UNITED STATES ENVIRONMENTAL PROTECTION AGENCY
REGION 8, MONTANA OFFICE
FEDERAL BUILDING, 10 W. 15th STREET, SUITE 3200
HELENA, MONTANA 59626

DEC 27 2006

RECEIVED
JAN 08 2007
DEQ
Planning Division

Ref: 8EPR-EP

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

Re: TMDL Approvals
Prospect Creek Metals

Dear Mr. Compton:

We have completed our review of the metals total maximum daily loads (TMDLs) as submitted by your office for the Prospect Creek TMDL Planning Area (TPA). The TMDLs are included in the document entitled Total Maximum Daily Loads for Metals in Prospect Creek Watershed – Sanders County, Montana, transmitted to us for review and approval in correspondence dated October 31, 2006 and signed by you. In accordance with the Clean Water Act (33 U.S.C. 1251 *et. seq.*), we approve all aspects of the metals TMDLs as developed for the Prospect Creek TPA. Enclosure 1 to this letter provides a summary of the elements of the TMDLs and Enclosure 2 provides details of our review of the TMDLs.

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 TMDLs have 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 Prospect Creek TPA metals TMDLs 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 these TMDLs 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 my staff at (406) 457-5024.

Sincerely,

Max H. Dodson
Assistant Regional Administrator
Ecosystems Protection and Remediation

Enclosures

cc:

Claudia Massman, Attorney
Montana Department of Environmental Quality
P.O. Box 200901
Helena, MT 59620-0901

Dean Yashan
Montana Department of Environmental Quality
P.O. Box 200901
Helena, MT 59620-0901

George Mathieus
Montana Department of Environmental Quality
P.O. Box 200901
Helena, MT 59620-0901

EPA REGION VIII MONTANA OFFICE TMDL REVIEW FORM

Document Name:	**Total Maximum Daily Loads for Metals in Prospect Creek Watershed – Sanders County, Montana (October 2006)**
Submitted by:	**MTDEQ**
Date Received:	**November 2, 2006**
Review Date:	**December 8, 2006**
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.
- ☐ Criterion not satisfied. Questions or comments provided below need to be addressed.
- ☐ Not a required element in this case. Comments or questions provided for informational purposes.

Prospect Creek (MT76N003_020), Antimony Creek (MT76N003_021), and Cox Gulch (MT76N003_022) appeared on Montana's most recent approved 2004 303(d) list. Prospect Creek also appeared on Montana's 1996 303(d) list. A summary of the listing information is provided below.

This document only addresses the metals related 303(d) listings.

Waterbody identification numbers were not presented anywhere in the document. In the future, please include them so there is no confusion over the identity of waters addressed by the TMDLs.

Water Body	Year Listed	Listed Pollutants	Action Taken
Prospect Creek (MT76N003_020)	1996	Thermal modification	TMDLs have been prepared for antimony, lead, and zinc. Thermal modification is not addressed in this document.
	2004	Metals	
Antimony Creek (MT76N003_021)	1996	Not listed	TMDLs prepared for antimony, arsenic, and lead
	2004	Arsenic, lead	
Cox Gulch (MT76N003_022)	1996	Not listed	TMDLs prepared for antimony and lead
	2004	lead	

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.

- ☑ 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.
- ☐ Criterion not satisfied. Questions or comments provided below need to be addressed.
- ☐ Not a required element in this case. Comments or questions provided for informational purposes.

The applicable water quality standards are adequately summarized in Section 1.1 and Appendix A.

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).

- ☑ 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.
- ☐ Criterion not satisfied. Questions or comments provided below need to be addressed.
- ☐ Not a required element in this case. Comments or questions provided for informational purposes.

Targets are provided for antimony, arsenic, lead and zinc, sediment chemistry, and macroinvertebrates in Table 4-1.

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.

- ☑ 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.
- ☐ Criterion not satisfied. Questions or comments provided below need to be addressed.
- ☐ Not a required element in this case. Comments or questions provided for informational purposes.

Potential metals sources include historic mines, the Stibnite Hill Mine and Mill facilities operated by U.S. Antimony Corporation, and natural background. Loading data from specific sources has not been presented and the relative importance of these sources has not been determined. Likely, significant future source assessment will be necessary to identify and prioritize metals sources within the watershed. A plan for additional monitoring is proposed in Section 5.3.2 (see comments below under "8 – Monitoring Strategy").

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.

- ☑ 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.
- ☐ Criterion not satisfied. Questions or comments provided below need to be addressed.
- ☐ Not a required element in this case. Comments or questions provided for informational purposes.

Flow-based TMDLs are presented in Section 4.2 for Prospect Creek (antimony, lead, zinc), Cox Gulch (antimony, lead), and Antimony Creek (Antimony, arsenic, lead). Example TMDLs, expressed in pounds/day and as percent load reductions, are presented for both high and low flow conditions.

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.

- ☑ 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.
- ☐ Criterion not satisfied. Questions or comments provided below need to be addressed.
- ☐ Not a required element in this case. Comments or questions provided for informational purposes.

Gross load allocations, equaling the loading capacity for each metal, are presented for Antimony Creek and Cox Gulch. In other words, source specific allocations have not been presented due to a lack of data to estimate current loads from each of the potentially contributing sources.

For Prospect Creek, allocations are presented on a watershed area basis: Antimony Creek Watershed, Cox Gulch Watershed, and the remainder of the Prospect Creek Watershed upstream of monitoring site S-6A.

An adaptive management strategy is presented in Section 4.5 to provide direction regarding modification of the TMDL and allocations in the future.

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.

☑ 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.
☐ Criterion not satisfied. Questions or comments provided below need to be addressed.
☐ Not a required element in this case. Comments or questions provided for informational purposes.

The margin of safety is provided implicitly through the numeric criteria for metals, which include built in margins of safety to assure protection of beneficial uses. Additionally, the most protective numeric criteria were selected in all cases.

Seasonality is addressed in that the targets apply year round and all flows have been considered.

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.*

☑ 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.
☐ Criterion not satisfied. Questions or comments provided below need to be addressed.
☐ Not a required element in this case. Comments or questions provided for informational purposes.

Source specific allocations could not be developed due to a lack of data regarding the contribution of metals from the various potential natural and anthropogenic sources. A monitoring strategy to address this is presented in Section 5.3.2.

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.

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

A restoration strategy is provided in Section 5.0.

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.

- ☑ 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.
- ☐ Criterion not satisfied. Questions or comments provided below need to be addressed.
- ☐ Not a required element in this case. Comments or questions provided for informational purposes.

Public involvement activities are described in Section 6.0 and appear to be adequate.

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.*

- ☐ 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.
- ☐ Criterion not satisfied. Questions or comments provided below need to be addressed.
- ☐ Not a required element in this case. Comments or questions provided for informational purposes.

Document organization is poor making it difficult for the reader to readily understand the technical basis for the conclusions. The level of detail regarding source identification and source load quantification is minimal resulting in a poor understanding of the relative contributions from the various potential sources. Nonetheless, it appears that an adequate level of analysis has been conducted to result in approvable targets, TMDLs, allocations, and margins of safety.

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.

- ☐ 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.
- ☐ Criterion not satisfied. Questions or comments provided below need to be addressed.
- ☑ Not a required element in this case. Comments or questions provided for informational purposes.

EPA will address ESA issues.

Enclosure 1

APPROVED TMDLs

Total Maximum Daily Loads for Metals in Prospect Creek Watershed, Sanders County, Montana (DEQ, 10/31/06)

8 TMDLs completed
0 Determinations made that no TMDL was needed
1 TMDLs not completed at this time

Impaired Water Bodies	Impairment Causes	Water Quality Restoration Goal	TMDL[3]	Allocations (Load Allocations; Wasteload Allocations)	Supporting Documentation (not an exhaustive list of supporting documents)
Prospect Creek Prospect Creek (MT76N003_020)	Antimony[1]	≤ 6 µg/L (all flows)	6.4 lbs/day (high flow) 0.64 lbs/day (low flow	Load Allocations: 100% of the load is allocated to three source areas, each representing a separate load allocation. These source areas are "Antimony Creek Drainage", "Cox Gulch Drainage", and "Remainder of Prospect Creek Drainage"; all loading reductions are to come from mining related sources to achieve the standard unless further study shows that this is not a reasonable expectation (part of adaptive management) WLA=0 MOS addressed implicitly	"United States Antimony Corp., 1999 Plan of Operations and Reclamation Plan, Operating Permit 00045A. Prepared for MDEQ, Hard Rock Mining Bureau" "The Effects of U.S. Antimony's Disposal Ponds on an Alluvial Aquifer and Prospect Creek, Western Montana. University of Montana Department of Geology Project # G-853-03"
	Lead[1]	≤ 0.54 µg/L all flows	0.58 lbs/day (high flow) 0.05 lbs/day (low flow)		
	Zinc[1]	≤ 37 µg/L (all flows)	40 lbs/day (high flow) 4.0 lbs/day (low flow)		
	All metals	Metals concentrations in stream sediments must not impede aquatic life use support or other beneficial uses. Periphyton and macroinvertabrate communities must be comparable to those for reference conditions for metals indicators using standard MDEQ protocol and impairment criteria.			
	Thermal Modification[2]	To be addressed in a future Montana DEQ document.			
Antimony Creek (MT76N003_021)	Antimony[5]	≤ 6 µg/L (all flows)	0.3 lbs/day (high flow) 0.0008 lbs/day (low flow)	Load Allocation: 100% allocated to combined "historic mine" and "background" source categories; all loading reductions are to come from	"United States Antimony Corp., 1999 Plan of Operations and Reclamation Plan, Operating Permit 00045A. Prepared for MDEQ, Hard Rock Mining Bureau"
	Arsenic[4]	≤ 18 µg/L (all flows	0.09 lbs/day (high flow) 0.0025 lbs/day (low flow)		
	Lead[4]	≤0.54 µg/L high flows; ≤1.3 µg/L low flows:	0.003 lbs/day (high flow) 0.0002 lbs/day (low flow)		

Impaired Water Bodies	Impairment Causes	Water Quality Restoration Goal	TMDL[3]	Allocations (Load Allocations; Wasteload Allocations)	Supporting Documentation (not an exhaustive list of supporting documents)
	All metals	Metals concentrations in stream sediments must not impede aquatic life use support or other beneficial uses. Periphyton and macroinvertabrate communities must be comparable to those for reference conditions for metals indicators using standard MDEQ protocol and impairment criteria.		mining related sources to achieve the standard unless further study shows that this is not a reasonable expectation (part of adaptive management) WLA=0 MOS addressed implicitly	"The Effects of U.S. Antimony's Disposal Ponds on an Alluvial Aquifer and Prospect Creek, Western Montana. University of Montana Department of Geology Project # G-853-03"
Cox Gulch (MT76N003_022)	Antimony[5]	≤ 6 µg/L (all flows)	0.27 lbs/day (high flow) 0.02 lbs/day (low flow)	Load Allocation: 100% allocated to combined "historic mine", "U.S. Antimony Corp" and "background" source categories; all loading reductions are to come from mining related sources to achieve the standard unless further study shows that this is not a reasonable expectation (part of adaptive management) WLA=0 MOS addressed implicitly	"United States Antimony Corp., 1999 Plan of Operations and Reclamation Plan, Operating Permit 00045A. Prepared for MDEQ, Hard Rock Mining Bureau" "The Effects of U.S. Antimony's Disposal Ponds on an Alluvial Aquifer and Prospect Creek, Western Montana. University of Montana Department of Geology Project # G-853-03"
	Lead[4]	≤ 0.54 µg/L all flows	0.024 lbs/day (high flow) 0.0017 lbs/day (low flow)		
	All metals	Metals concentrations in stream sediments must not impede aquatic life use support or other beneficial uses. Periphyton and macroinvertabrate communities must be comparable to those for reference conditions for metals indicators using standard MDEQ protocol and impairment criteria.			

[1] "Metals" were originally listed for Prospect Creek on the 2002 303(d) list. The metals causing the impairment were not specified in either the 2002 or 2004 303(d) list. Rather, antimony, lead, and zinc were determined to be the specific metals causing impairment as part of the TMDL process.

[2] Originally listed on the 1996 303(d) list

[3] The TMDLs presented in this table are examples. The actual TMDLs are presented in the document as loading equations based on water body assimilative capacity, restoration target (corrected for hardness where applicable), and streamflow: **TMDL**= *X µg/L)(Y cfs)(0.0054) Where X = applicable water quality numeric standard (target); y=flow; 0.0054=conversion factor*

[4] Originally listed on the 2004 303(d) list

[5] Neither Cox Gulch nor Antimony Creek were ever listed for antimony. However, this pollutant was added and addressed as part of the TMDL process.