



U.S. DEPARTMENT OF COMMERCE
National Oceanic and Atmospheric Administration
National Ocean Service
Office of Response and Restoration
Assessment and Restoration Division
290 Broadway, Rm 1831
New York, NY 10007

November 8, 2007

Kimberly D. Bose, Secretary
Federal Energy Regulatory Commission
888 First Street, N.E.
Washington, DC 20426

Dear Secretary Bose:

On behalf of the Department of Commerce, the National Oceanic and Atmospheric Administration's Office of Response and Restoration (NOAA OR&R), in its natural resource trustee capacity, works to protect and restore coastal resources from threats related to releases of hazardous substances and oil spills. NOAA OR&R appreciates the opportunity to comment on FERC's Study Plan Determination for the Massena Grasse River Hydroelectric Project, New York, Project No. 12607-001, October 19, 2007.

NOAA submitted comments on the January 2007 Massena Grasse River Hydroelectric Project Scoping Document 1 in a letter dated April 6, 2007. Subsequently NOAA commented on two May 2007 documents, FERC's Scoping Document 2 and the Town of Massena's 2007 Proposed Study Plan. We appreciate FERC's consideration of our agency's comments in preparing the Study Plan Determination for the Massena Grasse River Hydroelectric Project. Below are responses to FERC's comments on some of the study modifications requested by NOAA that were not incorporated into the Revised Study Plan.

Lake Sturgeon Movement and Spawning Study

The Grasse River sturgeon population is unique to this section of the St. Lawrence River system because it appears to be a self-sustaining spawning population. In a recent review paper on the ecology and behavior of lake sturgeon, Peterson et al. 2007 spoke about the effectiveness of fish passage for sturgeon. While the authors considered sturgeon passageways to have been effectively constructed on some low-head dams, they did not find support for currently available and effective passage associated with hydropower facilities and other high-relief dams and they implicate dam construction for habitat fragmentation and water quality degradation. The life history of sturgeon - their long life span, delayed maturation, and protracted spawning periodicity - and lack of information on juvenile habitat usage (Peterson et al. 2007) add to the complexity of study designs necessary to adequately characterize lake sturgeon habitat usage and recruitment within the Grasse River. For example, a single year sampling effort may not detect sporadic ingress of sturgeon into the Grasse River from the St. Lawrence due to their reproductive strategy and depleted populations. Spawning beds may not be used annually due to the size of the reproducing population. It is because of these concerns that we requested a greater level of effort in evaluating lake sturgeon movement and spawning.

NOAA's prior recommendation for additional continuous monitoring stations near the mouth of the Grasse River and upstream of the proposed project site in the vicinity of Louisville was not carried forward into the Revised Study Plan. The purpose of the proposed station near the mouth of the river was to track sturgeon movement between the Grasse River and the St. Lawrence River. Fixed stations are proposed at RM 1.8 and RM 7.8 in the Revised Study Plan. The 1.8 M location cannot affirmatively document movement between the Grasse and St. Lawrence Rivers due to its distance from the mouth. According to the Revised Study Plan, there is insufficient data presently to determine if the Grasse River sturgeon population consists of residents, non-residents or a mix of both. Tracking fish movement at the mouth of the Grasse River would provide a better picture of the number and frequency of sturgeon moving in and out of the Grasse River and age class structure of those fish. RM 7.8 falls within the reservoir created by dam construction while we proposed an additional monitoring station further upriver. The nexus of the fixed monitoring station at the mouth to the project is in determining the importance of the Grasse River to sturgeon that may inhabit the St. Lawrence River for part of their life cycle but could utilize the Grasse River for spawning. Alteration of flows associated with historical dam construction on the St. Lawrence River and its tributaries combined with the specific life history of lake sturgeon has contributed to impairment of spawning habitat and depleted population levels. Further alterations to the Grasse River environment could disrupt sturgeon movement to upstream spawning areas or could further isolate the Grasse River population with the potential in reduction in genetic diversity.

A fixed monitoring station upstream of the reservoir was intended to detect the movement of sturgeon between the upstream good quality habitat (e.g., long riffle area between Chase Mills and Madrid) and downstream areas. Lake sturgeon exhibit large home ranges and travel long distances to reach feeding and spawning areas. Migratory activities are also associated with seasonally searching out more favorable environmental conditions. Habitat usage and migration is linked to specific life stages and habitat availability (Peterson et al. 2007). A monitoring station at RM 7.8 may not be sufficient to capture random and non-random sturgeon movement upstream of RM 7.8 or inform us about the importance of upstream habitat to downstream fish and downstream habitat to upstream fish. Likewise, information collected at RM 7.8 may not be representative of results at a more upstream location. The request for additional level of effort is valid since these additional monitoring stations would provide a better understanding of the importance of the Grasse River habitat to the lake sturgeon population within the river proper and in the St. Lawrence downstream of the Moses Saunders Dam and thereby the impacts of dam construction on the lake sturgeon population.

NOAA previously submitted eight goals that we believed should have been addressed by the lake sturgeon plan. Some of the goals are included in the Revised Study Plan but some were not. The rationale for requesting studies on changes to habitat usage that might be triggered by Madrid Dam removal were offered for consideration to make FERC aware that the natural resource trustees, NOAA, NYSDEC, USFWS, and the St. Regis Mohawk Tribe are evaluating the feasibility of Madrid Dam removal as part of a natural resource damage assessment process under CERCLA. The designation of the upstream boundary of the MED study area is Madrid Dam because it is the first impassable barrier to fish. It seems that an alternative upstream boundary might have been selected if the Madrid Dam didn't exist or if removal was planned. We ask that FERC consider upstream expansion of the study area boundaries in future years if

we demonstrate further progress on selecting the Madrid Dam as a restoration project. Madrid Dam removal could alter the availability and quality of lake sturgeon habitat and could have implications to movement of lake sturgeon within the Grasse River and between the Grasse and St. Lawrence Rivers. Construction of the Massena Dam and removal of the Madrid Dam could impair some of the benefits in ecological services gained through dam removal including potential reduced habitat usage by fish in the lower Grasse.

Fish Community Study

NOAA previously recommended monthly sampling for baseline fish community studies and studies specific for mooneye (threatened in NYS), eel, eastern sand darter (threatened in NYS), and salmon. The purpose of this recommendation was to characterize habitat usage by a variety of resident and migratory species including state protected species. Since species have different home ranges and may migrate in and out of habitats on a daily or seasonal basis to find food, shelter, spawning, and refuge, or to adjust to variations in flow regimes, we were concerned that a more limited sampling design could overlook species requirements and fail to capture species with depleted or declining populations. Given FERC's reservations in carving out separate studies for some of these species, we await the findings of on-going studies to determine whether it would be appropriate to raise this issue in the future. FERC suggests that the Revised Study Plan is commensurate with fisheries investigations conducted by other hydroelectric project licensing applications. We could not confirm the comparability of the fish investigations proposed for the MED project relative to other dam licensing studies since the specific investigations referred to were not identified.

Water Quality

NOAA previously recommended collection of several water quality parameters because they are a benchmarks for fish and invertebrate habitat quality and suitability. Since the Revised Study Plan includes dissolved oxygen, temperature and pH measurements, NOAA will address our rationale for requesting measurement of suspended solids, nutrients and light attenuation. Dam construction can alter suspended solids, nutrients and light attenuation. Increased sedimentation and eutrophication in the impoundments and potential decreased sediment transport into habitats downstream of the dam alter fish and benthic communities (Gorman and Karr 1978, Bushaw-Newton 2002, Burroughs 2007). For example, the brook floater, a NY threatened freshwater mussel, is sensitive to siltation and eutrophication (<http://www.natureserve.org/explorer/servlet/NatureServe?searchName=ALASMIDONTA+VARICOSA>). Decreases in light attenuation due to increased nutrients, increases in chlorophyll a, and increased turbidity/suspended solids reduce the photic zone thereby impairing the extent and quality of aquatic vegetation habitat. Germination rates, seedling success, and vegetative establishment are influenced by water quality parameters and other biotic and abiotic factors. These vegetative beds support phytophilous invertebrates and are important fish spawning and nursery. See for example McFarland (2006) provides descriptions of habitat requirements for a common aquatic species, wild celery (*Vallisneria spiralis*).

Mussel Survey

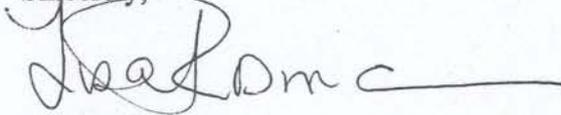
NOAA previously recommended that the entire project area between Madrid Dam and the mouth of the Grasse River be surveyed for mussels. The Revised Study Plan proposes to sample from Louisville to the location of the proposed dam. One reason for our broader study area request was due to concerns that dam construction would modify the flow of sediment and sediment-bound nutrients downstream of the dam and thereby alter mussel habitat. The Revised Study Plan does not address this. We were also concerned that dam construction could affect upstream fish migration and alter fish habitat. While the conversion of lotic habitat to lentic habitat would likely result in replacement of lotic species with lentic species, the reservoir would serve to further fragment the lotic habitat. Fish serve as hosts of the larval stage (glochidia) of mussels. Modifications to fish communities and impediments to passage can alter the distribution of mussels in the system and reduce the genetic diversity of the population. Since Madrid was the first impassable barrier, we proposed that as the upstream barrier rather than the Louisville location. Mussel beds are sometimes prevalent immediately downstream of dams as a consequence of restricted fish access further upstream. The 2007 mussel survey identified brook floater (*Alasmidonta varicosa*), a state threatened mussel, and black sandshell mussel (*Ligumia recta*), a species of greatest conservation need in the state of New York. Both were found in riffle habitat. The section of the Grasse between Chase Mills and Madrid supports a long riffle area that could support more of these individuals. Khym and Layzer (2000) demonstrated that suitability of some previously recognized fish hosts (white and black crappie, bluegill, largemouth bass) for black sandshell recruitment could not be demonstrated in the laboratory while sauger appeared to be a potentially suitable host. Walleye are a closely related species to sauger, are migratory, and theoretically might serve as a host. Given the special status afforded these two mussel species, it is possible that fish host limitations combined with habitat availability and fragmentation could further deplete the population. We request that FERC reconsider the study boundaries for mussels given the recent finding of two mussel species of particular regional interest to ascertain distribution and abundance in the stretch of river that is currently free-flowing without impediments to fish passage.

Floodplain/Ice Management Studies

NOAA previously requested the study area span the area from the Madrid Dam to the mouth of the Grasse River. The purpose for this request is that dam construction will alter how ice collects and moves in the river. The Dyna-Rice studies implemented for the Alcoa West PCB-contaminated site evaluated historic and current conditions in an effort to manage for future ice effects on contaminated sediments. These modeling efforts did not evaluate the effect of upstream dam construction on upstream or downstream ice conditions or on ice movement. While ice jam formation may be reduced downstream of the dam, the extent of this effect should be evaluated to the mouth since PCB-contaminated sediments extend that distance downstream. The modified ice environment upstream could cause increased flooding, increased shoreline erosion, modifications to erosional and depositional patterns and associated changes to in-stream and riparian habitats.

If you have any questions, I can be reached at 212-637-3259 or lisa.rosman@noaa.gov.

Sincerely,



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