RECORD OF DECISION

for the

Ballville Dam Project

Final Environmental Impact Statement

U.S. Fish and Wildlife Service

October 2014

Table of Contents

Introduction

This Record of Decision (ROD) was prepared by the U.S. Fish and Wildlife Service (Service) in compliance with to the National Environmental Policy Act of 1969, as amended (NEPA). The purpose of this ROD is to document the decision of the Service in response to the proposed removal of the Ballville Dam under the auspices of the Great Lakes Restoration Initiative (GLRI) through the Great Lakes Fish and Wildlife Restoration Act (Act)(16 U.S.C. 941 §4321 et seq.). The Service has based its decision on the analysis completed in the Draft Environmental Impact Statement (DEIS) released on January 24, 2014 (79 FR 4354), and the Final Environmental Impact Statement (FEIS) released on August 1, 2014 (79 FR 44856).

This ROD: (1) documents the Service decision and presents the rationale for the decision; (2) identifies the alternatives considered in the FEIS in reaching the decision; and (3) states whether all practicable means to avoid or minimize environmental harm from the alternative selected have been adopted, and if not, why they were not (40 CFR§ 1505.2).

Documents used in the preparation of this ROD include the following:

- Draft Environmental Impact Statement for the Ballville Dam Project (DEIS) and appendices (Service 2014),
- Final Environmental Impact Statement for the Ballville Dam Project (FEIS) and appendices (Service 2014a), and
- Programmatic Agreement (PA) (Service 2014b)

All of these documents are incorporated by reference.

Purpose and Need

The purposes for the issuance of federal funds are to restore natural hydrological processes over a 40 mile (64.4 kilometer) stretch of the Sandusky River, re-open fish passage to 22 miles (35.4 kilometers) of new habitat, restore flow conditions for fish access to new habitat above the impoundment, and improve overall conditions for native fish communities in the Sandusky River system both upstream and downstream of the Ballville Dam, restoring self-sustaining fish resources. These actions would support the goals of the Act and the GLRI.

Issuance of federal funds address the following needs related to the current conditions of the Sandusky River:

- Restore and expand upon self-sustaining fishery resources within the lower Sandusky River by providing fish passage in the Sandusky River at the Ballville Dam impoundment site in both the upstream and downstream directions.

- Restore system connectivity and natural hydrologic processes between the impounded area upstream of Ballville Dam and the lower Sandusky River, which would restore riverine fish and wildlife habitat, resulting in a net gain in the amount of free-flowing riverine habitat.

Meeting the needs listed above would likely address conditions or objectives of agreements currently in place between the City and other local, state, and federal agencies. Those may include, but are not limited to:

- Eliminating flood risks to the City of Fremont.

- Eliminating liabilities associated with the current safety conditions of the Ballville Dam including potential threats to private properties both upstream and downstream of Ballville Dam.

- Managing downstream movement of stored impoundment sediments.

- Achieving Aquatic Life Habitat Use-Attainment (as defined by OEPA in §3745-1-07 of Ohio Administrative Code) for the lower Sandusky River.

- Improving and increasing aquatic habitat availability in the lower Sandusky River downstream of the Ballville Dam site.

Project Area

The Ballville Dam was built on the Sandusky River between 1911 and 1913 in Ballville Township, approximately 1.5 miles (2.4 kilometers) upstream of the City and approximately 18 river miles (29 kilometers) upstream of Lake Erie. The dam is approximately 407 feet (124.1 meters) long and 34.4 feet (10.5 meters) high. It is composed of left and right spillways on either side of a non-overflow section. The non-overflow section has a penstock, six sluice gates, and a water intake. Additionally, a concrete seawall extends approximately 702 feet (214 meters) upstream from the left abutment. The impounded section of the Sandusky River extends upstream from the dam approximately 2.1 miles (3.4 kilometers) and the surface area is approximately 89.3 acres (36.1 hectares) (ODNR 1981). Various private residences are located with views of the impoundment in several locations. The City's new raw water intake is located approximately 6,000 feet (1,828.8 meters) upstream of the dam and the new raw water reservoir is to the west of the intake. This reservoir became operational in February 2013. The upper extent of the impoundment is located near the Tindall Bridge where Rice Road crosses the Sandusky River.

Alternatives

Eleven conceptual alternatives were identified during preparation of the DEIS and FEIS. Seven of those alternatives were eliminated from further analysis because they did not meet the stated goals and objectives of the Service or the Applicant, were thought to heighten flood risks for the local community, or were economically infeasible. The seven alternatives considered but not analyzed in detail include the following: (1) Dam Removal without installation of ice management system; (2) Dam Removal with Active River Ice Management; (3) Rehabilitate Dam, Hydroelectric Generation; (4) Rehabilitate Dam, Use as Flood Control Structure; (5) Dam Removal with Impoundment Dredging; (6) Rehabilitate Dam, Reconfigure Gates for Fish Passage; and (7) Rehabilitate Dam, Fish Stocking, Catch and Release.

Four alternatives were carried forward and analyzed in the DEIS and FEIS. Each of these alternatives is described fully in Chapter 3 of the FEIS. Following is a brief description of the no action as well as the three action alternatives.

Proposed Action – Incremental Dam Removal with Ice Control Structure

The Proposed Action is "Incremental Dam Removal with Ice Control Structure". Removal of the Ballville Dam, and Tucker Dam if needed, over a multi-event period lasting approximately 2 years would meet the purpose and need for the project. It would provide fish passage in both directions, restore system connectivity and natural hydrologic processes in the lower Sandusky River, manage sediment loads, as well as eliminate the liabilities associated with maintaining the existing structure and achieve biological use attainment for this section of the Sandusky River. The Proposed Action is divided into three phases with each phase having multiple objectives for meeting dam removal goals. In summary, the phases are as follows:

- Phase 1A – Construct access to south abutment
    - Trackhoes and work trucks would be the primary equipment used on the temporary access road. The access road and work pad would be in place for Phase 1B after which it would be restored to its previous condition during Phase 3, including loosening soil and re-planting.
- Phase 1B – Notch Spillway and Impoundment Drawdown
    - Upon completion of Phase 1A, a trackhoe with a mounted impact hammer would be used to notch the dam in order to lower the pool incrementally. The notch would be approximately 20 feet (6.1 meters) wide and result in an immediate drawdown of the impoundment by lowering part of the south spillway elevation from roughly 625 feet to 615 feet (190.5 to 187.5 meters).
- Phase 2A – Sediment Stabilization
    - As a result of Phase 1, approximately 20 acres (8.1 hectares) of sediment currently inundated by the impoundment would be exposed. Stabilization measures would be implemented to reduce potential mobility of the fine-grained sediment. An approved mixture of seed, included containerized trees in some areas, would be broadcast across the exposed surface then mulched to prevent sediment erosion and seed desiccation.
- Phase 2B – Construct Access Ramp Below Dam

    - Access for equipment to remove the dam would be from County Road 501 and from the American Electric Power (AEP) storage yard adjacent to the dam. Once access to the river is established, a temporary work ramp would be constructed to allow access for equipment to reach the top of the south spillway. The ramp would be approximately 250 feet (76.2 meters) in length and rise in elevation from 602 feet (183.5 meters) to 620 feet (189 meters) at the dam. As demolition of the south spillway and non-overflow portion of the dam occur, the temporary work ramp would be lowered.
- Phase 2C – Construct Ice Control Structures
    - Access for construction of the ice control structures (ICS) would be via the access road of Phase 2B. Construction of the ICS would be located 175 feet (53.3 meters) downstream of, and parallel to, the dam. The ICS consists of 15 piers spaced 21 feet (6.4 meters) apart on centers. Each pier would be constructed in three parts: drilling, reinforcement placement, and concrete placement by tremie method (pumping from the bottom up). During the 50 to 75 year service life of the ICS, various maintenance activities would be required to extend each pier's service years. Periodic removal of debris that may accumulate on the structure may be necessary.
- Phase 2D – Remove Dam
    - Demolition of the dam would be accomplished by a trackhoe accessing the top of the dam and enlarging the original notch from the access ramp. The bottom elevation of the notch would be lowered from elevation 615 feet to 610 feet (187.5 to 185.9 meters), allowing for additional impoundment drawdown to occur while the trackhoe demolishes the top of the remaining south spillway. The Ballville Dam structure is constructed of approximately 15,000 CY of reinforced concrete consisting of clean concrete materials made from sand and gravel river materials and steel rebar. During demolition, the contractor would be instructed to only use unreinforced concrete in the designated disposal areas. Approximately 1,900 CY of clean concrete rubble fill from the demolition would remain in the two concrete disposal areas (scour holes) in order to level the river bed.
- Phase 2E – Channel Restoration
    - Restoration of the project area would include approximately 28,000 CY of fill consisting of offsite rock and soil materials as well as some concrete rubble from the demolished dam and leftover access ramp. This material would be used for grading of the new bank benches. The proposed channel grading will consist of 1) placement of fill downstream of the current dam location, and 2) fill cut upstream of the current dam location. Without this grading the river could potentially flank the ICS rendering it ineffective. While it is expected that the river would naturally grade, there may be need to grade a channel lead starting approximately 300 feet (91.4 meters) upstream of the dam. Information regarding in-kind wetland mitigation is discussed in the planting plan and a commitment to reforest the site by planting bare root saplings and containerized trees is made. As restoration is being completed, removal of the remaining temporary ramp from Phase 2B would occur.
- Phase 3A – Monitor Channel Restoration and Water Supply Intake

    - As Phase 2D is being completed, monitoring of the City's reservoir intake, approximately 1.5 river miles (2.4 river kilometers) upstream of the dam, would occur to ensure that, during the lowering of the impoundment, no sediment blockage occurs due to instability of upstream banks. Similarly, stability of River Road would be monitored (just southwest of the intersection of River Road and Buckland Avenue) to ensure that no impacts to infrastructure occur as a result of the pool drawdown. If stabilization is necessary, appropriate measures would be implemented to safeguard both the intake and roadway.
- Phase 3B – Remove any Remaining Dam Material and Modify Seawall
    - After Phase 3A, any material stockpiled in the staging area or along the access road would be removed from the site. The seawall would be reduced in height, mechanically, to grade while keeping the below-grade portion in place. Approximately 195 CY of concrete would be removed and disposed of appropriately.
- Phase 3C – Remove Tucker Dam – if necessary
    - Removal of Ballville Dam and pool is expected to expose the Tucker Dam, if present, either whole or in part. The initial notch of the dam in Phase 1B would lower the impoundment to the point where evidence regarding whether the dam may still be in place and its potential to impact the success of the Proposed Action could be determined. If the Tucker Dam is intact and requires action, the Programmatic Agreement between the Service, Consulting Parties, and the OHPO provides guidance for removal based on its disposition.
- Phase 3D – Monitoring and Adaptive Management
    - The final phase of the project would occur for multiple years post-removal and would involve monitoring and adaptive management. Monitoring of wetland formation, areas of erosion and deposition, water quality, fish diversity and movement, and mussel relocations would occur to document ecological impacts of dam removal as well as compliance with Section 10/404/401 permits from the U.S. Army Corps of Engineers (USACE) and Ohio Environmental Protection Agency (OEPA). Adaptive management could include shaping the floodplain topography to promote the formation of fringe wetlands and/or floodplain wetlands, addressing rilling or gully formation on exposed sediments upstream of the dam, excavation near the reservoir intake to improve flow, or other adaptive actions to address erosion or habitat enhancements as upstream river conditions change.

Total Estimated Cost for the Proposed Alternative is $6.28 Million.

Alternative 1 – No Action Alternative

Under this alternative, federal funding would not be provided to remove the structure. Instead, it is expected that the Ballville Dam would remain in place and require extensive rehabilitation to be compliant with ODNR dam safety standards. The ARCADIS (2005) investigation report provided findings regarding methods and cost estimates to rehabilitate the Ballville Dam. In November 2013, Mannik and Smith Group (MSG) provided an investigation report that updated

the findings and cost estimates for rehabilitation of the Ballville Dam based on the 2005 ARCADIS report. Rehabilitation would include repairing the sluice gates, repairing concrete deterioration, sea wall fortification, and development of operations manuals for the rehabilitated structure.

Repair and maintenance of Ballville Dam do not meet the purpose and need for the project. This alternative would correct the progressive deterioration of the dam and associated seawall to comply with state-mandated dam safety requirements however it would not provide fish passage, restore system connectivity or natural hydrologic processes in the lower Sandusky River, or eliminate the liabilities associated with maintaining the existing structure in perpetuity.

Total estimated cost for the No Action Alternative is $8.9 - $10.7 Million.

Alternative 2 – Rehabilitate Dam, Install Fish Passage Structure

Under this alternative, rehabilitation and continued maintenance of Ballville Dam would be required, bringing it into compliance with relevant safety and operation standards, as described in Alternative 1. Additionally a fish elevator structure would be constructed to allow for upstream movements of native fish species. The objective of a fish elevator system would be to provide for upstream passage of fish that are commercially and ecologically important in the Sandusky River. Attraction flow would be necessary to guide fish into the trap entrance at the base of the fish elevator. Modifications of the downstream channel may be appropriate to guide fish to the fish elevator facility if it is deemed necessary based on post project monitoring and passage success. Exclusion of undesirable species would be part of fish elevator operation at Ballville Dam. Removal and disposal of any upstream migrating invasive species such as Asian Carp and Sea Lamprey, if present, would be required at the fish elevator system on Ballville Dam. Additionally, the fishpass outlet would be located upstream from the north spillway and built to ensure fish can successfully move upstream from the fishpass outlet with minimal risk of being swept downstream and over the spillway.

A fish elevator structure would provide for potential movement of fish upstream of the existing Ballville Dam, and maintain the historical nature of Ballville Dam, but it does not meet the need for restoring system connectivity and natural hydrologic processes both below and immediately above the dam in the Sandusky River Watershed. Thus, federal funding would not be provided to assist in the construction of this alternative. While this alternative does not meet all aspects of the purpose and need for the project, it does provide a reasonable alternative for consideration.

Total estimated cost for the Rehabilitate Dam, Install Fish Passage Structure Alternative is $16.8 - $18.6 Million.

Alternative 3 – Dam Removal with Ice Control Structure

Alternative 3 is similar to the Proposed Alternative, but activities would be divided into only two phases with each phase having multiple objectives for meeting dam removal goals. In summary, the phases are 1.) ice control structure construction, dam removal and restoration; and 2.) seawall modification and restoration of impoundment area. This alternative would occur over

approximately 1 year 6 months and allow less time for sediment stabilization because the dam would be breached and within one week full removal of the dam would occur.

Removal of the Ballville Dam, and Tucker Dam if needed, during a single event would meet the purpose and need for the project. It would provide fish passage in both directions, restore system connectivity and natural hydrologic processes in the lower Sandusky River, help achieve aquatic life habitat use-attainment, as well as eliminate the liabilities associated with the existing structure. In summary, the phases are similar in nature to the Proposed Action, however some key differences are south abutment access work and the initial notch construction. The phases included in this alternative are as follows:

- Phase 1A – Construct Access Ramp Below Dam
- Phase 1B – Construct Ice Control Structures
- Phase 1C – Remove Dam
- Phase 1D – Channel Restoration
- Phase 2A – Monitoring Channel Restoration and Water Supply Intake
- Phase 2B – Remove any Remaining Dam Material and Modify Seawall
- Phase 2C – Remove Tucker Dam – if necessary
- Phase 2D – Monitoring and Adaptive Management

Total estimated cost for the Dam Removal with Ice Control Structure Alternative is $6.28 Million.

Public Involvement

Public scoping for the EIS was first initiated in the form of an Notice of Intent (NOI) to conduct a 30-day scoping period for a NEPA decision on the proposed Ballville Dam project and request for comments, published in the Federal Register on October 21, 2011 (75 FR 4840-4842). A public scoping meeting was held in the City of Fremont on October 27, 2011 from 7:00pm to 9:00pm. The meeting included a presentation about the project as well as a question and answer session with members of the Service, ODNR, the City, and Stantec. The Service also conducted outreach by press releases and public notification to inform interested parties or those potentially affected by the Proposed Action and to request comments on the scope of the NEPA analysis. Comments were collected at that meeting, through U.S .mail, by phone, and through the email address Ballvilledam@fws.gov. Although the formal comment period ended November 21, 2011, comments continued to be received. A total of 13 written or verbal comments were submitted during the scoping meeting and comment period identifying issues and concerns about the Proposed Action and the preparation of the DEIS. Comments were received via phone, voicemail, electronic mail, and hardcopy mail and are indexed and summarized in Appendix B of the DEIS and FEIS. These comments were carefully reviewed and categorized into the issues that informed the analysis for the DEIS.

Following the public scoping meeting, the Service sent invitations to potential “Cooperating Agencies” to formally provide input and direction into the project. Partners with a jurisdiction by law or by special expertise in the project were invited to sign a Memorandum of Understanding (MOU) with the Service officially naming them as “Cooperating Agencies” in the project. Those

partners invited were the City of Fremont, USACE, ODNR, OEPA, and Ballville Township. Of those, the City, USACE, ODNR, and Ballville Township signed onto an MOU to assist in reviewing draft documents to ensure all parties have an opportunity to assist in project development, working towards the most complete and thorough analysis possible. The Service also sent consultation letters to the six tribal nations identified through the Native American Graves Protection and Repatriation Act (NAGPRA) database (http://grants.cr.nps.gov/nacd/index.cfm) to ensure they also had an opportunity to provide input and comment on the project.

During FEIS development, the Service consulted with the Ohio Historic Preservation Office (OHPO) in conjunction with obligations to fulfill requirements under NEPA, Section 106 of the National Historic Preservation Act (NHPA). The Service sent invitations to potential "Consulting Parties" to provide their input into the NHPA Section 106 components of the project. Partners with a jurisdiction by law or by special expertise in the project were invited. Those partners were the City of Fremont, USACE, ODNR, OEPA, and Ballville Township. The Service also invited two organizations identified as potential "Concurring Parties" to participate in the NHPA Section 106 process and provide their input. The organizations were the Sandusky County Historical Society, and the Rutherford B. Hayes Presidential Center. Both the Consulting and Concurring Parties, under these cultural statutes and regulations, were contacted by letter, follow-up phone calls, and emails. Personal meetings were conducted in order to provide information about the proposed Project and to seek additional input regarding the identification and evaluation of archaeological and historic resources. A Programmatic Agreement between the OHPO, Service, City of Fremont, USACE, ODNR, and OEPA was developed to address mitigation necessary to record the importance of the Ballville Dam and other historical features.

A Notice of Availability of the DEIS was published in the Federal Register (Service - 79 FR 4354; U.S. EPA - 79 FR 4158), on January 27, 2014 and January 24, 2014, respectively, opening a 60 day public comment period. A public meeting was held in Fremont on February 19, 2014, to provide information on the project, answer questions, and accept public comments. During the comment period on the DEIS, comments were received from 29 individuals, organizations, and agencies, addressing a number of topics including impacts to wetlands, city water supply, ice control structures, sediment disposition, and other topics. The public comments and associated responses are available in Appendix B2 of the FEIS.

A Notice of Availability of the FEIS was published in the Federal Register (Service - 79 FR 44856; U.S. EPA - 79 FR 44769) on August 1, 2014, opening a 30 day public review and comment period. During the review and comment period on the FEIS, comments were received from 28 individuals, organizations, and agencies, addressing a number of topics including impacts to wetlands, city water supply, ice control structures, sediment disposition and phosphorus loading, and other topics. Comments and the Service response on the FEIS are provided in Appendix A of this ROD.

Service Decision

The Service's decision is to adopt the Proposed Alternative. The Proposed Alternative best fulfills the agency's statutory mission and responsibilities while meeting the purpose and need. This decision is also based on the review of the alternatives and their environmental consequences described in the DEIS and FEIS, indicating the following.

1) Implementation of the Proposed Action would restore natural hydrological processes, reopen fish passage, restore flow conditions, and improve overall conditions for native fish communities in the Sandusky River system both upstream and downstream of the Ballville Dam, restoring self-sustaining fish resources.

2) Implementation of the Proposed Action would also ameliorate flood risks to the City of Fremont; eliminate liabilities associated with the current safety conditions of the Ballville Dam, manage the downstream movement of stored impoundment sediments; and restore Aquatic Life Habitat Use-Attainment for the lower Sandusky River.

3) All of the Mitigation Measures associated with the Proposed Action and itemized in FEIS Table 6-2 will be implemented to ensure protection of various resources. This includes protection of state and federally-listed and proposed species such as the Indiana bat and Northern long-eared bat via implementation of tree clearing timeframes or surveys and avoidance measures if the timeframes cannot be followed. Tree clearing that is proposed outside of the timeframes will be coordinated with ODNR.

Wetland Mitigation

Since publication of the FEIS, the Service, USACE, OEPA, US EPA, and City have been engaged in discussion on the wetland mitigation component of the Section 10, 404 and 401 permits. The USACE has the authority under its Section 10 and 404 statutes to approve the wetland mitigation component of the project, and to assure that all stream and wetland protection policies are implemented appropriately. While the Service remains an active participant in these discussions, we believe the final mitigation decisions (e.g., applicability of the "no net loss of wetlands" policy, appropriate compensatory mitigation for indirect wetland impacts, etc.) must be made between the City, as the Applicant, and the USACE, as the permitting entity. Several conference calls have occurred and different approaches to calculating both stream and wetland debits and credits have been proposed. At the time of this ROD the USACE and the City have not yet agreed on a final mitigation strategy. As described in the EIS, the USACE must issue a Section 10 and Section 404 permit in order for the Proposed Action to be implemented. A key component of these permits is a complete mitigation plan. Therefore, if a complete mitigation plan, acceptable to the USACE, is not provided by the City, then the Section 10 and 404 permits will not be issued and the Proposed Action will not be implemented. EIS Section 5.2.2.3.4 describes the relationship between the USACE permits and this EIS. It further describes the conceptual approach to the mitigation strategy, which is to consider mitigation credits in the framework of improved functions and values of the Sandusky River ecosystem (including both stream and wetland habitat) as a whole. The Service will support the final mitigation plan determined to be acceptable by the USACE, and require that it be implemented as part of the

Proposed Action in order for U.S. Fish and Wildlife Service funding to be expended on this project.

Environmentally Preferred Alternative

NEPA regulations require Federal agencies to specify "the alternative or alternatives which were considered to be environmentally preferable" (40 CFR 1505.2(b)). Based on the description of the alternatives considered in detail in the FEIS and this ROD, we have determined that Proposed Action, Incremental Dam Removal with Ice Control Structure, would cause the least damage to the biological environment and is therefore the environmentally preferred alternative for this proposed Federal action. The Proposed Action addresses many complexities related to this project including, restoring system connectivity and natural hydrologic processes while minimizing impacts due to sediment transport, wetlands, and fish and wildlife habitat shifts.

The Proposed Action differs significantly from Alternative 3 "Dam Removal with Ice Control Structure" in terms of expected environmental impact in that the Proposed Action would occur over a longer time interval, utilizing an initial "notch" to allow the incremental release of sediment and providing the opportunity to work towards sediment stabilization through seeding and planting. This would allow the anticipated impacts to the ecosystem from sediment transport to occur on a scale of months instead of weeks, and give the river more time to adjust to the restored hydrologic connection. Ideally this method of dam removal will reduce the overall sediment release and most importantly any impacts to downstream habitat and populations.

Signature:

Charlie Wooley
Deputy Regional Director, Region 3

10/2/14
Date

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Ohio Lake Erie Phosphorus Task Force II. 2013. Ohio Lake Erie Phosphorus Task Force II Final Report. Available at: http://www.epa.state.oh.us/portals/35/lakeerie/ptaskforce2/Task_Force_Report_October_2013.pdf

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-2014. Ballville Dam Project, Sandusky County, Ohio, Draft Environmental Impact Statement, January 2014. 255 pp + append.

-2014a. Ballville Dam Project, Sandusky County, Ohio, Final Environmental Impact Statement, August 2014. 282 pp + append.

-2014b. PROGRAMMATIC AGREEMENT (PA) among The U.S. Fish and Wildlife Service (USFWS), The Ohio Historic Preservation Office (OHPO), The Ohio Department of Natural Resources (ODNR), The Ohio Environmental Protection Agency (OEPA), The U.S. Army Corps of Engineers (USACE), and The City of Fremont (City), Regarding The Proposed Sandusky River Fish Passage Project (Project), Ballville Township, Sandusky County, Ohio. 16 pp.

Appendix A

FEIS Comments Received and Individual Responses

Name: Smith, F.
Comment:
Please remove the Ballville dam so that fish are able to move farther up stream.

Response:
Thank you for your comments.

Name: Thompson, G.
Comment:
Let's get this removed ASAP. I would like to fish for walleye in my neck of the woods before I kick the bucket. I live in Tiffin,Ohio.

Response:
Thank you for your comments.

Name: Dundore, P.
Comment:
Since the dam has not been maintained for 30 to 40 years the condition is bad. Fremont has built an off site res for their water needs other than the river also because of the trreatment of all the run off in the river i personaly think it should be removed which would let other type of fish (walleye) to go up stream for fishing. Which has not been since the dam was constructed in 1913.

Response:
Thank you for your comments.

Name: Sayre, S.
Comment:
Please remove the ballville dam as it serves no purpose anymore and might improve fishing and wildlife oppertunities along the river in the future with its absence from the scene.

Response:
Thank you for your comments.

Name: Wright, S.
Comment:
Remove the Ballville dame!!!!!!!

Response:
Thank you for your comments.

Name: Hunter, D.
Comment:
The Sandusky River and Lake Erie are vital to many Ohioans and the removal of the Ballville Dam will benefit the Sandusky River, Lake Erie and numerous Ohioans. Please remove the Ballville Dam ASAP.

Response:
Thank you for your comments.

Name: Lauer, J.
Comment:
I will be glad when this issue is put to rest and the dam is torn down. It is time for Fremont to move forward and let the reservoir and dam issues go.

Response:
Thank you for your comments.

Name: Keefe, J.
Comment:
I appreciate you keeping me on the mailing list. As I understand the extensive report, action alternative #3 is the recomeded action?

As a Charter Capt, of course my immediate concern is maintaining the and/or improving the fishery. On first glance through the report, it certainly appears these issues are addressed with alternative action item #3. With some luck from Mother Nature and the Big Guy upstairs, future generations will be able to enjoy the fruits of the labor. Below is what caught my eye when browsing the report. And to me, that appears to allow for the improving of spawning grounds for present and future species.

Response:
Thank you for your comments. Alternative number 4 in Table 2-1 of the FEIS titled "Incremental Dam Removal with Installation of Ice Control Structure" is the Proposed Alternative, and later in the FEIS identified as the Preferred Alternative. Alternative number 3 is similar, however removal would occur over a more truncated time schedule, allowing for less sediment stabilization practices. To reduce the potential impacts of sediment moving downstream, alternative 4 was selected as the Preferred Alternative.

Name: Rohm, R.
Comment:
How much evidence must be amassed before the obvious becomes apparent? The recent problems with the Western Lake Erie basin, as regards algal blooms, have become rather obvious. The entire major Northwestern city of Toledo, Ohio and surrounding municipalities have been placed in an emergency due to drinking water contamination. The National Guard and FEMA called into action to aid and protect the citizens. This is without mentioning the cost effect this is having on these government service agencies. The dumping of dredged silt from the Maumee River into the lake has exacerbated summer algae bloom to the point that normal seasonal bloom that used to occur after the strong summer heat of the months of late July and August is at least a full four (4) to six (6) weeks earlier and stronger this year. That is so even despite the fact that general summer temperatures have been lower than our normal summers. Overall, the 2014 summer season has escaped the sustained weeks long high 80's and low 90-degree temperatures so far. Imagine what may have happened [and perhaps may still happen] if heated weather had [or does] occurred. If a prolonged and protracted summer season extends through September and October the algae will only continue to persist. It remains to be seen at what further costs to taxpayers, the government and the environment?

Now we are being told as regards the Ballville Dam that notching the dam and allowing millions of tons of silt to wash downriver to the Lake Erie basin would NOT be of any consequence. In light of the most recent problems with water quality in the lake, it would seem abundantly clear and obvious that this belief is at very least ***NOT*** wholly true. It would seem that at the ***very least***, silt contamination of Lake Erie has become potentially a cause for immediate cessation of deliberately allowing mass quantities of river silt into the lake basin. A complete moratorium on mass migrations of silt into the lake should be immediately enacted. Further Scientific Studies should be conducted by two (2) or more outside the government sources to include a university based study and private environmental firm to assess what course of action(s) should be taken when dealing with river silt disposal.

Having said this, we have yet to discuss or conclude with scientific evidence what effects that the release of silt from behind the Ballville Dam would have on the Sandusky River's ecosystem downstream of the dam. The recent EIS in principle would conclude that release of the silt would have NO or minimal effect to the river's ecology, but at the same time they state that removal and remediation would be costly due to the "contaminated" silt having to be remediated at a cost of millions of dollars. Logically, you cannot have it both ways. If the silt is contaminated, we can't just let it go downstream. If it isn't contaminated then we should be able to effectively remove it through excavation and return to the farm fields from where it came from for very small costs as compared to the "toxic" remediation that is being called for in current scenarios.

No evidence has been produced that would scientifically explain what immediate or long-term effects silt release would have on the Sandusky River, Sandusky Bay and Lake Erie systems. We have opinions but no hard-unbiased scientific evidence about what would happen to the cobblebottom spawning beds in the downstream portion of the Sandusky River. Logic would tell you that million of cubic yards of silt would tend to bury the spawning beds under several inches

of organically enriched silt. This would further reduce the overall depth of the river [which is already shallow] and impede both fish migration, spawning and negatively affect the micro-flora and fauna of the Sandusky River system in general. This could have the potential to destroy the river system for the purpose of fish spawning for a number of species of fish including, but not limited to, White Bass and Walleye. This would thereby further compound breeding problems for these species, especially the Sandusky Bay Walleye population.

The potential destruction of micro-fauna and flora would have further reaching effects on a wide number of animals including fish, crustaceans, amphibians and small land mammals that predate-in-chain from the existing ecosystem. These are the potential downriver system problems that have not been significantly studied. This does NOT include the many potential eco-system effects that would occur on the upriver portion of the Sandusky River when the backwater areas of the river created by the impoundment of the dams that have been in place on the river for almost one hundred fifty (150) years.

The impact that the removal of the Ballville Dam would have on the upriver habitat has not been adequately considered or studied. Potentially hundreds of acres of upriver watershed would be negatively affected by the removal of the water impoundment created by the Ballville Dam. Mediation efforts to preserve the upriver wetlands would be costly and their effectiveness unknown until after the implementation. Surely any efforts we may employ would be far less adequate and effective than that which is already being supplied naturally by Mother Nature. The upriver environment has been in its present state for well over a century. No one can accurately predict what will happen after the removal of the dam. No one can accurately predict the cost both financially and environmentally of the removal of the dam. Mad men charge in where wise men fear to tread. Again before anything is done, further Scientific Studies should be conducted by at minimum two (2) or more outside the government sources to include a university based study and private environmental firm to assess what course of action(s) should be taken when dealing with the upland river environment prior to doing anything.

Logic would seem to be in somewhat short supply and Science seems nonexistent as regards the entire scope of what is being purposed in the EIS report. Forging ahead with a plan that has no real, tangible and scientifically based conclusions would be ludicrous. If something is worth doing then it’s worth doing it right. Emotion and desire should NOT be allowed to drive our ambitions. Total costs that include the costs to the environment must be sufficiently considered. The future of our society, children and environment are in the hands of those making decisions today that affect other generation’s tomorrows. We have NOT done the necessary homework to allow removal of the Ballville Dam. Until all “I’s” are dotted and all “T’s” are crossed, we should NOT move ahead with this proposal. Doing otherwise is at very least a disservice and a potential disaster in the making. Without further considered Scientific Studies by unbiased sources this proposed project should be placed in moratorium until all aspects of the impacts can be ascertained.

Response:

Thank you for your comments, we believe the FEIS is a thorough document analyzing the Ballville Dam Project from a National Environmental Policy Act perspective. The cooperating agencies have worked diligently since project scoping began in October 2011 to engage the community, develop alternatives, analyze those alternatives, and disseminate the anticipated impacts. Projected impacts described in the FEIS are based on the best scientific information available, and numerous on-site studies have been completed to be as accurate as possible in modeling and estimating future conditions resulting from each alternative. Please refer to page Section 4.2.2.4.2 of the FEIS as well as Appendix B2 (page 32) for descriptions within the FEIS and Appendix of the Sandusky River's influence on HABs in the western Lake Erie basin.

In regards to the seasonal algal blooms you identify, the primary reason for the increased incidence of HABs in the western basin is associated with increases in Dissolved Reactive Phosphorus (DRP), or phosphorus that is dissolved in the water and highly bioavailable (Daloglu et al. 2012). The phosphorus associated with the sediments stored behind the Ballville Dam is particulate phosphorus, or phosphorus that is adsorbed to the sediment, and therefore, much less bioavailable than the DRP fraction is.

While phosphorus cycling in a lake or riverine system can be complicated by a number of things, such as flow rate etc., the properties of phosphorus in water are relatively well understood. The phosphate ion (PO4) is a highly reactive anion and the sorption properties of sediment are important for understanding p-retention capacity, and this capacity is highly dependent upon the dissolved oxygen environment. When dissolved oxygen levels in the environment are high (>2 ppm dissolved oxygen), PO4 is strongly bound to both clay particles (and subsequent iron particles – called the iron sink), and is considered to be in particulate form. As long as the environment remains anoxic (>2 ppm dissolved oxygen), any phosphate in sediments will be trapped by the iron trap. Recall that the particulate form of phosphorus is much less bioavailable for algal production. Conversely, when dissolved oxygen levels in the environment are low (<2 ppm dissolved oxygen), phosphorus will move to the dissolved state due to iron redox (Fe3, which binds PO4, goes to Fe2, which releases the PO4 as dissolved Phosphorous). In the current situation, the sediment behind the dam is anoxic (has low dissolved oxygen) as you go deeper in the sediment. Therefore, due to the redox situation described above, the phosphorous that would be bound to iron in the oxygenated environment, becomes dissolved Phosphorous in the low oxygen environment. This remains as dissolved phosphorous until dissolved oxygen concentrations get above 2 ppm, and then the "iron trap" cycle is reinitiated. With dam removal and sediment mobilization, the sediment will re-oxygenate and the "iron trap" will be initiated, with dissolved phosphorous being bound and becoming particulate phosphorous. Given these dynamics associated with the phosphorus cycle and the high iron content in sediments behind the dam (Evans and Gottgens 2007) the expectation is that dam removal will have a minimal impact on the dissolved reactive phosphorus and harmful algal blooms.

In addition to chemical characteristics of the phosphorous several other lines of evidence suggest that Ballville Dam will have minimal impact on the size and extent of HABs. Sediment loads are not expected to increase appreciably over background as a result of demolition of Ballville Dam. Sediment that is exported from Ballville Dam will occur in response to seasonal stream flow patterns and will primarily occur during the cooler months when algal growth is not a concern.

Not all of the sediment will reach Lake Erie as some will be stored on floodplain, bars, or islands or dispersed throughout the river and bays.

It should also be noted that the Ohio Lake Erie Phosphorus Task Force II Report (2013) concluded that "there are multiple contributors to phosphorus into Lake Erie but agriculture is the leading source due to the majority of the land use in agriculture in the Maumee River (~80%) and is key to achieving substantive reductions." Further, the International Joint Commission Report "A Balanced Diet for Lake Erie: Reducing Phosphorus Loadings and Harmful Algal Blooms" (2014), identifies that the single largest source of dissolved reactive phosphorus that generates harmful algal blooms in the western basin of Lake Erie is the Maumee River. Additionally, the USACE-funded Study "Influence of Open-Lake Placement of Dredged Material on Western Lake Erie Basin Harmful Algal Blooms" (Ecology and Environment and LimnoTech 2014) also found that the Maumee River is the dominant source of bioavailable phosphorus contributing to HABs and that the open-lake placement of dredged material does not contribute to the development of HABs in the Western Basin of Lake Erie. Lastly, the International Joint Commission (2014) also notes that while their report focuses on phosphorus, they recognize that stressors other than nutrients also can adversely affect the water quality and ecology of Lake Erie, including but not limited to hydrologic alteration through dams (http://www.ijc.org/files/publications/2014%20IJC%20LEEP%20REPORT.pdf).

Regarding sediment disposition, including anticipated impacts to the ecosystem, please refer to section 5.1.2 and 5.3.2 of the FEIS as well as Appendix A11. Specifically regarding the analysis of dredging as one sediment management option, please refer to section 2.3.7 as well as Appendix A2.

Sediment analysis was conducted by Evans and Gottgens (2007) on Ballville impoundment sediment and included analysis for metals, pesticides, polychlorinated biphenyls (PCBs), and semi-volatile organic compounds, including polycyclic aromatic hydrocarbons (PAHs). No PAHs were detected. Table 4-6 in the FEIS describes the findings of the analysis. In summary, none of the maximum detected concentrations of metals or DDT breakdown products within the Ballville Dam impoundment exceeded consensus-based probable effect concentrations. Additionally, iron, lead, nickel and zinc were found below the appropriate sediment reference value for the Huron-Erie Lake Plateau ecoregion, where Ballville Dam is located. The maximum detected concentration of chromium also approximates background reference conditions as represented by the SRV. Per this analysis, the sediment in the impoundment is not required to be placed in a confined disposal facility.

Impact to wetlands due to the Ballville Dam Project is an important consideration regardless of the alternative proposed and has been investigated at length by the cooperating agencies and the project consultant Stantec, Inc. Although we and our partners continue working together to address and develop the proposed mitigation plan for impacts to wetlands, please refer to the "Wetland Mitigation" section on page 10 of this ROD for the current status of wetland mitigation discussions, and the EIS section 5.2.2 for the anticipated wetland impacts under the Proposed Action.

Name: Wurzel, T.
Comment:
Keep the dam in place

Please consider NOT removing the dam as it will narrow the river upstream from the dam thus affecting my waterfowl hunting.

Response:
Thank you for your comments. We have attempted to consider as many environmental consequences for each fully analyzed alternative as possible. Included in that is the potential impact to migratory waterfowl and upland wildlife species in the project area. Specifically for the Proposed Action, please refer to Section 5.3.2.2 and 5.6.2.1.3 of the FEIS.

Name: Rice, D.
Comment:
I absolutely support the removal of the dam.

Response:
Thank you for your comments.

Name: Universal Farms
Comment:
After extensive review of the recently released EIS for the Ballville Dam Project, our company, Universal Farms LLC, would like to introduce our local business to you for possible consideration of services involving the possible silt removal that is located behind the dam wall.

Universal Farms LLC, is a licensed Class 3 Recycling Facility, located approximately one (1) mile south of the Ballville Dam site. We specialize in Yard Waste Recycling and Mulch Manufacturing, having survived in a competitive market for over 35 years.

Universal Farms LLC, is situated on approximately 70 acres of tillable ground with an additional 5 acres of woods at the address indicated above. Our intentions at this point are to express interest in accepting the silt and windrowing it for future wholesale and retail sales. By choosing to truck the silt to one site, it would save time and money to complete the onsite preparations to the numerous locations that were listed in the EIS.

The benefit to Universal Farms LLC is obvious, but the sales and income tax standing to be gained for our local area governments is beneficial as well, not to mention the silt will be recycled and reused.

There are numerous issues that would have to be addressed regarding the possible site preparations and containment area, metal property reports after drying the product to name a few.

Response:
Thank you for your comments. Any future hiring of sub-contractors would be managed by our grantee, the Ohio Department of Natural Resources and possibly their sub recipients.

Name: Miller, B.
Comment:
Selfishness and Greed Presided Over The Vouch for Repair

I would like to offer my input on the Ballville Dam Repair versus Removal Project. I am going to forewarn that it will be very stern and one-sided because, frankly, I am tired of this project costing the tax payers money.

My brother and I are among the few that are MOST affected by this project. We own one of the houses on Cemetery Road. The Dam is about 500 feet from my back door. If I look out the door or any window I can see the Dam.

Personally, I think I can speak for a good portion of Fremonters when I say that we are bored of this "expletive deleted" debate. As far as I am concerned THERE IS NO DEBATE. According to the Fish and Wildlife citation/survey of at least a year or two ago, the Dam needed to be removed. It should have been removed then. This debate is only prolonging the inevitable and wasting money. To do so is UNETHICAL in every way.

I am, personally, offended by the selfishness of those who are vouching to save the Dam. If they want the Dam repaired so bad, then let THEM pay for it! Send them the bill and stop wasting the tax payers money! In fact, what is more, also send them the multiple surveyors bills and all of the costs as well as potential accumulated interest in relation to this intentional delay of the inevitable.

Finally and most importantly, there should have been a VOTE for those affected by this debate and project as to whether we should even look into the possibility of having the Dam repaired before it was ever decided that we should just go ahead and waste more time and money on an absolutely Logically Pointless inquisition. We could have asked one of the fish swimming in the river of the benefits of keeping the Dam versus the benefits of removing it and even it could have given you a more logical answer than the greed and selfishness of those who vouch to have the dam repaired.

You call this a Democracy... how? How is it a democracy if we can't vote on how our tax money is used... or, in this case misused? In short, "expletive deleted" this project, "expletive deleted" mayor Jim Ellis for not having the "expletive deleted" or integrity to stand up to those who opposed this project and telling them that logic adheres for us to remove the dam--for "expletive deleted" sake the State would help us pay for the removal and not the repair; this ALONE would provide the answer needed!--and "expletive deleted" every single one of the selfish, greedy, "expletive deleted" low-life "expletive deleted" who ever started the Save/Repair the Dam Project/Debate in the first place. Go "expletive deleted" yourselves! STOP WASTING OUR MONEY FOR YOUR OWN SELFISH DESIRES!

I am positive that giving the citizens affected by this project in the first place a chance to vote on this issue would have automatically overridden this entire debate and transcended this entire waste of time and money. This would not be a problem and thus I would not have felt the need to write this very angry email. All I can hope is that at least someone, somewhere learned from this absolute waste of time and money.

STOP wasting our time and money and Remove the "expletive deleted" Dam!

Response:
Thank you for your comments.

Name: Mosser, D.
Comment:
Having followed the progress of the proposed Ballville Dam removal for several years now, I think that there are a few items still to be resolved. I am most concerned about wetlands mitigation and the potential cost to the city of Fremont and the people of Fremont.

I still fully support the removal of the Ballville Dam. I support the Proposed Action and also Alternative 3. I would be happy to see the Sandusky River returned to its natural flow. That is something I have not seen in my lifetime, but would like to!

From the water quality standpoint, although the nutrient loads would still exist in the raw water, the increased flow rate and reduced detention time at the new water intake, would help to reduce the amount of algal laden water pumped into the reservoir. It would go from a stagnant water situation that exists in the present impoundment, where the algal bloom gets a head start before it goes into the reservoir, to a free flowing situation,where the algal bloom would not likely happen, before the water is pumped into the reservoir.

This has been and continues to be a long process and I looking forward to the endpoint. For me, hopefully this would be the removal of the Ballville Dam.

I encourage the members of the Fremont City Council to think clearly and act in the best interests of Fremont's citizens, and to not be swayed by outside influences who have been doing their best to derail this project from the beginning some 14 years ago.

Response:
Thank you for your comments. Impact to wetlands due to the Ballville Dam Project is an important consideration regardless of the alternative proposed and has been investigated at length by the cooperating agencies and the project consultant Stantec, Inc. Although we and our partners continue working together to address and develop the proposed mitigation plan for impacts to wetlands, please refer to the "Wetland Mitigation" section on page 10 of this ROD for the current status of wetland mitigation discussions, and the EIS section 5.2.2 for the anticipated wetland impacts under the Proposed Action.

Name: Mehling, M.
Comment:
I AM EVEN MORE AGAINST TAKING OUT THE DAM OUT MORE THEN EVER WITH WHAT HAPPENED IN TOLEDO, WE NEED TO HAVE A SECOND WATER SOURCE, HOW ABOUT PUTTING IT UP FOR A VOTE! I LIVE IN BALLVILLE AND HAVE NO SAY. ALL PEOPLE WORRY ABOUT IS THE MONEY, NOT DOING THE RIGHT THING. IF THE DAM IS REMOVED YOU WILL BE MAKING A BIG! MISTAKE DON'T DO IT, FIX IT!

Response:
Thank you for your comments. Water Supply for the local community must be by nature a top concern for the City of Fremont. The cooperating agencies have worked together to understand this topic in the context of the FEIS purpose and need and possible impacts on the water intake structure for the off-channel reservoir. Please see Section 4.13 of the FEIS for a description of the affected environment and Section 5.13 of the FEIS for a description of the environmental consequences of each alternative related to water supply. This topic also is discussed in Appendix B2.

Name: Gonya, C.
Comment:
I am a farmer downstream of the Ballville Dam. Part of the property I own consists of Sandusky River Marshland. I strongly disagree with the FEIS thinking on the release of the silt behind the dam into the Sandusky River.

The exact flow of that silt cannot be predicted and much of it will end up in the river or bay marshland. Everything has now changed since 500,000 people in Toledo, Ohio were subjected to a water supply that was poisoned by the harmful alga blooms. That is the wake-up call. No more business as usual.

Our Lake Erie and Sandusky Bay water system is sick. The marshland is vital for its health. The marshland acts as a filtering system. Why would you want to damage the system that is helping the river, bay and lake, when the waterway is under attack from the HABs. The silt behind the dam would never be allowed on farm fields, because of the combined heavy metals, DDT components, and phosphates and nitrates. **Why would you let it flow through some of the finest marshland in the world?**

Your job is to protect the marshlands and keep the water clean. Now, is not the time to go releasing a mile long stretch of silt 30 feet deep into the Sandusky River--not when the toxins in the water make national news. Please redo your study, since the situation with Sandusky River, Bay and Lake Erie has so dramatically changed. No more risks. No more errors.

Response:
Thank you for your comments, we believe the FEIS is a thorough document analyzing the Ballville Dam Project from a National Environmental Policy Act perspective. The cooperating agencies have worked diligently since project scoping began in October 2011 to engage the community, develop alternatives, analyze those alternatives, and disseminate the anticipated impacts, including impacts related to harmful algal blooms. Projected impacts described in the

FEIS are based on the best scientific information available, and numerous on-site studies have been completed to be as accurate as possible in modeling and estimating future conditions resulting from each alternative.

In regards to the seasonal algal blooms you identify, the primary reason for the increased incidence of HABs in the western basin is associated with increases in Dissolved Reactive Phosphorus (DRP), or phosphorus that is dissolved in the water and highly bioavailable (Daloglu et al. 2012). The phosphorus associated with the sediments stored behind the Ballville Dam is particulate phosphorus, or phosphorus that is adsorbed to the sediment, and therefore, much less bioavailable than the DRP fraction is.

While phosphorus cycling in a lake or riverine system can be complicated by a number of things, such as flow rate etc., the properties of phosphorus in water are relatively well understood. The phosphate ion (PO4) is a highly reactive anion and the sorption properties of sediment are important for understanding p-retention capacity, and this capacity is highly dependent upon the dissolved oxygen environment. When dissolved oxygen levels in the environment are high (>2 ppm dissolved oxygen), PO4 is strongly bound to both clay particles (and subsequent iron particles – called the iron sink), and is considered to be in particulate form. As long as the environment remains oxic (>2 ppm dissolved oxygen), any phosphate in sediments will be trapped by the iron trap. Recall that the particulate form of phosphorus is much less bioavailable for algal production. Conversely, when dissolved oxygen levels in the environment are low (<2 ppm dissolved oxygen), phosphorus will move to the dissolved state due to iron redox (Fe3, which binds PO4, goes to Fe2, which releases the PO4 as dissolved Phosphorous). In the current situation, the sediment behind the dam is anoxic (has low dissolved oxygen) as you go deeper in the sediment. Therefore, due to the redox situation described above, the phosphorous that would be bound to iron in the oxygenated environment, becomes dissolved Phosphorous in the low oxygen environment. This remains as dissolved phosphorous until dissolved oxygen concentrations get above 2 ppm, and then the "iron trap" cycle is reinitiated. With dam removal and sediment mobilization, the sediment will re-oxygenate and the "iron trap" will be initiated, with dissolved phosphorous being bound and becoming particulate phosphorous. Given these dynamics associated with the phosphorus cycle and the high iron content in sediments behind the dam (Evans and Gottgens 2007) the expectation is that dam removal will have a minimal impact on the dissolved reactive phosphorus and harmful algal blooms.

In addition to chemical characteristics of the phosphorous several other lines of evidence suggest that Ballville Dam will have minimal impact on the size and extent of HABs. Sediment loads are not expected to increase appreciably over background as a result of demolition of Ballville Dam. Sediment that is exported from Ballville Dam will occur in response to seasonal stream flow patterns and will primarily occur during the cooler months when algal growth is not a concern. Not all of the sediment will reach Lake Erie as some will be stored on floodplain, bars, or islands or dispersed throughout the river and bays.

It should also be noted that the Ohio Lake Erie Phosphorus Task Force II Report (2013) concluded that "there are multiple contributors to phosphorus into Lake Erie but agriculture is the leading source due to the majority of the land use in agriculture in the Maumee River (~80%) and is key to achieving substantive reductions." Further, the International Joint Commission

Report “A Balanced Diet for Lake Erie: Reducing Phosphorus Loadings and Harmful Algal Blooms” (2014), identifies that the single largest source of dissolved reactive phosphorus that generates harmful algal blooms in the western basin of Lake Erie is the Maumee River (http://www.ijc.org/files/publications/2014%20IJC%20LEEP%20REPORT.pdf). Additionally, the USACE-funded Study “Influence of Open-Lake Placement of Dredged Material on Western Lake Erie Basin Harmful Algal Blooms” (Ecology and Environment and LimnoTech 2014) also found that the Maumee River is the dominant source of bioavailable phosphorus contributing to HABs and that the open-lake placement of dredged material does not contribute to the development of HABs in the Western Basin of Lake Erie. Lastly, the International Joint Commission (2014) also notes that while their report focuses on phosphorus, they recognize that stressors other than nutrients also can adversely affect the water quality and ecology of Lake Erie, including but not limited to hydrologic alteration through dams.

Regarding the impact of the sediment on downstream marshes, Herdendorf (1987) states: “The upper end of Sandusky Bay possesses one of the largest concentrations of coastal wetlands on Lake Erie. The wetlands fringe the entire shoreline of Muddy Creek Bay and extend several kilometers up the estuaries of the Sandusky River.” The freshwater wetlands (marshes) of Lake Erie were formed in the deltas of rivers that flow into the lake and into protected shallow areas. Many wetland areas in Lake Erie are now managed and protected from water level changes by artificial dikes (Mitsch and Gosselink 1993). The upper reaches of the estuaries in Muddy Bay contain both diked and undiked marshes. Again Herdendorf (1987) explains: “If it were not for the network of dikes, it is likely that the erosive action of waves would eliminate much of the wetland vegetation in Sandusky Bay. The ability to regulate water levels in managed marsh units has proven to be a useful tool in altering species composition and thereby increasing waterfowl food and nesting cover. Most of the diked marshes are owned by shooting clubs and managed predominantly for waterfowl utilization and some mammal propagation. The waters of the western Lake Erie basin are more turbid than the other basins because of large sediment inputs from the Detroit, Maumee, Portage, and Sandusky Rivers, wave resuspension of silts and clay from the bottom, and high algal productivity.”

The pulses of sediment from the dam removal will be transported and dispersed into Muddy Bay and Sandusky Bay during high flow events. The silt stored behind the dam easily suspends in moving water, is highly mobile, and is slow to settle out of the water column. The amount of sediment available for transport is equivalent to approximately one year of sediment loading from the Sandusky River. The staged removal of the dam will limit the amount of sediment that mobilizes during each stage, resulting in multiple pulses of smaller amounts of sediment being transported into Muddy Bay and Sandusky Bay over the two year time frame.

One of the main causes of loss of coastal marshlands is wave action from Lake Erie. As stated above, many high quality marshes are protected from waves by man-made dikes, and these areas are actively managed for waterfowl and other game. Thus most wetlands are isolated from the increased supply. The remaining wetlands may be affected by sediment releases, however the magnitude is expected to be small and temporary due to:

- Staged removal of the dam that constrains the volume of sediment exported per unit time,
- Widespread dispersal of material that limits the amount of deposition at any location, and

• The distance to the project area allows for diminution of the sediment wedge.

Regarding sediment disposition, including anticipated impacts to the ecosystem, please refer to section 5.1.2 and 5.3.2 of the FEIS as well as Appendix A11. This was one of the primary concerns noted during project scoping and we have worked to understand and communicate the anticipated impacts of sediment in many sections of the FEIS.

Impact to wetlands due to the Ballville Dam Project is an important consideration regardless of the alternative proposed and has been investigated at length by the cooperating agencies and the project consultant Stantec, Inc. Although we and our partners continue working together to address and develop the proposed mitigation plan for impacts to wetlands, please refer to the "Wetland Mitigation" section on page 10 of this ROD for the current status of wetland mitigation discussions, and the EIS section 5.2.2 for the anticipated wetland impacts under the Proposed Action.

Name: Babione, S.
Comment:
Impact of removal of Ballville Dam

My name is Sue P. Babione, 2447 Buckland Avenue, Fremont, OH 43420. I am writing this email on behalf of myself, my son, Michael at this same address; and neighbor Carol Dixon, 2425 Buckland Avenue, Fremont, OH 43420.

We are requesting that a supplemental Final Environmental Impact Study be issued. This request is being made to reflect the current nature of what is now happening with Lake Erie, Sandusky Bay and the Sandusky River.

The FEIS released on August 1 was followed by a local disaster on August 2, 2014, when the drinking water for Toledo, Ohio, contained 3.1ppb of microcystin toxins and the residents were notified to not use the water for any purpose. Water safety and water supply issues are of major concern in many parts of the country; and this geographic area is critical.

The harmful alga bloom was fueled by an excess of phosphorous in Lake Erie, Sandusky Bay and the Sandusky River. At the same time, a 100 mile dead zone exists in the center of Lake Erie; it cannot rebound if more harm is inflicted.

Wetlands filter the Sandusky Bay and Lake Erie. Yet, the FEIS proposes millions of tons of phosphorous silt behind the Ballville Dam be released into the Sandusky River. The silt will flow into Sandusky River, Muddy Creek, Sandusky Bay and Lake Erie. It will enter the marshlands along the River and the Bay. No one can accurately predict where the silt will go and what harm the silt will have to the wetlands filtering system. This is an unknown and a risk that cannot be taken. We implore you to be cautious and considerate of the many residents who would be effected with a serious health risk.

Response:

Thank you for your comments, we believe the FEIS is a thorough document analyzing the Ballville Dam Project from a National Environmental Policy Act perspective. The cooperating agencies have worked diligently since project scoping began in October 2011 to engage the community, develop alternatives, analyze those alternatives, and disseminate the anticipated impacts, including impacts related to harmful algal blooms, and do not believe a supplemental EIS is warranted at this time. Projected impacts described in the FEIS are based on the best scientific information available, and numerous on-site studies have been completed to be as accurate as possible in modeling and estimating future conditions resulting from each alternative.

In regards to the seasonal algal blooms you identify, the primary reason for the increased incidence of HABs in the western basin is associated with increases in Dissolved Reactive Phosphorus (DRP), or phosphorus that is dissolved in the water and highly bioavailable (Daloglu et al. 2012). The phosphorus associated with the sediments stored behind the Ballville Dam is particulate phosphorus, or phosphorus that is adsorbed to the sediment, and therefore, much less bioavailable than the DRP fraction is.

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In addition to chemical characteristics of the phosphorous several other lines of evidence suggest that Ballville Dam will have minimal impact on the size and extent of HABs. Sediment loads are not expected to increase appreciably over background as a result of demolition of Ballville Dam. Sediment that is exported from Ballville Dam will occur in response to seasonal stream flow patterns and will primarily occur during the cooler months when algal growth is not a concern.

Not all of the sediment will reach Lake Erie as some will be stored on floodplain, bars, or islands or dispersed throughout the river and bays.

It should also be noted that the Ohio Lake Erie Phosphorus Task Force II Report (2013) concluded that "there are multiple contributors to phosphorus into Lake Erie but agriculture is the leading source due to the majority of the land use in agriculture in the Maumee River (~80%) and is key to achieving substantive reductions." Further, the International Joint Commission Report "A Balanced Diet for Lake Erie: Reducing Phosphorus Loadings and Harmful Algal Blooms" (2014), identifies that the single largest source of dissolved reactive phosphorus that generates harmful algal blooms in the western basin of Lake Erie is the Maumee River (http://www.ijc.org/files/publications/2014%20IJC%20LEEP%20REPORT.pdf). Additionally, the USACE-funded Study "Influence of Open-Lake Placement of Dredged Material on Western Lake Erie Basin Harmful Algal Blooms" (Ecology and Environment and LimnoTech 2014) also found that the Maumee River is the dominant source of bioavailable phosphorus contributing to HABs and that the open-lake placement of dredged material does not contribute to the development of HABs in the Western Basin of Lake Erie. Lastly, the International Joint Commission (2014) also notes that while their report focuses on phosphorus, they recognize that stressors other than nutrients also can adversely affect the water quality and ecology of Lake Erie, including but not limited to hydrologic alteration through dams.

The pulses of sediment from the dam removal will be transported and dispersed into Muddy Bay and Sandusky Bay during high flow events. The silt stored behind the dam easily suspends in moving water, is highly mobile, and is slow to settle out of the water column. The amount of sediment available for transport is equivalent to approximately one year of sediment loading from the Sandusky River. The staged removal of the dam will limit the amount of sediment that mobilizes during each stage, resulting in multiple pulses of smaller amounts of sediment being transported into Muddy Bay and Sandusky Bay over the two year time frame.

One of the main causes of loss of coastal marshlands is wave action from Lake Erie. As stated above, many high quality marshes are protected from waves by man-made dikes, and these areas are actively managed for waterfowl and other game. Thus most wetlands are isolated from the increased supply. The remaining wetlands may be affected by sediment releases, however the magnitude is expected to be small and temporary due to:

- Staged removal of the dam that constrains the volume of sediment exported per unit time,
- Widespread dispersal of material that limits the amount of deposition at any location, and
- The distance to the project area allows for diminution of the sediment wedge.

Regarding sediment disposition, including anticipated impacts to the ecosystem, please refer to section 5.1.2 and 5.3.2 of the FEIS as well as Appendix A11. This was one of the primary concerns noted during project scoping and we have worked to understand and communicate the anticipated impacts of sediment in many sections of the FEIS.

Impact to wetlands due to the Ballville Dam Project is an important consideration regardless of the alternative proposed and has been investigated at length by the cooperating agencies and the project consultant Stantec, Inc. Although we and our partners continue working together to

address and develop the proposed mitigation plan for impacts to wetlands, please refer to the "Wetland Mitigation" section on page 10 of this ROD for the current status of wetland mitigation discussions, and the EIS section 5.2.2 for the anticipated wetland impacts under the Proposed Action

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Name: Chudzinski, M.
Comment:
I find it appalling that the ODNR and the EPA are recommending the removal of the Ballville Dam as recommended by the Environmental Impact Study from Stantec.

Let's forget all of the Scientific Facts on why it should not be removed, The Silt issue, The Water Capacity issue, The political issue and yes, the fish issue.

This study was conducted by the former administration with the guidance of the ODNR's Fish and Wildlife Division to conclude that the Dam would be removed. This is irrefutable.

Your own study on fish migration in the Sandusky River concludes that the Walleye cannot make it very far upstream of the Dam. The Silt, once released will do more harm to the Fish spawning resulting in less Walleye in the Lake.

This is counterproductive.

The EPA by allowing the contaminated Silt to move downstream will cause an increase in the Alga Bloom in Lake Erie and other Toxins and pollution that will be reintroduced to the River, Bay and Lake.

This is also contrary to their Mission.

The ODNR does not care about the economic impact of this Dam removal on the Taxpayers of the City of Fremont. This issue of the Dam removal is only about Fish. Why should the taxpayers of Fremont be saddled with the sole burden of paying for this fiasco that NOBODY knows the total cost of?

This is where our State Government has gone wrong.

I would hope that you do some serious Sole searching and realize that your decision will adversely affect more than you think. Your Agenda has consequences.

Response:
Thank you for your comments, we believe the FEIS is a thorough document analyzing the Ballville Dam Project from a National Environmental Policy Act perspective. The cooperating agencies have worked diligently since project scoping began in October 2011 to engage the community, develop alternatives, analyze those alternatives, and disseminate the anticipated impacts. Projected impacts described in the FEIS are based on the best scientific information

available, and numerous on-site studies have been completed to be as accurate as possible in modeling and estimating future conditions resulting from each alternative.

Regarding sediment disposition, including anticipated impacts to the ecosystem, please refer to section 5.1.2 and 5.3.2 of the FEIS as well as Appendix A11. This was one of the primary concerns noted during project scoping and we have worked to understand and communicate the anticipated impacts of sediment in many sections of the FEIS.

Impacts to aquatic communities are anticipated under each of the four fully analyzed alternatives. Please refer to Section 4.3.2.2 of the FEIS for a description of the affected environment specific to aquatic wildlife and Section 5.3 of the FEIS for a description of these expected impacts related to each specific alternative presented.

In regards to the seasonal algal blooms you identify, the primary reason for the increased incidence of HABs in the western basin is associated with increases in Dissolved Reactive Phosphorus (DRP), or phosphorus that is dissolved in the water and highly bioavailable (Daloglu et al. 2012). The phosphorus associated with the sediments stored behind the Ballville Dam is particulate phosphorus, or phosphorus that is adsorbed to the sediment, and therefore, much less bioavailable than the DRP fraction is.

While phosphorus cycling in a lake or riverine system can be complicated by a number of things, such as flow rate etc., the properties of phosphorus in water are relatively well understood. The phosphate ion (PO4) is a highly reactive anion and the sorption properties of sediment are important for understanding p-retention capacity, and this capacity is highly dependent upon the dissolved oxygen environment. When dissolved oxygen levels in the environment are high (>2 ppm dissolved oxygen), PO4 is strongly bound to both clay particles (and subsequent iron particles – called the iron sink), and is considered to be in particulate form. As long as the environment remains anoxic (>2 ppm dissolved oxygen), any phosphate in sediments will be trapped by the iron trap. Recall that the particulate form of phosphorus is much less bioavailable for algal production. Conversely, when dissolved oxygen levels in the environment are low (<2 ppm dissolved oxygen), phosphorus will move to the dissolved state due to iron redox (Fe3, which binds PO4, goes to Fe2, which releases the PO4 as dissolved Phosphorous). In the current situation, the sediment behind the dam is anoxic (has low dissolved oxygen) as you go deeper in the sediment. Therefore, due to the redox situation described above, the phosphorous that would be bound to iron in the oxygenated environment, becomes dissolved Phosphorous in the low oxygen environment. This remains as dissolved phosphorous until dissolved oxygen concentrations get above 2 ppm, and then the “iron trap” cycle is reinitiated. With dam removal and sediment mobilization, the sediment will re-oxygenate and the “iron trap” will be initiated, with dissolved phosphorous being bound and becoming particulate phosphorous. Given these dynamics associated with the phosphorus cycle and the high iron content in sediments behind the dam (Evans and Gottgens 2007) the expectation is that dam removal will have a minimal impact on the dissolved reactive phosphorus and harmful algal blooms.

In addition to chemical characteristics of the phosphorous several other lines of evidence suggest that Ballville Dam will have minimal impact on the size and extent of HABs. Sediment loads are not expected to increase appreciably over background as a result of demolition of Ballville Dam.

Sediment that is exported from Ballville Dam will occur in response to seasonal stream flow patterns and will primarily occur during the cooler months when algal growth is not a concern. Not all of the sediment will reach Lake Erie as some will be stored on floodplain, bars, or islands or dispersed throughout the river and bays.

It should also be noted that the Ohio Lake Erie Phosphorus Task Force II Report (2013) concluded that "there are multiple contributors to phosphorus into Lake Erie but agriculture is the leading source due to the majority of the land use in agriculture in the Maumee River (~80%) and is key to achieving substantive reductions." Further, the International Joint Commission Report "A Balanced Diet for Lake Erie: Reducing Phosphorus Loadings and Harmful Algal Blooms" (2014), identifies that the single largest source of dissolved reactive phosphorus that generates harmful algal blooms in the western basin of Lake Erie is the Maumee River (http://www.ijc.org/files/publications/2014%20IJC%20LEEP%20REPORT.pdf). Additionally, the USACE-funded Study "Influence of Open-Lake Placement of Dredged Material on Western Lake Erie Basin Harmful Algal Blooms" (Ecology and Environment and LimnoTech 2014) also found that the Maumee River is the dominant source of bioavailable phosphorus contributing to HABs and that the open-lake placement of dredged material does not contribute to the development of HABs in the Western Basin of Lake Erie. Lastly, the International Joint Commission (2014) also notes that while their report focuses on phosphorus, they recognize that stressors other than nutrients also can adversely affect the water quality and ecology of Lake Erie, including but not limited to hydrologic alteration through dams.

Impacts to the local economy are anticipated under each of the four fully analyzed alternatives. Please refer to Section 4.7 of the FEIS for a description of the affected environment specific to socioeconomic factors and Section 5.7 of the FEIS for a description of these expected impacts related to each specific alternative presented.

Name: Krawczyk, J., U.S. Army Corps of Engineers
Comment:
Regarding proposed secondary/indirect wetland impacts related to the proposed project, the Corps Public Notice (Processing No. 2011-00046) dated July 2, 2014 (public comment period ending August 1, 2014) indicated that:

a. There would be 53.9 acres of indirect impacts to Section 10 wetlands, 52.49 acres of which would occur to Category 3 emergent/scrub-shrub/forested wetlands.

b. Anywhere from 23 – 55 acres of wetland could form after the drawdown, but the Applicant's (consultant's) professional, conservative opinion was that at least 14.5 acres of "in-kind" mitigation would exist in the former impoundment area after dam removal.

The USFWS FEIS document (Appendix B2) indicated that: "The Service and the City of Fremont are continuing to work with the Corps and Ohio EPA to develop a mitigation plan that will meet the requirements of Section 401, 404, and 10, described in the context of the 401 and 404 permits. Implementation of the plan will be included as a condition to the 404/401/10 permits. At the time of this EIS, the wetland mitigation plan had not been finalized, so the details

of the final mitigation plan are not available." This Corps comment is being provided to the Service to:

a. Inform the Service that as of the date of this comment (August 29, 2014), the Corps has not yet received or accepted a finalized wetland mitigation plan from the City of Fremont.

b. Reiterate the Corps' desire for the City of Fremont to continue their exploration of mitigation options, amounts, and values above and beyond the 14.5 acres of mitigation proposed in the March 6, 2014 “Ballville Dam Removal and Sandusky River Restoration Project Pre-Construction Notification – 401/404 Permit Application” application submittal.

Response:
Thank you for your comments. We continue to work with the USACE and the City to finalize a wetland mitigation plan that is acceptable to all partners.

Name: Sherck, J.
Comment:
The Federal Aviation Administration was inappropriately excluded from the study.

First, my understanding is that NEPA requires the input of all federal governmental agencies that would be affected by the decision to remove the Ballville Dam. The Federal Aviation Administration (FAA) is primarily responsible for the advancement, safety and regulation of civil aviation. The FAA to my knowledge did not have input into this study. Dam removal may create a latent and grave hazard to aviation at the Fremont Airport.

During certain times of the year, vast numbers of ducks, geese and other waterfowl inhabit the impoundment area behind the dam. At times the entire impoundment waters are covered with migrating flocks of these birds. I have personally witnessed these events, and estimated the number of waterfowl to be in the thousands, rather than the hundreds when this happens. At other times during the year, there are only a small number of waterfowl. If the dam is removed, the impoundment area will drain and the waterfowl will no longer use the area.

The FEIS concludes the following at 5.3.2.2 Post-Construction Effects (5-43,44): “Ponded open water habitat for waterfowl that exists behind the dam would be eliminated once the dam is removed. Waterfowl would be unlikely to congregate in this portion of the Sandusky River during migration after dam removal**, but they would be very likely to congregate at the new off channel reservoir located very near the former impoundment area.”** (emphasis added).

Unfortunately, the Northern most corner of Fremont’s “new, off channel reservoir”, virtually abuts the Fremont Airport. In fact, that portion of the reservoir appears to be no more that 200 yards from a grass runway (that is still in use), and approximately 2000 feet from the paved runway. One can imagine the hazard that will be created if the off channel reservoir is full of ducks and geese and they all fly off at once into the path of a plane taking off or landing. In light of the FEIS conclusion, the FAA ought to be made a party to this procedure and the permit process should be stopped until this matter is resolved.

It is a known fact that waterfowl can be a hazard to aircraft. It is a known fact that the new pond area for waterfowl (once the dam is removed) will be a matter of yards from the grassy airstrip at the Fremont Airport. It is a known fact that the FAA has not been made a part of this study, nor has any consideration been given in the report to this aviation hazard.

The events of August 2, 2014 have made the release of the FEIS an anachronism. Major sections of the FEIS must now be reconsidered and rewritten in light of the August 2nd disaster.

Studies do not take place in a vacuum. The FEIS was released on Friday August 1, 2014. On Saturday, August 2, 2014, just hours after the release of the FEIS, half a million citizens awoke in Toledo, Ohio to discover that their drinking water had been invaded with microcystin toxins from Harmful Alga Blooms (HABs), rendering the water unfit and dangerous to drink. Some of these citizens had already drunk the water, showered in it and made their breakfasts with it, before finding out that it had 3.1 ppb of microcystin toxins—over three times the World Health Organization's limit of 1 ppb.

A major crisis occurred, which included a declaration of a State of Emergency, mobilization of the National Guard, the shutting down of businesses, and the elimination of all non emergency surgical procedures in Toledo and area hospitals dependant upon Toledo's public water. This dominated national news headlines.

The microcystin poisoning of Toledo's drinking water, coupled with the 100-mile dead zone in the Central Basin, now leaves little doubt that Lake Erie is either seriously ill or dying. The story continues to unfold. As of August 27, 2014, residents of Pellee Island in Lake Erie have been warned not to drink their water as the toxic Lake Erie Algae has reached their shore. (See August 27, 2014 edition of the Toledo Blade).

This is a wake up call. It can no longer be business as usual. Governmental agencies entrusted with the protection of our water and environmental resources can no longer proceed on projects without knowing the outcome of the actions they take. They can no longer risk actions that will lead to unknown results. They must know what will happen, or they must not take the risk.

<u>No one knows what effect the phosphorus-laden silt behind the Ballville Dam will have on the HAB's once it is released.</u>

The Final Environmental Impact Study (FEIS) in answer to my questions concerning what effect, direct or indirect, will the sediment release have on the HAB's in the lower portion of the Sandusky River, Sandusky Bay and Lake Erie, (see Appendix B2, page 22) admitted that phosphorus was the primary reason for the increased incidence of HAB's in the western basin. The FEIS distinguishes between Dissolved Reactive Phosphorus (DRP) and particulate phosphorus in the sediments stored behind the dam, with the DRP being notably more bioavailable than the particulate phosphorus stored in the silt. (See Appendix B2, page 32).

The FEIS then goes on to say: "Regarding the recommendation to initiate a specific study on the effects that the release of silt will have on the lower river, bay and lake algae blooms. A quantitative analysis of the interaction of these variables is not feasible using currently available scientific tools." (See Appendix B2, page 32).

Also, at the August 21, 2014, Ohio Environmental Protection Agency's Section 401 Clean Water Act Permit Hearing, the spokesperson for the Ohio EPA admitted that no specific studies were conducted to determine what percent of the Ballville Dam impoundment silt would become bioavailable once it was released and reacted to the variables in the river water. Not only that, but the EPA spokesperson admitted that there were no such studies on any Ohio Rivers where silt loads were released.

This is now an unknown. We know that an amount of the particulate phosphorous will become bioavailable, over time, once it is released into the Sandusky River water. We do not know how that will effect the HAB's, since we do not know how much of it will be transformed. After the disaster of August 2, 2014, this is a high risk that cannot be taken simply because of the enormous amount of phosphorous contained in the silt.

Further, this risk cannot be taken, given the urgent focus areas of the Great Lakes Restoration Initiative (GLRI) of "cleaning up toxics and areas of concern" (not adding to them).

Laboratory tests can be designed to determine how reactive the thousands of tons of phosphorous locked in the impoundment silt will become, once it is released into the Sandusky River Water Shed.

I contacted a chemist from Chicago, Mr. John Clulow. John Clulow has worked for over 40 years in industry. Mr. Clulow explained that chemical tests to obtain valuable information are designed all the time.

Within 10 minutes, he roughed out a test which would yield needed information on how soluble the particulate phosphorous will become once it is released and subject to factors such as pH, presence of cations, oxygen levels, organics, temperature, etc. He explained that the complexity of this balance means that the potential for particulate phosphates to form soluble phosphate can only be meaningfully estimated through *in situ* laboratory experiments using representative, homogenized core samples of the sediment and representative samples of Sandusky River water. Mr. Clulow went on to say that such a study, conducted under laboratory conditions with an appropriate control without sediment, would yield better estimates of the amounts of phosphate that could become available to HAPs over time that would be obtained by simply considering these particulates in their existing, buried state without regard to the effect of changes in conditions following dispersion.

The following is John Clulow's rough draft of such experiment, that of course, can be Modified, when consulting with others in the field to yield an even more particularized result:

"The level of ionic, solubilized phosphorus in the sediment is not directly indicative of the levels that will be produced when sediment particles containing phosphorus are fully dispersed in Sandusky River water. It is likely that solubility equilibria will shift toward solubilization as a result of interaction with cationic species such as **Na+, Mg++, NH4+, H+ (pH)**."

This process could easily be verified by taking a deep core sample of the sediment, determining the initial phosphate ion concentration in deionized water, and then suspending a dilute sediment sample (10-20% by weight) under constant agitation in Sandusky River water in an open container. The process could be accelerated by warming the water. After a suitable time period with evaporation being replaced by river water periodically, the phosphate ion concentration could be determined and compared with the initial result. This experiment would be compared with a control consisting of river water with no sediment added.

In the absence of results from an experiment such as this and upon the sole basis of direct measurement of initial levels of sediment soluble phosphorus, there would be considerable risk that the already tenuous conditions in the bay and lake would be further exacerbated."

Therefore, to release the impoundment silt without knowing how reactive it will become in the river water is simply a risk that cannot be tolerated with the current situation of a very sick Lake Erie. If the worsening of Lake Erie continues, there will come a tipping point—the straw the breaks the camels back. Will the release of this silt be the tipping point? We don't know. But, we can find out with proper testing. Without the testing, the release of the silt, at best, will be reckless conduct by governmental agencies designed to protect our water, because it will be taking an unknown risk.

The wetlands above the Ballville Dam and the marshes below the dam face great risk.

"Restoring wetlands and other habitats" is another urgent focus area of the GLRI. (see FEIS 1.1) This does not mean destroying wetlands above the dam and endangering the thousands of acres of pristine marshlands below the dam with the release of a silt flow a mile long, a football field wide, and 30 feet high in some places. Nothing is more important to clean water than wetlands. "Wetlands improve water quality in nearby rivers and streams, and thus have considerable value as filters for future drinking water. " EPA Economic Benefits of Wetlands EPA-843-F-06-004 Office of Water May 2006.

If for no other reason, this permit ought be denied, as well over 50 acres of wetlands above the dam will be impacted by the removal of the dam due to hydrologic alteration. FEIS 5-12 to 5-18

"When water enters a wetland, it slows down and moves around wetland plants. Much of the suspended sediment drops out and settles to the wetland floor." (EPA-843-F-06-004 Office of Water May 2006).

There are thousands of acres of pristine marshland that surround Muddy Creek, the Sandusky River on the way to Sandusky Bay, and Sandusky Bay. These marshes comprise an intricate water filtering system that will be put at risk for sediment damage. Why? Because no one can

say with certainty where the sediment will deposit itself. No one knows. Just like no one knows, with certainty, where the river channel will be when the dam is removed.

It is unknown where the sediment wedge will ultimately go. It is unknown where the sediment will primarily settle out. To act without knowing, in the context of the current condition of a weakened, sick or dying Lake Erie, is reckless. It is reckless because one does know that if the sediment enters the marshes it will deposit itself on those pristine wetlands and cause harm to the "kidneys" of the Sandusky River/Bay water system—at perhaps the water system's most vulnerable moment in their thousands of years of existence.

The Ballville Dam does not impede Sandusky River Walleye from running upsteam of the dam, according to the seminal scientific study produced by the ODNR.

The FEIS continues to refuse to recognize that the Ohio Department of Natural Resource's (ODNR's) prime motivation for the removal of the Ballville Dam is the ODNR's single-minded determination to provide the Sandusky River Walleye Stock an expanded area to spawn upstream of the Ballville Dam. The Lake Erie Walleye is the cornerstone of the Ohio's billion-dollar sport fishing industry. The FEIS refuses to recognize this, even though ODNR publications and materials, including emails, recovered through information act requests, establish this to be the driving force behind this project.

While the FEIS acknowledges the economic importance of Walleye, it refuses to come clean and say that this project originated with the ODNR's desire to expand Walleye habitat upstream and that motivation continues to be the prime mover of this project. Instead the FEIS makes over arching comments on how all species of fish will benefit from the dam's removal. (Appendix B-33-34).
Following the disaster of August 2, 2014, total transparency is now necessary. Business, as usual, no longer works. Lake Erie is no longer robust. It is seriously ill.

Why is it necessary to establish that the expansion of Sandusky River walleye stock is the principal force behind the Ballville Dams' removal project? It is critical to those who will be the ultimate decision makers on the dam's fate to know exactly why this project was undertaken in the first place. The ultimate decision, on removal or repair of the dam, will include a myriad of factors: multiple environmental risks weighed against potential environmental benefits, water supply issues, financial costs, litigations risks, etc.

Yet, if it turns out that the dam is removed, and the walleye do not swim past the site of the old dam. Then, serious risks would have been taken to achieve the underlying, principal benefit of the project—which would have been all for naught.

The ODNR has conducted and presented its own seminal study, a tagged Walleye study, which concludes that: "Remarkably, it appears that river-spawning walleye do not ascend far enough upstream to be impeded by the Ballville Dam." The furthermost upstream point in any of the walleyes' migration was 2.5 km downstream from the dam. Spawning Behavior of Lake Erie Walleye in the Sandusky River and Bay, Eric J. Weimer, Sandusky fisheries Research Unit ODNR, February 1, 2010. That is correct, the Ballville Dam does not impede walleye spawning

because the walleye do not go anywhere near the dam. The study also refers to The Ohio State Study, which confirmed no walleyes at the dam location.

Despite the science of the ODNR's own study, which was corroborated by the Ohio State Study, the FEIS concludes: "There is a significant probability, although with some uncertainty, that Walleye will migrate above the Ballville Dam for reproductive purposes, however, the population response may take some time. (my emphasis added.) Appendix B2-36.

There is no question that suitable walleye spawning beds exist upstream of the dam. If, however, the walleye do not go upstream of the dam, as the scientific studies disclose, then it would make little difference if those new beds existed in the Mississippi River or the Colorado River.

You do the science and accept the results, or you deny the science and then do what ever you want to do at the public's peril. The latter is what is happening here! This has to stop. Since August 2nd, it cannot be business as usual. Lake Erie may be dying. Lake Erie may be at the tipping point. Sandusky River Walleye make up only 1% of Lake Erie's Walleye population.

The conclusion of the FEIS: "There is a significant probability, although with some uncertainty, that Walleye will migrate above the Ballville Dam for reproductive purposes, however, the population response may take some time."
(my emphasis added) is an artful linguistic dodge and cover. It translates into: "We want it to happen, but we don't know."

Again, after August 2nd, knowing that you don't know and still taking the risk is no longer acceptable. It is reckless behavior. Lake Erie can no longer survive on public policy making that doesn't know the answers, but takes the risks anyway.

If the Dam is removed the City of Fremont will be left with significantly less than a 100day supply of water. Despite the contentions of the FEIS, The City's water supply will not survive a serious drought situation.

After the events of August 2nd, it is clear that a sufficient supply of clean and abundant water is critical to the survival of any modern city. If a city runs out of water for even a few days it is major calamity. Many residents of Toledo drove to Fremont during the crisis of August 2nd to buy bottled water or fill their water jugs from public drinking fountains.

The Ballville Dam and impoundment area have provided the City of Fremont with a reliable, public water supply for a half-century. To rely on the ARCADIS (2008) model contained in the FEIS at 5-10 and to then state that Fremont would survive its worst three droughts is not correct.

The ARCADIS (2008) model has current demands of 3.9 MGD and future demands in the year 2024 as 9.1 MGD. Presently the City of Fremont for its own needs is now using 4 MGD and is contractually obligated to provide Fremont Energy Power plant an additional 6.7 MGD for a total use and obligation of 10.7 MGD. The City of Fremont is already exceeding the 9.1 MGD 2024 estimate, with its current usage and contractual arrangements

with Fremont Energy. The City of Fremont has now been providing the Fremont Energy Plant with water for well over a year.

Further, I previously submitted to the DEIS three e-mails from ODNR planner Leonard Black who developed a 100day "bare minimum" water supply figure necessary for Fremont to survive serious drought situations. Mr. Black not only set the 100day minimum, but he also warned about the need for a much larger water supply if the Fremont Energy Plant came on line.

The FEIS, at 4-58, sets the capacity of Fremont's upground reservoir at 730 MG. At the 10.7 MGD current city usage and contractual supply to Fremont Energy, Fremont only has a 68day supply of water, far below what is necessary to survive serious droughts. Fremont clearly needs the 80mg of water in the dam impoundment area, as that would increase the supply to 76 days.

The FEIS fails to recognize the true importance of the Ballville Dam as it relates to Fremont's water supply. The 80 MG in the impoundment area, while important in a drought situation, is not the only critical factor; it is the high capture rate system that is in play with the dam. That is, during a drought situation, virtually all the water flowing down the river is caught in the area behind the dam where the gravity flow pipe transports it to the filtration plant. This is a high capture rate system or nearly a 100% capture rate during droughts.

Compare this to the pump system in place at the new reservoir. That is a low capture rate system or, perhaps, a no-capture system during droughts. During a drought situation, the river water would be encased in silt if the dam was removed, and the water would have to be pumped out of that silt.

This is problematic as the FEIS cannot, at this time, predict where the channel will be or finally settle once the dam is removed. In fact, no assessment of property owners' new boundaries will be made for 4 or 5 years, due to the fluid nature of the situation. Yet, the intake for the new reservoir is stationary, a short distance from the river's edge. If the channel settled on the opposite side of the river, this would be disastrous for the city during droughts. The FEIS alludes to mitigation measures to be implemented if the intake is not able to draw water (FEIS 5-10), but those efforts would not achieve the 100% capture rate currently provided by the dam during times of severe drought.

Additionally, if the Ballville Dam were removed the city would be relying on a single reservoir for its water source. There would be very few, if any, cities the size of Fremont in Ohio or elsewhere that would find itself in a similar situation. What aggravates the situation is that the new reservoir was redesigned six times during its construction; it ended up being built on a non-suitable site of karst topography. The city sued the architect for malpractice; the cost went from early estimates of 8 to 13 million dollars to a final bill of 45 million. A liner system was installed with no leak detection system and built without a clay bottom; and, the reservoir has only been functioning for a little over a year at this point.

Again, we have a known. The City has never run out of water with the Ballville Dam impoundment system in place. Now, we have a question. Will the city survive the next serious drought if it is fulfilling its legal obligations of providing its customers with 10.7 MGD and has only a 68day supply of water? I submit the answer will be NO. The risk of a city running out of water is a risk no city should take. Nor, should that risk be imposed on any city.

Conclusion

You cannot now, with all of these unknowns, remove the Ballville Dam and let the silt flow free. The risk of the phosphorous igniting the HAB's is too great. You do not know what it's impact will be on the harmful alga. If Lake Erie reaches the tipping point and dies, walleye running up the Sandusky River will be the least of anyone's problems.

In situ laboratory testing of the silt must be conducted. The risk is too great, and no such study has been done in any Ohio River.

You cannot now, at this time, let the silt flow free into the existing walleye spawning beds north of Fremont and into the pristine marshlands that filter the Sandusky River, Muddy Bay and Sandusky Bay. You cannot, at this time, destroy the wetlands above the dam.

You cannot now, at this time, release a glacier of silt loaded with heavy metals and two forms of decaying DDT on the premise that it's no worse than what is already in the Lake. August 2, 2014 changed all that. It can no longer be business as usual.

You cannot now, put a city the size of Fremont, Ohio at risk of running out of water for a significant period of time during a drought. Not now. Not after the events of August 2nd, 2014.

You can no longer "not know" and still proceed to take the risk. After August 2, 2014 that conduct becomes reckless conduct. If the FEIS does not follow through with the GLRI goals of cleaning up toxics in our water (rather than adding to them), protecting watershed from polluted run-off (rather than letting loose the contaminated silt) and restoring wetland (rather than destroying some and endangering others), then what policy report will?

In light of the events of August 2nd, 2014, much of the FEIS needs to be reconsidered and a supplemental report issued calling for more tests and study on these vital issues.

Response:
Thank you for your comments, we believe the FEIS is a thorough document analyzing the Ballville Dam Project from a National Environmental Policy Act perspective. The cooperating agencies have worked diligently since project scoping began in October 2011 to engage the community, develop alternatives, analyze those alternatives, and disseminate the anticipated impacts. Projected impacts described in the FEIS are based on the best scientific information available, and numerous on-site studies have been completed to be as accurate as possible in modeling and estimating future conditions resulting from each alternative.

This document was meant to develop and analyze alternatives to understand and then seek the least environmentally impactful option while meeting the purpose and need of the project (See Section 1.5 and 1.6 of the FEIS). We have incorporated views and ideas from the community as well as known entities with special expertise or jurisdiction as it relates to the project to help ensure a detailed and yet comprehensive reporting of the anticipated impacts of each alternative were incorporated. There has been ample opportunity for the Federal Aviation Administration (FAA) to comment on this project including public notices for scoping of the EIS, the Draft EIS, and the Final EIS. Despite this public outreach effort, no comments were received during the EIS Scoping, Draft EIS, or Final EIS comment periods by the FAA or the operator of the Fremont Airport. Construction of the off channel reservoir occurred prior to development of this EIS, and is not part of the alternatives analyzed. Therefore the potential for waterfowl to congregate at the reservoir and potential impacts on the airport if this were to occur should have been addressed at the time the reservoir project was being evaluated. Waterfowl commonly congregate at open water areas in this region, and this is likely to occur at the reservoir irrespective of the presence or absence of the Ballville Dam. While it is likely that waterfowl displaced from the former dam impoundment may use the new off channel reservoir, it is also probable that they will utilize other nearby wetlands or ponds as a stopover on their migrations.

Many stressors working in concert can lead to a suite of impacts on aquatic ecosystems. One example of an environmental stressor is the placement of Ballville Dam and other barriers to connectivity and natural hydrologic function in the Lake Erie Watershed. In general, it is the balancing of those varied stressors across the landscape that will ultimately aid either recovery or loss of ecosystem function and thereby impact available benefits to society. Through this FEIS we sought to assess the proposed removal of one known stressor in the ecosystem and improve our understanding of the consequences of removal or rehabilitation of that structure. Based on the analysis, the least environmentally impactful and most environmentally beneficial alternative relating to the Ballville Dam is the Proposed Action “Incremental Dam Removal with Ice Control Structure.”

In regards to the seasonal algal blooms you identify, the primary reason for the increased incidence of HABs in the western basin is associated with increases in Dissolved Reactive Phosphorus (DRP), or phosphorus that is dissolved in the water and highly bioavailable (Daloglu et al. 2012). The phosphorus associated with the sediments stored behind the Ballville Dam is particulate phosphorus, or phosphorus that is adsorbed to the sediment, and therefore, much less bioavailable than the DRP fraction is.

While phosphorus cycling in a lake or riverine system can be complicated by a number of things, such as flow rate etc., the properties of phosphorus in water are relatively well understood. The phosphate ion (PO4) is a highly reactive anion and the sorption properties of sediment are important for understanding p-retention capacity, and this capacity is highly dependent upon the dissolved oxygen environment. When dissolved oxygen levels in the environment are high (>2 ppm dissolved oxygen), PO4 is strongly bound to both clay particles (and subsequent iron particles – called the iron sink), and is considered to be in particulate form. As long as the environment remains oxic (>2 ppm dissolved oxygen), any phosphate in sediments will be trapped by the iron trap. Recall that the particulate form of phosphorus is much less bioavailable for algal production. Conversely, when dissolved oxygen levels in the environment are low (<2

ppm dissolved oxygen), phosphorus will move to the dissolved state due to iron redox (Fe3, which binds PO4, goes to Fe2, which releases the PO4 as dissolved Phosphorous). In the current situation, the sediment behind the dam is anoxic (has low dissolved oxygen) as you go deeper in the sediment. Therefore, due to the redox situation described above, the phosphorous that would be bound to iron in the oxygenated environment, becomes dissolved Phosphorous in the low oxygen environment. This remains as dissolved phosphorous until dissolved oxygen concentrations get above 2 ppm, and then the "iron trap" cycle is reinitiated. With dam removal and sediment mobilization, the sediment will re-oxygenate and the "iron trap" will be initiated, with dissolved phosphorous being bound and becoming particulate phosphorous. Given these dynamics associated with the phosphorus cycle and the high iron content in sediments behind the dam (Evans and Gottgens 2007) the expectation is that dam removal will have a minimal impact on the dissolved reactive phosphorus and harmful algal blooms.

In addition to chemical characteristics of the phosphorous several other lines of evidence suggest that Ballville Dam will have minimal impact on the size and extent of HABs. Sediment loads are not expected to increase appreciably over background as a result of demolition of Ballville Dam. Sediment that is exported from Ballville Dam will occur in response to seasonal stream flow patterns and will primarily occur during the cooler months when algal growth is not a concern. Not all of the sediment will reach Lake Erie as some will be stored on floodplain, bars, or islands or dispersed throughout the river and bays.

It should also be noted that the Ohio Lake Erie Phosphorus Task Force II Report (2013) concluded that "there are multiple contributors to phosphorus into Lake Erie but agriculture is the leading source due to the majority of the land use in agriculture in the Maumee River (~80%) and is key to achieving substantive reductions." Further, the International Joint Commission Report "A Balanced Diet for Lake Erie: Reducing Phosphorus Loadings and Harmful Algal Blooms" (2014), identifies that the single largest source of dissolved reactive phosphorus that generates harmful algal blooms in the western basin of Lake Erie is the Maumee River (http://www.ijc.org/files/publications/2014%20IJC%20LEEP%20REPORT.pdf). Additionally, the USACE-funded Study "Influence of Open-Lake Placement of Dredged Material on Western Lake Erie Basin Harmful Algal Blooms" (Ecology and Environment and LimnoTech 2014) also found that the Maumee River is the dominant source of bioavailable phosphorus contributing to HABs and that the open-lake placement of dredged material does not contribute to the development of HABs in the Western Basin of Lake Erie. Lastly, the International Joint Commission (2014) also notes that while their report focuses on phosphorus, they recognize that stressors other than nutrients also can adversely affect the water quality and ecology of Lake Erie, including but not limited to hydrologic alteration through dams.

Regarding the impact of the sediment on downstream marshes, Herdendorf (1987) states: "The upper end of Sandusky Bay possesses one of the largest concentrations of coastal wetlands on Lake Erie. The wetlands fringe the entire shoreline of Muddy Creek Bay and extend several kilometers up the estuaries of the Sandusky River." The freshwater wetlands (marshes) of Lake Erie were formed in the deltas of rivers that flow into the lake and into protected shallow areas. Many wetland areas in Lake Erie are now managed and protected from water level changes by artificial dikes (Mitsch and Gosselink 1993). The upper reaches of the estuaries in Muddy Bay contain both diked and undiked marshes. Again Herdendorf (1987) explains: "If it were not for

the network of dikes, it is likely that the erosive action of waves would eliminate much of the wetland vegetation in Sandusky Bay. The ability to regulate water levels in managed marsh units has proven to be a useful tool in altering species composition and thereby increasing waterfowl food and nesting cover. Most of the diked marshes are owned by shooting clubs and managed predominantly for waterfowl utilization and some mammal propagation. The waters of the western Lake Erie basin are more turbid than the other basins because of large sediment inputs from the Detroit, Maumee, Portage, and Sandusky Rivers, wave resuspension of silts and clay from the bottom, and high algal productivity."

The pulses of sediment from the dam removal will be transported and dispersed into Muddy Bay and Sandusky Bay during high flow events. The silt stored behind the dam easily suspends in moving water, is highly mobile, and is slow to settle out of the water column. The amount of sediment available for transport is equivalent to approximately one year of sediment loading from the Sandusky River. The staged removal of the dam will limit the amount of sediment that mobilizes during each stage, resulting in multiple pulses of smaller amounts of sediment being transported into Muddy Bay and Sandusky Bay over the two year time frame.

One of the main causes of loss of coastal marshlands is wave action from Lake Erie. As stated above, many high quality marshes are protected from waves by man-made dikes, and these areas are actively managed for waterfowl and other game. Thus most wetlands are isolated from the increased supply. The remaining wetlands may be affected by sediment releases, however the magnitude is expected to be small and temporary due to:

- Staged removal of the dam that constrains the volume of sediment exported per unit time,
- Widespread dispersal of material that limits the amount of deposition at any location, and
- The distance to the project area allows for diminution of the sediment wedge.

Impact to wetlands due to the Ballville Dam Project is an important consideration regardless of the alternative proposed and has been investigated at length by the cooperating agencies and the project consultant Stantec, Inc. Although we and our partners continue working together to address and develop the proposed mitigation plan for impacts to wetlands, please refer to the "Wetland Mitigation" section on page 10 of this ROD for the current status of wetland mitigation discussions, and the EIS section 5.2.2 for the anticipated wetland impacts under the Proposed Action

Impacts to aquatic communities are anticipated under each of the four fully analyzed alternatives. Please refer to Section 4.3.2.2 of the FEIS for a description of the affected environment specific to aquatic wildlife and Section 5.3 of the FEIS for a description of these expected impacts related to each specific alternative presented.

Water Supply for the local community must be by nature a top concern for the City of Fremont. The cooperating agencies have worked together to understand this topic in the context of the FEIS purpose and need and possible impacts on the water intake structure for the off-channel reservoir. Please see Section 4.13 of the FEIS for a description of the affected environment and Section 5.13 of the FEIS for a description of the environmental consequences of each alternative related to water supply. This topic also is discussed in Appendix B2.

Name: Appleby, P.
Comment:
Please take the right amount of time to complete the reserch on the water and slit below the dam.

Response:
Thank you for your comments.

Name: Kessler, J., Ohio Department of Natural Resources
Comment:
Project: The project entails restoring and expanding upon self-sustaining fishery resources within the lower Sandusky River by providing fish passage, restoring system connectivity and natural hydrologic processes resulting in a net gain riverine habitat.

Location: The project is located in Ballville Township, Sandusky County, Ohio.
The Ohio Department of Natural Resources (ODNR) has completed a review of the above referenced project. These comments were generated by an inter-disciplinary review within the Department. These comments have been prepared under the authority of the Fish and Wildlife Coordination Act (48 Stat. 401, as amended; 16 U.S.C. 661 et seq.), the National Environmental Policy Act, the Coastal Zone Management Act, Ohio Revised Code and other applicable laws and regulations. These comments are also based on ODNR's experience as the state natural resource management agency and do not supersede or replace the regulatory authority of any local, state or federal agency nor relieve the applicant of the obligation to comply with any local, state or federal laws or regulations.

Fish and Wildlife: The Division of Wildlife (DOW) has the following comments.

The Division of Wildlife has reviewed the Ballville Dam Final Environmental Impact Statement and fully supports the USFWS' selected Proposed Action – Incremental Dam Removal with Ice Control Structure. The Proposed Action, as developed through the Final Environmental Impact Statement, will allow for unobstructed fish passage to an additional 22 miles of high quality habitat upstream of the dam on the Sandusky River, will have positive local and regional impacts to fish and wildlife resources in the Sandusky River Watershed and Lake Erie, and is consistent with the Division of Wildlife's mission. Additionally, the Division of Wildlife's position is that the Proposed Action is the best option to minimize the impact of the project on downstream fish and wildlife habitat and water quality, and that the restoration of in-stream habitat and connected coastal wetlands within the restored channel above the current dam (as proposed in the mitigation plan) will more than offset the indirect impacts to upstream habitats. Lastly, the Division of Wildlife believes that the Final Environmental Impact Statement adequately addresses potential impacts (based upon the best available information) of the project upon water resources, wildlife and fisheries, rare, threatened, and endangered species, land use, recreation, socioeconomics, cultural and historic resources, visual resources, transportation, air quality, noise, and human health and safety.

The ODNR Natural Heritage Database has a record within the Sandusky River at the project site for a population of the Greater Redhorse (*Moxostoma valenciennesi*), a state threatened fish. The DOW recommends no in-water work from at least March 15 to June 30 to reduce impacts to indigenous aquatic species and their habitat.

The project is within the range of the Indiana bat (*Myotis sodalis*), a state and federally endangered species. The following species of trees have relatively high value as potential Indiana bat roost trees: Shagbark hickory (*Carya ovata*), Shellbark hickory (*Carya laciniosa*), Bitternut hickory (*Carya cordiformis),* Black ash (*Fraxinus nigra*), Green ash (*Fraxinus pennsylvanica*), White ash (*Fraxinus americana*), Shingle oak (*Quercus imbricaria*), Northern red oak (*Quercus rubra*), Slippery elm (*Ulmus rubra*), American elm (*Ulmus americana*), Eastern cottonwood (Populus deltoides), Silver maple (*Acer saccharinum*), Sassafras (*Sassafras albidum*), Post oak (*Quercus stellata*), and White oak (*Quercus alba*). Indiana bat habitat consists of suitable trees that include dead and dying trees with exfoliating bark, crevices, or cavities in upland areas or riparian corridors and living trees with exfoliating bark, cavities, or hollow areas formed from broken branches or tops. If suitable trees occur within the project area, the Division of Wildlife recommends that these trees be conserved. If suitable habitat occurs on the project area and trees must be cut, the Division of Wildlife recommends cutting occur between October 1 and March 31. If suitable trees must be cut during the summer months, the Division of Wildlife recommends a net survey be conducted between June 1 and August 15, prior to cutting. Net surveys should incorporate either nine net nights per square 0.5 kilometer of project area, or four net nights per kilometer for linear projects. If no tree removal is proposed, the project is not likely to impact this species.

The project is within the range of the piping plover (*Charadrius melodus*), a state and federally endangered bird species, and the Kirtland's warbler (*Setophaga kirtlandii*), a state and federally endangered species. These species do not nest in the state but only utilize stopover habitat as they migrate through the region. Due to the location, and the type of work planned, this project is not likely to impact these species.

The project is within the range of the eastern massasauga (*Sistrurus catenatus*), a state endangered species and a federal candidate snake species. The eastern massasauga uses a range of habitats including bogs, fens wet prairies and other wetlands, as well as drier upland habitat. Due to the location, and the type of work planned, this project is not likely to impact this species.

The project is within the range of the western banded killifish (*Fundulus diaphanous menona*), a state endangered species. Due to the location, this project is not likely to impact this species.

The project is within the range of the American bittern (*Botaurus lentiginosus*), a state endangered bird. Nesting bitterns prefer large undisturbed wetlands that have scattered small pools amongst dense vegetation. They occasionally occupy bogs, large wet meadows, and dense shrubby swamps. If this type of habitat will be impacted, construction should be avoided in this habitat during the species' nesting period of May 1 to July 31. If this type of habitat will not be impacted, the project is not likely to impact this species.

The project is within the range of the king rail (*Rallus elegans*), a state endangered bird. If wetland habitat will be impacted, construction should be avoided during the species' nesting period of May 1 to August 1. If no wetland habitat is in the vicinity of the project area, the project is not likely to impact this species.

The project is within the range of the northern harrier (*Circus cyaneus*), a state endangered bird. This is a common migrant and winter species. Nesters are much rarer, although they occasionally breed in large marshes and grasslands. Harriers often nest in loose colonies. If this type of habitat will be impacted, construction should be avoided in this habitat during the species' nesting period of May 15 to August 1. If this habitat will not be impacted, the project is not likely to impact this species.

Watercraft: The Division of Watercraft, Scenic Rivers Program has the following comments.

The Ohio Scenic Rivers Program supports the EIS proposed action of incremental dam removal with ice control structures. The Sandusky River is a designated State Scenic River from Harrison Smith Park in Upper Sandusky, Wyandot County to Rodger Young Memorial Park in Fremont, Sandusky County. The purpose of the Scenic Rivers Program is to maintain this stretch of the Sandusky River in a natural state to maintain the biological integrity of this high quality system. The proposed action in the EIS best supports this purpose and we recommend this action be carried forward.

Soil and Water: The Division of Soil and Water offers the following comment.

The proposed dam removal and river restoration project appear to be located within the one-percent-annual-chance (100-year) floodplain of the Sandusky River as shown on the attached Flood Insurance Rate Map (FIRM) panel for Sandusky County, Ohio and Incorporated Areas (Community Panel Number 39143C0260 with an effective date of April 18, 2011).

Based upon the site map identifying the location of the proposed development, the project appears to be located within Zone A. To maintain compliance with the National Flood Insurance Program (NFIP) minimum criteria, it is necessary to assure that the flood carrying capacity within the altered or relocated portion of the watercourse is maintained. Work within and outside of the channel, as depicted in the mapped Special Flood Hazard Area (SFHA), must be evaluated by the community floodplain manager to ensure compliance.

Sandusky County is a participant in the NFIP and has adopted local floodplain management regulations, which establish permit requirements and performance standards that meet or exceed the minimum NFIP criteria. For additional information regarding local floodplain management requirements, please contact Sandusky County's designated Floodplain Manager, Tucker Fredericksen, at (419) 334-8963.

Response:
Thank you for your comments.

Regarding the recommendation that no in-water work from at least March 15 to June 30, we have worked to reduce and eliminate activities as best as possible during this restrictions. However, the Proposed Action does currently identify ramp construction (See section 3.1.1.2.2) during this approximate time period. If this work continues to be planned for the time frame between March 15 and June 30, the applicant will seek a waiver from the in water work restriction for ramp construction.

Impacts of the Proposed Action on State-listed species including the Greater Redhorse and Indiana bat are addressed in EIS Section 5.4.3.1. We appreciate that you provided guidance that the project will have no effect on the piping plover, Kirtland's warbler, eastern massasauga, and Western banded killifish.

Regarding the American bittern, king rail, and northern harrier, habitat suitable for these species is not found within the project area. The vast majority of the wetland habitat found in and around the project area are forested riparian wetlands adjacent to the Sandusky River. Marshes and grasslands are not present within the project area. Therefore the project should not impact these species.

Regarding the Ohio Scenic Rivers Program, the Sandusky River's Scenic River designation is discussed in EIS Sections 4.2.2.2 and 5.2.2.2.2. The Ohio Scenic Rivers Program is within a division of ODNR, and as a cooperating agency our team has coordinated with them to ensure the appropriate steps are taken to meet this designation while also achieving the purpose and needs for the project. No work within the river will occur until ODNR has provided written approval of the work.

Regarding the National Flood Insurance Program (NFIP), we will continue to coordinate as needed with the with local floodplain administrator as to whether or not a letter of map revision is needed as a result of the proposed action and to address problems as they arise within our authorities regarding the NFIP.

Name: Pelloso, L., U.S. Environmental Protection Agency
Comment:
The U.S. Environmental Protection Agency (USEPA) has reviewed the Final Environmental Impact Statement (Draft EIS) for the Ballville Dam Project located in Sandusky County, Ohio. This letter provides our comments on the Final EIS, pursuant to the National Environmental Policy Act (NEPA), the Council on Environmental Quality's NEPA Implementing Regulations (40 CFR 1500-1508), and Section 309 of the Clean Air Act.

The Ballville Dam is located approximately 18 river miles upstream of Lake Erie, in Ballville Township, upstream of the City of Fremont, in Sandusky County, Ohio. Its location falls within a 70-mile stretch of the Sandusky River, designated as one of 10 reaches of state-designated scenic

river in Ohio. It was built on the Sandusky River between 1911 and 1913. Originally built as a run-of-the-river hydroelectric generation facility, it was soon abandoned as a hydroelectric facility because seasonal flow in the river was insufficient to meet power generating requirements of the plant. The City of Fremont (City) bought the land and facilities in 1959 and re-purposed the dam to provide the City's water supply. Since the purchase of the Ballville Dam by the City in 1959, the impounded area has been used as a source of public water. Due to ongoing drinking water quality violations, the Ohio Environmental Protection Agency (OEPA) ordered the City to construct an off stream reservoir to serve as a drinking water source. As of late 2013, this new off-stream raw water reservoir, now constructed, is currently the primary source of drinking water for the City of Fremont. The Ballville Dam and the impounded area are no longer necessary as a public water supply for the City of Fremont.

Progressive deterioration of the dam and an adjacent north bank seawall has been noted in successive inspections by the Ohio Department of Natural Resources (ODNR), beginning in 1980. The last known maintenance performed on the structure occurred in 1969. The dam is currently classified by ODNR as a Class I structure; this is the highest hazard rating due to the probable loss of life if the dam were to fail during a flood event. In addition to safety issues, the Ballville Dam di vides the aquatic ecology of the lower Sandusky River, altering biological functions and impacting both riparian and aquatic habitats otherwise provided by a historically-connected Sandusky River watershed. The dam represents an impassable barrier to upstream movement of all aquatic organisms and to downstream movement of many aquatic organisms, and has altered natural hydrologic and sediment transport functions in the Sandusky River.

The Final EIS selected Alternative 4 - Incremental Dam Removal with installation of an ice control structure (ICS) as the Proposed Action for providing fish passage upstream and downstream of the Ballville Dam location, restoring natural hydrologic and sediment transport regimes, and addressing dam safety and liability. The Proposed Action would be divided into three phases with each phase having multiple objectives for meeting dam removal goals. In summary, the phases are: I) the initial notching of the Ballville Dam; 2) sediment stabilization, dam removal, and ice control structure construction; and 3) sea wall modification along the north bank of the river upstream of the dam removal, and restoration of the project area. Phase 3 would also include the demolition of any remnants of Tucker Dam, if necessary.

USEPA provided comments on the Draft EIS to USFWS on March 6, 2014. USEPA appreciates USFWS's diligence in responding to public comments raised during the Draft EIS comment period. Additionally, USEPA commends the coordination efforts and the level of detail provided in USFWS's responses to USEPA's comments on the Draft EIS. Nearly all of the comments provide by USEP A in our Draft EIS comment letter had a thorough response provided. We recommend that USFWS and the City of Fremont address our remaining concerns and issues as project design, refinement, and environmental permitting progress. USEPA's comments on the Final EIS are as follows:

WETLAND AND WATER RESOURCE IMPACTS MITIGATION REQUIREMENTS

- The Proposed Action will require direct impacts to 0.67 acre of wetlands (six wetlands) and 2.34 acres of the Sandusky River, and indirect impacts to 53.90 acres of wetlands (nine wetlands).

Indirect wetland impacts are attributed primarily to the loss of wetland hydrology associated with the drop in water level following dam removal. Many wetland functions and values will be lost if these existing wetlands revert to upland areas. In addition to wetland fill, the loss of (via indirect impacts to) over 50 acres of wetlands, primarily high quality Class 3 forested wetlands, continues to be of significant concern to USEPA. Page 5-24 of the Final EIS states, *"In summary,* 49.9 *acres of forested floodplain wetland would be subject to indirect impacts from loss of hydrology; potentially* 35.8 *acres of new wetland could be formed, which totals a net loss of* 14 *floodplain [wetland} acres."* Additionally, Page 5-25 of the Final EIS states that the overall project could result in a net loss of over 30 acres of wetland.

While the Final EIS states that there is the potential for the development of new wetlands in areas currently inundated by the Ballville Dam impoundment (in the range of 22.80 to 54.60 acres), there is substantial uncertainty as to the quality, location, and acreage of wetlands that may actually develop post dam removal. Furthermore, even if the maximum expected acreage of 54.60 acres of new wetlands forms, the expected net gain of wetland would only be 0.65 acre. It is highly likely that the project, if implemented as proposed, will result in a net loss of natural wetlands.

The Final EIS briefly notes that the current proposal for wetland mitigation is creation of at least 14.5 acres of "in-kind" wetland within the former impoundment. Additionally, "out-of-kind" mitigation proposing implementation of measures that improve and restore the water quality of the Sandusky River is also proposed. No specific mitigation for indirect wetland impacts has been, or is currently, proposed. At the time of the Final EIS, wetland mitigation plans had not been finalized, and discussion on mitigation requirements with the regulatory agencies were ongoing. However, wetland mitigation proposals currently appear to allow a net loss of wetland acreage associated with the project.
Recommendations: While USEP A supports the overall goals of this project, USEPA recommends that USFWS and the City of Fremont provide wetland mitigation for both direct and indirect wetland impacts in a manner that ensures no net loss of wetland. Out-of-kind mitigation may be determined to be appropriate for impacts to the Sandusky River itself. USEPA supports mitigation ratios proposed for direct wetland impacts. Wetland mitigation for indirect wetland impacts should, however, also be provided. Any updated mitigation information and plans should align with information (or application amendments) to be provided to both the U.S. Army Corps of Engineers (USACE) and the Ohio Environmental Protection Agency (OEP A) for Clean Water Act Section 404 permitting and Section 401 Water Quality Certification. To the extent mitigation commitments are finalized by the time the Record of Decision (ROD) is finalized, mitigation obligations should be committed to in the ROD.

- Both the Draft and Final EISs state that there is the potential for development of new wetlands in areas currently inundated by the Ballville Dam impoundment (in the range of 22.80 to 54.60 acres). While USEPA concurs that predictions regarding the exact size, location, and type of newly-formed wetlands post -dam removal are uncertain, we reiterate our concerns over the lack of substantive commitments in both the Draft and Final EIS that ensure project implementation, including mitigation, results in no net loss of wetlands.

Recommendations: **USEP A encourages additional coordination between USFWS, the City of Fremont, and the regulatory agencies to ensure that project implementation does not result in a net loss of wetland. Wetland mitigation for both direct and indirect wetland impacts should be committed to and undertaken to ensure no net loss of wetlands through project implementation. Commitments for both direct and indirect wetland impacts should be committed to in the ROD.**

THREATENED AND ENDANGERED SPECIES

- Section 5.4.2.1.1 of the Final EIS discusses tree clearing restriction dates to be utilized (no clearing between April 1 to October 1) in order to avoid impacts to the Indiana Bat and Northern Long-Eared Bat. For any tree clearing deemed necessary between April 1 to October 1, specific actions will be undertaken, including habitat assessments, emergence surveys (if deemed necessary), and specific tree cutting protocols due to the presence or absence of emerging bats from specific trees.
  Recommendation: **USEP A requests that these restriction dates and specific actions be committed to in the ROD. All tree removals scheduled during the dates of April 1 to October 1 should also be coordinated with the Ohio Department of Natural Resource (ODNR).**

Response:

Thank you for your comments. A "Wetland Mitigation" section has been included in the ROD on page 10 to provide a detailed update on the status of mitigation discussions. The Service, USACE, City, ODNR and Ohio EPA continue to engage in discussion and evaluate of wetland mitigation components of the project. Further, in the ROD the Service commits to adopt whatever final mitigation plan is determined to be acceptable by the USACE, and to require that it be implemented as part of the Proposed Action in order for Federal funding to be expended on this project.

In the ROD, the Service has committed to implement all mitigation measures as identified in FEIS table 6.2, including protective measures for Indiana bat and Northern long-eared bat. We have also committed to coordinating with ODNR if the seasonal tree clearing timeframes cannot be followed.

Name: Form letter received with minimal text variation* from 433 Commenters.
*It is our interpretation that the intent of the comment did not vary substantively between the variations in text. The most received version of the comment is provided here along with the response.

Comment:
I'm writing to provide public comment for the Ballville Dam Removal. It is necessary to remove the Ballville dam in order to restore the hydrology and ecology of the Sandusky River - back to its original natural state. I applaud your plans to include restoration of mussel populations, allow fish passage, and expand macroinvertebrate habitats.

However, I am concerned about the release of sediments behind Ballville Dam and strongly feel that you should consider water quality as the project's top priority.

Sediment and silt have accumulated behind the dam for more than 100 years and yet the permit applicant has not provided comprehensive sediment data and modeling to determine what pollutants and types of contaminants are present and their impact to downstream ecosystems. High loads of phosphorous and nitrogen contribute to yearly algae blooms in Lake Erie. In addition, the release of toxic sediments could be expensive, destructive, and detrimental to our environment and public health. It is vital that we understand how this dam's collected sediment could impact Ohio's greatest natural resource: Clean Water.

In addition, the applicant proposes an "incremental" release of silts and water from the impoundment, through a notching process, but does not suggest any kind of gate installed on site. Preventative measures like installing a check gate to slow or halt flow volume are vital to ensure that our water quality and our surrounding communities are protected.

I support the removal of the Ballville dam if it improves water quality. Please ensure that:

1.) All sediment and silt materials meet standards of the Clean Water Act prior to being released. If any material exceeds the Clean Water Act standards, then it will be removed and placed in a confined disposal facility rather than released.

2.) Measures, such as a gate, will be implemented to stop the flow of sediments from the impoundment, in case unexpected problems occur.

Response:
Thank you for your comments.

Sediment analysis was conducted by Evans and Gottgens (2007) on Ballville impoundment sediment and included analysis for metals, pesticides, polychlorinated biphenyls (PCBs), and semi-volatile organic compounds, including polycyclic aromatic hydrocarbons (PAHs). No PAHs were detected. Table 4-6 in the FEIS describes the findings of the analysis. In summary, none of the maximum detected concentrations of metals or DDT breakdown products within the Ballville Dam impoundment exceeded consensus-based probable effect concentrations. Additionally, iron, lead, nickel and zinc were found below the appropriate sediment reference value for the Huron-Erie Lake Plateau ecoregion, where Ballville Dam is located. The maximum detected concentration of chromium also approximates background reference conditions as represented by the SRV. Applications for permits for activities which may adversely affect the quality of waters of the United States will be evaluated for compliance with applicable effluent limitations and water quality standards. The USACE and OEPA will conduct this analysis as part of their Water Quality Public Interest Review (33 CFR 320.4), and will report the findings in their Environmental Assessment for the Section 10/404/401 permits

Regarding sediment disposition, including anticipated impacts to the ecosystem, please refer to section 5.1.2 and 5.3.2 of the FEIS as well as Appendix A11. Specifically regarding the analysis

of dredging as one sediment management option, please refer to section 2.3.7 as well as Appendix A2.

In regards to the seasonal algal blooms you identify, the primary reason for the increased incidence of HABs in the western basin is associated with increases in Dissolved Reactive Phosphorus (DRP), or phosphorus that is dissolved in the water and highly bioavailable (Daloglu et al. 2012). The phosphorus associated with the sediments stored behind the Ballville Dam is particulate phosphorus, or phosphorus that is adsorbed to the sediment, and therefore, much less bioavailable than the DRP fraction is.

While phosphorus cycling in a lake or riverine system can be complicated by a number of things, such as flow rate etc., the properties of phosphorus in water are relatively well understood. The phosphate ion (PO4) is a highly reactive anion and the sorption properties of sediment are important for understanding p-retention capacity, and this capacity is highly dependent upon the dissolved oxygen environment. When dissolved oxygen levels in the environment are high (>2 ppm dissolved oxygen), PO4 is strongly bound to both clay particles (and subsequent iron particles – called the iron sink), and is considered to be in particulate form. As long as the environment remains oxic (>2 ppm dissolved oxygen), any phosphate in sediments will be trapped by the iron trap. Recall that the particulate form of phosphorus is much less bioavailable for algal production. Conversely, when dissolved oxygen levels in the environment are low (<2 ppm dissolved oxygen), phosphorus will move to the dissolved state due to iron redox (Fe3, which binds PO4, goes to Fe2, which releases the PO4 as dissolved Phosphorous). In the current situation, the sediment behind the dam is anoxic (has low dissolved oxygen) as you go deeper in the sediment. Therefore, due to the redox situation described above, the phosphorous that would be bound to iron in the oxygenated environment, becomes dissolved Phosphorous in the low oxygen environment. This remains as dissolved phosphorous until dissolved oxygen concentrations get above 2 ppm, and then the “iron trap” cycle is reinitiated. With dam removal and sediment mobilization, the sediment will re-oxygenate and the “iron trap” will be initiated, with dissolved phosphorous being bound and becoming particulate phosphorous. Given these dynamics associated with the phosphorus cycle and the high iron content in sediments behind the dam (Evans and Gottgens 2007) the expectation is that dam removal will have a minimal impact on the dissolved reactive phosphorus and harmful algal blooms.

In addition to chemical characteristics of the phosphorous several other lines of evidence suggest that Ballville Dam will have minimal impact on the size and extent of HABs. Sediment loads are not expected to increase appreciably over background as a result of demolition of Ballville Dam. Sediment that is exported from Ballville Dam will occur in response to seasonal stream flow patterns and will primarily occur during the cooler months when algal growth is not a concern. Not all of the sediment will reach Lake Erie as some will be stored on floodplain, bars, or islands or dispersed throughout the river and bays.

It should also be noted that the Ohio Lake Erie Phosphorus Task Force II Report (2013) concluded that “there are multiple contributors to phosphorus into Lake Erie but agriculture is the leading source due to the majority of the land use in agriculture in the Maumee River (~80%) and is key to achieving substantive reductions.” Further, the International Joint Commission Report “A Balanced Diet for Lake Erie: Reducing Phosphorus Loadings and Harmful Algal

Blooms" (2014), identifies that the single largest source of dissolved reactive phosphorus that generates harmful algal blooms in the western basin of Lake Erie is the Maumee River (http://www.ijc.org/files/publications/2014%20IJC%20LEEP%20REPORT.pdf). Additionally, the USACE-funded Study "Influence of Open-Lake Placement of Dredged Material on Western Lake Erie Basin Harmful Algal Blooms" (Ecology and Environment and LimnoTech 2014) also found that the Maumee River is the dominant source of bioavailable phosphorus contributing to HABs and that the open-lake placement of dredged material does not contribute to the development of HABs in the Western Basin of Lake Erie. Lastly, the International Joint Commission (2014) also notes that while their report focuses on phosphorus, they recognize that stressors other than nutrients also can adversely affect the water quality and ecology of Lake Erie, including but not limited to hydrologic alteration through dams.

Gates have not been proposed as a means to control sediment export from the reservoir. Instead, the project has been phased over a 14 month period to limit the amount of sediment exported in any given storm event. During year one the dam will be notched on the south side approximately 20 feet wide and 10 feet deep. The dimensions of the notch are only large enough to convey approximately 2,000 cfs, which is large enough for approximately 90 percent of the summer and autumn discharge values but is not large enough for the larger storm flows that transport most sediment. This strategy constrains storm driven export because the impoundment would maintain backwater conditions during higher flows. Thus the notch effectively performs like a gate. A gate is not practical during Phase 2 demolition of the dam because of rapidly changing dimensions of the dam.
