus recommendation of the Prioritization Workgroup to implement the basin management framework, as described by Mike, and to start with the Red River basin. All of the information discussed in these meetings can be found online in the meeting summaries.

Next, Mike briefed the group on the Nutrient Criteria workgroup meeting.

Nutrient Criteria Workgroup

For the Nutrient Criteria workgroup, there were four topics the group touched upon:

- Nutrient results;
- State water quality standards;
- What are Nutrient Criteria?; and
- North Dakota Nutrient Criteria Development Plan.

Mike very briefly discussed the topics referring to slides in his presentation. Mike touched on the state water quality standards for North Dakota. The Standards work by first classifying and defining the

beneficial uses of the State's lakes, reservoirs, rivers and streams. The Standards then protect these uses by defining narrative and numeric water quality criteria which are not to be exceeded. Nutrient criteria are numeric values of nitrogen, phosphorus, and some measure of algal biomass and water clarity. These criteria are needed so that states can: 1) determine when waters are impaired; 2) identify restoration targets for impaired waters; 3) set permit limits for point sources; and 4) better inform nonpoint source reduction efforts to protect waters before they become impaired.

Nutrient Criteria Development Plan for North Dakota

Mike provided a summary of the current North Dakota Nutrient Criteria Development Plan. The current plan was develop and approved by EPA in May 2007. The goal of the Plan is "to develop technically defensible nutrient criteria for surface waters, which are protective of the resource, and consistent with federal guidance." Mike said the Plan, which provides the framework for criteria development, includes rivers and streams as one category and lakes and reservoirs as a second category. The Plan also recognizes that criteria need to take into consideration spatial (e.g., ecoregion or hydrologic basin differences) and temporal scales (e.g., when and how long until excessive nutrients cause an effect). Finally, the Plan recognizes that stressor-response relationships, which are the basis for criteria development, must be quantifiable (i.e., you must be able to measure both stressor and response variables).

Mike reported that the Nutrient Criteria Workgroup came away from the meeting establishing that the current Nutrient Criteria Development Plan makes sense and there is no reason to change it. They also identified where we need to begin. The plan is to identify priority waterbodies to begin nutrient criteria development. The Nutrient Criteria Workgroup identified Lake Sakakawea and Red River as potential waterbodies to begin criteria development.

At the conclusion of his presentation, Mike asked the group if there were any other waterbodies they felt should be considered. Any recommendations for prioritization can be sent to Mike to be integrated into the strategy.

Prior to breaking for lunch, Mike announced that some funding is available to begin working on a recovery potential tool. For those people interested in helping to develop a state tool, there will be a workshop (time to be announced at a later date) to discuss the steps involved and then development will begin.

After lunch, Mike introduced Kathy Tweeten.

Kathy Tweeten, with the North Dakota State University Extension, served as the facilitator for the group discussion. Kathy began by introducing herself and posed a question to the group, "What is the goal for today?" She began by listing some of the topics she recommended the group think about during their discussions based on the information she heard from the presentations this morning.

- Strategize to determine efforts that can be done to reduce nutrient loads
- Be strategic in implementing strategies
- Strategies have to be scientifically defensible
- Need to be aware of the costs involved in developing strategies

- Determine the level of reduction needed
- Target regulatory practices (NPDES, agricultural BMPs)
- Look at solutions that will work for North Dakota
- Determine where the gaps are (research? education?)

Kathy mentioned that she had visited the North Dakota Department of Health's website to familiarize herself with the topic and took out the top pieces that they stated were important. She challenged the group to think about the strategy and the following items when developing the strategies:

- Be inclusive
- Provide short- and long-term goals
- Be practical
- Be achievable (something with results)
- Strategies have to make a difference
- Have to have buy-in from all the groups
- Science-based
- Consider existing programs
- Consider funding
- Target
- Existing regulations
- Economics

Jim Gray commented that it's just like asking someone for directions--they will need to know where you are going and how soon you have to be there. This is the part that needs to be determined.

SMART Goals

Kathy went on to say, from what she is hearing that the strategies have to be specific enough to be measured. Have to determine "What they are?", "What do they apply to?", etc. Also, there is the need to determine how things will be measured. The group needs to agree upon a threshold (s). We need to ask the question "Is more research necessary?" She also mentioned that the group needs to develop strategies that mean something, and apply to the audience. They have to be attainable, relevant, and done within an established timeframe.

Kathy then asked the group if they wanted to breakout into smaller groups to discuss certain topics or remain as one large group and pick a topic to focus on. The group decided not to breakout and remain as one group for discussion.

Group Discussion

The group decided to begin the discussion with the topic of BMPs. At this time, Kathy asked the group to refer to the handout developed by the ND Department of Agriculture and distributed earlier to the group that listed general BMPs. First the group discussed research needs. They discussed, for nutrient management, whether cover crops are beneficial to water quality, should they be validated, and what are the costs versus the benefits of these practices. Second, the group discussed edge-of-the field/erosion control practices. Things to think about include whether bioreactors are feasible for tile drainage water

and what residual and naturally occurring chemicals and metals are released. The group then created a list of items to consider when defining BMPs that will apply to North Dakota including:

- Should be evaluated and monitored
- Identify additional benefits
- Research-based
- Tested demonstrations
- Regionally specific demonstrations
- Unintended consequences

Next the group focused discussions on specific BMPs for their purposes. The group determined that they should develop a BMP handbook that would include existing BMPs and recommendations—reflecting statewide with regionally specific BMP lists.

Steps to the conservation guide are listed below including:

- Compiling relevant information into regional format
  -Eastern Valley (Red River)
  -Prairie Pothole Region
  -West Region
- Formatting
  -Must be usable
- Delivery – vet with producers
  -Will it reduce input per unit of production cost?
- Education
  -Funding?

Examples of specific BMPs include:

- Soil Testing
  -Use North Dakota State University recovery variable rate test (producers-growers)
- Measures to control wind erosion
  -vegetation, trees, etc.

The group identified members to serve on the handbook development committee. The following people were identified:

- Kendall Nichols – North Dakota Soybean Council
- Greg LaPlante – North Dakota Corn Growers
- Dave Franzen – North Dakota State University-Extension
- Larry Cihacek – North Dakota State University, Dept of Soil Science
- Ted Alme – USDA NRCS
- Jim Gray – North Dakota Department of Agriculture
- Greg Sandness – North Dakota Department of Health
- Jim Collins – North Dakota Department of Health

- Input could be requested of other groups as needed (i.e., North Dakota Stockmen's Association, North Dakota Association of Soil Conservation Districts)

A targeted completion date for the publication is October 1, 2014.

No specific goals were chosen for targeting nutrient reduction levels as that falls out of the scope of this workgroup.

As Mike Ell mentioned, the challenge is bringing this all together, from the different pieces, under one umbrella. Everyone will have an opportunity to comment on the strategy. This will be a living document. As we learn more about nutrients in North Dakota the strategy will evolve and change as necessary.

Mike then concluded the workgroup meeting by thanking those in attendance and reminding those in attendance that all materials (meeting summaries, Power Point presentation, web links) are available on the North Dakota Department of Health website at http://www.ndhealth.gov/WQ/SW/Z6_WQ_Standards/Nutrient_Management/Nutrient_Management.htm.