Policy analysis and recommendations for environmental protection for Montana Department of Highways bridge and construction projects

William David Routzahn

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POLICY ANALYSIS AND RECOMMENDATIONS FOR ENVIRONMENTAL PROTECTION FOR MONTANA DEPARTMENT OF HIGHWAYS BRIDGE AND CONSTRUCTION PROJECTS

by

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B.A., Carroll College, 1978

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Approved by

[Signatures]
Chairman, Board of Examiners

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INTRODUCTION

The main corridors for the highways serving the different geographic areas of Montana follow by necessity the major rivers and drainage systems from the continental divide. These main highways affect both wetlands and the course of the rivers themselves. Additionally, the highway system affects the migration routes and the territory of many game and non-game species. The highways also provide convenient areas for wildlife to congregate and feed on the grasses planted after disturbances caused by construction.

With the aging of Montana's Federal Aid Highways and the need to replace many of the substandard bridges throughout the state many environmental problems have come to light. For example, a major study conducted by Montana State University addressed the concern stream improvement structures and the effects such replacements had on fish. These improvements have met with limited success and their effectiveness still requires more study. The effect of construction and bridge replacement on the environment requires additional resources to alleviate problems before they occur.

CHAPTER 1

Problem

Environmental and water quality problems will continue to be of major importance to the contractors that bid on the various projects throughout the state. The costs associated with providing proper protection of the environment and the expertise needed to minimize the damages have to be addressed early in the planning process. Al Whipperman of the Montana Department of Fish, Wildlife and Parks (MDFWP), Fisheries Division, and Kevin Keenan of the Montana Department of Health and Environmental Sciences (MDHES) Enforcement Bureau indicated that current policy within the Montana Department of Highways (MDOH) does not go far enough to adequately address the concerns over protection of the environment in a timely manner. Current MDOH policy does not adequately provide for environmental protection enforcement as a measure of job performance. The assessment of monetary penalties is now a matter of court order when reductions in contractor payments or mitigation of damages would handle the problem with more speed and ease.

2Interview with Al Whipperman, Montana Department of Fish, Wildlife and Parks, October, 1988. Interview with Kevin Keenan, Montana Department of Health and Environmental Sciences, March 1989.
A case in point occurred during the construction of I-15 through Bison Canyon in 1985-86. Problems associated with water quality and environmental protection were difficult to resolve for the staffs of both the MDHES and MDFWP. A bulldozer, owned by John-Boy Construction Co. of Bozeman, was left in Bison Creek for approximately ten days. During that time this equipment was left in the creek, oil from the engine and diesel fuel from the tank continuously released contaminates into the water. The contractor did not need the machine immediately so it was not removed. The District Construction Supervisor for the MDOH drove past the bulldozer daily in his inspections of the project. When asked if he told the Project Manager to have the bulldozer removed the supervisor replied that "it was a MDHES problem, not a MDOH problem." Eventually, violations associated with the Interstate construction in Bison Canyon resulted in several thousands of dollars in fines and the loss of precious environmental resources. Two Montana contractors were put on one year probation for violating terms of their contract with MDOH (Appendix A). State law provides that a state agency may levy fines up to $1000/day for violations of the Stream Preservation Act (SPA). MDFWP prefers to use mitigation for damages

3Court records and supporting documentation were obtained from Kevin at MDHES. See Appendix A.
incurred, as opposed to fines. The MDHES levied fines of $10,000 each on the two contractors responsible for violations of the SPA. Some of the damage to the Boulder River and Bison Creek was "irreparable" according to Allen Elser, state fisheries division management chief.4

When bridges throughout the state need to be refinished, and repainted, major contracts are let by MDOH for bridge maintenance. Each year MDOH says that language for protective measures will be included in the next years bid letting to address problems of lead and phosphates allowed to enter the waterways. However, when the new contract comes out, the language for protective measures is not there. Situations like this do not have to exist.

The successful bidders on bridge projects may not realize that rust, sand, lead and phosphates are released into the waters with their activities. If appropriate measures were included in the bid, the prospects for environmental protection would be much greater. With the addition of lead and phosphates to the waterways, from sandblasting and scraping, the potential exists for major water quality problems and environmental degradation.

Information on environmental problems and concerns need to be presented to contractors bidding on highway

projects before the projects are awarded. Contractors have to be aware of the problems and concerns so that the proper monetary adjustments can be made to the bid.

MDOH personnel have had a tendency in the past to overlook or ignore contractor violations of water quality and environmental protections agreed upon by MDFWP and MDHES. The field personnel have to take a more active role on inspections and compliance monitoring of contractor personnel.

I would also like to present appropriate procedures for reporting either failures or violations of the agreements entered into by MDOH, MDFWP and MDHES. The current methods used by MDOH do not address the problems and departmental personnel are not informed of their responsibilities. Instances where state inspectors "turn their heads the other way" or fail to report violations should be addressed.

This professional paper will:

1. Address current policy and its effects on the MDOH, the MDFWP and MDHES with respect to water quality and environmental concerns for bridge replacement and construction in those sensitive areas.

2. Provide guidelines that will allow prospective bidders to address water quality concerns and other environmental problems in their bid. This should help contractors to evaluate the risk of damage to rivers and
streams and submit their bids accordingly. In turn, this should allow for greater citizen participation in the review of environmental policies. As a result, the contractor will have already bid on environmental protection and would not be as inclined to put environmental problem areas or complex environmental interests in the "back seat."

3. Provide guidelines to personnel on discipline handling in those instances where MDOH field personnel are, or should be, aware of and responsible for contractor incurred negligence. Instances of MDOH personnel turning their heads to problems has been documented.\textsuperscript{5} Methods have to be defined in order to bring MDOH Project Managers into the enforcement end of applicable state law.

\textsuperscript{5}The Independent Record, Helena, Montana, August 15, 1985, p. 5.
CHAPTER 2

Background

The missions of the various state agencies differ with their Enabling Acts. Each agency is mandated to accomplish their goals within the time frame and budget established by the legislature. Various commissions and commissioners from throughout the state have input for priorities, projects and accomplishments. Commissioners are chosen by the Governor to represent certain geographical areas of the state. The current Governor selects the Chairperson position of each of the various commissions. The commissions chart the course of the agency and decide on which projects, improvements, purchases and policy they will follow.

MDOH

The Department of Highways acquires rights-of-way, designs and accepts bids for the building and maintenance of highways and the infrastructure associated with them. The replacement or rehabilitation of bridges and culverts is a responsibility falling chiefly on the Bridge Bureau within MDOH. The process for projects to go from conception to completion is a lengthy and drawn out operation requiring many areas of special expertise. The final decision on any project rests with the Highway Commission.
The MDOH is responsible for all state maintained highways as defined by the legislature. The MDOH is also responsible, through the Federal Highway Administration (FHWA), for federally funded highways. Funding of the states Federal Aid system is the responsibility of both the State and Federal governments. The Federal Aid Highway System is made up of Federal Aid Interstate (FAI), Federal Aid Primary (FAP), Federal Aid Secondary (FAS) and what is referred to as "orphan plant" (those state maintained highways not fitting into the previously stated categories). The system also includes all of the infrastructure associated with the highways, such as urban connectors, rural arterials, over- and underpasses, bridges and culverts, railroad crossings, and farm-to-market roads. The monies required for the proposed projects comes from one of the categories of FAI, FAP or FAS. There are also other categories of funding for Safety, Hazard Elimination, Railroad Crossing, Urban Highways and Bridge Replacement projects. Special funding is approved by Congress, as is the case with the current problem of bridge inspection and replacement or rehabilitation.6

In 1983, a section of the Mianus River bridge, located on a busy stretch of Interstate 95 in Connecticut

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broke loose from the main structure and fell into the river, resulting in the deaths of three people. As a result, Congress was prompted to take a closer look at the nation's bridges. A study done by the Department of Transportation found poor or inadequate inspection and/or maintenance procedures on a majority of the nation's bridges. Each state was then required to inspect and update the Bridge Sufficiency Rating manual. These inspections located many deficiencies and sub-standard load limits on many bridges. Congress then set the funding levels for bridge repair or replacement based on the needs of the states.

**MDFWP**

The Department of Fish, Wildlife, and Parks is responsible for the administration and protection of the wildlife (both game and non-game species), plants of ecological significance, state lands purchased for recreation and habitat, and the states fisheries resource. The MDFWP is also responsible for the many laws the legislature requires the MDFWP to enforce. The MDFWP receives monies from the federal government through the sale of firearms and ammunition. In addition, certain state gas taxes, registration fees, fishing tackle sales, and Payments in Lieu of Taxes are returned to MDFWP. Normally the federal government has little interaction with MDFWP unless administrative procedures are
questioned. Many court cases have been heard by both the Montana Supreme Court and the U.S. Supreme Court involving MDFWP and their jurisdiction over state and federal lands. New Mexico and Minnesota hunters have filed suits that have gone to the U.S. Supreme Court concerning the setting of licence fees and quotas on out-of-state residents. The Courts have ruled in favor of the state retaining control of all lands located within their borders. This has had a far reaching effect when the MDOH comes up against the MDFWP in disputes over land use and environmental disturbances. Cooperation between the various state agencies has been a challenge that has resulted in many court cases, especially with the MDOH. The direction, as far as enforcement, litigation and land purchases are concerned, has rested with the Fish and Game Commission.

MDHES

The Department of Health and Environmental Sciences is responsible for environmental quality in Montana. The monitoring of environmentally sensitive projects and enforcement of Montana’s environmental laws is addressed in the MDHES. The major environmental protection laws for air and water quality have been the responsibility of the MDHES. The major federal laws and state laws are enforced through this agency include (but are not limited to) the following:
1. The National Environmental Protection Act (NEPA)
2. The Montana Environmental Protection Act (MEPA)
3. The Clean Air Act (CAA)
4. The Clean Water Act (CWA)
5. The Toxic Substances Control Act (TSCA)
6. The Resource Conservation and Recovery Act (RCRA)

The MDHES has been caught in the middle of many environmental battles due to having enforcement responsibilities for state rules and regulations. Many of the federal laws are passed with stipulations that monies from the federal budget include matching funds appropriated by legislatures. Although the MDHES also enforces state laws and answers to the legislature, its personnel budget is in fact upwards of 90% federally funded. The legislature can keep a "hands on" approach to any enforcement activities. This can lead to the larger issue of the state's rights and the responsibility to enforce federal law. When states fail to adhere to the guidelines established by Congress, the major portions of the funds are in jeopardy of being withheld. This was an issue with the drinking age and the 55 mile per hour speed limit. Federal funds could be withheld if states did not enact laws according to federal guidelines. This method is also of use to ensure that states enact and enforce environmental laws.
Frequently the missions of these state agencies conflict with the federal government’s mandates. The MDOH wants to build highways the least expensive way it can and the disregard of environmental laws has occurred. With these problems a significant use of taxpayer money is incurred.

CONTRACTORS

Contractors bidding on construction projects in Montana depend on many factors when competition is involved. Taking certain risks and chances are part of the process. Successful competitive bidding is the difference between survival and failure for all the companies involved. A company that loses too many bids can go bankrupt. Experience has proven to be a good teacher in the competitive bidding process. Most contractors continue to be honest concerning contract agreements, some even expressing no objections to environmental laws and policy. Some contractors, however, do put environmental concerns low on their list of priorities when bidding on projects.

Disagreements can occur when problem solving takes on a less than professional atmosphere. With camera in hand and a newspaper reporter on their heels, many "environmentalists" take great pleasure in documenting,
for the public, mistakes that do occur. One contractor asked "why is it always confrontational?"  

Building some of the construction projects as designed, while also meeting environmental concerns, can be difficult at best. An example of this was a job bid with a stipulation of no sediment in the creek. The project ended up being built in violation of contract language since no inspector was present to help avoid confrontation and impossible specification requirements. Some contractors will bid on jobs with a full knowledge of possible problems, but feel that these problems can be taken care of at their convenience. Some contractors believe that many of the problems can be worked out at preconstruction conferences, but rigid specifications designed to protect poor inspection procedures show little regard for quality. The bottom line of any competitive bidding process is "getting a good job at a profit."

7Interview with Maronick Construction Company, April, 1989.
METHODOLOGY

This is a case study and will draw from a variety of sources. Sources for the information will include reviews of current policies from the agencies mentioned. Publications and court documents will be researched. Several interviews with state and contractor personnel have been completed.
CHAPTER 3

ANALYSIS OF PROJECT SELECTION AND AWARDING OF CONTRACTS TO LOW BIDDERS ON HIGHWAY CONSTRUCTION PROJECTS

STATEWIDE PROJECT SELECTION

The procedures for nomination and acceptance of construction projects will be discussed. Bridge and culvert replacement projects follow a similar process.

Knowledgeable civil engineers located in Districts throughout the state send nominations to the Program Development Division, headquartered in Helena. Their information is obtained from:

1. The major management systems (Pavement Management, Bridge Inventory, Maintenance Management).
2. Recommendations from required inspections of culverts, bridges and reported trouble spots, and
3. Requests provided from private individuals.

Proposals for reconstruction, rehabilitation or restoration of the various components of the Federal Aid Highway System are received and put in the appropriate categories for funding purposes. Projects are evaluated and recommendations are made by the main headquarters in Helena. Current needs are matched up with available funds. The projects are put in a priority listing. Political considerations are also addressed at this point.
in the process, since favoritism of various types could play a role in the location, or be a catalyst for, increased environmental problems.⁸

METHODOLOGY OF PROJECT ASSESSMENT

The bridges located on the Federal Aid System are required to be inspected on a rotating basis with the results compiled and kept in a computer file. Every two years a Bridge Sufficiency Rating Book is published. The sufficiency rating of each bridge is based on several factors, including: age, material of construction, Average Daily Traffic, span, historical value, maintenance and a number of other criteria.⁹ The rating for each bridge is based upon points between zero and 100, with zero indicating that the bridge needs replacing immediately and 100 indicating that it is the best condition. Historical bridges are not replaced but abandoned with new construction either up or down stream.

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⁸The highway from Wolf Point to Scobey is a low traffic volume road. Twelve foot driving lanes and eight foot shoulders are not necessary. North of the junction of U.S. 2 for approximately ten miles is a project built to major arterial specifications. Only a few hundred feet past the turn-off to former Governor Ted Schwinden’s farm, the road returns to ten foot lanes with no shoulder.

The pavements of the Federal Aid Highway System are rated for the distress present on each section of highway. A ride score for each section of highway is obtained with a ride meter. This meter gauges the ride of a section of highway, correlated to the score the traveling public would apply to the road. These two highway condition criteria are input into a computer for further analysis. Each section of highway also has a sufficiency rating given to it with several criteria listed to gauge highway performance. The information from the pavement includes: width and depth of pavement, curves, drainage, traffic carrying capacity, accidents per mile, age and a few other engineering related concerns. With the information collected, each project can be assessed on its own merits.

The other method used for selection is the "obvious problem waiting for a solution" method. Spring break-up can bring a project to the public's attention faster than any other means of project selection. Landslides and washouts of bridges are disaster projects that need to be rehabilitated or reconstructed in an emergency atmosphere.

DISTRICT FIELD INVESTIGATIONS AND RECOMMENDATIONS

The engineering personnel throughout the state in the five districts are responsible for submitting their list of project nominations to Helena annually. The field engineers investigate for important social, environmental,
and/or archaeological concerns that fall within the limits (mileposts of the Federal Aid System) of the proposed project. Some of the important factors the District field engineer consider are historic bridges, river channels, cities and towns impacted by the proposed project, river, stream, and creek crossings, buffalo jumps, Indian spiritual grounds, or prairiedog towns. The District Engineer then prioritizes each project, matches available district funding to estimated costs, and submits the list of project nominations to the Program Development Division in Helena.

HELENA HEADQUARTERS PROJECT SELECTION

The major Divisions, Sections and Units responsible for analysis, selection, design and completion of a project are:

A. Program Development Division
B. Engineering Division
C. Preconstruction Bureau
D. Road Design Bureau
E. Bridge Bureau
F. Construction Bureau
G. Materials Bureau
H. Contract Plans
I. Environmental Unit

J. Personnel Division

Program Development receives all project nominations from the five districts throughout the state. The five districts are headquartered in Missoula, Butte, Great Falls, Glendive and Billings. The numerous projects from throughout the state are put in order of priority based on many criteria. Some of the criteria used in evaluating projects are:

1. Average Daily Traffic (ADT) or Average Annual Daily Traffic (AADT). This is the number of vehicles that pass a given point on the system over a certain period of time.

2. % Trucks. This is a number relating to the "18 wheelers" using the highway system. One study relates the damage done by one semi-tractor with loaded trailer to equal the damage of 9999 passenger cars.\(^{11}\)

3. Distress in the pavement. This shows pavement deterioration based on number and types of cracks present in the asphalt pavement, rutting of the pavement and how well the shoulder of the road is functioning.

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\(^{10}\)See Appendix C for organizational chart for MDOH.

4. Ride Score. This instrument determined factor is correlated to a measure of how the traveling public would view the section of road.

5. Safety. How many and what type of accidents have occurred on this section of highway; fatalities, injuries, and property damage.

The division also includes any special request projects on the list. Some of the special projects might be political in nature, or be a project for an unusually severe spring break-up not foreseen by the field engineers. Program Development matches the estimated costs of the various nominations with the available funding allocated and appropriated from the state legislature and the federal government. Each District is allocated a portion of the available funds based upon population and the number of miles of highway located there. With many more miles of roads in need of repair than funds available to rehabilitate them the prioritization and location of projects is very important.

When the list of projects, cost and location is determined, the list is submitted to the Highway Commission for approval. The Highway Commission is made up of five commissioners, one from each district, appointed by the Governor. The commission goes through the list of projects one by one and accepts or rejects the recommendations.
The list of accepted projects then goes to the Engineering Division for preconstruction activities of public hearings, location and road design. These are the points at which the decision is made to build the road in the most cost effective way. This most often means following or crossing waterways in Montana. Bridges within the project have to be located and designed. Many Sections and Bureaus have to be consulted in this stage of the planning process. The major areas of concern here are:

1. Preconstruction Bureau. This Bureau holds public meetings on the proposed project for citizen input into the planning phase before final location is determined. Estimates of the project cost is computed and fit into the available state and federal money.

2. Location and Road Design. The major placement and design of the highway is completed here. Concerns include rivers to cross, and where to cross them. Hydraulics Unit determines if a bridge or culvert will do the job. The blueprints and plans for the project are completed here. The Environmental Unit is contacted for many of the problems encountered. Historical, archaeological, and environmental concerns are addressed through this stage of the project. Memoranda of Agreement and Authorization are drawn up with MDFWP and MDHES. The Environmental Unit is staffed with an archaeological specialist and a
wildlife biologist. Many of the recommendations from the trained individuals in this section are dismissed as unneeded or unnecessary by the civil engineers within the MDOH.

One of the responsibilities of the Wildlife Biologist in this unit is to observe and report on violations of the MAA and other state laws that the contractor is responsible to follow. The message sent by MDOH seems to be "let the MDHES find the violations because that is not our job." Several of the violations reported on the Bison Canyon job were by concerned citizens.\(^{12}\)

3. The Materials Bureau has responsibilities for soil problems, both chemical and geological. Environmentally important soils or other deposits of concern should be tested and reported. For example, high sulfide soils produce sulfuric acid from exposure to oxygen in the air and water, causing severe and persistent environmental problems. This type of soil was present in Bison Canyon with the I-15 construction project.

Once the major design decisions have been made and the appropriate field surveys and public meetings have

\(^{12}\)See Appendix A Item #9 "Failure of MDOH to report violations reasonably and quickly."
been held, the project is written up. Once completion of cross-sections, plans, special provisions, modifications to the Standard Specifications and other concerns are addressed, the project is sent to Contract Plans. The location has by this time been determined, the road designed to fit the lay of the land, and the project ready to be "let."

**COMPETITIVE BIDDING AND CONTRACTOR SELECTION**

The bidding process associated with the construction of Montana's highways and bridges requires contractors to receive copies of the plans, cross-sections of the project, a "special provisions" section, a copy of Standard Specifications for Road and Bridge Construction and other related materials in order to provide a competitive bid. The blueprints and cross-sections show exactly how and where the project will be located. The plans show the river crossings, railroad right-of-way, alignment, property ownership, borrow sources and a number of other necessary parts for consideration. The "special provisions" are the instructions for the bidders. Special provisions might include such items as quantities of materials needed to complete the project, Disadvantaged Business Enterprise goals, environmental awareness, public advisory radio station announcements and the Davis-Bacon Wage Act considerations for union labor on the project.
Any special requirements or changes as far as material specifications of the Montana Standard Specifications for Highway Construction would be included, as would be any special consideration for culvert coating or fencing and a myriad of other actions. The Standard Specifications give an exact account of all the contractual requirements for which the contractor will be responsible. This covers methods of testing and inspection, methods of payment and change order, materials specifications and contractor and MDOH requirements and responsibilities. Having assembled information from all these as well as other sources, the contractor sends in a sealed bid to the MDOH. On the appropriate day of the bid letting, the sealed bids are opened in public and each contract is awarded to the lowest bidder. Three exceptions to this procedure are:

1. Federal Highway Administration concurrence maybe needed on some major projects.

2. Construction companies located within the borders of Montana receive a leeway of 3% from out-of-state bidders; i.e. if the bid from a Montana contractor is 3% higher than the lowest bid from an out-of-state company then the bid goes to the Montana firm.

3. The state can reject all bids. The state can also withdraw any and all projects up to the point of bid opening. Engineers estimates are used by the MDOH to gauge the appropriate amount bid on each project.
Best guess methods are incorporated to provide a dollar figure that contractor bids should not exceed. If the bids received exceed the engineers estimates then those projects are generally withdrawn and readvertised at a later date.

EFFECTS OF SELECTION PROCEDURES ON ENVIRONMENTAL QUALITY

The most obvious and potentially harmful language missing from or inadequate in the specials are specific concerns for safeguard of the environment. The requirements any potential contractor has to be aware of (and is responsible for) are inadequate.

The section on Environmental Awareness in the "special provisions" reads as follows;

This project will be subject to close and observation in regard to environmental impact. The contractor shall conduct operations in such a manner as to eliminate or minimize environmental damage. Before beginning operations on any item or work in environmentally critical areas, the contractor shall make all personnel to be employed in the work aware of special provision conditions related to environmental aspects of particular operations.
The contractor shall also make all personnel engaged in a particular item of work aware of all conditions imposed by permits or approvals applying to that work. The contractor shall periodically inform and emphasize to employees the importance of complying with environmental provisions of the contract.

The contractor shall protect and indemnify the Department and its representatives against any claim or liability arising from or based on violation of any water pollution control laws, rules, regulation, ordinances or decrees, or based on violation of environmental contract provisions by himself or by his employees.

In addition to the special provisions, the MDOH and MDFWP have a Memorandum of Agreement and Authorization signed by both directors with many more environmental concerns than are addressed in the contract language (see Appendix B). The MDOH has agreed to not permit operation of mechanized equipment or construct gravel, earthen or rock embankments in flowing water for access to work areas, work platforms, or diversion of streams, or

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13MEMORANDUM OF AGREEMENT AND AUTHORIZATION, Project: Fl-1(18)14 Troy-Libby. See Appendix B.
or any other purpose unless specifically authorized by the appropriate person or contract. As noted in Appendix B, the MAA consists of four pages, agreed to by the directors of two State Agencies. The Environmental Awareness section of the "special provisions" consists of two paragraphs. The two paragraphs do not provide the necessary information contractors need to make accurate and environmentally knowledgeable bids.

For example, a major project designed by MDOH and let in 1988 is a stretch of highway on the FAP system known as Troy-Libby or RTF-BRF 1-1(31)14.\textsuperscript{14} This project is unique in many ways but only the most severe environmental concerns will be noted.

This particular stretch of highway follows the Kootenai River the continuous length of the project. On the southside of the right-of-way are cliffs, of 500 to 1000 vertical feet in height. The north side of the

\textsuperscript{14}RTF-BRF1-1(31)14, RTF-BRF1-1(32)23, and RTF1-1(33)17 UNIT 1 are project designations. RTF means Reconstruction Trust Fund as designated by the Montana Legislature. BRF is bridge replacement funds as mentioned in footnote 2. The first "1" shows FAP route 1 (designated from the Montana-Idaho border in the west to the Montana-North Dakota border in the east). The second "1" shows the number of projects on this section of highway--in this case one. The number in brackets is the agreement number or the number of projects in the county. The last number is the beginning milepost of the subject projection this case the project begins at milepost 14. Mileposts go from west to east and FAP route 1 goes from MPO at Mt-Id to MP667 at Mt-ND.
right-of-way has the Burlington Northern railroad
right-of-way and immediately to the north of that flows
the second most voluminous river in Montana, the Kootenai.
Within the confines of the project limit are an additional
three creeks flowing north from the confines of the
Cabinet Mountains Wilderness Area. The water quality
within the limits of this project is among the highest in
Montana. The project encompasses approximately ten miles
of major construction through many environmentally
sensitive areas. The contractor has no recourse as far as
the possibility of bad design or location is concerned.
The MDOH has covered all the possibilities for error and
responsibility by "shotgunning" the language to absolve
itself of all responsibility. If the MDOH cannot be held
responsible for its actions, how does a contractor expect
to accomplish the goals established in the bid? The
design of the highway project would indicate that it is
possible to build the project within all the guidelines
and requirements. With one fish and wildlife biologist
currently working for MDOH problems become more apparent.

Another example is a project currently under contract
from Avon to Elliston. Within the limits of this project
are wetlands, creeks, railroad right-of-way and the Little
Blackfoot River. The MAA entered into by MDOH and MDFWP
is six pages long, detailing many environmental concerns,
expressing sportsmen and hunters concerns for wildlife and
fish and stream modifications affecting sport fishing. The MDOH also has its usual disclaimer to keep the "environmentalists" at bay. It is clearly impossible for one person to monitor the Troy-Libby and Avon-Elliston projects for non-specific contract language when they are a several hours from each other. This can be tried, but it is unlikely that it will be effective. The most preferable way to handle this type of situation is acknowledgement of environmental concerns, and reasonable accommodation to prevent rather than mitigate damage.

The economic value generated from anglers on Montana's streams can be quite significant.¹⁵ The Kootenai River shows a reported value per year, in terms of how much money that anglers spend to fish, as $3.1 million. The upper Clark Fork River tributaries show a sportsmen value per year of $1.3 million.

The MAA is available to the contractor before the bid is submitted to MDOH for the project. Even though such information is available, however, a contractor involved in the competitive bidding process might not take it into account. The environmental problems are secondary to the major costs of procuring borrow material, asphalt, gravel

and labor. The wetland requirements for many projects similar to this are a cause of great concern for many contractors trying to make a profit from construction activities. Often the wetlands requirements are not included due to a lack of understanding or care on the part of the contractor and the availability of information in the bidding package.

Project selection has a large bearing on the environmental disturbances encountered. Current methods of nomination and selection do not include a detailed analysis of environmental degradation. The decision to complete an Environmental Assessment (EA) or a more detailed Environmental Impact Statement (EIS) is usually made only when threats of court action are brought up by public interest groups. Both of these methods cost money but then so do court cases and penalties for violations of water and air quality.

The effect construction activities have on the environment and the disturbances created by the project can be mitigated or corrected based on some well documented studies.¹⁶ Effects on both wildlife and plant ecosystems have been studied and measures and recommendations made to eliminate or minimize

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environmental damages. The most frequently encountered problem with the bidding process is the awarding of bids to an unqualified bidder, one who does not have the necessary expertise and equipment to do the work. With the stringent specifications and other concerns a contractor has meet, some companies are eliminated from the bidding process simply due to their inability to compete. This shifts the burden of environmental protection to those contractors that should be able to handle the requirements.

One contractor suggested that environmental concerns are secondary concerns to the bidding process. When a contractor arrives at the job site and begins the major construction only to find that his bid didn’t cover the costs associated with water and/or air quality then one of two possible reactions can occur. The environmental damage can be hidden, or done when inspectors are not on the job site, or the contractor can meet the requirements of the contract with profit margins reduced to unacceptable levels. The bidder that purposely submits a low bid with the intention of no acting in good faith may be an exception to the rule, but this still occurs during the bidding process. Either way, the losers are the people and taxpayers of the state and nation.

Another problem with present policy is that MDHES or MDFWP are required to monitor and enforce contract
language. Project Managers in control of specification monitoring are concerned about densities, per cent asphalt, grade markers and other engineering concerns; they are not concerned with inspecting for significant environmental degradation.

CURRENT GUIDELINES AND POLICY GOVERNING CONSTRUCTION PROJECTS

The major guidelines governing highway projects statewide are contained in the Standard Specifications book, and any Supplemental Specifications and/or Special Provisions are contained within the project plans.\footnote{STANDARD Specifications for ROAD and BRIDGE CONSTRUCTION of the MONTANA DEPARTMENT of HIGHWAYS, 1987 edition.} As mentioned before, an MAA is also part of the package governing the project. Project Managers, selected to represent the MDOH as chief inspectors, have many years of on-the-job training and are well versed in specification monitoring and project control. Project Managers are required to either be on-site to provide adequate inspections, or to designate a responsible MDOH employee to act on his or her behalf. From the initial construction phase through project completion, the Project Manager has total control over the project as state and federal law provides. Contractors are responsible for the
adherence to standard practices and contract language. The District Construction Supervisor, and over him the District Engineer, oversee the Project Manager. Many other individuals contribute expertise to quality control and specification monitoring. Laboratory Supervisors and Lab Techs are involved with this work, as are the Lab Aides who sample and record materials from the field. The Materials Bureau in Helena provide sophisticated testing procedures and complex technical equipment and the personnel to provide support for specifications and test results. All tests are performed by knowledgeable, trained individuals. Personnel, procedures and equipment are certified by the National Bureau of Standards in Washington D.C. Tests are performed according to specific procedures and guidelines established by the American Association of State Highway and Transportation Officials (AASHTO) and the American Society for Testing Materials (ASTM). The certifying organizations are made up of scientists, engineers, mathematicians, and other people knowledgeable in testing. Both public and private sectors are represented.
CHAPTER 4

DAMAGES ASSOCIATED WITH POOR INSPECTION OR OVERSIGHT

The problems that have been cited from Bison Canyon, Troy-Libby, Helena-West and Avon-Elliston show that changes to current policy could improve both the environmental and business climate of Montana. For example, the removal of a bridge within the project boundary of Bison Canyon required that it not be dropped in the creek. When the demolition occurred the bridge fell into the middle of the creek. Citing the possibility that lightning could have set the charge off prematurely the contractor chose the method he felt was the most appropriate. This method caused damage to the creek and state personnel were ineffective in preventing the damage.

Chlorinated water from a water treatment plant escaped from a ruptured line, spilling water into a nearby creek, which resulted in a fish kill. The ruptured line was shown on the plans to be two feet deeper than it actually was. These problems are not confined to contractors. Poor evaluations, improper plans, inadequate inspection procedures and more contribute to the problems faced today.

Violations cited by MDFWP and MDHES are frequently not the most severe cases. Many of the violations cited by MDHES involve infractions which are minor compared to
other instances of damage to the environment. For example, effluent not meeting water quality discharge specifications for turbidity was pumped into a dry creekbed. MDHES issued a violation for the discharge of muddy water into the stream. The water that was pumped into the dry channel was the only water there and that water quickly disappeared into the ground.

THE RESULTS OF CONTRACTOR DAMAGE

Bison Canyon

Several newspapers carried articles on the environmental problems encountered during the construction of I-15 through Bison Canyon. Two construction companies were fined $10,000 each and placed on a year probation for one of their activities. Thirteen separate violations to state law, contract agreements and/or MAA were noted on this project (see Appendix C). Some of the problems were more serious than others and in many instances MDOH personnel did not notify the appropriate people of violations. The fines placed on a company do not seem to be the prime factor in deterring repeat offenses. Rather, negative publicity that surrounds the contractor appears to have more of an affect on improving the contractor’s performance.
Helena-West

The major problems of the waterline break and the discharge of dirty water into Ten Mile Creek were penalized with fines and probation. Mentioned by one contractor as a more just and lasting way of correcting damages is to have the contractor correct the mistake. In this way the contractor can replace or adjust the problem and will be penalized by the extra cost which would have been profit. This is a good motivator which could prevent damage from occurring in the first place. Punitive damages, according to one contractor, are merely counterproductive.

Troy-Libby and Avon-Elliston

These two projects are currently under construction with completion of both expected in 1989 or 1990. Due to the fact that this is new construction no violations have been noted yet.

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18Interview with a Montana Contractor who wishes to remain anonymous.
ADDRESSING THE PROBLEM

The problems now associated with environmental degradation will not be easily solved. Many contractors and state personnel are slow to change. Built in restraints and individual obstructionists tend to maintain the status quo and prohibit rapid change. This is not to say that the MDOH is totally responsible, as many obstructionists are found in the environmental camp as well. Engineers are opposed to changing current methods and practices for construction; environmentalists are opposed to any impacts through environmental disturbances.

Several methods and guidelines could be implemented to alleviate or mitigate many of the problems now encountered in the construction of roads and bridges.

1. The provision of more thorough environmental assessments and important safeguards to contractors before they bid on projects. Agency integrity and consistence is necessary so that bidders will know that contract language shall be enforced.

2. Require that MDOH personnel in the field perform environmental inspections along with their other inspection duties.

3. Provide more personnel training and promote greater awareness of problems between MDOH, MDFWP, MDHES
and contractors. Training of state inspectors in proper procedures, specification requirements, contractor agreements and position requirements assure better performance and contractor personnel will be more aware of their actions and responsibilities on the job site.

4. Politically it is very difficult to solve some of these problems. Many times special interest politics will outweigh logic or common sense and cause environmental degradation. If policy makers intend to enforce compliance the policy must be clear, concise and enforced in an even-handed manner. Loopholes and multiple interpretations only serve to weaken the proposed changes. Policies and guidelines fail to perform when they are hard to understand or if field and contractor personnel are not adequately informed of the requirements.

**JOB PERFORMANCE MODIFICATION WITH PERFORMANCE APPRAISALS**

A measure of one’s job performance can be quantified and measured by the proper use of performance appraisals (PA). Contractor progress and adherence to policy and agreements can be summarized as a measure of job performance. To monitor the individual within an agency is fairly easy and straightforward. The PA can be tailored to meet the requirements of a particular job or a series of similar jobs. Standardization of performance for field personnel is important. District Engineers and
District Construction Supervisors could be held to the same requirements as the Project Manager. Unsatisfactory or unacceptable performance could lead to the use of MDOH disciplinary procedures. Discipline (or handling of disciplinary cases) would continue to be in accordance with approved departmental policy. Discipline must be administered in an evenhanded manner and with no prejudice to any of the personnel concerned.

The following was noted about one violation of the Stream Preservation Act during construction of I-15 in Bison Canyon: "Highway Department employee watched the 4-29-85 instance." To watch a violation and do nothing about it either by reporting it to a superior or by accepting responsibility for the violation can be handled with Performance Appraisals. Performance Appraisals can be a significant tool when dealing with controversial or new policies. To monitor the agency and attempt to provide guidance to Department Directors is the responsibility of the Governor. The support for performance monitoring of field personnel and contractor compliance to approved policy and contract language requires support of the Governor.
CHAPTER 6

CONCLUSIONS AND RECOMMENDATIONS

The recommendations made here will be broken down into those areas that the problems can be addressed with the most efficiency. The recommendations will be addressed to each department along with the effects of those recommendations. The recommendations will also be directed to contractors bidding successfully on state highway projects.

MONTANA DEPARTMENT OF HIGHWAYS

The development of a method to ensure that contract language is accurate for contractors bidding on state projects to protect sensitive environmental areas is important. To insure that field personnel are trained more thoroughly concerning environmental responsibilities, and proper handling of discipline is required.

Many of the projects nominated and selected have serious environmental impacts that should be part of the planning process within the MDOH. Environmental Impact Statements should be written with communication lines open to the MDFWP and the MDHES.

My recommendations concern four major areas, from the project selection to final acceptance of the completed project.
1. During the field review of these projects a greater effort should be made in locating and identifying potential environmental problems, and then include them in bid specifications. EIS’s and EA’s are good documents but contractors submitting bids based on these documents need straightforward language that could be provided by the three agencies. From a field review of the proposed project the Environmental Unit, within MDOH, should make an exhaustive study of the potentials for and suggestions to address the environmentally sensitive areas within the projects scope. Montana is so highly diverse, and covers such a wide range of geographic and climatic differences that each project should be considered unique for its particular location. This information should be included in the special provisions of the project. Two paragraphs from a special provisions document is not sufficient information for a contractor to base bid amounts assuring environmental protection and compliance. The remedies should emphasize avoidance of problems instead of mitigation of damages. Environmental problems and solutions worked out between the MDOH, and the MDFWP have to be presented to the bidders and explained in monetary terms. Contractors must realize that failure to provide for the requirements of the contract will mean a loss of money.
2. Montana agencies need to have better inspection procedures and the acceptance of certain responsibilities by field personnel with regard to environmental protection. The case of Bison Canyon and MDOH personnel ignoring a bulldozer in the creek emphasizes the need to be responsible to the environment. The District Engineer and District Construction Supervisor have to take responsibility for the failure to follow contract language. The Director has to assure that rules are being followed. Appropriate disciplinary procedures have to be implemented for those instances where job performance is below acceptable levels. The protection of the environment is not only the responsibility of the MDFWP or the MDHES. The MDOH has to be a partner in monitoring the progress of the project and in environmental control. The agency's main concern is still the building of highways to proper specifications. However, with the inspections of materials, densities and grades comes the responsibility that all contract language been forced. Those personnel that do not follow recommendations or accept the responsibility of their positions should be replaced with others that will.

3. The addition of more trained biologists to monitor construction projects statewide is critical for the reduction of environmental problems. Training for personnel who deal directly with these problems is
important. Personnel need to be trained to identify problems from the beginning, identify potential problems during construction and to provide expertise to help when a problem does arise. Without people who know what to look for and how to help out with a problem the MDOH is blind to the results. The civil engineers from the MDOH do not possess the required expertise to adequately identify biological and chemical problems associated with the diversity of Montana.

4. Performance Appraisals have to be written for field personnel, with duties and responsibilities for contractor monitoring clearly defined. Field personnel are responsible for contract implications and should be answerable for their actions. The MAA's entered into between the MDOH and the MDFWP is the responsibility of both agencies not just the MDFWP.

MONTANA DEPARTMENT OF FISH, WILDLIFE AND PARKS

Continual monitoring of sensitive projects will be needed. The MAAs that are entered into with the MDOH are not specific enough for contractors to get a good feel for what is required of them. The MAAs could be more specific as far as requirements are concerned to prevent damages or at least minimize them. Though it is sometimes impossible to enforce, contractors have to be held accountable and the damages mitigated fairly. MDFWP biologists should get
some training in construction practices and procedures to know and get a feel for what is happening when a contractor works around streams and rivers. The addition of civil engineers or environmental engineers to the staff at the MDFWP could be a valuable tool. The MAA has provisions for contractor personnel to be made aware of environmental concerns but no follow-up action is provided. The MDFWP should make sure that this provision is followed. Some form of a check-list could be developed to ensure that contractor personnel receive the appropriate environmental awareness training as indicated in the MAA.

MONTANA DEPARTMENT OF HEALTH AND ENVIRONMENTAL SCIENCES

The number of staff positions available for enforcement is inadequate. One person on the staff at the MDHES is responsible for all enforcement in the state. More people should be in the field to monitor progress and help when problems arise. MDHES personnel should have authority to monitor contractor personnel for proper training in environmental regulations. Enforcement of state law with respect to the construction activities and water and air quality can lead to tunnel vision. Common sense coupled with knowledge about the methods and practices of highway construction and bridge replacement
will help provide a better work relationship between the MDHES, the MDOH and contractors working in Montana.

**CONTRACTORS**

Contractors have to realize that environmental protection is ultimately their responsibility but that the costs for it will be included in the dollars provided for construction. Knowledge that any environmentally destructive action will have to be corrected, at no cost to the state, should make prospective bidders more aware of their responsibilities. Contractors that continually and habitually fail to adhere to contract obligations or cause serious environmental degradation should be penalized. Disqualification from bidding on projects involving state funds for specified periods of time would provide incentives to do the project right the first time. There will be some contractors that will continue to put low bids in that circumvent the system. Close scrutiny and enforcement of negotiated contracts and established specifications should alleviate many problems.

**EFFECTS OF RECOMMENDATIONS**

The most probable and financially important impact of the recommendations will be the number of miles of highways built for the dollar received. It is possible that fewer miles of highway will be constructed and fewer
bridges replaced. That there is only one wildlife biologist to cover all the projects in the state seems to be a real indicator of how the MDOH approaches its environmental responsibilities. More knowledgeable people are needed to monitor the various stages of highway design and construction. Better training should allow personnel to perform more efficiently and would offset some of the budgetary impact. A cost-benefit analysis would be difficult because some of the environmental impacts of bridge and highway construction could last well into the next century. Short term benefits should include increased fishing opportunities and cleaner water and air.

Personnel must know exactly where they stand with respect to enforcement requirements. Trained personnel should be on hand to help with problems or environmentally sensitive areas. Contractor personnel must know what is expected of them and must be able to perform their job duties accordingly.

Training budgets for the agency will increase, and will probably be offset by increase in job performance. Environmental quality would be one benefit that would be difficult to access financially. Cooperation between agencies would be increased. Monitoring and certification of contractor employee training could require more involvement and money from departmental personnel.
SUMMARY

Where highway construction is concerned, the environmental health of Montana’s streams and air are dependent on the cooperation of the various responsible state agencies and contractors working in the state. Confrontations, though sometimes unavoidable, can seriously damage the economical and environmental atmosphere of the state. This does not have to happen. Cooperation between contractors and the state along with open communications would facilitate completion of projects and lessen friction between the various parties.

Contractors bidding on state jobs have to be provided with all the necessary information so that they can include the appropriate environmental safeguards to minimize or eliminate negative environmental impacts. This information must come from personnel knowledgeable in the environmental protection of our streams and air. The information has to be provided on a case by case basis. Contractor and state personnel have to accept their responsibilities as overseers of the environment and do the best possible job with the least negative impact. MAA’s agreed on by the MDOH and the MDFWP have stipulations for employee awareness of the environment, but no method or way to assess that the training was
carried out. Trained, reliable and conscientious individuals working the projects is important.

Cooperation cannot be overemphasized. There are enough confrontations to go around without having needless and senseless problems blown out of proportion.

The MDOH has to provide the contractors that bid on bridge replacement and highway construction projects a more environmentally detailed report. The Department has to take more responsibility for controlling environmental impacts on the projects that it lets. Department personnel should be held responsible for ignoring or condoning unlawful contractor practices. This does not mean that the Project Manager needs to go running to enforcement officials every time there is a violation. An on-the-spot consensus of personnel knowledgeable in their field can solve many of the problems now encountered. A simple solution to the incident that occurred during construction of the Bison Canyon I-15 project with the bulldozer would have been to explain to the contractor that he had to remove the bulldozer from the creek, immediately. The necessary removal equipment was on site so the problem could have been quickly resolved.

The agreements and contract language provide a background for protection of the environment. Between the agreements and the final construction acceptance however, the process seems to have broken down. Incorporating the
recommendations offered in this paper into the contract should help assure compliance with environmental standards.
APPENDIX A

List of Violations Cited on I-15 Bison Canyon Project
**Proposed Strategy**

1) File Civil Suit against Contractor for Discharging without an MPDES Permit on 4-29-85 and 4-30-85 (Water Quality Act Violations).

2) Revoke MPDES Permits and 16.20.633(3)(a) Authorizations because of violations.

2 a) Deny Section 401 certification, thereby preventing the issuance of 404 Corps of Engineer’s Permits.

3) Compliance Monitor.

4) Transfer Summary of Observed Violations to Department of Highways.

5) Initiate Administrative proceedings to encourage reasonable compliance.

6) Modify Contracts/MAA’s/124 permits.

7) Modify DHES 16.20.633(3)(a) permits to reference:
   a) Dept. of Highways contract provisions
   b) Reference 124 and 3a permits
   c) Include specific FW&P requirements

**Discussion Points**

1) Are all parties familiar with “Water Quality Act” provisions in Dept. of Highways Contracts:
   a) Dept. of Highways field staff/inspection staff/design staff/environmental staff
   b) Contractors
   c) Subcontractors

2) Are all parties familiar with options for compliance with Water Quality requirements.
Discussion Points (continued)


4) Who bears responsibility for assuring compliance in the field:
   a) Dept. of Highways
   b) Contractors
   c) DFW&P
   d) DHES-WQB

Is there an A.G.'s opinion relating to this question. See attached.

5) Reasonable Mitigation
## Violations Summary - Basin Highway 1-15 Project

### Situation/Condition

<table>
<thead>
<tr>
<th>Situation/Condition</th>
<th>Consequence to Water Quality</th>
<th>Date Observed</th>
<th>By Whom</th>
<th>Dept. of Highways Contract Provision Violated</th>
<th>M.A.A. Provision Violated</th>
<th>Sample Date</th>
<th>Location</th>
</tr>
</thead>
<tbody>
<tr>
<td>1. Excavating in state waters.</td>
<td>Erosion Sedimentation Turbidity</td>
<td>3-14-85</td>
<td>R. Boland P. Garrett</td>
<td>Special Provision of 150, No. 20, pg. 11, para. 1 &amp; pg. 12, para 3</td>
<td>No specific provision</td>
<td>None</td>
<td>Boulder River Sta. 1110± (just upstream of Basin)</td>
</tr>
</tbody>
</table>

### Please note:
1. Engineer's authority to substitute practice - however
   a) Substituted action must prevent sedimentation
   b) Must be submitted to DFW&P and DHES-WQB
2. Any 3a awarded thru 124 process was voided by changes
3. No 3a was issued by WQB

### 2. Encroachment of excavated materials on stream/placing wastes in a location where they might cause pollution.

<table>
<thead>
<tr>
<th>Situation/Condition</th>
<th>Consequence to Water Quality</th>
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<th>By Whom</th>
<th>Dept. of Highways Contract Provision Violated</th>
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</tr>
</thead>
<tbody>
<tr>
<td>2. Encroachment of excavated materials on stream/placing wastes in a location where they might cause pollution.</td>
<td>Sedimentation Erosion Turbidity</td>
<td>3-14-85</td>
<td>R. Boland P. Garrett</td>
<td>Special Provision of 150, No. 21, pg. 12, para. 2</td>
<td>MAA 150 No. 9, pg. 2</td>
<td>Boulder R. Sta. 1110±</td>
<td></td>
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<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td>No specific requirement</td>
<td>No. 7, pg. 2 MAA 143-146</td>
<td></td>
<td>Bison Cr. Stu. 661±</td>
</tr>
</tbody>
</table>

### Note:
This practice is also in violation of the Montana Water Quality Act, Section 75-5-605 (prohibits the placing of wastes in a place where they might cause pollution).
<table>
<thead>
<tr>
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</tr>
</thead>
<tbody>
<tr>
<td>3. Failure to implement reasonable diversion construction specifications.</td>
<td>Sedimentation Erosion Turbidity</td>
<td>4-23-85</td>
<td>R. Boland</td>
<td>Special Provision of 150, No. 91, p. 55</td>
<td>MAA 150</td>
<td>No. 17, pg. 3</td>
<td>Cataract Creek Sta. 1220±</td>
</tr>
<tr>
<td></td>
<td></td>
<td>10-16-84</td>
<td>R. Boland</td>
<td>Special Provisions</td>
<td>MAA 143-146</td>
<td>No. 11, pg. 3</td>
<td>A. Bison Creek Sta. 555±</td>
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<tr>
<td></td>
<td></td>
<td></td>
<td>P. Garrett</td>
<td>of 143-146</td>
<td></td>
<td></td>
<td>B. Bison Creek Sta. 660±</td>
</tr>
<tr>
<td></td>
<td></td>
<td>4-29-85</td>
<td>N. Peterson</td>
<td>(no special)</td>
<td>MAA 143-146</td>
<td>No. 11, pg. 3</td>
<td>Bison Creek Sta. 555±</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>R. Boland</td>
<td>(no special)</td>
<td></td>
<td></td>
<td>Bison Creek Sta. 660±</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>K. Chrest</td>
<td></td>
<td></td>
<td></td>
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</tr>
</tbody>
</table>

4. Inappropriate use of track mounted vehicle.

<table>
<thead>
<tr>
<th>Consequence to Water Quality</th>
<th>Date Observed</th>
<th>By Whom</th>
<th>Dept. of Highways Contract Provision Violated</th>
<th>M.A.A. Provision Violated</th>
<th>Sample Date</th>
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</tr>
</thead>
<tbody>
<tr>
<td>Sedimentation Erosion Turbidity</td>
<td>4-29-85</td>
<td>R. Boland</td>
<td>Special Provisions</td>
<td>MAA 143-146</td>
<td>No. 1, pg. 1</td>
<td>Bison Creek Sta. 661±</td>
</tr>
<tr>
<td></td>
<td></td>
<td>K. Chrest</td>
<td>of 143-146, No. 27, para. 3</td>
<td></td>
<td>MAA 143-146</td>
<td></td>
</tr>
</tbody>
</table>

Please note: Possibility of fuel & lubricants loss to stream. Equipment was in water at least two days.
<table>
<thead>
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</thead>
<tbody>
<tr>
<td>5. Poor culvert installation.</td>
<td>Sedimentation, Turbidity, Erosion</td>
<td>4-29-85</td>
<td>R. Boland, K. Chrest</td>
<td>Special Provisions of 143-146 No. 25, pg. 12</td>
<td>MAA 143-146 No. 8, pg. 2, MAA 143-146 No. 11, pg. 3</td>
<td>4-30-85</td>
<td>Three drainages from Sta. 589 to 660, tributary to Bison Cr. Specific location unknown at this time.</td>
</tr>
<tr>
<td>6. Discharging wastewater to state waters without an MPDES permit or control treatment structures.</td>
<td>Sedimentation, Turbidity</td>
<td>4-30-85</td>
<td>M. Pasichnyk, K. Chrest</td>
<td>Provisions of 143 &amp; 146 No. 25, pg. 12</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td>4-29-85</td>
<td>R. Boland, K. Chrest</td>
<td>No. 25, pg. 12, Para. 1 Special Provision of 150, No. 23, pg. 13 &amp; No. 24, pg. 14</td>
<td></td>
<td>4-29-85</td>
<td>Instream Increase 10.5 NTU Discharge 245 NTU Bison Cr., Sta. 661± Upstr. 10 NTU Dnstr. 90 NTU</td>
</tr>
</tbody>
</table>

Note: MPDES Authorization No. MT-G070021, issued on 9-20-84 for Contract Areas 143 & 146 expired 11-15-84. Self monitoring not complied with. This location was never included in an application. Highway Department employee watched the 4-29-85 instance. Standard practice not employed. Also provisions require that work will not be allowed until engineer gets copy of Authorization Letter from DHES-WQB.
7. Failure to seek approval for deviations from FW&P  

<table>
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</tr>
</thead>
<tbody>
<tr>
<td>7. Failure to seek approval for deviations from FW&amp;P</td>
<td>General condition demonstrated by other violations</td>
<td></td>
<td></td>
<td>Special Provisions of 143-146, No. 23, pg. 11, Sec. A and B. Special Provisions of 143-146, No. 25, pg. 12, para. 1</td>
<td>MAA 143-146 No. 19, pg. 7</td>
<td>N/A</td>
<td></td>
</tr>
</tbody>
</table>

8. Failure to file blasting plan or notice of blasting in/near state waters  

<table>
<thead>
<tr>
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</tr>
</thead>
<tbody>
<tr>
<td>8. Failure to file blasting plan or notice of blasting in/near state waters</td>
<td>Turbidity Observation</td>
<td>4-23-85</td>
<td>R. Boland</td>
<td>Special Provisions of 143-146, No. 38, pg. 20, as amended Attachment 2-A</td>
<td>MAA 143-146 No. 12, pg. 4 para. 1, 2, 3</td>
<td>Sta. 661±</td>
<td>Bison Creek - in Bison Creek - Canyon. Condition was same on 5-22-85 (R. Boland)</td>
</tr>
</tbody>
</table>

Note: 5-day removal requirement. Requirement to maintain 7 cfs was not allowed. Fish, Wildlife & Parks never received plan or notice.
<table>
<thead>
<tr>
<th>Situation/Condition</th>
<th>Consequence to Date</th>
<th>Dept. of Highways Contract Provision Violated</th>
<th>M.A.A. Provision Violated</th>
<th>Sample Date</th>
<th>Location</th>
</tr>
</thead>
<tbody>
<tr>
<td>9. Failure of Dept. of Highways to report violations reasonably quickly.</td>
<td>For discussion, very few, if any, violations have been reported - reason unknown</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>10. Failure to apply for 16.20.633(3)(a) Authorization and/or comply with conditions.</td>
<td>No application for 3a authorization submitted for these areas.</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>11. Failure to advise FWP of material pit locations.</td>
<td>Loss of resource</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Situation/Condition</td>
<td>Date Observed</td>
<td>By Whom</td>
<td>Dept. of Highways Contract Provision Violated</td>
<td>M.A.A. Provision Violated</td>
<td>Sample Date</td>
</tr>
<tr>
<td>-----------------------------------------------------------------------------------</td>
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<td>--------------</td>
</tr>
<tr>
<td>12. Failure to follow agreement for Cascade Cascade stilling</td>
<td>10-16-84</td>
<td>R. Boland, P. Garrett, N. Peterson</td>
<td>MAA 143-146</td>
<td>No. 15, pg. 6</td>
<td>Sta. 680± - 687±</td>
</tr>
</tbody>
</table>

|                                                                                  |               |                  | Sheet 10 & Sheet 28                          |                                                                           |
|                                                                                  |               |                  | Bernice Basin                                |                                                                           |
|                                                                                  |               |                  | Construction plans                          |                                                                           |
|                                                                                  |               |                  | Elk Pk. No. Sheet 8                          |                                                                           |
|                                                                                  |               |                  | one area.                                    |                                                                           |

For discussion: Information provided to Department indicated very few bales observed in place.
APPENDIX B

Memorandum of Agreement and Authorization for:

Troy-Libby
Avon-Elliston
MEMORANDUM OF AGREEMENT AND AUTHORIZATION

Project:  F 1-1(18)14
         Troy - Libby

This Memorandum of Agreement and Authorization is prepared and agreed to by the Montana Department of Highways (MDOH) and Department of Fish, Wildlife, and Parks (MDFWP), as provided by paragraph A(5) of the Interagency Memorandum of Understanding dated July 20, 1982. The general conditions of this agreement may be changed or amended only by written approval from both agencies. The MDOH will insure that all conditions as stated in this MAA are carried out and adhered to. MDFWP approves this project as provided under the Montana Stream Protection Act, subject to receipt and approval of information specified by Item 2.

1. The contractor will not be permitted to operate mechanized equipment or construct gravel, earthen, or rock embankments in flowing water for access to work areas, work platforms, cofferdams, or diversion of streams, or for any other purpose unless specifically authorized by the approved plans, special provisions, or conditions of this MAA to do so.

2. All activities associated with construction of this project which may change or modify any stream or its banks are subject to requirements of the Montana Stream Protection Act, 87-5-501, et seq., MCA. MDOH will notify MDFWP of contractor-provided temporary structures, including temporary channel changes, other construction facilities, access roads, or construction activities of any type which may affect a stream on the project. Plans, proposed procedures, or other descriptive information will be submitted by MDOH at least 30 days prior to initiating activities or
construction of such structures or facilities. MDFWP will attempt to expedite its review and comment as much as is practical on request of MDOH. In no case, however, shall subject activities be initiated prior to receipt of written approval from MDFWP to MDOH for that activity, except as provided by the above cited statute.

MDOH will provide revised plans for any modification to approved temporary facilities. No work will be done on such modifications until the revisions are approved in writing by Department of Fish, Wildlife, and Parks.

MDOH will require that the contractor build and operate work bridges, haul bridges, detour bridges, or other temporary construction facilities approved by MDFWP in accordance with approved plans.

3. Clearing and grubbing around all streams will be confined to the minimum area actually required for construction. Only streambank vegetation in direct conflict with construction operations may be removed. Any streambank vegetation which is damaged or destroyed outside the construction limits will be replaced.

4. Near streams, access roads, stockpiles, equipment storage areas, and work areas will be graded and contoured so that drainage is directed to temporary erosion control features, which may consist of bermed settling areas, straw bales, fabric silt fences, or other appropriate methods approved by the MDOH project manager, sufficient to retain suspended sediment. The contractor will be required to locate staging areas for storage of material to be used in construction at least 50 feet horizontally from the edge of the stream at the highest water level anticipated during the construction period. The contractor will be prohibited from depositing material excavated for substructure construction in the
stream, or in such a location as to encroach upon the stream. In areas draining into streams, temporary erosion control measures, such as settling basins, silt fence, straw bales, ditch checks, or mulches will be installed as early in the construction process as possible, or immediately after cut or fill slopes are established to grade.

5. The contractor will be required to retain drainage or discharge from temporary channel changes or instream excavations which may cause a violation of Montana water quality standards, for clarification (ARM 16.20.601-643, 16.20.701-705, 16.20.901-918). This may require the construction of settling ponds, cofferdams, retaining dikes, berms, or other approved means of sediment retention. The contractor will be required to remove all temporary structures or stream obstructions not part of permanent construction before completion of the project.

6. Areas near the stream disturbed by construction will be revegetated with appropriate vegetation as recommended by the MDOH agronomist. Riprap will be backfilled with soil down to the ordinary water line and revegetated according to project specifications.

7. The natural channel of streams will not be altered outside of the construction limits required for construction, except as provided by item 2.

8. Short-term construction authorization (Section 3a permit) will be obtained from the Montana Department of Health and Environmental Sciences prior to required diversion of stream flow. Only equipment mounted on rubber tires and of a type to minimize disturbance of the stream and surrounding vegetation is authorized for instream work unless an exception is approved by MDFWP. Temporary channel changes will be returned to the original cross-section and profile as nearly as possible.
9. Instream work will be allowed according to the following schedule:

   Callahan Creek       Dec. 2 - April 1
                        June 1 - Oct. 15

   Lake Creek           Dec. 2 - April 1
                        June 1 - Oct. 15

   Cedar Creek          June 1 - April 15

10. At the Preconstruction Conference the contractor will be made aware of the special provisions and conditions relating to the Stream Protection Act aspects of the project.

11. The MDOH will monitor the project to insure compliance with the MAA. Any changes in the MAA will be agreed to by the MDOH District Construction Supervisor and the MDFWP, and coordinated by the MDOH Biologist. Any amendment or alteration will be agreed to in writing.

12. The MDOH Project Manager will immediately report violations of state water quality or Stream Protection Act regulations to the MDOH Environmental Unit in Helena. The MDOH Environmental Unit will report these incidents to the MDFWP Stream Protection Act Manager or Water Quality Bureau as appropriate.

   Gary J. Wicks
   Director of Highways
   Date 5/10/88

   James W. Flynn, Director
   Montana Department of Fish, Wildlife, and Parks
   Date _________
MEMORANDUM OF AGREEMENT AND AUTHORIZATION

Project: I 15-3(12)50  
Bernice - Basin

This Memorandum of Agreement and Authorization (MAA) sets forth the provisions agreed to by the Montana Department of Highways (MDOH) and the Montana Department of Fish, Wildlife, and Parks (MDFWP). The MDOH shall insure that all provisions stated in the MAA shall be carried out. The MDFWP approves this project as provided under the Montana Stream Preservation Act, 87-5-501 through 87-5-509, MCA.

1. The contractor shall not operate mechanized equipment or construct gravel, earthen or rock embankments in the water of the stream for temporary access to work areas.

2. Temporary bridges for access to the work shall provide sufficient waterway to pass flows during the period of use without excessive scour, streambank erosion or damage to adjacent property.

3. Approach fills for work or haul bridges will not encroach into the active stream channel. Clearing and grubbing shall be confined to the minimum area actually required for construction and only the stream bank vegetation in direct conflict with construction operations may be removed. Any vegetation which, in the opinion of the engineer, is injured or destroyed due to negligence by the contractor shall be replaced by the contractor at no cost to the State. End fills shall be bulkheaded with planking or other suitable material to prevent spilling or erosion of fill material or other sediment from spilling into the stream.

4. The bridge deck for work or haul bridges shall be sufficiently tight and equipped with curbs or other devices to prevent soil, silt or sediment from spilling into the stream.
5. The contractor shall remove all temporary structures or stream obstructions, not part of the permanent work.

6. The contractor shall submit sketches of proposed work bridges to the engineer for review prior to beginning construction. The MDFWP will be provided a copy of the work bridge plans for their review. The contractor shall obtain the appropriate permits for their work bridges.

7. Staging areas for material storage for construction activities shall not be located within fifty feet horizontally of the highest water surface elevation which may be anticipated during the construction period.

8. Any drainage from the staging area which may pollute Bison Creek or the Boulder River shall be retained for clarification before entry to the river.

9. Excavated material from substructure construction shall not be deposited into the flowing river or stream. Such material shall be deposited in stockpiles which do not encroach on the flowing river or stream and the material shall be deposited in such a manner so as to prevent sediment and silt laden water from entering the flowing river or stream.

10. Riprap will be topsoiled down to the normal high water elevation to a depth that will fill the existing voids in the riprap. The area will be fertilized and seeded.

11. Any boulders with a diameter of 5± feet or larger which are encountered when excavating the new channel adjacent to Indian Head Rock (Station 1015± - 1024±) shall be left in place and incorporated into the channel design.

12. The MDOH project manager will have sole supervisory capacity over this project. However, the MDOH biologist will be available for consultation and to offer advice during construction of all channel changes. The MDFWP may have their fisheries biologist present to offer advice, if they so desire.
13. Channel changes shall be built as specified in the Special Provisions with plugs left at each end to keep the river flow out of the new channel until it is complete. In order to remove the plugs, some instream work may be necessary and water quality criteria for turbidity violations can be expected to occur. The contractor will be required to obtain the necessary short-term construction authorization from the Montana Department of Health and Environmental Sciences.

14. The MDOH will flag trees that are to be preserved in the area between Station 1084 and 1092.

15. Any large rocks (3± feet diameter and larger) that fall into the Boulder River as a result of construction activities shall be removed from the river by the end of work on the day the rock enters the river. Removal shall be by rubber tired equipment and shall be done in such a manner that impact is minimized and damage to the natural streambed is minimal. If the rocks are too large to be handled with normal rubber tired equipment, the contractor will be allowed to drill and shoot them prior to removal in order to break them into manageable size pieces.

16. Before beginning operations, the contractor shall make all personnel employed in the work area aware of the special provisions and conditions relating to environmental aspects of the project as well as the MAA conditions.

17. If diversion of the flow of water is needed to construct the arches or footings at Red Rock Creek and/or Cataract Creek, the flowing water shall be placed in a contained temporary diversion channel. The diversion channel may consist of a pipe, or reinforced plastic lined channel, or reinforced fabric channel liner, etc.

18. The DFWP will be advised of the proposed location of material pits for this project. This will be done as early as possible.
19. The proposed levees at Stations 945± and 955± will be located as possible between existing trees and/or willow clumps in order to avoid the removal of this vegetation.

20. Between Stations 1112± and 1135±, the existing stream bank adjacent to the proposed retaining wall will be preserved as much as possible.

Gary J. Wicks
Director of Highways

James W. Flynn, Director
Montana Department of Fish, Wildlife & Parks

GLL/pz/SH
APPENDIX C

Organizational Chart for Montana Department of Highways
REFERENCES


DAILY NEWSPAPERS REVIEWED

Great Falls Tribune. Great Falls, Montana.
The Independent Record. Helena, Montana.
Daily Inter Lake. Kalispell, Montana.
Missoulian. Missoula, Montana.
Livingstone Enterprise. Livingstone, Montana.
Ravalli Republic. Hamilton, Montana.
PEOPLE CONSULTED

Chrest, Ken. Assistant Bureau Chief. Fisheries Division, Montana Department of Fish, Wildlife and Parks.

Gosnell, Bill. Executive Assistant to the Director. Montana Department of Highways.


Maronick, Phil. Owner. Maronick Construction Company.


Whipperman, Al. Bureau Chief. Montana Department of Fish, Wildlife and Parks.