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Information Bulletin No. WY-97-112

To: District Managers
From: Deputy State Director, Resources Policy and Management
Subject: Wyoming Total Maximum Daily Load Workplan

The Department of Environmental Quality, Water Quality Division (WDEQ) has completed its final Total Maximum Daily Load Workplan (see attached). Copies of this plan have been distributed to every District and Resource Area Office.

It is very important that Wyoming BLM become familiar with the details of this plan, including the identified tasks, their schedules, and the proposed monitoring parameters and methods, since this effort may influence many of the activities we implement or authorize on public land.

Please review this plan and consider the workload implications as part of your TMDL workload assessment. Please contact Rick Schuler at 307-775-6092 if you have any questions.

Roger P. Wickstrom
Acting

1 Attachment:
1 - WDEQ TMDL Workplan, July 30, 1997 (16 pp.)

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WYOMING DEPARTMENT OF ENVIRONMENTAL QUALITY
TOTAL MAXIMUM DAILY LOAD (TMDL) WORKPLAN
JULY 30, 1997

INTRODUCTION

This workplan outlines the Wyoming Department of Environmental Quality, Water Quality Division's (DEQ) estimate of the scope and extent of work which must be achieved to assess waterbodies and, where necessary, develop Total Maximum Daily Loads (TMDLs) for impaired waterbodies (often referred to as "streams"). The 1996 303(d) list was used to estimate the workload, and subsequent deletions (delisting) and new additions are not included. It is acknowledged that this list will be revised every couple of years. The plan also includes steps to allocate responsibilities, such as Best Management Practices (BMPs) or NPDES discharge limits, to move towards achievement of the TMDLs. This work is being conducted per the requirements of Section 303(d) of the federal Clean Water Act. This plan was initially released for public comment in March, 1997, and has been revised based on those comments (see response to public comment in Attachment B). If you have questions regarding this workplan, please contact Mark Conrad at 307/777-5802, or Beth Pratt at 307/777-7079.

The two most critical items to ensure success of the Wyoming TMDL program are scientifically rigorous data collection and analysis, and public participation and involvement at all levels in the TMDL process. Much of the TMDL monitoring (outlined in Attachment A) will be based on methods developed during the Reference Stream Project (RSP). RSP evaluates streams by integrating assessments of biological communities, habitat and chemical water quality parameters, and then categorizes streams based on ecoregion and stream type, to account for differences in geology, soils, topography and climate. Realistic comparisons can then be made with reference streams with similar natural water quality potential, rather than relying on "one size fits all" water quality standards and models.

To ensure success of the TMDL program, collaborative type principles will be followed whenever possible throughout the process. DEQ recognizes that effective TMDL development and implementation can only be accomplished by cooperation and understanding between stakeholders. The establishment of collaborative watershed stakeholder committees will be encouraged to address TMDL issues on a local or watershed scale. Further, a state-wide TMDL advisory and technical assistance work group is being organized to advise DEQ on the TMDL effort and to make recommendations to update, modify and develop future 303(d) lists. Meetings of this workgroup will be announced and open to the public.

DEQ acknowledges that the 1996 303(d) list does not include every Wyoming stream which may need TMDL development, and that some listed streams may not actually be impaired. Considerable work needs to be done to improve the accuracy of the listing process. The 1996 list was developed largely through responses to DEQ questionnaires sent to conservation districts, federal and state agencies, and university researchers. Many of the streams were nominated based solely on "professional judgement" without any hard data, and some streams were listed to allow funding of watershed improvement projects. At the time, DEQ felt obligated to list those streams, however, in retrospect, DEQ realizes that it can only list streams as needing TMDLs if credible data indicates the stream is impaired. Therefore, the 1998 and future 303(d) lists will only contain streams with credible data indicating impairment, or streams with NPDES permits containing Waste Load Allocations (WAS) and

expiring within two years. Streams on the 1996 list which do not have credible data to substantiate listing (or delisting) will be moved to a "monitoring" list of streams, indicating that not enough data exists to determine whether there are impairments or not. Streams on the "monitoring" list will be monitored to determine whether or not they are actually impaired and need to be listed on the 303(d) list, or placed on a list of streams meeting beneficial uses. Additionally, streams with active watershed improvement projects will be categorized as low priority for monitoring and/or TMDL development to give the watersheds a chance to improve before assessment occurs.

A five year planning process, beginning in the summer of 1998, will be utilized as a target for the monitoring effort, with development of TMDLs, water quality controls and Best Management Practices (BMPs) for all impaired waterbodies on the 1996 303(d) list to be completed over a ten year period. Waterbodies subsequently added to the 303(d) list are not subject to this ten year schedule. Implementation of BMPs will be encouraged for non-point source impacted waterbodies as TMDLs are developed. Other aspects of the TMDL process include such things as verification and adoption of appropriate stream classifications during the triennial water quality standards reviews, and adding, delisting, and re-prioritizing waterbodies as new information becomes available.

This workplan assumes an increase in DEQ staffing of seven Full Time Equivalents (FTEs) and shifting of some existing duties of staff members to accomplish data collection, evaluation, verification, and establishment of TMDLs over a ten year period. It is recognized that as work on this issue continues, the state may identify a need for additional resources. Should this need occur, the state will pursue appropriate mechanisms such as grant funding and/or general fund appropriation to finance the additional required resources.

Data collection targeted at setting TMDLs, verifying adopted TMDLs, identifying segments in need of listing, validating the current TMDL list, and evaluating appropriateness of current designated uses shall occur each year on a priority basis. DEQ will prioritize future 303(d) lists based on credible data and recommendations of the state-wide TMDL work group.

Outputs from this effort shall include:

- 1) Educational materials for interested and affected citizens;
- 2) Development of scientifically sound, credible data;
- 3) Continued evaluation of impaired waterbodies (303(d) list);
- 4) Development of TMDLs for impaired waterbodies per priority list;
- 5) Confirmation of designated uses and triennial review of stream classifications;
- 6) Allocation of water quality controls and implementation of BMPs to achieve TMDLs;
- 7) Listing and delisting of waterbodies on the 303(d) and "monitoring" lists; and
- 8) List of waterbodies meeting beneficial uses.

MISSION STATEMENT

As the state agency responsible for protection of water quality, DEQ will adopt and recommend Total Maximum Daily Loads (TMDLs) for impaired waterbodies over a ten year period, relying on credible data and utilizing local interest groups that represent watershed stakeholders as the fundamental process for development of TMDLs and BMPs to achieve water quality goals.

WORKPLAN, GOALS AND OBJECTIVES

NOTE: The goals and objectives of the workplan are not listed in any prioritized order, since they are inter-related, all must be accomplished together. For example, Goal 1 -- "Clean up 303(d) list, Waterbody System Database, and Stream Classifications," can only be accomplished through monitoring and assessment of data, which relies on accomplishment of other objectives concurrently. The dates listed for each task provides information about when each task will be completed, although many tasks are ongoing or will need to be re-addressed occasionally.

GOAL 1: Clean up 303(d) list, waterbody system database, and stream classifications.

OBJECTIVE 1: Cleanup 303(d) list and prepare for 1998 list.

- TASK 1: Transfer streams without credible data to support impairment from 1996 303(d) list to "monitoring" list. (Draft 9/97)
- TASK 2: Contact land management agencies to ascertain if data exists which documents that streams under their management were incorrectly listed. (7/97)
- TASK 3: Through monitoring or other means, verify listing of streams which appear to have been incorrectly listed due to suspect data. (8/97 and beyond)
- TASK 4: Develop data adequacy criteria, with guidance from the TMDL advisory workgroup, for adding new waters to the 303(d) list. (9/97)
- TASK 5: Initiate development of the 1998 305(b) report and future 303(d) lists. (8/97-4/98)
- TASK 6: Where sufficient information exists to show there is no problem, delist streams utilizing appropriate public participation procedures. (2/98; then next 305b report)
- TASK 7: Integrate and link data to ensure both the 303(d) list and 305(b) report reflect current knowledge and water quality conditions. (ongoing)
- TASK 8: Develop list of waterbodies meeting beneficial uses. (ongoing)

OBJECTIVE 2: Clean up waterbody system database.

- TASK 1: Train employee on WBS and STORET. (7/97-9/97)
- TASK 2: Verify data and begin database clean-up. (10/97 and beyond)
- TASK 3: Evaluate resources needed for getting new/better data into WBS, including potential for electronic transfer of information from other agencies. (12/97)

OBJECTIVE 3: Initiate clean up of stream classifications as part of Water Quality Standards revisions.

- TASK 1: Hire and train staff. (ASAP)
- TASK 2: In cooperation with EPA, develop protocols for performing analyses to recommend appropriate stream classifications. (Draft 10/97)
- TASK 3: Perform resource analysis to determine number of stream classification analyses which can be performed over a five year period. (12/97)
- TASK 4: Develop long range plan for performing analyses and recommending stream classifications over a period of three to four Water Quality Standards revisions (i.e., 9 - 12 years) in accordance with the Wyoming Administrative Procedures Act. (2/98)

GOAL 2: Obtain positions and funds to monitor and establish TMDLs for all impaired waterbodies on 1996 303(d) list within ten years (4/98)

OBJECTIVE 1: Add two FTEs to initiate TMDL effort. (6/97)

OBJECTIVE 2: Add five additional FTEs to establish TMDLs for all impaired waterbodies on 1996 303(d) list within ten years. (6/98)

GOAL 3: Establish effective outreach program to inform citizens of TMDL issues.

OBJECTIVE 1: Identify "target audience."

TASK 1: Develop point source mail list of permittees and representative organizations such as WAM, county commissioners, etc. (2/97 and ongoing)

TASK 2: Develop NPS list which includes land user organizations, land and resource management agencies, and environmental organizations. (2/97 and ongoing)

OBJECTIVE 2: Implement outreach effort to address targeted audience.

TASK 1: Develop information packet, which explains what a TMDL is in basic terms, and explains the potential impacts, as well as benefits, to the State of Wyoming as a result of the TMDL suit. (2/97)

TASK 2: Mail information packet to target audience and offer to schedule informational seminars in various locations around the state. (3/97)

TASK 3: Put together slides, overheads, etc. for informational seminars and schedule and advertise presentations. (3/97)

TASK 4: Presentations to groups statewide -- estimate 20-30 statewide. (4/97-5/98)

OBJECTIVE 3: Assure public participation in decision making through collaborative stakeholder type processes, local watershed groups and public comments.

TASK 1: Encourage formation of local watershed and collaborative type stakeholder groups to participate in TMDL monitoring, development, and participation. (ongoing)

TASK 2: Form state-wide TMDL advisory and technical assistance workgroup of representatives from agencies and watershed interest and user groups to make recommendations to DEQ. These recommendations may include prioritizing the 303(d) list for monitoring and TMDL development, list/delist waterbodies, and address other TMDL issues. (9/97)

TASK 3: Develop watershed management plans using collaborative type processes to ensure stakeholders' needs are addressed. (ongoing)

TASK 4: Develop TMDLs and BMPs in the absence of functioning local watershed or collaborative type groups. (as needed)

TASK 5: Provide opportunities for public comment whenever a TMDL is proposed. (ongoing)

TASK 6: Provide opportunities to appeal TMDLs before Water and Waste Advisory Board. (as needed)

TASK 7: Evaluate and modify Continuing Planning Process (CPP) to include revised TMDL adoption process. (12/97)

TASK 8: For point sources, continue 30 day public notice period for renewed permits with an appeals process that attempts to resolve issues informally. If issues can not be resolved informally, the issue can be taken to the Environmental Quality Council for resolution.

GOAL 4: Identify additional external resources for monitoring, development, and implementation of TMDLs.

OBJECTIVE 1: Identify mechanisms such as memorandums of understanding (MOUs), letters of intent, and joint workplans for coordination and cooperation with appropriate local, state and federal agencies.

TASK 1: Evaluate existing MOUs to identify~ revision needs. (10/97)

TASK 2: Meet with state/regional representatives to address various methods for jointly addressing monitoring and TMDLs. (6/97-11/97)

TASK 3: Sign new MOUs, letters of intent, or joint workplans. (12/97)

TASK 4: Meet with individual forests/BLM districts to establish site specific coordinated monitoring, data management, and TMDL implementation and verification plans. (4/97-5/98)

TASK 5: Assure that land management agencies include all stakeholders in their decision making process, consistent with state plan. (ongoing)

OBJECTIVE 2: Identify local watershed planning entities, such as conservation districts and collaborative watershed stakeholder groups, that are interested in addressing impaired streams in their watersheds.

TASK 1: Provide support to those entities for assessment, and development and implementation of BMPs. (ongoing)

TASK 2: As outcome of BMP development, adopt TMDLs. (ongoing)

GOAL 5: Establish monitoring plan to verify additions/deletions to 303(d) list and to develop/verify TMDLs on priority waterbodies.

OBJECTIVE 1: Complete Reference Stream Project (RSP) database for Wyoming streams.

TASK 1: Finish sampling remaining RSP streams. (10/97)

TASK 2: Complete statistical analysis of RSP data. (5/98)

TASK 3: Continue sampling selected reference streams for trend analysis. (ongoing)

OBJECTIVE 2: Evaluate 303(d) list to prioritize waterbodies for monitoring work.

TASK 1: Assess permit compliance monitoring schedule and compare to permit reissuance schedules. Develop consolidated point source monitoring priority list. (3/97)

TASK 2: Establish new protocols for permit compliance monitoring which will verify support TMDL work. (5/97)

TASK 3: Review existing Game & Fish and University of Wyoming data, and if necessary, obtain state resources to contract for performing additional fishery assessments on waterbodies listed due to fishery impacts. (5/97-4/98)

- TASK 4: Train field analysts and representatives from local collaborative type watershed groups on new protocols. (7/97 and ongoing)
- TASK 5: Evaluate current 319 project monitoring plans to determine adequacy for TMDL decision making, such as delisting or TMDL development, and contact proponents to establish willingness to modify monitoring workplans, if necessary. (1/97 - 4/98)
- TASK 6: Establish nonpoint source monitoring priority list based on 303(d) ranking, recommendations of TMDL workgroup, and other factors, such as potential for delisting. (4/97 to 12/97)
- TASK 7: Finalize staff monitoring schedules for 1997 season. (7/97)
- TASK 8: Evaluate USGS contract--modify 1998 contract if appropriate. Work with State Engineer and Water Development to determine if they have additional resources/needs for expanded flow data collection. (7/97)
- TASK 9: Identify additional data sources, and incorporate verifications of information into monitoring priorities for 1998 season. (4/98)
- TASK 10: Evaluate and verify quality of volunteer (citizen monitoring) data for incorporation into statewide monitoring priorities and schedules. (7/98-11/98)

OBJECTIVE 3: Conduct initial monitoring on all waterbodies listed on 1996 303(d) list in five years, beginning in 1998.

- TASK 1: Conduct initial Beneficial Use Reconnaissance Program (BURP) monitoring on all waterbodies on 1996 303(d) list. (7/98-10/2002)

GOAL 6: Establish TMDLs on a watershed basis for all impaired waterbodies on 1996 303(d) list within ten year period, based on schedule listed below.

YEAR % of TMDLs Completed		YEAR % of TMDLs Completed	
1997	4	2003	45
1998	10	2004	55
1999	15	2005	70
2000	20	2006	80
2001	25	2007	90
2002	35	2008	100

OBJECTIVE 1: Adopt Point Source TMDLs, using updated Waste Load Allocations (WAS).

- TASK 1: Train staff on WLA and Load Allocation (LA) models and procedures. (4/97)
- TASK 2: Develop 303(d)(1) and 303 (d)(3) TMDLs as necessary and appropriate. (ongoing)
- TASK 3: Develop guidelines for assuring TMDL tracking, public notice and documentation become integral parts of each permit and each nonpoint source project. (7/97)
- TASK 4: Further refine point source TMDLs per 303(d) priority list, taking into consideration nonpoint source loads within the watershed, to the extent that data is available. (2/97 - 2/98)

OBJECTIVE 2: For Nonpoint Sources (NPS), assist and encourage watershed planning groups to assess sources of impairment and develop BMPs and TMDLs to address impairments.

- TASK 1: Evaluate previous NPS project records and, if credible data indicates impairment, and participants are willing, adopt TMDLs for eight streams. (9/97 - 9/98)
- TASK 2: Establish DEQ/EPA/federal agency coordination group to identify minimum TMDL elements for federal agency submittals to DEQ/EPA. (10/97)
- TASK 3: Work with current NPS project proponents to develop credible data and implement appropriate BMPs to address NPS water quality problems, considering point sources within the watershed. (9/97-9/98)
- TASK 4: Work with NPS Task Force/potential project proponents to assure all new surface water 319 implementation projects account for both point and nonpoint source impacts (revise Request for Proposal accordingly). (6/97 and beyond)
- TASK 5: Work with project sponsors and federal land management agencies to identify and establish a pilot NPS/TMDL project for testing criteria and procedures developed. (7/97 - 10/98)
- TASK 6: Expand monitoring requirements in NPS project implementation plans to assure quality of data is adequate to result in local or state development and implementation of TMDLs. (6/97 and beyond)
- TASK 7: Integrate point source permitting, NPS project and TMDL efforts into watershed based approach to water quality management. (4/98 and beyond)
- TASK 8: Provide opportunities for local stakeholder groups to modify TMDLs and BMPs to improve probability of meeting TMDL endpoints.

OBJECTIVE 2: Track TMDL implementation.

- TASK 1: Develop TMDL follow-up monitoring plan and schedule to confirm results of implementation. (9/98)
- TASK 2: Establish criteria and procedures for delisting and/or relisting a waterbody based on results of monitoring. (10/98)

GOAL 7: Implement TMDLs to improve water quality.

OBJECTIVE 1: Implement TMDLs within a reasonable time period after development.

- TASK 1: Work with local stakeholder groups to voluntarily implement nonpoint source TMDLs and BMPs as they are developed. (ongoing)
- TASK 2: Incorporate WLAs into new and existing discharge permits. (ongoing)

ATTACHMENT A: TMDL MONITORING PLAN FOR WATER QUALITY
LIMITED STREAM SEGMENTS

Wyoming's TMDL Workplan has three primary goals: to accurately assess the streams and lakes of the state for water quality impairments; to confirm stream designation for beneficial uses; and to work cooperatively with land owners, managers and affected agencies and individuals to develop TMDLs and BMPs for those waterbodies which need them.

All of these goals rely on accurate water quality assessment. Although many water studies have been conducted in Wyoming, the use of different methodology between studies often does not allow direct comparisons of data collected in different waterbodies, or provide the necessary data to develop realistic TMDLs. Therefore, DEQ's stream assessment will be primarily based on DEQ's Reference Stream Project (RSP) methodology and data.

Reference Stream Project (RSP)

DEQ began the RSP in 1992 to assess the water quality of streams throughout the state, using the same methodology so comparisons could be made between streams. By 1998, the RSP database will include assessments of more than 200 Wyoming streams. RSP is based on analysis of instream benthic macroinvertebrate community structure (bioassessments), integrated with habitat assessment and chemical water quality data, as the primary indicator of water quality and ecological integrity of streams. Insects and other macroinvertebrates are exposed to all water quality changes in a stream, both short and long term. Since certain species are more tolerant of certain pollutants than others, community structure is highly dependent on year-round water quality. Therefore, bioassessments have been used throughout the United States to quantitatively evaluate water quality changes related to a wide variety of point source and NPS pollutants, as well as land use changes.

Bioassessments of macroinvertebrate communities are analogous to range condition surveys. Since some species are more tolerant of environmental stresses than others, different communities will thrive under certain environmental conditions, just like plant communities will change in response to environmental stressors or changes. For example, certain aquatic insect communities will dominate in streams exposed to high levels of sedimentation just as certain plant communities will thrive under drought conditions. However, the same communities of plants, or macroinvertebrates, would not be expected in different parts of the state because of other variables such as elevation, soils, and geology. Therefore, the reference stream approach is used to eliminate as many of those variables as possible, so realistic comparisons can be made between streams with similar natural water quality potential.

Streams in the RSP are categorized based on stream type (to account for different topography, geology, geomorphology, etc.) and ecoregion (to account for different climates, elevations, soils, plant communities, etc.). This enables real world comparisons between similar streams instead of deciding if a stream is impaired based solely on a "one size fits all" chemical water quality standard, which may be impossible to meet in many streams in Wyoming, due to natural conditions.

Standard RSP monitoring includes bioassessments incorporated with sampling for 12 water quality parameters, flow measurements, stream channel classification, 13 qualitative habitat parameters and 6 quantitative habitat parameters (Table I). Monitoring occurs during low base flow conditions to assure only those parts of the stream bed which are always submerged are sampled, and since this is the period when aquatic organisms may be most stressed. Sampling for these parameters also allows better incorporation of habitat and water quality data collected by different agencies or organizations.

TMDL Monitoring

DEQ proposes a two phase monitoring approach for TMDL development and implementation, based on the prioritized 303(d) list. The first step in the TMDL process is to determine if a 303(d) listed stream is impaired or not, and if the stream is properly classified. This will take place during Beneficial Use Reconnaissance Program (BURP) monitoring. DEQ is obligated to assess the water of the state, and strives to conduct initial BURP monitoring in collaboration with local stakeholder groups, whenever possible. Streams meeting beneficial uses will go to public comment for delisting from the 303(d) list. If streams are only threatened or impaired due to point source discharges, the Waste Load Allocations (WAL) for point source discharges will be reassessed during the permit renewal process. All stream segments on the 1996 (303(d)) list will have BURP monitoring conducted within the next five years. Streams which do not meet beneficial uses due to nonpoint

source (NPS) pollution will move on to Phase II to evaluate pollution sources, and to identify and implement the appropriate Best Management Practices (BMPs) to restore the stream to meet its beneficial uses.

Phase I: Beneficial Use Reconnaissance Program (BURP) Monitoring

BURP monitoring will be conducted at each stream segment on the 303(d) list, following RSP protocols, although additional monitoring parameters may be included, based on site-specific pollutants or stressors. BURP assessment is intended to differentiate between impaired and non-impaired streams, based on attainment of beneficial uses. It is not intended to identify every source of NPS pollution, but it may be possible to suggest causative agents through an evaluation of all existing data and other supporting evidence. Data generated from BURP monitoring will also supplement existing data for use in models to set, or modify, WAS for streams which receive point source discharges. BURP monitoring should be sufficient to analyze streams which are not impaired by NPS pollutants. BURP monitoring will also provide baseline data for more intensive sampling and TMDL development in Phase II, or to change the classification of streams which do not have the natural water quality to support their designated beneficial uses.

Stream segments placed in the 303(d) list for non attainment of beneficial use for cold water and warm water fisheries will be assessed through review of recent fish sampling and inventory records maintained by state and federal agencies. If beneficial use cannot be determined by record review, fish sampling may be required using a qualitative single pass method, quantitative two-pass method without replacement using blocknets (based on Zippin 1958), or another appropriate fish sampling method (Klemm et al. 1993).

BURP monitoring for streams affected by point source discharges will be conducted in conjunction with National Pollutant Discharge Elimination System (NPDES) compliance inspections. Monitoring will consist of sampling facility effluent coupled with BURP monitoring in the stream above the discharge outfall and below the mixing zone, primarily during low base flow. At a minimum, chemical parameters listed in the NPDES permit will be sampled. Additionally, acute or chronic Whole Effluent Toxicity (WET) testing may be conducted, should toxic effects to instream biological communities be observed during BURP monitoring (US EPA 1991). Data from BURP monitoring will supplement data used to calculate WAS on streams which are in need of WAS, or modified WAS for pollutants causing impairment.

If a NPS BURP assessment shows a stream is not impaired for its actual stream type, the data will be submitted to a local collaborative watershed group, if one exists, and the TMDL advisory and technical assistance workgroup for delisting and/or reclassification as needed. If BURP assessment shows that a stream is impaired, it is imperative that local stakeholders are given the opportunity to participate in a collaborative watershed group to develop a TMDL Sampling and Analyses Plan (SAP) for that watershed.

After a WLA has been established, the permit will be public noticed for 30 days. After responding to public comment, the WLA allocation will be submitted to EPA for approval as a TMDL. If after BURP monitoring it is determined that the WLA is inadequate the WLA will be modified, as necessary, to meet the beneficial use. After modification of a WLA, the permit will proceed through the public notice and EPA approval process.

Phase II: Sampling and Analysis Plan (SAP) and TMDL Development

The objectives of phase II are: development and implementation of a site specific SAP; collection of appropriate data for TMDL implementation; setting TMDL endpoints and load allocations (LAs) for NPS pollutants; establishing BMPs; and continuing monitoring to verify that TMDL implementation results in attainment of beneficial uses. To involve the public in the TMDL development and implementation process, DEQ will invite local citizens, land owners, land managers, county extension agents, federal agency personnel, conservation districts, sponsors of 319 or other collaborative watershed water quality improvement projects, and all other watershed stakeholders to participate in local collaborative watershed meetings as the first step in Phase II. The agenda for these meetings will include discussion of the TMDL process, results of BURP monitoring, and opportunities for participation and cooperation.

The SAP is the site-specific monitoring and analysis plan designed to identify significant sources of impairment, establish LAs, identify appropriate BMPs, and determine effectiveness of TMDLs toward restoration of beneficial uses. No single set

of monitoring parameters and no single monitoring design can be applied to all impaired streams because of the wide variety of NPS pollutants, NPS pollutant sources, land uses, and their varying effect on beneficial uses. Moreover, no single set of BMPs that implement the TMDL are effective for restoration of water quality, habitat and biological integrity at all NPS impaired streams. Therefore individual SAPs, LAs, BMPs and TMDL endpoints will need to be developed for each stream segment or watershed impaired by NPS pollutants using collaborative stakeholder group principles to ensure the needs and objectives of landowners and land managers, as well as DEQ, are met.

Each SAP design should incorporate water quality, biological and/or habitat monitoring to assess site-specific pollutant or stressors and their sources, and to establish TMDLs defined for restoration of beneficial uses. Watershed size, access to sampling sites, size of stream segment, location of flow diversions, tributaries, change in land use, stream classification, geomorphology and other features also factor into the SAP design. Site-specific reference streams should be incorporated into the SAP design when possible, and should be sampled during the same time period as the study site. The reference stream design accounts for variability affecting water quality such as temperature, precipitation, stream flow, local geology, wildlife activity and other natural variables. The advantage of the reference stream design is that it provides information for establishing measurable objectives and endpoints on a site-specific or watershed basis, based on achieving conditions similar to the reference site, rather than trying to meet "one size fits all" criteria.

Data from SAP monitoring will be assessed and TMDL endpoints established to address the pollutants and/or stressors of concern. Then, TMDLs will be established for each pollutant, and LAs and associated BMPs will be calculated and established in cooperation with watershed stakeholders for different sources and/or stream reaches, for the stream to meet its TMDLs. Unlike WAS, which are usually concentration based standards, LAs and TMDLs are often measures which quantify- habitat or stream condition.

Because compliance with nonpoint TMDLs is voluntary, implementation of BMPs will be left up to individual land owners or managers. However, there may be incentive programs that can assist land managers with the implementation of BMPs. Through public participation and cooperation in the TMDL process, it is the hope of the DEQ that land managers will see the value of implementing BMPs and modifying land management practices in order to protect and restore waters of the state, while maintaining productivity of the land.

Following TMDL development and BMP implementation, the waterbody will be transferred from the 303(d) list to the "monitoring" list to allow the BMPs to take effect and give the stream time to recover. After the "recovery period", BURP or SAP level sampling, as decided on a case by case basis, will resume to determine if the stream is meeting its beneficial uses. If data indicates the stream has been restored to the point where it can sustain its beneficial use, it will go to public comment for delisting from the 303(d) list. However, if beneficial use has not been attained, the BMPs and TMDLs for the stream will be investigated, with public comment, to determine what changes are needed for stream rehabilitation.

Quality Assurance I Quality Control

Quality Assurance I Quality Control (QA/QC) functions ensure that all data generated during monitoring is consistent, valid and of known quality by following approved and specific field, laboratory and data handling methods. Strict adherence to QA/QC procedures is perhaps the most important facet when conducting monitoring and it will not be viewed as an obscure notion to be tolerated, but rather as an important deeply ingrained concept followed by all project personnel during each phase of monitoring. BURP monitoring and SAP monitoring will follow QA/QC guidelines established for Wyoming point source and NPS water quality monitoring (WDEQ 1989, 1991, 1993). The QA/QC guidelines ensure consistency for field and laboratory functions to guarantee quality data and thus, sound TMDL development and implementation.

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Beneficial uses for Wyoming water based on WDEQ (1990) are:

1. Agriculture;
2. Protection and propagation of fish and wildlife;
3. Industry;
4. Human consumption;
5. Recreation; and
6. Scenic value

Table 1. Standard RSP and BURP Monitoring Parameters

PARAMETER	METHOD REFERENCE
Temperature	170.1; US EPA 1983
pH	150.1; US EPA 1983
Conductivity	120.1; US EPA 1983
Dissolved Oxygen	360.1; US EPA 1983
Turbidity	180.1; US EPA 1983
Total Suspended Solids	160.1; US EPA 1983
Alkalinity	310.1; US EPA 1983
Sulfate	375.2; US EPA 1983
Chloride	325.2; US EPA 1983
Nitrate	353.2; US EPA 1983
Total Phosphorus	365.3; US EPA 1983
Total Hardness	130.1; US EPA 1983
Flow	Harrelson et al. 1994
Stream Channel Classification	Rosgen 1994
Macroinvertebrates	King 1993
Habitat Assessment	King 1993
Width / Depth	Bauer and Burton 1993
Bank Stability	Baner and Burton 1993
Substrate	Woman 1954; or Bevenger and King 1995
Embeddedness	Platts et al. 1983
Habitat Types	Meehan 1991
Photopoints	Cowley 1992; King 1993
Global Positioning (GPS) Reading	Kennedy 1996
Pool Complexity (Tentative)	Bauer and Burton 1993
Other Watershed and Channel Factors	See Description Below

Other descriptive items included in core BURP monitoring are Quarter, Section, Township, Range, Latitude, Longitude, County, Ecoregion, Elevation, Drainage Area, Drainage Basin, Gradient, Stream Order, Predominant Soil Type, Predominant Geology, Primary Land Use, Secondary Land Use, Land Ownership and Land Management Status. Many of these items may be determined in the office and field checked during BURP monitoring.

ATTACHMENT B: RESPONSES TO COMMON CONCERNS BASED ON PUBLIC COMMENTS ON
WYOMING'S DRAFT TMDL WORKPLAN

Based on the responses DEQ received on the Draft TMDL Workplan, there are five primary issues of concern which will be discussed in this document. First, DEQ would like to emphasize that we are committed to involving local watershed stakeholder and coordinated resource management type groups in the TMDL process - especially when it comes to developing and implementing TMDLs and Best Management Practices for NPS impairments.

The second issue is the accuracy of the 303(d) list. Although the 1996 303(d) list is finalized, the 1998 303(d) list will be completely reworked to only include those streams which have credible data indicating impairment. Waterbodies on the 1996 list that lack credible data to support delisting or listing shall be placed on a "to be monitored list"; often referred to as "monitoring" list.

The third issue is the use of what some people refer to as "surrogate measures" or non-traditional methods to monitor water quality. Any methods used to define TMDLs will be scientifically sound, objective, repeatable, and defensible.

The fourth issue is whether TMDLs for NPS impairments will become regulated. Currently there are no regulations requiring land owners to implement BMPs for NPS pollution. DEQ strongly believes that NPS pollution is best addressed through voluntary, cooperative efforts rather than regulation, and does not believe NPS regulation will benefit citizens, producers, agencies, or the environment. However, we cannot guarantee that some legislative body will not change the current voluntary program to a mandatory program.

And the final issue is whether the state or the EPA can do a better job of running the TMDL program in Wyoming. First, DEQ believes that Congress intended states to establish water quality standards under the Clean Water Act, which includes development of TMDLs. DEQ firmly believes that our approach to TMDL development and the involvement of watershed stakeholders in the TMDL process will benefit the people and the water quality of Wyoming more than abrogating this responsibility to EPA.

Collaborative Stakeholder Type Processes

The water quality in any stream is due to the cumulative effect of all the different activities in the stream's watershed, and even some activities outside of the watershed. Since TMDLs and the associated BMPs can affect many of those activities, all the land and water users and regulators in the watershed should understand how those activities affect the watershed and water quality, and should work together to determine how that watershed is managed. To ensure success of the TMDL program, collaborative stakeholder type processes will be followed and encouraged, whenever possible, throughout the TMDL process.

In collaborative processes, land managers, land owners, interested citizens and agency representatives come together to mutually plan the use and management of a watershed. Through this process, each of these people becomes a stakeholder whose needs and objectives for the watershed are discussed and addressed. The stakeholders work together to develop mutually agreeable plans and goals which incorporate the needs of all the stakeholders.

DEQ recognizes that effective TMDL development and implementation can only be accomplished by cooperation and understanding between stakeholders. Therefore we are encouraging new and existing collaborative watershed stakeholders groups to address TMDL issues on a local or watershed scale. We realize that the stakeholders in any watershed are the people who are best able to make decisions about how a watershed should be managed. If a stream is actually impaired, TMDLs must be developed by law. However, DEQ feels that collaborative groups will be the key to successful TMDL development and BMP implementation with as little government interference as possible.

In addition, a state-wide TMDL advisory and technical assistance work group is being organized to provide guidance to the TMDL program and to make recommendations for updating, modifying and developing future 303(d) lists. Representatives from agencies, and watershed interest/user groups and organizations have been asked to participate in the work group. We will expect the workgroup to provide recommendations to DEQ concerning the adoption of TMDLs, listing/delisting streams, reclassifying streams, monitoring protocols, and other issues affecting the TMDL program.

303(d) List Accuracy

Due to questions about the accuracy of the 1996 303(d) list, the 1998 303(d) list will be modified to include only those waterbodies which need TMDLs developed/verified due to NPDES permits due for renewal within the next two years and in need of a waste load allocation, and the waterbodies with credible data indicating they are impaired and therefore in need of TMDL development. DEQ has established the following criteria for delineating which streams go on the 303(d) list and which will be "removed" and placed on a "monitoring" list, indicating that not enough data exists to determine whether there are impairments or not. Streams on the "monitoring" list will be assessed over the next five years to determine if they should be put on the 303(d) list, or on a list of streams meeting beneficial uses.

Listed below are the initial criteria that will be applied to the 1996 303(d) list to create the initial draft 1998 303(d) list. The initial draft will be completed in early September, 1997 to allow time for the state TMDL advisory group to review and to allow interested or affected entities time to provide QA/QC data if they feel any waterbodies are not listed properly. DEQ requests that any such data be supplied as soon as possible, and no later than November 1, 1997, to enable DEQ and the advisory group to evaluate the data before releasing the draft 1998 303(d) list in early 1998.

First Cut Criteria for 1998 303(d) List

- * WAS for point sources are reassessed at the end of a permit term, therefore, all point sources with permits expiring within the next two years requiring a waste load allocation will be placed on the 303(d) list.
- * Keep waterbodies with active 319 or other collaborative type projects with data indicating impairment on 303(d) list. Reprioritize waterbodies with 319 and collaborative type watershed improvement projects to low priority for TMDL development, as long as data is being collected and BMPs are being implemented. Reprioritize NPS impaired waterbodies primarily on Federal lands to low priority, if Allotment Management Plans (AMPs) or other site specific land management plans were developed in previous five years and contain BMPs to improve water quality. Rationale is to focus efforts on streams which don't have active water quality improvement work being conducted on them.
- * Move to "monitoring" list all waterbodies with 205j projects or collaborative type projects that lack credible data indicating impairment.
- * Move to "monitoring" list all waterbodies listed only as evaluated if no credible data exists indicating impairment.
- * Move to "monitoring" list all waterbodies without data that conforms with QA/QC protocol.
- * Move to "monitoring" list waterbodies with no data less than five years old indicating impairment, unless state feels waterbody should remain listed.
- * Delist streams as TMDLs are developed and approved by EPA.
- * Delist streams with credible data indicating no impairments exist.

"Surrogate Measures"

There has been some concern over the use of "surrogate measures". A goal of the Clean Water Act is to provide water quality standards for the protection and propagation of fish and wildlife, public water supplies, agricultural uses, etc.

There are two different types of WQ standards which must be met. One type is a chemical water quality standard which is measured as concentration or load, such as mg/L or pounds per day. Chemical water quality standards are most often used associated with point source pollution, because they can be readily measured and because they provide specific limits which may not be exceeded. However, even if a discharger meets chemical standards, they still must meet the other type of standard, the narrative standard, such as "protection and propagation of fish and wildlife". In other words, even if a discharger meets the

effluent limits in their permit, they still cannot discharge something that impairs fisheries or causes human health risks. Therefore, narrative standards are used to ensure water quality goals are met, when chemical standards do not adequately protect the waterbody.

Narrative standards are used in addition to, or instead of, chemical water quality standards for several reasons:

- * They are all encompassing -- they account for pollutants which may not have chemical standards;
- * They account for cumulative effects of multiple pollutants;
- * They account for unknown sources of pollutants; and
- * They look more closely at the source and effects of an impairment rather than relying on a "one size fits all" chemical concentration of a pollutant to describe the ecological effects of that pollutant.

Lets take sediment for an example. The instream chemical standard in Wyoming is measured as turbidity, although many discharge permits measure sediment as Total Suspended Sediment. These standards work well from a regulatory standpoint for point source discharges because they provide a number which may not be exceeded, and it is very clear whether there is a violation or not. Someone just needs to go out and collect samples, and the numbers will tell if there is a violation.

A problem with measuring sediment in a natural stream, is that the turbidity or suspended sediment in a stream fluctuates widely over time, due to storms, runoff- different flows, irrigation diversion and many other natural or man caused events or activities. In order to accurately measure the suspended sediment in the stream, samples need to be collected at different flow regimes, before, during and after storms, when different amounts of water are diverted, etc. This type of monitoring is very expensive, but it still does not account for sediment which is transported by bouncing along the bottom of a stream -- or the bedload. Again, this will require intensive, long term sampling to accurately measure the sediment in the system.

However, measuring sediment load still doesn't measure the ecological effect if the standards are exceeded, so the narrative standard may, or may not be violated. Different streams can handle sediment better than others. A certain concentration of sediment in one stream may be much less detrimental than the same concentration in another, and a certain concentration in the fall may be much worse than the same concentration in the spring. Although sediment in the water column can be detrimental to fish and other aquatic organisms, generally, the deposition of excess sediment on a stream bottom causes more problems than suspended sediment in the water column.

Deposition is dependent on erosion rates, flows, stream type, topography, and other factors. Measuring sediment alone does not describe deposition of sediment on the bottom or what is happening to the aquatic ecosystem. Therefore, this data needs to be entered into models to determine the impact. But in order to make the models work, soil, vegetation, climate, topography, geology and other factors will also have to be measured and entered into a model. Additionally, not all models will work on all streams, so the proper model must be used and it must be calibrated to local conditions. Because of these factors, it is very expensive to measure stream impairment for many NPS pollutants, such as sediment, using chemical parameters.

DEQ's preference is to measure parameters which are directly related to the problem. For example, if bank erosion is a problem we measure bank erosion, if sediment deposition is a problem, we might measure cobble embeddedness -- the amount of fine sediment deposited in riffle areas in streams. Since many narrative standards protect aquatic life, our stream assessments also incorporate bioassessments of macroinvertebrate communities, the aquatic insects and invertebrates that live in a stream, as a primary indicator of stream health.

So how do we know how much cobble embeddedness is okay? For the past several years DEQ has been assessing streams throughout the state and has been developing a reference stream database of healthy streams. These streams are organized by ecoregion and stream type so comparisons can be made between streams with similar natural conditions, rather than relying on "one size fits all" standards to judge a stream's health. For example, the North Platte River above Glendo Reservoir and Telephone Creek in the Snowy Range are both Class 2 cold water fisheries, and therefore are subject to the same chemical water quality standards. Obviously, they are totally different streams, so our specific assessment methods, and our water quality expectations at each stream would be different, based on natural conditions. Therefore, chemical water quality measurements are often more of a "surrogate measure" because they do not directly address impact to a particular stream, whereas the parameters DEQ uses for NPS impacts are more directly related to the factors causing impairment. For any

parameter to be acceptable in the TMDL process, it must be quantifiable, repeatable and scientifically rigorous enough to withstand scrutiny. DEQ will not be making decisions on streams, or develop TMDLs, without scientifically valid data.

Will Non Point Source TMDLs Become Mandatory on Private Lands?

Many people have concerns that TMDLs for NPS pollutants will become a regulatory mechanism used by regulators against the sources. However, DEQ feels that NPS issues are best addressed through voluntary water quality improvement efforts rather than regulation. These types of programs have worked well to improve water quality in Wyoming, while still maintaining, and often improving, productivity of the land. DEQ also believes the intent of the Clean Water Act (CWA) was to address NPS pollution through non-regulatory methods. Section 319 of the CA, which was written after section 303 was written, discusses NPS pollution, specifically the use of BMPs to control these pollutants to the maximum extent practicable. In no place does section 319 discuss regulation as a method to control NPS pollution. Currently, there is no regulatory mechanism to require non-point sources of pollution to employ BMPs, nor does DEQ advocate such a requirement. Regulating NPS pollution or TMDLs would likely impose excessive monitoring, permitting and regulatory costs to the state, as well as to producers, recreationists and other watershed users. Additionally, it would probably result in exorbitant litigation and may actually move resources away from protecting watersheds and improving water quality. However, we must recognize that some legislative body could modify' in the future what is now a voluntary program.

Should DEQ or EPA Run the TMDL Program?

DEQ has combined its point source and nonpoint source programs into a Watershed Management Program to better address the TMDL issues. The revised workplan envisions an increase in staffing of seven Full Time Equivalents (FTEs) and shifting of existing duties of staff members to accomplish data collection, evaluation, verification, and establishment of TMDLs. Shifting duties of staff members is necessary to address TMDL issues, and will increase work load, but combining the nonpoint and point source programs has also eliminated some redundancies. Also, much of the work conducted in both the point source and non-point source programs in the past nearly, but not quite, met TMDL objectives. By focussing on TMDL objectives, this work will be conducted so data will have the QA/QC to be incorporated into the TMDL process as needed. Another of the ways DEQ is addressing TMDLs is through cross training of staff and other agency personnel so they can assist us to complete the work load. Additionally, we are working with agencies to better incorporate the data they collect to assess streams, and if the data indicates, remove them from the 303(d) list, change their classification as needed, or provide information for the TMDL process. Above all, we will strive to bring together all interests to ensure this effort results in clear benefits to our citizens and stakeholders.

If we advocate this responsibility to EPA, even worse workload problems may be faced by EPA, who does not have the staff to properly address TMDLs. A consequence of this may be "boilerplate" or "one size fits all" TMDLs established for Wyoming, by people who do not even live in Wyoming, rather than developing TMDLs and BMPs with the stakeholders in each watershed. This is an important issue for Wyoming and as a state we should remain in the drivers seat.

Summary

Developing TMDLs on impaired waters is a mandatory part of the Clean Water Act. DEQ will work with watershed stakeholders to develop TMDLs and BMPs which work for the stakeholders and maintain productivity of the land. DEQ will work with the TMDL advisory group to revise the 303(d) list to only include streams with documented water quality problems. DEQ will apply standards based on potential natural water quality to account for natural background sources rather than relying on "one size fits all" standards. It is the belief of DEQ that any regulation of NPS TMDLs will be counter-productive to improving water quality, and will threaten the water quality improvements that have been made in Wyoming. Finally, DEQ's commitment to collaborating with watershed stakeholders and using realistic water quality standards will be more beneficial to both the citizens and waters of Wyoming than any EPA TMDL effort.

If you have questions regarding this workplan, please contact Mark Conrad at 307/777-5802, or Beth Pratt at 307/777-7079.

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