UNITED STATES ENVIRONMENTAL PROTECTION AGENCY
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Ref: 8EPR-EP

May 10, 2005

Mr. Art Compton, Director
Planning, Prevention and Assistance Division
Department of Environmental Quality
P.O. Box 200901
Helena, MT 59620-0901

Re: **TMDL Approvals**
Grave Creek

Dear Mr. Compton:

We have completed our review of the total maximum daily load (TMDL) as submitted by your office for the Grave Creek Watershed. The TMDL is included in the document entitled Grave Creek Watershed Water Quality and Habitat Restoration Plan and Sediment Total Maximum Daily Loads (Montana Department of Environmental Quality) transmitted to us for review and approval in correspondence dated March 15, 2005 and signed by you. In accordance with the Clean Water Act (33 U.S.C. 1251 *et. seq*.), we approve all aspects of the TMDL as developed for the Grave Creek Watershed. Enclosure 1 to this letter provides a summary of the elements of the TMDL and Enclosure 2 provides details of our review of the TMDL.

Based on our review, we feel the separate TMDL elements listed in Enclosure 2 adequately address the pollutants of concern, taking into consideration seasonal variation and a margin of safety. In approving this TMDL, EPA affirms that the TMDL has been established at a level necessary to attain and maintain the applicable water quality standards and has the necessary components of an approvable TMDL.

EPA has been in contact with the United States Fish and Wildlife Service (FWS) regarding whether and, if so, how the EPA's approval of the Grave Creek TMDL may affect the continued existence of any endangered or threatened species listed under the Endangered Species Act (ESA) or the designated critical habitat of any such species. EPA has not determined that today's approval may have such an affect. Therefore, consistent with the terms of a consent decree in the lawsuit of Friends of the Wild Swan, *et al*., v. U.S. Environmental Projection Agency, *et al*., Civil Action No. CV99-87-M-LBE, United States District Court for the District of Montana, Missoula Division, EPA has decided to approve this TMDL contingent upon the outcome of consultation with the FWS.

Thank you for your submittal. If you have any questions concerning this approval, feel free to contact Ron Steg of our Montana office staff at (406) 457-5024.

Sincerely,

Original Signed by Max H. Dodson

Max H. Dodson
Assistant Regional Administrator
Ecosystems Protection and Remediation

Enclosures

cc: Claudia Massman, Attorney
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EPA REGION VIII MONTANA OFFICE TMDL REVIEW FORM

Document Name:	**Grave Creek Watershed Water Quality and Habitat Restoration Plan and Sediment Total Maximum Daily Loads (March, 2005)**
Submitted by:	**MTDEQ**
Date Received:	**March 16, 2005**
Review Date:	**April 25, 2005**
Reviewer:	**Ron Steg**
Formal or Informal Review?	**FORMAL**

This document provides a standard format for the EPA Montana Office to provide comments to the Montana Department of Environmental Quality on TMDL documents provided to the EPA for either official formal, or informal review. All TMDL documents are measured against the following 12 review criteria:

1. Water Quality Impairment Status
2. Water Quality Standards
3. Water Quality Targets
4. Significant Sources
5. Total Maximum Daily Load
6. Allocation
7. Margin of Safety and Seasonality
8. Monitoring Strategy
9. Restoration Strategy
10. Public Participation
11. Endangered Species Act Compliance
12. Technical Analysis

Each of the 12 review criteria are described below to provide the rational for the review, followed by EPA's summary and comments/questions. **Comments/questions that need to be addressed are presented in bold**. This review is intended to ensure compliance with the Clean Water Act and also to ensure that the reviewed documents are technically sound and the conclusions are technically defensible.

1. Water Quality Impairment Status

Criterion Description – Water Quality Impairment Status

TMDL documents must include a description of the listed water quality impairments. While the 303(d) list identifies probable causes and sources of water quality impairments, the information contained in the 303(d) list is generally not sufficiently detailed to provide the reader with an adequate understanding of the impairments. TMDL documents should include a thorough description/summary of all available water quality data such that the water quality impairments are clearly defined and linked to the impaired beneficial uses and/or appropriate water quality standards.

☑ Satisfies Criterion
☐ Satisfies Criterion with stipulations provided below that must be addressed.
☐ Satisfies Criterion. Questions or comments provided below should be considered.
☐ Partially satisfies criterion. Questions or comments provided below need to be addressed.
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☐ Not a required element in this case. Comments or questions provided for informational purposes.

The aquatic life and cold water fishery beneficial uses were listed as impaired due to the pollutant "siltation" on the 1996 and 2004 303(d) lists. Recreation was added as an impaired beneficial use on the 2004-303(d) list. Although spatially and temporally limited fish and aquatic life data suggest full support of these beneficial uses, consideration of an extensive list of physical indicators, best professional judgment, and the presence of historic and current sediment sources resulted in the conclusion that Grave Creek is impaired due to sediment and/or habitat alteration. Human-caused sources were estimated to deliver over 80 percent of the total sediment load to Grave Creek.

2. Water Quality Standards

Criterion Description – Water Quality Standards

The TMDL document must include a description of all applicable water quality standards for all affected jurisdictions. TMDLs result in maintaining and attaining water quality standards. Water quality standards are the basis from which TMDL's are established and the TMDL targets are derived, including the numeric, narrative, use classification, and antidegradation components of the standards.

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The applicable water quality standards are adequately summarized in Section 3.2.

3. Water Quality Targets

Criterion Description – Water Quality Targets

Quantified targets or endpoints must be provided to address each listed pollutant/water body combination. Target values must represent achievement of applicable water quality standards and support of associated beneficial uses. For pollutants with numeric water quality standards, the numeric criteria are generally used as the TMDL target. For pollutants with narrative standards, the narrative standard must be translated into a measurable value. At a minimum, one target is required for each pollutant/water body combination. It is generally desirable, however, to include several targets that represent achievement of the standard and support of beneficial uses (e.g., for a sediment impairment issue it may be appropriate to include targets representing water column sediment such as TSS, embeddeness, stream morphology, up-slope conditions, and a measure of biota).

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A suite of reference-based targets and supplemental indicators were applied including the following:

Targets

- Pool frequency
- Surface fines < 2mm
- Subsurface fines < 6.35mm
- Macroinvertibrate populations
- Width to depth ratio

Supplemental Indicators

- Large woody debris
- Sinuousity
- Meander length ratio
- Bull trout redd counts
- Residual pool depth
- Sediment loading estimates, visual indicators, Pfankuch scores

Adaptive management is featured to facilitate modification of the targets based on future collection of additional data.

4. Significant Sources

Criterion Description – Significant Sources

TMDLs must consider all significant sources of the stressor of concern. All sources or causes of the stressor must be identified or accounted for in some manner. The detail provided in the source assessment step drives the rigor of the allocation step. In other words, it is only possible to specifically allocate quantifiable loads or load reductions to each significant source when the relative load contribution from each source has been estimated. Ideally, therefore, the pollutant load from each significant source should be quantified. This can be accomplished using site-specific monitoring data, modeling, or application of other assessment techniques. If insufficient time or resources are available to accomplish this step, a phased/adaptive management approach can be employed so long as the approach is clearly defined in the document.

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Sources of sediment considered in this analysis include: natural background, roads, mass wasting, bank erosion, and forest harvest. A variety of modeling and simple estimation techniques were applied to estimate loads and attribute them to either natural or human-caused sources. Of the total sediment load to Grave Creek, over 80 percent was estimated to originate from human-caused sources.

5. TMDL

Criterion Description – Total Maximum Daily Load

TMDLs include a quantified pollutant reduction target. According to EPA reg (see 40 C.F.R. 130.2(i)) TMDLs can be expressed as mass per unit of time, toxicity, % load reduction, or other measure. TMDLs must address, either singly or in combination, each listed pollutant/water body combination.

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The TMDL is expressed as a 60 percent reduction in sediment loading from all human caused sources.

6. Allocation

Criterion Description – Allocation

TMDLs apportion responsibility for taking actions or allocate the available assimilative capacity among the various point, nonpoint, and natural pollutant sources. Allocations may be expressed in a variety of ways such as by individual discharger, by tributary watershed, by source or land use category, by land parcel, or other appropriate scale or dividing of responsibility. A performance based allocation approach, where a detailed strategy is articulated for the application of BMPs, may also be appropriate for non point sources.

In cases where there is substantial uncertainty regarding the linkage between the proposed allocations and achievement of water quality standards, it may be necessary to employ a phased or adaptive management approach (e.g., establish a monitoring plan to determine if the proposed allocations are, in fact, leading to the desired water quality improvements).

Allocating load reductions to specific sources is generally the most contentious and politically sensitive component of the TMDL process. It is also the step in the process where management direction is provided to actually achieve the desired load reductions. In many ways, it is a prioritization of restoration activities that need to occur to restore water quality. For these reasons, every effort should be made to be as detailed as possible and also, to base all conclusions on the best available scientific principles.

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The proposed allocations are as follows:

- Human-caused bank erosion – 63% reduction (from 9,393 to 3,475 tons/year)
- Roads – no increase from 2002 levels
- Human-caused mass wasting – 50% reduction (from 1,547 to 774 tons/year)
- Other forest management – performance-based consistent with application of reasonable land, soil, and water conservation practices.

This equates to an approximate 60 percent reduction in sediment loading from human-caused sources.

7. Margin of Safety and Seasonality

Criterion Description – Margin of Safety/Seasonality

A margin of safety (MOS) is a required component of the TMDL that accounts for the uncertainty about the relationship between the pollutant loads and the quality of the receiving water body (303(d)(1)(c)). The MOS can be implicitly expressed by incorporating a margin of safety into conservative assumptions used to develop the TMDL. In other cases, the MOS can be built in as a separate component of the TMDL (in this case, quantitatively, a TMDL = WLA + LA + MOS). In all cases, specific documentation describing the rational for the MOS is required.

Seasonal considerations, such as critical flow periods (high flow, low flow), also need to be considered when establishing TMDLs , targets, and allocations.

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The margin of safety is provided by a conservative suite of targets considering a wide variety of physical and biological conditions, conservative assumptions made throughout the process, and a holistic, watershed scale approach that directly addresses the pollutant of concern (i.e., sediment) as well as a number of other habitat and flow related issues that all seek to attain and maintain full beneficial use support.

8. Monitoring Strategy

Criterion Description – Monitoring Strategy

Many TMDL's are likely to have significant uncertainty associated with selection of appropriate numeric targets and estimates of source loadings and assimilative capacity. In these cases, a phased TMDL approach may be necessary. For Phased TMDLs, it is EPA's expectation that a monitoring plan will be included as a component of the TMDL documents to articulate the means by which the TMDL will be evaluated in the field, and to provide supplemental data in the future to address any uncertainties that may exist when the document is prepared.

At a minimum, the monitoring strategy should:

- *Articulate the monitoring hypothesis and explain how the monitoring plan will test it.*
- *Address the relationships between the monitoring plan and the various components of the TMDL (targets, sources, allocations, etc.).*
- *Explain any assumptions used.*
- *Describe monitoring methods.*
- *Define monitoring locations and frequencies, and list the responsible parties.*

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Monitoring is proposed for all of the targets and supplemental indicators that were used to verify compliance with Montana's narrative sediment criteria and will be used in the future to evaluate success of the implementation of this TMDL. BMP implementation and effectiveness monitoring is also proposed. Finally, supplemental monitoring is proposed to develop a better understanding of Grave Creek and its biologic community.

9. Restoration Strategy

Criterion Description – Restoration Strategy

At a minimum, sufficient information should be provided in the TMDL document to demonstrate that if the TMDL were implemented, water quality standards would be attained or maintained. Adding additional detail regarding the proposed approach for the restoration of water quality is not currently a regulatory requirement, but is considered a value added component of a TMDL document.

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A detailed conceptual restoration strategy is provided.

10. Public Participation

Criterion Description – Public Participation

The fundamental requirement for public participation is that all stakeholders have an opportunity to be part of the process. Public participation should fit the needs of the particular TMDL.

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A number of meetings were held with watershed stakeholders during the document development process to discuss and provide input on the overall strategy and outline technical components of the process. Stakeholders were then provided an opportunity to review and provide comment on a draft document prior to its release to the general public. A 30-day public comment period was then initiated on November 24, 2004. This final document reflects DEQ's responses to all public comment.

11. Technical Analysis

Criterion Description – Technical Analysis

*TMDLs must be supported by an appropriate level of technical analysis. It applies to **all** of the components of a TMDL document. It is vitally important that the technical basis for **all** conclusions be articulated in a manner that is easily understandable and readily apparent to the reader. Of particular importance, the cause and effect relationship between the pollutant and impairment and between the selected targets, sources, TMDLs, and allocations needs to be supported by an appropriate level of technical analysis.*

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An appropriate level of technical analysis has been conducted. The water quality impairment determination was based on consideration of multiple indicators and documentation/quantification of sediment loading from anthropogenic sources. The TMDL and allocations address the controllable sources and, if implemented, they would likely result in achievement of the narrative criteria for sediment and full support of fish and aquatic life.

12. Endangered Species Act Compliance

Criterion Description – Endangered Species Act Compliance

EPA's approval of a TMDL may constitute an action subject to the provisions of Section 7 of the Endangered Species Act ("ESA"). EPA will consult, as appropriate, with the US Fish and Wildlife Service (USFWS) to determine if there is an effect on listed endangered and threatened species pertaining to EPA's approval of the TMDL. The responsibility to consult with the USFWS lies with EPA and is not a requirement under the Clean Water Act for approving TMDLs. States are encouraged, however, to participate with FWS and EPA in the consultation process and, most importantly, to document in its TMDLs the potential effects (adverse or beneficial) the TMDL may have on listed as well as candidate and proposed species under the ESA.

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EPA will address ESA issues.

Enclosure 1

APPROVED TMDLS

4 TMDL completed**
0 Determinations that no TMDL is needed
0 TMDLs yet to be developed

Waterbody Name*	**TMDL Parameter/ Pollutant** [*Based on 1996 & 2004 §303(d) Lists*]	**Water Quality Goal/Endpoint**	**TMDL**	**WLA LA**	**Supporting Documentation** (not an exhaustive list of supporting documents)
Grave Creek* MT76D004_060 17010101	**Siltation**	• Pool Frequency = 12-29 • % surface fines < 2mm = <20% • % subsurface fines < 6.35 mm = < 28% • Macroinvertebrate IBI's = > 75% • W/D = < 25 (Lower), < 27 (B & C reaches) • LWD = 146 - 294 • Sinuosity = 1.2 - 1.6 • Meander Length Ratio = 13.8 - 19.2 • Bull Trout Redds = > 156 • Residual Pool Depth = > 3 (*LWD = large woody debris* *IBI = index of biotic integrity* *W/D = width depth ratio*)	60% reduction in human-caused sediment loading	WLA = 0 LA = 63% reduction in human-caused bank erosion and 50% reduction in human-caused mass wasting	"Grave Creek Watershed Water Quality and Habitat Restoration Plan and Sediment Total Maximum Daily Loads"; MT DEQ; March 2005

* An asterisk indicates the water body has been included on the State's Section 303(d) list of water bodies in need of TMDLs.
** Through the Grave Creek siltation TMDL, stressors not necessarily associated with pollutants but yet identified as a stressor on the State's 303(d) list for Grave Creek including "Bank Erosion", "Other Habitat Alterations", and "Fish Habitat Degradation" were addressed. (See Table 3-2 in the Grave Creek TMDL document referenced above.) All these stressors and "siltation" count towards the number of TMDLs established by the State.