



WATER QUALITY SUBCOMMITTEE

Conference Call Summary

January 12, 2006

1:30 p.m. – 3:30 p.m. EST

Welcome and Opening Remarks

Herb Windom, Ph.D., Chair, Water Quality Subcommittee

Dr. Herb Windom (Skidaway Institute of Oceanography) welcomed the Subcommittee members to the conference call. He explained that, in assigning Subcommittee members to specific charge questions, he had mistakenly assigned Dr. Laura Ehlers as the lead, which he will correct. He added that further discussion about these assignments will occur during the face-to-face meeting. The focus of today's meeting was the presentations on the long-term goals (LTGs). He requested that Subcommittee members limit the number of questions after each presentation to allow time for group discussion at the end of the conference call. Dr. Charles Noss (Office of Research and Development [ORD], U.S. Environmental Protection Agency [EPA]) introduced Dr. Kathryn Saterson, who addressed LTG 1.

LTG 1: Analyzing Stressor Effects

Kathryn Saterson, Ph.D., EPA, ORD, National Health and Environmental Effects Research Laboratory (NHEERL)

Dr. Saterson characterized LTG 1 as focusing on approaches to analyzing stressor effects for eventual use in criteria development. Overall, the intent of LTG 1 is to "...provide the approaches and methods to develop and apply criteria for habitat alteration, nutrients, suspended and bedded sediments, pathogens, and toxic chemicals that will support designated uses for aquatic systems." The Clean Water Act (CWA) provides the legislative mandate for protecting the nation's waters. To do this, managers first need to be able to assess the condition of an aquatic resource and determine the degree of impairment. The next steps are to diagnose the cause of the impairment; forecast the effects of changes in stressor levels; and, finally, remediate. LTG 1 aims at the first step, how to assess the conditions. LTG 2 is concerned with diagnosing the causes of impairment.

LTG 1 is structured around the following three science questions:

Science Question 1, Stressor-Response: *What are the quantitative and causal relationships between varying levels of stressors (habitat alteration, nutrients, toxics, pathogens), alone and in combination, and the biological response of aquatic ecosystems and the resulting services such systems provide?*

Science Question 2, Classification of Ecosystem Responses: *What are the best ways to classify ecosystems, landscapes, and watersheds to enable efficient and scientifically sound development and application of indicators, biocriteria, listing criteria, and water quality criteria?*

Science Question 3, Integration for Bioassessment: *How can stressor levels, biological-response relationships, classification schemes, bioassessment methods, ecological risk assessments, and indicators be applied across U.S. surface waters to set criteria for identifying/restoring impaired waters and maintaining designated uses?*

Science Question 1 is designed to increase understanding of specific responses to each of the stressors. Science Question 2 seeks the best ways to classify the responses to stressors in different systems to determine the degree of impairment when the information is incomplete. Science Question 3 addresses methods for assessing the biological response to multiple stressors. It includes field-oriented bioassessment research as a field-oriented research as well as biocriteria development. This question integrates the first two science questions and other information needed to conduct bioassessment.

Client Needs

Dr. Saterson explained that ORD developed the LTGs and associated science questions in response to client needs identified by the EPA Office of Water, in particular the Office of Wetlands, Oceans, and Watersheds (OWOW) and the Office of Science and Technology (OST), as well as states and tribes. The *2002 ORD Report on Aquatic Stressors; Framework, and Implementation Plans for Effects Research* was the result of nearly 2 years of consultation with various EPA clients to develop the framework for examining aquatic stressors. Because every endpoint cannot be addressed, the selection of specific focal ecosystems and endpoints also was conducted in collaboration with clients. For example, endpoints of specific interest for nutrient criteria include submerged aquatic vegetation, dissolved oxygen, and food webs. The program's response to client needs such as these were mentioned in several testimonial letters.

Recent Results

Dr. Saterson discussed recent results of the program's work on Science Question 1, Stressor-Response. The goals for the toxics stressor research include developing (1) methods to extrapolate chemical toxicity effects across species and populations, and (2) specific approaches for evaluating the relative and cumulative risks of chemical stressors. A wildlife research strategy, written in 2004, outlines the approach to investigating risks from toxics. This was developed partly in response to a Science Advisory Board (SAB) recommendation that ORD improve and enhance wildlife risk assessment. Habitat alteration is another stressor that is addressed in the first science question. ORD's research on habitat alteration as a stressor has two primary goals: (1) to link the loss and degradation of habitat to selected fish, shellfish, and wildlife endpoints; and (2) to determine which models of biological response to habitat change are most appropriate for use in criteria decision making. A testimonial from the Wisconsin Department of Natural Resources mentions results from specific work on wildlife mercury risk assessment.

To improve the understanding of nutrients as a stressor to aquatic systems, the program has studied dissolved oxygen, submerged aquatic vegetation, and food webs in receiving waters and

estuaries. Recent results of this research include tools that are being developed by the Gulf of Mexico Hypoxia Monitoring and Modeling Program. This work has begun to provide decision-support tools that will help water resource managers establish nutrient management plans to reduce hypoxia in the Gulf of Mexico, the Mississippi River Basin, and other areas along the Gulf Coast. Some of the empirical models have developed approaches to evaluate increased nutrient loads and the relationship to decreases in eel grass coverage, increases in new species, and changes in phytoplankton food webs. The beneficial use of these research results by the Tampa Bay Estuary Program, the U.S. Army Corps of Engineers, and the Chesapeake Bay Program Office is mentioned in several testimonials that were sent to the Subcommittee members.

Dr. Saterson described recent results of the program's work on Science Question 2, Classification of Ecosystem Responses. To support development of criteria that can be applied at a regional scale, the Water Quality Research Program is developing methods for understanding how stressor-response relationships can change across landscapes, scales, and ecosystems. Outcomes from this work have improved the coastal nutrient criteria guidance being used by EPA regions, states, and tribes. The results of this research can be applied to other aquatic life criteria as well as nutrient criteria.

Dr. Saterson explained that Science Question 3 integrates the results from the first two questions to begin bioassessments of large rivers, headwaters, and isolated wetlands. Some of the outcomes include simpler and more cost-effective sampling methods that can improve the foundation for the National Status and Trends Assessment. These sampling methods also help characterize the function and contribution of headwater streams to downstream water quality and the function and contribution of isolated wetlands to surface water quality. Rapid assessment methods that characterize multiple indicators for plants, soil, and hydrology in coastal wetlands also have been studied. This research will be presented in a poster at the face-to-face meeting in Cincinnati.

Research on microbial indicators of recreational water quality (i.e., "the beaches research") was conducted in response to the Beaches Environmental Assessment and Coastal Health Act. One of the posters will discuss the development of a rapid, health-based, field-validated method that can produce results within 2 hours of sample collection. This method will provide beach managers and public health officials with a means to help prevent exposure to unsafe water.

Possible Future Directions

Dr. Saterson discussed several possible future directions for research under LTG 1. Habitat research can be directed more toward providing suites of habitat alteration and response relationships. From this research, scientists can extrapolate ways to develop broad-scale habitat requirements for streams and coastal waters and provide approaches to evaluate the combined effects of habitat alteration with many other stressors. Wherever possible, this information should be integrated with the Office of Water's (OW) Tiered Aquatic Life Use (TALU) methodology, which is helping to define designated uses.

In the area of nutrient criteria, future research can provide the load-response relationships that will help to establish nutrient criteria in coastal waters and the Gulf of Mexico. This knowledge

will be extended wherever possible to develop more empirically based nutrient criteria for other water body types.

In the area of toxics research, the program will continue to support OW's efforts to define guidelines, particularly in cases where information about chemicals and site-specific conditions is limited. This work also will include efforts to integrate multiple stressors.

Currently, OW and ORD are preparing a national strategy for developing criteria for suspended and bedded sediments. The general support for this effort will require research under LTG 2 of the Water Quality Research Multi-Year Plan (MYP) and, possibly, research under LTG 4 of the Ecological Research MYP. It will be important, as both of those MYPs are revised, to determine how the program can support that strategy. Finally, the program will continue to find mechanisms to increase the cross-ORD research collaboration on all of these issues.

Dr. Windom thanked Dr. Saterson and commented that her presentation was very well aligned with the posters that will be presented in Cincinnati. Dr. Ehlers noted that Dr. Saterson's presentation, and the ones to follow are organized around the LTGs and science questions; she wondered how the results correspond to the Annual Performance Measures (APMs) under each LTG in the MYP. Will the presentations in Cincinnati be based on Annual Performance Goals (APGs) and APMs, or will they be based on the science questions? Dr. Noss replied that he is in the process of relating the APGs to the science questions and preparing slides on this issue for the meeting in Cincinnati. He also will provide slides about the program's future direction. He explained that the laboratories work from the science questions to the APMs. Dr. Windom commented that the logic models were very comprehensible and suggested that Dr. Noss use a similar approach. Dr. Saterson added that often it is difficult to make a direct correlation between the science questions and specific APGs because many of them are cross-cutting; one science question applies to multiple APGs. Some of the posters are deliberately synthetic, reporting on results from multiple divisions and laboratories, and multiple APGs. Dr. Saterson noted that in LTG 1, many of the APGs and APMs are organized by specific stressors, so that should be helpful in linking results in the posters to the MYP.

LTG 2: Diagnostics

Bruce Mintz, EPA, ORD, National Exposure Research Laboratory (NERL)

Mr. Mintz explained that LTG 2 addresses the scientific foundation for the CWA Section 303(d) listing process of identifying impairments, including classification, frameworks, methods for stressor identification, and establishing causal linkages. This applies to the priority stressors as well as to biological indicators. One of the major drivers for LTG 2 is the fact that OW is encouraging the states to use biological criteria as a measure of water quality condition and to determine whether there is an impairment. There is a problem, however, with this approach. If an impairment is based on exceeding biological criteria, the appropriate action may be unclear because the source of the impairment might not be known. Similarly with fecal contamination, the appropriate response to an impairment or beach closure caused by high fecal levels may be uncertain if the source is unknown. Source tracking for fecal contamination, therefore, is another major driver.

Mr. Mintz presented a few examples of client needs and explained that these were not all-inclusive—they were selected from the needs lists that the program received from OW, and there

is some overlap with LTG 1 and other LTGs. Client needs include: source/stressor and stressor/response relationships; pathogens—fate and cost-effective wastewater management; assessing risks (e.g., biosolids and blending); and new and quicker indicators for water quality criteria. Mr. Mintz explained that source/stressor and stressor/response relationships are important across the CWA paradigm of monitoring conditions, establishing criteria, diagnosing, and forecasting effectiveness of management actions.

Mr. Mintz presented the three science questions under LTG 2 and discussed accomplishments related to these questions.

Science Question 1: *How can multiple and possibly related causes of biological impairment be inferred from indicator and other observations and cause-effect modeling? For habitat alteration? For nutrients? For suspended and bedded sediments? For pathogens? For toxic chemicals?*

Mr. Mintz explained that this question concerns developing better (i.e., faster, less expensive, and/or more accurate) indicators of causes or sources of impairments. Mr. Mintz presented several accomplishments related to Science Question 1 and noted that these also were selected highlights and not all-inclusive. The Stressor Identification Guidance is a joint ORD/OW product that provides guidance on determining causes of biological impairments. There has been much technical outreach and training to complement this guidance. The next product, the Causal Analysis/Diagnosis Decision Information System (CADDIS), is an extension of the Stressor Identification Guidance into a Web-based decision-support tool. The program also completed several ecological risk assessment case studies, which have provided a great deal of leadership in the field of ecological risk assessment.

Science Question 2: *How can the sources and source strengths of stressors be inferred from in situ measurements? From stressor measurements? From biological indicators? From remotely sensed observations and watershed properties?*

Accomplishments in this area, in addition to research, include published guidance on the advantages and limitations of different approaches currently in use for microbial source tracking. Toxicity Identification Evaluation (TIE) guidances have been produced for identifying chemicals that are associated with aquatic toxicity in sediments as well as in water. Finally, the Ecology and Oceanography of Harmful Algal Blooms (EcoHAB) Science To Achieve Results (STAR) grants have explored relationships between nutrients, eutrophication, and harmful algal blooms.

Science Question 3: *How does one determine the most appropriate and efficient scale for application of diagnostic methods within the total maximum daily load (TMDL) and 303(d) process?*

The accomplishments in this area primarily include watershed classification approaches. The program has examined the characteristics associated with susceptibility to different stressors for specific water body types in ecoregions so that the diagnostic data and models can be extrapolated to other, less-studied, water bodies with similar characteristics.

Mr. Mintz described several anticipated accomplishments. The CADDIS work will continue and produce a CADDIS 2. Additional work will continue on refining, evaluating, and demonstrating

diagnostic models. There will be additional work on rapid, specific, sensitive fecal indicators, with a focus on source tracking. The program also will focus on novel diagnostic indicators (e.g., genetic-level markers). Assessment of long-term concentrated animal feeding operations (CAFO) impacts on water quality will continue. Currently, only nitrogen is regulated in CAFOs, but there is concern about pathogens and antibiotics. The program will continue to evaluate the potential for diagnosing impairments caused by suspended and bedded sediments. It also will continue to refine and evaluate classification procedures for different applications.

Dr. Meyer asked if the ecological risk assessment was included in the background materials that were provided to the Subcommittee. Victor Serveiss replied that the ecological risk assessment comprised several EPA reports in which the ecological risk assessment paradigm was applied to the watershed scale in certain regions where there were issues of concern. For instance, in the Clinton Powell Valley, the ecological risk assessment approach was taken to help the Nature Conservancy and the Fish and Wildlife Service make wiser management decisions about threatened and endangered species of fish and mussels. Dr. Meyer requested representative samples of this work.

LTG 3: Restoration and Protection

Benjamin Blaney, Ph.D., EPA, ORD, National Risk Management Research Laboratory (NRMRL)

Dr. Blaney explained that in meeting the CWA goals, the research supported by LTGs 1 and 2 addresses the development of standards and LTG 1 includes monitoring for condition and identifying impairments, and LTG 2 is concerned with determining the causes of those impairments. LTG 3 addresses the issue of developing and implementing appropriate management options to achieve the goals or designated uses that have been established for a body of water or a watershed. LTG 3 also includes monitoring to determine the effectiveness of management schemes. Accordingly, LTG 3 of the Water Quality Research Program is providing tools to restore and protect impaired waterways and forecasting the effectiveness of proposed management schemes. This work involves the development of TMDLs and, ultimately, the development and implementation of watershed strategies to reduce the number of impaired streams and other surface water bodies that are listed in 303(d). This work helps OW programs, such as the 319 Funding Program, in which regions and states must determine the most cost-effective restoration activities. This research also helps to address some of the issues that the Office of Management and Budget has brought to the Agency in terms of starting to value the ecological improvements that have occurred as a result of these programs. Dr. Blaney added that the following three science questions under LTG 3 reflect these different components.

Science Question 1: *What additions to models are most needed for the TMDL process [for major stressors]?*

Science Question 2: *What best management practices (BMPs), treatment systems, and restoration technologies remain as uncertain options for watershed management [and for mixed land use watersheds and major stressors]?*

Science Question 3: *How can classification schemes, modeling scenario analyses, landscape classification, and economic projections be applied to provide alternatives for meeting water quality goals efficiently at multiple scales? What are the economic benefits of watershed management?*

Science Question 1 is concerned with improving the models that are available for allocating loads under the TMDL process. Science Question 2 addresses the means for restoring or protecting water bodies. Science Question 3 addresses other technical issues, such as ecological benefits, and how to develop frameworks for implementing BMPs. Dr. Blaney explained that this is the overall intent of the LTG and how the science questions fit into it.

Landscape assessment and water quality modeling are the main types of research associated with Science Question 1. Landscape assessment addresses the impacts of development on water quality and helps to predict where restoration activities will be most effective. Water quality modeling is needed to understand the fate and transport of contaminants and how that changes as different BMPs are implemented.

Science Question 2 addresses the technical issues involved with BMPs, treatment, and restoration. The program has conducted extensive work on urban wet weather flows for approximately 15 years. This work has included combined sewer overflow control and characterization and control of releases in urban stormwater situations. The program is addressing CAFOs because this is a point source covered by the National Pollution Discharge Elimination Standards (NPDES) Program, which promulgated regulations in 2003. The research program addresses these types of sources by providing pollutant characterization and determining appropriate control techniques. The program also evaluates BMP performance in general to increase the data and improve the understanding of the proper way to design, implement, and monitor the performance of BMPs. Currently, a great deal of emphasis is focused on wetlands (e.g., determining how to restore or develop constructed wetlands and how to use them effectively as BMPs).

Under Science Question 3, the program addresses multi-scale problems that develop as BMPs or NPDES controls are needed at different points in a watershed. Consideration is given regarding how the benefits from these controls interact with each other and impact different water body locations downstream. The program is considering market-based approaches to stressor control (e.g., initiating work on trading nutrient reduction credits achieved through the use of wetlands). The program also is developing frameworks to conduct ecological benefits assessment and using techniques, such as, evaluation approaches, to determine monetary values associated with ecological benefits.

The research under LTG 3 supports several offices within OW. For the Office of Water Management (OWM), the program supports work in the area of stormwater program effectiveness, implementation of CAFO regulations, emerging contaminants, and pathogens. Most of the work is focused on high priority stressors, such as nutrients, pathogens, and sediments, but the program also is addressing emerging contaminants such as endocrine disrupting chemicals (EDCs) and contaminants from veterinary medicine. Dr. Blaney explained that pathogens are a major issue for all of the offices within OW. Expanding the cost-effectiveness of various wastewater and wet weather flow management strategies also is important to those offices.

OST develops regulations for point sources and is involved with improving their control technologies (e.g., in the area of publicly owned treatment works [POTWs]). Additional priority areas for OST are economic benefits of use attainment and decision making tools for various management options. OWOW conducts wetlands research and has particular interest in lower

impact development practices. The program's landscape modeling supports OWOW needs to examine the impacts of local development.

Recent Accomplishments

Dr. Blaney presented a few highlights from the program's numerous accomplishments. He explained that the majority of the work associated with LTG 3 pertained to Science Questions 1 and 2. Important accomplishments under Science Question 1 included work on landscape assessment techniques, improving water quality models, and providing those models to the Water Quality Modeling Technical Support Center.

Accomplishments under Science Question 2 focused on urban issues through the combined sewer overflows and stormwater BMP work. The program produced manuals on constructed wetlands and issued a major report on risk management evaluation of CAFOs. An ecological risk assessment for watershed management also was developed.

Future Research Objectives

Dr. Blaney presented areas of anticipated future activities. Work is expected to continue in the areas of water quality modeling, BMP development, and techniques to control releases from CAFOs. There likely will be increased emphasis on Science Question 3, which is critical for evaluating benefits and developing watershed management strategies from an integrated perspective. Work in this area is anticipated to include: (1) innovative approaches to using market forces to achieve CWA objectives, and (2) developing tools to account for ecological benefits and important socioeconomic factors when developing watershed restoration and protection strategies.

Dr. Windom thanked Dr. Blaney and opened the discussion for questions. Dr. Ehlers asked about a document that describes accomplishments under LTG 3. Dr. Blaney replied that she was referring to a 17-page document, entitled *Key Past and Anticipated Accomplishments*, which discusses the Water Quality Research Program's past and anticipated future accomplishments, from 1995 to 2010. This was sent to the Subcommittee members on December 28, 2005. Dr. Ehlers mentioned another document, which was sent as an attachment labeled "20d.long-term goal3.doc," that refers to many different posters. Dr. Blaney explained that this was the chapter that he wrote on LTG 3; these are the posters that the Subcommittee members will see in Cincinnati. Dr. Ehlers noted that the accomplishments list was organized by LTG and year, and has to be read in detail to determine what part goes with which science question. Dr. Saterson replied that the list was revised a few days ago; it now is organized by stressor and includes additional headers.

Dr. Meyer asked about *Economics and Ecological Risk Assessment: Applications to Watershed Management*. Dr. Victor Serveiss replied that this is a program, which includes a book, a strategy, an EPA report, and several ongoing projects. This program will be described in a poster.

LTG 4: Biosolids

Annette Gatchett, EPA, ORD, NRMRL

Ms. Gatchett explained that the biosolids research is a small part of the Water Quality Research Program. It supports the section of the CWA that governs biosolids disposal or beneficial reuse. This work also supports a recent National Research Council (NRC) review. This is a common theme, which drives EPA's response to much of the program's current and proposed research.

Ms. Gatchett presented a schematic of human exposure pathways associated with agricultural land application of wastes. The schematic begins with wastewater and sludge generated in locations such as homes, hospitals, and slaughterhouses. The waste is treated for the reduction of pathogens and attraction of vectors, after which it is disposed of or used. Options for use or disposal often are close to residences and people, which causes concern about potential health effects, especially via the movement of bioaerosols.

Ms. Gatchett presented the four science questions that are associated with LTG 4:

Science Question 1: *Do contaminants in biosolids pose a significant health risk to the public when applied in compliance with current regulations?*

Science Question 2: *What additional models, tools, and methods are needed to identify, measure, and assess aggregate exposure pathways and risks?*

Science Question 3: *What improved analytical techniques can be developed to adequately determine pathogen and priority toxic chemicals in or released from biosolids?*

Science Question 4: *What is the current state of management practices for biosolids production and application, and how can those be made more effectively?*

The biosolids research program focuses on Science Questions 2, 3, and 4. Science Question 2 pertains to characterization tools that are used during field application. Science Question 3 addresses analytical laboratory techniques and procedures. The Pathogen Equivalency Committee work is associated with Science Question 4.

Ms. Gatchett mentioned the NRC Report and the resulting Final Action Plan that was prepared by OW. The NRC study was completed in 2002, and provided EPA with 60 recommendations. In response, OW identified approximately 14 projects in both regulatory and non-regulatory areas. ORD supports about 9 of those 14 different topics, 4 of which are represented in the program's accomplishments. These include methods development, field study applications, and the Pathogens Equivalency Committee work. Ms. Gatchett noted that a public comment period was held on EPA's Final Action Plan and, in 2003, the Water Environment Research Foundation (WERF) held a research summit. The program was able to support some of the findings in the NRC report by addressing some of the recommendations in OW's Final Action Plan.

The four major research areas under LTG 4 include: (1) developing analytical methods for fecal coliforms and *Salmonella*; (2) determining exposure to biosolids from land application; (3) developing analytical methods for viruses and viable *Helminth* ova; and (4) continuing to support the Pathogen Equivalency Committee.

Accomplishments

Ms. Gatchett explained that the North Carolina Field Study addresses Science Questions 2 and 3 (i.e., characterization of exposure for human health, field studies, and analytical methods). This work relates to the concern about exposure to biosolids from land application. This was a highly complex study, which focused on identifying and optimizing measurements and methods to characterize exposure. In addition to measuring concentrations, the work involved determining whether the results were reproducible. The study involved a full sampling of air and soils before, during, and after application, and required a minimum of 40 scientists onsite during a 1-week period. A large interdisciplinary team included representatives from EPA and its contractors, the U.S. Department of Agriculture (USDA), the North Carolina Department of Agriculture, and the Information Sharing Group. This project also required a very high level of quality assurance/quality control. The study was completed recently, and the results will be published this year.

Two indicator techniques for pathogens were completed in 2004. This work addresses Science Question 3 and involves analytical procedures. Fecal coliforms were used as indicators for sewage sludge treatment efficacy. These standardized and validated procedures were used by OW to promulgate standard methods.

The Pathogen Equivalency Committee was created in 1995 to make recommendations to EPA and state managers on the equivalency of unproven sewage sludge disinfection technologies and processes. Over the years, it has evaluated numerous technologies.

Environmental Regulations and Technologies was completed in 1998. Often referred to as “the White House document,” this report is significant because the regions, states, and local regulators use it and its updated editions as the primary reference for evaluating equivalent treatments. This report covers the requirements for controlling pathogens and vectors, provides the rationale behind the regulations and how they should be practiced, and includes a discussion of worker safety. The most recent edition was published in 2003. In addition, a 2005 document, *Infectious Disease Agents in Sewage Sludge and Manure*, was completed in response to a recommendation in the NRC Report.

Future Research and Expected Accomplishments

Ms. Gatchett stated that future activities for LTG 4 will include additional field studies to address issues involving land application, characterization, and analytical techniques. The program will plan research based on the North Carolina study and focus on the question of reproducibility as well as differing climate conditions and biosolid sources. The goal is to provide scientifically sound results and information that can be used by the decision makers who are responsible for biosolids reuse and disposal. The program will continue to work on methods for detecting viruses, and to develop new and improved analytical techniques for emerging pathogens, prions, and pharmaceutical and personal care products. A workshop is being planned to address issues such as monitoring protocols for measuring exposure to contaminants from biosolids. Finally, the Pathogens Equivalency Committee work will continue to assess the effectiveness of innovative and alternative treatment techniques.

Dr. Windom thanked Ms. Gatchett and reminded the Subcommittee members that each of today's presenters will be available to answer questions at the face-to-face meeting in Cincinnati. Dr. Weisberg asked about the apparent difference between the efforts in LTG 4 and the work on the other LTGs. The work in the first three LTGs follows a logical sequence: developing criteria to describe a problem, creating a series of diagnostics to define the cause of the problem, and then defining a series of solutions to the problem. These LTGs are very problem-independent (i.e., the process applies equally well to nutrient criteria, bacteria, and other stressors). In LTG 4, the work is very source-specific.

Dr. Blaney explained that, until the NRC report was released, the Water Quality Research Program focused primarily on the first three LTGs, with a small level of research in biosolids. When the NRC report was issued, ORD and OW decided to expand the work in the biosolids area, and the research had to be included in the MYP. Biosolids, because they come from POTWs, are covered under the CWA, and ORD and OW chose to focus the biosolids program solely on human health impacts. Biosolids research could not be integrated easily into the other three LTGs, so it was included as a separate LTG. Dr. Blaney noted that the biosolids work is a smaller part of the program and has fewer resources than the other LTGs. Dr. Noss explained that when the regulations for managing these materials were being established, a risk-based approach was taken. This was criticized later in the NRC report. The biosolids program tried to address a series of problems that had been recognized for a long time, but it did not have sufficient resources because the regulations were expected to address these problems. The NRC report revealed that these problems still remain. Questions about the risk assessment (e.g., whether it should be part of a human health-based risk assessment) will be raised as ORD revisits these issues. Ms. Gatchett added that a large amount of growth has occurred over the past 10 years and many more residents live close to areas where biosolids are being land-applied. This has caused significant public concern. Dr. Windom interjected that this is an important point, and he asked Dr. Noss to think about it before the face-to-face meeting. The process for prioritizing, sequencing, and responding to shifting needs is significant, and this issue often is raised in BOSC program reviews. Dr. Noss agreed to provide information about this at the meeting.

Wrap-Up

Dr. Windom thanked the presenters and added that he looked forward to meeting them in Cincinnati. Dr. Smith noted that she sent the revised accomplishments document to Drs. Windom, Meyer, Chauret, and Ehlers. Dr. Kleinow also requested a copy of the document. Dr. Windom asked Dr. Smith to assemble several hard-copy sets of the testimonials for the Subcommittee to review at the face-to-face meeting.

Dr. Windom explained that the first day of the face-to-face meeting will be focused on reviewing posters that summarize the accomplishments and ongoing research for each of the LTGs. Later in the day, Subcommittee members will work on responses to the charge questions that relate directly to the program's science. Dr. Windom sent the Subcommittee members an Excel file indicating the posters to be reviewed by each Subcommittee member. Dr. Saylor agreed to review the three remaining posters; he will note that on the Excel file and return it to Dr. Windom.

Dr. Windom stated that he will send the Subcommittee members a draft outline of the report structure. This will be based on previous BOSC program reviews, which address each charge question by LTG. He commented that the program is too large for the Subcommittee to review all of its accomplishments. He suggested using selected examples to demonstrate how the program approaches problems and provides research results and how those results have been used. He recommended including examples of activities that the program has done well. For areas that have not been successful, reasons (e.g., resource limitations) should be provided. Dr. Sayler agreed with the approach and added that he would like to see an analysis of the program's leadership and scientific quality relative to other organizations (e.g., leading the science forward in a collective sense). Dr. Noss agreed to provide examples of the program's leadership. Dr. Meyer noted that accomplishments should include implementation. Dr. Noss replied that this issue has been discussed internally. Other than the bibliometric analysis, there is no comprehensive Agency-wide tool to track the use of products in regulations or other instances of research application.

Dr. Windom indicated that he would e-mail the draft outline of the report to the Subcommittee members early next week. He requested that the members add draft outlines of their sections and send them back to him by January 19. He will put the drafts together and send them to the Subcommittee members before the face-to-face meeting. Dr. Meyer asked whether each charge question should be addressed by LTG, and whether that applied to the leadership section. Dr. Windom replied that the leadership section might have to be more general, but some elements, such as relevance, quality, and performance, could be organized by LTG. He recommended this approach to keep the document from becoming too complicated.

Dr. Ehlers commented that she needed information from the face-to-face meeting to do an adequate job on her section. Dr. Windom suggested that she add notes or bullets to be expanded upon and include issues that are important to address. The idea is to have a draft outline as soon as possible to use as a starting point. At the meeting, the Subcommittee will discuss the program in more depth. Each of the Subcommittee members will have specific writing and editing tasks, which will be identified at the meeting. After the meeting, the Subcommittee members will complete their sections and send them to Dr. Windom, who will compile the sections into a cohesive report.

Dr. Smith asked whether any members of the public wished to comment. There were no such requests. Dr. Smith reminded the members to bring their travel expenses and time sheets to the face-to-face meeting. She asked whether there were any additional information needs and noted that the revised accomplishments list had been sent out. Dr. Windom asked Dr. Smith to send the ecological risk document to Dr. Meyer.

Referring to the list of the program publications that was sent to the Subcommittee members, Dr. Weisberg asked about the percentage of publications written solely by EPA authors and those written in collaboration with other organizations. Of the collaborative publications, he wanted to know the percentage of publications written by state agencies, federal agencies, and academia. Cynthia Nolt-Helms (EPA/ORD) pointed out that the research conducted through the STAR Program could be considered an additional category, and those authors would be predominantly academic researchers. Dr. Smith agreed to follow up on Dr. Weisberg's request, and Dr. Windom adjourned the conference call at 3:30 p.m.

Action Items

- ✧ Dr. Windom will revise the Subcommittee assignments to remove Dr. Ehlers as the lead writer.
- ✧ Dr. Noss will prepare slides to define the relationships between APMs, APGs, and the science questions. He also will prepare slides about the program's future direction.
- ✧ Dr. Smith will send Dr. Meyer representative samples of the ecological risk assessment.
- ✧ Dr. Noss will provide a description of the program's process for prioritizing and sequencing research activities, including the process for responding to shifting client needs.
- ✧ Dr. Smith will send Dr. Kleinow a copy of the revised accomplishments document.
- ✧ Dr. Smith will assemble a few hardcopy sets of the testimonials for the Subcommittee to review at the face-to-face meeting.
- ✧ Dr. Sayler will note the posters that he will review and return the Excel file to Dr. Windom.
- ✧ Dr. Windom will send the Subcommittee members a draft outline of the report structure based on previous BOSC program reviews.
- ✧ Dr. Noss will provide examples of the program's leadership.
- ✧ Subcommittee members will add draft outlines of their sections to the draft report outline and send them to Dr. Windom by January 19. Dr. Windom will compile the drafts and send them to the Subcommittee members before the face-to-face meeting.
- ✧ Subcommittee members will bring their travel expenses and time sheets to the face-to-face meeting.
- ✧ Dr. Smith will provide information about the percentages of publications written solely by EPA as well as information on collaborative publications.

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APPENDIX

Conference Call Agenda



WATER QUALITY SUBCOMMITTEE

Conference Call Agenda

January 12, 2006

1:30 p.m. - 3:30 p.m. EST

Participation by Teleconference Only

(866) 299-3188

Conference Code: 2023439766

THURSDAY, JANUARY 12, 2006

1:30 p.m.	Welcome and Opening Remarks	Dr. Herb Windom, Chair Dr. Bernice L. Smith
1:40 p.m.	Water Quality Research Program Discussion of Long-Term Goals (LTG) 1-4 LTG 1: Dr. Kathryn Saterson LTG 2: Mr. Bruce Mintz LTG 3: Dr. Ben Blaney LTG 4: Ms. Annette Gatchett	Dr. Charles Noss Water Quality National Program Director
2:40 p.m.	Review of Agenda for Face to Face Meeting - General overview of meeting process	Dr. Herb Windom, Chair
2:50 p.m.	Discuss and develop draft report outline	Chair/Subcommittee
3:10 p.m.	Identification of Additional Information Needs - Written documentation needs - Request for specific presentations	Chair/Subcommittee
3:20 p.m.	Public comments	
3:30 p.m.	Adjourn	