

ENVIRONMENTAL ASSESSMENT WORKSHEET

This Environmental Assessment Worksheet (EAW) form and EAW Guidelines are available at the Environmental Quality Board’s website at:

<http://www.eqb.state.mn.us/EnvRevGuidanceDocuments.htm>. The EAW form provides information about a project that may have the potential for significant environmental effects. The EAW Guidelines provide additional detail and resources for completing the EAW form.

Cumulative potential effects can either be addressed under each applicable EAW Item, or can be addresses collectively under EAW Item 19.

Note to reviewers: Comments must be submitted to the RGU during the 30-day comment period following notice of the EAW in the *EQB Monitor*. Comments should address the accuracy and completeness of information, potential impacts that warrant further investigation and the need for an EIS.

1. Project title: Whitewater River Channel Restoration Project

2. Proposer: MN Department of Natural Resources

Contact person: Brent Anderson
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3. RGU: MN Department of Natural Resources

Contact person: Ronald Wieland
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4. Reason for EAW Preparation: (check one)

Required:

- EIS Scoping
 Mandatory EAW

Discretionary:

- Citizen petition
 RGU discretion
 Proposer initiated

If EAW or EIS is mandatory give EQB rule category subpart number(s) and name(s):

Minnesota Rules, part 4410.4300, subpart 26, Stream diversion.

5. Project Location:

County: Winona
City/Township: Altura / Elba Township
PLS Location (¼, ¼, Section, Township, Range):

¼, ¼	Section	Township	Range
NWNE; SWNE; NENW; SENW	20	107N	10W

Watershed (81 major watershed scale): Mississippi River – Winona
GPS Coordinates: UTM Coordinates: x: 576149.338028, y: 4878911.276909
Geographic Coordinates: latitude: 44.059414; longitude: -92.049253
Tax Parcel Numbers: 02.000.1830; 02.000.1850; 02.000.1870; 02.000.1900

At a minimum attach each of the following to the EAW:

- County map showing the general location of the project;

Figure 1: Whitewater River Channel Restoration Project, Winona County

- U.S. Geological Survey 7.5 minute, 1:24,000 scale map indicating project boundaries (photocopy acceptable); and

Figure 2: Whitewater River Channel Restoration Project, USGS Map, 1:24,000

- Site plans showing all significant project and natural features. Pre-construction site plan and post-construction site plan.

Figure 3: Whitewater State Park Visitor Map – Existing Conditions

Figure 4: Whitewater River Channel Restoration Project, Existing Site Conditions and Design Features

Figure 5: Whitewater River Channel Restoration Project, Natural Plant Communities & Land Cover

Figure 6: Whitewater River Channel Restoration Project, NRCS Soil Units

Figure 7: Whitewater River Channel Restoration Project, Project Design and Site Plan

Figure 8: Whitewater River Channel Restoration Project, New Channel Profile

Figure 9: Whitewater River Channel Restoration Project, Cross Sections Showing Excavation and Fill Profiles

Figure 10: Whitewater River Channel Restoration Project, Typical Dimensions for Channel Sections (Run, Riffle, Glide, and Pool)

Figure 11: Whitewater River Channel Restoration Project, Riffle Details

Figure 12: Whitewater River Channel Restoration Project, Channel Block and Wier Details

Table 1: Whitewater River Channel Restoration Project, Annual Streambank Erosion Estimates

Attachments

- A. DNR Natural Heritage Information System Concurrence
- B. State Historic Preservation Office Correspondence

6. Project Description:

- a. Provide the brief project summary to be published in the *EQB Monitor*, (approximately 50 words).

The Minnesota Department of Natural Resources (DNR) proposes a stream restoration project in Whitewater State Park on the Middle Fork Whitewater River in Winona County. The project would restore approximately 1,800 feet of unstable channel to enhance ecological function, reduce water quality impairments, and improve aquatic habitat and public safety. Project includes repositioning approximately 700 feet of stream channel to a former alignment, restoring the stream banks, and installing a series of rock riffle structures.

- b. Give a complete description of the proposed project and related new construction, including infrastructure needs. If the project is an expansion include a description of the existing facility. Emphasize: 1) construction, operation methods and features that will cause physical manipulation of the environment or will produce wastes, 2) modifications to existing equipment or industrial processes, 3) significant demolition, removal or remodeling of existing structures, and 4) timing and duration of construction activities.

The DNR propose a channel restoration that re-establishes dimension, pattern, and profile on a 1,800-foot (0.34 mile) reach of the Middle Fork Whitewater (MFW) River, one of Minnesota's premier fly-fishing and cold-water trout angling watersheds. The proposed project is located in Whitewater State Park (WSP) adjacent to important campgrounds that experience high traffic levels and concentrated visitor use. Although several attempts to control stream bank erosion have been made using riprap, park facilities including campgrounds and roads remain vulnerable to increased flood damage due to channel instability and currents that direct flow towards an erosive stream bank. Bank erosion is threatening the elevated terrace where the Upper and Lower Cedar Hill campgrounds are located (Figures 1, 2 and 3).

In a 3-day period during August 2007, the watershed received from 10 to 14 inches rainfall that caused excessive flooding in the river valley and changed the course of the river along this reach. Another flood of lesser magnitude occurred in 2010. Constructed road and trail structures have also contributed to reduced stream stability.

Project Concept and Design. A three-year watershed-scale sediment study of the Whitewater River by the DNR Stream Habitat Program provided the basis for the proposed project design and best alternative to pursue. The Natural Channel Design (NCD) technique of the Rosgen classification system helped identify the restoration design to use. The NCD approach evaluates the measured morphological relations associated with bank full flow, geomorphic valley type, and geomorphic stream type of a deteriorated stream reach and compares it to a stable reach of similar character. Characteristics of a stable channel of similar stature are extrapolated to the disturbed stream segment through modelling. The Rosgen's NCD approach has been adopted by several state and federal agencies, including the Natural Resource Conservation Service (NRCS).

Pattern-based stream instability was identified along the proposed channel restoration area. Although stream bank erosion is an on-going source of sediment in streams, studies indicated a disproportionate amount of sediment (322 tons per year) originates from this reach (Table 1). The sedimentation rate is much higher than a stable reach of stream.

A more complete channel restoration that is in line with natural channel design principles is proposed to protect the campgrounds from stream bank erosion, improve the ecological integrity of the park resources, correct the chronic degradation of the river channel, and improve safety. The best alternative was to reconfigure this segment to emulate the existing form of the natural valley wall pattern of a stable reference channel above the project area. The design review indicated that the pre-2007 flood location of the river channel would serve as the most suitable re-alignment option. The design concept identified that repositioning the stream channel and flow trajectory would reduce impacts along a section of highly erosive stream bank.

To achieve project objectives, bridge structures needed to be protected without compromising the stability of the river channel. Constriction caused by the two bridges needed to be accommodated in project designs. The proposed trajectory under the bridge structures fit well within the ranges identified in the models, while meeting channel capacity and competence requirements. This design is expected to protect existing infrastructure while providing better resource accessibility and channel performance (Figures 4, 5, and 6).

Project Description. A more complete channel restoration including riffle construction is proposed in line with natural channel design principles. The restoration project includes the following activities: 1) developing a preferred alternative based on geomorphological modeling, as described

above; 2) permitting, surveying, staging, and scheduling construction and use of Best Management Practices (BMPs); 3) constructing a series of three rock riffles, mostly staged to take place in dry channels, 4) grading along the new channel alignment, 5) connecting the new channel to the river and inserting a channel block above the old channel; 6) retrofitting the old channel to function as floodplain and backwater wetland pool; 7) revegetating disturbed areas and installing erosion control features; and 8) monitoring erosion control measures and performance of the new channel (Figures 7, 8, 9, 10, 11, and 12).

Construction activity is estimated to take 2-4 weeks, as weather conditions permit, and would ideally occur between Labor Day and October 15, 2015, as recommended for trout streams in this part of the state. Exact timing and dates will be determined as project details and permits are approved. On-site project oversight will be provided by DNR Stream Habitat Program professionals to ensure compliance with design specifications.

To enable efficient management of machinery and available materials, the Gooseberry Glen campground road and a short trail will be used to reach the construction site. Gooseberry Glen campground will be closed during project construction. The pedestrian bridge crossing will be closed and barricaded for the duration of construction.

“No-go” areas demarcating areas off-limits to construction equipment and material placement and potential stockpile areas have been identified (Figure 4). Prior to initiating construction activities, all areas excavated, used for stockpiling, and no-go areas will be surveyed and staked. During clearing, grubbing, and grading, a variety of materials will be salvaged and stockpiled, including boulders, Class V riprap, topsoil, vegetation mats, tree trunks, and root wads. The organic materials will be redistributed to critical areas for improving the success of revegetating the site after the final grade is established. All excavated channel material not devoted to permanent blocks or riffle construction will likely be redistributed within the old river channel to avoid any need to move materials offsite. Erosion control measures would be installed concurrent with excavation and construction staging.

The rock riffles are being installed as a safety measure to protect the reach in the case of high river flows during construction. Rock riffles will be constructed of approximately 320 large, 4-foot boulders with rounded-roughened faces. Footer boulders will be buried in cobble and gravel excavated from the river channel and riffle boulders will be partially buried. The configuration of the boulders will direct flow toward the stream center. The rock riffles would remain in place after construction and become further embedded into the substrate through natural accretion.

The rock riffles will create beneficial habitats for migrating fish such as a “step pool” habitat and will anchor a series of three typical riffle-run-pool-glide sequences. The riffle-pool sequence will help to reestablish the natural pattern and process of the river and enhance fish habitat without destabilizing the new stream channel. The flow pattern created by the rock riffles will also improve sediment transport downstream and help reduce downstream head and bank under cutting.

Three locations have been chosen for the rock riffles: at 30 to 100 feet above the Trunk Highway 74 (TH 74) crossing (~150 feet); near the location of the proposed diversion to the new channel (~630 feet); and just above the pedestrian bridge (~1260 feet). Values in parenthesis list approximate distances below the upper end of the project area. The proposed upper riffle will be implemented if available funding is sufficient to cover its additional cost. The rock riffle (wier) above TH 74 bridge is proposed to protect the bridge piers and improve bridge safety. Presently, the channel thalweg is flowing directly into the northerly bridge support causing cutting around its base. The wier would

re-direct channel flow towards the center of the bridge span and reduce erosion potential on the bridge support structure.

Boulder placement for the upper wier would be constructed in-water. Boulder placement on the middle and lower riffle structures proposed for the new channel will be staged when channel is dry prior to diverting water into the new channel. Riffles segments in the existing channel will be installed after water has been diverted into the new channel and before backfilling commences.

The proposed bottom-of-river profile will be retrofitted with pools and riffles to mimic natural profiles. A major focus of the project is to reposition approximately 700 feet of stream channel to a former alignment. Excavation of the new channel will occur when the floodplain is dry. Construction of the channel would be sequenced to manage material movement and stockpiling efficiently. Construction will begin at the bottom extent of the channel and proceed working upstream. Water will not be diverted into the new channel until it has been completed and the site has been stabilized using erosion control BMPs (Figures 8, 9, and 10).

The grading and movement of alluvial substrates and organic materials will require the use of heavy construction equipment, including excavators, bull dozers, and dump trucks. An excavator would dig the new stream channel according to the designated dimension, pattern, and profile of the alignment. A bulldozer will re-grade slopes by moving excavated material upstream along the banks.

The channel block will be placed across the old channel and flow will be diverted into the new channel after it is completed. The channel block materials will consist of salvaged trees and riprap. The logs will be stacked in crisscrossed layers and anchored with riprap. The footer logs will be embedded into the block but also extends into both the old and new channels to create fish structure and protect the block from the force of the river (Figure 12).

After the channel block is in place, sculpting and back filling of the existing channel will begin, leaving depressions where wetland creation is proposed. The riparian wetlands will be designed to flood during high water events but will maintain shallow marsh features during periods of low flow. An estimated 0.34 acres of back-channel wetland will be created at 900 feet below the upper end of the project area, along the stream bank adjacent to the Upper and Lower Cedar campgrounds. The wetland will be developed from an existing channel pool. Hydraulic connectivity between the river and the wetland will be maintained via subsurface flow.

Final grading and sloping of the channel and stream banks would complete the site preparation. Soil protection measures would proceed until completion. Erosion control measures will be applied along eroding stream banks to speed up the process of stabilizing the erosion prone area. Obsolete geotextile placed during previous bank stabilization efforts will be removed and discarded in an approved land fill. The salvaged vegetated mats would be placed along the steeper sections of the stream bank once final grading is completed. Wildlife friendly erosion control blankets would be positioned as needed. Up to 3.5 acres of disturbance, generally positioned above the ordinary high water level (OHWL), generally described as the bank full level reached by annual or biennial frequency floods. The disturbance zone above the OHWL would be reseeded with a locally sourced seed mix approved for riparian habitats [similar to Minnesota Department of Transportation (MnDOT) Seed Mix No. 34-261]. The seed mix will be selected and planted in consultation with DNR staff. Native trees would be planted on about 0.5 acres to promote bank stability and habitat improvement.

Monitoring during construction would include evaluating compliance with appropriate equipment maintenance, equipment cleaning, haul road use, and BMPs that minimize impacts. Surveys will be completed to monitor the effectiveness of erosion control measures, such as mulching, seeding, and sod/root mat applications and invasive species problems. The Stream Habitat Program will monitor the restoration project for geomorphic and biological changes over time. This would include analysis of stream bank erosion rates and channel stability. Adaptive management may be required if changes occur, but no channel form changes are anticipated.

c. Project magnitude:

Total Project Acreage	8.0
Linear project length	1,800 lineal feet
Number and type of residential units	N/A
Commercial building area (in square feet)	N/A
Industrial building area (in square feet)	N/A
Institutional building area (in square feet)	N/A
Other uses – specify (in square feet)	N/A
Structure height(s)	N/A

d. Explain the project purpose; if the project will be carried out by a governmental unit, explain the need for the project and identify its beneficiaries.

Several attempts have been made to engineer stability into the existing stream channel pattern by using riprap to hard-armor points along the shoreline. The armoring was ordered to protect an eroding terrace adjacent to Upper and Lower Cedar Hill campgrounds. The armoring from the earlier project failed during the 2007 flood event, resulting in worsened stream bank erosion and an increase in channel-sourced sediment. In an emergency response to the 2007 flood event, attempts were made to re-arm this tight meander bend. Several of the erosion control structures installed after the 2007 flood failed during a moderate flood event in 2010. This previous bank armoring and other active remedial structures continue to deteriorate. Active headcuts and extreme channel undercutting of the toe slope are continuing to degrade the valley wall/channel bank. Excessive bank erosion rates continue largely unabated. Park facilities and other public infrastructure remain vulnerable to increased flood damage.

The vulnerability of WSP park roads, campgrounds, other facilities, and bridge structures to future flooding elevates the urgency to address public safety issues from the recurring flood damage. The channel restoration would lower risks of flood damage to infrastructure. In concert with the restoration work, a campground development in the park would enable the park to maintain visitor capacity when Gooseberry Glen campground, which is located in a flood prone area, is closed. Collectively, these projects will improve public safety (see Item 6e).

Recent analysis has shown that the quality of the stream habitat along this reach of river has been degraded by a sequence of anthropogenic influences. Without taking action to remedy the situation, as identified in the proposed project, aquatic habitats would continue to degrade.

The primary purpose of this project is to restore proper pattern, profile, and dimension to this stream reach to create a more stable river system. A stable and resilient river will reduce impacts of flooding by effectively managing its water and sediment delivered to this site. With the improvement of the reach’s channel and floodplain stability, water quality and wildlife habitat will be improved and better protected. Fish, wildlife, and aquatic habitat connectivity along the MFW

River will be improved by this design and by the permanent closure of Gooseberry Glen Campground in the future.

The WSP encompasses 2,733 acres and received over 325,000 visitors in 2013. The project is located at the heart of the camping area of WSP and, if the project is successful, can serve as an example for use by interpretive specialists (naturalists) to convey key messages around river system management, land use and protection, and natural resource stewardship.

e. Are future stages of this development including development on any other property planned or likely to happen? Yes No

If yes, briefly describe future stages, relationship to present project, timeline and plans for environmental review.

Several developments proposed in the vicinity of the restoration project meet the definition of 'phased action' as provided in *Minnesota Rules*, part 4410.0200, subpart 60. Multiple projects or multiple stages of a single project that are connected actions or phased actions must be considered in total when determining the need for an EAW, preparing the EAW, and determining the need for an EIS (*Minnesota Rules*, part 4410.1000, subpart 4). The projects are listed as follows: Whitewater Whitewater State Park Campground Development, Gooseberry Glen Conversion to Day Use; Whitewater Country Loop State Trail – segment from St. Charles to Elba; and several other park maintenance or improvement projects.

The DNR is proposing to develop a new campground within WSP with construction beginning in the spring of 2016 and ending by 2018. The 54-acre project area is located on state park lands on the east side of TH 74 across from the entrance to the park's visitor center. The project will include the construction of approximately 45 to 50 campsites, four camper cabins, and rehabilitation of three primitive group camp sites. The project area is situated generally about 600 feet from the proposed Whitewater River Channel Restoration Project.

This campground project met the threshold that requires the completion of an EAW for the construction of a seasonal or recreational development consisting of 50 or more sites, in accordance with *Minnesota Rules*, part 4410.4300, subpart 20 (Campgrounds and RV Parks). The EAW was filed with the Minnesota Environmental Quality Board (EQB) and a notice of its availability was published in the EQB Monitor on September 29, 2014. Because of the nature, location, and scheduling of the two projects, the Whitewater River Channel Restoration project was listed as having the potential for cumulative effects on the water quality of the MFW River. Discussions of the cumulative effects of the MFW River Channel Restoration project were incorporated into the Whitewater State Park Campground Development project EAW. Based on the Findings of Fact and Conclusions in the Record of Decision on the need for an EIS, completed in January 2015, the DNR determined that, after considering cumulative effects of the channel restoration project and the Whitewater State Park Campground Development project, the campground development does not have the potential for significant environmental effects. Therefore, the development of an Environmental Impact Statement for the campground development was not required.

The Gooseberry Glen campground will be temporarily closed during construction of the Whitewater River Channel Restoration project. After completing the proposed campground developments, in 2017, the Gooseberry Glen campground will be closed permanently and the facility will be reconfigured as a day use area. The proposed day use area will serve as an area for gatherings and picnics and as a staging area for launching outdoor recreation activities, such as hiking and bird

watching. Closing the Gooseberry Glen campground will eliminate the risk to campers using the area during flood events and the need for mobilizing staff for emergency evacuations.

Some camping-related infrastructure, including a portion of the campground loop, campsite spurs, fire rings, picnic tables, and campsite markers would be removed while the sanitation building, parts of the campground loop road, and a few of the picnic tables and fire rings will be retained. The reworked site will be landscaped with native plantings intermixed with areas of lawn maintained for public enjoyment. Although designs for the day use area have not been finalized, development concepts include gravel-surface parking and naturalized play areas.

In 2008, the DNR completed the Whitewater Country Loop (WCL) State Trail master plan. One of the alternative corridors considered for connecting St. Charles to Elba passes through WSP. An option that takes the trail through WSP would follow TH 74 on the east side, bringing the trail through project area. The selection of a preferred route has not been determined.

Rehabilitation of the currently operational Cedar Hill campgrounds (Upper and Lower) is proposed in 2017. Improvements include replacing two sanitation buildings, implementing soil stabilization and stormwater management, repaving road segments, raising some campsite spurs prone to flooding, and rerouting traffic to improve flow.

Park facilities including campgrounds and roads remain vulnerable to increased flood damage. To address longitudinal and lateral floodplain connectivity issues created by constriction of the river passage by Minnesota State Trunk Highway 74 (TH 74) bridge, relief culverts are recommended. The culverts would restore connectivity for lateral and longitudinal floodplain function, sediment transport, and possibly enable pedestrian traffic under TH 74.

f. Is this project a subsequent stage of an earlier project? Yes No

If yes, briefly describe the past development, timeline and any past environmental review.

Two or three attempts have been made to engineer stream bank stability at points along the existing stream channel by using riprap and other measures of armoring the shoreline. The projects failed during a major flood event in 2007 and 2010, resulting in worsened stream bank erosion and downstream sedimentation. In an emergency response to the 2007 flood event, new riprap, sky hook, and lunker structures were installed, but several of these structures failed after moderate floods in 2010. Lunkers and sky hooks are structures that create artificial bank overhang features that provide fish some protection from stream currents and shadow cover for hiding. The previous projects did not require a Public Waters Work permit or official environmental review according to Environmental Quality Board rules, Minnesota Rules, Chapter 4410.

7. Cover types: Estimate the acreage of the site with each of the following cover types before and after development:

	Before	After		Before	After
Wetlands	0.17	0.34	Lawn/landscaping	0.23	0.20
Deep water/streams	1.90	2.20	Impervious surface	0.19	0.19
Wooded/forest	3.31	3.76	Stormwater Pond		
Brush/Grassland	2.20	1.31	Other (describe)		
Cropland	0.00	0.00			
			TOTAL	8.00	8.00

- 8. Permits and approvals required:** List all known local, state and federal permits, approvals, certifications and financial assistance for the project. Include modifications of any existing permits, governmental review of plans and all direct and indirect forms of public financial assistance including bond guarantees, Tax Increment Financing and infrastructure. *All of these final decisions are prohibited until all appropriate environmental review has been completed. See Minnesota Rules, Chapter 4410.3100.*

<u>Unit of government</u>	<u>Type of application</u>	<u>Status</u>
Winona County	SWCD Application (possible regulatory) Floodplain Compliance	Coordination in progress Documentation & Coordination in progress
MPCA (MN Pollution Control Agency)	NPDES/SDS Construction Stormwater General Permit	Anticipated
MnDOT	Right-of-Way/Utilities	Not yet applied
DNR-Waters	Public Waters Work Permit	Application pending
US Army Corps of Engineers	RHA, Section 10 CWA Section 404 RGP	Likely applicable, pending determination
MN State Legislature	Lessard-Sams Outdoor Heritage Fund	FY 2014, \$300,000

The MPCA 401 Certification is incorporated into the Corps' Section 404 RGP (Regional General Permit); RHA Rivers and Harbors Appropriation Act of 1899; CWA refers to the Clean Water Act

Cumulative potential effects may be considered and addressed in response to individual EAW Item Nos. 9-18, or the RGU can address all cumulative potential effects in response to EAW Item No. 19. If addressing cumulative effect under individual items, make sure to include information requested in EAW Item No. 19

9. Land use:

a. Describe:

- i. Existing land use of the site as well as areas adjacent to and near the site, including parks, trails, prime or unique farmlands.

The project area is under ownership of the State of Minnesota and lies entirely within WSP, about one mile from its northern boundary. The restoration site is at the lower end of the 53-square mile MFW River watershed, about 3 miles above its confluence with the North Fork Whitewater River. The length of the MFW River is about 20 miles.

Land use in the MFW River watershed is largely agricultural, with some rural residential development and public lands reserved for outdoor recreation and biodiversity conservation. According to the MPCA's watershed assessment (2013), over 80% of its land use is tied to agricultural production (cropland 54% and rangeland 28%) Extensive cropping systems that expose mineral soils during cultivation increase the potential of erosion and sedimentation affecting the river's water quality. Several large areas of State forest lands and the 28,000 acre Whitewater Wildlife Management Area (WMA) are in proximity to the WSP; a portion of the WMA is within the state park boundary on the west side.

Uses of lands within the WSP include camping, hiking, wildlife viewing, seasonal hunting and fishing, and other outdoor activities. Skiing and snowshoeing are examples of winter activities. The park currently has two semi-modern campgrounds, one modern and three primitive group camps, and 10

miles of hiking trails. In winter, the park maintains 6 miles of groomed cross-country ski trails and approximately 10 miles of hiking trails.

- ii. Plans. Describe planned land use as identified in comprehensive plan (if available) and any other applicable plan for land use, water, or resources management by a local, regional, state, or federal agency.

The Whitewater State Park Management Plan was approved in December 1979. The Whitewater State Park Management Plan provides a strategic vision for the state park and guides the development of facilities and management of the unit's natural and cultural resources to balance resource protection and recreational opportunities.

In 2008, the DNR completed the Whitewater Country Loop (WCL) State Trail master plan. One of the alternative corridors considered for connecting St. Charles to Elba passes through WSP. An option that takes the trail through WSP would follow along the east side of TH 74, potentially bringing the trail across the channel restoration area. The selection and location of the preferred route has not been determined.

The proposed project is placed in context with the Winona County Comprehensive Plan (WCCP) (November 2014) development goals and policies that may be applicable to the proposed project, including the Natural Resource Protection and "Open Space and Recreation" themes. The plan identifies goals, policies, and strategies: that the county participate in coordinated water resource and watershed planning, monitoring, and management; that all water resources in the county are protected from sources of pollution; that development in designated floodplain areas be carefully controlled to protect public health and safety and minimize pollution problems; that the county enact floodplain and shoreland ordinances to promote water quality improvement; that wetlands are preserved; that soil conservation and erosion control practices are promoted; that performance standards are enlisted to protect natural resources; that coordination between state and county entities promotes working relationships through an emphasis on communication and education, rather than regulation; and that all levels of government promote land management practices that protect natural resources.

Winona County has zoned WSP as Agriculture/Resource Conservation (ARC). Much of the land surrounding the state park is also zoned as ARC, with small areas zoned Rural Residential or Rural Heritage.

- iii. Zoning, including special districts or overlays such as shoreland, floodplain, wild and scenic rivers, critical area, agricultural preserves, etc.

The project is located within FEMA's provisional 100-year floodplain, referred to as a flood hazard area (Figure 5). Winona County Floodplain Ordinances are applicable. The shoreland zone for the MFW River is 300 feet wide measured from the ordinary high water level (OHWL) of the river. As a Tributary Class river, septic systems must be at least 75 feet away from the river, and structures, at least 100 feet away. It is anticipated that more than one acre of disturbance would occur above the OHWL. This would include the area forming the new channel (2.2 acres) and other floodplain disturbances (1.5 acres).

Soil erosion and sedimentation control BMPs will be made available to the Winona County Engineer, the local Soil and Water Conservation District, and the Whitewater River Watershed Project.

- b. Discuss the project's compatibility with nearby land uses, zoning, and plans listed in Item 9a above, concentrating on implications for environmental effects.

The proposed project is compatible with Whitewater State Park Management Plan (1979), WCL State Trail Plan, the WCCP (2014), and applicable Winona County zoning ordinances. Parks, wildlife areas, game management, and forest preserves are permitted principal uses within Winona County's ARC zone. The DNR's goal is to comply with applicable provisions in the Winona County's Comprehensive Plan and Zoning Ordinances during the construction and maintenance of the channel restoration project. As a courtesy, the DNR routinely coordinates with local governments to foster good working relationships when state law preempts local ordinances and when regulation is delegated to local authorities.

The DNR has provided Winona County with information that the finished fill of the channel restoration will be accomplished in compliance with the provisions of the Winona County Floodplain Ordinances (11.4). Modelling analysis indicates there will be a maximum rise of 0.86 feet downstream of TH 74 bridge approximately at the location where the new river channel would begin. The increase occurs within state owned property and does not impact any structures. The upper wier structure causes a rise of 0.29 feet upstream of the bridge and a reduction of 0.25 feet downstream when compared to existing conditions. The wier structure does not impact the existing water surface elevation at the bridge.

No buildings or septic systems are proposed in the shoreland zone. Stormwater management will be conducted in a manner the meets the NPDES/SDS Construction Stormwater General Permit standards and/or the WC Shoreland Performance Standards identified in part 11.3.7.18.

This project is compatible with recommendations in the plan as well as with state park statutory guidance to protect and conserve natural resources. An amendment to the park's master plan is in progress to reflect current park development plans, including the new campground proposal and accommodations for development of a proposed state trail. The proposed channel restoration project will not require inclusion in the amendment to the State Park management plan.

- c. Identify measures incorporated into the proposed project to mitigate any potential incompatibility as discussed in Item 9b above.

Although the project will cause minor annoyances to park visitors, the project is generally compatible with nearby land uses. Environmental effects of the project that could affect nearby receptor sites will be discussed under those items specifically addressing the environmental effects (noise, exhaust fumes, dust, etc.). Stormwater management will be addressed under Item 11.b.i.2. Otherwise, no incompatibility has been identified.

Some of the land surface on the project site is irregular, rough, and broken, making walking through the site quite difficult. The final grade profile will be smoothed out to improve safety and provide better walking conditions. Landscaping will prepare the site to appear 'natural' while allowing the channel to properly manage its water and sediment.

10. Geology, soils and topography/land forms:

- a. Geology - Describe the geology underlying the project area and identify and map any susceptible geologic features such as sinkholes, shallow limestone formations, unconfined/shallow aquifers, or karst conditions. Discuss any limitations of these features for the project and any effects the

project could have on these features. Identify any project designs or mitigation measures to address effects to geologic features.

The landscape of the project area is classified within the Ecological Classification System (ECS), which follows a national framework of classifying ecological and landscape features. As applied across the State of Minnesota, the ecological land classification is used to identify, describe, and map progressively smaller areas of land with increasingly uniform ecological features. The project area lies within the Blufflands Subsection (a sub-unit of the Paleozoic Plateau Section) and the Elba Slopes Land Type Association (LTA).

Nearly 450 million years ago, shallow seas covered most of North America, including southeastern Minnesota. On its bed, sediment accumulated and gradually turned into rock hundreds of feet thick. When the sea withdrew, erosion carved through the bedrock, creating the valleys and bluffs found in what is now WSP. More recently, glacial melt-waters sculpted the cliffs and valleys. The subsection is characterized by bluff prairies, steep bluffs sensitive to erosion, and deep stream valleys. Impressive dolomite cliffs that rise 600-feet above the valley floors and cold-water trout streams add to the appeal of WSP. River-bottom forests grow along major streams and backwaters and upland forests are found along the bluff slopes.

A thin blanket of wind-blown silt covers clayey and loamy sediment that contains high amounts of rocks and bedrock in the Blufflands Subsection. The depth of drift over bedrock varies from 0 to 50-feet. Devonian dolomite and limestone are more locally exposed along the western edge of the subsection, where WSP is located. The Elba Slopes LTA contains a landscape characterized by steep hill sides and gullies with slope gradients of 20% to 70%. The transition from ridge top to steep side slope is usually very abrupt.

The representative substrate of the project's construction area is cobbly alluvium. Alluvium consists of sediments and limestone rocks deposited by running water. The channel bed at the downstream end of the project area is composed of Jordan Sandstone (Upper Cambrian) bedrock outcrop, which is dominantly whitish-tan to orange, very fine- to coarse-grained, quartzose, friable sandstone.

Excessive sedimentation is occurring along the river's eastern stream bank below the Cedar Hill Campground. The stream is cutting into an old stream terrace consisting of loamy-textured erosion-prone soils (Timula silt loam, 20 to 40 percent slopes, an eroded soil series). At the cut bank, the stream terrace is about 14 feet above the riverbed and the floodplain hazard area.

No karst features are mapped within the proposed project area, as indicated on karst features maps provided by the County.

- b. Soils and topography - Describe the soils on the site, giving NRCS (SCS) classifications and descriptions, including limitations of soils. Describe topography, any special site conditions relating to erosion potential, soil stability or other soils limitations, such as steep slopes, highly permeable soils. Provide estimated volume and acreage of soil excavation and/or grading. Discuss impacts from project activities (distinguish between construction and operational activities) related to soils and topography. Identify measures during and after project construction to address soil limitations including stabilization, soil corrections or other measures. Erosion/sedimentation control related to stormwater runoff should be addressed in response to Item 11.b.ii.

NOTE: For silica sand projects, the EAW must include a hydrogeologic investigation assessing the potential groundwater and surface water effects and geologic conditions that could create an increased risk of potentially significant effects on groundwater and surface water. Descriptions of water resources and potential effects from the project in EAW Item 11 must be consistent with the geology, soils and topography/land forms and potential effects described in EAW Item 10.

The NRCS soil survey for Winona County shows that loess soils occupy the gently rounded ridge tops. Loess and limestone residual soils occupy the upper valley slopes along the tributary streams and alluvial soils are found in the valleys of WSP. The project area consists of mainly the Beavercreek soils in the flood plain and a minor component of the Timula silt loam, 20 to 40 percent slopes, eroded soils on the old terrace slope above the flood plain.

The Beavercreek, stony, frequently flooded soils occupy most of the project area. The Beavercreek soils are typically found on floodplains and alluvial fans below steep to very steep slopes. Slopes are 1 to 8 percent. The soil series consists of well drained soils formed in gravelly, cobbly, and loamy recent alluvial sediments. The parent material consists of loamy-skeletal alluvium consisting of water-worn-gravel, cobbles and stones. There is a low frequency of water availability above a soil depth of 60 inches. A seasonal zone of water saturation is at 48 inches during April and May. This soil does not meet criteria for hydric soils.

Samples were taken to determine representative particle size distribution of alluvial materials that would be encountered in the construction zone. The particle sizes fall into the following classes (diameter given in inches): 6% sand, silt, or clay (<0.1 in); 12% fine to medium gravel (0.1 – 1 in); 32% coarse gravel (1 – 3 in); 38% cobble (3 – 10 in); 12% stone (10 – 20 in); and 5% boulders (20 - 40 in). The alluvium is composed of 82% gravel and cobble, ranging in particle size from 0.1 inch to 10 inches in diameter. Stones and boulders (greater than 10 inches diameter) make up about 12% of the alluvium, and finer sand, silt, and clay sediments make up an additional 6%.

The Timula, eroded component, makes up a minor portion of the project area. Slopes range from 20 to 40 percent. The parent material consists of coarse silty loess. The natural drainage class is well drained. Water movement in the most restrictive layer is moderately high. This soil is not flooded. It is not ponded. There is no zone of water saturation within a depth of 72 inches. This soil does not meet hydric criteria. The saturated hydraulic conductivity is moderately high to high (4.23 to 14.11 micrometers per second).

A soil limitation of the Beavercreek series is related to the high amounts of coarse gravel and rock in the alluvial materials. Fine textured sediments and topsoil may be limited. On much of the site there is about two inches of topsoil over coarse grade materials. Project plans call for stockpiling fine sediments for top dressing areas that will be revegetated.

Repair of an eroded stream bank is the only construction work proposed in Timula soils. The erosion control measures are meant to speed up the process of stabilizing the erosion prone area. Much of the sedimentation presently occurring along the cut bank is from Timula soils that are being undercut by the river. With the proposed new channel alignment, undercutting of the bank should cease.

Although much of the area would be sensitive to contamination from wastes or chemicals spills, the development and maintenance of the channel restoration would have limited potential for accidental spills or other contamination of soils and groundwater. Protection measures have been identified under Item No. 12c (Figure 6).

11. Water resources:

- a. Describe surface water and groundwater features on or near the site in a.i. and a.ii. below.
 - i. Surface water - lakes, streams, wetlands, intermittent channels, and county/judicial ditches. Include any special designations such as public waters, trout stream/lake, wildlife lakes, migratory waterfowl feeding/resting lake, and outstanding resource value water. Include water quality impairments or special designations listed on the current MPCA 303d Impaired Waters List that are within 1 mile of the project. Include DNR Public Waters Inventory number(s), if any.

Topography of the landscape surrounding the project area is rugged, forming break lands of steep slopes and deep valleys that form an interface between relatively flat plateaus above and floodplains below. The proposed project is within a deep valley with a natural valley wall pattern. The valley type begins to widen downstream of the project area. The river channel proposed for restoration is listed as a public water, contains wetlands below the OHWL of the river, and has seepage wetlands within the project area that will be avoided.

The proposed project is located on the MFW River within the Mississippi River – Winona Major watershed, and the Whitewater River Minor watershed. The MFW River originates in eastern Olmsted County, one mile northeast of Eyota and flows in a northeasterly direction. The MFW River (Kittle Number M-031-019), Trout Run Creek, and Unnamed Creek (Whitewater Tributary) are small streams that originate on the rolling Rochester plateau and enter deep gorges within WSP. Trout Run Creek joins the MFW River south (up-stream) of the proposed project area and contributes about 40% of the flow through the park. The MFW River joins the Whitewater's north and south branches near Elba in western Winona County. No lakes are present within the watershed.

The seven mile segment of the MFW River running through the park averages twenty feet wide and maintains an average depth of ten- to twelve-inches. Its gradient averages 31 feet per mile. Three river habitats are designated (by percent of total length): pool (30%), riffle (55%), and flat (15%). Its flow averages about five cubic feet per second (cfs) where it enters the park, and 10 to 15 cfs where it exits.

The proposed project is along a segment of the MFW River, which is a designated trout stream listed in *Minnesota Rules*, part 6264.0050, subpart 4. The upper 12 miles of the MFW River, extending from the headwaters to Crow Spring, is classified as a warm water stream. The 13 miles downstream extending from Crow Spring to the South Fork of the Whitewater River, which includes the segment proposed for restoration, is classified as a coldwater habitat. The creek run fast and cold through the steep limestone bluffs of the park. The MFW River is subject to seasonal flooding.

The reach of the MFW River that extends for 12 miles from the west line of T107R11W Section 35 to the North Fork of the MFW River contains the section of the river channel that is proposed for restoration. This reach of the MFW River is classified by the MPCA (see *Minnesota Rules*, part 7050.0470) as a Class 1B, 2A, and 3B water body. The applicable state classifications and the referenced water quality standards for the reach are: Class 1B (drinking water use with approved disinfection); Class 2A [aquatic life and recreation, cold water sport fish (trout waters)], and Class 3B (use for general industrial purposes, except for food processing). Use is protected as outlined by the numeric and narrative water quality standards (WQS) found at *Minnesota Rules*, parts 7050.0220 through 7050.0223, and *Minnesota Rules*, part 7050.0210.

Also the following general use classifications are applicable:

- Class 4: agriculture and wildlife. Includes all waters of the state that are or may be used for any agricultural purposes, including stock watering and irrigation, or by waterfowl or other wildlife and for which quality control is or may be necessary to protect terrestrial life and its habitat or the public health, safety, or welfare. Class 4A waters includes cold water sport fish (trout waters) and 4B waters includes cool and warm water sport fish; both are also protected for drinking water. The applicable WQ standards are defined in *Minnesota Rules*, part 7050.0220, subparts 3a and 4a, and part 7050.0224, subparts 1, 2 and 3.
- Class 5: aesthetic enjoyment and navigation. The applicable WQS are defined in *Minnesota Rules*, part 7050.0220, subpart 3a, and part 7050.0225.
- Class 6: includes other uses and protection of border waters. The applicable WQS are defined in *Minnesota Rules*, part 7050.0226.
- Also, the narrative standards at *Minnesota Rules*, part 7050.0210 apply to all water bodies, regardless of their designated use classification.

The overall condition of the reach, as reported by MPCA, is “not always suitable for swimming and wading due to high bacteria levels caused by the presence of human or animal waste in the water. The segment may not support a thriving community of fish and other aquatic organisms, as indicated by excessive turbidity (suspended solids).” The MFW River is on the MPCA 303d list of impaired water bodies due to exceedances of fecal coliform, turbidity, and nitrate standards. The exceedances impair the following designated uses on the MFW River, respectively, with year impairment was listed: Aquatic Recreation (2008), Aquatic Life (2010), and Drinking Water (2012).

The river has an approved TMDL for fecal coliforms. The MPCA developed a process to identify and address threats to water quality in the major watersheds in Minnesota. This process is called WRAPS or the Watershed Restoration and Protection Strategy. In 2010, the MPCA started the WRAPS study in the Mississippi River (Winona) Watershed. The MFW River sub-watershed’s outlet is represented by MPCA water quality station 10LM002. The Monitoring and Assessment Report for this major watershed was completed in 2013.

A wetland delineation report was completed for the project area in October 2013. Two riverine wetlands with a combined total area of 0.17 acres were classified as Type 2 wetlands (freshwater wet meadows). The wetlands occur along the eastern edge of the old channel within its bank-full mark, i.e. below the OHWL of the river. The wetlands are designated as public waters and fall under the DNR permitting authority. Although Wetland Conservation Act (WCA) rules do not apply, similar mitigation standards for the loss of public water wetlands are applicable.

- ii. Groundwater – aquifers, springs, seeps. Include: 1) depth to groundwater; 2) if project is within a MDH wellhead protection area; 3) identification of any onsite and/or nearby wells, including unique numbers and well logs if available. If there are no wells known on site or nearby, explain the methodology used to determine this.

Two regional aquifers are identified in the northwestern part of Winona County: the Prairie du Chien – Jordan (PCJ) aquifer and the Franconia – Ironton – Galesville (FIG) aquifer. The PCJ aquifer is a major source of water in the County. It is the shallowest aquifer and exhibits a wide range of depths. The PCJ aquifer is often dewatered near stream valleys. Few wells are drilled in the FIG aquifer so limited information is available.

Aquifer sensitivity refers to the degree of geological protection of the aquifer(s) used by the public water supply. The aquifer(s) that the wells draw from are classified as highly sensitivity to contamination due to the local geological setting, i.e., karst geology. Rapid infiltration and locally focused recharge of groundwater is possible in karst formations and the natural treatment that is normal for groundwater flow is reduced. Therefore water pollutants entering from the surface are only partially abated.

A black ash seep and two other springs enter the MFW River along the northwest portion of the project area. The seeps support clear and cold water that is desirable for trout. Channel construction in the northwest portion of the project will utilize the pre-2007 flood channel, causing no new disturbance to the seepage areas. The seep/springs are high quality and protection was recommended early in project design. The springs will be demarcated and flagged as part of the no-go zone, where construction equipment will not be allowed to enter. Additional groundwater issues are discussed below

1. Beaver creek soils that occupy most of the project area create little resistance to water movement because of their high composition of gravels and cobbles. This soil is flooded occasionally for very brief duration. Water depth is normally below 60 inches. However, a seasonal zone of water saturation occurs during the months of April and May at a depth of about 48 inches. Water does not pond on these soils.
2. The project is not located in a Minnesota Department of Health (MDH) wellhead protection area.
3. The water supply for WSP is obtained from seven primary wells. Two additional wells that have unknown use status are within 0.4 miles of the project area. The WSP does not currently monitor water usage at the campgrounds or other facilities.

The closest wells to the construction area are located on the adjacent high terrace and serve the Cedar Hill campground. These wells are between 350 and 570 feet from the project area and have a depth between 50 and 60 feet deep.

The Aquifer Sensitivity of both of these wells is rated as high and the Well Sensitivity is either high or not rated. Well sensitivity refers to the integrity of the wells, i.e., knowing whether construction and maintenance standards are achieved, regardless of aquifer sensitivity.

Other wells, located between 900 to 1300 feet from the project area, have a depth between 150 to 294 feet. These wells all have high Aquifer Sensitivity and several have Well Sensitivity. Well logs are available from the MDH. None of these wells are known to be abandoned. Information on WSP wells and their sensitivity is from the MDH (See table below). The distance values refer to distance from the nearest project area boundary.

Unique Well No	Well ID	Distance (mi.)	Depth	Well Use	Aquifer	Aquifer Sensitivity	Well Sensitivity
00219107	Modern Group Center (P-1)	0.6	145	Primary	Bedrock	High	No
00219217	(Cedar Hill Campgr.(P-?))	0.1	60	Unknown	Alluvium		
00219221	Gooseberry Glen (P-3)	0.2	210	Primary	Bedrock	High	Yes
00474596	Cedar Hill Campgr. (P-4)	0.1	53	Primary	Glacial Deposits	High	Yes
00219219	Gooseberry Glen (P-5)	0.2	150	Primary	Bedrock	High	Yes

Unique Well No	Well ID	Distance (mi.)	Depth	Well Use	Aquifer	Aquifer Sensitivity	Well Sensitivity
00219220	(South Group Camp?) (P-?)	0.4	223	Unknown			
00219076	Primitive Group Camp (P-7)	0.2	294	Primary	Bedrock	High	No
00164906	Maintenance Shop (P-8)	0.5	250	Primary	Bedrock	High	No
00507586	Interpretive Center (P-9)	0.2	192	Primary	Bedrock	High	No

Source: Minnesota Department of Health; P-numbers under Well ID are well reference numbers for the park. Cedar Creek Well Numbers are under review.

- b. Describe effects from project activities on water resources and measures to minimize or mitigate the effects in Item b.i. through Item b.iv. below.
- i. Wastewater - For each of the following, describe the sources, quantities and composition of all sanitary, municipal/domestic and industrial wastewater produced or treated at the site.
- 1) If the wastewater discharge is to a publicly owned treatment facility, identify any pretreatment measures and the ability of the facility to handle the added water and waste loadings, including any effects on, or required expansion of, municipal wastewater infrastructure.
 - 2) If the wastewater discharge is to a subsurface sewage treatment systems (SSTS), describe the system used, the design flow, and suitability of site conditions for such a system.
 - 3) If the wastewater discharge is to surface water, identify the wastewater treatment methods and identify discharge points and proposed effluent limitations to mitigate impacts. Discuss any effects to surface or groundwater from wastewater discharges.

No wastewater will be generated as a result of this project.

- ii. Stormwater - Describe the quantity and quality of stormwater runoff at the site prior to and post construction. Include the routes and receiving water bodies for runoff from the site (major downstream water bodies as well as the immediate receiving waters). Discuss any environmental effects from stormwater discharges. Describe stormwater pollution prevention plans including temporary and permanent runoff controls and potential BMP site locations to manage or treat stormwater runoff. Identify specific erosion control, sedimentation control or stabilization measures to address soil limitations during and after project construction.

This 1800-foot reach of the MFW River has been assessed for channel sourced sediment contributions (i.e., bank erosion). The east bank of the stream channel is receding at an estimated rate of between 0.6 to 1.2 feet per year. The annual sedimentation contribution rate for this segment is estimated at 322 tons, with most of the contributions coming from the eroding valley walls along the tight meander sections of the stream channel. The predicted rate of sedimentation is anticipated is a decline by 90 percent to around 32 tons per year (Table 1). It is anticipated that less than 3.5 acres of flood plain above the normal water level will be disturbed.

The project purpose is to re-establish and mimic natural sediment transport processes in which 90% of all sedimentation produced would come from the river bed itself and not from uphill disturbances. During construction, the project will utilize a variety of storm water BMPs, including devices and methods to prevent turbulent water and polluted discharges into the river. These include:

1. Phasing. Project staging has been developed to minimize in-water construction and reduce amount of disturbed soils during construction. See section 11.b.iv for in-water BMPs.

2. Slope/Bank Stabilization. Formation of the new channel will require excavation work to shape the river banks. Reshaping of the banks is proposed to occur as soon as possible upon completion of the channel form. The work will include shaping the slopes to a low angle of repose (less than 12 percent slope), placement of locally obtained rip-rap, vegetation mats, erosion control blankets, and/or other treatments to reduce the potential of bank failure occurring along the new channel. To minimize the amount of disturbance of the river bank at any given time, work of stabilizing the new channel banks will be completed in phases.
3. Temporary Sedimentation Ponds. Stockpiles of material are proposed within the project limits, which includes the riverbed itself. Materials such as riprap and gravel may be stored in the inactive portion of the river channel. Other materials such as compost and topsoil to stabilize the banks will be kept in a staging yard near the project but not within the channel. As part of the project, installation of sedimentation ponds will occur in downstream areas to capture material that escapes from stockpiles or disturbed areas of the river.
4. Minimize erosion and sediment contribution during restoration phase: Use local-source native plant materials to restore high quality Native Plant Communities (NPC). Use of vegetation mats will be implemented if feasible after further investigation and coordination with contractor. Some clumps of American elderberry, willow, and other woody vegetation will also be salvaged and replanted to provide quicker establishment of some woody vegetation. Plant materials that will be salvaged have been marked and on-site construction supervisors will direct salvage and replant operations. Wildlife friendly erosion blankets and/or hydro-mulch is specified in project designs. Oats or other cover crops will be used as necessary to reduce soil exposure. Controlling reed canary grass, which is common throughout similar habitats on the MFW River, will be a challenge as vegetation is reestablished on the disturbed areas.

The entire site will be seeded by the contractor with winter wheat to quickly establish ground cover during the fall after construction and the following spring. Native seeding will be completed by the DNR. Stream banks and stream plugs will be seeded with sedges and other wetland species. Additional tree plantings on 0.5 acres of the disturbance zone will be completed in years 2-5, depending on whether site conditions are favorable. These will likely be bare root plantings to supplement salvaged and volunteer woody vegetation. One area with a south facing aspect will be seeded with a prairie mix seed lot.

Very little on-site erosion is expected throughout construction due to the gravely-cobbly nature of the channel bed materials. No net change in stormwater runoff quantity will result from the project post-construction. No net change in storm water runoff quality from the adjacent watershed is anticipated as part of this project.

Plans for the construction will be shared with Winona County Soil and Water Conservation District (WCSWCD), Winona County (WC), and Whitewater River Conservation Program (WRCP).

It is anticipated that about 3.7 acres of the disturbance would occur above the OHWL and 2.1 acres would occur below the OHWL. The 2.2 acre area proposed for the new channel is considered above the OHWL and about 1.5 acres of disturbance would occur elsewhere on the floodplain. The DNR will apply for the National Pollution Discharge Elimination System Construction Stormwater General Permit and complete a Stormwater Pollution Prevention Plan (SWPPP). After project completion about 3.3 acres of disturbance, which includes fill areas in the old channel, will be above the OHWL.

- iii. Water appropriation - Describe if the project proposes to appropriate surface or groundwater (including dewatering). Describe the source, quantity, duration, use and purpose of the water use and if a DNR water appropriation permit is required. Describe any well abandonment. If connecting to an existing municipal water supply, identify the wells to be used as a water source and any effects on, or required expansion of, municipal water infrastructure. Discuss environmental effects from water appropriation, including an assessment of the water resources available for appropriation. Identify any measures to avoid, minimize, or mitigate environmental effects from the water appropriation.

No dewatering is proposed as part of this project.

- iv. Surface Waters

- a) Wetlands - Describe any anticipated physical effects or alterations to wetland features such as draining, filling, permanent inundation, dredging and vegetative removal. Discuss direct and indirect environmental effects from physical modification of wetlands, including the anticipated effects that any proposed wetland alterations may have to the host watershed. Identify measures to avoid (e.g., available alternatives that were considered), minimize, or mitigate environmental effects to wetlands. Discuss whether any required compensatory wetland mitigation for unavoidable wetland impacts will occur in the same minor or major watershed, and identify those probable locations.

Wetlands were delineated in the project area by an independent contractor in October 2013. Only two wetlands, totaling 0.17 acres, were identified in the project area. Both of the wetlands would be destroyed when the river channel is repositioned into its former alignment. DNR and the Technical Evaluation Panel (TEP) staff concurred that the wetlands are below the OHWL of the MFW River, are regulated under the jurisdiction of the public water permitting (*Minnesota Rules*, chapter 6115) and not subject to WCA rules (*Minnesota Rules*, chapter 8420). The public water wetlands will be replaced with other constructed wetlands on-site in one or several backwater areas of the old channel. According to the applicable wetland replacement ratio of 2:1, the DNR proposes that 0.17 acres of wetlands impacted by construction be replaced by at least 0.34 acres of wetland marsh vegetation that would be created.

A back-channel wetland/pool will be created along the east bank of the old channel approximately where the stream bank has been riprapped. A channel pool is already formed at this location. The constructed wetland will be hydraulically connected to the restored channel to enable habitat connectivity and passage for biota. Other side channels or braided channels (within the banks) may form, eventually resulting in a higher ratio of replacement than the 2:1 ratio required. The restored wetland backwater will be seeded with a mix that contains mostly sedges and wetland species. The seed mix will grade into woodland species (bottlebrush grass, silky wild rye, river bank rye, cow parsnip, etc.) away from the channel.

“To improve regulatory consistency between programs, work in public water rules generally require that as a condition of approval for a DNR permit for impacts to public waters wetlands the application must comply with WCA sequencing requirements and replacement standards. These requirements apply to all DNR permits for impacts to public waters wetlands – not just WCA-regulated wetlands that have been waived to the DNR. This means that DNR permits for project impacts to public waters wetlands must:

- ensure that the project has adequately avoided and minimized wetland impacts,

- require wetland replacement consistent with WCA provisions for the type, amount, location and timing of the replacement, and
- include monitoring and reporting requirements.”

Information on the replacement calculations should be provided in the Joint Application available on the Corps webpage under Appendix D, the “Project-Specific Replacement/Permittee Responsible Mitigation” section. The amount of acreage of other aquatic resources that lack vegetation such as the stream bed should also be provided in the application.

- b) Other surface waters- Describe any anticipated physical effects or alterations to surface water features (lakes, streams, ponds, intermittent channels, county/judicial ditches) such as draining, filling, permanent inundation, dredging, diking, stream diversion, impoundment, aquatic plant removal and riparian alteration. Discuss direct and indirect environmental effects from physical modification of water features. Identify measures to avoid, minimize, or mitigate environmental effects to surface water features, including in-water Best Management Practices that are proposed to avoid or minimize turbidity/sedimentation while physically altering the water features. Discuss how the project will change the number or type of watercraft on any water body, including current and projected watercraft usage.

The DNR proposes to restore a river meander to its proper (previous) alignment within the valley. Currently, the river is actively eroding a silty terrace along its eastern bank. The cause of much of the instability of the MFW River within the park is historic road and bridge construction, which flattened the river slope and increased the tendency for the channel to cut new meanders. Previous attempts at armoring sections of eroding banks with rocks have been unsuccessful. Following Natural Channel Design principles, this project re-establishes an appropriate dimension, pattern, and profile for its given valley type. As such, stable pool, riffle, glide, and run habitats will be created. Benthic invertebrates and trout depend on these types of habitat within the river channel. In addition, it is anticipated that bank erosion will be minimized in the restored reach, thus increasing downstream water quality and decreasing the sediment load within the stream (Figure 7 and 8 and Table 1).

The project will require a Work in Public Water (WPW) Permit. The WPW permit has been drafted and some of the construction plans are available in this EAW (see Figures 7 through 12). The permits applicable to mitigation for effects on water quality and from effects of changes in the course, current, or cross-section of the MFW River are based on the expectation that more than one acre of disturbance would occur above the OHWL and some work would occur below the OHWL.

Although the potential for exclusion from using the US Army Corps of Engineers (Corps) Regional General Permit (RGP) is still being evaluated, the Corps has indicated that the proposed project will likely fall within the definition of an authorized activity permitted under the RGP (RGP-003-MN), if protocols stipulated in the RGP are followed. The project fits under the definition of Authorized Activity I. Stream and Wetland Restoration, Enhancement or Establishment Activities. With caveats identified in the RGP, this category identifies, “the enhancement, restoration, or creation of riffle and pool stream structures; the placement of in-stream habitat structures; [and the] modifications of the stream bed and/or banks to restore or create stream meanders” as authorized activities. It is noted that, “this RGP category may be used to relocate aquatic habitat types on the project site, provided there are net gains in aquatic resource functions and values.”

According to definitions in the 404 RGP, the project would be considered a stream restoration. The 404 RGP defines restoration as the re-establishment or rehabilitation of sites that historically supported wetlands or streams and frequently retain some wetland components (e.g., hydric soils) or stream processes even after human-made disturbances such as drainage, cropping or channelization. Regarding this project, severe flooding related to human-made disturbances, such as land clearing and land use changes caused by agriculture, transportation structures, and other developments have caused the degradation of this segment of the MFW River.

Included with the RGP as an attachment is the modification to RGP-003-MN associated with the Clean Water Act Section 401 water quality certification submitted by the MPCA. The MPCA applies conditions within the 404 RGP that are applicable to this project as follows:

“The in-water BMPs must be properly installed prior to conducting the authorized activities and must be maintained throughout the duration of the project's in-water disturbances. While conducting the work, the BMPs must also be visually monitored to ensure management of turbidity and/or sedimentation. If turbidity and/or sedimentation caused by the project, is observed outside and downstream of the defined work area, then the authorized activities must cease immediately until alternative BMPs, which will adequately control turbidity and sedimentation, have been implemented....In-water BMPs must be included in the construction plan.” Further information on BMPs that may be suitable for this purpose can be found in “Best Practices for Meeting DNR General Public Waters Work Permit GP 2004-0001” manual provided on the DNR web site.

Construction of most of the new channel and bank shaping will occur within the dry zone of the alluvial floodplain and is not considered in-water construction. The design will include channel blocks and diversions to keep the existing river flowing within its current channel until such time that the new channel has been properly stabilized and is ready for service. Removal of the diversions will occur once the new channel is constructed and ready for use. Water flow will occur through the new channel while the remaining bank shaping and wetland restoration work is completed in the old channel. The only in-water construction activities that will occur are the placement of boulders for the wier above TH 74 and the development and breaching of the channel block areas. This phasing will assure that river turbidity does not occur on a continual basis while construction equipment is active within a potentially wet channel. More specific steps of construction phasing are included in the construction plan.

By requiring the contractor to develop and use the following BMPs during in-water construction activities, the project's short-term turbidity impacts will be mitigated to the extent practicable, cognizant of the applicable state water quality standards. The same BMPs will also serve to help avoid and/or minimize the project's potential to exacerbate the existing MPCA CWA 303(d) listed impairments that are identified above. Conditions to which the contractor is instructed are as follows: construction will only occur during low flows, as guided by the project engineer; in-stream movement of machinery will be kept to a minimum; imported boulders and gravel shall be required to be free of dirt and debris at delivery; silt fencing, booms, and other physical BMPs will be installed whenever in-water construction occurs. The project will utilize physical BMPs such as silt fencing, biologs, floating silt booms, flocculants and other materials to provide capture and filtration capability to prevent downstream-bound sedimentation.

During construction of the channel restoration, the site is more vulnerable to unseasonal flooding. The short term duration of the construction period will help to reduce the chance of flood damage occurring to the work site. Also the wier and riffle structures will be in place during construction to

maintain stable flow during most flood events. The downstream channel is anchored on bedrock and does not show a potential of headcutting.

With more than one acre of disturbance occurring above the OHWL, an National Pollution Discharge Elimination System/ State Disposal System (NPDES/SDS) Construction Stormwater General Permit would be applicable and a Stormwater Pollution Prevention Plan (SWPPP) would be necessary. The project will not change the number or type of watercraft usage on this waterway.

12. Contamination/Hazardous Materials/Wastes:

- a. Pre-project site conditions - Describe existing contamination or potential environmental hazards on or in close proximity to the project site such as soil or ground water contamination, abandoned dumps, closed landfills, existing or abandoned storage tanks, and hazardous liquid or gas pipelines. Discuss any potential environmental effects from pre-project site conditions that would be caused or exacerbated by project construction and operation. Identify measures to avoid, minimize or mitigate adverse effects from existing contamination or potential environmental hazards. Include development of a Contingency Plan or Response Action Plan.

No known contamination or environmental hazards have been identified to occur within the project area. Gooseberry Glen Campground contains two vault toilets and one sanitation building that are susceptible to major flood events. The sanitation building has a large tank and drain field that are not within the project area. The proposed project will not impact these structures.

Modelling analysis indicates there will be maximum rise of 0.86 feet downstream of TH 74 bridge approximately at the location where the new river channel would begin. This is in proximity to the Gooseberry Glen campground. The increase occurs within state owned property and does not impact any structures or increase potential for contamination entering surface waters.

- b. Project related generation/storage of solid wastes - Describe solid wastes generated/stored during construction and/or operation of the project. Indicate method of disposal. Discuss potential environmental effects from solid waste handling, storage and disposal. Identify measures to avoid, minimize or mitigate adverse effects from the generation/storage of solid waste including source reduction and recycling.

The proposed project is not expected to generate significant amounts of solid waste. The project will utilize mostly natural materials such as boulders, rocks, gravel, sand, other mineral soils, and organic materials to establish the channel block and river diversion. The intent is to balance the materials that are already available on site to minimize importing and exporting from the site. The contractor will be responsible for hauling any construction-generated wastes to offsite facilities.

- c. Project related use/storage of hazardous materials - Describe chemicals/hazardous materials used/stored during construction and/or operation of the project including method of storage. Indicate the number, location and size of any above or below ground tanks to store petroleum or other materials. Discuss potential environmental effects from accidental spill or release of hazardous materials. Identify measures to avoid, minimize or mitigate adverse effects from the use/storage of chemicals/hazardous materials including source reduction and recycling. Include development of a spill prevention plan.

There are no storage tanks on site. The construction, monitoring, and maintenance of the proposed project have limited potential for releases of toxic or hazardous substances. Vehicular fluid from typical construction and operational machinery is the largest source of toxic or hazardous materials.

Refueling spills and equipment breakdowns, such as a broken hydraulic line, could introduce contaminants into the soil during construction. Equipment operators are instructed to take precautions when refueling equipment. Refueling would be conducted away from surface waters and equipment would be regularly inspected and repaired to prevent inadvertent loss of fuels, oils, or other hazardous fluids. Spills will be reported to the Duty Officer, MPCA, and Winona County.

General specifications included in the PWP permit are provided in the DNR GP 2004-0001. Although the DNR GP 2004-0001 is obligatory of MnDOT road projects, the guidance document conditions can be written into the WPW permit. Pollution prevention measures, including the management and storage and disposal of hazardous waste, must be in compliance with MPCA regulations and liquid and solid wastes must be disposed of properly and in compliance with MPCA regulations. The Corps 404 RGP has pollution prevention, spill contingency plan, and disposal site requirements. If a SWPPP is completed, measures for pollution prevention must be stipulated in the plan as well.

- d. Project related generation/storage of hazardous wastes - Describe hazardous wastes generated/stored during construction and/or operation of the project. Indicate method of disposal. Discuss potential environmental effects from hazardous waste handling, storage, and disposal. Identify measures to avoid, minimize or mitigate adverse effects from the generation/storage of hazardous waste including source reduction and recycling.

Sludge, animal waste and ash material will not be generated during construction or operation of the proposed project. General construction wastes will be managed by the contractor.

13. Fish, wildlife, plant communities, and sensitive ecological resources (rare features):

- a. Describe fish and wildlife resources as well as habitats and vegetation on or in near the site.

The Whitewater State Park is mainly located in the Elba Slopes LTA of the Blufflands subsection, west of the Mississippi River channel and floodplain. When European settlers first arrived in the area, the vegetation around Whitewater Valley was a mixture of bottomland hardwoods, oak savanna, big woods (mesic hardwood forests), and dry prairie. Bottomland forest was located on the broad, moist floodplains near the Whitewater River. Oak savanna and prairies were found on the dryer south and west slopes and mesic hardwood forests were located on north and east slopes of the valley. The upper gently rolling plateau, when influenced by natural and aboriginal fire, consisted primarily of prairie and oak savanna. Numerous cold-water trout streams fed major rivers, including the Whitewater River. These communities, though altered by human land use, continue to dominate the LTA.

Fisheries. Brown and rainbow trout are abundant and a small number of native brook trout are found in the MFW River. The river is regularly stocked with brown, rainbow, and brook trout. Most of the river is open for the winter catch-and-release season. The river supports non-game species including the longnose dace, blacknose dace, sculpin, and white suckers.

The MFW River is currently designated as a medium priority stream for DNR Fisheries' Long-Term Monitoring Program of southeast Minnesota. This requires measurements every four years of discharge, geomorphology, fish habitat, and aquatic plants. The monitoring station near WSP was surveyed again in 2014.

The MFW River within WSP is a highly utilized and valued trout fishery. Brown and brook trout are stocked on a rotational management plan. In October 2011, a DNR Fisheries' long-term monitoring (LTM) station just downstream of the project area (within 300 feet) documented an estimated 933 adult brown trout/mile and 1533 recruit brown trout/mile. Non-game fish documented at that time

includes longnose dace, blacknose dace, slupin spp., and white sucker. The Coldwater Index of Biotic Integrity (IBI) score was 33.33 (Fair) on the 0 – 120 rating scale. The Minnesota Stream Habitat Assessment (MHSA) score was 63.05 on 100 point rating scale. Aquatic invertebrate diversity is moderate or even low within the project area compared to higher quality stream reaches within the park and watershed.

Aquatic invertebrates occur in the existing channel, but ongoing research on their abundance and diversity indicates aquatic invertebrate species diversity is much lower in the proposed stream restoration project area when compared with higher quality areas upstream of the TH 74 bridge. Stoneflies and other longer-lived species are not abundant or do not occur in the project area. The severe flooding within the project area may be a contributing factor to the lower diversity of aquatic invertebrates in the project area.

Wildlife - The Blufflands subsection provides a critical migratory corridor for forest songbirds, raptors, and waterfowl. It is the most important subsection for reptiles and one of the most important subsections for mollusks. Nearly 50 kinds of mammals and 250 kinds of birds use the Whitewater River Valley during the course of a year. Wild turkeys forage in the valley and bald eagles are year-around residents of the blufflands and Mississippi River bottomlands. Wildlife species in the project vicinity likely include raccoon, mink, fox, and deer. Predators that feed on fish such as mink, kingfisher, osprey, and great blue heron will benefit from improved fish populations; Invertebrate predators, such as frogs, will benefit from increased insect and zooplankton populations.

The greater Whitewater State Park is one of the most popular birding parks in southeastern Minnesota. The woodlands along the Whitewater River are important migratory corridors, and a total of 35 species of neotropical warblers and vireos have been recorded in the park. Waterfowl, shorebirds, and riparian bird species nest or migrate through the park. Kingfishers, egrets, herons, and other waterbirds are common. The park contains a wide variety of habitats, including towering bluffs, woodlands, marshes, riparian and an assortment of other wetlands. The bluffs are good for viewing raptors such as hawks and eagles. Peregrine falcons (*Falco peregrinus*) successfully nest in the park after being absent for decades. The project area is located within a large, 46,000-acre Audubon-designated Important Bird Area (IBA), the Whitewater Valleys IBA. The variety of habitats found in the IBA supports a wide diversity of bird-life. Approximately 250 species use the valley for migration and breeding including 25 species of waterfowl, 22 species of shorebirds, 31 species of warblers and 17 species of sparrows. Over 100 species are potential breeders in the area.

Numerous wildlife species utilize the riparian habitat corridor. Deer, mink, beaver, and raccoon will use the corridor for passage through the park to other more suitable habitats. Uncommon mammals like river otter also use the corridor for travel. Common bird species utilize the project area to search for fish prey (kingfisher, osprey, bald eagle, herons, etc.) or to forage in riparian habitats (swallows, flycatchers, warblers, etc.). Reptiles and amphibians include frogs, turtles, northern water snakes, and other species.

- b. Describe rare features such as state-listed (endangered, threatened or special concern) species, native plant communities, Minnesota County Biological Survey Sites of Biodiversity Significance, and other sensitive ecological resources on or within close proximity to the site. Provide the license agreement number (LA-____) and/or correspondence number ([ERDB #20140359](#)) from which the data were obtained and attach the Natural Heritage letter from the DNR. Indicate if any additional habitat or species survey work has been conducted within the site and describe the results.

The Minnesota Natural Heritage Information System (NHIS) database was reviewed by the proposer and concurrence of the assessment was provided by the DNR Endangered Species Review Coordinator on August 15, 2014. The review was conducted to determine whether any rare, threatened, or endangered plant or animal species or other significant natural features are known to occur within or near the project area. Along with the acknowledgement of the presence of species in the vicinity, the review provided discussion on whether the rare features would be affected by the project. Potential project effects are described below. For rare features in the vicinity that will not be affected or be affected minimally, discussion will be provided in this section and not in Items 13c and 13d. The following codes have been used to indicate federal and state species status: state listed Threatened (TH), Special Concern (SPC), those not listed or uncommon (NL); federally listed Endangered (E) (Attachment A).

Minimal effects from the project on the following rare features are anticipated:

1. Outstanding biodiversity significance rating: Adjacent NPC landscape, referred to as the Whitewater Park West site (upslope of project area), is rated as an area of outstanding biodiversity significance. The proposed project will not affect the conservation targets within the area. The project area is located near the edge of the area of biodiversity significance, disturbs a small amount of wooded area outside of the area, and proposes replanting forest to add 0.5 acres of native forest habitat than existed prior to construction.
2. MHs37 (Southern Dry-Mesic Oak Forest) and MHs49 (Southern Wet-Mesic Hardwood Forest): These high quality native plant communities will be avoided by the scope of the project and/or project design. MHs37 communities are upslope or downstream of the project area and will not be impacted. MHs49 is mapped within the project boundary but will not be impacted by the project design. The excavation and grading necessary for stream stability downstream of the foot bridge will put the channel back to its pre-2007 flood location. This design establishes a larger buffer between the restoration work and the MHs49 native plant community. All riparian areas will be restored to a combination of MHs49 and FFs59 (Southern Terrace Forest) communities. The project design avoids black ash seeps in proximity to the construction zone.
3. Bat concentration: The project area does not currently provide good habitat for northern myotis (SPC, Federally-listed Endangered) due to the lack of cavity trees and the low quality forest community in the project area. Incidental use of the project area by bats for foraging is likely, as some species prefer riparian areas more than others. The area is not known to have habitat features that are especially attractive to bats.

Bats have occupied nearby structures in the past and bat houses have been erected in the park to promote summer residency. A maternity colony of bats was identified in the early 1980s in an old building near WSP visitor center, 0.2 miles from the project area. The building was demolished during construction of the current visitor center. Subsequent visits by staff failed to detect a maternity colony in the same area. Park staff constructed a bat condo to mitigate the demolition of the old building, but bats failed to colonize the structure. The bat condo was eventually replaced with several small bats houses near the visitor center. These structures were successfully colonized during past seasons. WSP resource specialists plan to build additional bat houses in the area to provide maternity habitat for bats, perhaps house placement would be within the proposed project area.

4. Plains wild indigo (SPC), wolf's bluegrass (SPC), and cliff goldenrod (NL), and woodland bluegrass (NL): These species are associated with surrounding high quality NPCs and occur further upslope in dryer oak woodland, dry rock outcrops, and bluff prairies. Spreading sedge, (*Carex laxiculmis*), a state-listed threatened plant (TH), is also found in the surrounding bluffs. The dry bluff areas are important habitats for many other plant and animal species (especially invertebrates). The habitats are actively managed for protecting these sensitive species, all of which are found in steep topography away from the project area.
5. Cerulean warbler (SPC) and Louisiana waterthrush (SPC): These species are documented along the MFW River. Cerulean warblers have been documented within proximity to the restoration site. Project designs minimize impacts to surrounding forest canopy. One cluster of cottonwood and willow may be impacted by project construction and the new channel alignment between the TH 74 bridge and the foot bridge will result in the loss of stream bank vegetation and woody cover. These impacts will occur in fall (non-breeding season) and minimally affect Cerulean warbler and the Louisiana waterthrush. Their habitat is anticipated to improve over the long-term.
6. Peregrine falcon (SPC): For the past 5 to 10 years, peregrine falcons have nested on a cliff above the south picnic area about 0.4 miles away from the project area. The nesting site of the birds and their foraging movements will not be affected by the proposed development.
7. Glade mallow, *Napaea dioica* (TH): No occurrences of this species are known from the project area, but with improved habitat, its establishment may be a secondary benefit of project developments. The restored riparian habitat may have characteristics that would support populations of state listed species, such as glade mallow. Unimpeded flow of streams or rivers and the accompanying natural processes of flooding and bank scouring are necessary for seedling establishment of glade mallow.

The environmental effects and measures taken to avoid, minimize and mitigate adverse effects on the following rare features will be described under Items 13c and 13d:

1. Pickerel frog (Species in Greatest Conservation Need): The pickerel frog has been documented along the MFW River. They are known to occur throughout WSP.
2. Brook lamprey (SPC) are documented in the MFW River.
3. Trout and aquatic invertebrates (NL): The MFW River is a well-known trout fishery.
- c. Discuss how the identified fish, wildlife, plant communities, rare features and ecosystems may be affected by the project. Include a discussion on introduction and spread of invasive species from the project construction and operation. Separately discuss effects to known threatened and endangered species.

Rare features may be affected as follows:

1. Timber rattlesnake: Low potential for encountering a rattlesnake in project area.
2. Pickerel frog: Construction and grading activities will impact the pickerel frog habitat during project implementation, causing direct impacts to the pickerel frog and frog habitat.

3. Brook lamprey are documented in the MFW River. Direct impacts will occur to brook lamprey if they are present in the project area during construction.
4. Trout and aquatic invertebrates: High density spawning runs occur in the month of October, in the MFW River just downstream of the project area. Sedimentation originating from the project area could temporarily reduce water quality if erosion controls are not established.

Management of Invasive Species. Construction, campground use and maintenance, other management activities, and visitor movements within the park can contribute to the spread of invasive species. Several hundred boulders, at least four feet in diameter, will be imported for constructing the vertical control structures to improve stability and eliminate the potential for head-cutting.

Several invasive species are currently present within the project area, including: reed canary grass; wild parsnip; Queen Anne's lace; Dame's rocket; and garlic mustard. Existing seed banks for each of these species will be present and exposed after construction. Other species are known to occur in proximity to the project area: creeping Charlie, common buckthorn, honeysuckle, and Canada thistle. Frequent flooding will likely introduce additional seed into disturbed soils.

The most problematic species to control will likely be reed canary grass since it is already widespread and can quickly spread and become established on disturbed soils. A high seeding rate of sedges, cordgrass, and other wet meadow species will be used along the river banks and wetland areas to promote quicker establishment of native species. As forest communities (MHs37 and MHs49) establish and mature, shade from the tree canopy will eventually reduce reed canary to exposed stream banks. Some spot treatments in priority areas will be necessary in the interim period.

Garlic mustard control is a major focus throughout WSP. The site will be monitored and garlic mustard control actions will be implemented, as needed. Dame's rocket is so widespread within the Whitewater valley that DNR is not currently applying control treatments. The DNR will limit the spread of Queen Anne's lace and parsnip and other species over the long term. No rare species are expected to be at risk from invasive species management within the project area.

The use of high quality seed mixes for the establishment of native plant communities combined with continuous monitoring during vegetation establishment (1-5 years) and quick treatment response will help to minimize the spread of invasive species across the project area. Ensuring boulders brought on site are clean and equipment entering and exiting the site is cleaned and using mostly on-site materials reduces the chance of new invasive species from being introduced to the project area during construction. Integrated pest management and BMPs will be used for species control and DNR Operation Order No. 113 will be applied by staff and contractors.

- d. Identify measures that will be taken to avoid, minimize, or mitigate adverse effects to fish, wildlife, plant communities, and sensitive ecological resources.

Measures will be taken to avoid, minimize, or mitigate adverse effects to the following rare feature:

1. Timber rattlesnake: If a rattlesnake is observed within the construction zone during project operations, the snake will be either left alone or relocated to areas known to contain rattlesnakes. Wildlife friendly erosion control mesh will be used. If reptiles and amphibians are still active in the area when construction is initiated additional monitoring will be implemented.

2. Pickerel frog: Initiating construction in early September as designed should minimize impacts to reptiles and amphibians in the construction area. Most reproduction has occurred by this time of the year. In addition, most reptiles and amphibians will still be active and enable them to escape from active construction areas. Project designs include the restoration of flooded pools which will improve habitat for aquatic species including the pickerel frog. The wetlands will be designed to include habitat characteristics that are attractive to these species. Park staff will attempt to relocate turtles, salamanders, frogs, and other wildlife as feasible.
3. Brook lamprey: Better stream stability and habitat improvements are proposed as mitigation for potential direct impacts on resident animals. The project will provide long-term benefits to the lamprey populations as the river stabilizes and habitat improves.
4. Trout and aquatic invertebrates: Minimizing sedimentation during construction and avoiding trout spawning season are steps that will be taken to avoid and minimize the environmental effects on trout and its food sources. The amount of sediment released by construction activities is expected to be low because gravel and cobble make up over 80 percent of the substrate. Much of the silt in the stream bed has been carried downstream during past extreme flood events. Construction is proposed to start immediately after Labor Day and be completed before the trout spawning season in October. Better stream stability and habitat improvements will provide long-term benefits to desirable aquatic invertebrate populations in the river. Project sequencing to minimize in-water construction activities will limit nearly all construction activities to dry or disconnected wet areas. The SWPPP and BMPs will be used for erosion control and stormwater management. After project completion the project area should contribute about ten percent of the pre-project sedimentation contributions.

General measures that will be taken to avoid, minimize, or mitigate adverse effects on wildlife:

1. Avoid impacts to spring channels and confluence: project is designed to avoid these areas. Their location will be demarcated as part of the “no-go” area.
2. Fisheries mitigation will include working in the fall to winter period, after the primary park use season has occurred. All equipment will be cleaned thoroughly prior to and after each introduction to the site to remove exotic seed and plant parts.
3. Prior to and during construction, DNR staff will identify and resolve any vegetation concerns to minimize damages and long-term vegetation management issues.
4. Restore impacted wetlands on-site: Restore impacted wetlands at a 2:1 ratio with back water pools as proposed in current designs. Create additional flood channels, etc. as design allows. This will help mitigate effects on numerous amphibians, reptiles, fish, aquatic invertebrates, and birds.
5. Minimize long-term bird habitat impacts: short-term impacts to Cerulean warbler, Acadian flycatcher, Louisiana waterthrush, and many other species may occur. Restoration of NPCs (combination of MHs49 and FFs59) along the riparian corridor will provide long-term benefits for many bird species.
6. Minimize erosion and sediment contribution during restoration phase: use local-source native plant materials to restore high quality NPCs; use of vegetation mats will be implemented if feasible after further investigation and coordination with contractor; use of wildlife-friendly erosion blankets and/or hydro-mulch as specified by project designers; and use oats or other cover crops as necessary to reduce soil exposure. Reed canary grass is common throughout similar habitats on the MFW River and will be a challenging invasive plant on this site.

7. Relocate turtles, amphibians, and other wildlife as necessary: some wildlife may be obvious during construction (others, like invertebrates and fish will not).
8. Restoration of this reach would restore stability, lessen erosion, improve water quality, enhance habitat conditions, revive natural structure and function, and result in an overall more productive and higher quality natural system.
9. Maintaining connectivity of the riparian area with minimal human disturbance (campgrounds and other infrastructure) on at least one side of the river is recommended. Currently, Gooseberry Glen Campground is a high use area on the west side of the river. Once the new proposed campground is developed (on the east side of TH 74), the Gooseberry Glen campground will be repurposed as a day use area and the east side of the river will be restored to native plant communities that will serve as a wildlife corridor.
10. Wildlife impacts will be temporary (limited to construction and establishment phases of project). Numerous wildlife species will benefit from the combination of a more stable river channel and the restoration of adjacent riparian areas.

14. Historic properties:

Describe any historic structures, archeological sites, and/or traditional cultural properties on or in close proximity to the site. Include: 1) historic designations, 2) known artifact areas, and 3) architectural features. Attach letter received from the State Historic Preservation Office (SHPO). Discuss any anticipated effects to historic properties during project construction and operation. Identify measures that will be taken to avoid, minimize, or mitigate adverse effects to historic properties.

1. The project area lies partially within the Whitewater State Park Civilian Conservation Corps (CCC)/Work Progress Administration (WPA)/Rustic Style Historic Resources Historic District as identified in Figure 5. The historic district includes 29 contributing resources representing a particularly diverse collection of rustic style resources. These rustic style buildings and structures were built with native limestone quarried from within the park between 1934 and 1941 and were listed on the National Register of Historic Places in 1989. The boundary of the historic district encompassed 536 acres and represents the same boundary as the 1941 boundary of WSP. Contributing resources of the historic district include the Gooseberry Glen sanitation building (combination building in the National Register nomination) and a culvert, both of which are located immediately south and west of the project area. No contributing resources of the historic district are located within the project area. The project will not have an adverse effect on the historic district since no contributing resources are located in the project area.
2. Four archaeological sites are known within WSP. These sites were found during archaeological surveys undertaken for review of past proposed park development. Three of these sites are American Indian sites that are represented by lithic (stone) artifact scatters. These sites include 21WN30, 21WN32, and 21WN39. Site 21WN43 is represented by the archaeological remains of a CCC/WPA camp. This camp also served as a German prisoner of war camp during World War II and is located south of the campground. An unverified informant report also indicates an American Indian artifact was found northeast of the park visitor center. Presently, this surface find is not considered a legitimate archaeological site. None of these archaeological properties will be affected by this project.

3. A cultural resource reconnaissance survey will be completed for this project by the Minnesota State Parks and Trails Cultural Resource Management Program of the Minnesota Historical Society.

The project area includes a small part of the NRHP District. However, no historic resources within the district will be affected by the proposed project. Only two structures, both of which are bridges, have been identified in the project area. The two bridges that cross the project area are not classified as historic structures. Additional site review will occur prior to construction. DNR correspondence with SHPO is attached (Attachment B).

15. Visual:

Describe any scenic views or vistas on or near the project site. Describe any project related visual effects such as vapor plumes or glare from intense lights. Discuss the potential visual effects from the project. Identify any measures to avoid, minimize, or mitigate visual effects.

Several scenic overlooks are within the state park, including Chimney Rock, Signal Point, Eagle Point, Coyote Point, and Inspiration Point. All are located at high points of the park and look over the river valley. The proposed project area may be visible from some of these overlooks. However, the project does not pose a negative impact to the views of the river valley or surrounding landscapes.

No environmental effects associated with visual glare or vapor plumes would occur during construction or park operation.

Visual impacts will be obvious during construction and early establishment phases of the proposed project. Establishment of native vegetation is expected to be somewhat slower than other sites will richer soils.

16. Air:

- a. Stationary source emissions - Describe the type, sources, quantities and compositions of any emissions from stationary sources such as boilers or exhaust stacks. Include any hazardous air pollutants, criteria pollutants, and any greenhouse gases. Discuss effects to air quality including any sensitive receptors, human health or applicable regulatory criteria. Include a discussion of any methods used assess the project's effect on air quality and the results of that assessment. Identify pollution control equipment and other measures that will be taken to avoid, minimize, or mitigate adverse effects from stationary source emissions.

Stationary source emissions will not be generated by this project or its use and operation post-development.

- b. Vehicle emissions - Describe the effect of the project's traffic generation on air emissions. Discuss the project's vehicle-related emissions effect on air quality. Identify measures (e.g. traffic operational improvements, diesel idling minimization plan) that will be taken to minimize or mitigate vehicle-related emissions.

The proposed project will result in air emissions from construction vehicles during construction. Diesel fuel exhaust emissions contain pollutants such as carbon monoxide, nitrogen oxides, reactive organic gasses, sulfur dioxide and suspended particulate matter, all of which may carry associated health risks. Minor additional traffic to transport crew and materials will be generated. As machines are modernized, Environmental Protection Agency emission levels become more stringent on new engines.

- c. Dust and odors - Describe sources, characteristics, duration, quantities, and intensity of dust and odors generated during project construction and operation. (Fugitive dust may be discussed under item 16a). Discuss the effect of dust and odors in the vicinity of the project including nearby sensitive receptors and quality of life. Identify measures that will be taken to minimize or mitigate the effects of dust and odors.

Construction activities will create dust and odors during daytime operations. To minimize impacts, construction phasing will be used to limit the amount of open area worked at any one time. As well, DNR will limit work to weekdays and daytime hours. No construction work will be allowed during park quiet hours, holidays, and weekends. The forested perimeter will help to reduce dust spread throughout the area.

17. Noise

Describe sources, characteristics, duration, quantities, and intensity of noise generated during project construction and operation. Discuss the effect of noise in the vicinity of the project including 1) existing noise levels/sources in the area, 2) nearby sensitive receptors, 3) conformance to state noise standards, and 4) quality of life. Identify measures that will be taken to minimize or mitigate the effects of noise.

1. Existing ambient noise within the state park is typical of wildlife, flowing water, and recreational areas. Some noise is generated from traffic along TH 74, park maintenance operations, and from visitor in transit. Decibel levels of common noise sources for the park may range from 30 (secluded woods) to 90 (chainsaw or lawnmower at one meter).
2. The nearest sensitive receptors to the construction area or project boundary are park campsites which are approximately 300 feet away. The nearest private residences are at least 1,000 feet away. The combination of the existing vegetative cover and distance to receptors will help diffuse some of the noise generated from construction activities.

Noise from construction activities will be temporary and limited to normal daily work periods. All construction work and future use of the area will conform to state noise standards.

3. Noise generated from the construction activities will be temporary disturbance to wildlife and a minor annoyance to humans in proximity to the project area. The DNR will monitor noise generation if complaints arise.

The project is proposed to occur during the fall, when campground occupancy is winding down for the recreation season. The DNR will establish limited daily working hours to minimize noise disturbance to park patrons, area residents and wildlife. The confined area of the work zone and surrounding woody vegetation will help mitigate the temporary effects of machinery noise.

18. Transportation

- a. Describe traffic-related aspects of project construction and operation. Include: 1) existing and proposed additional parking spaces, 2) estimated total average daily traffic generated, 3) estimated maximum peak hour traffic generated and time of occurrence, 4) indicate source of trip generation rates used in the estimates, and 5) availability of transit and/or other alternative transportation modes.

The DNR is currently working with MnDOT permitting authorities and bridge designers at both the District and Central Bridge Office level to develop a solution that benefits river habitat and the TH 74

bridge structure that crosses the project area. Flows of the MFW River are currently causing degradation of the bridge footings. The DNR proposes to direct flows away from the bridge footings to reduce erosion on the bridge footings. If funding permits and the MnDOT and DNR agree on a design within the current schedule of the river re-route project, the DNR will include the work of construction a wier up stream of the bridge in the construction contract. The DNR will likely include this work in the contract as a bid alternate should any construction funding concerns arise.

Access to the project is proposed through the existing Gooseberry Glen campground adjacent to and south of the proposed project area. A minor access trail from Gooseberry Glen campground to the project site will be established for the duration of the project. The Gooseberry Glen campground will be temporarily closed during construction to insure visitor safety and reduce the potential for conflicts between campground users and construction operations.

No long term transportation impacts such as additional traffic generation or new parking areas are proposed as part of this project. Abutments for both of the TH 74 bridge and the pedestrian bridge would be protected during and after excavation. The MnDOT is considering replacing the TH 74 bridge within a decade. The present narrow span structure would likely be replaced with a longer span bridge to reduce the exposure of its footings to flooding and to allow normalized flooding to occur without constriction.

- b. Discuss the effect on traffic congestion on affected roads and describe any traffic improvements necessary. The analysis must discuss the project's impact on the regional transportation system. *If the peak hour traffic generated exceeds 250 vehicles or the total daily trips exceeds 2,500, a traffic impact study must be prepared as part of the EAW.* Use the format and procedures described in the Minnesota Department of Transportation's Access Management Manual, Chapter 5 (available at: <http://www.dot.state.mn.us/accessmanagement/resources.html>) or a similar local guidance.

The proposed project will not affect the long term operation of existing parking or transportation networks within or near the park. Temporary, disturbances may occur during construction. Limited trips for hauling materials and equipment to the work site will occur. Most construction materials will be harvested on-site.

- c. Identify measures that will be taken to minimize or mitigate project related transportation effects.
N/A

19. Cumulative potential effects: (Preparers can leave this item blank if cumulative potential effects are addressed under the applicable EAW Items)

- a. Describe the geographic scales and timeframes of the project related environmental effects that could combine with other environmental effects resulting in cumulative potential effects.

The Whitewater River Stream Restoration Project is proposed to reduce bank erosion and head cutting along the MFW River. The project will reconfigure the river channel below the Cedar Hill Campground to eliminate erosive force on an eroding bank and restore approximately 1,800 feet of river channel within the Whitewater State Park. There is a small risk of a flood event occurring during the construction. The construction period is estimated to occur for approximately 2-4 weeks, between Labor Day and October 15, 2015, as weather conditions permit.

The existing channel will be abandoned and partially flooded by design to serve as a backwater area that will provide habitat for a variety of aquatic species, including fish, amphibians, reptiles,

invertebrates, and birds. Comparative metrics of a stable reference channel was identified on the MFW River above the project area. The reference channel and valley profile was used to identify desirable features of the new channel to re-establish the dimension, pattern, and profile of the stream and revive its natural structure and function. A more complete channel restoration that is in line with natural channel design principles (including reconstructive riffles) is proposed to protect the campgrounds from stream bank erosion, improve the ecological integrity of the park resources, and partially correct degradation of the river.

Channel excavation would move over 15,000 cubic yards. Most of the material that is used to form the channel and fill the existing channel will be gravel and cobble materials from the existing riverbed. The channel restoration project will have the potential to temporarily increase river sedimentation during project developments. After the restoration is complete and the river banks are re-vegetated, this segment of the river should attain a high level of channel stability reduces sedimentation long term.

The proposed project will contribute to the cumulative potential effects on water quality of the MFW River, which is listed on the current MPCA 303d Impaired Waters List for the following: aquatic recreation, due to fecal coliform; aquatic life, due to turbidity; and drinking water, due to nitrates. The MFW River encompasses 53 square miles of mostly agriculture crop and pasture lands, and less than 15 percent forestland. Cropping systems expose mineral soils during cultivation, which increases the risk of erosion and sedimentation affecting the river's water quality. The project area is 0.2 percent of the MFW River watershed.

- b. Describe any reasonably foreseeable future projects (for which a basis of expectation has been laid) that may interact with environmental effects of the proposed project within the geographic scales and timeframes identified above.

Proposed projects in the immediate vicinity of the Whitewater River Channel Restoration project, includes the following reasonably foreseeable future projects for which a basis of expectation has been laid: Whitewater State Park Campground Development project; Gooseberry Glen Conversion to Day Use project; the potential construction of the Whitewater Country Loop State Trail – segment from St. Charles to Elba; and other park maintenance or improvement projects.

Whitewater State Park Campground Development Project. The project area encompasses approximately 54 acres located about 600 feet on average from the channel restoration site. The proposed campground area is anticipated to include 45 to 50 electrified RV/tent campsites, 4 camper cabins and three group camp sites. Two sanitation buildings will be located within the campground, as well as several (up to seven) vault toilets. Hiking/pedestrian trail connections will also be included in the design. The interchange off of TH 74 will be reconfigured to allow access from the east side of the highway. The intersection will consolidate the eastward campground entrance with the visitor center and Cedar Hill Campgrounds entrance to the west side of the trunk highway. The river segment is located where some of the runoff from the proposed campground development enters the river, but most of its runoff enters the river slightly downstream of the proposed channel restoration project area.

Construction-related disturbances will affect over 23 percent of the proposed 54-acre project area, including increasing the amount of impervious surfaces. After the proposed campground development project is completed, the area of impervious surfaces will increase to ten percent (5.42 acres) and the area of lawn and landscaping will increase to thirteen percent. Plant cover in the

project area will decrease by one percent to seventy-seven percent. The campground development project will increase soil compaction and decrease infiltration due to the addition of less permeable surfaces (campsites, spurs, roads, buildings, and other use areas). During construction, the area's soil would be exposed and vulnerable to erosion. Along with increases in runoff volume, the quality of the runoff could deteriorate, with increases in pollutants, such as sediment and phosphorus, reaching the receiving waters.

Gooseberry Glen Conversion to Day Use. Proposed for 2017, after completing the new campground development, the Gooseberry Glen campground is proposed to be closed and reconfigured as a day use area. Closing the Gooseberry Glen campground will eliminate the risk to campers using the area during flood events and the need for staff mobilizations for conducting emergency evacuations of the area. The proposed day use area will serve as an area for gatherings and picnics and as a staging area for launching outdoor recreation activities, such as hiking and bird watching. The campground conversion to a day use area will involve removing some camping-related infrastructure, including a portion of the campground loop, campsite spurs, fire rings, picnic tables, and campsite markers. The new day use area will be landscaped with native plantings intermixed with areas of lawn, increasing the vegetated, permeable surfaces in this area. Some of the picnic tables, fire rings, the sanitation building and parts of the campground loop road will be retained. Although designs for the day use area have not been finalized, development concepts include gravel-surface parking and naturalized play areas.

Whitewater Country Loop State Trail – segment from St. Charles to Elba. The location for the segment of the Whitewater Country Loop State Trail connecting St. Charles to Elba a state trail segment is yet to be determined and subject to funding. One of the alternatives considered is a segment that would transect the project area, likely along the shoulders and parallel to TH 74. It has yet to be determined if this trail segment would be a part of the state trail or just a connecting link providing access to the state park. The location of the MFW River trail crossing has not been determined. The proposed trail is primarily for biking, with other pedestrian and non-motorized uses permitted, and will likely consist of a 12-foot wide, paved (asphalt or bituminous) surface. If the alternative corridor that follows TH 74 is chosen, more than two miles of the Whitewater Country Loop State Trail would be built to reach the WSP Visitor Center from the plateau area. The trail would contribute to an increase in impervious surfaces in the WSP area and in transecting the sloping terrain, runoff to the MFW River will be incrementally greater.

Miscellaneous State Park Improvements. A campground rehabilitation project is being planned for the Cedar Hill Campground, located adjacent to the channel restoration project site. The improvements will be implemented sometime after the completion of the new campground. The project will be within existing footprint of the campground and will include minor campsite improvements (reorienting campsite use areas, raising sunken use areas, adding vegetative screening between sites), improvement of traffic circulation within the campground, and replacement of the sanitation buildings. Cedar Hill Campground is adjacent to the MFW River segment slated for restoration (Figure 5). Soil disturbances during construction could locally increase erosion and sedimentation.

- c. Discuss the nature of the cumulative potential effects and summarize any other available information relevant to determining whether there is potential for significant environmental effects due to these cumulative effects.

The potential environmental effects related to the proposed project could combine with environmental effects from other past, present, or reasonably foreseeable future projects for which a basis of expectation has been laid. The cumulative potential effects associated with the proposed project are primarily related to potential effects on water quality.

The related projects will increase the quantity of runoff to the MFW River and at least temporarily, increase the amount of sediments and other pollutants entering the river. If runoff is not managed, controlled or filtered during and after construction of the proposed projects and other related projects, the amount of soluble solids and nutrients carried to surface waters could increase.

The potential cumulative effects on water quality will be temporary in nature, with the MFW River being most vulnerable during project construction. Projects will be sequenced over several years thus limiting the potential cumulative effects on construction stormwater. Soon after construction of the channel restoration is completed, the MFW River channel should exhibit sediment reduction as the stream banks are re-stabilized. Permit requirements and BMPs applied during construction of each of these projects should be sufficient to manage the temporary risk of higher sedimentation. In the context of the widespread use of lands for cropping and pasture, the incremental contribution to the watershed will be small. There is a lack of evidence to indicate significant environmental effects would result from these cumulative effects.

- 20. Other potential environmental effects:** If the project may cause any additional environmental effects not addressed by items 1 to 19, describe the effects here, discuss the how the environment will be affected, and identify measures that will be taken to minimize and mitigate these effects.

All potential environmental effects have been addressed above.

RGU CERTIFICATION. *(The Environmental Quality Board will only accept **SIGNED** Environmental Assessment Worksheets for public notice in the EQB Monitor.)*

I hereby certify that:

- The information contained in this document is accurate and complete to the best of my knowledge.
- The EAW describes the complete project; there are no other projects, stages or components other than those described in this document, which are related to the project as connected actions or phased actions, as defined at Minnesota Rules, parts 4410.0200, subparts 9c and 60, respectively.
- Copies of this EAW are being sent to the entire EQB distribution list.

Signature



Date

March 9, 2015

Title

Environmental Review Planner