

Clean Water State Revolving Fund- **Nonpoint Source** Project Plan Preparation Guidance

Michigan Department Environmental Quality

Rick Snyder, Governor
C. Heidi Grether, Director



<http://www.michigan.gov/deq>

Administered by:

Drinking Water and Municipal Assistance Division
Revolving Loan Section
Sonya T. Butler, Section Manager

Mailing Address:

P.O. Box 30241
Lansing, MI 48909-7741

Delivery Address:

Constitution Hall 4th Floor South
525 W. Allegan Street
Lansing, MI 48933
517-284-5433

The Michigan Department of Environmental Quality (DEQ) will not discriminate against any individual or group on the basis of race, sex, religion, age, national origin, color, marital status, disability, political beliefs, height, weight, genetic information or sexual orientation. Questions or concerns should be directed to the Quality of Life – Office of Human Resources, P.O. Box 30473, Lansing, MI 48909-7973.

Table of Contents

| | |
|--|----|
| Introduction | 3 |
| Project Plan Contents | 4 |
| Delineation of the Study Area..... | 4 |
| Environmental Setting | 4 |
| Cultural Resources | 4 |
| The Natural Environment | 5 |
| Land Use in the Study Area | 6 |
| Economic Characteristics | 7 |
| Population | 7 |
| Stormwater Management System..... | 7 |
| Need for the Project..... | 7 |
| Compliance Status..... | 8 |
| Orders..... | 8 |
| Water Quality Problems | 8 |
| Projected Needs for the Next 20 Years | 8 |
| Future Environment without the Proposed Project | 8 |
| Analysis of Alternatives | 8 |
| Identification of Potential Alternatives | 9 |
| No Action | 9 |
| Optimum Performance of Existing Systems/Practices..... | 9 |
| Regional/Collaborative Alternatives..... | 9 |
| Analysis of Potential Alternatives..... | 9 |
| The Monetary Evaluation | 10 |
| The Environmental Evaluation | 11 |
| Implementability and Public Participation | 12 |
| Technical and Other Considerations | 12 |
| Selected Alternative | 14 |
| Relevant Design Parameters | 14 |
| Controlling Factors..... | 14 |
| Project Site Maps..... | 15 |
| Sensitive Features | 15 |
| Schedule for Design and Construction | 15 |
| Cost Summary | 15 |
| Authority to Implement the Selected Alternative | 15 |
| User Costs | 16 |
| Disadvantaged Community | 16 |

| | |
|--|----|
| Useful Life | 17 |
| Evaluation of Environmental Impacts | 17 |
| Analysis of the Impacts..... | 17 |
| Direct Impacts | 17 |
| Indirect Impacts..... | 18 |
| Cumulative Impacts | 19 |
| Mitigation | 19 |
| Short-Term Construction-Related Mitigation | 20 |
| General Construction | 20 |
| Mitigation of Long-Term Impacts | 20 |
| Siting Decisions | 21 |
| Operational Impacts..... | 21 |
| Mitigation of Indirect Impacts | 21 |
| Master Plan and Zoning Ordinances | 21 |
| Ordinances | 21 |
| Public Participation | 22 |
| Public Meetings on Project Alternatives..... | 22 |
| The Formal Public Hearing | 22 |
| Public Hearing Advertisement..... | 22 |
| Public Hearing Transcript..... | 22 |
| Public Hearing Contents | 23 |
| Comments Received and Answered | 23 |
| Adoption of the Project Plan | 23 |
| More Information, Forms, and Guidance..... | 24 |

Introduction

This document provides detailed guidance to potential loan applicants and their consultants regarding the federal and state requirements governing project plan preparation for nonpoint source (NPS) pollution control and permitted stormwater treatment. The guidance is intended to be comprehensive and addresses a wide variety of potential projects; not every issue within this guidance is relevant to every project. However, when items are pertinent to the project, they must be addressed at a level of detail appropriate to the complexity of the issue and the scope of the proposed project. The applicant's final project plan must address all of the elements identified in state law (MCL§324.5303) and its attendant rules (Michigan Administration Code R323.952). A copy of these rules can be found at the State Budget Web site (<http://www.michigan.gov/orr/0,1607,7-142-5698---,00.html>).

The State Revolving Fund (SRF) program is an environmental protection program, focused on correcting water quality problems and protecting public health, rather than accommodating anticipated land development. The evaluation of certain issues is required by federal regulations and analyses must be conducted to ensure that proposed projects will protect and enhance water quality. *Applicant Actions Related to Project Planning* (guidance available in the Clean Water Revolving Fund Web site) provides a comprehensive list of the agencies that may need to be contacted to provide input or environmental clearances.

Applicants should start project plan development as early as possible, ideally 10 or more months prior to the annual SRF July 1st submittal deadline. Revolving Loan Section (RLS) and Water Resources Division-NPS Unit staff are available to discuss program requirements, project plan contents, and technical concerns. Applicants should submit a draft project plan for review at least 90 days before the plan is finalized. This will allow staff to identify any problematic issues or potential obstacles to prioritizing the project. The community will then have the opportunity to incorporate the necessary changes before the project plan public hearing. Potential applicants should note that all contracts for architectural and/or engineering services (including planning, design, and/or construction engineering) for work being funded by the SRF must publicly announce all requirements for these services and negotiate contracts using a Qualifications-Based Selection (QBS) process. Guidance documents for the QBS process, along with the *QBS Procurement of Architectural and Engineering Services Certification Form*, can be found in the *Design Phase Guidance* document or on the Clean Water Revolving Fund Web site.

Incorporation of green project components in eligible SRF projects is encouraged. Refer to the [CWSRF and DWSRF Green Project Reserve Guidance](http://www.michigan.gov/deq/0,4561,7-135-3307_3515_3517-233829---,00.html) (http://www.michigan.gov/deq/0,4561,7-135-3307_3515_3517-233829---,00.html) for project examples and eligibility requirements

Applicants interested in SRF funding for NPS projects must meet these initial eligibility requirements:

- (1) An applicant must have an approved NPS watershed plan or equivalent. An approved NPS watershed plan is either a DEQ-approved watershed plan under the Clean Michigan Initiative (CMI) Michigan Administrative Code *R 324.8802(a) and R 324.8810*, or a watershed plan approved by the DEQ as meeting the "Nonpoint Source Program and Grants Guidelines for States and Territories." The nine elements of a watershed-based plan are located in Appendix C.
- (2) NPS projects must be consistent with the DEQ NPS Program Management Plan. The plan is available on the DEQ Water Resources Division Web site at [NPS Program Plan](http://www.michigan.gov/documents/deq/wrd-nps-program-plan-2015_511849_7.pdf) (www.michigan.gov/documents/deq/wrd-nps-program-plan-2015_511849_7.pdf).

- (3) Projects located in communities covered by the National Pollution Discharge Elimination System (NPDES) Municipal Separate Storm Sewer System (MS4) permit must be “above and beyond” the permit requirements to be eligible for SRF NPS funds. Projects that either reduce the amount of stormwater runoff generated or intercept, infiltrate, hold, or treat stormwater before it enters the storm sewer system or reduce the amount of stormwater in the MS4 are generally eligible. Projects that are required by an MS4 or other NPDES permit are considered point sources, or Section 212 projects, and must be submitted as an application for the wastewater SRF program. An end-of-pipe device to treat stormwater from the municipal storm sewer system before it is discharged to a waterbody is considered a point source control and should be submitted for wastewater SRF funding. Stormwater staff in the DEQ district offices can answer questions about specific MS4 permit requirements. Contact information can be found on the DEQ WRD Web site at [MS4 Storm Water Staff](http://www.michigan.gov/documents/deq/wrd-muni-sw_344963_7.pdf) (http://www.michigan.gov/documents/deq/wrd-muni-sw_344963_7.pdf).
- (4) The primary purpose of the proposed project must be for the treatment of stormwater runoff to remove NPS pollutants. Projects whose primary purpose is for stormwater transport or flood control are not eligible for SRF NPS funding since they do not provide a water quality benefit.

A complete final project plan will be the basis for project prioritization for SRF loan assistance. Two copies of the final project plan must be submitted to the address on the front cover of the guidance by July 1 of any given year for prioritization on a Project Priority List (PPL) for the following fiscal year (October 1 to September 30). A completed *Project Plan Submittal form* and the *Project Useful Life and Cost Analysis Certification Form* must accompany the final project plan submittal. These forms are available on the Clean Water Revolving Fund Web site.

Project Plan Contents

The project plan should begin with basic background information. The initial section should be detailed enough to serve as the foundation for assessing needs, evaluating alternatives, and identifying any environmental issues. The watershed plan should be used as an information source; however, additional information may be required to address the project plan requirements.

Delineation of the Study Area

The study area provides the basis for planning the proposed project(s), assessing the NPS needs, and identifying the environment that contributes to the NPS pollution issues. The study area should cover the watershed or sub-watershed area where the proposed project is located and the surrounding municipality.

Environmental Setting

The environmental setting in the study area must be discussed, including a brief evaluation of the following items as applicable:

Cultural Resources

Known historical and archaeological sites must be described, based on documentation provided through the National or State Historical Register, the State Historical Preservation Office (SHPO), local historical societies, Tribal Historical Preservation Offices (THPO), local historical societies, and local or regional planning agencies.

The Natural Environment

A. Air Quality

The current and anticipated future air quality in the study area should be discussed, especially as it relates to the project or any development that may be facilitated by project implementation.

B. Wetlands

All wetlands in the study area must be identified and described. A map of these wetlands must be included in the project plan.

C. Coastal Zones

All Great Lakes shorelands, coastal zones, and coastal management areas within the study area must be identified and described. A map of any coastal zones and coastal management areas must be included.

D. Floodplains

Floodplains within the study area must be identified and described. A Federal Emergency Management Agency (FEMA) floodplain map, with the proposed construction areas marked, must be included in the project plan.

E. National Wild and Scenic Rivers

All rivers designated for protection within the study area must be identified and described.

F. Major Surface Waters

The characteristics and uses of the surface and groundwater should be described, especially if the waterbody is not meeting its designated use or is subject to a Total Daily Maximum Load (TMDL) allocation. Water quality monitoring results should be presented to establish the current conditions. If the waterbody is impacted by rainfall-induced stormwater runoff, the discussion should cover the quantity and quality-related impacts to the waterbody. Points where water is drawn for public water supply, agricultural, or industrial use should be identified.

A map of the major lakes, rivers, streams, and drains in the study area must be included in the project plan. The watersheds in the study area should be delineated.

G. Recreational Facilities

A map showing parks and other outdoor recreational facilities in the study area should be included in the project plan. Water-based recreation areas should be noted. Areas of highly maintained turf, such as golf courses, should be noted, especially those in close proximity to waterbodies. Plans for the expansion of existing recreational sites and new developments should be discussed.

H. Topography

The topography of the study area and its influence on the drainage basins and their characteristics (e.g., area, slope, elevation) should be discussed. A topographic map of the study area should be included.

I. Geology

A description of the geologic structures or formations, such as Karst topography, that could affect the choice of alternatives should be included. Discuss the depth to bedrock or water table if it may affect project alternatives.

J. Soils

Soil types in the study area and their characteristics that could affect or be affected by the project alternatives (e.g., permeability, erosion potential, compaction, porosity) should be identified. Areas where adverse soil or subsoil conditions may be encountered during construction should be noted.

K. Agricultural Resources

All prime and unique farmlands in the study area must be identified and described. A map of these farmlands should be included in the project plan. If any area agricultural lands are a potential or identified source of NPS pollutant runoff, they should be described and identified on the map.

L. Fauna and Flora

Fauna and flora characteristic of the study area should be described. Environmentally-sensitive habitats and any species currently listed as endangered, threatened, or state species of special concern must be identified. Sensitive habitats should be identified on a map.

Land Use in the Study Area

The existing land uses in the study area must be described, including an identification of residential, commercial, industrial, agricultural, and public land uses. A discussion of the master plan, zoning, and other land use regulations or policies, especially those that address sensitive features such as wetlands, should be included. Existing or proposed stormwater management ordinances should be discussed. Maps from the master plan showing existing and future zoning and land uses should be included.

The predicted land use in the study area over the 20-year planning period must be discussed. Development trends should be addressed, with an emphasis placed on any trends that may be detrimental to air and water quality, impact agricultural uses, increase impervious areas, and/or development near sensitive areas.

A. Land Use Data

Land use data is critical to assessing the need, priority, and sizing of the proposed project. The data presented in the project plan must include the following items:

- 1) The percentage distribution of current land uses in the study area.

- 2) Identification of any interconnected impervious areas, especially areas located adjacent to waterbodies in the drainage area served by the proposed project or upstream of the drainage area served by the proposed project. A discussion of the amount of impervious areas should be included.
- 3) Land use projections for the study area served for the next 5, 10, and 20 years.

Economic Characteristics

Present and future economic characteristics must be described, including:

1. Median household income in the study area.
2. The major economic characteristics, which might affect land development or re-development in the project area, including how these trends are expected to affect NPS pollution inputs and the need for stormwater management.

Population

Current population data and the 10, 15, and 20-year population projections should be included. Projections used in the project plan should correlate with those prepared by the appropriate regional planning agency or the state of Michigan.

Stormwater Management System

Stormwater management system includes the natural and man-made drainage pathways that stormwater follows and any natural (i.e., wetlands) or man-made detention or retention areas contained in these drainage ways. Provide information on how the existing system is functioning, with an emphasis on hydrologic issues, sediment deposition, stream bank scour, etc. The discussion should include:

1. The physical condition of any existing natural and man-made stormwater systems in relation to the proposed project. Describe any best management practices (BMP) or system components that treat NPS pollutants. Discuss any operational or maintenance issues.
2. Design capacity for man-made components and existing stormwater flows. Provide information on the frequency of bankfull flows and the typical rainfall amount that causes bankfull flows.
3. The location of NPS pollutant inputs.
4. Describe any NPS control activities in the study area.
5. Describe any existing NPS control or stormwater ordinances.
6. An evaluation of the system's climate resiliency. The system's ability to withstand and respond to changes resulting from climatic factors, such as increased flooding risks, increased intensity or frequency of storm events, should be evaluated. Information and resources can be found at the U.S. Environmental Protection Agency (EPA) Web site for climate ready water utilities located at www.epa.gov/climatereadyutilities.

Need for the Project

The documentation of need should be sufficiently detailed to form the basis for project ranking on the PPL. The applicable watershed plan findings and recommendations should be referenced. The need for the proposed project must include a discussion of the following topics:

Compliance Status

The status of compliance with any existing MS4, groundwater, or NPDES discharge permit should be described, including a comparison of any existing treatment facility performance to the permit discharge limits or requirements. A copy of any relevant MS4 permit must be included as an appendix to the project plan.

Orders

Any NPS or stormwater-related court orders, federal or state enforcement orders, and administrative consent orders involving the municipality should be discussed and a copy of each order must be included as an appendix to the project plan.

Water Quality Problems

- A. Discuss the NPS pollutants as identified in the watershed plan. Water quality information from the DEQ Water Quality and Pollution Control Section 303(d) Integrated Report and/or any approved TMDL should be discussed. The report can be found online using the [Integrated Report link](http://www.michigan.gov/deq/0,4561,7-135-3313_3681_3686_3728-12711--,00.html) (http://www.michigan.gov/deq/0,4561,7-135-3313_3681_3686_3728-12711--,00.html). A copy of any approved TMDL document should be included as an appendix. The sources and quantity of the NPS pollutants should be described, including information on the estimated pollutant load. The critical areas as identified in the watershed management plan should be described, and any related maps from the plan should be included. Any problems caused by hydrologic changes in the watershed, leading to pollutant inputs from bank erosion or stream-bed scour, should be discussed. The NPS pollution sources expected to be addressed by the proposed project must be identified.
- B. Identify the goals of the project in relation to the watershed plan. The executive summary of the watershed plan and any applicable information should be included as an appendix.
- C. Summarize the results of any recent water quality monitoring data applicable to this project.

Projected Needs for the Next 20 Years

Projected NPS control needs should be based on 20-year population projections and the expected land use based on the master zoning plan. Potential increases in the amount of impervious area, residential and commercial development, should be considered in these projections. The projected needs should also include a discussion of the NPS sources and the threats to water quality identified in the watershed management plan.

Future Environment without the Proposed Project

Discuss the expected water quality impacts if the proposed project is not implemented. This discussion should consider the projected 20-year NPS control needs, as well as increases in the NPS pollutant load based on the study area development trends and density patterns.

Analysis of Alternatives

The purpose of the alternative analysis is to assure that a wide range of options to achieve the project's objectives and meet any technical constraints are examined. Based on the project objectives and requirements, the potential alternatives must be evaluated and screened. The

rationale for rejecting an alternative must be provided in the project plan; an in-depth analysis is only performed for the principal alternatives. The in-depth analysis will include a monetary evaluation, implementability assessment, potential environmental impacts, and technical differences between the alternatives.

Identification of Potential Alternatives

The following types of alternatives must be evaluated:

No Action

The no-action alternative is evaluated to assess the impact of continuing with the existing conditions. This discussion should evaluate the water quality impacts that will likely occur if the proposed project is not implemented.

Optimum Performance of Existing Systems/Practices

The performance of any existing stormwater management practices in the project area should be evaluated. The feasibility and water quality benefits of improving the existing system to address the identified water quality need should be evaluated. The results of the evaluation will determine what additions, expansions, or replacements could be made, including improved design, operation, and maintenance of stormwater management systems.

The investigation of the performance of existing practices should consider the following items:

- A. The optimum performance level possible with the existing process design.
- B. The age and reliability of any existing stormwater management practices and their remaining useful life.
- C. The impact of modifying the stormwater management practices in regards to water quality and quantity.
- D. The effectiveness and suitability of modifications for improving performance through public education and management changes.

Regional/Collaborative Alternatives

If the watershed plan identified unstable stream flows or severe changes in hydrology as a cause of NPS pollutant inputs, the project plan should include a discussion of the feasibility of regional alternatives to address the unstable flow by changing the hydrology on a regional level vs. addressing individual sites. This discussion should evaluate cost-effectiveness and implementation issues.

Analysis of Potential Alternatives

The analysis of the potential project alternatives can examine both the selected location and the proposed BMPs for that location. The analysis of the proposed site location must discuss the watershed plan objectives and recommendations, identified critical areas, and the targeted NPS pollutants. Discuss the prioritization of pollutants and sources contained in the watershed plan as they relate to the selected site. Any technical or implementation constraints that impact the site selection process should be identified. The evaluation of BMP alternatives should include the widest variety of practices appropriate for the selected site and the pollutant of concern.

The evaluation of potential alternatives must consider costs and compare the potential impacts resulting from each alternative. Consideration should be given to the financial impact of the project upon the municipality to ensure that the project is affordable. The proposed project should be the cost-effective alternative to address the identified NPS pollution problem.

Equivalent alternatives must be compared. Each alternative must provide the same pollutant reduction or hydrologic benefit and address all of the needs detailed in the Need for Project section above. Any deviations from this “apples-to-apples” comparison must be noted.

The Monetary Evaluation

The monetary evaluation must include a present worth analysis. This analysis does not identify the source of funds, but compares all costs uniformly for each alternative over the 20-year planning period. Refer to the *Fundamentals of the Monetary Evaluation* for further information.

The following cost factors are associated with the monetary evaluation:

A. Sunk Costs

Sunk costs are any investments or financial commitments made before or during project planning. They are not included in the cost-effectiveness analysis since they have already been committed regardless of the alternative selected. Sunk costs typically include the cost of existing facilities and associated land, outstanding bond indebtedness, and the cost of preparing the project plan.

B. Present Worth

Present worth is the sum that if invested now at a given interest (discount) rate, would provide exactly the funds required to pay all present and future costs. Total present worth, used to compare alternatives, is the sum of the initial capital cost plus the present worth of operation, maintenance, and replacement (OM&R) costs minus the present worth of the salvage value at the end of the 20-year planning period. Where the components used as the basis for calculating OM&R costs differ between alternatives, a breakdown of those differences must be provided. For vegetative BMPs, the calculations must include the cost for any expected vegetation replacement.

The real discount rate used to calculate the present worth cost is established each year by the federal Office of Management and Budget. The real discount rate is posted on the Clean Water Revolving Fund Web page.

C. Salvage Value

The planning period for the monetary evaluation is 20 years. At the end of this period, portions of the proposed structures or equipment may have a salvage value. When calculating present worth, the salvage value of those structures or equipment is determined by using straight line depreciation. The present worth of the salvage value is computed using the discount rate. The useful life to be used in the monetary evaluation should fall within the following ranges:

- 1) Land – permanent
- 2) Stormwater structures – 20 years

If a useful life of less than 20 years is assigned to any project component, the cost-effectiveness analysis must show the present worth replacement cost at the end of the useful life, as well as the present worth of the salvage value of the replacement at the end of the 20-year planning period.

D. Escalation

Only energy costs and land value may be escalated in the monetary evaluation. The cost of labor, equipment, and materials is not escalated since it is assumed that any increase will apply equally to all alternatives.

The escalation of energy costs is to be based on data periodically published by the EPA or on historical data for the area, if justified. Land prices should be escalated at a uniform rate of 3 percent per year, except for rights-of-way and easements.

E. Interest During Construction

If interest during construction is significant and may influence the choice of alternatives, it may be included in the monetary evaluation using the following method. If expenditures are uniform and the construction period is less than four years, the interest is one half of the product of the construction period in years, the total capital expenditures (in dollars), and the real discount rate. Otherwise, interest should be calculated on a yearly basis.

F. Mitigation Costs

The costs of mitigation, whether undertaken by the applicant or another party, must be included in the monetary evaluation. Depending on the short-term or long-term nature of mitigation, appropriate cost factors should be applied to generate a present worth value. Where either impacts or the types of mitigation (such as non-structural measures) are not easily reduced to a monetary basis, they must still be considered in the alternatives analysis along with other non-monetary issues such as implementability.

G. User Costs

Another aspect of the monetary evaluation is the calculation of the total cost of each alternative to the system users. Total cost includes capital and financing costs, OM&R costs, and other costs such as sunk costs, related assessments, stormwater utility fees, millages, etc. The project plan must show the current costs and estimated costs (annual, quarterly, or monthly) to system users for each alternative. This information must be made available to the public as part of the public participation process.

The Environmental Evaluation

The major environmental impacts expected to result from each alternative must be compared in the project plan. Where impacts are similar, the discussion should compare impacts in terms of scope and intensity. Where vastly different types of impacts are expected, the whole range of impacts must be addressed, including any significant environmental impacts precluded by rejection of an alternative. In general, the comparison of impacts of each alternative should address each relevant environmental, social, or other factors identified in the project background section. It may be possible to summarize; however, major impacts should be fully described to clarify the differences in scope and intensity expected to result from the various alternatives. Anticipated mitigation requirements and costs must be identified and included in this discussion.

Implementability and Public Participation

Throughout the evaluation of alternatives, the public must be provided with opportunities to comment. With public input, it may become apparent that certain alternatives or sites are not acceptable to the public or to neighboring communities affected by the project. These issues must be resolved in the choice of alternatives. Public input received during the planning process should be discussed in the project plan.

Other implementation issues that may need to be resolved include the financial burden on the applicant municipality; the need for intermunicipal agreements or formation of an operating authority; the availability, and competing uses, of the proposed site; and the ability of the municipality to manage the construction and OM&R of the proposed project.

Technical and Other Considerations

A. Pretreatment

Pretreatment requirements must be considered if heavy sediment loading, heavy metals, or other hazardous constituents are present in the runoff and have the potential to impact the function of the proposed project.

B. Growth Capacity

The project plan must consider the impact future population growth and land use changes will have on the project. While the specific details of development cannot be predicted accurately, an attempt should be made to identify future stormwater management needs.

Information on the type and magnitude of anticipated development and the related changes in stormwater runoff and nonpoint source pollution inputs should be discussed.

Local ordinances or regulations that restrict runoff from new developments should be discussed in relation to the control of NPS pollution inputs.

C. Reliability

Each alternative should be evaluated based on reliability – its ability to continue to provide NPS pollution control compared to other structures or practices. Differences in reliability of the alternatives should be discussed.

D. Alternative Sites

The evaluation of alternatives should consider a variety of sites that can provide the same pollutant reduction benefits whenever possible. These sites should be shown on maps and described in terms of comparative physical characteristics (e.g., existing farmland, sensitive environmental features, surrounding land uses). The ownership and availability of the sites should be noted. If such analysis was completed as part of the watershed plan, summarize the results.

E. Site Requirements for Infiltration Practices

Infiltration practices should reference the Low Impact Design Manual produced by the Southeast Michigan Council of Governments and use the appropriate checklists associated with the proposed infiltration practices during the site selection and design phase. The checklists can be found on a link to the chapter on [Structural Best Management Practices](http://www.semco.org/Reports/LID/index.html#132) (<http://www.semco.org/Reports/LID/index.html#132>). The chapter covers each practice, with the appropriate checklist at the end of the section.

F. Contamination at the Project Site

The cleanup of contamination at a project site must be factored into the environmental evaluation of the alternatives and cost-effectiveness. Typically, four types of contamination may be encountered during project construction: soils contaminated by chemicals or metals; discarded materials, such as drums containing fluids or solid waste; groundwater or surface waters contaminated by chemicals or metals; and historic landfills.

Each project site should be evaluated for potential contamination utilizing the following actions:

- 1) An examination of the state's list of contaminated sites, found at the [DEQ Web site for contaminated sites](https://secure1.state.mi.us/FacilitiesInventoryQueries/) (<https://secure1.state.mi.us/FacilitiesInventoryQueries/>).
- 2) Identification of past activities that might have caused site contamination, such as industrial production areas, historical landfills or other waste disposal areas, underground storage tanks, equipment or degreasing operations, waste disposal areas, or lagoons. Be aware that parks and other open areas may be the site of historic landfills.
- 3) A visual survey of project sites to identify any abandoned containers or other evidence of potential contamination.
- 4) Where contamination is suspected, soil and groundwater sampling and groundwater flow direction analysis of the project site must be conducted to identify potential contamination problems or zones of influence by proposed practices.

The activities necessary for construction to proceed in areas of contamination (i.e., the excavation, testing, removal, handling, transportation, and disposal of contaminated materials and any special design considerations) must be identified and factored into the environmental evaluation. The costs associated with these activities must be included and identified as mitigation costs in the monetary evaluation of alternatives.

G. Green Project Reserve (GPR)

Determine if there are any components that could be eligible for GPR. If you have projects with components that address green infrastructure, water or energy efficiency improvements, or other environmentally innovative activities, it could be eligible for GPR. Review the guidance documents on the [GPR Web site](http://www.michigan.gov/deq/0,4561,7-135-3307_3515_3517-233829--,00.html) (http://www.michigan.gov/deq/0,4561,7-135-3307_3515_3517-233829--,00.html) to see if project components qualify. For those that do qualify, be sure to include information about the components and how they meet the EPA Green Project Reserve Eligibility Guidance in the project plan. This could be in the form of a separate memo, an attachment, or within the body of the project plan.

Selected Alternative

The description of the selected alternative must be comprehensive, providing sufficient detail on the project and its beneficial and adverse impacts. A discussion of how the proposed project fits into the watershed plan recommendations and addresses NPS pollution control needs for the next 20 years should be included.

The following items should be addressed, as appropriate:

Relevant Design Parameters

A summary of the basis of design should be presented, including:

- A. The existing features, including natural and man-made stormwater conveyance systems.
- B. The size of the contributing drainage area.
- C. The design criteria (e.g., detention times, discharge and overflow rates, design storm characteristics, initial, and design flows).
- D. A description of the hydrologic characteristics of the site, and its impact on project design.
- E. Estimated reductions in pollutant load and discharge flow rate and volume, as applicable.
- F. Expected maintenance requirements, including accessibility of the site for routine maintenance or repair, special equipment needed, responsible agencies, and disposal requirements for any residues. The frequency of maintenance activities and inspections should be addressed. Any special maintenance considerations due to the location of the practices and/or public accessibility must be factored into the maintenance requirements.
- G. Depth to groundwater and/or bedrock and soils information must be included for infiltration practices.

Controlling Factors

Briefly discuss how the following factors influenced the design of the selected alternative.

- A. Contributing land uses in the drainage area.
- B. Estimated NPS pollutant loads and existing treatment practices.
- C. Stormwater discharge permit requirements, if applicable.
- D. Proposed discharge rates and criteria for downstream channel protection.
- E. Mitigation of environmental impacts from the proposed project's construction and operation.

Project Site Maps

Legible maps, with distance scales and other appropriate graphics, must be provided to show the following items:

- A. Any existing stormwater structures or BMPs on the project site.
- B. All natural features on and adjacent to the site.
- C. Grade and elevation lines.
- D. Drainage area and stormwater flow direction.
- E. All proposed best management practices.
- F. The location of the proposed project in the watershed.

Sensitive Features

If environmentally-sensitive features — wetlands, floodplains, prime or unique agricultural lands, historic structures, archaeological sites, or the habitat of a threatened or endangered species — may be affected by the project or occur in proximity to the proposed project, such features should be clearly shown on a map included in the project plan. A wetland delineation will be needed if wetlands may be impacted. Other studies may be required to identify the presence of endangered/threatened species or their habitat.

Schedule for Design and Construction

Major project-related activities and scheduled dates need to be listed and briefly explained. The time required for design, financing, bidding, permit procurement, seasonal restrictions on construction and site restoration, and the mitigation of environmental impacts should be identified and factored into the schedule. Refer to the SRF Fiscal Year Financing Schedule to select the appropriate milestone dates for the preferred funding quarter.

Cost Summary

A summary of all costs associated with planning, design, and construction of the selected alternative must be presented, including costs associated with administration, financial, and legal services, land acquisition, mitigation, and other project related activities. Costs of green project reserve components should be specifically identified.

Authority to Implement the Selected Alternative

The legal, financial, and managerial aspects of the applicant's organization should be briefly discussed to document that the applicant has the legal authority, capability, and willingness to plan, finance, build, operate, and maintain the proposed project. Where responsibility for implementation rests with more than one entity, each entity's jurisdiction and responsibility must be delineated. The institutional arrangements for financing the project, including capital cost contributions from each entity, must be described.

In the case of a project serving more than one municipality, an intermunicipal service agreement will establish the institutional and financial obligations of each participating municipality. The project plan must identify any service agreements that will be needed in order to finance and

construct the project. If revisions to existing agreements are needed to implement the project, the project plan must also identify the necessary changes.

Where the applicant's authority to finance and construct the proposed project requires contractual arrangements with other local units of government, resolutions must be obtained from all of the participating entities adopting the project plan and agreeing to implement and/or maintain the selected alternative. These resolutions will suffice as an initial demonstration of implementation capability. However, executed inter-agency agreements will be needed to solidify those arrangements prior to loan award.

All inter-governmental agreements and necessary ordinances must be submitted for DEQ review as part of the rate methodology submittal during the SRF loan application process.

User Costs

The total estimated project costs should be translated into an estimated total annual, quarterly, or monthly cost to the users over the useful life of the project. The discussion should compare the existing charges to the proposed charges after project completion. The rationale and benefit of the project should be explained.

The discussion of costs must identify the number of users or user equivalents (with a definition of what constitutes a user equivalent). The number of users must be related to the total annual debt to be retired so that it is clear how the cost of the project is distributed. Where other sources of funding within the budget of the community will be used to defray costs, this should be described so the public is aware of all the funding sources. The use of special assessments, millages, stormwater utility fees, or other financing tools that will be used to defray the debt must be discussed.

The project costs and associated user charges must include the following items:

- 1) Capital expenditures (e.g., debt retirement, special assessments).
- 2) Operation and maintenance costs.
- 3) Replacement of service-limited facilities and components.
- 4) Other costs likely to be incurred by users.

Since customers will have varying means to pay for their portion of the project, it may be useful to discuss various methods of payment and any financial assistance programs that may be available.

Disadvantaged Community

Part 53, Clean Water Assistance, of the Natural Resources Environmental Protection Act, 1994 PA 451, as amended, provides benefits to municipalities who meet the state's criteria for disadvantaged community status. Those benefits include additional priority points and extended loan terms. A *Disadvantaged Community Status Determination Worksheet* must be completed and returned with the final project plan submittal.

Thirty (30) year loans are available for communities who meet the state's criteria for disadvantaged community status (as determined above) and have provided sufficient documentation within the project plan that the asset(s) being funded will have a useful life that meets or exceeds 30 years.

Useful Life

Projects must submit documentation to reasonably support the projected useful life of the assets financed by the SRF loan. Useful life estimates should be supported by manufacturer's recommendations or other relevant information in the project plan. Loan terms must not exceed the useful life of the project.

For projects involving a variety of components or equipment with varying useful life estimates, a weighted average should be used to determine the overall project useful life. The weighted useful life should be the total of all calculated life values (each asset's dollar value times its estimated useful life) divided by the total estimate of all the project dollars spent on those assets (weighted useful life = total of life values / total estimate dollars spent on assets).

Evaluation of Environmental Impacts

The potential beneficial and adverse environmental effects of the project must be evaluated in the project plan. The natural environment described in Section 1 may be affected by implementing the selected alternative. The analysis of project impacts should be organized to consider the impacts of the proposed project on the existing environment. Responses from reviewing agencies can be compiled in an appendix. Responses received after the project plan submittal should be forwarded to your RLS project manager.

The analysis of impacts should address the direct, indirect, and cumulative impacts.

Analysis of the Impacts

Direct Impacts

Direct impacts are the social and environmental impacts that are directly attributable to the construction and operation of the project. Projects may have minimal impacts on environmental features, but will have noise, dust, and traffic disruption impacts. Retention or detention basins normally have greater primary impacts that must be evaluated, particularly where construction will occur in previously undisturbed areas. Impacts related directly to the construction of the proposed project, even those of a short-term nature, should be discussed.

Direct impacts can be divided into those attributable to project construction and those attributable to project operation. While construction normally creates short-term impacts that can be mitigated or reversed through adequate restoration, the destruction or disruption of structures or sensitive habitats can result in long-term, irreversible impacts.

A. Construction Impacts

The project plan must describe all of the areas that will be affected by construction. All of the natural and man-made features existing in these areas must be identified. Construction in rights-of-way should describe the existing features in the zone of construction. Areas of potential tree removal must be identified, and any removal of large trees or extensive areas of vegetation removal must be noted. Construction in public areas, such as parks, should discuss the impacts of restricted access during the construction period. Drainage features, sidewalks, and other features that will be disturbed should be identified.

Impacts upon sensitive features such as floodplains, wetlands, stream crossings, shorelands, and prime or unique agricultural lands must be identified. Disturbance of any of the features must be described and typically will require review by and permits from state or federal agencies (see *Applicant Actions Related to Project Planning*). Applicants should have sensitive features such as floodplains and wetlands delineated by qualified consultants and include these delineations in the project plan.

Construction methods, area, and size of disturbance (including expected width of trench and associated area) should be thoroughly described. Other construction-related impacts such as heavy equipment emissions or uncontrolled dust should be discussed.

Rare, threatened, endangered, and special concern species must be identified in the project plan. A biological survey may be required to identify if they exist in the areas of construction, or would be affected by proximity to construction.

Impacts upon archeological, historical, or cultural resources (e.g., historic neighborhoods, buildings, or streetscapes) must be identified. Refer to the Michigan State Housing Development Authority Web site for instructions and documents needed for a SHPO review and to the RLS Web site for *THPO Guidance*.

Traffic impacts should be identified; especially the areas where construction will impact access or that will be affected by increased construction traffic. The potential location of construction haul routes, construction access points, and traffic disturbances should be addressed.

Impacts upon the existing and future quality or quantity of groundwater and surface water should be identified. Short-term impacts include those related to construction site runoff, stream sedimentation, dewatering activities, stream crossings, and bypass pumping or other methods required for in-stream construction activities. Long-term impacts include discharges to surface waters, surface water to groundwater discharges, infiltration practices to groundwater quality and quantity, groundwater to surface water discharges, and groundwater flow alterations.

Other potential environmental impacts not identified above should be addressed.

B. Operational impacts

Impacts of the operation and on-going maintenance of the stormwater management practices, and any potential impacts on upstream and downstream areas due to changes in stream flow, quantity, or velocity should be discussed. Other impacts may include visual change in the landscape or the area's aesthetics, potential safety issues for stormwater basins, increased public access to non-public areas, reduction in parking spaces, etc.

C. Social Impacts

Examples of social impacts that should be discussed include increased user charges, disturbance of traffic patterns, lack of access to businesses or public areas, and change in the use of public areas.

Indirect Impacts

Indirect impacts are those caused or facilitated by the proposed project, but which may be removed in time and/or distance. Indirect impacts are often secondary in nature and may be caused by the destruction or modification of sensitive features such as wetlands or shorelands, the conversion of agricultural lands or park lands to other uses, and changes in stormwater flow pattern.

The following indirect impacts need to be discussed:

- A. Changes in land use (i.e., the loss of open space, floodplains, prime agricultural land, or Great Lake shorelands).
- B. Changes to the natural setting or sensitive features.
- C. Potential impact on upstream and downstream communities due to changes in stream flow, quantity, or velocity.
- D. Impacts on cultural, human, social, and economic resources.
- E. Impacts to the area's aesthetics.

Cumulative Impacts

Cumulative impacts are those impacts to the environment that increase in magnitude over time or that result from multiple impacts affecting one particular element of the environment. A comprehensive overview of these impacts should be presented, not an analysis of each impact separately. The overview should blend together impacts from actions directly or indirectly related to the project and/or related impacts with impacts from actions attributable to other agencies or persons. Cumulative impacts should discuss:

- A. Siltation or other impacts caused by changes in discharges to the same watercourse over time.
- B. Water quality or quantity impacts to upstream and downstream communities.
- C. Fiscal impacts on the municipality and its citizens resulting from multiple public works or stormwater projects occurring in the same time frame.
- D. Changes to the area's aesthetics, including tree and other vegetation removal.

Mitigation

Where adverse impacts cannot be avoided, mitigation must be considered and described in the project plan, whether or not it is required by a particular permit or agency clearance. The magnitude and potential for environmental impacts, and any "extraordinary measures" necessary to mitigate them, will determine whether the DEQ will require an Environmental Impact Statement.

The project plan must include both structural and non-structural measures that will be taken to avoid, eliminate, or minimize any adverse impacts on the environment. Structural measures include mitigation related to the specific design and construction of the practices. Non-structural measures include mitigation related to governmental, institutional, or private plans, policies, or regulations, or related to the phasing of construction over the planning period.

Short-Term Construction-Related Mitigation

Many mitigation techniques used to minimize construction impacts are standard procedures included in construction contracts. Examples are traffic and safety hazard controls, dust control, noise control, soil erosion and sedimentation control, tree protection, disposal of construction spoils, and restoration of roads, vegetation, and utilities. These types of mitigation must be discussed in the project plan. Siting and routing decisions should consider the relative costs of replacing or restoring the more expensive or valuable existing features, such as roads and mature vegetation.

General Construction

If construction will occur in or near sensitive features, mitigation measures are usually specified in permits issued under the various acts that protect those features. Typical mitigation-related permit specifications include:

- A. Prohibiting the disposal of construction spoils in wetlands, floodplains, or other sensitive areas.
- B. Specifying the use of construction mats or wide-track vehicles in wetlands or limiting construction to dry seasons.
- C. Specifying certain construction practices for stream crossings or in-stream construction.
- D. Construction timing and other requirements to protect endangered/threatened species and their habitat.
- E. Staging of construction activities to minimize the potential for soil erosion and sedimentation.
- F. Mitigation to address dewatering impact to groundwater resources and local residents.

Early contact should be made with permitting authorities to determine the existence and extent of the various sensitive features. This information must be incorporated into the project plan. Be aware that these agencies often cannot provide a clearance on the proposed action without detailed plans or drawings. Because the applicant municipality is ultimately responsible for complying with federal and state environmental laws and regulations, its representatives must be timely in providing sufficient information for agency evaluations.

Even if required permits or clearances do not specify mitigation measures, mitigation must be evaluated if there will be construction in proximity to sensitive features.

When extensive vegetation removal is required to construct the project, the mitigation of these impacts must be discussed. This discussion must include the specifics of vegetation reestablishment (number, size, species composition, etc.) and the expected timeframe of vegetation reestablishment.

Mitigation of Long-Term Impacts

Every effort must be made to avoid potential long-term or irreversible adverse impacts. Where it is demonstrated that there are no feasible and prudent alternatives that totally avoid impacts,

mitigation must be considered to ensure that sensitive features do not suffer permanent or irreversible adverse environmental impacts.

Siting Decisions

The location of stormwater treatment practices or structures is generally permanent and irreversible and should avoid damage to sensitive features. When there is absolutely no other feasible alternative, replacement of damaged natural features (e.g., wetlands) may be an option upon approval by the agency with permitting or review authority over the resource.

Operational Impacts

Preventative and mitigative measures to address impacts identified above that may occur as a result of the project's operation must be discussed. If the project has the potential to adversely affect the hydrologic regime or vegetation of a wetland or stream, mitigation must be considered.

Mitigation of Indirect Impacts

Mitigation of indirect adverse impacts is generally accomplished by utilizing non-structural means (e.g., public policies, phasing the construction of the project). Where new development is expected to be either facilitated or accommodated by the proposed project, or the project itself is part of a new development, the project plan must show that the negative impacts can be mitigated to prevent adverse impacts to the cultural, historical, and natural features of the area. Where potential adverse impacts have been identified, the discussion should focus on the municipality's ability to mitigate those impacts through land use planning, zoning, and other ordinances.

SRF loan assistance cannot be provided to a project that will accommodate or facilitate growth in areas that are protected from development under federal or state law. The project plan must demonstrate that planning, zoning, or other land use control safeguard those lands and resources from damage or destruction.

Master Plan and Zoning Ordinances

The master plan and zoning should recognize and protect the cultural, historical, and natural attributes existing in the study area. Planning and zoning should specifically address development pressures on the following:

- A. Historical features or neighborhoods so that these areas are not directly destroyed by new building or indirectly impacted by other infrastructure.
- B. Prime or unique agricultural land to control direct development and prevent displacement of farmers by increased taxes and other assessments.
- C. Wetlands, floodplains, stream banks, shorelands, or other sensitive features to direct development away from these areas and to prevent deterioration of these areas by dumping, nonpoint source pollution, and other degradation (e.g., destroying vegetation, draining, ditching, utilization of pesticides and herbicides).

Ordinances

Ordinances should be developed to control increased stormwater runoff and NPS pollution from impervious surfaces, fertilized and chemically treated residential lawns, and disturbed areas

where new construction is occurring. Structural solutions (e.g., settling or retention basins, a stormwater control network) may be necessary to address the magnitude of stormwater runoff, potential flooding, and NPS pollution problems created by development.

Public Participation

The opportunities for public participation must be documented in the project plan. This participation is generally informal in the early planning phase and more formal during the finalization of plans. In addition to public meetings, other methods of involving the public include newspaper articles, fliers in utility bills, mass mailings to citizens, and the establishment of citizen groups for input on controversial projects. The purpose is to address any controversial aspect of the project plan and/or generate a better understanding of the project.

Public Meetings on Project Alternatives

Public meetings should be held during project development to discuss the various alternatives being considered. These meetings should be advertised in a newspaper of general circulation in the project area and should be held at times and places conducive to maximizing public input (i.e., generally in the evening and at a central location). While a brief summary of the meetings should be included in the project plan, an official record of the proceedings is not required.

Although public meetings on the proposed alternatives are preferred, council meetings held in accordance with all of the above requirements are acceptable. Meetings targeted toward the affected stakeholders (schools if the practices affect schools, neighborhood or lake association meetings if residents/lake owners are affected, etc.) can be an important component of public involvement, identifying and addressing issues. A demonstration that there were adequate opportunities for public consultation, participation, and input in the decision-making process during alternative selection must be provided in the project plan. A brief summary of meetings, a list of significant issues raised in those meetings, and any changes to the project resulting from public input should be included.

The Formal Public Hearing

The municipality applying for an SRF loan must hold a formal public hearing prior to the adoption and submittal of a final project plan. The date, place, and time of this hearing must be conducive to maximizing public input. For complex or controversial projects, or projects that will serve more than one municipality, hearings at several locations could be held.

Public Hearing Advertisement

A notice of the public hearing must be advertised at least 30 days prior to the hearing in a newspaper of general circulation in the communities affected by the proposed project. Notices on a municipality's Web site can supplement, but not substitute, for a published public hearing notice. A copy of the draft project plan must be available for review during the entire 30-day notice period. Instructions on where to find copies of the project plan and how to submit written comments about the project must be included in the advertisement. A copy of the advertisement and an affidavit of publication must be included in the final project plan. A *Notice of Project Plan Public Hearing (Model)* can be found on the Clean Water Revolving Fund Web page.

Public Hearing Transcript

A verbatim transcript of the public hearing, recorded by a court reporter or transcribed by a stenographer from a recording of the proceedings, must be included in the final project plan. The transcript must also include the comments received and the issues raised by the public during the hearing.

Public Hearing Contents

The following items must be discussed during the public hearing:

- A. A description of the water quality problems to be addressed by the project and the principal alternatives that were considered.
- B. A description of the recommended alternative, including its capital costs and a cost breakdown by project components.
- C. A discussion of project financing and costs to users, including the proposed method of project financing and the estimated monthly debt retirement; the proposed annual, quarterly, or monthly charge to the typical household; and any special fees that will be assessed.
- D. A description of the anticipated social and environmental impacts associated with the recommended alternative and the measures that will be taken to mitigate adverse impacts.

In the event no one from the public attends the hearing (a reporter would be considered a member of the public, as would members of the applicant's governing body), the public hearing may be opened and closed without a formal presentation of the project plan. However, a transcript must still be submitted with the final project plan documenting this action.

Comments Received and Answered

The final project plan must include the following items:

- A. A typed list with the names and addresses of the people who attended the public hearing.
- B. A copy of any written comments that were received during the public comment period for the proposed project.
- C. The applicant's responses to the comments received.
- D. A description of any changes made to the project as a result of the public participation process.

Adoption of the Project Plan

The official period for receiving public comments on the proposed project may either end at the close of the formal public hearing or extend for several days after the hearing. After the close of the public comment period, an alternative must be selected for implementation and formally adopted by the municipalities participating in the project. The final project plan submitted by the July 1 deadline must include resolutions from all of the participating local units of government to formally adopt the project plan and implement the selected alternative. A *sample Joint Resolution* is available on the Clean Water Revolving Fund Web site. Note that the project plan must not be formally acted upon prior to the close of the public hearing and comment period.

More Information, Forms, and Guidance

Please visit the [DEQ Clean Water Revolving Fund Web site](http://www.michigan.gov/cleanwaterrevolvingfund) (www.michigan.gov/cleanwaterrevolvingfund) for more information and to obtain the following additional planning-related forms and documents:

*Clean Water Revolving Funds SRF/SWQIF Project Plan Submittal Form
(including sample Joint Resolution and Disadvantaged Community Worksheet)*

Applicant Actions Related to Project Planning

Project Priority List (PPL) Scoring Data Form for NPS Projects

Fundamentals of the Monetary Evaluation

Notice of Project Planning Public Hearing (Model)

NPS Ranking Criteria

Design Phase Guidance

SRF Eligibility Guidance

Information Needed for a State Historic Preservation Office Project Review

National Natural Landmarks in Michigan

Regional Planning Agency Addresses

THPO Guidance

Qualifications-Based Selection Process Guidance and FAQs

QBS Certification Form for Procurement of Architectural and Engineering Services

Project Useful Life and Cost Analysis Certification Form