Federal Energy Regulatory Commission
Washington, DC 20426
August 28, 2009

OFFICE OF ENERGY PROJECTS

Project No. 12829-001 – Louisiana
Greenville Bend Hydrokinetic Project
Free Flow Power Corporation

Project No. 12861-001 – Louisiana
Scotlandville Bend Hydrokinetic Project
FFP Project 28, LLC

Project No. 12921-001 – Louisiana/Mississippi
Kempe Bend Hydrokinetic Project
FFP Project 32, LLC

Project No. 12930-001 – Mississippi/Arkansas
Ashley Point Hydrokinetic Project
FFP Project 41, LLC

Project No. 12938-001 – Mississippi/Tennessee
Hope Field Point Hydrokinetic Project
FFP Project 42, LLC

Project No. 12915-001 – Missouri/Illinois
Flora Creek Light Hydrokinetic Project
FFP Project 54, LLC

Project No. 12912-001 – Missouri/Illinois
McKinley Crossing Hydrokinetic Project
FFP Project 57, LLC

Subject: Scoping Document *2* for Greenville Bend (P-12829), Scotlandville Bend (P-12861), Kempe Bend (P-12921), Ashley Point (P-12930) Hope Field Point (P-12938), Flora Creek Light (P-12915), and McKinley Crossing (P-12912) Hydrokinetic Projects.

To the Party Addressed:

The Federal Energy Regulatory Commission (Commission) is currently reviewing the Pre-Application Document submitted by Free Flow Power Corporation on behalf of itself and six subsidiary limited liability corporations (henceforth collectively identified as "Free Flow Power") for the licensing of hydrokinetic energy projects in the Mississippi River. The proposed projects are Greenville Bend (Free Flow Power Corporation, P-12829), Scotlandville Bend (FFP Project 8, LLC, P-12861), Kempe Bend (FFP Project 28, LLC , P-12921), Ashley Point (FFP Project 41, LLC , P-12930), Hope Field Point (FFP Project 42, LLC , P-12938), Flora Creek Light (FFP Project 54, LLC, P-12915), and McKinley Crossing (FFP Project 57, LLC, P-12912) Hydrokinetic Projects (collectively identified as the "Lead Projects"). The projects are proposed to be located as follows:

- The Greenville Bend Project stretches between river miles 99.1 and 102.0 in Jefferson and Orleans Parishes near the cities of New Orleans and Marrero, Louisiana.

- The Scotlandville Bend Project stretches between river miles 233.9 and 236.9 in West Baton Rouge and East Baton Rouge Parishes near the city of Baton Rouge, Louisiana.

- The Kempe Bend Project stretches between river miles 381.1 and 386.5 in Tensas Parish, Louisiana, and Jefferson County, Mississippi, near the city of Natchez, Mississippi.

- The Ashley Point Project stretches between river miles 679.1 and 695.5 in the counties of Tunica, Mississippi, and Lee, Arkansas.

- The Hope Field Point Project stretches between river miles 725.0 and 736.9 between Arkansas and Tennessee. It is proposed in the counties of Shelby, Tennessee, and Crittenden, Arkansas, near the cities of Memphis, Tennessee, and West Memphis, Arkansas.

- The Flora Creek Light Project stretches between river miles 51.2 and 58.0 between Missouri and Illinois. It is proposed in the counties of Alexander and Union, Illinois, and Cape Girardeau, Missouri, near the city of Cape Girardeau, Missouri.

- The McKinley Crossing Project stretches between river miles 182.1 and 184.1 between St. Louis County, Missouri, and St. Clair County, Illinois, and near the cities of St. Louis, Missouri, and Venice and Madison, Illinois.

Pursuant to the National Environmental Policy Act (NEPA) of 1969, as amended, Commission staff intends to prepare an environmental impact statement (EIS) which will be used by the Commission to determine whether, and under what conditions, to issue original licenses for the projects. To support and assist our environmental review, we are engaged in the public scoping process to ensure that all pertinent issues are identified and analyzed, and that the EIS is thorough and balanced.

On March 16, 2009, we issued Scoping Document (SD1) in which we disclosed our preliminary view of the scope of environmental issues associated with the licensing of the proposed projects. Based on the verbal comments that we received at ten scoping meetings held on between April 14 and May 7, 2009, in Vicksburg, Mississippi; New Orleans, Louisiana; Baton Rouge, Louisiana; Memphis, Tennessee; and St. Louis, Missouri; and written comments we received throughout the scoping process, we prepared the enclosed Scoping Document 2 (SD2). We appreciate the participation of governmental agencies, non-governmental organizations, and the general public in the scoping process. The enclosed SD2 for the project is intended to serve as a guide to the issues and alternatives to be addressed in the EIS. Key changes from SD1 to SD2 are identified in bold, italicized type.

SD***2*** is being distributed to both Free Flow Power's distribution list and the Commission's official mailing list. If you wish to be added to or removed from the Commission's official mailing list, please send your request by email to efiling@ferc.gov or by mail to: Kimberly D. Bose, Secretary, Federal Energy Regulatory Commission, 888 First Street, NE, Room 1A, Washington, DC 20426. All written or emailed requests must specify your wish to be removed or added to the mailing list and must clearly identify the following on the first page: **Greenville Bend Hydrokinetic Project No. 12829-001, Scotlandville Bend Hydrokinetic Project No. 12861-001, Kempe Bend Hydrokinetic Project No. 12921-001, Ashley Point Hydrokinetic Project No. 12930-001, Hope Field Point Hydrokinetic Project No. 12938-001, Flora Creek Light Hydrokinetic Project No. 12915-001, and McKinley Crossing Hydrokinetic Project No. 12912-001**.

SD***2*** is issued for informational use by all interested parties; no response is required. If you have any questions about SD***2***, the scoping process, or how Commission staff will develop the environmental document for this project, please contact Stephen Bowler at (202) 502-6861 or at Stephen.Bowler@ferc.gov, or Sarah Florentino at (202)502-6863 or at Sarah.Florentino@ferc.gov. Additional information about the Commission's licensing process and the Lead Projects may be obtained from our website, http://www.ferc.gov, or Free Flow Power's licensing website, http://free-flow-power.com/index.php?id=51.

Enclosure: Scoping Document ***2***

cc: Mailing List
Public Files

SCOPING DOCUMENT ***2***

GREENVILLE BEND, SCOTLANDVILLE BEND, ***KEMPE BEND, ASHLEY POINT,*** HOPE FIELD POINT, ***FLORA CREEK LIGHT,*** AND MCKINLEY CROSSING HYDROKINETIC PROJECTS

LOUISIANA, MISSISSIPPI, TENNESSEE, ARKANSAS, ILLINOIS, MISSOURI

PROJECT NOS. 12829-001, 12861-001, 12921-001, 12930-001, 12938-001, 12915-001, and 12912-001

Federal Energy Regulatory Commission
Office of Energy Projects
Division of Hydropower Licensing
Washington, DC

August 2009

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1.0 INTRODUCTION

The Federal Energy Regulatory Commission (Commission or FERC), under the authority of the Federal Power Act (FPA),[1] may issue licenses for terms ranging from 30 to 50 years for the construction, operation, and maintenance of non-federal hydroelectric projects. On January 15, 2009, Free Flow Power Corporation, on behalf of itself and 50 subsidiary limited liability corporations (collectively "Free Flow Power") filed a Pre-Application Document (PAD) and Notice of Intent (NOI) with the Commission covering 55 sites in the Mississippi River between St. Louis, Missouri and New Orleans, Louisiana. On March 13 ***and May 21***, 2009, Free Flow Power filed supplement***s*** to its PAD. Free Flow Power proposed that seven of the sites be treated as the "Lead Projects" and that pre-filing be initiated for those sites using the Integrated Licensing Process (ILP). The proposed ILP projects are Greenville Bend (Free Flow Power Corporation, P-12829), Scotlandville Bend (FFP Project 8, LLC, P-12861), Kempe Bend (FFP Project 28, LLC , P-12921), Ashley Point (FFP Project 41, P-12930), Hope Field Point (FFP Project 42, P-12938), Flora Creek Light (FFP Project 54, P-12915), and McKinley Crossing (FFP Project 57, P-12912) (collectively identified as the "Lead Projects").

- The Greenville Bend Project stretches between river miles 99.1 and 102.0 in Jefferson and Orleans Parishes near the cities of New Orleans and Marrero, Louisiana.

- The Scotlandville Bend Project stretches between river miles 233.9 and 236.9 in West Baton Rouge and East Baton Rouge Parishes near the city of Baton Rouge, Louisiana.

- The Kempe Bend Project stretches between river miles 381.1 and 386.5 in Tensas Parish, Louisiana, and Jefferson County, Mississippi, near the city of Natchez, Mississippi.

[1] 16 U.S.C. § 791(a)-825(r).

- The Ashley Point Project stretches between river miles 679.1 and 695.5 in the counties of Tunica, Mississippi, and Lee, Arkansas.

- The Hope Field Point Project stretches between river miles 725.0 and 736.9 between Arkansas and Tennessee. It is proposed in the counties of Shelby, Tennessee, and Crittenden, Arkansas, near the cities of Memphis, Tennessee, and West Memphis, Arkansas.

- The Flora Creek Light Project stretches between river miles 51.2 and 58.0 between Missouri and Illinois. It is proposed in the counties of Alexander, and Union, Illinois, and Cape Girardeau, Missouri, near the city of Cape Girardeau, Missouri.

- The McKinley Crossing Project stretches between river miles 182.1 and 184.1 between St. Louis County, Missouri, and St. Clair County, Illinois, and near the cities of St. Louis, Missouri, and Venice and Madison, Illinois.

None of the seven proposed Lead Projects would occupy federal lands.

After the seven Lead Projects have completed the study determination phase of the ILP, Free Flow Power would prepare license applications for the other 48 sites under the Commission's Traditional Licensing Process (TLP). Free Flow Power intends for the study plans established in the ILP to be used at the TLP sites. Scoping would be conducted for the TLP sites at a later date.

Ultimately, Free Flow Power proposes to install 180,000 turbine-generators across 55 sites to produce 1,800 MW of average operating generation with a total installed capacity of 7,200 MW. Detailed descriptions of the proposed Lead Projects are provided in section 3.0.

The Federal Power Act, the National Environmental Policy Act (NEPA),[2] the Commission's regulations, and other applicable laws require that we independently evaluate the environmental effects of licensing the Lead Projects as proposed, and also consider reasonable alternatives to the applicants' proposed action. At this time, we intend to prepare an environmental impact statement (EIS) that describes and evaluates the probable effects, including an assessment of the site-specific and cumulative effects, if any, of the proposed action and alternatives.

[2] National Environmental Policy Act of 1969, as amended (Pub. L. 91-190. 42 U.S.C. § 4321-4347, January 1, 1970, as amended by Pub. L. 94-52, July 3, 1975, Pub. L. 94-83, August 9, 1975, and Pub. L. 97-258, § 4(b), Sept. 13, 1982).

In addition to the Commission, other agencies will need information for their analysis as well. Free Flow Power intends its PAD and subsequent studies to be used by all the agencies, particularly the Commission, U.S. Army Corps of Engineers (Corps)***, and the U.S. Coast Guard (Coast Guard)*** in developing a record that can be used to prepare a single environmental document covering the range of issues and approvals. This scoping process will help the Commission, the Corps, ***the Coast Guard*** and others identify the pertinent issues to be analyzed in reviewing the Free Flow Power proposal.

2.0 SCOPING

This Scoping Document ***2*** (SD***2***) is intended to advise all participants as to the proposed scope of the EIS and to seek additional information pertinent to this analysis. This document contains: (1) a description of the scoping process and schedule for the development of the EIS; (2) a description of the proposed action and alternatives; (3) a preliminary identification of environmental issues and proposed studies; (4) a proposed EIS outline and a proposed schedule for the development of the EIS; and (5) a preliminary list of comprehensive plans which are applicable to the projects.

2.1 Purposes of Scoping

Scoping is the process used to identify issues, concerns, and opportunities for enhancement or mitigation associated with a proposed action. According to NEPA, the process should be conducted early in the planning stage of the projects. ***We issued Scoping Document 1 (SD1) for the project on March 16, 2009, to enable appropriate resource agencies, Indian tribes, and other interested parties to more effectively participate in and contribute to the scoping process. In SD1, we requested clarification of preliminary issues concerning the proposed projects and identification of any new issues that need to be addressed in the EIS. We revised SD1 following the scoping meetings and after reviewing comments filed during the scoping comment period. Additions or modifications to the issues or project description contained in SD1 are shown in bold and italic type in this SD2.***

2.2 Comments, Scoping Meetings, and Site Visits

In addition to written comments solicited by SD1, we held ten public scoping meetings and six site visits between April 14 and May 7, 2009, to identify potential issues associated with the proposed projects. Notices of the scoping meetings and site visits were published in local newspapers and in the Federal Register. Both day and night scoping meetings were held in Vicksburg, Mississippi; New Orleans, Louisiana;

Baton Rouge, Louisiana; Memphis, Tennessee; and St. Louis, Missouri. A court reporter recorded comments made during each of the scoping meetings. Within the same time period, site visits were held at the Greenville Bend, Scotlandville Bend, Ashley Point, Hope Field Point, Flora Creek Light, and McKinley Crossing projects.

In addition to the comments received at the scoping meetings, the following entities filed written comments on SD1:

Entity	***Dated Filed***
Illinois Environmental Protection Agency (Illinois EPA), Bureau of Water	***July 20, 2009***
Missouri Department of Natural Resources (Missouri DNR)	***July 14 and 21, 2009***
Missouri Department of Conservation (Missouri DC)	***July 14, 2009***
Department of Interior (Interior), U.S. Fish and Wildlife Service (FWS) and National Park Service (NPS)	***July 14, 1009***
Prairie River Network	***July 14, 2009***
The American Waterways Operators	***July 14, 2009***
Corps, Mississippi Valley Division	***July 13, 2009***
Tennessee Wildlife Resources Agency (Tennessee WRA)	***July 13, 2009***
Coast Guard	***July 13, 2009***
Arkansas Department of Heritage	***July 13, 2009***
U.S. Environmental Protection Agency (EPA), Regions 4, 5, 6, and 7	***July 8, 2009***
Jotori Dredging, Inc.	***June 2, 2009***
Rose Schulte	***May 14, 2009***
Grace Hill Settlement House	***May 12, 2009***
Illinois Department of Natural Resources (Illinois DNR)	***May 11, 2009***
Mississippi Department of Wildlife, Fisheries, and Parks (Mississippi DWFP)	***April 27, 2009***
FWS	***April 15, 2009***

Entity	***Dated Filed***
Plaquemines Parish Government, Department of Economic Development and Tourism	***March 19, 2009***

2.2.1 Issues Raised During Scoping

During the meetings and the following comment period, we received comments on Free Flow Power's PAD and the Commission's SD1. In addition, participants filed study requests. SD1 was revised to address only comments relating directly to the scope of environmental issues; comments on the applicant's PAD and study requests are not discussed here but will be considered during study plan development and the ensuing study plan meetings. This document, SD2, presents our current view of issues and alternatives to be considered in the EIS, and reflects comments suggested during scoping, excluding those indicated below. In some cases we have substantially revised and expanded our description of the issues, especially in the areas of navigation, geomorphology, river control, and engineering.

The general concerns raised by participants during scoping are summarized below by topic. Both oral and written comments are addressed in the summary. The summary, however, does not include every oral and written comment made during the scoping process. For instance, we do not address comments that are recommendations for schedule changes, statements of opinion regarding operation of the proposed projects, or minor editorial corrections. We also have not included comments that are recommendations for license conditions, as these recommendations would be addressed in the EIS.

LICENSING PROCESS

Comment: EPA comments that the EIS should contain a table comparing the seven lead sites to the other 48 sites, including the specific criteria and resource information that was used to select the Lead Projects. EPA also requests that the EIS clarify the method by which unique issues will be identified at each of the 48 sites and what type of documentation will incorporate information gathered from the ILP. Missouri DNR states that in order to validate the use of the ILP, it expects the EIS to fully discuss site selection, clearly justify the selection of the lead sites, and clearly define the criteria that make them representative.

Response: The seven Lead Projects to be addressed in the EIS include three of the four projects that Free Flow Power proposed in its NOI and PAD, and another four

projects that were recommended by FWS based on biological attributes. The focus of the EIS will be on evaluating the site-specific and cumulative effects of the seven Lead Projects, including the effects of past and reasonably foreseeable future actions as part of the cumulative effects analysis, which includes the potential licensing of the other proposed projects. Although some of the studies that are conducted under the ILP for the seven Lead Projects should be applicable to address the same issues at the other projects, we anticipate that their applicability will be reviewed and evaluated by stakeholders during the TLP that will be followed for those projects. Information gathered from the ILP will be documented in Free Flow Power's Initial Study Reports, Preliminary Licensing Proposal, and License Application, as well as the Commission's EIS for the Lead Projects.

Comment: EPA requests that the EIS clarify what types of analysis and documents (Programmatic EIS, EA for individual projects, EA for project groups) would be prepared as part of the TLP process for the remaining 48 sites.

Response: The ILP is the default procedure under the Commission's regulations and is being used for the 7 Lead Projects. They will be analyzed in one EIS. Permission to use the TLP has been granted for 48 sites. Under the TLP, the applicant is responsible for consultation with stakeholders until the application is filed. License applications will be required for all TLP, as well as all ILP, sites

Comment: The American Waterways Operators states that because no site or situation has the same mix of navigation or other factors, an assessment conducted for one site cannot realistically or fairly be considerable transferable to another site. Therefore, the American Waterways Operators request that an EIS be prepared for each site.

Response: We agree that there are site-specific factors that will need to be evaluated at each of Free Flow Power's proposed projects. We do not agree that a separate NEPA document is needed for each project, because site-specific analysis of multiple sites can be accommodated in a single EA or EIS, and may facilitate the analysis of cumulative effects as well as identification of appropriate measures to address them.

LICENSING ALTERNATIVES

Comment: *EPA, FWS, and Missouri DC state that a phased licensing approach would allow Free Flow Power to identify impacts and implement an adaptive management approach to correct or reduce impacts. EPA requests that the EIS analyze a phased approach or pilot project process, including thresholds for equipment removal, as an alternative to the ILP and TLP. FWS, Tennessee WRA, and Missouri DC also suggest the EIS consider partial build-out followed by research, monitoring, and evaluation of environmental impacts.*

Response: *Phased development may well merit consideration as an alternative. However, at this time no detailed proposal for phasing exists. In our list of alternatives to be analyzed, alternative 3 serves as a placeholder for alternatives developed as detail accumulates and is analyzed in our process. Phased development is an alternative that might be framed and analyzed later in the process.*

Comment: *EPA requests that the EIS include an assessment of a fully representative number of project alternatives to evaluate specific site adjustments, array designs, and potential elimination of specific project sites if conditions are identified that are not conducive to development. EPA recommends that the EIS include clear descriptions of the preferred alternative, chosen technology, designs, placement of projects, and site selection criteria.*

Response: *We intend to provide a description of the preferred alternative in the EIS, including rationale for our selection of the preferred alternative. In addition, we plan to evaluate other alternatives as identified in section 3.0 of this SD2. We will assess each of the proposed seven lead sites and will make a finding regarding each site, which may include a determination of the potential elimination of specific project sites if conditions are identified that are not conducive to development.*

COOPERATING AGENCY STATUS

Comment: *The Coast Guard, acting under authority of the Ports and Waterways Safety Act, asks FERC for formal appointment as a cooperating agency with support to FERC limited to: 1) safety and security of the waterways for all users; 2) vessel safety and navigation; and 3) traditional and primary Coast Guard functions – including pollution response.*

Response: *Given the large number of issues related to navigation safety, we welcome the Coast Guard's interest in participating as a cooperating agency, which*

would help to ensure that navigation safety issues are fully addressed in the EIS. We will follow up with appropriate Coast Guard staff to prepare a letter of agreement. We are currently in the process of discussing a similar agreement with the Corps.

CUMULATIVE EFFECTS

<u>Comment</u>: The Corps, New Orleans District, and the American Waterways Operators request that all environmental issues addressed in the EIS be analyzed for both site-specific and cumulative effects. Illinois EPA requests that the EIS include an evaluation of the potential for the projects to have a negative cumulative effect on water quality. FWS requests that all effects addressed under Aquatic Resources (section 4.2.2), Terrestrial Resources (section 4.2.3), and Threatened and Endangered Species (section 4.2.4) be evaluated both on a site-specific and cumulative level.

<u>Response</u>: This SD2 lists possible cumulative effects for several issues identified under Aquatic Resources (including effects on water quality), Terrestrial Resources and Threatened and Endangered Species. However, there are also several issues that we find to be site-specific in nature.

<u>Comment</u>: EPA and FWS note that since the original 55 projects were submitted, Free Flow Power has proposed an additional 25 sites that may be dependant upon the analysis of the Lead Projects. EPA and FWS request that the geographic scope of cumulative effects be of sufficient size to include all reasonably foreseeable projects related to this licensing action.

<u>Response</u>: Our defined geographic scope will enable analysis of cumulative effects for projects proposed by Free Flow Power anywhere in the middle and lower Mississippi River as well as other developmental and non-developmental activities in the affected reaches of the river.

<u>Comment</u>: EPA requests clarification of what is meant by the limit of "significant" commercial navigation, in the description of the geographic scope of our cumulative effects analysis.

<u>Response</u>: We have removed the word "significant" from this issue statement. Our intent is to evaluate the site specific and cumulative effects of the proposed projects on commercial navigation for all boat traffic that passes through the project areas.

NAVIGATION

Comment: ***The American Waterways Operators and several attendees at scoping meetings expressed concerns about how the proposed projects could impact navigation, including: 1) the potential for inadequate clearance above the turbine systems to cause navigation hazards during periods when river levels are low; 2) the potential for debris jams to develop on turbine pilings and cause navigation hazards; 3) potential interference of electromagnetic fields with navigation instrumentation or unsafe conditions caused by energizing the water if turbines or cables are damaged; and 4) any navigation shutdowns that may be required during installation and maintenance of the turbines. The American Waterways Operators specifically request that:***

1. ***FERC set up a formal process to coordinate with experts on navigation, safety and the environment from industry, the Coast Guard, and the Corps to ensure that the projects do not pose risks to vessels.***

2. ***FERC require Free Flow Power to submit a detailed plan for how it will build and maintain the structures without interfering with the safety or movement of commercial vessels. These plans should be made available for public review and comment.***

3. ***FERC require Free Flow Power to describe how maintenance of the projects will be handled to avoid navigation delays or closures and how commercial vessel owners would be compensated for delays, lost-opportunity costs and vessel damage caused by turbines and associated equipment.***

4. ***FERC require that turbines and associated equipment be sited in areas below the Low Water Reference Plane or 200-year low river level, whichever is lowest, with a minimum 15-foot clearance between equipment and towboats and barges.***

5. ***FERC require the marking of all sites with an electronic Automatic Identification System signature which can be read on an electronic navigation chart.***

6. ***FERC carefully review the spatial needs of inland tows. They state that tows traveling upstream and downstream need from 800 to 2,000 feet of width to safely pass.***

7. ***FERC verify that electrical current that the projects will create in the river is not potentially harmful to vessel personnel and cargo. The American Waterways Operators suggests that FERC review the "man overboard" studies done on the electric fish barrier on the Illinois Waterway that clearly state that, given certain circumstances, a very small electrical current in the water can cause injury or death.***

Response: ***Regarding the need to have expert input and allow public review on navigation plans, our process incorporates several opportunities for input from federal, state, and local resource agencies, Indian tribes, non-governmental organizations, and members of the public. Immediately, all parties are encouraged to participate in the study plan development process. After the study process has been completed, and an acceptable application has been filed, we will request recommendations, terms, and conditions in the Ready for Environmental Analysis (REA) notice that will be issued when we determine that we have sufficient information to proceed with preparing the EIS. In the EIS, we will consider and evaluate all of the recommendations, conditions, and prescriptions that are filed in response to the REA notice. We will request comments and hold public meetings on the draft EIS.***

This SD2 reflects our intention to address the depth requirements to avoid impacts to navigation, potential effects of debris jams, effects of electromagnetic fields on navigation instrumentation, and potential safety hazards associated with energizing the water in the event of system damage or malfunction. We appreciate the information on studies conducted in the Illinois Waterway, and on the spatial needs of inland tows, and will consider this information as we move forward with study planning and with preparation of the EIS. The other items listed by the Waterways Operators appear to be recommendations for conditions to be included in project licenses. This information is useful to inform the study development process, as well as inform Free Flow Power of potential recommendations for license conditions.

Comment: ***The Corps, Memphis District, request that FERC determine whether there is sufficient channel depth to accommodate navigation – even at river stages below the Low Water Reference Plane – prior to analyzing the proposed studies or literature reviews.***

Response: ***This is a component of one of our study requests, and we agree that the issue should be addressed in an expedited fashion so that study effort can be focused on sites where development will not be ruled out based on navigational depth requirements.***

COASTAL RESTORATION

***Comment**: Several participants in the scoping meetings noted that there are major coastal restoration projects underway in the basin, and encouraged Free Flow Power and the Commission to coordinate with other agencies to ensure that Free Flow Power's projects are developed in a manner that is consistent with, and do not interfere with, coastal restoration projects.*

***Response**: We have added this issue to SD2, and will review information filed as part of this proceeding regarding these restoration projects and will assess the potential implications of the proposed projects in relation to these restoration efforts.*

GROUNDWATER CONTAMINATION

***Comment**: One meeting participant expressed concern that driving thousands of pilings deep into the river bed could introduce contaminants into aquifers and affect public water supplies.*

***Response**: We have added this issue to SD2, and it will be assessed in the EIS.*

SEDIMENT TRANSPORT

***Comment**: Several parties expressed concern over the potential effects of the project on sediment transport and the feasibility of maintaining the project given potential changes in channel shape and morphology.*

***Response**: We have revised and expanded the issues outlined herein to include these concerns, and these issues will be assessed in the EIS.*

AQUATIC RESOURCES

***Comment**: EPA recommends that Free Flow Power conduct upstream/downstream monitoring at an ILP site or use an existing model to determine net effect of the projects on turbidity. EPA also requests in-situ research to study potential effects of fish entrainment, electromagnetic fields (EMF), and noise/vibration because tank studies may not adequately replicate natural river processes and conditions.*

***Response**: These and similar study recommendations are appropriate topics for discussion in the upcoming study plan development process.*

THREATENED AND ENDANGERED SPECIES

Comment: ***FWS recommends that the FERC include a stand-alone Biological Assessment (BA) of effects to federally listed species as an appendix to the EIS. They state that given the complexity of the proposal (essentially 7 licenses, and ultimately a total possibility of 80 licenses) and the geographic scope of the projects, a section focused on ESA consultation will avoid unnecessary confusion generally found in documents where the information in a BA is scattered throughout the effects sections of the NEPA document.***

Response: ***We will consider Interior's suggested approach to preparing our BA for all federally listed species that may be affected by the licensing of these projects.***

Comment: ***Numerous parties commented that the EIS should fully consider potential adverse effects on the endangered pallid sturgeon, including the potential effects of turbine strike, electromagnetic fields, noise and vibration, and changes in flow patterns and sediment transport processes.***

Response: ***We have modified SD2 to clarify that we will evaluate each of these potential effects on pallid sturgeon in the EIS.***

CLIMATE CHANGE

Comment: ***EPA states that climate change is predicted to impact the timing and availability of water resources by altering precipitation patterns and rates of evaporation. Given the 50 year license duration proposed by Free Flow Power, EPA requests the EIS analyze all reasonably possible effects of climate change on project operations and project effects. EPA also requests the EIS describe possible project adaptations or operational responses to climate change.***

Response: ***Attempting to forecast changes which might occur as a result of climate change are outside of the EIS scope. Nonetheless, we will evaluate a range of hydrological conditions as part of our environmental analysis of the projects. In addition, the Commission determines at the time of license issuance the duration of the licenses, which could include a license term of ranging from 30 to 50 years.***

SEISMICITY

Comment: ***The Corps, Memphis District, notes that sites 46, 47, and 48 are within the New Madrid Seismic Zone and that the effects of an earthquake within the New Madrid Seismic Zone would not necessarily be limited to the proposed project sites in its immediate vicinity. Missouri DNR recommends that Free Flow Power integrate design characteristics that are adequate to withstand the acceleration projections reported by the U.S. Geological Survey related to a large-magnitude earthquake in the Wabash Valley or New Madrid Seismic Zones.***

Response: ***Potential risks from future seismic activity will be considered in our assessment of the projects, as will the need for requirements related to emergency response and salvage.***

BEST MANAGEMENT PRACTICES

Comment: ***EPA notes that given the large geographic area covered by the projects and the use of unproven technology, it is important that the EIS adequately describe the applicable state and federal best management practices for each impact category and discuss the extent to which these practices will mitigate for unavoidable adverse effects.***

Response: ***The EIS will include a description and analysis of Free Flow Power's proposed measures, including applicable best management practices that Free Flow Power would be required to adhere to when constructing, operating, and maintaining each project. In addition, the EIS will assess and describe potential unavoidable effects that would occur as a result of the proposed action.***

INDIRECT EFFECTS

Comment: ***EPA recommends FERC and Free Flow Power study the extent to which the projects would contribute to indirect effects resulting from expansion of existing uses or new development along the banks of the Mississippi River associated with increases in available power supply.***

Response: ***We agree that indirect effects associated with new development should be evaluated in the EIS, as well as any socioeconomic benefits to local communities related to the construction, operation, and maintenance of the project. We have incorporated this into the issues identified herein.***

COMPREHENSIVE PLANS

***Comment**: EPA comments that the Upper Mississippi River Navigation and Ecosystem Sustainability Program contains information related to navigation, recreation, and ecosystem restoration, which is relevant to the proposed projects. The Corps, Memphis District, comments that the Lower Mississippi River Resource Assessment contains information related to management data needs, natural resource habitat needs, and river-related recreation and access needs and is relevant to the proposed projects. This plan should be completed in FY2010. The Corps, New Orleans District, comments that the following plans contain information relevant to the proposed projects: 1) Louisiana Coastal Protection and Restoration Project; 2) Louisiana Coastal Area Ecosystem Restoration Plan; 3) Mississippi River Gulf Outlet Ecosystem Restoration Feasibility Study; 4) Coastal Wetlands Planning, Protection, and Restoration Act; 5) Coast 2050; 6) Barataria-Terrebonne National Estuary Program; 7) Coastal Impact Assistance Program; 8) Louisiana Master Plan; 9) Caernarvon Freshwater Diversion Project; 10) Davis Pond Freshwater Diversion Project; and 11) Mississippi River Dredging Plans and Schedules.*

FWS comments that the EIS should reference the Pallid Sturgeon Recovery Plan, U.S. Fish and Wildlife Service, November 7, 1993. In addition, FWS notes that while an updated plan is currently being finalized and should be forthcoming within several months, a more recent (June, 2007) 5-year status review is available. FWS also comments that the following state and federal comprehensive plans contain information relevant to the proposed projects: 1) Illinois Wildlife Action Plan;[3] 2) Missouri Wildlife Action Plan;[4] 3) Kentucky Wildlife Action Plan;[5] 4) Tennessee Wildlife Action Plan;[6] 5) Arkansas Wildlife Action Plan;[7] 6) Mississippi Wildlife Action Plan;[8] 7) Louisiana Wildlife Action Plan;[9] 8) The Middle Mississippi River National Wildlife Refuge Comprehensive Conservation Plan;[10] 9) the Corps objectives for the

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[3] http://dnr.state.il.us/ORC/WildlifeResources/theplan/final

[4] http://www.fws.gov/midwest/FederalAid/state_plans.html

[5] http://fw.ky.gov/kfwis/stwg/default.asp

[6] http://www.state.tn.us/twra/cwcs/cwcsindex.html

[7] http://www.wildlifearkansas.com/strategy.html

[8] http://home.mdwfp.com/ContentManagement/Html/htmldownload.aspx?id=281#strategy

[9] http://www.wlf.state.la.us/experience/wildlifeactionplan/wildlifeplandetails

[10] www.fws.gov/midwest/Planning/MarkTwain/final_ch4.pdf.

long term management and restoration of the Upper Mississippi River;[11] and 10) Middle Mississippi River Regional Plan.[12]

Response: ***We will consider these plans in our evaluation of the effects of the project on relevant resources. To be considered a comprehensive plan under section 10(a)(2)(A) of the FPA the plan must be filed with the Commission with a request that it be considered as a comprehensive plan. The Commission is required to determine whether a project is consistent with filed, qualifying plans. If a document does not qualify as a comprehensive plan, we will consider the document, as we consider all relevant studies and recommendations, in the public interest analysis pursuant to section 10(a)(1) of the FPA.***

SITE-SPECIFIC ISSUES

Comment: ***Missouri DNR recommends that Free Flow Power contact the Corps regarding a Formerly Utilized Sites Remedial Action Program (FUSRAP) site in St. Louis near the proposed McKinley Crossing Project. Missouri DNR indicates that the Corps can provide historical information for this area, contact names for landowners, and contact names for Corps individuals that have done work within the river nearby, including the recently constructed chevrons, maps of sampling, remedies for contamination, and other relevant material.***

Response: ***Investigating available information on potential contaminated sites would assist with assessing potential site-specific effects associated with ground-disturbing activities, including the installation of underground cables, construction, use of lay-down areas, and access routes. Early investigation of available information may help to identify more favorable transmission routes and substation locations that would reduce concerns over disturbing and releasing contaminants into the environment. We encourage Free Flow Power to investigate these and any other site-specific concerns as it develops its licensing proposals for each project.***

Comment: ***Missouri DNR notes that the Corps is planning a deep dig (approx. 30+ feet) in close proximity of the boundaries labeled as the previously existing road called Destrehan as it had once extended from Wharf Street to the River. They indicate that this is on property now owned by the City of St. Louis and includes the levee and a bike trail. The Department notes that Free Flow Power may need to consider this***

[11] www2.mvr.usace.army.mil/UMRS/NESP/Documents/NESP%20ENV%20Rpt%206%20SGO_Report_11-1-07.pdf.

[12] www.swircd.org/mmrp/reports/MMRPRegionalPlanFinaloct08.pdf

excavation during their planning for this project and its implications for the installation of the proposed project.

<u>Response</u>: We appreciate your filing of this information, which Free Flow Power will need to consider as they develop the details of the proposed project layout and design that must be included in their license applications.

<u>Comment</u>: The American Waterways Operators notes specific concerns with four of Free Flow Power's Lead Projects: Scotlandville Bend, Kempe Bend, Ashley Point and Hope Field Point. The American Waterways Operators comments that in these areas, channel topography creates conditions that could result in vessels coming into close proximity with proposed turbine locations. The American Waterways Operators also expressed concern with three of the TLP project sites: Walker Bend, Little Prairie Bend, and Hickman Bend. In these areas The American Waterways Operators comments that the proposed turbine locations are likely to interfere with sediment transport processes and create safety concerns.

<u>Response</u>: Being informed of any site-specific navigation concerns or issues associated with individual sites is important. Such concerns regarding these projects will need to be taken into account and addressed as study plans are developed and refined, and as Free Flow Power refines its proposed project configurations at each site. Site-specific issues associated with the TLP projects will be addressed during the proceedings for those projects.

3.0 PROPOSED ACTION AND ALTERNATIVES

In accordance with NEPA, the environmental analysis will consider the following alternatives, at a minimum: (1) the no-action alternative, (2) the applicant's proposed action, and (***3***) ***other potential*** alternatives to the proposed action.

3.1 No-action Alternative

Under the no-action alternative, the applicant's proposed projects would not be built (i.e., there would be no change to the existing environment). No new environmental protection, mitigation, or enhancement measures would be implemented. We use this alternative to establish baseline environmental conditions for comparison with other alternatives.

3.2 Applicant's Proposal

Free Flow Power proposes to install about 180,000 in-stream turbine-generators in a section of the Mississippi River stretching between St. Louis, Missouri and New Orleans, Louisiana, mounted on a variety of stationary or floating structures. Free Flow Power would also implement certain environmental protection, mitigation, and enhancement measures. The first set of preliminary permits for the Lead Projects issued expires on December 31, 2010.

3.2.1 Proposed Project Facilities and Operations

Each project would consist of multiple arrays of 6-turbine-generators mounted on a variety of stationary or floating structures. The structures and equipment would be placed between 9 and 55 feet below Low Water Reference Plane, depending on the U.S. Army Corps of Engineers (Corps) requirement***s*** for each site. The turbines would have a typical rated installed capacity of 10 kW each (ranging from 3 to 40 kW) and would be installed to capture energy from flow velocities ranging from 2 to 4 meters per second.

Free Flow Power is developing its own turbine generators, but is considering using others as well. The Free Flow technology is a ducted turbine with a rim-mounted, direct-drive, water-lubricated generator. The technology has been ***bench***-tested using a scale (one meter diameter) prototype in the dry and in a ***test*** flume ***in flowing water***.

Free Flow Power plans to use two types of turbine generators. At sites of relatively stable water velocity, single speed turbines with induction generators would be deployed. At sites ***with*** fluctuating ***water*** velocities, variable speed turbines with permanent magnet generators would be used. Underwater cables would transmit generated power to various substations located on shore at between 3.5 and 15 kV as either 3-phase AC (induction generator sites) or 2-wire DC current (magnet generators).

The ***seven*** ILP sites are described as follows:

- For the Greenville Bend Project, P-12829, Free Flow Power proposes to employ 1,740 turbine-generators, providing an average operating capacity of 17.4 MW and an installed capacity of 69.6 MW.[13]

[13] The methodology for determining dependable capacity has not been reviewed.

- For the Scotlandville Bend Project, P-12861, Free Flow Power proposes to employ 1,800 turbine-generators, providing an average operating capacity of 18.0 MW and an installed capacity of 72.0 MW.

- For the Kempe Bend Project, P-12921, Free Flow Power proposes to employ 3,240 turbine-generators, providing an average operating capacity of 32.4 MW and an installed capacity of 129.6 MW.

- For the Ashley Point Project, P-12930, Free Flow Power proposes to employ 9,840 turbine-generators, providing an average operating capacity of 98.4 MW and an installed capacity of 393.6 MW.

- For the Hope Field Point Project, P-12938, Free Flow Power proposes to employ 7,140 turbine-generators, providing an average operating capacity of 71.4 MW and an installed capacity of 285.6 MW.

- For the Flora Creek Light Project, P-12915, Free Flow Power proposes to employ 4,080 turbine-generators, providing an average operating capacity of 40.8 MW and an installed capacity of 163.2 MW.

- For the McKinley Crossing Project, P-12912, Free Flow Power proposes to employ 1,200 turbine-generators, providing an average operating capacity of 12 MW and an installed capacity of 48 MW.

Free Flow Power's Lead Projects would have a total average operating capacity of 290 MW and a total installed capacity of 1,162MW.

3.2.2 Proposed Environmental Measures

Because the Greenville Bend, Scotlandville Bend, Kempe Bend, Ashley Point, Hope Field Point, Flora Creek Light, and McKinley Crossing Hydrokinetic Projects are original projects, Free Flow Power has not implemented any existing environmental measures at these sites. Free Flow Power has proposed the following environmental measures to protect and enhance environmental resources of the project areas.

Navigation, Dredging, and the Maintenance of Existing Physical Structures

- Ensure placement of the turbine generator arrays in locations that conform to the Corps' specifications, ***including locating the turbines in areas that***

will not be dredged and ensuring the turbines are at depths below the navigational channel.

- Assess, in conjunction with the Corps and coastal zone management agencies, the potential for scouring and silting close to channel and flood control infrastructure.

- Work with the Coast Guard and the Corps to design an acceptable installation program and appropriate markers for the project sites.

- Coordinate with the Coast Guard and the Corps relating to the schedule for installation and maintenance of equipment at project sites.

- Develop an emergency response and salvage plan.

Geologic and Soil Resources

- Follow best management practices during construction of the projects to avoid and minimize potential effects to sediment and soils.

Aquatic Resources

- Employ latest accepted norms for construction to minimize spills of fuel and other hazardous materials.

- Follow best practice standards for activities during operation and maintenance subsequent to construction.

- Investigate alternatives in transmission cable deployment to minimize or avoid disrupting riverbed habitats.

- Calculate the expected frequencies and levels of electromagnetic fields and sonic noise for system components, including the turbine generators and cabling and compare to thresholds for species identified in literature.

- Increase distance between rotor and stator vanes of turbine generator to reduce risk of fish strike.

- Eliminate high-velocity flow gaps in turbine generator structure where fish might be subject to abrasion or grinding.

- Avoid known mussel beds.

Terrestrial Resources

- Follow all local, county, state, and federal regulations pertaining to wetlands to minimize potential project effects on wetlands, riparian, and littoral habitat within the transmission line corridors during construction.

- Consult with resource agencies on methods to minimize potential project effects to botanical species and wildlife, such as diving birds, in the project areas.

- Comply with all requirements of the Bald and Golden Eagle Protection Act and the Migratory Bird Treaty Act, including requirements to maintain appropriate buffers, in terms of distance and timing.

- Survey project sites prior to siting on-land infrastructure for colonial bird nesting areas or bald eagle nests and, if present, consult with state agencies and FWS on appropriate measures to minimize impact, including restricting construction to non-nesting periods and maintaining appropriate buffer zones.

- Exercise appropriate caution if any work is to be done in the vicinity of identified bald eagle nests, report any newly identified nests, and consult with state and federal authorities on steps to minimize any adverse impact to bald eagles.

Threatened and Endangered Species

- Continue to work with resource agencies to minimize project effects to rare, threatened, and endangered species in the vicinity of the project sites.

- Free Flow Power would be vigilant of the potential presence of West Indian manatees within project sites and will avoid sea-grass beds.

- Consult with FWS and appropriate state authorities should construction be performed during Louisiana black bear denning season or if actual or candidate den trees are affected, including any tree used by a denning bear during the winter or any bald cypress and tupelo gum trees with visible cavities, having a diameter at breast height of 36 inches or greater and occurring in or along a water body.

- Abide by conservation measures prohibiting tree removal if it is likely to affect Indiana bat roosting or maternity trees.

- Prior to siting on-land infrastructure, Free Flow Power would survey the project areas to determine if nesting colonies of piping plover, interior least tern, or brown pelicans are present. If present, Free Flow Power would consult with state agencies and FWS on appropriate measures to minimize impact, including restricting construction to non-nesting season and/or maintaining appropriate distances from nesting colonies.[14]

- Avoid siting infrastructure in known mussel beds, including beds of federally listed mussel species.

Recreation and Land Use

- Avoid sites of recreational significance when installing onshore equipment.

- Consult with federal and state agencies and non-governmental organizations to avoid impinging on recreational uses.

- Develop and implement an emergency response and salvage plan to be executed to avoid any adverse impact in case of damage to individual or multiple recreation units.

Cultural Resources

- Avoid sites of cultural significance, such as shipwrecks, when installing the turbine arrays on the riverbed.

[14] In it letter filed on July 14, 2009, FWS reports that piping plover and brown pelicans do not nest in the project areas.

- Avoid sites of cultural, historic, or Tribal significance when installing equipment in the project areas.

- Install onshore transmission lines to avoid and/or minimize the visual impairment of cultural, historic, recreational, or Tribal sites.

- Report any findings of cultural resources, such as shipwrecks, located during the course of site surveys to appropriate authorities.

Aesthetic Resources

- Install onshore transmission lines to avoid and/or minimize the visual impairment of cultural, historic, recreational, or Tribal sites.

3.*4* Alternatives to the Proposed Action

Commission staff will consider and assess all alternative recommendations for operational or facility modifications, as well as protection, mitigation, and enhancement measures identified by us, the agencies, Indian tribes, NGOs, and the public.

4.0 SCOPE OF CUMULATIVE EFFECTS AND SITE-SPECIFIC RESOURCE ISSUES

4.1 Cumulative Effects

According to the Council on Environmental Quality's regulations for implementing NEPA (50 C.F.R. 1508.7), a cumulative effect is the effect on the environment that results from the incremental effect of the action when added to other past, present and reasonably foreseeable future actions, regardless of what agency (Federal or non-Federal) or person undertakes such other actions. Cumulative effects can result from individually minor but collectively significant actions taking place over a period of time, including hydropower and other land and water development activities.

4.1.1 Resources That Could Be Cumulatively Affected

Based on information in the PAD and preliminary staff analysis, we have identified the following resources that may be cumulatively affected by the proposed operation of the project: aquatic (including water quality and fishery resources), wetlands and terrestrial resources, commercial navigation, ***flood protection, and*** recreation.

4.1.2 Geographic Scope

Our geographic scope of analysis for cumulatively affected resources is defined by the physical limits or boundaries of: (1) the proposed action's effect on the resources, and (2) contributing effects from other hydropower and non-hydropower activities within the Mississippi River basin. Because the proposed action would affect the resources differently, the geographic scope for each resource may vary.

At this time, we have tentatively identified the middle and lower Mississippi River basin as our geographic scope of analysis for ***recreation and*** aquatic resources. ***We choose this same scope for flood protection, extending laterally to include all lands that have been subject to inundation during anticipated flood events.*** A large amount of commercial barge traffic navigates the river carrying thousands of tons of products daily to and from the upper Mississippi, Ohio, and Missouri Rivers. We propose the scope for cumulative effects on navigation to extend to the limits of commercial navigation in the drainage. By contrast, we propose the geographic scope for terrestrial resources to encompass the channel and riparian zones of the middle and lower Mississippi River.

The Lead Projects would be 7 of 55 proposed hydrokinetic projects located on the Mississippi River. At these sites, we will focus within the project boundary on the channel, turbine arrays, transmission corridor and riparian. We will focus on a portion of the river extending two times the project length upstream and about five times the project length downstream.

4.1.3 Temporal Scope

The temporal scope of our cumulative effects analysis in the EIS will include a discussion of past, present, and future actions and their effects on each resource that could be cumulatively affected. Based on the potential term of a license, the temporal scope will look 30-50 years into the future, concentrating on the effect to the resources from reasonably foreseeable future actions. The historical discussion will, by necessity, be limited to the amount of available information for each resource. The quality and quantity of information, however, diminishes as we analyze resources further away in time from the present.

4.2 Resource Issues

In this section, we present a preliminary list of environmental issues to be addressed in the EIS. We have identified these issues, which are listed by resource area, by reviewing information in the PAD on the Lead Projects. This list is not intended to be

exhaustive or final, but contains those issues raised to date that could have substantial effects. After the scoping process is complete, we will review the list and determine the appropriate level of analysis needed to address each issue in the EIS. Those issues identified by an asterisk (*) will be analyzed for both cumulative and site-specific effects.

4.2.1 Navigation, Geomorphology and River Control

- ***Effects of construction, installation, operation, and maintenance of turbine systems on navigation conditions and channel maintenance requirements, including dredging and other existing or planned operations.****

- ***Turbine clearance (e.g., relative to the Low Water Reference Plane) that is needed at each site to avoid conflicts with navigation.***

- ***Effects of turbine systems on river hydraulics, including conditions that could affect navigation such as boils, eddies, and upwellings.****

- ***Navigation effects from debris trapped by the turbine arrays, including effects on river hydraulics and the potential for trapped debris to protrude upward into the navigation channel.****

- ***Effects of channel closings or restrictions required during project construction, operation, or maintenance on commercial and recreational navigation (including duration and seasonal timing of construction, installation, and maintenance activities).****

- ***Measures for decommissioning any turbine systems and for locating and removing damaged components. Potential effects of broken and damaged turbine system components on dredging equipment, downstream infrastructure, fishing, and other river uses and natural resource values.****

- ***Safety of vessel personnel and cargo from electrical currents during both normal and extraordinary (e.g., cable rupture, man-overboard) conditions.***

- ***Effects of electrical fields of turbine systems on the radio communication used by barges and other navigation entities.***

- ***Effects on existing and future commercial sand and gravel dredging operations.****

- ***Effects of dredge and fill associated with the installation and maintenance of the proposed projects, including the storage, hauling, and disposal of excavated sediment.****

- ***Effects on sediment transport, including effects on channel morphology, bedforms, roughness and stability, shoreline erosion and bank stability, channel training structures, and bank protection features.****

- ***Overall effects of the project on existing and future barge fleeting operations and anchorage.****

- ***Effects on flood protection, including water levels, levee maintenance and integrity, revetment placement, and potential effects on the Project Design Flood (PDF) flowline and the U.S. Army Corps of Engineers Mississippi River and Tributaries (MR&T) Project.****

4.2.2 Engineering

- ***Effects of propeller wash from boats on turbines and associated equipment.***

- ***Effects on turbines from sunken shipping equipment (boats, barges) in areas with high accident rates, such as in areas with sharp bends, areas with complex currents.***

- ***Survival of turbine arrays under stress from flood conditions, impact of submerged debris, added stress associated with trapped debris, or strike by a vessel or massive ice discharged from the locks and dams.***

- ***Effects of sedimentation and debris transported by the river on equipment function, mounting system, and efficiency, and measures to be taken if sedimentation, scouring or debris accumulation affects turbine system function or stability.***

- ***Potential effects of earthquakes on turbine systems placed in New Madrid Seismic Zone.***

- ***Potential effects or conflicts with ongoing or planned coastal restoration projects conducted by the Corps or the Louisiana Coastal Protection and Restoration Authority.***

- ***Effects of vibration or oscillation of equipment on sediment and infrastructure stability, including but not limited to potential liquefaction of sediment within or supporting levees.***

- ***Effects of project construction, operation, and maintenance on utility and bridge crossings.***

- ***Effect of any turbine proposed for mounting on an existing structure (bridge support, revetment structure, etc.) on structure stability.***

4.2.3 Aquatic Resources

- Effects of the movement of turbine blades on ***aquatic species*** including the potential for fish strike and turbine mortality.***

- Effects of the presence of turbine arrays on ***aquatic species*** behavior, movement, and habitat use including the potential of habitat avoidance.*

- Effects of electromagnetic fields from the generators and transmission lines on aquatic species and habitat.***

- Effect of noise and vibration ***during installation of turbine arrays and project operation, as well as associated cable installation,*** on aquatic species, ***including aquatic species movement*** and habitat.***

- Effects of project construction, operation, and maintenance on water quality parameters such as total dissolved gases, water temperature, ***turbidity,*** toxic compound concentrations, ***groundwater quality***, macrophyte growth, ***pH, and nutrient concentrations.****

- ***Effects of potentially altered flow patterns resulting from project operation on biota, plant species, primary productivity, and food web structure.****

- ***Potential for and effects of hazardous materials spills on water quality.****

- Effects of the project on woody debris transport and recruitment, and sediment transport. ***

- ***Effects of any chemicals used to reduce incidence of the growth of algae,***

mollusks and other bio-organisms on water quality and aquatic resources.

- ***Effects of hydrologic variation on project operations.***

4.2.4 Terrestrial Resources

- Effects of project construction and operation on bald eagles and other raptors; diving birds; colonial nesting birds; and other migratory birds, ***including potential for entrainment, habitat avoidance, or habitat loss***. *******

- Effects of installing, ***operating, and maintaining*** underground cables on terrestrial resources.

- Effects of construction and maintenance of substations ***as well as offsite and shore-based staging areas*** on terrestrial ***habitat availability. ****

- Effects of installation, ***operation, and maintenance*** of primary transmission lines on terrestrial resources including the establishment and spread of invasive species, along both new and existing right-of-ways***. ****

- Effects of temporary and permanent potential impacts to wetlands from use of construction staging areas, installation of transmission cable, construction and maintenance of turbine arrays and substations, and use of recreation facilities in the project areas. *******

- Effects of maintenance activities (e.g., road maintenance, transmission line maintenance and rights-of-way vegetation management) and recreation on wildlife habitat and wildlife, including the establishment and spread of invasive species.*

- ***Potential for and effects of hazardous materials spill on land*.****

4.2.5 Threatened and Endangered Species

- Effects of construction, installation, and maintenance of the ***turbine systems,*** transmission cables, substations***, and shore-based staging facilities*** on potentially occurring federally listed species, both aquatic and terrestrial, including the interior least tern ***and pallid sturgeon.****

- Effects of fish strikes***, electromagnetic fields, noise and vibration, changes***

in flow patterns and sediment process changes on the federally endangered pallid sturgeon*******

- Indirect effects through fish host species and sediment processes and direct effects through installation and maintenance of turbines on federally listed mussels.*******

4.2.6 Recreation and Land Use

- Effects of project operations on boating safety (e.g., hydraulic effects, entanglement with anchor lines or fishing gear) within the project boundaries.

- Effects of project construction, operations***, and maintenance*** on existing recreation***al*** access ***and facilities within and in the vicinity of the proposed*** project boundaries, ***including, but not limited to, state and local parks.***

- ***Effects of project construction, operation, and maintenance activities associated with the proposed projects due to increased levels of noise, traffic, and dust created by heavy equipment.***

- ***Effects of turbine placement and deployment strategies on public and private boat ramps and access points, as well as public and other conservation lands located adjacent to the project areas.***

- ***Effects of project construction, operations, and maintenance on existing recreation activities within and adjacent to the proposed projects' boundaries, including, but not limited to, swimming, canoeing, kayaking, fishing, wildlife viewing, hunting, picnicking and motorized boating.***

- ***Effects of the project construction, operation, and maintenance on recreational and commercial fishing opportunities in the vicinity of the projects.***

- ***Effects of project construction, operations and maintenance on future recreational access within and adjacent to the proposed projects' boundaries.***

- ***Effects of electrical current associated with the project on humans that come in contact with the water (e.g., man-overboard situation, capsized canoes, etc.).***

- ***Effects of project facilities, including installed turbines and onshore structures, on noise in the project areas.***

- ***Effects of the potential establishment of exclusion zones or fishing restrictions within the project areas for project safety reasons on public access and recreational opportunities.***

4.2.7 Cultural Resources

- Effects of the proposed action and alternatives on properties included in, or eligible for inclusion in, the National Register of Historic Places.

- Effects of the proposed action and alternatives on historical shipwreck sites.

4.2.8 Aesthetic Resources

- Effects of project facilities and operations on the aesthetic/visual experience of visitors and residents using project lands and waters ***and ecotourism within the region.***

4.2.9 Socioeconomics

- Effects of the project (energy costs and project-related recreation) on the local economies in the middle and lower Mississippi River basin.

- ***Effects of the proposed projects on timber harvest and transport in the region.***

- ***Potential economic effects of the proposed projects on recreational and commercial fisheries in the project region.***

4.2.10 Developmental Resources

- Effects of project maintenance on the energy and capacity benefits of the project and effects of funding various protection, mitigation, and enhancement measures on the cost of project power.

5.0 PROPOSED STUDIES

Depending upon the findings of studies completed by Free Flow Power and the recommendations of the consulted entities, Free Flow Power will consider, and may propose certain other measures to enhance environmental resources affected by the project as part of the proposed action. Free Flow Power's initial study proposals are identified by resource area in table 1. Some studies have overlapping objectives and are thus duplicated. Detailed information on Free Flow Power's initial study proposals can be found in the PAD. Further studies may need to be added to this list based on comments provided to FERC and Free Flow Power from interested participants, including Indian tribes.

Table 1. Free Flow Power's Initial Study Proposals. (Source: PAD)

Resource Area and Issue	Proposed Study/Information Need
Engineering	
Avoidance of adverse impact on existing structures required for flood control and channel maintenance	Free Flow Power proposes to assess appropriate locations for placing pilings and other infrastructure at each project site so that it will not compromise existing structures. Free Flow Power would also assess the potential for scouring and silting close to channel and flood control infrastructure.
Aquatic Resources	
Injury to fish from Free Flow Power's turbine generators	Free Flow Power proposes to conduct a tank-based study to assess the probability and nature of injury to fish, including potential host fish for mussels.
Effect of electromagnetic field (EMF)	Free Flow Power proposes to conduct a literature-based survey of EMF thresholds for relevant species and compare to the EMF levels produced by Free Flow Power turbine generators and their deployment systems.
Effect of noise/vibration	Free Flow Power proposes to conduct a literature-based survey of the effects of noise and vibration on aquatic communities and engage in further consultation with FWS.
Impact to mussel beds	Free Flow Power proposes to avoid known mussel beds and will study the nature and probability of injury to host fish.
Potential for increased sedimentation – habitat alteration	Free Flow Power proposes to conduct a literature- and modeling-based study on potential for habitat alteration and potential for increased sedimentation

Resource Area and Issue	Proposed Study/Information Need
	and will engage in further consultation with FWS.
Impacts to paddlefish and freshwater drum	Free Flow Power proposes to conduct a tank study to investigate direct and delayed mortality.
Impact of installation/removal on aquatic community	Free Flow Power proposes to conduct a literature-based survey of the effects of construction activity on the aquatic community.
Terrestrial Resources	
Effect of transmission lines on terrestrial and aquatic species and habitats	Free Flow Power proposes to conduct a literature-based study on potential impact of transmission lines on terrestrial species and habitats, including wetlands.
Rare, threatened, and endangered (RTE) species	
Potential impacts to RTE species	Free Flow Power proposes to conduct an experimental tank study to investigate direct and delayed mortality is needed to determine potential effects to pallid sturgeon. In addition, further analysis of sensitivity to electric and magnetic fields potentially produced by Free Flow Power turbine generators will also be necessary.
	Free Flow Power proposes to conduct an experimental tank study to investigate direct and delayed mortality is potentially needed to determine potential effects to Alabama shad.
	Free Flow Power proposes to survey each on shoring point for pondberry, decurrent false aster, small whorled pogonia, Virginia sneezeweed, Mead's milkweed, and running buffalo clover before siting onshore infrastructure, and would consult with resource agencies to minimize any adverse impact.

*6.*0 EIS PREPARATION SCHEDULE

At this time, we anticipate the need to prepare a draft and final EIS. The draft EIS will be sent to all persons and entities on the Commission's service and mailing lists for the Lead Projects. The EIS will include our recommendations for operating procedures, as well as environmental protection and enhancement measures that should be part of any license issued by the Commission. All recipients will then have 60 days to review the EIS and file written comments with the Commission. All comments on the draft EIS filed with the Commission will be considered in preparation of the Final EIS.

The major milestones, including those for preparing the EIS, are as follows:

Major Milestone	Target Date
Scoping Meetings	April-***May*** 2009
License Application Filed	December 2010
Ready for Environmental Analysis Notice Issued	March 2011
Deadline for Filing Comments, Recommendations and Agency Terms and Conditions/Prescriptions	May 2011
Draft EIS Issued	October 2011
Comments on Draft EIS Due	December 2011
Deadline for Filing Modified Agency Recommendations	April 2012
Final EIS Issued	

If Commission staff determines that there is a need for an additional season of studies before the application is filed, additional information, or additional studies in response to the application, all subsequent milestones would be delayed by the time amount of allowed for Free Flow Power's to respond to the Commission's request. A copy of Free Flow Power's process plan, which has a complete list of licensing milestones for the Lead Projects, including those for developing the license application, is attached as Appendix B to this SD***2***.

7.0 PROPOSED EIS OUTLINE

The preliminary outline for the Lead Projects' EIS is as follows:

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2.5 Other Alternatives (as appropriate)
3.0 ENVIRONMENTAL ANALYSIS
3.1 General Description of the River Basin
3.2 Scope of Cumulative Effects Analysis
3.2.1 Geographic Scope
3.2.2 Temporal Scope
3.3 Proposed Action and Action Alternatives
3.3.1 Geologic and Soil Resources
3.3.2 Aquatic Resources
3.3.3 Terrestrial Resources, including wetlands
3.3.4 Threatened and Endangered Species
3.3.5 Recreation and Land Use
3.3.6 Cultural Resources
3.3.7 Aesthetic Resources
3.3.8 Socioeconomics

8.0 COMPREHENSIVE PLANS

Section 10(a)(2) of the FPA, 16 U.S.C. section 803(a)(2)(A), requires the Commission to consider the extent to which a project is consistent with federal and state comprehensive plans for improving, developing, or conserving a waterway or waterways affected by a project. The staff has preliminarily identified and reviewed the plans listed below that may be relevant to the Lead Projects. Agencies are requested to review this list and inform the Commission staff of any changes. If there are other comprehensive plans that should be considered for this list that are not on file with the Commission, or if there are more recent versions of the plans already listed, they can be filed for consideration with the Commission according to 18 CFR 2.19 of the Commission's regulations. Please follow the instructions for filing a plan at http://www.ferc.gov/industries/hydropower/gen-info/licensing/complan.pdf.

The following is a list of comprehensive plans currently on file with the Commission that may be relevant to the Lead Projects.

Arkansas

Arkansas Department of Parks and Tourism. 1985 Statewide Comprehensive Outdoor Recreation Plan (SCORP). Little Rock, Arkansas. December 1984.

U.S. Fish and Wildlife Service. Undated. Fisheries USA: the recreational fisheries policy of the U.S. Fish and Wildlife Service. Washington, D.C.

Illinois

Illinois Department of Conservation. 1983. Outdoor recreation in Illinois: 1983 policy plan. Springfield, Illinois. November 1983. 100 pp.

Illinois Environmental Protection Agency. 1992. Illinois water quality management plan. Springfield, Illinois. December 1992. 100 pp.

U.S. Fish and Wildlife Service. 1993. Upper Mississippi River & Great Lakes region joint venture implementation plan: A component of the North American waterfowl management plan. March 1993.

U.S. Fish and Wildlife Service. Undated. Fisheries USA: the recreational fisheries policy of the U.S. Fish and Wildlife Service. Washington, D.C.

U.S. Fish and Wildlife Service. Upper Mississippi River & Great Lakes Region Joint Venture Implementation Plan: A Component of the North American Waterfowl Management Plan. March 1993.

Kentucky

Kentucky Department of Local Government. 1995. Outdoor recreation in Kentucky. A five-year assessment and policy plan, 1995-1999. Frankfort, Kentucky. January 1995.

Kentucky Division of Water. National Park Service. 1992. Kentucky rivers assessment. Department of the Interior, Atlanta, Georgia. 264 pp.

U.S. Fish and Wildlife Service. Undated. Fisheries USA: the recreational fisheries policy of the U.S. Fish and Wildlife Service. Washington, D.C.

Louisiana

Gulf States Marine Fisheries Commission. 2006. The striped bass fishery of the Gulf of Mexico, United States: A regional management plan. Ocean Springs, Mississippi. March 2006.

Louisiana Department of Culture, Recreation and Tourism. 1994. Louisiana Statewide Comprehensive Outdoor Recreation Plan (SCORP), 1993-1998: information base for executive decision. Baton Rouge, Louisiana.

U.S. Fish and Wildlife Service. Gulf States Marine Fisheries Commission. 1995. Gulf sturgeon recovery/management plan. Atlanta, Georgia. September 15, 1995.

U.S. Fish and Wildlife Service. Canadian Wildlife Service. 1986. North American waterfowl management plan. Department of the Interior. Environment Canada. May 1986.

U.S. Fish and Wildlife Service. 1990. Gulf Coast joint venture plan: A component of the North American waterfowl management plan. June 1990.

U.S. Fish and Wildlife Service. Undated. Fisheries USA: the recreational fisheries policy of the U.S. Fish and Wildlife Service. Washington, D.C.

Mississippi

Gulf States Marine Fisheries Commission. 2006. The striped bass fishery of the Gulf of Mexico, United States: A regional management plan. Ocean Springs, Mississippi. March 2006.

Mississippi Department of Economic Development. 1982. Mississippi comprehensive intermodal transportation plan: ports and waterways. Jackson, Mississippi. September 1982.

Mississippi Department of Wildlife, Fisheries, and Parks. 1990. Mississippi State Comprehensive Outdoor Recreation Plan (SCORP). Jackson, Mississippi. November 2, 1990.

National Marine Fisheries Service. 1995. Gulf sturgeon (*Acipenser oxyrhynchus desotoi*) Recovery/Management Plan. Prepared by the Gulf Sturgeon Recovery/Management Task Team. September 15, 1995.

U.S. Fish and Wildlife Service. Gulf States Marine Fisheries Commission. 1995. Gulf sturgeon recovery/management plan. Atlanta, Georgia. September 15, 1995.

U.S. Fish and Wildlife Service. Canadian Wildlife Service. 1986. North American waterfowl management plan. Department of the Interior. Environment Canada. May 1986.

U.S. Fish and Wildlife Service. 1990. Gulf Coast joint venture plan: A component of the North American waterfowl management plan. June 1990.

U.S. Fish and Wildlife Service. Undated. Fisheries USA: the recreational fisheries policy of the U.S. Fish and Wildlife Service. Washington, D.C.

Missouri

Missouri Department of Natural Resources. 1985. Missouri regional watershed assessment: a basin-by-basin compilation of water problems and issues. Rolla, Missouri. 228 pp.

Missouri Department of Natural Resources. 1986. Missouri water atlas. Jefferson City, Missouri. 97 pp.

Missouri Department of Natural Resources. 2003. Statewide Comprehensive Outdoor Recreation Plan (SCORP) 2002 - 2007. Jefferson City, Missouri. March 2003.

Missouri Department of Natural Resources. Undated. Missouri water quality basin plans. Jefferson City, Missouri. Eight volumes.

U.S. Fish and Wildlife Service. 1993. Upper Mississippi River & Great Lakes region joint venture implementation plan: A component of the North American waterfowl management plan. March 1993.

U.S. Fish and Wildlife Service. Undated. Fisheries USA: the recreational fisheries policy of the U.S. Fish and Wildlife Service. Washington, D.C.

Tennessee

Tennessee Department of Conservation. 1984. Tennessee State outdoor recreation planning report. Nashville, Tennessee. December 1984.

U.S. Fish and Wildlife Service. Undated. Fisheries USA: the recreational fisheries policy of the U.S. Fish and Wildlife Service. Washington, D.C.

9.0 MAILING LIST

The list below is the Commission's official mailing list for the Lead Projects (FERC Nos. 12829, 12861, 12921, 12930, 12938, 12915, and 12912 respectively). If you want to receive future mailings for the Lead Projects and are not included in the list below, please send your request by email to efiling@ferc.gov or by mail to: Kimberly D. Bose, Secretary, Federal Energy Regulatory Commission, 888 First Street, N.E., Room 1A, Washington, DC 20426. All written and emailed requests to be added to the mailing list must clearly identify the following on the first page: Greenville Bend Hydrokinetic Project No. 12829, Scotlandville Bend Hydrokinetic Project No. 12861, Kempe Bend Hydrokinetic Project No. 12921, Ashley Point Hydrokinetic Project No. 12930, Hope Field Point Hydrokinetic Project No. 12938, Flora Creek Light Hydrokinetic Project No. 12915, and McKinley Crossing Hydrokinetic Project No. 12912.

You may use the same method if requesting removal from the mailing list below.

Register online at http://www.ferc.gov/esubscribenow.htm to be notified via email of new filings and issuances related to this or other pending projects. For assistance, please contact FERC Online Support at FERCOnlineSupport@ferc.gov or toll free at 1-866-208-3676, or for TTY, (202) 502-8659.

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APPENDIX A - PROCESS PLAN AND SCHEDULE

LEAD PROJECTS PROCESS PLAN AND SCHEDULE

Responsible Party	Pre-Filing Milestone		Date[1]	FERC Regulation
FFP	Issue Public Notice for NOI/PAD		1/15/09	5.3(d)(2)
FFP	File NOI/PAD with FERC		1/15/09	5.5, 5.6
FERC	Tribal Meetings		6/1/06	5.7
FERC	Issue Notice of Commencement of Proceeding; Issue Scoping Document 1		3/16/09	5.8
FERC	Project Site Visits and Scoping Meetings		4/14/09 through 5/07/09	5.8(b)(viii)
All stakeholders	PAD/SD1 Comments and Study Requests Due		7/14/09	5.9
FERC	Issue Scoping Document 2		8/28/09	5.1
FFP	File Proposed Study Plan (PSP)		8/28/09	5.11(a)
All stakeholders	Proposed Study Plan Meetings	Vicksburg, MS	9/28/09-9/30/09	5.11(e)
		Memphis, TN	10/6/09-10/7/09	
		New Orleans, LA	10/13/09-10/15/09	
		St. Louis, MO	10/20/09-10/21/09	
All stakeholders	Proposed Study Plan Comments Due		11/27/09	5.12
FFP	File Revised Study Plan		12/28/09	5.13(a)
All stakeholders	Revised Study Plan Comments Due		1/12/10	5.13(b)
FERC	Director's Study Plan Determination		1/27/10	5.13(c)
All Mandatory Conditioning	Any Study Disputes Due[2]		2/16/10	5.14(a)

Responsible Party	Pre-Filing Milestone	Date[1]	FERC Regulation
Agencies			
Dispute Panel	Dispute Resolution Panel Convenes	3/8/10	5.14(d)(3)
Dispute Panel	Third Dispute Panel Member Selected	3/23/10	5.14(d)
FFP	Applicant Comments on Study Disputes Due	3/15/10	5.14(j)
Dispute Panel	Dispute Resolution Panel Technical Conference	April 2010 [prior to engaging in deliberative meetings]	5.14(j)
Dispute Panel	Dispute Resolution Panel Findings Issued	4/7/10	5.14(k)
FERC	Director's Study Dispute Determination	4/27/10	5.14(l)
FFP	First Study Season	2010	5.15(a)
FFP	Initial Study Report	10/26/10	5.15(c)(1)
All stakeholders	Initial Study Report Meeting	11/10/10	5.15(c)(2)
FFP	Initial Study Report Meeting Summary	11/26/10	5.15(c)(3)
All stakeholders	Any Disputes/Requests to Amend Study Plan Due	12/27/10	5.15(c)(4)
All stakeholders	Responses to Disputes/Amendment Requests Due	1/24/11	5.15(c)(5)
FERC	Director's Determination on Disputes/Amendments	2/23/11	5.15(c)(6)
Second study season if necessary. Schedule would be adjusted accordingly.			
FFP	File Preliminary Licensing Proposal	8/17/10	5.16(a)
All stakeholders	Preliminary Licensing Proposal Comments Due	11/15/10	5.16(e)
FFP	File Final License Application	12/31/10	5.17
FFP	Issue Public Notice of License Application Filing	1/14/11	5.17(d)(2)
FERC	Issue Public Notice of License Application Filing (Tendering Notice)	1/14/11	5.19
FERC	Director's Determination on Any Additional	1/31/11	5.19(e);

Responsible Party	Pre-Filing Milestone	Date[1]	FERC Regulation
	Study Requests and Notification of Any Deficiencies		5.20(a)(2)
FERC	Issue Public Notice Accepting Application and Ready for Environmental Analysis (REA)	3/01/11	5.22
All stakeholders	Comments, Interventions, 10(a) Recommendations Due	5/2/11	5.23(a)
Agencies	10(j) Recommendations; 4(e) Terms and Conditions; Fishway Prescriptions Due	5/12/11	5.23(a)
FFP	Request 401 Water Quality Certifications	5/12/11	5.23(b)
FFP	Reply Comments Due	6/28/11	5.23(a)
FERC	Issue Draft Environmental Impact Statement (EIS)	10/27/11	5.24
All stakeholders	Draft EIS Comments Due	12/26/12	5.24(c)
Agencies	Modified 4(e) Terms and Conditions Due; USFWS Modified Fishway Prescriptions Due	4/24/12	5.24(d)
FWS/NMFS	ESA Biological Opinion As Needed	Feb. 2012	ESA
FERC	Issue Final EIS	5/24/12	
FERC	Issue License Order	8/22/12	FPA

[1] If the due date falls on a weekend or holiday, the due date is the following business day.
[2] Shaded milestones are unnecessary if there are no study disputes.