

ENVIRONMENTAL ANALYSIS AND DECISION ON THE NEED
FOR AN ENVIRONMENTAL IMPACT STATEMENT (EIS)

Form 1600-1 Rev. 6-2001

Department of Natural Resources (DNR)

Region or Bureau
Northeast

Type List Designation
Type II

NOTE TO REVIEWERS: This document is a DNR environmental analysis that evaluates probable environmental effects and decides on the need for an EIS. The attached analysis includes a description of the proposal and the affected environment. The DNR has reviewed the attachments and, upon certification, accepts responsibility for their scope and content to fulfill requirements in s. NR 150.22, Wis. Adm. Code. Your comments should address completeness, accuracy or the EIS decision. For your comments to be considered, they must be received by the contact person before August 8, 2011 at 4:00 p.m.

Contact Person:

Carrie Webb

Title:

Address: 2984 Shawano Ave.

Green Bay

Telephone Number

(920) 662-5453

Applicant: Matt Payette/Kewaunee County Parks

Address: E4280 County Rd. F, Kewaunee, WI 54216

Title of Proposal: Bruemmerville Dam Abandonment

Location: Bruemmerville County Park **County:** Kewaunee **Town:** Town of Ahnapee

Township Range Section(s): in the NE1/4 of the SW1/4 of Section 28, Township 25 North, Range 25 East

PROJECT SUMMARY

1. Brief overview of the proposal including the DNR action (include cost and funding source if public funds involved)

The Kewaunee County Promotions and Recreation Department has requested a permit to remove the Bruemmerville Dam on Silver Creek in Bruemmerville County Park. Phase I will remove a portion of the dam in small sections so the draw down can be controlled. Some excavation of the accumulated sediment immediately upstream of the spillway may be needed. Once drawdown is complete, the remaining impounded sediments will be left to dry to facilitate construction. Phase II will consist of removal of the remainder of the dam, restoration of the stream channel, seasonal sea lamprey barrier installation, and restoration of site vegetation. The area of the impoundment outside of the stream channel will be restored as floodplain. Some grading to enhance stability of the floodplain may be needed, and woody debris will be installed at key locations to slow overbank flow velocities.

Kewaunee County received funds for removing the dam from the WDNR's Municipal Dam Grant Program. Total construction costs including restoration and landscaping is expected to be \$188,090.

2. Purpose and Need (include history and background as appropriate)

The Bruemmerville Dam dates back to 1866 when it was originally constructed as an earthen dam, but it washed away twice before a concrete spillway was built in 1923. The dam was first used to provide power for a grist and saw mill. Kewaunee County obtained ownership of the dam and mill pond in 1950. The current dam condition suggests that immediate action is needed for concrete dam repairs to minimize the risk to public safety (Rice Engineering, 2009). Dam removal was chosen by the County as their preferred alternative for managing the site due to grant money being available for removal, but not available for repairs.

The Bruemmerville Dam is a 10 foot high earthen bank dam with a concrete spillway impounding a pond area of approximately 4.6 acres. Along the south banks of the impoundment, only steep upland slopes are present, with water at 3 to 5 feet deep immediately off the banks. The dam is over 200 feet long with a hydraulic height of 11 feet. Flow passes through a 50 foot wide concrete spillway and down a steep 40 foot long trailrace with multiple small drops or cascades. The dam and associated impoundment are located west and south of Willow Dr. and North of Freemont St. The Silver Creek watershed is predominately rural and agricultural lands, around 75%, with forest and wetland complexes making up the remaining 25% (Hogler, et al 2004). The lower reach of Silver Creek, starting at the Bruemmerville Dam, flows through a meadow-woodland landscape to the confluence with the Ahnapee River 1.5 miles downstream. The tributary drainage area of Silver Creek at the confluence with the Ahnapee River is approximately 67 square miles.

The uncontrolled primary spillway is in good condition, with no major cracks or structural problems observed (Rice Engineering, 2009). The left and right buttresses and abutment walls are concrete, with walls approximately 40 feet long and 12 inches thick. Both abutments and buttresses have deep concrete deterioration in several areas with some exposure of reinforcing steel. Structural integrity of the dam, despite the observed deterioration, is considered to be sound (the impoundment is not in immediate need of a drawdown). However, it is deteriorating and repairs or removal are recommended in the near future (Rice Engineering, 2009).

The dam is considered a barrier to upstream fish movement, and is the first barrier from Lake Michigan. The US Fish and Wildlife Service (USFWS) consider this dam to be the first effective barrier to migration of the destructive aquatic invasive species (AIS) sea lamprey (*Petromyzon marinus*).

Removal or modification of fish passage barriers may not be encouraged when the passages of undesirable species or fish pathogens, such as Viral Hemorrhagic Septicemia (VHS), carry an intolerable risk to the resource relative to the overall benefits of fish passage. The potential for infestation and expanding the range of reproducing sea lamprey in Lake Michigan is of special concern to the USFWS.

3. Authorities and Approvals (list local, state and federal permits or approvals required)

- Water Regulation and Zoning – Chapters 30.12, 30.19, 30.20, and 31.185 Wis. Stats., and associated administrative codes
- Approval under Section 404 - Army Corp of Engineers
- USFWS – comments on operation to prevent spread of AIS

PROPOSED PHYSICAL CHANGES (more fully describe the proposal)

4. Manipulation of Terrestrial/Aquatic Resources (include relevant quantities - sq. ft., cu. yard, etc.)

Wetlands located in and adjacent to mostly the northern end of the impoundment would not be inundated after the draw down. The wetlands will remain drier than they had been with the impounded water and accumulated sediment, so the type of wetland and their functions and values will likely change.

The pond will be permanently drawn down, with passive construction of a new sinuous channel and floodplain through the former impoundment. The proposed channel alignment and gradient were developed based on channel grades

upstream and downstream of the site, review of aerial photographs, and depth of refusal data.

The proposed channel will have banks that will overtop in 2 to 3 year floods, with capacity to mobilize and redistribute gravel in the bed. The proposed dimensions of the channel are consistent with channel dimensions downstream of the site and will have a bottom width of 32 feet and a top width of 42 to 52 feet. A transitional riffle/step pool is included at the downstream end to provide grade control and placement of a seasonal barrier to prevent invasive sea lamprey migration upstream. The barrier will be in place April through mid June.

Breeching of the dam and the drawdown of the impoundment should begin following the completion of the sea lamprey run in mid-June and the lamprey barrier completed before the spring sea lamprey run begins in early April of the following year. The drawdown should also start no later than October 1 as amphibians and reptiles burrow into their winter hibernation sites once the temperature drops below 50 degrees.

The seasonal sea lamprey barrier will be constructed at the upstream end of the transition riffle to ensure that upstream habitat will not be open habitat during sea lamprey spawning. A seasonal barrier was chosen for the benefit of passing target species (northern pike and smallmouth bass) to the upstream habitat during the off season of lamprey migration by reducing the channel head difference from 18 inches to 6 inches between barrier crest and adjacent tailwater at the barrier location. The barrier design was placed at the top of the transition riffle to add further insurance that lampreys migrating upstream in the project reach cannot get upstream of the project area since higher velocities occur within the riffle. These higher velocities create conditions that may not be conducive for upstream migration since the invasive species are poor swimmers. An overhanging steel "lip" will also be constructed all the way across the top of the barrier to deter sea lamprey migration.

The dam is a true barrier to AIS and VHS and the planned modification will allow some passage of fish and aquatic life, and therefore pose some risk of passing AIS or pathogens upstream.

6. Buildings, Treatment Units, Roads and Other Structures (include size of facilities, road miles, etc.)

The parking lot will be reconstructed and improved to allow a capacity of 12 cars.

7. Emissions and Discharges (include relevant characteristics and quantities)

The impoundment will be reduced at a rate less than four inches per day to reach the full drawdown. Sediment built up behind the dam is expected to discharge downstream, however it will be dependent on weather conditions, amount of loose sediment, and sloughing up stream. High rainfall and or snowfall/melt would cause significant sedimentation downstream.

8. Other Changes

Under NR 20.14 (9), waters below this dam, because of their connection to Lake Michigan, are considered positive for VHS. Removing the dam will increase the length of VHS designated waters.

9. Identify the maps, plans and other descriptive material attached

Attachment A: County map showing the general area of the project

Attachment B: USGS topographic map

Attachment C: Site development plan

Attachment D: Plat map

Attachment E: Wisconsin Wetland Inventory and hydric soils map

Attachment F: Aerial photo

Attachment G: Site photos

AFFECTED ENVIRONMENT (describe existing features that may be affected by proposal)

10. Information Based On (check all that apply):

Literature/correspondence (specify major sources)

Hogler, S., Surendonk, S. and Gansberg, M. 2004. Wisconsin DNR. 2003-2004 Door Peninsula Baseline Monitoring Report.

Rice Engineering. 2009. Dam Inspection Report for ALGOMA DAM. Prepared for Kewaunee County Promotion & Recreation Department.

Personal Contacts (list in item 26)

Field Analysis By: Author Other (list in item 26)

Past Experience With Site By: Other (list in item 26)

11. Physical Environment (topography, soils, water, air)

Bruemerville Dam is owned by Kewaunee County and creates an approximately 4.6 acre impoundment on Silver Creek. Nuisance levels of aquatic plants comprise much of the pond bottom. These plants are abundant and hinder all forms of recreational use, especially in mid-late summer. Much of the upstream area is shallow littoral area with terrestrial islands forming a braided channel. There will no longer be a pond present as the surface water will be contained within a natural stream, and the current impoundment will only be flooded occasionally.

Approximately 4,640 cubic yards of sediment is impounded behind the dam. This material consists of 71 to 86 percent sand, and 13 to 26 percent silt and clay, with more sand in the upper end of the impoundment, and more silt and clay in the lower end of the impoundment. Some of the sediment will be removed during dam drawdown, but some will discharge downstream and deposit in areas that have been deprived of sedimentation that normally occurs in a natural, undisturbed waterway.

Sediment sampling results showed that arsenic, cadmium, chromium, copper, lead, and mercury concentrations were all below their Threshold Effects Concentration (TEC). Any sediment that is removed can be placed on any upland site.

12. Biological Environment (dominant aquatic and terrestrial plant and animal species and habitats including threatened/endangered resources; wetland amounts, types and hydraulic value)**Fish**

There is currently no fish passage at the dam, which fragments the riverine habitat. Habitat in the impoundment is lentic that is degraded, benefiting primarily those species such as common carp, bullhead, and green sunfish that thrive in sluggish, heavily vegetated warmwater impoundments. The impoundment increases water temperatures through solar exposure. Increased temperatures spur algal and vegetative growth and decay, which decreases dissolved oxygen concentrations. Downstream of the dam the habitat is riverine in nature providing habitat for a variety of native species (northern pike, smallmouth bass, and forage fish), non-native stocked trout and salmon (steelhead, brown trout and Chinook salmon), and to invasive round goby, sea lamprey, and carp, the dam serving as an upstream migration barrier. Silver Creek is a tributary to the Ahnapee River and ultimately Lake Michigan, therefore the native species, along with a number of non-game species such as suckers and redhorse may use sections of the river for spawning.

Silver Creek downstream of the dam supports a variety of riverine fish that require a variety of habitats to thrive. Critical habitat areas include shoreland wetlands, riffles, holes, deep runs, and cover. Species such as northern pike may be negatively impacted if sediments released during the drawdown are deposited along the toe of the river banks preventing pike from spawning in shoreline vegetation. Smallmouth bass may be impacted with the loss of deep run or pool habitat, and many species of forage fish and suckers would be impacted if riffle areas are filled in with sediment. It is also important that silt or sand bars are not formed to maintain water depths that allow for fish to migrate up stream. To prevent negative impacts to fish, sedimentation caused by the drawdown must be controlled to the greatest extent possible to limit the filling of any critical fish habitat.

AIS fish species established in Lake Michigan include the parasitic sea lamprey and the round goby (*Neogobius melanostomus*). Round goby was first observed in the Great Lakes in 1990 and in Lake Michigan in 1999. Monitoring by the USFWS and the Wisconsin Department of Natural Resources (WDNR) has not identified any adult or larval sea lamprey in Silver Creek.

The USFWS criteria for an acceptable barrier to sea lamprey is a minimum 18 inch elevation difference between the barrier crest and tailwater during a 10 year flood event; the absence of flooding around the dam abutments at all water levels; and the absence of spillway breaches large enough for lamprey to swim through. In a meeting between the County, WDNR, and the Great Lakes Fish Commission, the USFWS determined that they are not opposed to a smaller seasonal barrier provided it is designed to include an overhanging steel "lip" from bank to bank, and stop logs are used instead of flash boards.

Plants

The wetland systems in the upper portion of the pond consist of emergent wet meadow and shallow marsh with standing open water – all of which is a floodplain complex. The area has many wetland plants including, but not limited to sandbar willow (*Salix exigua*), red-osier dogwood (*Cornus stolonifera*), highbush cranberry (*Viburnum trilobum*), cattail (*Typha latifolia*), eastern cottonwood (*Populus deltoides*), quaking aspen (*Populus tremuloides*), green ash (*Fraxinus pennsylvanica*), and reed canary grass (*Phalaris arundinacea*).

The open water area consists of aquatic species such as less duckweed (*Lemna minor*), greater duckweed (*Spirodela polyrrhiza*), coon's-tail (*Ceratophyllum demersum*), and sago pondweed (*Stuckenia pectinata*).

There are no recently observed threatened or endangered species listed in the immediate project area. The cuckooflower (*Cardamine pratensis*), a Special Concern species was found within the project area in a bog in 1937. Two Threatened species within one mile of the project were found in 1906 and are the longear sunfish (*Lepomis megalotis*) and pugnose shiner (*Notropis anogenus*). No federally listed species were listed within one mile of the project area.

Water Quality

Upstream of the dam, approximately 1.3 miles at CTH S, macroinvertebrate samples in Silver Creek indicated poor water quality in 1978, 1994, and again in 2004. Approximately 1/2 mile downstream of the dam at Algoma's west city limits, a macroinvertebrate sample indicated good water quality in 1978. Restoration of the stream should improve water quality upstream of the dam.

Wildlife

This is a list of species that may use the lake and the surrounding habitat during various times of the year.

- Mammals- muskrats, mink, beaver, shrews, rabbit, woodchuck, ground squirrel, gray squirrel, fox squirrel, vole, mice, coyote, fox, raccoon, opossum, weasel, skunk, badger, and otter.
- Birds- pied-billed grebe, bittern, great blue heron, green-backed heron, Canada Goose, mute swans, wood duck, green-winged teal, mallard, blue-winged teal, hooded merganser, red-tailed hawk, northern harrier, American Kestrel, ring-necked pheasants, sora, American Coot, sandhill crane, killdeer, yellowlegs, spotted sandpiper, American Woodcock, ring-billed gull, herring gull, mourning dove, screech owl, great horned owl, nighthawk, chimney swift, ruby-throated hummingbird, belted kingfisher, red-headed woodpecker, flicker, downy woodpecker, hairy woodpecker, flycatchers, swallows, blue jay, crow,

black-capped chickadee, nuthatch, brown creeper, wren, American Robin, gray catbird, cedar waxwing, starling, vireo, warblers, tree sparrow, savanna sparrow, field sparrow, song sparrow, chipping sparrow, swamp sparrow, red-winged blackbird, bobolink, oriole, grackle, goldfinch, pine siskin and house sparrow. In addition, approximately another 50 to 100 song bird species could use this area during spring and fall migration.

- Amphibians- bullfrog, green frog, northern leopard frog, American Toad, chorus frog, spotted salamander, tiger salamander.
- Reptiles - snapping turtle, painted turtle, garter snake, water snake, and fox snake. Turtles are a slow-to-mature, long-lived species and a drawdown at the wrong time of year could pose significant threats to the local turtle population.

13. Cultural Environment

a. Land use (dominant features and uses including zoning if applicable)

The dam and a portion of the millpond are within a county park. There are a few residences, a park, and a hunting and fishing club surrounding the pond, but the watershed contains primarily farmland. The city limits of Algoma are a half mile from the pond.

b. Social/Economic (including ethnic and cultural groups)

The County has held informational meetings about the project and the reaction to the dam removal has been mixed. A public information hearing was held by the Department to discuss the project further, allow citizens to ask questions, and to voice their concerns about the project for the record.

c. Archaeological/Historical

This is a riverine system which existed prior to the dam installation. No known archaeological or historical sites will be affected.

14. Other Special Resources (e.g., State Natural Areas, prime agricultural lands)

None known.

ENVIRONMENTAL CONSEQUENCES (probable adverse and beneficial impacts including indirect and secondary impacts)

15. Physical (include visual if applicable)

The drawdown as proposed would bring the impoundment down as far as possible, in stages, to the depth of refusal. The impoundment will be significantly reduced in size, exposing an area of mud flats, which could cause some temporary odor from decaying vegetation.

Weather patterns during the drawdown will affect the amount of sediment that may be transported down stream and over the dam. If precipitation is excessive during the period of draw down or a significant amount of snowmelt or rain occurs it would be expected that down-cutting in the littoral areas within the impoundment will allow for more sediments to be transported downstream. Sheet and rill erosion during high precipitation events also will contribute to the overall sediment load downstream.

The water surface elevations will decrease as a result of dam removal. The estimated decrease ranges from 1.3 feet 450 feet downstream of the Ahnapee State Park Trail during the 2 year flood, to 7.9 feet near the dam at the location of the lamprey barrier during the 100 year flood.

The seasonal sea lamprey barrier will prevent the majority of lamprey from migrating upstream, but it will not be a complete barrier. So far lamprey have not been found within Silver Creek, but if they find their way upstream in the future, they may be able to cross this barrier during times of higher water.

All construction site erosion will be mitigated according to the Wisconsin Best Management Practices available at <http://dnr.wi.gov/runoff/stormwater/techstds.htm>. Final project design will include erosion control for construction site runoff management.

According to the consultant for the applicant, the removal of the dam and addition of the seasonal barrier will not impact flood water surface elevations or the chance of flood occurrences. The proposed project will not impact the local or regional quality or quantity of groundwater. Before a permit can be issued for the project the DNR floodplain engineer will have to sign off on the flood analysis that was done by the consultant. The County will also have to verify the project is in compliance with the local floodplain zoning ordinance.

Existing public roads and right-of-ways will be used for accessing the site for construction. Disturbed areas will be seeded, sodded or riprapped, depending on the location. Landscape plans have been developed for the former impoundment to provide riparian habitat and dissipate flood energy.

16. Biological (including impacts to threatened/endangered resources)

The lake will be drawn down slowly allowing fish and wildlife time to seek appropriate habitat to minimize stranding and other impacts of the drawdown. If the drawdown is done in a timely manner (i.e. at target elevation by no later than October 1), most amphibians, reptiles, and furbearers will be able to adjust and seek other suitable habitat. To reduce impacts to fish the drawdown of the impoundment should begin following the completion of the sea lamprey run in mid-June and the lamprey barrier completed before the spring sea lamprey run begins in early April of the following year. This schedule should allow most spring spawners to complete spawning, hatching of the eggs, and allow the movement of fry into the main channel. It would also avoid spring and fall migrations of Lake Michigan fish species. Forage species may be negatively impacted during the drawdown because of increased flows, turbid waters, and temporary sedimentation of riffle areas.

The shallow, non-stratified impoundment increases water temperatures during summer months and decreases water temperatures during the winter months. Impoundments can create additional summer thermal stress to biota and may be most limiting during drought and low-flow conditions. Since water temperatures are inversely related to dissolved oxygen solubility in water, higher water temperatures may limit the availability of oxygen for fish and other aquatic life. Removal of the dam will improve this situation and will provide more consistent water temperatures.

Fish:

The hydraulic conditions after the dam is taken out and times of the year when the seasonal sea lamprey barrier is removed will allow for passage of northern pike and smallmouth bass. Natural channel design assumes low velocity conditions in boundary layers, interstitial spaces, and backwater areas to provide additional hydraulic diversity to facilitate fish migration.

In general, dams and other barriers to fish movement negatively impact the connectivity of fish populations to their historical range and habitat requisites. The impacts occur within, upstream, and downstream of the barrier. Dams and other barriers to fish movement have been identified as a major cause for the decline in fish community diversity, abundance, and structure in Wisconsin. Barrier impacts may include the obstruction and timing of fish migration; fragmentation of fish over wintering, feeding, spawning and rearing habitats; reduced genetic diversity and degraded fish habitat. These cumulative impacts can directly and indirectly impact the overall viability of individual fish species, reproduction, food supply and growth, predation, resistance to disease and stress, etc. Dams and like barriers to fish movement have been implicated as contributing to the decline in mussel populations. Modification or removal of these barriers has been shown to be an environmentally sound, technically feasible, and a cost effective means for enhancing the values and function of disturbed stream ecosystems in Wisconsin.

The fish community will benefit by removing the dam as they will have access to higher water quality and historical spawning and rearing habitat present in Silver Creek, enhancing genetic diversity and relative abundance.

Invasive species:

A seasonal lamprey barrier is not a guarantee against the movement of AIS or VHS upstream but rather a pragmatic means of balancing fish and aquatic life passage and the undesirable impacts of AIS and VHS moving further up into the watershed.

Under NR 20.14 (9), waters below this dam, because of their connection to Lake Michigan, are considered positive for VHS. This project will change the areas in which wild bait harvest can occur (or will be prohibited) and where a Great Lakes Trout and Salmon Stamp will be required to fish for Lake Michigan trout and salmon. VHS is an infectious fish disease where infected fish shed the virus into a lake or river through their urine and reproductive fluids. Not every infected fish dies of the disease, but the infected fish that recover can still spread the disease to other fish. If an infected fish passes the former dam location, the entire watershed could potentially become VHS positive.

Round gobies are another AIS of concern that could pass upstream with dam removal. Unlike some other Lake Michigan invaders, round goby populations can spend their entire life cycle in the river where they impact native species that can be part of a well balanced ecosystem.

17. Cultural**a. Land Use (including indirect and secondary impacts)**

Little or no change in land use will occur within the millpond area. The existing park will be improved with new walking trails, a bridge, and a parking lot. Removal of the dam and construction of the lamprey barrier will not significantly impact land uses, property values, or boundaries. For safety purposes, the public will need to be excluded from accessing the area during construction. Some residents may actually visit the site to observe the project but others will stay away due to the noise and the presence of heavy equipment.

b. Social/Economic (including ethnic and cultural groups, and zoning if applicable)

There may be a temporary odor from decaying vegetation during and after the drawdown. Once the area has dried out and re-vegetated, the odor should be gone.

The future of Bruemmerville County Park will be improved from a recreational use standpoint and will hopefully become a destination spot for tourism. Summer-time recreation on Silver Creek has been reduced for many years.

There aren't any economic impacts to private property owners expected from a change in the landscape from a pond to a stream.

c. Archaeological/Historical

The drawdown is not expected to have any effect on cultural resources.

18. Other Special Resources (e.g., State Natural Areas, prime agricultural lands)

This project is not expected to have any impact on natural areas or agricultural interests.

19. Summary of Adverse Impacts That Cannot Be Avoided (more fully discussed in 15 through 18)

- There may be a slight odor due to decaying aquatic vegetation.
- Fine silt and sediment may be washed downstream and possibly into the Ahnapee River.
- Amphibians, reptiles, and macroinvertebrates may be displaced and/or killed.
- Muskrat population may be affected and most likely will decline.

- Wetlands will be drier and functions will change.
- Fall migratory birds may not utilize this area to the extent they have in the past.
- Floating leaf plant community will be eliminated.
- New boundary of VHS waters upstream.
- Potential increase of AIS upstream of the former dam site.
- Construction related noise and dust may increase temporarily.

DNR EVALUATION OF PROJECT SIGNIFICANCE (complete each item)

20. Environmental Effects and Their Significance

- a. Discuss which of the primary and secondary environmental effects listed in the environmental consequences section are long-term or short-term.**

The odor from decaying vegetation will be short term and only occur immediately after drawdown.

Large sediment loading could negatively impact the water quality of Silver Creek downstream on a temporary basis. Rivers are sediment and nutrient transport systems. Once the bed of the pond is exposed and becomes desiccated and re-vegetated (stable), sedimentation downstream is not expected to be any more than would normally be expected based on gradient and bed-load type.

Amphibians, reptiles, and macroinvertebrates will likely only be affected during the first year of construction. After the site has stabilized they will adapt to the more natural conditions of the area and populations may improve due to the expected benefit to water quality.

The wetland type will permanently change, which will change the vegetation and the types of wildlife that use those wetlands throughout their life stages.

The removal of the dam will allow access to upstream habitat by native fish species on a permanent basis.

The removal of the dam will potentially allow access to upstream habitat by the invasive sea lamprey and other aquatic invasive species. AIS issues could have a significant long term impact on the upper watershed. Lake Michigan is currently positive for sea lamprey, round goby, and VHS. To date, the lower reach of Silver Creek is negative for these species. Some of the AIS issues (round goby, sea lamprey) could be at least partially resolved by ongoing monitoring of the advancement of these species up the river system and the eventual closure or modification of the lamprey barrier if needed.

The positive impacts of opening the upper watershed to native fish species passage would be both short term and long term. Access to their historical habitats would be enhanced along Silver Creek. Enabling fish passage will increase the probability of developing sustainable populations of northern pike and smallmouth bass in Silver Creek.

- b. Discuss which of the primary and secondary environmental effects listed in the environmental consequences section are effects on geographically scarce resources (e.g. historic or cultural resources, scenic and recreational resources, prime agricultural lands, threatened or endangered resources or ecologically sensitive areas).**

There are no geographically scarce resources within the project limits.

- c. Discuss the extent to which the primary and secondary environmental effects listed in the environmental consequences section are reversible.**

The effects of the project are reversible only if a new dam is constructed. Any sedimentation that occurs downstream can be removed, with some difficulty, but the drawdown can be managed if heavy precipitation causes heavy sediment load downstream.

21. Significance of Cumulative Effects

Discuss the significance of reasonably anticipated cumulative effects on the environment (and energy usage, if applicable). Consider cumulative effects from repeated projects of the same type. Would the cumulative effects be more severe or substantially change the quality of the environment? Include other activities planned or proposed in the area that would compound effects on the environment.

The additional length of stream that will be available to native fish species during various life stages should improve the overall population. More dam removal projects will only improve fish habitat by allowing more access and habitat to desirable species.

Removal of the dam without the installation of a suitable lamprey barrier would add significant river miles that are suitable for sea lampreys to successfully reproduce. Sea lamprey control is critical to maintain the trout and salmon fishery in Lake Michigan, and if more projects are proposed that increase spawning areas, it could increase the lamprey population.

There are no known similar projects proposed in the area.

22. Significance of Risk

- a. **Explain the significance of any unknowns that create substantial uncertainty in predicting effects on the quality of the environment. What additional studies or analysis would eliminate or reduce these unknowns?**

One of the unknowns with this proposal is how much sediment will actually be dislodged if significant precipitation causes downcuts and/or sheet and rill erosion occurs on the mudflat. This is an unknown since precipitation cannot be predicted with any reasonable certainty for the duration of the drawdown. It's unlikely that all 4,640 cubic yards of estimated soft sediment will be carried downstream, but a portion of that amount is expected to be transported downstream to the Ahnapee River, and possibly into the Algoma harbor, and ultimately Lake Michigan.

The re-colonization of fish into what was the impoundment from downstream reaches or from upstream river stretches not impacted by the millpond can not be estimated with any level of confidence. This is due to the uncertainty regarding the size of downstream or upstream source populations in Silver Creek and the Ahnapee River and climate driven variables such as water flow and water temperature. Generally fish populations begin to stabilize quickly after habitat work has been completed in a restoration area. The sustainability of the populations will depend greatly on the quality of habitat that is established in the restoration area or by the amount of downstream disturbance to source populations. If habitat work is minimal in the old impoundment it is likely that minimal fish populations will become established. If a variety of habitat is built into the old impoundment there is a much greater chance that a diverse assemblage of fish will reside in the area.

- b. **Explain the environmental significance of reasonably anticipated operating problems such as malfunctions, spills, fires or other hazards (particularly those relating to health or safety). Consider reasonable detection and emergency response, and discuss the potential for these hazards.**

There will be a potential for fuel spills and other operating malfunctions. Machinery should be checked daily for leaks and removed from the site if any leaks are detected. If a spill occurs, the WDNR and local fire department will be notified immediately.

23. Significance of Precedent

Would a decision on this proposal influence future decisions or foreclose options that may additionally affect the quality of the environment? Describe any conflicts the proposal has with plans or policy of local, state or federal agencies. Explain the significance of each.

Wisconsin DNR Fisheries Management and the United States Fish and Wildlife Service, Sea Lamprey Control Program do not support the removal of the dam unless a suitable sea lamprey barrier is constructed. Removal of the dam without the installation of a lamprey barrier would add significant river miles of habitat that is suitable for sea lampreys to successfully reproduce. Sea lamprey control is critical in achieving the Fish Community Objectives set by the Great Lakes Fishery Commission and to maintain the trout and salmon fishery in Lake Michigan. It is a stated policy of the DNR to prevent the movement of invasive species into new waters. Increased lamprey spawning in Silver Creek could cause USFWS to begin lamprey treatments in Silver Creek increasing treatment costs.

VHS and AIS movement into new waters is likely to become an increasingly greater issue in the future. There are projects being discussed on other rivers that are within or near VHS waters. Although each chapter 31 decision is made on a case by case basis, the process and decision on this project could affect how other projects are reviewed and decided because AIS and VHS are a matter of statewide concern.

This project does not set any legal precedent or hold the potential for influence over future WDNR actions or decisions. This project would not foreclose any option which could potentially affect the environment.

24. Significance of Controversy Over Environmental Effects

Discuss the effects on the quality of the environment, including socio-economic effects, that are (or are likely to be) highly controversial, and summarize the controversy.

The quality of the environment will be improved by restoring a stream to its natural state. There was some public concern for flooding and increased velocities downstream, but the impoundment as it exists no longer provides any flood storage, so the amount of water flowing downstream will stay the same.

If a suitable sea lamprey barrier is not proposed and installed, removing the dam could increase reproduction of this invasive species. The U.S. Fish and Wildlife Service does not support removal of the dam due to quality larval and spawning sea lamprey habitat located above the dam if an appropriate barrier is not installed.

ALTERNATIVES

25. Briefly describe the impacts of no action and of alternatives that would decrease or eliminate adverse environmental effects. (Refer to any appropriate alternatives from the applicant or anyone else.)

No action: The Department of Natural Resources has determined that based on the observed concrete deterioration of the spillway identified with the 2009 Rice Engineering dam evaluation, the dam needs to be repaired or removed. Doing nothing is not an option due to the deterioration of the structure. The habitat and water quality would continue to be impaired by the pond. As such, this alternative was eliminated from further consideration.

Repair the dam: The County does not have funding to do the necessary repairs to get the dam into compliance.

Remove the dam: This is the County's preferred alternative because they have received a grant that covers the entire cost of removal. This alternative will be the most beneficial to habitat and water quality also.

Construct a fish passageway with a trap and sort facility: In a trap and sort facility, all fish moving upstream must enter

a sorting box. From the sorting box, desirable fish are manually sorted from the undesirable such as AIS, and the desirable fish are allowed to pass upstream. A trap and sort facility requires an operational staff well versed in fish identification and fish passage protocol, thus adding personnel costs to operating expenses. This is not a cost effective option and was eliminated from consideration.

SUMMARY OF ISSUE IDENTIFICATION ACTIVITIES

26. List agencies, citizen groups and individuals contacted regarding the project (include DNR personnel and title) and summarize public contacts, completed or proposed).

<u>Date</u>	<u>Contact</u>	<u>Comment Summary</u>
2/5/2010	Letter from Jessica Barber, USFWS Fish Biologist	Letter stated that the USFWS does not support removal of the dam due to the risk of increasing sea lamprey habitat upstream.
2/23/2011	County Parks monthly meeting	Public was mainly concerned about additional water and velocities downstream with the pond gone.
3/21/2011	Letter from Jessica Barber, USFWS Fish Biologist	Asked for an opportunity to review the plans for a sea lamprey barrier.
4/4/2011	Memo to USFWS from Inter-Fluve	Inter-fluve explained the design of the barrier and disputed USFWS's preferred design.
5/10/2011	Letter from Jessica Barber, USFWS Fish Biologist	USFWS again explains the reasons for the requirements of the barrier.
6/29/2011	Meeting with DNR, USFWS, Great Lake Fishery Commission, Inter-fluve, and County Parks	Everyone sat down to discuss the design of the barrier and their concerns. The USFWS' preferred barrier would have qualified as a new dam, and the county's grant would not have covered a new dam. The county does not have the money to construct a dam on their own and didn't want to be liable for another dam. Everyone compromised in the end with USFWS allowing a shorter barrier as long as a steel "lip" was placed all the way across the channel and stop logs instead of flash boards were used on the removable portion of the barrier.
Throughout project	Steven Hogler, Miles Winkler, & Mary Gansberg - DNR	Assistance with the Environmental Analysis and identifying potential environmental impacts.
7/27/2011	DNR Public Informational Hearing	Few comments were received, but one person was concerned about fewer fish present at the dam site, and the other was concerned about the structural stability of the lamprey barrier.

Project Name: Bruemmerville Dam

DECISION (This decision is not final until certified by the appropriate authority)

In accordance with s. 1.11, Stats., and Ch. NR 150, Adm. Code, the Department is authorized and required to determine whether it has complied with s.1.11, Stats., and Ch. NR 150, Wis. Adm. Code.

Complete either A or B below:

A. EIS Process Not Required



The attached analysis of the expected impacts of this proposal is of sufficient scope and detail to conclude that this is not a major action which would significantly affect the quality of the human environment. In my opinion, therefore, an environmental impact statement is not required prior to final action by the Department.

B. Major Action Requiring the Full EIS Process



The proposal is of such magnitude and complexity with such considerable and important impacts on the quality of the human environment that it constitutes a major action significantly affecting the quality of the human environment.

Signature of Evaluator <i>Carrie Webb</i>	Date Signed 8/17/11
--	------------------------

Number of responses to news release or other notice:

Certified to be in compliance with WEPA	
Environmental Analysis and Liaison Program Staff <i>James P. Operalski</i>	Date Signed 8/17/11

NOTICE OF APPEAL RIGHTS

If you believe that you have a right to challenge this decision, you should know that Wisconsin statutes and administrative rules establish time periods within which requests to review Department decisions must be filed.

For judicial review of a decision pursuant to sections 227.52 and 227.53, Stats., you have 30 days after the decision is mailed, or otherwise served by the Department, to file your petition with the appropriate circuit court and serve the petition on the Department. Such a petition for judicial review shall name the Department of Natural Resources as the respondent.

To request a contested case hearing pursuant to section 227.42, Stats., you have 30 days after the decision is mailed, or otherwise served by the Department, to serve a petition for hearing on the Secretary of the Department of Natural Resources. The filing of a request for a contested case hearing is not a prerequisite for judicial review and does not extend the 30-day period for filing a petition for judicial review.

Note: Not all Department decisions respecting environmental impact, such as those involving solid waste or hazardous waste facilities under sections 144.43 to 144.47 and 144.60 to 144.74, Stats., are subject to the contested case hearing provisions of section 227.42, Stats.

This notice is provided pursuant to section 227.48(2), Stats.