

Chapter 39
WATER RESOURCE IMPACTS

MDT ENVIRONMENTAL MANUAL

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Chapter 39

WATER RESOURCE IMPACTS

39.1 OVERVIEW

Project effects on surface water and groundwater resources, including water quality impacts, water body modification and impacts from storm water runoff, must be considered as a part of the analyses for compliance with the *National Environmental Policy Act* (NEPA) (42 USC 4321, et seq.) and the *Montana Environmental Policy Act* (MEPA) (MCA 75-1-101, et seq.). In addition, other directives, including, but not limited to, Section 303(d) of the *Clean Water Act* (CWA) (regarding impaired waters), Section 402 of the CWA (regarding the National Pollutant Discharge Elimination System (NPDES)), Section 404 of the CWA (regarding permits for discharges of dredged or fill material into waters of the United States), the Federal *Safe Drinking Water Act*, the *Montana Water Quality Act*, the *Montana Stream Protection Act* and various Tribal and local ordinances impose additional requirements applicable to certain water resources and certain types of actions that must also be addressed as a part of the impact analysis process.

This Chapter provides guidance and procedures for addressing impacts of proposed projects on surface water and groundwater resources, including consideration of the requirements of applicable Federal, Tribal, State and local water resource protection directives and requirements.

39.2 LAWS, REGULATIONS AND GUIDANCE

39.2.1 Federal

39.2.1.1 16 USC 661-667d “Protection and Conservation of Wildlife”

These *Unites States Code* (USC) Sections codify the provisions of the *Fish and Wildlife Coordination Act*. 16 USC 662 requires that, “...whenever the waters of any stream or other body of water are proposed or authorized to be impounded, diverted, the channel deepened, or the stream or other body of water otherwise controlled or modified for any purpose whatever,...”, the entity must first consult with the US Fish and Wildlife Service (USFWS) and the fish and wildlife agencies of the States where the action occurs. The purpose of the consultation is to promote conservation of wildlife resources by preventing loss of and damage to such resources and to provide for the development and improvement of those resources in connection with the proposed action affecting the water resource.

39.2.1.2 33 USC 401, et seq. “Construction of Bridges, Causeways, Dams or Dikes Generally; Exemptions”

These USC Sections codify Section 9 of the *Rivers and Harbors Act of 1899* and establish the authority for the requirement to obtain a permit from the US Coast Guard (USCG) for construction of bridges, causeways, dams or dikes affecting navigable waters of the United States. The primary USCG regulations for implementing Section 9 are provided in Title 33 of the *Code of Federal Regulations* (CFR), Parts 114 and 115.

39.2.1.3 33 USC 403 “Obstruction of Navigable Waters Generally; Wharves; Piers, etc.; Excavations and Filling In”

This USC Section codifies Section 10 of the *Rivers and Harbors Act of 1899* and establishes the authority for the requirement to obtain a permit from the US Army Corps of Engineers (COE) for structures or work, other than bridges or causeways, affecting navigable waters of the United States. The primary COE regulations for implementing Section 10 for structures or work affecting navigable waters are provided in 33 CFR 322.

39.2.1.4 33 USC 1313(d) “Identification of Areas with Insufficient Controls; Maximum Daily Load; Certain Effluent Limitations Revision”

This USC Section codifies the provisions of Section 303(d) of the CWA, which establishes requirements and procedures for identifying impaired waters and implementing total maximum daily loads necessary for achieving applicable water quality standards. Implementing regulations for this part are provided in 40 CFR 130.7 “Total Maximum Daily Loads (TMDL) and Individual Water Quality-Based Effluent Limitations.”

39.2.1.5 33 USC 1342 “National Pollutant Discharge Elimination System”

This USC Section codifies Section 402 of the CWA. It authorizes the US Environmental Protection Agency (EPA) to administer a program for permitting point source discharges of

pollutants, including discharges from storm water conveyance structures and/or disturbed areas, subject to effluent limitations and conditions as EPA determines are necessary to meet the objectives for water pollution prevention and control. The primary EPA regulations for implementing Section 402 are provided in 40 CFR 122-125.

39.2.1.6 33 USC 1344 “Permits for Dredged or Fill Material”

This USC Section codifies Section 404 of the CWA and authorizes the COE and EPA to administer a program for permitting discharges of dredged or fill material into waters of the United States. The primary COE regulations for implementing Section 404 are provided in 33 CFR 320-332. The primary EPA regulations for implementing Section 404 are provided in 40 CFR 230-231.

39.2.1.7 42 USC 300f through 300j “Safety of Public Water Systems”

These USC Sections codify the provisions of the *Safe Drinking Water Act* (SDWA). The SDWA is the main Federal law that ensures the quality of Americans’ drinking water. Under SDWA, EPA sets standards for drinking water quality and oversees the States, localities and water suppliers who implement these standards. Source Water Protection, Underground Injection Control, and Source Water Assessment are components of the programs authorized under SDWA.

39.2.1.8 23 USC 139 “Efficient Environmental Reviews for Project Decision-Making”

For projects involving preparation of an environmental impact statement and for environmental assessments being prepared in accordance with the FHWA “SAFETEA-LU Environmental Review Process Final Guidance,” this part of the USC requires that, at appropriate times during the study process, the lead agency or agencies for the project collaborate with agencies serving as participating agencies to determine the methodologies to be used and the level of detail required for assessing impacts, including water resource impacts. See [Chapters 11 “Preparing Environmental Documentation,”](#) [13 “Environmental Assessment/FONSI”](#) and [14 “Environmental Impact Statement/ROD”](#) for further guidance on this requirement.

39.2.1.9 COE “Clean Water Act Guidance” Website

This website, accessible via the COE Headquarters home page, provides links to a broad range of CWA guidance, including general Information on jurisdictional determinations, the *US Army Corps of Engineers Jurisdictional Determination Form Instructional Guidebook* and other supporting documents.

39.2.1.10 USGS Montana Water Science Center “Ground-Water Information and Data” Website

This US Geological Survey (USGS) website contains links to data on groundwater levels, groundwater networks, water level statistics and links to other groundwater information sources.

39.2.1.11 USGS “National Streamflow Information Program” Website

This website, maintained by the USGS, provides access to streamflow data from the USGS stream-gaging network. The network consists of approximately 7,500 stream gages that provide long-term, accurate and unbiased information on streamflow to meet local, State, regional and national needs.

39.2.1.12 “FishXing” Website

This website is maintained by the US Forest Service (USFS), Stream Systems Technology Center and is accessible via the Stream Systems Technology Center website. It provides links to design guidance, software, multimedia presentations and other resources regarding evaluation and design of culverts for fish passage. Examples of information available on the website include:

- case studies;
- video lectures and videos;
- aquatic organism passage stream simulation design guide. a method for designing and building road-stream crossings intended to permit free and unrestricted movements of any aquatic species; and
- aquatic organism passage assessment guide, a national inventory and assessment procedure for identifying barriers to aquatic organism passage at road-stream crossings.

39.2.1.13 EPA “Stormwater Discharges From Construction Activities” Website

This website, accessible via the EPA home page, contains information regarding storm water and construction. Examples of information available on the website include:

- construction Phase II Fact Sheets,
- guidance on developing Storm Water Pollution Prevention Plans (SWPPPs) for construction sites,
- national menu of best management practices (BMPs),
- construction webcasts,
- Low Erosivity Waiver (LEW) calculator,
- EPA’s Construction General Permit, and
- electronic Notice of Intent (eNOI) system.

39.2.1.14 EPA “Stormwater Discharges From Municipal Separate Storm Sewer Systems (MS4s)” Website

This website, accessible via the EPA home page, provides information regarding the NPDES MS4 permit program. Examples of information on the website include:

- storm water Phase II Final Rule Fact Sheets,

- national menu of BMPs,
- urbanized area maps,
- minimum control measures, and
- funding information.

39.2.1.15 FHWA Restoration of Fish Habitat in Relocated Streams

This *Manual*, accessible via the FHWA website, provides guidelines for the design and construction of relocated channels and describes measures that lead to rapid recovery of new channels by natural processes. It includes chapters on the following topics:

- flow in natural streams,
- fish habitat,
- rehabilitation concepts,
- habitat restoration measures and structures,
- design of relocated stream channels,
- construction of relocated channels with habitat structures, and
- Tenmile Creek – A Case Study in Stream Relocation.

39.2.1.16 FHWA Evaluation and Management of Highway Runoff Water Quality (Water Quality Synthesis)

This 1996 *Manual* presents a synthesis of past documentation and research on highway storm water runoff to provide a single-volume user's manual on water quality assessment and mitigation. The *Manual* presents the available and appropriate impact prediction and mitigation tools for use during highway project planning and development activities. The *Manual* is a self-contained desk reference for highway practitioners with an extensive bibliography. It is available from the FHWA Office of Natural Environment.

39.2.1.17 FHWA Technical Advisory T 6640.8A

The Technical Advisory, dated October 30, 1987, includes the following guidance for addressing water resource issues in environmental documents.

39.2.1.17.1 Water Quality

The environmental documentation should include summaries of analyses and consultations with the State and/or local agency responsible for water quality. Coordination with EPA under the Federal CWA may also provide assistance in this area. The discussion should include sufficient information to describe the ambient conditions of streams and water bodies likely to be impacted. It should also identify the potential impacts of each alternative and proposed mitigation measures. Under normal circumstances, existing data may be used to describe ambient conditions. The inclusion of water quality data spanning several years is encouraged to reflect trends.

The environmental documentation should also identify any locations where roadway runoff or other non-point source pollution may have an adverse impact on sensitive water resources (e.g., water supply reservoirs, groundwater recharge areas, high quality streams). The 1981 FHWA research report "Constituents of Highway Runoff," the 1985 report "Management Practices for Mitigation of Highway Stormwater Runoff Pollution" and the 1987 report "Effects of Highway Runoff on Receiving Waters" contain procedures for estimating pollutant loading from highway runoff. They may be helpful in determining the level of potential impacts and appropriate mitigation measures. The environmental documentation should identify the potential impacts of each alternative and proposed mitigation measures.

Where an area designated as a principal or sole-source aquifer under Section 1424(e) of the SDWA may be impacted by a proposed project, early coordination with EPA will assist in identifying potential impacts. EPA will furnish information on whether any of the alternatives affect the aquifer. This coordination should also identify any potential impacts to the critical aquifer protection area (CAPA), if designated, within affected sole-source aquifers. If none of the alternatives affect the aquifer, the requirements of the SDWA are satisfied. If an alternative is selected that affects the aquifer, a design must be developed to ensure, to the satisfaction of EPA, that it will not contaminate the aquifer (40 CFR 149). The environmental documentation should record coordination with EPA and identify its position on the impacts of the various alternatives. The environmental documentation should show that EPA's concerns on the preferred alternative have been resolved.

Wellhead protection areas were authorized by the 1986 Amendments to the SDWA. Where a proposed project encroaches on a wellhead protection area, the environmental documentation should identify the area, the potential impact of each alternative and proposed mitigation measures. Coordination with the State agency responsible for the wellhead protection plan will aid in identifying the areas, impacts and mitigation. If the preferred alternative impacts these areas, the environmental documentation should document that it complies with the approved State wellhead protection plan.

39.2.1.17.2 Water Body Modification

For each alternative under detailed study, the environmental documentation should contain exhibits and discussions identifying the location and extent of water body modifications (e.g., impoundment, relocation, channel deepening, filling). The documentation should identify the use of the stream or body of water for recreation, water supply or other purposes. The documentation should provide the results of coordination with appropriate Federal, Tribal, State and local agencies (e.g., coordination with the USFWS under the *Fish and Wildlife Coordination Act*).

39.2.1.17.3 Storm Water

The environmental documentation should identify locations where roadway runoff or other non-point source pollution may have an adverse impact on sensitive water resources (e.g., water supply reservoirs, groundwater recharge areas, high quality streams, TMDL streams). The environmental documentation should identify the potential storm water impacts of each alternative and proposed mitigation measures. The reports mentioned under 39.2.1.16.1

contain procedures for estimating pollutant loading from highway runoff. They may be helpful in determining the level of potential impacts and appropriate mitigation measures.

39.2.2 Tribal

39.2.2.1 Aquatic Lands Protection Ordinance 90-A

This Ordinance, enacted by the Blackfeet Nation, requires a permit from the Blackfeet Nation for construction or fill projects that occur in wetlands, riparian areas and streams on the Blackfeet Indian Reservation.

39.2.2.2 Aquatic Lands Conservation Ordinance 87-A

This Ordinance, enacted by the Confederated Salish and Kootenai Tribe (CSKT), requires a permit from the CSKT for any proposed work in, over or near any stream, river, lake or wetland on the Flathead Indian Reservation.

39.2.3 State

39.2.3.1 MCA 7-13-4501, et seq. “Local Water Quality Districts”

These Parts of the *Montana Code Annotated* (MCA) establish policy and authority for creation of local water quality districts to protect, preserve and improve the quality of surface water and groundwater. Implementing rules for these Parts are provided in the *Administrative Rules of Montana* (ARM) Sections 17.30.1801 through 1807.

39.2.3.2 MCA 75-5-101, et seq. “Water Quality”

These Montana statutes establish the authority for the Department of Environmental Quality (DEQ) to administer requirements for protecting, maintaining and improving the quality and potability of water for public water supplies, wildlife, fish and aquatic life, agriculture, industry, recreation and other beneficial uses and to provide a comprehensive program for the prevention, abatement and control of water pollution. Implementing rules are provided in ARM 17.30.101 through 2006.

39.2.3.3 MCA 75-5-318 “Short-Term Water Quality Standards for Turbidity”

This Montana statute establishes the authority for DEQ to issue 318 Authorizations for turbidity resulting from stream-related construction activities or stream enhancement projects. Section 318 also authorizes the Department of Fish, Wildlife, and Parks (FWP), to authorize short-term water quality standards for any stream construction project that it reviews under MCA 75-7-101, et seq. “Streambeds” or MCA 87-5-501, et seq. “Stream Protection.” Activities must be performed in accordance with conditions prescribed to protect water quality and to minimize sedimentation.

39.2.3.4 MCA 75-5-401 through 410 “Permits”

These Montana statutes establish the authority for DEQ to administer the Montana Pollutant Discharge Elimination System (MPDES) permit programs. Implementing rules for the MPDES programs include the following:

- ARM 17.30.1101-1117 “Storm Water Discharges”:
 - + ARM 17.30.1110 “Application Procedures: General;”
 - + ARM 17.30.1111 “Application Procedures, Permit Requirements: Small MS4s”; and
 - + ARM 17.30.1115 “Notice of Intent Procedures: Construction Activity”;
- ARM 17.30.1201-1209 “Montana Pollutant Discharge Elimination System (MPDES) Standards”; and
- ARM 17.30.1301-1387 “Montana Pollutant Discharge Elimination System (MPDES) Permits.”

39.2.3.5 MCA 75-5-605 “Prohibited Activity – Exemption”

This Montana statute includes provisions that prohibit the siting and construction of a sewage lagoon less than 500 feet from an existing water well. (This may be an issue for MDT rest areas or storm water detention basins.)

39.2.3.6 MCA 75-6-101, et seq. “Public Water Supply”

These Montana statutes establish policy and authority for DEQ to administer requirements for protecting, maintaining and improving the quality and potability of water for public water supplies and domestic uses. Implementing rules are provided in ARM 17.38.101 through 607.

39.2.3.7 MCA 76-4-101, et seq. “Sanitation in Subdivisions”

These Montana statutes codify the provisions of the *Sanitation in Subdivisions Act*. They establish the authority for DEQ to administer rules and standards for approving subdivisions for various types of public and private water supplies, sewage disposal facilities, storm water drainage ways, and solid waste disposal. Implementing rules are provided in ARM 17.36.101, et seq. (These requirements may be a consideration in the evaluation of indirect or cumulative impacts for certain types of MDT projects.)

39.2.3.8 MCA 77-1-1101, et seq. “Use of Beds of Navigable Rivers”

These Montana statutes establish the authority for Department of Natural Resources and Conservation (DNRC) to administer requirements for obtaining a land-use license or easement from DNRC for the construction, placement, or modification of a structure or improvements in,

over, below, or above a navigable stream. When an MDT project involves work affecting a navigable stream, the MDT Right-of-Way Bureau generally secures the land-use license or easement, if required.

39.2.3.9 MCA 85-2-901, et seq. “Ground Water Assessment”

These Montana statutes establish the authority for improving the quality of groundwater management, protection and development decisions within the public and private sectors. By establishing a program to systematically assess and monitor the State’s groundwater and to disseminate the information to interested persons. To improve coordination of groundwater management, protection, development and research functions among units of State, Federal and local government by establishing a groundwater assessment steering committee.

39.2.3.10 MCA 87-5-501 through 509 “Stream Protection”

These Montana statutes establish the authority for FWP to administer requirement for submitting SPA 124 Notifications for projects that may affect any streams or tributaries in Montana.

39.2.3.11 ARM 17-30-1001 through 1045 “Montana Ground Water Pollution Control System”

These ARM Sections address standards and permit requirements administered by DEQ for limiting discharges that could introduce pollution into Montana’s ground water resources.

39.2.3.12 ARM 17.30.1101 through 1387 “Montana Pollutant Discharge Elimination System”

These ARM Sections address requirements and standards for permits associated with pollutant discharges, including those from Small Municipal Separate Storm Sewer Systems (MS4), from construction activities disturbing one acre (0.4 ha) or more of ground area and from construction dewatering operations. Under the authority of these rules, DEQ administers an MPDES “General Permit for Storm Water Discharges Associated with Small Municipal Separate Storm Sewer System (MS4)”, an MPDES “General Permit for Storm Water Discharges Associated with Construction Activity” and an MPDES “Construction Dewatering General Permit.” Information about the general permits is accessible via the DEQ website.

39.2.3.13 DEQ “Water Quality Information” Website

This website, accessible via the DEQ home page, contains links to a broad range of information regarding water quality, including the following:

- laws and rules,
- CWA Information Center,
- STORET (water quality monitoring data storage/retrieval),
- water quality library,

- public drinking water,
- source water protection/source water assessments,
- TMDLs,
- standards and classifications,
- surface water monitoring, and
- water quality publications.

The website, accessed via the “Source Water Protection” link, includes a link to information on “Montana Local Water Quality Districts” authorized under MCA 7-13-4501, et. seq.

39.2.3.14 Montana Natural Resource Information System (NRIS) “Water Information” Website

This website, accessible via the NRIS home page, contains links to a broad range of Montana water resource information, including data on surface water, groundwater and water quality.

39.2.3.15 Montana “NRIS Montana Maps” Website

This website, accessible via the NRIS home page, contains links to mapping for watersheds, drainage basins and sub-basins, and for average precipitation, land cover, land ownership, land slope and rivers and streams within each sub-basin.

39.2.3.16 Montana Bureau of Mines and Geology “Ground-Water Information Center” Website

This website, accessible via the Bureau of Mines and Geology home page, provides a central repository for information on the groundwater resources of Montana. The data include well-completion reports from drillers, measurements of well performance and water quality based on site visits, water-level measurements at various wells for periods of up to 60 years, and water-quality reports for thousands of samples.

39.2.3.17 FWP “Montana Fisheries Information System (MFISH)” Website

This website, accessible via the FWP home page, provides a database of Montana fisheries information that can be searched by the water body name, species, FWP region, county or hydrologic unit code.

39.2.3.18 DNRC “Water Resources Division” Website

This website, accessible via the Department of Natural Resources and Conservation (DNRC) home page, includes a link to information on Controlled Ground Water Areas. These areas are river basins or aquifers that DNRC has authority to control or close to certain types of water appropriations due to water availability, water contamination problems or for protecting existing water rights.

39.2.3.19 DNRC “Montana Land-Use License or Easement on Navigable Waters” Website

This website, accessible via the “Stream Permitting Guide” link on the DNRC Public Interest website for Permits/Licenses includes information on the requirements that DNRC administers for obtaining a land-use license or easement for the construction, placement or modification of a structure or improvements in, over, below or above a navigable stream.

39.2.3.20 DEQ “Storm Water Discharges Associated with Construction Activity” Website

This website, accessible via the DEQ home page, contains information regarding storm water and construction (e.g., storm water construction general information; the General Permit for storm water discharges associated with construction activity; DEQ guidance, rules and regulations).

39.2.3.21 DEQ “MPDES General Permit for Storm Water Discharges Associated with Small Municipal Separate Storm Sewer Systems (MS4)” Website

This website, accessible via the DEQ home page, contains information regarding the storm water MS4 General Permit. Examples of the information available include:

- the General Permit for Small MS4s,
- Environmental Assessment and fact sheet for the General Permit,
- permit fee schedule and application form,
- DEQ guidance for storm water construction, and
- DEQ maps for initial small MS4 permit coverage area:

39.2.4 MDT**39.2.4.1 MDT Standard Specification 208 “Water Pollution Control and Stream Preservation”**

This specification includes provisions for preventing water pollution, minimizing impacts to streams and other water resources, controlling sediment transport and soil erosion, and reclamation.

39.2.4.2 MDT Erosion and Sediment Control Best Management Practices Manuals

These documents include a *Field Manual* and a *Reference Manual*, both are accessible via the MDT website. The purpose of the *Manuals* is to describe the procedures and methods to reduce erosion and sedimentation associated with highway-related preconstruction, construction and post-construction activities.

39.3 PROCEDURES

39.3.1 Information Gathering

The Preliminary Field Review (PFR) is the initial step in evaluating water resource issues for a proposed project. The PFR includes preliminary evaluation of the scope of work and potential for social, economic and environmental impacts, including water resource impacts. The Design Team (DT) ensures appropriate MDT personnel are notified of the field review and invited to participate. The Project Development Engineer (PDE) reviews the list of Environmental Services Bureau (ESB) attendees and includes others as necessary to ensure appropriate ESB personnel are in attendance. The PDE participates in the PFR to make a preliminary evaluation of available information on the project scope and the potential for water quality and/or storm water impacts, including construction and post-construction operational impacts affecting impaired waters, sole source aquifers, public drinking water supplies or other water resources. The District Biologist (DB) participates in the PFR to make a preliminary evaluation of available information on the project scope and the potential for water resource/water body modification impacts.

Following the field review, the DT prepares a PFR Report summarizing the issues discussed during the review. The final PFR Report is distributed for review and comment. Within ESB, the PDE serves as the document champion to coordinate and collect comments from other ESB Sections. The PDE compiles the comments into a PFR review memorandum for signature by the Environmental Services Bureau Chief.

For projects subject to the requirements of 23 USC 139 "Efficient Environmental Reviews for Project Decision-Making," the PDE and DB, in cooperation with FHWA, collaborate with participating agencies in determining the appropriate methodologies to be used and the level of detail required in the analysis of water resource impacts of project alternatives.

Based on the project scope and field observations during the PFR, the PDE and DB coordinate in conducting a field and literature review to gather information that is used in the analysis of the proposed project's water resource impacts. The PDE and DB also coordinate in obtaining water resource information and determinations of jurisdiction from agencies that have a management or regulatory interest in rivers, streams and other water resources the project may affect. Examples include DEQ, DNRC, FWP, EPA, USFWS, COE, USFS, Tribal agencies, irrigation districts, municipalities, local water quality districts, lake associations, soil and water conservation districts and watershed organizations.

The following Sections describe roles and responsibilities and the information gathered for analysis of water quality impacts, water resource/water body modification impacts and storm water impacts. [Section 39.3.1.1](#) addresses the information categories considered for all water resource impact analyses. [Section 39.3.1.2](#) discusses the additional categories of information applicable to water quality impact analyses. [Section 39.3.1.3](#) describes the additional categories of information applicable to water resource/water body modification impact analyses and [Section 39.3.1.4](#) discusses the additional information categories applicable to storm water impact analyses.

After the PDE and DB complete all information gathering, they document the information in the project file and provide a copy of the documentation to the DT.

39.3.1.1 Information Gathered for All Types of Water Resource Impact Analyses

The PDE and DB coordinate to document the following, as applicable and available for the project area:

1. Drainage Basins/Watersheds. Identify the names and boundaries of drainage basin(s), sub-basin(s) and watershed(s) (e.g., depicted on maps) in the project study area and discussion of drainage characteristics (e.g., where they originate, where they drain), topography, elevations and current and planned development in watershed.
2. Public Water Supplies. Identify the name and location of surface and groundwater resources that serve as public water supplies and the entity or entities with jurisdiction.
3. Surface Water Resources. Identify the name and location of water resources, including natural and constructed water bodies, in each affected watershed in relation to project alternatives (e.g., depicted on maps, aerial photographs). Also include the following information for each water resource:
 - type of water resource (e.g., river, perennial or intermittent stream/tributary, lake, pond, reservoir, irrigation system, slough);
 - water quality classification; and
 - applicability and conditions of any TMDLs pursuant to *Clean Water Act* Section 303(d) (e.g., standards/beneficial uses impaired, causes of impairment, sources of impairment, TMDL status or priority for TMDL development).
4. Groundwater Aquifers. Identify the name and location in relation to project alternatives (e.g., depicted on maps) of major groundwater aquifers in the project study area. Provide the following information for each aquifer:
 - depth below ground level and well-yield data;
 - aquifer composition (i.e., type of geology/deposits), groundwater transmissibility (flow rate through the soil) and topography;
 - sources of recharge and discharge;
 - uses (e.g., drinking water supply);
 - whether designated as a sole source aquifer; and
 - presence of wellhead protection areas/certified source water protection areas, Controlled Groundwater Areas and, if present, their boundary and location in relation to project alternatives.

39.3.1.2 Specific Information Gathered for Water Quality Impact Analyses

For analysis of water quality impacts, in addition to the items described in [Section 39.3.1.1](#), the PDE also documents the following, as applicable and available for the project area:

1. Water Quality Monitoring Data. Include monitoring data for both surface water resources and groundwater aquifers.
2. Other Applicable Water Quality Requirements. Consider the following categories:
 - local water quality district's name, jurisdiction boundaries and program requirements;
 - Tribal requirements (e.g., Confederated Salish and Kootenai Tribe (CSKT) Water Quality Management Ordinance 89B, CSKT Water Quality Standards, Anti-degradation Policy) and description of requirements/standards; and
 - other local requirements (e.g., Missoula Water Quality Ordinance), including name and boundaries of local jurisdiction and description of requirements/standards.

39.3.1.3 Specific Information Gathered for Water Resource/Water Body Modification Impact Analyses

For analysis of water resource/water body modification impacts, in addition to the items described in [Section 39.3.1.1](#), the DB and PDE also document the following, as applicable and available for the project area:

1. COE Jurisdiction. Include preliminary determination of jurisdictional status for the COE (i.e., special aquatic sites, waters of US or navigable waters of the US, including irrigation systems that have a downstream surface connection to other waters of the US and/or jurisdictional wetlands, per the regulations).
2. Stream Information. In conjunction with the Hydraulics Section, the DB/PDE provide following information on streams:
 - origin, length and area drained;
 - flow data/flow regime, substrate composition, channel condition, past causes/changes in stream morphology, etc.;
 - in-stream habitat (e.g., pool and riffle complexes), suitability for fish, aquatic insects, etc.;
 - uses (e.g., recreation);
 - diversions (e.g., for irrigation purposes); and
 - current roadway crossing type, if applicable, and watershed/project segment with which it is associated.
3. Irrigation System Information. In conjunction with the Hydraulics Section, the DB/PDE provide the following information for irrigation systems:

- active and abandoned irrigation facilities (e.g., bridges, ditches, berms, headgates, culverts, siphon culverts, flow splitters, weirs, pumps, sprinklers);
 - size range, type (e.g., corrugated steel pipe, reinforced concrete pipe) and condition of irrigation system culverts;
 - system ownership and access points (e.g., through prescriptive easements);
 - plans for expansion or improvement of irrigation facilities;
 - location of in-channel or off-channel irrigation water storage facilities;
 - location of lateral canals, for diverting irrigation water to irrigator's property; and
 - sources of water for irrigation (e.g., diversion from streams).
4. Wild and Scenic Rivers. The PDE identifies and describes any potentially affected designated or candidate Wild and Scenic River segments in the project study area. See [Chapter 35 "Wild and Scenic Rivers"](#) for procedures and guidance.
 5. Domestic Wells. In conjunction with the Hydraulics Section, the PDE identifies the presence of domestic wells/number of wells per square mile (kilometer) in the project study area.

39.3.1.4 Specific Information Gathered for Storm Water Impact Analyses

For analysis of storm water impacts, in addition to the items described in [Section 39.3.1.1](#), the PDE also documents the following, as applicable and available for the project area:

1. Potential MS4 or Tribal Involvement. Identify any potential involvement with areas covered by an MPDES or NPDES permit for MS4s. Also, identify potential involvement with Tribal lands.
2. Existing Storm Water Facilities. For projects involving improvements to an existing highway, identify current storm water drainage associated with the highway, including the following:
 - method of handling storm water runoff (e.g., overland sheet flow, carried in ditches/culverts, directed through storm drains to a closed storm sewer system, directed to infiltration systems such as drywells, direct discharge from bridges into water body crossed); and
 - identification of surface water bodies and groundwater bodies receiving storm water runoff from highway.

39.3.2 Analysis and Findings

Throughout the design process, the PDE and DB coordinate with the DT on an ongoing basis to evaluate project impacts to water resources and measures for avoiding and/or minimizing those

impacts. The PDE and DB also coordinate with agencies that have a management or regulatory interest in water resources the project may affect (e.g., USFWS pursuant to the *Fish and Wildlife Coordination Act*, COE under CWA Section 404, EPA, FWP, DNRC, DEQ, Tribal agencies, irrigation districts, municipalities, lake associations, soil and water conservation districts, watershed organizations), regarding the project's potential impacts and measures to avoid or minimize the impacts.

The following Sections discuss the procedures for the analyses and findings regarding water quality impacts, water resource/water body modification impacts and storm water impacts.

39.3.2.1 Water Quality Impact

In conducting the analysis of potential impacts, the appropriate ESB personnel consider both construction-related effects and post-construction operational effects of the project alternatives under study. They consider the nature of the proposed project (e.g., rehabilitation, reconstruction, new construction) and the proximity of project alternatives to surface water and ground water resources identified through the information-gathering activities. For each alternative, they assess the topography and the relationship to surface water and ground water resources to identify those that have potential for being affected by pollutants from construction activities and operation and maintenance of the completed facility. They determine the types of construction activities the project alternatives will likely involve that have potential for affecting water quality (e.g., cut/fill excavation or other soil disturbance, bridge removal/replacement, culvert removal/replacement, in-stream work, operation of construction equipment, stockpiling of materials). They also determine aspects of the project alternatives that have potential for post-construction water quality impacts (e.g., increased roadway surface and/or changes in drainage facilities and/or drainage patterns with increased volume/velocity of discharge resulting in increased pollutant loads, erosion and scouring affecting receiving waters). They then conduct analyses to identify the type(s) and extent of pollutants the project alternatives could introduce and consider the results of those analyses in comparison with existing characteristics of the affected water resources (e.g., current water quality classification, designation as impaired, TMDL stream, Wild and Scenic River, high quality stream, high quality aquatic habitat, drinking water supply, sole source aquifer) to identify potential impacts. The following sections provide examples of construction and post-construction items with potential for affecting water quality.

39.3.2.1.1 Construction-Related Impacts

Examples of construction-related items with potential for water quality impacts include:

- in-stream work, channel relocation and/or placement of fill into a water body causing increased turbidity and sedimentation;
- discharge of eroded soils from areas disturbed by construction and/or from soil stockpiles;
- accidental leaks and spills of hazardous materials from construction vehicles and equipment; and

- location of materials sources within an active channel or floodplain area, with the potential for introducing petroleum-based contamination and fine sediments as a result of machinery working within or in close proximity to those water resources.

39.3.2.1.2 Post-Construction Impacts

Examples of post-construction operational items with potential for water quality impacts include:

- increased impervious surface area for roadway contaminants (e.g., oil, grease and related petroleum hydrocarbons, metals such as copper and zinc, tire rubber) and atmospheric pollutants to be deposited and carried off in storm water discharges to adjacent water bodies; and
- application of herbicides, mowing, winter maintenance (application of sand and deicing salt), debris removal from slumps and landslides, all of which can result in pollutants being carried into adjacent water bodies through storm water discharges.

39.3.2.1.3 Impact Avoidance and Minimization Measures

For the identified potential water quality impacts, the PDE/DB coordinates with the DT to evaluate measures for avoiding and minimizing potential adverse impacts. Examples of impact avoidance and minimization measures may include the following:

- incorporating design modifications in the project to avoid water resources;
- requiring covers on soil and materials stockpiles;
- limiting or prohibiting in-stream work or allowing in-stream work only during low-flow periods;
- ensuring full compliance with MDT Standard Specification 208 "Water Pollution Control and Stream Preservation";
- implementation by the contractor of suitable measures from the MDT *Permanent Erosion and Sediment Control Design Guidelines* (e.g., check dams, lined ditches, settling basins);
- minimizing the amount of area disturbed at any given time and developing special provisions for re-vegetating disturbed areas as soon as practical after completion of operations causing the disturbance;
- contractor compliance with requirements of the MPDES "General Permit for Storm Water Discharges Associated with Construction Activity;"
- ensuring compliance with stipulations associated with 318 Authorizations;
- contractor-prepared emergency response plans for addressing accidental spills of harmful materials including provisions for immediate spill containment;

- limiting the size of storage containers for fuel, solvents or other hazardous materials at the project site, particularly in recharge areas of public water supply wells;
- contractor-imposed restrictions that allow refueling only in a designated containment area;
- as appropriate, designing the project to encourage infiltration of roadway runoff into adjacent soils where conditions are favorable to prevent pollutant discharge to surface waters;
- incorporating water quality treatment facilities for roadway runoff in the project design (e.g., wet ponds for settlement of pollutants where adequate space is available within existing right-of-way, or biofiltration swales where right-of-way is limited); and
- designing the project to convey roadway runoff to dry wells or sumps that direct the runoff into alluvial materials for filtration before reaching groundwater.

As an integral part of the evaluation of impact avoidance and minimization measures, the appropriate ESB personnel determine whether the affected water resources are subject to special requirements (e.g., TMDLs, Tribal or local government water quality ordinances and/or standards, Local Water Quality District controls, EPA review associated with designated sole source aquifers). For water resources subject to special requirements, the appropriate ESB personnel coordinate with the appropriate agencies to determine how the applicable requirements affect the evaluation and selection of measures for avoiding and minimizing the impacts.

The appropriate ESB personnel document the results of the evaluation of water quality impacts, measures to avoid, and minimize those impacts in the project file, and provide a copy of the documentation to the DT. The appropriate ESB personnel also document the results of coordination with affected water quality agencies.

The PDE ensures that information on water quality impacts, impact avoidance and minimization measures and results of coordination with regulatory and resource agencies is compiled for incorporation into the environmental documentation for the project; see [Section 39.3.2.4](#) "Documentation."

39.3.2.2 Water Resource/Water Body Modification Impact

In conducting the analysis of potential impacts, the appropriate ESB personnel consider both construction-related effects and post-construction effects of the project alternatives under study. They evaluate the scope of the project alternatives to identify aspects with potential for modifying water resources/water bodies such that their uses and functions (e.g., for recreation, water supply, fish and wildlife habitat) would be affected. For each alternative, they identify construction-related aspects (e.g., water resource/water body impoundments, channel relocations, channel deepening, filling, bank stabilization) and post-construction aspects (e.g., increased roadway surface with potential for increased pollutant loads). They then identify impacts by evaluating the potential effect of those aspects on the uses and functions of the affected water resources/water bodies as identified from the information gathering activities (e.g., impacts to recreational uses and impacts to fish and wildlife from loss, degradation or

modification of aquatic or terrestrial habitat). The following sections present examples of construction and post-construction items with potential for affecting water resource/water body uses and functions through water resource/water body modification.

39.3.2.2.1 Construction-Related Impacts

Examples of construction-related water resource/water body modification items with potential for affecting uses and/or functions include the following:

- excavation within stream channel for pier construction;
- alteration of substrate, aquatic habitat, flow characteristics and scour potential as a result of pier relocation associated with bridge replacement;
- excavation and grading of stream channel/banks for abutment construction;
- installation of new or relocated culverts affecting fish passage;
- cut sections intersecting perched groundwater, creating an outlet for groundwater movement;
- displacement of domestic water wells;
- disturbance and displacement of water body substrate and in-stream habitat for culvert extensions to accommodate wider roadway;
- temporary disruption of irrigation facilities;
- increase in turbidity and sedimentation associated with in-stream work, channel relocation and/or placement of fill into a water body;
- impoundment of surface water flow through construction of roadway embankment; and
- impacts to aquatic habitat or recreational use functions from accidental leaks and spills of hazardous materials from construction vehicles and equipment.

39.3.2.2.2 Post Construction Impacts

Examples of post-construction water resource/water body modification items with potential for affecting uses and/or functions include:

- increased impervious surface area for roadway contaminants (e.g., oil, grease and related petroleum hydrocarbons, metals such as copper and zinc, tire rubber) and atmospheric pollutants to be deposited and carried off in storm water discharges to adjacent water bodies, thereby potentially affecting aquatic life/habitat and recreational use;
- road maintenance impacts to aquatic life/habitat and recreational uses (e.g., caused by roadway runoff carrying harmful substances from application of herbicides, mowing,

application of sand and deicing salt for winter maintenance, debris removal from slumps and landslides); and

- adverse effects on groundwater quantity and quality from development induced by the highway project, including increased groundwater use and effects from installation of individual and community wastewater treatment facilities.

39.3.2.2.3 Impact Avoidance and Minimization Measures

For the identified potential water resource/water body modification impacts, the appropriate ESB personnel coordinate with the DT to evaluate measures for avoiding and minimizing the impacts. Examples of impact avoidance and minimization measures for water resource/water body modification impacts include the following:

- incorporating design modifications into the project to avoid or minimize water resource/water body modification (e.g., minimize stream channel relocation and/or alteration, provide suitable drainage culverts to avoid unintentional impoundment of surface water flows by roadway embankment);
- designing structures (e.g., culverts, bridges) to avoid obstructing or substantially changing flow characteristics of rivers and/or streams;
- designing the project to prevent disturbance of shallow groundwater flow patterns and to maintain irrigation canals, ditches and agricultural drainage systems in their existing location and condition, to the extent practical;
- designing the project to provide for continuation of surface flow patterns through the project study area and avoid creation of new impoundments where percolation may alter groundwater hydrology;
- ensuring timing of construction in accordance with permit conditions to protect reproductive cycles of aquatic species;
- relocating private wells in accordance with MDT and FHWA standard practices;
- designing any culverts to be added or replaced in fish-bearing waters to accommodate fish passage to the extent practical;
- replacing any disturbed irrigation facilities in consultation with the owners to minimize impacts to farming and/or ranching operations; and
- designing new storm water outfalls associated with new or reconfigured surface drainage systems to avoid erosion affecting adjacent water bodies.

As an integral part of the evaluation of impact avoidance and minimization measures, the appropriate ESB personnel determine whether the affected water resources are subject to special requirements (e.g., coordination with USFWS pursuant to the *Fish and Wildlife Coordination Act*, TMDLs pursuant to CWA Section 303(d), Section 404 or Section 10 permits from the COE, Section 9 permits from the USCG, land use license or easement from DNRC for

work involving a navigable water, ALPO or ALCO Tribal permits, SPA 124 Notification to FWP or 318 Authorization from DEQ). For water resources subject to special requirements, the appropriate ESB personnel coordinate with the appropriate agencies to determine how the applicable requirements affect the evaluation and selection of measures for avoiding and minimizing the impacts.

The appropriate ESB personnel document the results of the evaluation of water resource/water body modification impacts and measures considered to avoid and minimize those impacts in the project file. The appropriate ESB personnel provide a copy of the documentation to the DT. The appropriate ESB personnel also document the results of coordination with affected regulatory and resource agencies.

The DB coordinates with the PDE to ensure the information on water resource/water body modification impacts, impact avoidance and minimization measures and results of coordination with regulatory and resource agencies is provided for incorporation into the environmental documentation for the project; see [Section 39.3.2.4](#) "Documentation."

39.3.2.3 Storm Water Impact

39.3.2.3.1 Potential Impacts

In conducting the analysis of potential impacts, the PDE considers the information gathered on the identification of water resources/water bodies likely to receive storm water discharges from project alternatives; during project construction and/or associated with operation and maintenance of the completed facility. For the evaluation of construction-related impacts, the PDE considers the scope of the proposed project alternatives and the nature and extent of construction activities likely to be involved. The PDE compares the anticipated construction activities with the locations of surface water and ground water resources and evaluates the potential for storm water discharges from the construction areas to carry pollutants into the water resources. As a part of this analysis, the PDE recognizes that MDT requires its contractors to implement storm water BMPs and adhere to applicable storm water control requirements. For the evaluation of post-construction operation and maintenance impacts, the PDE considers effects associated with increases in impervious roadway surface and changes in storm water drainage facilities and/or drainage patterns. Examples of the types of impacts that may be identified include:

- storm water discharges into water bodies subject to TMDLs;
- increased erosion and sediment runoff associated with storm water drainage from areas disturbed and exposed during construction;
- storm water transport of pollutants associated with operation of construction equipment (e.g., fueling, engine maintenance activities involving oil, grease, solvents, other engine fluids) into surface water or groundwater resources;
- increased impervious roadway areas provide greater surface area for roadway contaminants (e.g., oil, grease and related petroleum hydrocarbons, heavy metals, tire rubber) and atmospheric pollutants to be deposited and carried off in storm water discharges to adjacent water bodies;

- increased erosion and sediment runoff from new storm water outfalls associated with new or reconfigured surface drainage systems; and
- storm water transport of harmful substances from roadway maintenance (e.g., application of herbicides, mowing, application of sand and deicing salt for winter maintenance, debris removal from slumps and landslides) into surface water and groundwater resources.

39.3.2.3.2 Impact Avoidance and Minimization Measures

For the identified potential storm water impacts, the appropriate ESB personnel coordinate with the DT and interested/affected agencies to evaluate measures for avoiding and minimizing the impacts. The DT incorporates impact avoidance and minimization measures associated with project design in the project plans. The District Environmental Engineering Specialist (DEES) works to ensure contractor compliance regarding environmental issues. The following are examples of storm water impact avoidance and minimization measures for various construction and operational aspects:

1. NPDES/MPDES Permit Requirements for Construction Storm Water Discharges. Projects disturbing 1 acre (0.4 ha) or more of land area are subject to NPDES and/or MPDES permit requirements for storm water discharges associated with construction activity; NPDES if located on Tribal land, MPDES for other areas of the State. MDT also secures NPDES/MPDES permits for work disturbing less than 1 acre (0.4 ha) if the amount of disturbance is close to the 1 acre (0.4 ha) threshold and the area to be disturbed is in close proximity to a water resource that could be affected by storm water discharge from the site. The MDT Erosion Control/Construction Engineer reviews contract plans and special provisions for proposed MDT projects to conduct a preliminary evaluation of the applicability of NPDES/MPDES permit requirements for storm water discharges associated with construction activity. The Erosion Control/Construction Engineer provides the PDE a memorandum that summarizes the results of the preliminary evaluation and provides information on Standard Provisions to include in the contract documents, application requirements and fees for necessary permit coverage and the location of erosion control plans and location maps for the project.

The lead contractor must comply with the permit requirements, when applicable, including:

- submitting an NOI for coverage under the general permit for construction activity, submit to EPA for NPDES or to DEQ for MPDES; and
 - preparing and implementing a SWPPP that identifies and documents sources of potential pollutants at the construction activity site and BMPs to be used to help ensure pollutants do not impact receiving surface waters through storm water runoff.
2. NPDES/MPDES MS4 Permit Requirements. Projects located entirely or partially within an area covered by the NPDES or MPDES permit requirements for MS4s must comply with applicable effluent limitations and control measures described in the Storm Water

- Management Plan (SWMP) for affected area(s). The MDT Erosion Control/Construction Engineer reviews contract plans and special provisions for proposed MDT projects to conduct a preliminary evaluation of whether any part of the project is within an area subject to the NPDES/MPDES permit requirements for storm water discharges associated with small MS4s. The Erosion Control/Construction Engineer provides the PDE a memorandum that summarizes the results of the preliminary evaluation and provides information on Standard Provisions to include in the contract documents, application requirements and fees for necessary permit coverage and the location of erosion control plans and location maps for the project.
3. Design of Drainage Systems. Designing new storm water outfalls associated with new or reconfigured surface drainage systems to avoid erosion affecting adjacent water bodies.
 4. Implementation of Standard Specification 208. Ensuring the contractor is in full compliance with MDT Standard Specification 208 "Water Pollution Control and Stream Preservation."
 5. Use of Settlement Measures. Incorporating suitable measures from the *MDT Erosion and Sediment Control Best Management Practices Manuals* (e.g., sediment controls — check dams, silt fences and sedimentation basins; temporary and permanent retention ponds) to optimize settling time for sediment-laden runoff.
 6. Management of Areas Disturbed by Construction. Minimizing the amount of area disturbed at any given time and developing special provisions for re-vegetating disturbed areas as soon as practical after completion of operations causing the disturbance.
 7. Preparation of Emergency Response Plans. Contractor preparation of emergency response plans for addressing accidental spills of harmful materials including provisions for immediate spill containment.
 8. Control of Equipment Pollutants. Contractor implementation of good housekeeping practices to minimize potential for introducing pollutants associated with operation of construction equipment into adjacent water bodies.
 9. Management of Roadway Runoff. Designing the project to encourage infiltration of roadway runoff into adjacent soils where conditions are favorable to prevent pollutant discharge to surface waters.
 10. Use of Treatment Facilities. Incorporating water quality treatment facilities for roadway runoff in the project design (e.g., wet ponds for settlement of pollutants where adequate space is available within existing right-of-way, biofiltration swales where right-of-way is limited).
 11. Use of Dry Wells/Sumps. Designing the project to convey roadway runoff to dry wells or sumps that direct the runoff into alluvial materials for filtration before reaching groundwater.

As an integral part of the evaluation of impact avoidance and minimization measures, the appropriate ESB personnel determine whether the affected water resources are subject to

special requirements (e.g., TMDLs pursuant to CWA Section 303(d), designated Sole Source Aquifer). If so, the appropriate ESB personnel coordinate with the appropriate agencies to determine how the applicable requirements affect the evaluation and selection of measures for avoiding and minimizing the impacts.

The PDE documents the results of the evaluation of storm water impacts and measures to avoid and minimize those impacts in the project file and provides a copy of the documentation to the DT. The PDE also documents the results of coordination with affected regulatory and resource agencies.

The PDE ensures that information on storm water impacts, impact avoidance and minimization measures and results of coordination with regulatory and resource agencies is compiled for incorporation into the environmental documentation for the project; see [Section 39.3.2.4](#) "Documentation."

39.3.2.4 Documentation

Upon completion of all water resource impact analyses and findings, the PDE ensures the information on the impacts, impact avoidance and minimization measures and results of coordination with affected regulatory and resource agencies is incorporated into the environmental documentation for the project; see [Chapters 11 "Preparing Environmental Documentation," 12 "Categorical Exclusion," 13 "Environmental Assessment/FONSI" and 14 "Environmental Impact Statement/ROD."](#)

39.3.3 Mitigation and Commitments

The appropriate ESB personnel conduct the following to ensure avoidance, minimization and mitigation measures and commitments associated with water resource impacts are included in the design documents and appropriately implemented:

1. Design. The PDE and DB coordinate with the DT to incorporate measures in the project plans for avoiding and minimizing water resource impacts. The PDE and DB participate in the Plan-in-Hand Review for the project to address water resource impacts and associated impact avoidance and minimization measures.
2. Special Provisions. To the extent possible, the PDE and DB should prepare the contract documents using the *MDT Standard Specifications* to minimize the need for special provisions. The PDE and DB prepare any special provisions necessary to implement impact avoidance and minimization measures for the project's water resource impacts, including special provisions identified by the Erosion Control/Construction Engineer for storm water issues, and coordinate with the DT and the MDT Contract Plans Bureau to ensure the special provisions associated with the water resource impacts are accurately reflected in the final engineering plan documents.
3. Final Plan Review. The PDE and DB coordinate with the DT to review the final project plans to ensure that measures for avoidance and minimization of water resource impacts have been incorporated and are accurately reflected. The PDE and DB coordinate as

necessary with the DT and the MDT Contract Plans Bureau to implement any needed changes.

4. Construction. The PDE and DB coordinate with Construction personnel and the DEES to ensure that applicable Standard Specifications and the special provisions and design elements concerning water resource impacts and associated impact avoidance and minimization measures are implemented during project construction.

