

Appendix A

**TECHNICAL REPORTS**

**MDT ENVIRONMENTAL MANUAL**

*October 2010*



## Appendix A

# TECHNICAL REPORTS

Appendix A presents outlines for use in preparing technical reports for documenting results of environmental analyses for MDT projects. The following outlines are provided:

- [Biological Resource Report/Biological Assessment,](#)
- [Wetland Findings Report,](#)
- [Cultural Resources Report,](#)
- [Preliminary Site Investigation Report,](#)
- [Detailed Site Investigation Report,](#) and
- [Detailed Noise Analysis Report.](#)

## BIOLOGICAL RESOURCE REPORT/BIOLOGICAL ASSESSMENT

This topic presents the general format for Biological Resource Reports/Biological Assessments. Depending upon the project, some sections may not apply and should not be included in the report, or several sections may be combined into one section.

### EXECUTIVE SUMMARY

### TABLE OF CONTENTS (Including List of Figures and List of Tables, as applicable)

#### 1.0 INTRODUCTION

- 1.1 Project Description
- 1.2 General Area Description

#### 2.0 GENERAL STUDY METHODS

(Include the office work and preliminary activities required for preparing the report.)

- 2.1 Agency Coordination
- 2.2 Literature/Database Searches
- 2.3 Field Surveys

(The discussion of Study Methods for each resource area should describe the detailed methodology used for office and field work pertaining to that resource area.)

#### 3.0 TERRESTRIAL RESOURCES

- 3.1 Methods
- 3.2 Results

##### 3.2.1 Ecological Setting and General Description

##### 3.2.2 General Vegetation

- 3.2.2.1 Baseline Conditions
- 3.2.2.2 Potential Impacts
- 3.2.2.3 Avoidance and Minimization
- 3.2.2.4 Recommended Conservation Measures

##### 3.2.3 Noxious Weeds/Invasive Species

- 3.2.3.1 Species Present and Distribution
- 3.2.3.2 General Description and Degree of Infestation
- 3.2.3.3 Recommended Conservation Measures

##### 3.2.4 General Wildlife Species

- 3.2.4.1 Species Description and Distribution
- 3.2.4.2 Habitat Requirements
- 3.2.4.3 Potential to Occur in Project Area

**BIOLOGICAL RESOURCE REPORT/BIOLOGICAL ASSESSMENT**

- 3.2.4.4 Potential Impacts
- 3.2.4.5 Avoidance and Minimization
- 3.2.4.6 Recommended Conservation Measures

**4.0 AQUATIC RESOURCES****4.1 Methods****4.2 Results****4.2.1 Aquatic Sites**

- 4.2.1.1 Site Descriptions
- 4.2.1.2 Potential Impacts
- 4.2.1.3 Avoidance and Minimization
- 4.2.1.4 Recommended Conservation Measures
- 4.2.1.5 Permitting Required

**4.2.2 General Aquatic Species**

- 4.2.2.1 Species Description and Distribution
- 4.2.2.2 Habitat Requirements
- 4.2.2.3 Potential to Occur in Project Area
- 4.2.2.4 Potential Impacts
- 4.2.2.5 Avoidance and Minimization
- 4.2.2.6 Recommended Conservation Measures

**5.0 SENSITIVE SPECIES OF SPECIAL CONCERN****5.1 Methods****5.2 Results****5.2.1 Plant Species**

- 5.2.1.1 Species Description and Distribution
- 5.2.1.2 Habitat Requirements
- 5.2.1.3 Potential to Occur in Project Area
- 5.2.1.4 Potential Impacts
- 5.2.1.5 Avoidance and Minimization
- 5.2.1.6 Recommended Conservation Measures

**5.2.2 Terrestrial Species**

- 5.2.2.1 Species Description and Distribution
- 5.2.2.2 Habitat Requirements
- 5.2.2.3 Potential to Occur in Project Area
- 5.2.2.4 Potential Impacts
- 5.2.2.5 Avoidance and Minimization
- 5.2.2.6 Recommended Conservation Measures

**BIOLOGICAL RESOURCE REPORT/BIOLOGICAL ASSESSMENT**

## 5.2.3 Aquatic Species

- 5.2.3.1 Species Description and Distribution
- 5.2.3.2 Habitat Requirements
- 5.2.3.3 Potential to Occur in Project Area
- 5.2.3.4 Potential Impacts
- 5.2.3.5 Avoidance and Minimization
- 5.2.3.6 Recommended Conservation Measures

6.0 THREATENED AND ENDANGERED SPECIES  
BIOLOGICAL ASSESSMENT

## 6.1 Introduction

## 6.2 Methods

## 6.3 Results (By Species)

## 6.3.1 [Species Name]

- 6.3.1.1 Species Description
- 6.3.1.2 Status and Distribution
- 6.3.1.3 Life History and Habitat Requirements
- 6.3.1.4 Reasons for Decline
- 6.3.1.5 Environmental Baseline/Occurrence in Project Area
- 6.3.1.6 Effects of the Action/Impacts Analysis
- 6.3.1.7 Cumulative Effects Analysis
- 6.3.1.8 Recommended Conservation Measures
- 6.3.1.9 Determination of Effect

## 7.0 WETLANDS

## 7.1 Introduction

## 7.2 Methods

## 7.3 Results

- 7.3.1 Description of Delineated Wetlands
- 7.3.2 Wetland Delineation and Function Assessment Classification
- 7.3.3 Potential Wetland Impacts
- 7.3.4 Avoidance and Minimization
- 7.3.5 Permitting Required
- 7.3.6 Proposed Wetland Mitigation

## 8.0 REFERENCES

## 9.0 TABLES AND FIGURES

**BIOLOGICAL RESOURCE REPORT/BIOLOGICAL ASSESSMENT**

## 10.0 APPENDICES

Including, but not limited to, the following:

- Project location map
- Topographic maps
- Photographs of relevant sites
- Corps of Engineers Wetland Delineation Forms
- MDT Wetland Assessment Forms
- Plan sheets with delineated wetland locations
- Agency coordination letters and phone call logs
- Montana Natural Heritage Program Elemental Occurrence Report
- Species lists (common and scientific names)

## WETLAND FINDINGS REPORT

This topic presents the general format for Wetland Findings Reports. The report presents a quantification of final wetland impacts resulting from a project and discusses mitigation/compensation measures for the impacts. Each major section of the report should require a half- to third-page discussion on each topic.

### EXECUTIVE SUMMARY

### TABLE OF CONTENTS (Including List of Figures and List of Tables, as applicable)

- 1.0 PROJECT DESCRIPTION
  - 1.1 Scope of Work
  - 1.2 Location
  - 1.3 Specific Design Features Contributing to Major Wetland Impacts and Why They Are Necessary
  - 1.4 Elements (e.g., design) Used to Avoid or Minimize Wetland Impacts
- 2.0 WATER BODIES
  - 2.1 Description of Affected “Waters of the United States” (i.e., water bodies subject to US Army Corps of Engineers (COE) jurisdiction)
  - 2.2 Brief Description of Affected Non-Jurisdictional Water Bodies (e.g., irrigation ditches)
- 3.0 WETLANDS
  - 3.1 Methods
  - 3.2 General Description of Area Hydrology, Vegetation, Soils
  - 3.3 Total Delineated Wetland Area
  - 3.4 Wetland Type, Category (MDT Wetland Assessment Form)
- 4.0 IMPACT AVOIDANCE AND MINIMIZATION MEASURES
  - 4.1 Project Design Elements or Features that Contribute to Avoidance and Minimization of Wetland Impacts (e.g., alignment shifts, slope modifications, larger structures, soft-armoring, vegetation stabilization)
  - 4.2 Limitations on Ability to Avoid and Minimize Wetland Impacts (i.e., justification for unavoidable wetland impacts)
- 5.0 UNAVOIDABLE IMPACTS
  - 5.1 Anticipated Impacts to “Waters of the United States”

## WETLAND FINDINGS REPORT

### 5.2 Summary Discussion and Table for Wetland Areas and Location/Extent of Impact for Each Wetland

(For each wetland, generally include wetland name (e.g., WL1, WL2, WL2a), location by station right or left, delineated wetland area, area impacted and any distinguishing characteristics.)

## 6.0 COMPENSATORY MITIGATION

### 6.1 Total Quantity of Unavoidable Wetland Impact by Wetland Category

### 6.2 Brief Narrative Summary of the Wetland Impacts

### 6.3 Discussion of Mitigation/Compensation for Unavoidable Wetland Impacts (e.g., on-site with the project, off-site at an established MDT wetland reserve within the watershed) and the debit-to-credit ratio based on the proposed method of mitigation/compensation.

## 7.0 ATTACHMENTS

Specific attachments are determined case-by-case, based on project information, scope and wetland impacts. Examples may include the following:

- Plan and profile sheets with delineated wetlands and impacted wetland areas indicated (e.g., with hatching/cross-hatching)
- Memoranda from MDT Design staff addressing impact avoidance and minimization measures or other relevant design decisions (e.g., Bridge, Hydraulics, Road Design)
- Topographic and aerial photography
- Site photographs of wetland areas and/or water bodies
- MDT Wetland Assessment Forms and/or COE Wetland Delineation Forms

## CULTURAL RESOURCES REPORT

This topic presents the general format for Cultural Resources Reports.

Positive Report (i.e., when cultural resources are identified)

### EXECUTIVE SUMMARY

### TABLE OF CONTENTS (Including List of Figures and List of Tables, as applicable)

- 1.0 INTRODUCTION
  - 1.1 Project Description
  - 1.2 General Area Description
- 2.0 METHODS
  - 2.1 Field and Research Methods
  - 2.2 Montana SHPO File Search
- 3.0 PREHISTORIC AND/OR HISTORIC CONTEXT/OVERVIEWS
- 4.0 RESULTS
  - 4.1 Cultural Resource Sites Identified in Project Area
    - 4.1.1 Map showing resource locations
    - 4.1.2 Description of setting, natural characteristics and cultural features for each resource
    - 4.1.3 Site history for each resource
    - 4.1.4 Evaluation of significance/eligibility for the National Register of Historic Places
- 5.0 BIBLIOGRAPHY
- 6.0 APPENDICES
  - 6.1 Site Forms Prepared Under Programmatic Agreements
  - 6.2 Official Correspondence
  - 6.3 Permits
  - 6.4 Reports Prepared by Sub-consultants
- 7.0 ATTACHMENTS
  - 7.1 Site Forms
  - 7.2 Isolate Forms
  - 7.3 Cultural Resource Annotated Bibliography System (CRABS) Form

## CULTURAL RESOURCES REPORT

### 7.4 Negatives or Digital Images and Photo logs for Photographs Taken During Field Survey

#### Negative Report (i.e., when cultural resources are not identified)

Report may be prepared in the form of a letter that addresses the following components:

- Results of Background Search
- Description of Area Inventoried
- Description of Field Methodology
- Statement that No Cultural Resource Properties Were Found

The negative report also must include the following items, as attachments:

- CRABS Form
- Map of the Project Location

## PRELIMINARY SITE INVESTIGATION REPORT

This topic presents the general format for Preliminary Site Investigation Reports for hazardous materials/substances investigations.

### EXECUTIVE SUMMARY

### TABLE OF CONTENTS (Including List of Figures and List of Tables, as applicable)

- 1.0 INTRODUCTION
- 2.0 PURPOSE
- 3.0 SCOPE OF WORK
- 4.0 METHODS
- 5.0 RESULTS/CONCLUSIONS
  - 5.1 Soils and Field Data
  - 5.2 Analytical Results
  - 5.3 Groundwater Data
- 6.0 RECOMMENDATIONS
- 7.0 REFERENCES
- 8.0 APPENDICES (the following are examples)
  - Soil Boring Locations
  - Soil Boring Logs
  - Analytical Results
  - Data Validation Report
  - Third Party Groundwater Quality Information
  - Monitoring Well Design Detail
  - Access Agreement
  - Proposed Supplemental Conditions

## DETAILED SITE INVESTIGATION REPORT

This topic presents the general format for Detailed Site Investigation Reports for hazardous materials/substances investigations.

### EXECUTIVE SUMMARY

### TABLE OF CONTENTS (Including List of Figures and List of Tables, as applicable)

- 1.0 INTRODUCTION
  - 1.1 Purpose
  - 1.2 Project Location
  - 1.3 Description of Area Topography/Geology/Hydrogeology
  - 1.4 Site Investigation History
- 2.0 SCOPE OF WORK
  - 2.1 Preliminary Research
  - 2.2 Utilities
  - 2.3 Investigation Activities
    - 2.3.1 Subsurface Soil Sampling
    - 2.3.2 Groundwater Sampling
  - 2.4 Site Lithology
  - 2.5 Hydrology
- 3.0 ANALYTICAL RESULTS/CONCLUSIONS
  - 3.1 Estimated Extent of Contamination
    - 3.1.1 Lithology/Visual Observations
    - 3.1.2 Subsurface Soil Contamination
      - 3.1.2.1 Soil Field Screening Results
      - 3.1.2.2 Laboratory Analysis Results – Soil
    - 3.1.3 Groundwater Contamination
      - 3.1.3.1 Laboratory Analysis Results – Groundwater
  - 3.2 Soil Disposal Options
- 4.0 RECOMMENDATIONS

## DETAILED SITE INVESTIGATION REPORT

### 5.0 REFERENCES

### 6.0 APPENDICES (the following are examples)

- Boring Logs and Field Notes
- Laboratory Analytical Results
- Photo Log

## DETAILED NOISE ANALYSIS REPORT

This topic presents the general format for Detailed Noise Analysis Reports.

### EXECUTIVE SUMMARY

### TABLE OF CONTENTS (Including List of Figures and List of Tables, as applicable)

#### 1.0 INTRODUCTION

##### 1.1 Project Description

##### 1.2 Description of Surrounding Land Use

#### 2.0 METHODS

##### 2.1 Ambient Noise Measurements

###### 2.1.1 Locations of Measurements

###### 2.1.2 Dates and Times

###### 2.1.3 Weather and Traffic Conditions

###### 2.1.4 Equipment Used

###### 2.1.5 Measurement Duration and Repetitions

##### 2.2 Noise Modeling Parameters and Calibration of Model

##### 2.3 Table of Modeling Results and Description of Impacted Receivers

###### 2.3.1 For existing (present year) traffic volumes, using peak hour projected traffic volumes for selected receivers

###### 2.3.2 For all alternatives, using design year "build" projected traffic volumes

###### 2.3.3 For design year "no build" scenario

##### 2.4 Noise Abatement

###### 2.4.1 Reasonableness and feasibility

###### 2.4.2 If applicable, noise abatement option(s) to be pursued through public comment process

###### 2.4.3 When applicable, a completed and signed Noise Abatement Recommendations Checklist

