VERDANT POWER

Before the United States of America
Federal Energy Regulatory Commission

ROOSEVELT ISLAND TIDAL ENERGY PROJECT

FERC No. 12611

Final Kinetic Hydropower
Pilot License Application

Volume I of 4
December 2010

Verdant Power, LLC
New York, NY

PILOT LICENSE APPLICATION

ROOSEVELT ISLAND TIDAL ENERGY PROJECT

FERC NO. 12611

VOLUME 1 OF 4

December 2010

Submitted by:

VERDANT POWER

KINETIC HYDROPOWER PILOT PROJECT APPLICATION

Roosevelt Island Tidal Energy Project – FERC No. 12611

This application for a kinetic hydropower pilot license is executed in the State of Maryland, County of Anne Arundel.

By: Verdant Power, LLC
Name: Kevin G. Lynch
Chief Financial Officer
Address: 888 Main Street-Suite 1
New York, NY 10044-0213

Kevin G. Lynch, being duly sworn, deposes and says that the contents of this application are true to the best of his knowledge or belief. The undersigned Applicant has signed the application this 17th day of DECEMBER 2010

Applicant Signature

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Subscribed and sworn to before me, a Notary Public of Maryland, this 17th day of DECEMBER, 2010.

Signature

Commission Expires: 9/9/2012

INITIAL STATEMENT

BEFORE THE
UNITED STATES OF AMERICA
FEDERAL ENERGY REGULATORY COMMISSION

Verdant Power, LLC **Project No. 12611-003**

APPLICATION FOR AN ORIGINAL LICENSE FOR A KINETIC HYDROPOWER PILOT LICENSE FOR THE ROOSEVELT ISLAND TIDAL ENERGY PROJECT EAST CHANNEL PILOT

INITIAL STATEMENT

1. Verdant Power, LLC ("Verdant Power" or "Company") applies to the Federal Energy Regulatory Commission ("FERC") for a hydrokinetic pilot project license, under the guidance of FERC's *Licensing Hydrokinetic Pilot Projects* whitepaper, for the Roosevelt Island Tidal Energy (RITE) Project, East Channel Pilot ("RITE East Channel Pilot" or "pilot project") water power project, as described hereinafter. Previous FERC project number designation for the RITE Project includes FERC Preliminary Permit No. 12611.

2. The location of the project is:

   State or territory: New York
   County: New York County
   Township or nearby town: New York City
   Stream or other body of water: East River

3. The exact name, address, and telephone number of the applicant are:

   Verdant Power, LLC
   The Octagon
   888 Main Street
   New York, NY 10044
   (212) 888-8887

4. The exact name, address, and telephone number of each person authorized to act as agent for the applicant in this application, if applicable, are:

Ronald F. Smith
Chief Executive Officer
(212) 888-8887 ext. 601

William H. "Trey" Taylor
President
(212) 888-8887 ext. 602

Address (for both agents listed above):
Verdant Power, LLC
The Octagon
888 Main Street
New York, NY 10044

5. The applicant is a domestic corporation and is not claiming preference under section 7(a) of the Federal Power Act. See 16 U.S.C. 796.

6. (i) The statutory or regulatory requirements of the state(s) in which the project would be located that affect the project as proposed with respect to bed and banks and the appropriation, diversion, and use of water for power purposes, and with respect to the right to engage in the business of developing, transmitting, and distributing power and in any other business necessary to accomplish the purposes of the license under the Federal Power Act, are included below along with, (ii) The steps which the applicant has taken or plans to take to comply with each of the laws cited above:

Statute: Public Lands Law, §§ 10, 75

Regulation: 9 NYCRR 270

The State of New York is sovereign owner of the beds of numerous bodies of water within the State. Various activities relating to the use of land underwater, such as construction of commercial docks, wharves, moorings and permanent structures require

permission from the State, and an application must be made to the NYSOGS. Intake and discharge pipes, pipelines, cables and conduit lines for commercial purposes are required to be issued easements for the use and occupation of land underwater. Pending issuance of any other required State and Federal permits, NYSOGS will issue an easement for these uses through application, normally for a twenty-five year term.

Verdant Power applied for and received a permit for the use of state-owned property from the NYSOGS for the RITE Demonstration and that permit has been extended to September 2010. A renewal is currently pending approval. As it proceeds through the license period, Verdant Power intends to consult with the NYSOGS and renew its agreement as necessary for the underwater land required for operation of the pilot project.

Chapter 899 of the New York State Unconsolidated Laws of 1984 (RIOC Act)

The Roosevelt Island Operating Corporation (RIOC) was created by the New York State legislature in 1984 as a public benefit corporation to plan, develop, operate, maintain, and manage Roosevelt Island. RIOC assumed the role of the New York State Urban Development Corporation as lessee under a 99-year Master Lease (running until 2068) from the City of New York. Part of RIOC's mission is to ensure the corporation is in compliance with its enabling legislation, corporate By-laws and guidelines, the Public Authority laws, and applicable Federal, State, and City laws and rules, by evaluating and implementing efficient and effective policy and procedures.

Verdant Power obtained a RIOC Standard Permit for Field and Park Use for its existing Control Room used in the RITE Demonstration (same facility will be used for the pilot project, with the addition of a small storage unit). On November 18, 2008, Verdant Power consulted with RIOC to determine the requirements for expanded land use required by the pilot project (*i.e.*, to include five shoreline switchgear vaults). A summary of this consultation is located in Appendix B of Volume 1. A renewal of the

RIOC permit covering expansion of the project site to include an additional storage container (required for Installs A and B-1), with an option to expand for later-stage installations (i.e. shoreline vaults for Installs B-2 and C) is pending approval.

Statute: NYC Charter Chapter 15, Sections 383 & 384

Regulation: NYC Administrative Code Title 4

Authority: New York City Department of City Planning

The rights of the city in and to its water front, ferries, wharf property, bridges, land under water, public landings, wharves, docks, streets, avenues, highways, parks, waters, waterways and all other public places are hereby declared to be inalienable; but upon the closing or discontinuance of any street, avenue, park or other public place, the property may be sold or otherwise disposed of as may be provided by law, and leases of land under water... may be made as may be provided by law. No real property of the city may be sold, leased, exchanged or otherwise disposed of except with the approval of the mayor and as may be provided by law unless such power is expressly vested by law in another agency.

Verdant Power has initially reviewed this statute and finds that City lands underwater do not seem to extend beyond pierhead/bulkhead line. However, further consultation with the NYS Office of General Services may be necessary to identify any specific areas.

Statute: NYC Charter Chapter 8, Section 197-c

Regulation: NYC Administrative Code Title 25 Chapter 1

Authority: New York City Department of City Planning - City Planning Commission

Uniform land use review procedure: Required for changes to the city map, including disposition of the real property of the city, including the sale or lease of land under water (pursuant to Chapter 15 Section 1602) and for special permits within the jurisdiction of

the city planning commission under the zoning resolution (pursuant to Section 200 and 201). Pierhead line is outermost seaward boundary of area regulated by Zoning Resolution.

Verdant Power conducted initial consultation to confirm needed city approvals and timing for the RITE Demonstration, and will reinitiate contact for the pilot project.

Statute: New York City Charter Chapter 26, Section 643

Regulation: NYC Building Code §27-126

Authority: New York City Department of Buildings

Building Permit: The NYC building code (and permits required pursuant to) applies to the construction, alteration, repair, demolition, removal, maintenance, occupancy and use of new and existing buildings including the installation, alteration, repair, maintenance and use of service equipment therein. With regard to the regulation, inspection and testing of electric wires and wiring apparatus and other appliances used or to be used for the transmission of electricity for electric light, heat, power, signaling, communication, alarm and data transmission in or on any building or structure in the city, the department's jurisdiction does not extend to waterfront property owned by the city and under the jurisdiction of the department of ports, international trade and commerce, or to the following structures on any such waterfront property; wharves, piers, docks, bulkheads, structures wholly or partly thereon, or to such other structures used in conjunction with or in furtherance of waterfront commerce or navigation, or to bridges, tunnels or subways or structures appurtenant thereto.

Verdant Power has reviewed this statute and may need to discuss applicability of this statute with the NYC Department of Buildings. Verdant Power will make a determination on this issue and act as required.

Statute: NYC Charter Chapter 37, Section 854

Authority: New York City Arts Commission

Design Review: No structure shall be erected or placed upon land belonging to the city... and no structure which is the property of any corporation or private individual shall extend over or upon any... park or public place belonging to the city... unless the design thereof, accompanied by an estimate of cost and a plan showing the proposed location, shall have been submitted to the commission and the design, and in the case of a building or other structure its location in relation to existing or projected developments in the vicinity, shall have been approved in writing by it...if an approval of a structure pursuant to subdivision e of this section primarily concerns an action within an historic district and also requires a report or determination by the landmarks preservation commission (pursuant to chapter 3 of title 25 of the administrative code of the city of New York), then the powers and duties of the art commission with respect to such structures shall instead be exercised by the Landmarks Preservation Commission pursuant to its own rules and procedures.

Verdant Power has reviewed this statute and may need to discuss applicability and timing of this approval with NYC Arts Commission. Verdant Power will make a determination on this issue and act as required.

New York Public Service Law – §4.68 Approval of Incorporation and Franchises; Certificate

The New York Public Service Commission (PSC) maintains jurisdiction, supervision, powers and duties as to the manufacture, conveying, transportation, sale or distribution of gas (natural or manufactured or mixture of both) and electricity for light, heat or power, to gas plants and to electric plants and to the persons or corporations owning, leasing or operating the same. Article 4.68 of New York Public Service Law requires that any gas

corporation or electric corporation seeking to begin construction of a plant shall first obtain the permission and approval of the Public Service Commission.

The definition of an "electric corporation" under New York Public Service Law §2.13 includes a specific exception for "alternate energy production facilities," which, under New York Public Service Law §2.2-b are defined to include "tidal"[1] energy production facilities, "together with any related facilities located at the same project site, with an electric generating capacity of up to eighty megawatts, which produces electricity, gas or useful thermal energy." It is therefore Verdant Power's view that, as a tidal energy production facility with a generating capacity well under eighty megawatts, the RITE East Channel Pilot falls within the definition of an "alternate energy production facility" and is exempt from New York Public Service Law §4.68.

New York PSC Order, Case 02-E-1282 – Order Modifying Standardized Interconnection Requirements

In November 2004, the New York Public Service Commission (PSC) issued an order modifying the Standard Interconnection Requirements (SIR) by increasing the maximum capacity of interconnected systems from 300 kW to 2 MW and expanding interconnection to the state's area networks, which serve parts of large, urban areas (including New York City). The SIR apply to New York's six investor-owned local electric utilities: Central Hudson Gas and Electric, Consolidated Edison (Con Edison), New York State Electric & Gas, Niagara Mohawk, Orange and Rockland Utilities, and Rochester Gas and Electric.

Verdant Power will work through the SIR process to obtain final utility acceptance for interconnection of the pilot project. Verdant Power would likely apply to interconnect

[1] New York Public Service Law §2.2-b was amended on July 28, 2009 by the New York State legislature to add fuel cell, tidal and wave energy to the definition of the term "alternate energy production facility" for purposes of the public service law.

the power generation facilities of the pilot to the Consolidated Edison (ConEd) power distribution system under this modified SIR process.

7. Brief project description

(i) Proposed installed generating capacity:

1 MW

(ii) Check appropriate box:

☐ Existing Dam ☐ Unconstructed Dam

☐ Existing dam, major modified project (see §4.30(b)(14))

☒ Hydrokinetic Pilot Project

8. Lands of the United States affected (shown on Exhibit G):

	(Name)	(Acres)
(i) National Forest	None	Not Applicable (N/A)
(ii) Indian Reservation	None	N/A
(iii) Public Lands under the Jurisdiction of New York State	NY Department of State - for all underwater facilities	21.2 (includes underwater cables from turbines to shoreline vaults)
(iv) Other	Roosevelt Island Operating Company (RIOC):	
	Shoreline Cable Vaults (5)	0.012 Acres (536 sq ft)
	Control Room & Storage Area	0.007 Acres (320 sq ft)
	Underground transmission lines (2)	0.38 Acres (everything in else in the boundary)

(v) Total U.S. Lands		21.6 Acres

(vi) Check appropriate box:

☐ Surveyed Land ☒ Unsurveyed Land

Construction of the project is planned to start within 6 - 8 months, and is planned to be completed within 39 months, from the date of issuance of license.

PART A

REVISED PROCESS PLAN AND JUSTIFICATION STATEMENT

PART A

PROCESS PLAN AND JUSTIFICATION STATEMENT

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PART A

PROCESS PLAN AND JUSTIFICATION STATEMENT

Verdant Power proposes a process plan and schedule for expedited review of its application for a hydrokinetic pilot license. This plan is presented below and provides the parties that will be involved in this licensing process with the information necessary to facilitate their participation, including the anticipated milestones and overall path associated with the licensing process. Also included in this section is the justification statement for using the Commission's Hydrokinetic Pilot Project Licensing Process.

1.0 SUMMARY OF KEY PROJECT ACTIVITIES AND CONSULTATION TO DATE

Given the long history of activities under the Verdant Order[1] and Verdant Power's initial licensing activities for the RITE Project using the Traditional Licensing Process, Verdant Power includes in Table 1 below a list of key licensing and project activities that have taken place leading up to this submission of pre-filing materials. A record of communication is provided in Part B of this volume and includes official correspondence regarding the Project that was not filed with the Draft Kinetic Hydropower Pilot License Application in November 2008.

Table 1. Summary of Key RITE Project Licensing and Project Milestones to Date

Date	Milestone
September 9, 2002	FERC issues initial Preliminary Permit (P-12158)
October 22, 2003	VP distributes Initial Consultation Document to service list
December 15, 2003	VP conducts two sessions of a Joint Agency Public Meeting and site visit on Roosevelt Island
February 19, 2004	FERC grants authority for VP to initiate day-to-day Section 106 Consultation
February 19, 2004	FERC designates VP as the non-federal representative for Section 7 Consultation

[1] *Verdant Power LLC*, 111 FERC ¶61,024, *order on reh'g* 112 FERC ¶61,143 (2005)

Date	Milestone
June 9, 2004	VP conducts Publicly Noticed Study Scoping Meeting on Roosevelt Island related to the Initial Consultation Document filed with FERC for the RITE Project
September 8, 2004	VP conducts follow up Study Scoping Meeting with Agency Representatives in Tarrytown, NY to discuss permitting requirements for deployment and operation of the six study units in support of the RITE Project
July 27, 2005	FERC determines that a FERC license is not needed for deployment of the six study units: "Verdant Order"
September 9, 2005	NYSDEC grants permits for deployment and study of six study units with Fish Monitoring and Protection Plan (FMPP) v6.0 as conditions
December 13, 2005	FERC issues second Preliminary Permit (P-12611)
May 5, 2006	US ACOE grants permit for deployment and study of six study units with same FMPP conditions above.
December 12, 2006	VP initiates RITE demonstration Deploy #1 (Two Gen 4 KHPS Units)
December 20, 2006	VP distributes 11 study plans to approximately 200 interested parties in support of the January 4, 2007 Study Meeting
January 4, 2007	VP conducts open Study Meeting on Roosevelt Island for RITE Buildout Field License Application
January 21, 2007	VP concludes RITE demonstration Deploy #1
January 2007	VP submits request to FERC to conduct pre-filing NEPA scoping and provides proposed Scoping Document 1 to FERC.
January 2007	FERC grants request for pre-filing scoping.
February 2007	VP/FERC perform 30-day public notice period for NEPA Scoping Meeting and distribute Scoping Document 1 to project stakeholders. The scoping document identifies studies to date, provides non-proprietary results of such studies and the plans for continuing and additional studies.
February 7, 2007	RITE Recreational study group meets
March 1, 2007	VP conducts consultation with RITE Navigation and Security study group
March 6, 2007	VP submits 60-day monitoring plan to RITE Aquatic Resources study groups (5 study plans)
March 16, 2007	VP files amended preliminary permit, based on Navigation and Security study group comments.
March 28 & 29, 2007	FERC conducts Scoping Meetings on Roosevelt Island.
March 29, 2007	VP conducts consultation with RITE Historical and Cultural study group
April 11, 2007	FERC initiates tribal correspondence via letter

Date	Milestone
April 18, 2007	VP initiates RITE demonstration Deploy #2 (Six Gen 4a KHPS units)
April - June 2007	Resource agencies comment of scoping and preliminary permit amendment (in FERC docket)
May 12 - 17, 2007	VP conducts post-deployment studies, hydrodynamics, noise and bird observations in accordance with FMPPv6.0
June 14, 2007	FERC approves preliminary permit amendment
June 20, 2007	VP conducts hydroacoustic workshop with agencies to discuss aquatic data collected post deployment
July 1, 2007	VP concludes Deploy #2
July 11, 2007	VP posts all data collected in study plans to resource agencies
August - September 2007	VP files for and receives extension of NYSDEC/USACE permits with conditions to amend Fish Monitoring and Protection Plan (FMPP)
July 07 - May 2008	VP conducts redesign and testing on Gen 5 rotor
December 2007	VP reinitiates discussions with NYSDEC on study plans and receives extension of NYSDEC study plan until May 9, 2009
Jan - May 2008	VP consults with agencies on revisions to FMPP for permit extension/Deploy #3
May 15, 2008	FERC/VP hold pre-application meeting
May 27, 2008	VP conducts meeting with agencies on revised Deploy #3 plan and completion of revised study plans associated with FMPP
June - August 2008	VP consults with resource agencies on protocols for FMPP associated with Deploy #3
September 2008	Verdant Power receives NYSDEC and USACE approval of FMPP v7.5/permit extension
September 11, 2008	VP initiates RITE demonstration Deploy #3 (Two existing KHPS units retrofitted with Gen 5 rotors)
September - ongoing	VP begins execution of study plans under FMPP v7.5
October 28, 2008	FERC/VP hold pre-application meeting concerning Hydrokinetic Pilot License Application
November 25, 2008	VP Files Draft Pilot License Application
December 1, 2008	FERC Issues Notice of Intent for Draft Pilot License Application
December 1, 2008	VP Files Application for Successive Preliminary Permit
December 3, 2008	VP Files Supplemental Information to Draft Pilot License Application
December 5, 2008	FERC Letter to VP re Acceptance of Preliminary Permit Application

Date	Milestone
December 9, 2008	FERC Issues Notice of Acceptance of Preliminary Permit Application
December 10, 2008	VP Files 60-Day Interim Monitoring Report for Fish Movement and Protection Study
January 8 – March 5, 2009	Agency and Public Comments Filed
January 27, 2009	FERC Issues Request for Additional Information on Draft Pilot License Application
February 17, 2009	FERC Order Issuing Preliminary Permit
March 30, 2009	VP Files Supplemental Information to FERC's Request for Additional Information
April 3, 2009	VP Files Supplemental Information and Schedule of Activities
May 1, 2009	FERC Issues Notice Concluding Pre-Filing Process and Approving VP's Process Plan and Schedule
May 1, 2009	FERC Issues Letter Concluding Pre-Filing Process and Response on Waiver Request and Process Plan
July 2010	VP continues consultation on permits and RMEE Plans v1
July 31, 2009	VP Files 6-Month Report of Activities
September 2009	VP continues consultation on permits and RMEE Plans v2
January 29, 2010	VP Files 6-Month Report of Activities
April 15, 2010	VP Consults with Agencies to Discuss Environmental Monitoring Plans.
July 30, 2010	VP Files 6-Month Report of Activities
August 2010	VP continues consultation on permits and RMEE Plans v3
October 14, 2010 November 23, 2010	VP Consults with Agencies on Monitoring Plans, Updates on Technology, and Plans to File Final License Application VP conduction final consultation on RMEE plans

2.0 PROPOSED PROCESS PLAN AND SCHEDULE

Verdant Power proposes a process plan and schedule for expedited review of its application for a hydrokinetic pilot license. This plan is shown in Table 2 below and provides the parties that will be involved in this licensing process with the information necessary to facilitate their participation, including the anticipated milestones and overall path associated with the licensing process.

Table 2. Hydrokinetic Pilot Project Licensing Process Plan and Schedule

DATE	DAYS	MILESTONE
December 29, 2010		1) Verdant Power Files License Application 2) Verdant Power Files Application Submittals for Concurrent Regulatory Processes (CZMA, Clean Water Act, etc., if needed) 3) Verdant Power Files Applicant-Prepared Draft Biological Assessment (DBA) 4) Verdant Power Files Revised Post-License Monitoring Plan
January 13, 2011	15	Commission Issues Acceptance & REA Notice; and Request for Interventions
January 13, 2011	15	Commission Issues Biological Assessment (BA), if necessary
February 14, 2011	30	Agencies and Others File Recommendations, Conditions, and Comments on the Application
April 15, 2011	60	Commission Issues Single EA if FONSI
May 16, 2011	30	Agencies and Others Comment on EA; 10j Resolution
May 16, 2011		Ready for Commission Decision

3.0 JUSTIFICATION STATEMENT

The following demonstrates that Verdant Power's RITE East Channel Pilot meets the *Criteria for Using the Pilot Licensing Procedures,* listed in Section III of the Commission's whitepaper, "Licensing Hydrokinetic Pilot Projects." These criteria specify that the proposed project must be: 1) small; 2) short term; 3) not located in sensitive areas; 4) removable and able to be shut down on short notice; 5) removed, with the site restored, before the end of the license term (unless a new license is granted); and 6) initiated with a draft application that is adequate as filed to support environmental analysis.

1) Pilot projects will be small.

As mentioned in the whitepaper, Commission staff will evaluate projects on a case-by-case basis, but expects that pilot projects will be less than 5MW and often will be substantially smaller. In addition to generating capacity, staff also will consider carefully the number of generating units and the project footprint in determining whether the proposal qualifies as a pilot project.

Verdant Power's proposed RITE East Channel Pilot should be considered in compliance with this criterion, as its proposed full build-out installed capacity would be 1MW, which is far below the 5 MW threshold proposed by the Commission in its whitepaper. With respect to the number of generating units and the project footprint, there were agency concerns about whether the full build out of the project (with 30 generating units) together with the proposed West Channel pilot project would meet this criteria. Verdant has decided not to pursue development in the West Channel of the east River and is now proposing to develop the East Channel pilot project in a phased approach starting with a two-turbine deployment and gradually building out to the full field of thirty turbines. Operational and environmental monitoring would be conducted during each phase to help understand the effects of expanding the footprint and the number of generating units prior to work being conducted.

2) The license will be short term.

As mentioned in the whitepaper, the Commission will evaluate on a case-by-case basis, but expects that pilot projects will have terms of 5 years.

While Verdant Power has respectfully considered the Commission's whitepaper guidelines of a license term of 5 years, the Company believes that, for the several reasons described below, the Commission should consider a term of 10 years for the full development of the RITE East Channel Pilot. Verdant Power believes that this timeframe should still be considered short term, especially because the Company's original plan under the TLP was intended for a 30-50 year license.

Rationale for Request of 10-year license:

a) <u>Prove Maintenance Cycles</u>. While proven operational through the RITE demonstration, Verdant Power's KHPS is an emerging technology that requires additional field demonstration, particularly in terms of Operations and Maintenance cycles, in order to be deemed reliable in the eyes of stakeholders/investment community and thus reach full commercialization. Therefore, a key goal of the pilot project is to demonstrate the actual in-field

Operation and Maintenance cycles of the technology, which are currently expected to be 2-3 years. In order to prove this expectation, Verdant Power seeks to demonstrate at least two such maintenance cycles during the pilot license period. This would require a minimum 6-year operating period, plus time for initial construction and potential removal.

b) Financing Ability. As an innovative technology, kinetic hydropower requires a higher level of capital costs and, accordingly, higher levels of project financing. Based on its fundraising efforts over the past decade, Verdant Power envisions that obtaining financing for a project that only operates for 3 years will be difficult. Therefore, the Company believes it will see more likelihood for financing of a phased project operated over a 10-year period, which would provide a greater chance of approaching payback economics.

c) Facilitate Staged Approach to Commercial Development of the RITE Project. While initially it was Verdant Power's intention to file for a 30-50 year license for the full commercial development of the RITE Project, based on agency feedback and the Commission's introduction of the Hydrokinetic Pilot Project Licensing Process, Verdant Power proposes the staged approach outlined below in order to commercially develop the RITE Project:

- Install A: Q4 2011 – performed under existing Verdant Order and 401/404 permit:
    - 2 units on existing Pile 1 and Pile 5.
    - Units will run for 180 days.
    - After 180 days, if units are functional, Verdant will need to decide whether to remove them to inspect for wear and tear, or to run them longer to evaluate their longevity.
    - This allows Verdant to test new turbine technology without bearing the costs and risk of the new triframe.
- Install B1: Install 3 units on 1 Tri-Frame: Q3 2012
- Install B2: Install 6-9 more units on 2-3 triframes: Q3 2013
- Install C: Install up to 30 units (total) on 10 triframes: Q3 2014

A 10-year license for the RITE East Channel Pilot would assist in this phased approach by allowing for some schedule readjustment based on results or changes to the project and also allow adequate time to conduct relicensing efforts for a longer term commercial license for the project after the pilot phase ends. A proposed schedule depicting the overall approach is provided in Attachment A.

d) <u>Availability of Renewable Energy Credits</u>. The New York State Energy Research and Development Authority (NYSERDA) enters into 10-year contracts with renewable energy producers during which time NYSERDA provides renewable portfolio standard incentives. These incentives are crucial to the development of the pilot and the KHPS technology. A 10-year license period would increase the likelihood of NYSERDA entering into such a contract with Verdant Power for the RITE East Channel Pilot.

3) Pilot projects will avoid sensitive locations.

The whitepaper guidance indicates that the applicant must describe potential areas of sensitivity in the proposed project area and indicate the reasons for the sensitivity and include stakeholder comments. Commission staff will determine whether a potential use conflict makes the proposal inappropriate for an expedited review process.

As a result of the extended consultation process undertaken by Verdant Power in following the TLP for the first few years of its preliminary permit, the Company has developed and executed extensive studies, as well as engaged stakeholder concerns in siting the pilot project proposed here. Sensitive locations were mainly focused on commercial navigation conflicts as dictated by the U.S. Coast Guard, recreational concerns related to shoreline fishing, commercial navigation restrictions due to oil barge deliveries at the Ravenswood Generating Station, and interference with potential water taxis on Roosevelt Island. No sensitive habitats for fishery or other biological resources were noted in the record comments from 2003-2008. However, in their comments on the draft Pilot License Application, NMFS noted "*The East River provides an important hydrologic connection between New York Bay and western Long Island Sound.*

Considering that many trust resources use this area as a migration corridor, for resident habitat and for other important ecological functions, the East River will include sensitive areas. We encourage FERC to take these critical uses into serious consideration in its deliberative process, and ensure that all sensitive areas are given adequate analysis for identification and protection in their licensing decision." Verdant has worked with the NMFS and other agencies to develop a monitoring plan to assess potential impacts to species migrating through this area and has completed an essential fish habitat assessment which accompanies this application. Verdant Power believes the project is in compliance with this criterion.

4) Pilot projects will be subject to strict safeguards for the public and environmental resources potentially leading to project modification, shutdown, or complete removal.

The whitepaper states that unacceptable risks to the public or the environment during the license period, as observed through monitoring protocols required by the license (or as otherwise becomes evident), will lead to project alteration, shut-down, or removal followed by site restoration.

Under its preliminary permit and the Verdant Rulings, from 2002-present, Verdant Power has tested and demonstrated its KHPS in the East River. The installation, operation and removal activities associated with this demonstration have required permits[2] from both the NYSDEC and USACE. As a condition of these permits, Verdant Power was required to ensure public safety, environmental safety, shutdown and removal, for the term of the project permits, a period of 3 years extending from May 2006 to May 2009.

Specifically, Verdant Power complied with these requirements by establishing a public safety exclusion zone around the field array, marked with Public Aides to

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[2] The RITE demonstration operates under three specific U.S. in-water permits: (1) a joint USACE/NY state DEC Permit (No. 2-6204-01510/00001) and ACOE Permit (No. NAN-2003-402-EHA); (2) a FERC preliminary Permit (No. 12611) not required for operation; and (3) a NYS Office of General Services (OGS) permit for use of state-owned property (No. LUW-01008-06).

Navigation (PATONs); developing and executing a Fish Movement and Protection Plan (FMPP), which included extensive studies to ensure environmental resource safety; agreeing to conditions that require the shutdown if public or environmental safety was compromised; and accepting conditions that required the removal of the project and restoration at the end of the permit.

Verdant Power has included these same types of provisions and plans in this hydrokinetic pilot project license application[3]. By its demonstrated compliance with these types of conditions over the life of the NYSDEC and USACE permits, and the inclusion of these plans in this license application for comment, Verdant Power believes it is in compliance with this criterion for a hydrokinetic pilot project.

5) Pilot projects will be required to complete project removal and site restoration before the end of the license unless the licensee obtains a new license covering the pilot project site.

The whitepaper states that licenses for pilot projects will require that the project be removed and the site restored as directed by the Commission. If a pilot project licensee opts to apply for a standard license at the end of the pilot project license term, authorization of the build-out project will be evaluated in a full Commission proceeding with National Environmental Policy Act (NEPA) review and participation by all interested stakeholders. If build-out is licensed, there may be no need to remove the pilot devices.

As discussed above, Verdant Power has complied with these requirements in its RITE demonstration and proposes to accept conditions of this nature in the proposed hydrokinetic pilot license. In addition, as required by the Commission guidance, Verdant Power includes in this license application a plan to assure financing to remove the project and restore the site, in the event a relicense is not pursued.

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[3] See Volume II, C. ii Safeguarding the Public and Environmental Resources/Project Removal Plan for further details.

6) Initiated with a draft application that is adequate as filed to support environmental analysis.

The whitepaper states that the draft application must include a thorough description of the existing environment, incorporating a review of existing information and a description of the environmental baseline, which may require basic pre-application surveys, measurements, or observations. Potential effects of the project should also be included.

Verdant Power has been actively studying the RITE Project area, consulting with Project stakeholders, and addressing potential environmental issues for a number of years. Verdant Power believes that the environmental report submitted with this application as Exhibit E provides a more than sufficient level of information to support the environmental analysis for issuance of the pilot license and thus believes the project is compliant under this criterion.

ATTACHMENT A

Proposed Staged Approach to Commercial Development of the RITE Project (2009-14)

Verdant Power proposes a staged approach to the commercial development of the RITE Project.

	Q4	Q1	Q2	Q3	Q4	Q1	Q2	Q3	Q4	Q1	Q2	Q3	Q4	Q1	Q2	Q3	Q4
Year	**2010**	**2011**	**2011**	**2011**	**2011**	**2012**	**2012**	**2012**	**2012**	**2013**	**2013**	**2013**	**2013**	**2014**	**2014**	**2014**	**2014**
File FERC Pilot License Application	File																
FERC Issues Pilot License - RITE East Channel Pilot					Issue?												
NYSDEC/USACE 401/404 Permit	Existing In Effect	File modification And extension					Expires May 2012	===	===	===	===	===	Extend to Nov 2013				
Install A				Test	Install & Monitor		Report Results	Inspect	Continue to Run								
NYSDEC/USACE 401/404 Permit		File for new			Issue?												
Install B-1									Install & Monitor		Report Results						
Install B-2												Install & Monitor	Monitor		Report Results		
Install C																Install & Monitor	Monitor
Relicense																	Start 5.5 yr Process

PART B

COMMUNICATION RECORD

COMMUNICATIONS RECORD

This section contains the record of communications between Verdant Power and federal, state, and local resource agencies, non-governmental organizations, and members of the public potentially interested in the Project. Table 1 contains a complete list of consultation beginning with Verdant Power's filing of the preliminary permit application in 2002. Table 2 contains a list of stakeholders that are being notified of this application and is followed by the Certificate of Service. Finally, this section contains copies of publication of the notice of filing the Draft License Application in local newspapers and summaries of key agency meetings.

Table 1. Record of Consultation

Date	Organization	Type	Description	Location of Document
5/30/2002	Verdant Power	FERC Filing	Verdant Power files preliminary permit for the RITE Project (P-12178)	FERC Docket
9/9/2002	FERC	FERC Filing	FERC issues preliminary permit	FERC Docket
7/23/2003	FERC	FERC Filing	FERC issues "Verdant Order"	FERC Docket
10/27/2003	Verdant Power	FERC Filing	Verdant Power distributes Initial Consultation Document (ICD)	Verdant Power
12/15/2003	Verdant Power	Meeting	Verdant Power holds meeting with stakeholders on Roosevelt Island	Verdant Power
12/23/2003	NYSDEC	Letter		Verdant Power
2/7/2004	Verdant Power	Letter	Verdant Power requests that FERC designate the Company as a non-federal representative for the purposes of Section 7 consultation of the ESA	FERC Docket
2/17/2004	Verdant Power	Letter	Verdant Power requests that FERC designated the company as a non-federal representative for the purposes of section 106 consultation with the New York State Historic Preservation Officer	FERC Docket
2/19/2004	FERC	Letter	FERC sends a letter to USFWS granting Verdant Power the ability to begin initial consultation under Section 7 of the ESA	FERC Docket
2/19/2004	FERC	Letter	FERC grants Verdant Power authority to begin initial consultation with the New York State Historic Preservation Officer	FERC Docket

Date	Organization	Type	Description	Location of Document
5/21/2004	NMFS	Letter	NMFS sends a letter to the USACE stating there are no known threatened and endangered species in the East River	Verdant Power
6/9/2004	Verdant Power	Meeting	Verdant Power holds meeting on Roosevelt Island with agencies to discuss study plans	FERC Docket
6/18/2004	NYSDEC	Letter	NYSDEC Communication with USACE re: Verdant Power's RITE Demonstration Project	Final License Application Consultation Appendix
6/9/2005	ConEd	Letter	ConEd approves Verdant Power's proposal to connect 6 turbines to a Roosevelt Island meter	FERC Docket
9/3/2004	NYSDEC	Letter	NYSDEC comments to Verdant Power on draft permit application	Verdant Power
7/25/2005	NYSDEC	Letter	NYSDEC comments to Verdant Power on RITE demonstration Fish Movement and Protection Plan	Verdant Power
9/6/2005	Verdant Power	FERC Filing	Verdant Power petitions FERC for new preliminary permit for the RITE Project	FERC Docket
9/19/2005	NYSDEC	Permits	NYSDEC issues permit for RITE demonstration Project (DEC No. 2-6204-01510/00001 and 00002)	Verdant Power
10/14/2005	NYSDEC/USACE	Letter	USACE and NYSDEC approve Fish Movement and Protection Plan 6.0 (FMPP v6.0 October 2005)	Verdant Power

Date	Organization	Type	Description	Location of Document
10/15/2005	Verdant Power	Data	Verdant Power, in accordance with permits from the New York State Department of Environmental Conservation (NYSDEC) and the Army Corps of Engineers (USACOE) permits: DEC No. 2-6204-01510/00001 and 00002 and NAN-2003-402-EHA for the RITE Project, begins detailed data collection under a Fish Movement and Protection Plan (FMPP v6.0 October 2005) associated with RITE Demonstration Deploy #1 and Deploy #2 in December 2006 through June 2007.	Verdant Power
12/13/2005	FERC	FERC Filing	FERC issues new preliminary permit for the RITE Project (P-12611)	FERC Docket
1/19/2006	FERC	Letter	FERC affirms that Verdant Power is operating under the FERC Traditional Licensing Process (TLP)	FERC Docket
5/5/2006	USACE	Permits	USACE issues permit for RITE Demonstration Project (NAN-2003-402-EHA)	Verdant Power
6/30/2006	NYSDEC	Letter	NYSDEC comments to Verdant Power on the RITE demonstration Fish Movement and Protection Plan and Water Quality Assessment	Final License Application Consultation Appendix
7/12/2006	NYSDEC	Letter	NYSDEC submits letter stating that water quality assessment should include grab sampling if a core sample cannot be collected and a sediment study plan if the grab sample contains fine grain sediment	FERC Docket
9/14/2006	NYSOGS	Permit	NYSOGS grants Verdant Power an underwater lands lease for the RITE demonstration	Verdant Power

Date	Organization	Type	Description	Location of Document
11/1/2006	Verdant Power	Letter	Verdant Power sends letter to agencies requesting information on threatened and endangered species at the RITE Project	DTA
11/17/2006	NMFS	Letter	NMFS sends letter that states that consultation pursuant to Section 7 of ESA would not be necessary for the RITE Project	Verdant Power
12/28/2006	USFWS	Letter	USFWS responds to the letter sent by Verdant Power requesting information on the presence of threatened and endangered species within the RITE Project and states that except for the "occasional transient individual" there are no federally listed species within the RITE Project. The RITE Project region is also not a "critical habitat"	FERC Docket
1/4/2007	Verdant Power	Meeting	Verdant Power holds kick-off meeting on Roosevelt Island in accordance with the TLP at Roosevelt Island to introduce its 11 RITE study groups	Verdant Power
1/19/2007	Verdant Power	Email	RITE Recreational Resources Study Group receives a questionnaire	Verdant Power
1/22/2007	Verdant Power	Conference Call	RITE Navigational Study Group meets	Verdant Power
1/22/2007	Verdant Power	Conference Call	RITE Water Quality Study Group meets	Verdant Power
1/25/2007	Verdant Power	Conference Call	Rite Threatened and Endangered Species, Birds Study Group meets	Verdant Power
1/25/2007	Verdant Power	Conference Call	RITE Aquatic Resource Study Group meets	Verdant Power

Date	Organization	Type	Description	Location of Document
2/6/2007	NMFS	Letter	NMFS submits information on federally listed species within the RITE Project and states that consultation pursuant to Section 7 of the ESA would now be necessary	FERC Docket
2/7/2007	Verdant Power	Conference Call	RITE Recreational Resources Study Group meets	Verdant Power
2/13/2007	USACE	Letter	USACE establishes itself as a cooperating agency for the RITE Project	FERC Docket
2/14/2007	NYSDEC	Letter	NYSDEC comments to Verdant Power about permit modification inquiries	Final License Application Consultation Appendix
3/1/2007	FERC	FERC Filing	FERC issues notice of scoping meeting	FERC Docket
3/1/2007	Verdant Power	Meeting	Verdant Power holds a RITE Navigation Group meeting in its offices on Roosevelt Island	Verdant Power
3/6/2007	USEPA	Letter	The USEPA sends a letter establishing itself as a cooperating agency	FERC Docket
3/16/2007	Verdant Power	FERC Filing	As a result of coordination with the navigation and security group; the original build out project boundary is found to be unsatisfactory to the U.S. Coast Guard, therefore Verdant Power files for an amended preliminary permit boundary, encompassing two fields in the East River - an East Channel Field north of the Roosevelt Island bridge, and a second field in the West Channel in the UN security zone.	FERC Docket
3/20/2007	Verdant Power	Conference Call	RITE Aquatic Resource Study Group meets, discusses 60 Day Interim Monitoring Report	Verdant Power
3/28/2007	FERC	Meeting	FERC conducts TLP scoping meeting at Roosevelt Island	FERC Docket

Date	Organization	Type	Description	Location of Document
3/28/2007	Verdant Power	Meeting	Verdant Power holds RITE Recreational Resource Group meeting in offices on Roosevelt Island	Verdant Power
3/29/2007	FERC	Meeting	FERC conducts TLP scoping meeting at Roosevelt Island	FERC Docket
4/1/2007	Verdant Power	Website	Verdant Power publishes a RITE Project website (www.riteporject.com) that provides information about the project. The site closes temporarily in August 2008, republished in November.	Website
4/2/2007	NYSDOS	Letter	NYSDOS sends a letter commenting on amendment of the preliminary permit and the need to discuss this amendment further. Proposed to discuss in Albany on April 18, 2007	FERC Docket
4/11/2007	FERC	Letter	FERC sends letter to Delaware Nation, et al to invite tribal Consultation to be initiated and give notice of Verdant Power's scoping meetings (3/28/07 and 3/29/07)	FERC Docket
4/18/2007	USFWS	Letter	USFWS sends letter commenting on the 60 Day Report	Verdant Power
4/18/2007	NYSDOS	Letter	NYDOS sends letter of comment to FERC	FERC Docket
4/25/2007	NYSDEC	Letter	NYSDEC submits comments on the 60 Day Interim Report	FERC Docket
4/27/2007	US EPA	Letter	US EPA provides comments on the proposed RITE Project and requests review of the hydrodynamics study plan	FERC Docket
4/30/2007	NMFS	Letter	NMFS submits comments on the 1/17/2007 meeting at FERC	
4/30/2007	USFWS	Letter	USFWS submits comments on the Scoping Document	FERC Docket
4/30/2007	NYSDEC	Letter	NYSDEC submits comments on the Scoping Document	FERC Docket

Date	Organization	Type	Description	Location of Document
5/1/2007	USFWS	Letter	USFWS submits comments on the Scoping Document	
5/7/2007	USDOI	Letter	USDOI submits comments on Verdant Power's proposed amendment of the second preliminary permit filed for the RITE Project	FERC Docket
5/7/2007	NYSDEC	Letter	NYSDEC submits comments on Verdant Power's amendment of the second preliminary permit filed for the RITE Project	FERC Docket
3/13/2007	NOAA	Letter	NOAA sends letter commenting on the project plans for licensing	Verdant Power
5/20/2007	Verdant Power	Conference Call	RITE Aquatic Resource Study Group meets, holds hydroacoustics workshop during the meeting	Verdant Power
6/1/2007	NMFS	Letter	NMFS submits comments on DTA letter dated 4/10/2007	FERC Docket
6/14/2007	FERC	FERC Filing	FERC approves RITE preliminary permit amendment	FERC Docket
6/20/2007	Verdant Power	Meeting	Verdant Power holds a workshop for agencies on the interpretation of data collection associated with the fixed hydroacoustics - part of the Fish Movement and Protection Plan (FMPP). Workshop is held at NYSDEC NYC Offices	Verdant Power
7/11/2007	Verdant Power	Data	Verdant Power places available data from RITE demonstration Deploy #2 on a secure ftp site for agency review pursuant to the requirements of the FMPP v6.0	Website
7/27/2007	NMFS	Letter	NMFS recommends consultation pursuant to Section 7 of ESA should be initiated	FERC Docket
7/27/2007	NMFS	Letter	NMFS submits comments on DTA letter dated 6/28/2007	FERC Docket

Date	Organization	Type	Description	Location of Document
8/1/2007	Verdant Power	Conference Call	Verdant Power forms the Fish Movement and Protection Plan (FMPP) Group consisting of NYSDEC, USACE, NOAA, EPA and USFWS and holds a call	Verdant Power
8/8/2007	Verdant Power	Permits	In accordance with the New York State Department of Environmental Conservation (NYSDEC) and the Army Corps of Engineers (USACE) permits: DEC No. 2-6204-01510/00001 and 00002 and NAN-2003-402-EHA for the RITE Project, Verdant Power applies for an extension of these permits to May 9, 2009; with the condition that the Fish Monitoring and Protection plan (rev.6.0) be updated to reflect lessons learned during the first deploy and incorporate new testing	Verdant Power
9/1/2007			NYSDEC and USACE give approval for extension until Dec 31, 2007 to file new permit plan (FMPP)	Verdant Power
9/13/2007	NYSDEC	Permits	Permit extension to 12/31/2007	FERC Docket
12/1/2007	Verdant Power	Conference Call	Verdant Power, NYSDEC and USACE hold call to discuss Fish Movement and Protection Plan	Verdant Power
2/1/2008	Verdant Power	Conference Call	Verdant Power, NYSDEC and USACE hold call to discuss Fish Movement and Protection Plan	Verdant Power
3/1/2008	Verdant Power	Conference Call	Verdant Power holds a call to discuss Fish Movement in Protection Plan with all 5 agencies	Verdant Power
5/15/2008	Verdant Power	Meeting	Verdant Power has meeting with FERC to discuss DLA	Verdant Power

Date	Organization	Type	Description	Location of Document
5/29/2008	Verdant Power	Meeting	Verdant Power holds meeting at USACE offices in NYC with the FMPP Group	Verdant Power
6/1/2008	Verdant Power	Email	As a result of the May 29, 2008 meeting with the FMPP Group, Verdant Power begins periodic status reports on Fish Movement and Protection at the RITE demonstration.	Verdant Power
7/23/2008	NYSDEC	Letter	NYSDEC comments to Verdant Power on the RITE demonstration Fish Movement and Protection Plan	Final License Application Consultation Appendix
8/8/2008	NYSDEC	Letter	NYSDEC comments to Verdant Power on the RITE demonstration Fish Movement and Protection Plan	Final License Application Consultation Appendix
9/1/2008	NYSOGS	Permit	Verdant Power receives renewed underwater lands lease permit from the NYSOGS for the RITE demonstration	Verdant Power
9/3/2008	NYSDEC	Letter	NYSDEC gives Verdant Power revisions on its comments on the RITE demonstration Fish Movement and Protection Plan	Final License Application Consultation Appendix
9/4/2008	Verdant Power	Letter	NYDEC and USACE approve Fish Movement and Protection Plan 7.5 (FMPP v7.5 September 2008)	Verdant Power
9/13/2008	NYSDEC	Permits	NYSDEC and USACE grants Verdant Power an extension of their permits, DEC No. 2-6204-01510/00001 and 00002 and NAN-2003-402-EHA for the RITE Project in accordance of the revised FMPP v7.5, updated to reflect lessons learned during Deploy #1 and #2 and incorporate new testing protocols to evaluate operating KHPS consistent with the Plan objectives.	Verdant Power

Date	Organization	Type	Description	Location of Document
11/17/2008	Verdant Power	Meeting	Verdant Power meets with the U.S. Coast Guard to discuss the filing of the Draft Pilot License Application	Verdant Power
11/18/2008	Verdant Power	Meeting	Verdant Power meets with RIOC to discuss the filing of the Draft License Application	Verdant Power
11/25/2008	Verdant Power	Website	Verdant Power reopens and updates the FERC Project website www.riteproject.com to include information Draft License Application	Website
12/1/2008	Verdant Power	Newspaper	Verdant Power publishes notice of filing of its NOI, draft application, and request for waiver in Queens Chronicle, Downtown Express, and The Main Street Wire	Attachment B
12/5/2008	FERC	Letter	Letter of Acceptance of Preliminary Permit Application	FERC Docket
12/9/2008	FERC	Notice	Notice of preliminary permit applications accepted for filing and soliciting comment	FERC Docket
12/22/2008	SHPO	Letter	SHPO sent letter stating that stating that "the project will have No Adverse Effect on cultural and historical resources eligible for or listed on the National Register of Historic Places."	Verdant Power
1/5/2009	USEPA	Letter	Comments of US Environmental Protection Agency	FERC Docket
1/5/2009	Express Marine Inc.	Letter	Comment letter re: commercial navigational safety of Draft License Application	FERC Docket
1/6/2009	Tug and Barge Committee	Letter	Comment letter re: Draft License Application	FERC Docket
1/6/2009	Donjon Marine Co. Inc.	Letter	Comment letter re: Draft License Application	FERC Docket

Date	Organization	Type	Description	Location of Document
1/6/2009	The Delaware Nation	Letter	Comment letter re: Draft License Application	FERC Docket
1/7/2009	Steven Finkelstein	Letter	Request for paper copies	FERC Docket
1/8/2009	Bouchard Transportation Co.	Letter	Comment letter re: the proposed Turbine Fields in the East River.	FERC Docket
1/8/2009	United Marine Division	Letter	Comment letter re: Draft License Application	FERC Docket
1/8/2009	William Harrigan	Letter	Comment letter re: Draft License Application	FERC Docket
1/9/2009	USFWS	Letter	Comment letter re: Draft License Application	FERC Docket
1/9/2009	Henry Mahlmann	Letter	Comment letter re: Draft License Application	FERC Docket
1/9/2009	Andrew McGovern	Letter	Comment letter re: Draft License Application	FERC Docket
1/9/2009	USACE	Letter	Comment letter re: Draft License Application	FERC Docket
1/9/2009	NMFS – Northeast Regional Office	Letter	Comment letter re: Draft License Application	FERC Docket
1/9/2009	NOAA – Northeast Regional Office	Letter	Comment letter re: Draft License Application	FERC Docket
1/9/2009	NYSDEC	Letter	Comment letter re: Draft License Application	FERC Docket
1/21/2009	Verdant Power	Meeting	Verdant Power attended a Harbor Ops Meeting to give an update on the RITE Project	Notes in Final License Application Communication Record
1/23/2009	Verdant Power	Meeting	RITE Status Update to Agencies	Memo in Final License Application Communication Record
1/27/2009	FERC	Letter	Addition Information Requests on Draft License Application	FERC Docket

Date	Organization	Type	Description	Location of Document
2/1/2009	Verdant Power	Report	FMPP Report on DIDSON/SBT Groundtruthing and Appendix	Verdant Power
2/2/2009	Verdant Power	Packet	Verdant sent stakeholders packet of copies of FERC's Additional Information Requests	Verdant Power
2/4/2009	USDI	Letter	Comments on Application for Preliminary Permit	FERC Docket
2/9/2009	NYSDEC	Letter	Comments on Application for Preliminary Permit	FERC Docket
2/11/2009	Verdant Power	Letter	Verdant sent letter to USCG, Donjon Marine Company Inc and United Marine Division Local 333 requesting a meeting on 3/10/2009 to discuss commercial navigation in East Channel of the East River	Letter in Final License Application Communications Record
2/11/2009	Verdant Power	Letter	Letter to NYC Parks requesting to characterize the recreational use of Hallet's Cove	Letter in Final License Application Communications Record
2/17/2009	FERC	Order	Order issuing Preliminary Permit	FERC Docket
2/23/2009	Verdant Power	Memo	RITE Status Update to Agencies	Memo in Final License Application Communication Record
2/26/2009	NMFS	Letter	Letter requesting to add contact	FERC Docket
2/26/2009	Verdant Power and NYC Parks – Nate Grove	Call	Characterizing recreational use of Hallet's Cove	Notes in Final License Application Communication Record
2/26/2009	Verdant Power and DonJon Marine	Call	Left message to discuss March 10, 2009 navigation meeting	Notes in Final License Application Communication Record

Date	Organization	Type	Description	Location of Document
2/26/2009	Verdant Power and USCG	Call	USCG confirmed meeting	Notes in Final License Application Communication Record
2/27/2009	Verdant Power and DonJon Marine	Call	Left message to discuss March 10, 2009 navigational meeting	Notes in Final License Application Communication Record
2/27/2009	Verdant Power and United Marine Division Local 333	Call	Call clarifying that the meeting was about the East Channel of the East River, not the West Channel	Notes in Final License Application Communication Record
3/2/2009	Verdant Power and DonJon Marine	Email	Clarifying West Channel or East Channel Opposition	Notes in Final License Application Communication Record
3/4/2009	Verdant Power and DonJon Marine	Email	Follow-up on clarifying West Channel or East Channel Opposition	Notes in Final License Application Communication Record
3/4/2009	Verdant Power and Long Island City Community Boathouse	Email	Characterizing recreational use of Hallet's Cove specifically kayakers	Notes in Final License Application Communication Record
3/4/2009	Verdant Power and United Marine Division Local 333	Call	United Marine Division declined the navigation meeting because they have no problem with the project in the East Channel of the East River	Notes in Final License Application Consultation Appendix
3/5/2009	International Longshoreme n's Association	Letter	Comment letter re: Draft License Application	Verdant Power

Date	Organization	Type	Description	Location of Document
3/6/2009	Verdant Power	Presentation	Final Fixed Hydroacoustics and Groundtruthing Report for Deployment #3	Verdant Power
3/9/2009	Verdant Power and NYC Parks – Joshua Laird	Call	Characterizing recreational use of Hallet's Cove	Notes in Final License Application Communication Record
3/11/2009	Verdant Power and Long Island City Community Boathouse	Email	Following up on characterizing recreational use of Hallet's Cove specifically kayakers	Notes in Final License Application Communication Record
3/11/2009	Verdant Power and Manhattan Island Foundation	Call	Characterizing recreational swimming use of Hallet's Cove and the East River	Notes in Final License Application Communication Record
3/11/2009	Verdant Power and NYC Parks - Joshua Laird	Email	Email sent to Joshua Laird requesting to characterize the recreational use of Hallet's Cove	Notes in Final License Application Communication Record
3/19/2009	United Marine Division Local 333	Letter	Clarifying not opposed to project in the East Channel of the East River, opposed to the project in the West Channel of the East River	FERC Docket
3/25/2009	Verdant Power and DonJon Marine	Email	Follow-up on clarifying West Channel or East Channel Opposition	Notes in Final License Application Communication Record
3/26/2009	Verdant Power and NYC Parks – Nate Grove	Call	Characterizing recreational use of Hallet's Cove	Notes in Final License Application Consultation Appendix
3/30/2009	Verdant	FERC Filing	Supplemental Information filed by Verdant in response to FERC Request for Additional Information	FERC Docket

Date	Organization	Type	Description	Location of Document
3/31/2009	Verdant Power	Report	FERC Additional Information Request Responses	FERC Docket
4/3/2009	Verdant	FERC Filing	Preliminary Permit Schedule of Activities	FERC Docket
4/10/2009	Verdant	Conference Call	Call re: monitoring plans. Attended by Verdant, FERC, NYSDEC, NYSERDA, NOAA, EPA, NYSDOS. USACE and USFWS were invited, but could not attend	Notes in Final License Application Communication Record
5/1/2009	FERC	FERC Order	Notice concluding pre-filing process and approving process plan and schedule	FERC Docket
6/11/2009	Verdant	Conference Call	Call re: monitoring plans. Attended by Verdant, FERC, NYSDEC, USACE, NOAA, NYSDOS, NYSERDA, and EPA were invited but could not attend	Notes in Final License Application Communication Record
7/2/2009	Verdant	Conference call	Call re: monitoring plans	Notes in Final License Application Communication Record
7/23/2009	Verdant	Conference Call	Call on Section 10/404/401 permit modifications with RMEE plan updates	Notes in Final License Application Communication Record
7/31/2009	Verdant	Report	Six-Month Report of Activities under Preliminary Permit	FERC Docket
8/25/2009	Verdant Power	Memo	RITE Status Update to Agencies	Memo in Final License Application Communication Record
11/5/2009	Verdant Power	Memo	RITE Status Update to Agencies	Memo in Final License Application Communication Record

Date	Organization	Type	Description	Location of Document
12/14/2009	Verdant Power and DonJon Marine	Call and Email	Verdant contact DonJon marine to clarify comment on Draft License Application	Notes in Final License Application Communication Record
1/29/2010	Verdant	Report	Six-Month Report of Activities under Preliminary Permit	FERC Docket
4/15/2010	Verdant	Conference Call	Call on Section 10/404/401 permit modifications with RMEE plan updates	Notes in Final License Application Communication Record
7/30/2010	Verdant	Report	Six-Month Report of Activities under Preliminary Permit	FERC Docket
8/3/2010	Verdant	Conference Call	Call on Section 10/404/401 permit modifications with RMEE plan updates	Verdant
8/23/2010	Verdant	Conference Call	Call on Section 10/404/401 permit modifications with RMEE plan updates	Notes in Final License Application Communication Record
9/9/2010	Kleinschmidt o/b/o Verdant Power	Conference Call	Verdant and NOAA begin Section 7 Consultation	Notes in Final License Application Consultation Appendix
10/14/2010	Verdant, FERC, NYSDEC, NYSERDA, NOAA, EPA, NYSDOS, USACE, USFWS	Meeting	Meeting re: monitoring of ESA species with Verdant, FERC, NYSDEC, NYSERDA, NOAA, EPA, NYSDOS, USACE, and USFWS	Notes in Final License Application Consultation Appendix
10/19/2010	NOAA	Letter	NOAA files comments on monitoring plan meeting on October 14, 2010	Letter in Final License Application Communication Record

Date	Organization	Type	Description	Location of Document
11/3/2010	Verdant Power	Memo	RITE Status Update to Agencies	Notes in Final License Application Communication Record
11/10/2010	Kleinschmidt o/b/o Verdant Power and NOAA	Call	Kleinschmidt left message at NOAA Silver Spring office about MMPA	Notes in Final License Application Consultation Appendix
11/16/2010	Kleinschmidt o/b/o Verdant and NOAA	Call	NOAA Silver Spring left message for Kleinschmidt to call Mary Culligan about MMPA	Notes in Final License Application Consultation Appendix
11/23/2010	Kleinschmidt o/b/o Verdant	Call	Kleinschmidt talked to Julie Crocker at NOAA about MMPA, was told to talk to Michelle Magliocca	Notes in Final License Application Consultation Appendix
11/23/2010	Kleinschmidt o/b/o Verdant	Call	Klienschmidt left message for Michelle Magliocca at NOAA about MMPA	Notes in Final License Application Consultation Appendix
11/23/2010	Kleinschmidt o/b/o Verdant	Conference Call	Call re: monitoring of ESA species, attended by Verdant, FERC, NYSDEC, NYSERDA, NOAA, EPA, NYSDOS. USACE and USFWS were invited, but could not attend	Notes in Final License Application Communication Record
11/29/2010	Kleinschmidt o/b/o Verdant	Call	Michelle Magliocca of NOAA left message with Kleinschmidt about MMPA	Notes in Final License Application Consultation Appendix
12/2/2010	Kleinschmidt on behalf of Verdant and NYSDEC	Conference Call	Verdant discusses monitoring of ESA species	Notes in Final License Application Consultation Appendix

Date	Organization	Type	Description	Location of Document
12/3/2010	Kleinschmidt on behalf of Verdant and NOAA	Call	Kleinschmidt emailed Julie Crocker at NOAA about MMPA	Notes in Final License Application Consultation Appendix
12/8/2010	Kleinschmidt on behalf of Verdant and NOAA	Email	Kleinschmidt left message with Julie Crocker at NOAA about MMPA	Notes in Final License Application Consultation Appendix
12/13/2010	NOAA	Letter	NOAA files comments on monitoring plan call on November 23, 2010	Letter in Final License Application Communication Record
12/16/2010	Kleinschmidt o/b/o Verdant and NOAA	Call	Kleinschmidt left message at NOAA Northeast Fisheries Center about MMPA	Notes in Final License Application Consultation Appendix
12/16/2010	Kleinschmidt o/b/o Verdant and NOAA	Call	Kleinschmidt talked to Mary Culligan at NOAA Noretheast Fisheries Center about MMPA	Notes in Final License Application Consultation Appendix
12/16/2010	Kleinschmidt o/b/o Verdant and NOAA	Call	Kleinschmidt left message with Julie Crocker at NOAA about MMPA	Notes in Final License Application Consultation Appendix

The following potentially interested federal, state, and local resource agencies, non-governmental organizations, and members of the public are being notified of this Application:

Table 2. Stakeholder Distribution List

First Name	Last Name	Title	Organization
Michael	Eckhart	President	ACORE
Jodie	Roussell		ACORE
			Advisory Council On Historic Preservation
Carol	Murphy		Alliance for Clean Energy New York
David	Jenkins	Director, Conservation and Public Policy	American Canoe Association
Andrew	Fahlund	Senior Program Director, Dam Reform	American Rivers
Robbin	Marks	Senior Director, Conservation Program	American Rivers
Kevin	Colburn	National Stewardship Director	American Whitewater/Hydropower Reform Coalition
Martin	Schreibman		AREAC
Dick	Dennis		Back Cast Charters
John	Cronin		Beacon Institute
Robert	Glas	Fleet Port Captain	Bouchard Transportation Co.
Franklin	Keel	Regional Director	Bureau Of Indian Affairs
Brenda	Aird	Senior Renewable Energy Advisor	Bureau of Land Management
Vernon	Isaac	Chief	Cayuga Nation
			Citizen's Environmental Coalition
David	Rivel	Executive Director	City Parks Foundation
Steve	Hammer	Adjunct Assistant Professor of International and Public Affairs	Columbia University
Arthur	Kressner	Director, Power Supply R&D	Con Edison
Damian	Sciano	Project Manager, Distribution Engineering	Con Edison

First Name	Last Name	Title	Organization
Joe	Carbonera	Project Manager, Research and Development	Con Edison
Ray	Diaz		Con Edison
Fred	Coppersmith	Director, Research and Development	Con Edison
Chris	Kilian	Senior Attorney, Natural Resources Project Director	Conservation Law Foundation
Jameel	Amhad		Cooper Union
Linda	Lance	Associate Director for Energy and Transportation	Council on Environmental Quality
James	House		Coyote Sportfishing Charters
John	Waldman	Ecology Professor	CUNY
David	Bernhardt	Dep. Chief of Staff and Counselor to the Sec'y	DOI
Diane	Lazinsky		DOI
Susan	O'Brien		DOI
Andrew	Raddant	Regional Environmental Officer	DOI
Andrew	Tittler		DOI
Mary Josie	Blanchard	Deputy Director	DOI
John	Witte	Executive Vice President	DonJon Marine Company
			Ducks Unlimited
Susan	Holmes	Senior Legislative Representative	EarthJustice
Victoria	Gilbert		East River CREW
Rod	Fujita	Scientist	Environmental Defense
Lingard	Knutson	NEPA Compliance	EPA
Grace	Musumeci	Section Chief	EPA
Cliff	Rader	NEPA Compliance Division	EPA
Cosmo	Servidio	Policy Advisor	EPA
Roger	Bedard		EPRI
Wayne	Huebschman		Express Marine Inc.
			Federal Emergency Management Agency
Kimberly	Bose	Secretary	FERC

First Name	Last Name	Title	Organization
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Emily	Carter		FERC
Vince	Yearick	Assistant Division Director, Hydropower Licensing, Northeast Region	FERC
Ann	Miles	Director	FERC
John	Smith	Branch Chief	FERC
Timothy	Konnert		FERC
Timothy	Looney		FERC
Kenneth	Yu	Attorney	FERC
Frank	Cresitelli		Fin Chaser Charters
John	De Mio		Fish Formula Charters
Michael	Davis	Executive Director	Floating the Apple
Barbara	LaRocco		Going Coastal Inc.
Tom	Donelly	Board Member	Greater Astoria Historical Society
John	Catsimatidis	CEO	Gristedes Supermarket (Red Apple Group)
Mark	Strober		HRPA
Alfred	White		Hudson River Fishermen's Association
John	Seebach	National Coordinator	Hydropower Reform Coalition
Rebecca	Sherman	Coordinator	Hydropower Reform Coalition
Rich	Newallis, Jr.		Just One More Sport Fishing Charters
Michael	Glass		Kayaker
Anna	West		Kearns & West
Mark	Dougherty	Clean Energy Project Manager	LIPA
Richard	Rossin	Program Manager-Research & Development	LIPA
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First Name	Last Name	Title	Organization
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Scott	Stringer	President	Manhattan Borough President's Office
Morty	Berger		Manhattan Island Foundation
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Carter	Craft		Metropolitan Waterfront Alliance
Mike	Scardigno	Captain	Mi-Jo Charters Atlantic Highlands
Steve	Jagoda		Molly Roze Fishing Charters
Peter R.	Keyes	VP/General Manager	Moran Towing Corporation
Michael	McVay	Ass't VP - Seaboard Barge Corp.	Moran Towing Corporation
Chris	Mildrum		Moran Towing Corporation
Edward	Tregurtha	President	Moran Towing Corporation
Paul	Tregurtha	Chairman/CEO	Moran Towing Corporation
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Robert	Teetz	Director	National Grid
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Joan	Harn	Hydro Leader	National Park Service
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Kevin	Mendik		National Park Service
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First Name	Last Name	Title	Organization
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Eric	Gioia	City Council Member	New York City Council
Jessica S.	Lappin	City Council Member: Chair of the Land Use Subcommittee on Landmarks, Public Siting and Maritime Uses	New York City Council
Christine	Quinn	Speaker of the City Council	New York City Council
Peter	Vallone	City Council Member: Public Safety (Chair) ; Education ; Environmental Protection ; Finance ; Governmental Operations	New York City Council
			New York City Downtown Boathouse
Bob	Schmitt	Director of Environmental & Energy Policy	New York City Transit
		Director	New York Department Of Law
Jason	Babbie		New York Public Interest Research Group (NY PIRG)
Paul	Hyde		New York Public Interest Research Group (NY PIRG)
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Christine	Rieth		New York State Museum
Tom	Fox	CEO/President	New York Water Taxi

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Ralph	Lopez	Program Specialist	NOAA - NMFS
Jeff	Smith	Marine Habitat Resource Specialist	NOAA - NMFS
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			North Star II Fishing & Charter
			NY Harbor Sport Fishing Charter
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Nate	Grove		NYC Department of Parks & Recreation
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James	Gallagher	Director Office of Energy and Environment	NYC Economic Development Corporation
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Micah	Kellner	Assembly Member	NYS Assembly
Catherine	Nolan	Assembly Member	NYS Assembly
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Jaclyn A.	Brilling	Secretary to the Commission	NYS Public Service Commission
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Tom	Dvorsky	Director - Office of Electric, Gas and Water	NYS Public Service Commission
Liz	Krueger	NYS Senator	NYS Senate
Senator George	Onorato	NYS Senator	NYS Senate
Jose	Serrano	NYS Senator	NYS Senate
Senator Toby Ann	Stavisky	NYS Senator	NYS Senate
Kathy	Hattala	Fisheries Biologist	NYSDEC

First Name	Last Name	Title	Organization
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Steven	Resler		NYSDOS
George	Stafford	Director	NYSDOS
Jeffrey	Zappieri		NYSDOS
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Joe	Mattioli		On the Bite Charters
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Kathryn	Wylde	President and CEO	Partnership for New York City
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Andrew	McGovern	Chairman, Harbor Safety	Port of New York and New Jersey
Captain Eric	Johansson	Executive Director of Tug and Barge Committee	Port of New York and New Jersey Maritime Association
George	Delis	District Manager	Queens Community Board 1
Vincio	Donato	Chairman	Queens Community Board 1
Joseph	Conley	Chairperson	Queens Community Board 2
Debra	Markell-Kleinert	District Manager	Queens Community District 2
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Santo	Verta	Assistant Project Manager Engineering	RIOC
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Tony	DeLernia		Rocket Charters
Jack	Olthius	Executive Director	Sandy Hook Pilots Assocation
Henry	Mahlmann		Sandy Hook Pilots Association
Cyrus	Schindler	President	Seneca Nation of Indians
Edgar	Freud		Sierra Club
Paul O.	Thompson	Chief	St. Regis Mohawk Tribe
Donald	Chesley	Research Engineer	Stevens Institute of Tech

First Name	Last Name	Title	Organization
Christopher	Coakley	Vice President	The American Waterways Operators
Dick	Lutz		The Main Street Wire
Jason	Schwartz	Director	The Partnership for Parks
Tim	Gamble		The Red Hook Boaters
Karen or Kevin	Bradshaw		The Vessel Dorothy B VIII, operated by Aqua Star, Inc.
Emerson	Webster	Chief	Tonawanda Band of Seneca
Steve	Moyer	Conservation Director	Trout Unlimited
Leo R.	Henry	Chief	Tuscarora Nation
William	Harrigan	President	United Marine Division International Longshoremen's Association
Steve	Oravets		United Marine Division International Longshoremen's Association
Naomi	Handell	Eastern Permits Chief	US Army Corps of Engineers
Richard	Tomer	Regulatory Branch Chief	US Army Corps of Engineers
LT Edward	Munoz	Chief Waterways Oversight Branch	US Coast Guard
Jeff	Yunker	Waterways Management Coordinator	US Coast Guard
Patrick	Mannion	Director of Operations Vessel Traffic	US Coast Guard
CWO Darren	Pauly	Aids to Navigation	US Coast Guard
Alexander	Hoar		USFWS
Anne	Secord		USFWS
Steve	Sinkevich		USFWS
Dave	Stilwell	Field Office Supervisor	USFWS
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Lou Ellyn	Jones		USFWS
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Hannah	Abend		Verdant Power
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Dean	Corren		Verdant Power
Dan	Costin		Verdant Power
Susana	Crespo		Verdant Power
Mollie	Gardner		Verdant Power
Jamey	Gerlaugh		Verdant Power
Chris	Gray		Verdant Power
John	Gray		Verdant Power
Aaron	Hernandez		Verdant Power
Matt	Klein		Verdant Power
Doug	Lessig		Verdant Power
Kevin	Lynch		Verdant Power
Ron	Smith		Verdant Power
Glen	Smith		Verdant Power
John	Sterling		Verdant Power
Trey	Taylor		Verdant Power
Mark	Tinkler		Verdant Power
Kris	Unger		Verdant Power
Dean	Whatmoor		Verdant Power
Don	Shelters	Conservation Officer	Zoar Valley Paddling Club

ROOSEVELT ISLAND TIDAL ENERGY PROJECT (FERC NO. 2660-003-NY)
LICENSE APPLICATION DISTRIBUTION LIST

CERTIFICATE OF SERVICE

I, Timothy J. Oakes, Project Manager, Kleinschmidt Associates, hereby certify that I have this day served upon each person designated on FERC's official service list and on the attached Distribution List, notice and electronic access to (and/or a copy of) the Roosevelt Island Tidal Energy Project (FERC No. 2660-003-NY) Final Pilot License Application, dated this 29th day of December 2010.

By: _____

Timothy J. Oakes
Project Manager
Kleinschmidt Associates

i. Meeting Summaries and Communication since November 2008.

Verdant Power conducted meetings with multiple stakeholders since filing the draft application in November 2008; draft minutes from these meetings are attached. Minutes from meetings prior to November 2008 are found in the Draft License Application.

CONSULTATION RECORD:

HOW COMMENTS ON DLA WERE INCORPORATED INTO THE FLA

Topic	Issue	Source	Date Published on Docket	Comment/Recommendation	Response/Location of Response
Aquatic Resources	Avoidance Behavior	USACE	21-Jan-09	Exhibit E, Section 5.3.3.2, page E-104 states that lower numbers of targets observed in the turbine impact zones may indicate turbine avoidance behavior. With the limited actual operating data of fish interaction with functional KHPS units, it does not appear that any conclusions can be drawn about fish turbine avoidance behavior.	RMEE Plan Consultation 2009-2010 and Final License Application
Aquatic Resources	DIDSON/Hydroacoustics	NYSDEC	12-Jan-09	Exhibit E - Environmental Report Section 5.3.3.2 Environmental Effects Page E-106 -- Department staff do not agree entirely with the statement that the Mobile DIDSON ground-truthing protocol was developed to attempt to observe fish behavior near operating turbines. The DIDSON may prove very useful to observe various aspects of fish movement or behavior. But Verdant indicated in the Project DIDSON/Split Beam Hydroacoustic Ground truthing Study (dated March 11, 2008) that objectives of this effort were to develop a realistic methodology to observe fish interaction/reaction, and ground-truth data collected by BioSonics' Split Beam Transducers (SBT) upstream and downstream of an array of operating hydrokinetic turbines, by using a mobile DIDSON in conjunction with a single SBT. The study plan indicated that the split-beam technique was to provide estimates of individual fish target strength, a measure that roughly corresponds to the physical size of the fish, and the DIDSON was to provide visual observation for both size (and potentially) species identification. Staff emphasize that ground-truthing is an essential aspect of the monitoring plan.	Groundtruthing was completed in February 2009 and discussed during RMEE Plan Consultation 2009-2010. Didson results contained in Appendix B of the RMEE Plans in Volume 4.
Aquatic Resources	DIDSON/Hydroacoustics	USACE	21-Jan-09	Exhibit E, Section 5.3.3.2, page E-100. Explain why the full QA/QC protocol of the fixed hydroacoustics was not executed.	Addressed in FERC Additional Information Request 9b and consultation.
Aquatic Resources	Environmental Effects	NYSDEC	12-Jan-09	Exhibit E - Environmental Report Section 5.3.3.2 Environmental Effects Page E-107 -- The statements made under #5, Assess Potential Effect of Commercial Array, regarding the prediction of the effects from 100 turbines, sufficient spacing enhancing fish avoidance, and that the commercial KHPS field having a minimal influence on fish abundance and movement, are somewhat speculative and should be revised or substantiated by the actual data.	The Final License Application and the RMEE plans present all information currently known about the effects of the turbines on fish movement and abundance.
Aquatic Resources	Environmental Effects	NYSDEC	12-Jan-09	Exhibit E - Environmental Report Section 5.3.3.2 Environmental Effects Page E-108 - The third bullet states that the extreme level of protocol used for the six-pack (test field) proved to be excessive, but offers no explanation. Additional discussion of this crucial aspect of the project must be required. While Verdant acquired a good deal of data during the operation of the test field, a host of factors, including the East River's challenging physical environment, produced technical difficulties with both the turbines and the monitoring equipment, resulting in data gaps and questions that temper the conclusions that can reasonably be drawn from available data.	RMEE Plan Consultation 2009-2010 and Final License Application.
Aquatic Resources	Fixed Hydroacoustics in East Channel	NYSDEC	12-Jan-09	Exhibit E - Environmental Report Section 5.3.2.4 Water Quality (Sediment) Page E-95 -- The Department provided numerous comments on the 60 day Interim Report and these comments (letter dated 4/25/07) should be included or otherwise addressed in the environmental analysis.	4/25/07 letter included as part of the Consultation record; issue addressed in Final License Application.
Aquatic Resources	Quality/Extent of Data	USACE	21-Jan-09	Exhibit E, Section 5.3.3.2, page E-108 states that the level of study protocol was proven to be excessive. However, due to the fact that the purpose of the study protocol was to gather data for a new technology with no prior data and the fact that the lack of data collected with functional KHPS units precludes making useful conclusions about possible environmental impacts, it dos not seem accurate to state that the study protocol was excessive.	Comment acknowledged.
Aquatic Resources	Stationary Netting	NYSDEC	12-Jan-09	Exhibit E - Environmental Report Section 5.3.2.4 Water Quality (Sediment) Page E-93 -- The Fish Monitoring and Protection Plan (FMPP) was prepared by Verdant, not the agencies, but was subject to agency review, and Verdant incorporated agency comments into various revisions of the document. The statement at the end of the first paragraph that the new protocols are being executed through deployment # 3 is not accurate since deployment # 3 has concluded and stationary netting was not conducted in deployment #3.	FERC Additional Information Request 9a; Stationary netting is deffered as described in RMEE-3 Final License Application
Aquatic Resources	Summary of Aquatic Studies	EPA	9-Jan-09	Table 5.3.3.1-1 [Vol 2, p. E-94] does not reflect that during deployment #2, six turbines were working from April to May '07, and only four turbines were working from May to June '07.	RITE demonstration operation discussed in Final License Application - Vol. 1 Attachment A.
Aquatic Resources	Underwater Noise	USACE	21-Jan-09	Exhibit E, Section 5.3.3.3, page E-117 details additional problems with the noise study data. Consider conducting further noise studies in the East Channel to obtain useful, reliable data.	FERC Additional Information Request 9e and Final License Application - RMEE Plan, Volume 4; RMEE-6 Underwater Noise
Aquatic Resources	Underwater Noise	USACE	21-Jan-09	Exhibit E, Section 5.3.3.3, page E-119 concludes that fish reactions to KHPS turbine noise in a 30 turbine array are unlikely. How can this conclusion be made if the noise data from the six turbine array is faulty and there is no discussion of the noise levels that would be generated by a 30 turbine array?	FERC Additional Information Request 9e and Final License Application - RMEE Plan, Volume 4; RMEE-6 Underwater Noise
Aquatic Resources	Underwater Noise	USACE	21-Jan-09	Exhibit E, Section 5.3.3.3, page E-126 again concludes that a 30 KHPS turbine array would not have noise effects on the aquatic community. It does not appear that Verdant has gathered enough useful, accurate data to draw this conclusion.	FERC Additional Information Request 9e and Final License Application - RMEE Plan, Volume 4; RMEE-6 Underwater Noise
Aquatic Resources	Underwater Noise	USACE	21-Jan-09	Exhibit E, Section 5.3.3.3, page E-110 states that expected underwater noise levels were confirmed during measurements taken during the pre-deployment period. However the next sentence says that technical difficulties precluded accurate readings. This paragraph seems contradictory.	FERC Additional Information Request 9e and Final License Application - RMEE Plan, Volume 4; RMEE-6 Underwater Noise

Topic	Issue	Source	Date Published on Docket	Comment/Recommendation	Response/Location of Response
Baseline Studies	West Channel Field	NYSDEC	12-Jan-09	Section 4 Justification Statement (6) Initiated with a draft application that is adequate as filed to support environmental analysis -- The draft application states that the baseline as described in Exhibit E provides more than sufficient information to support the environmental analysis to issue a pilot license. As indicated in provision 2 above, staff concur that a baseline data set was established for the east channel, but do not agree this is the case for the West Channel. Staff are concerned that the recent successive preliminary permit application that Verdant filed on 12/1/08 (Attachment "A" of this application) proposes only mobile DIDSON monitoring and stationary netting for the West Channel, if necessary. The Department intends to file separate comments on the preliminary permit application advising that additional baseline sampling needs to be conducted in the West Channel. The movement of fish may be more concentrated in the West Channel, and if so, the potential for fish community impacts may be higher. However, staff maintain that only through comparable sampling using similar gears (fixed hydroacoustics) will it be possible to understand the potential impacts of the turbine field build-out in the East and West channels.	Verdant Power has decided to forego project development in the West Channel; therefore, this comment no longer applies. See also FERC Additional Information Request 12c.
Communication	Stakeholder List	NYSDEC	12-Jan-09	Stakeholder List: This list should be updated to reflect agency staff currently involved with the project.	Stakeholder list updated in December 2010. See Part B of Volume 1.
Consultation and Compliance	First Nations Area	Delaware Nation	26-Jan-09	As described in your correspondence, and upon research of our database(s) and files, we find the Lenape people occupied these areas either historically or prehistorically. However, the location of the project does not endanger known sites of interest to the Delaware Nation. Please continue with the project as planned. However, should this project inadvertently uncover an archaeological site or object(s) we request that you immediately contact the appropriate state agencies, as well as the Delaware Nation (within 24 hours). Also, we ask that you halt all construction and ground disturbing activities until the tribe and these state agendas are consulted.	Comment acknowledged. Should aany archeological site be uncovered during construction notification will proceed as indicated. See also Exhibit E of Final License Application.
Exhibit A, Part C	Communication Record	NYSDEC	12-Jan-09	Part C Communication record: Although the communication record is extensive, it does not include numerous letters from the Department regarding the environmental analysis, the various study plans and the Fish Movement and Protection Assessment (FMPA). There are nine additional Department letters (attached dated: 12/22/03, 6/18/04, 9/3/04, 7/25/05, 6/30/06, 2/14/07, 7/23/08, 8/8/08, 9/3/08) that staff request to be included as part of the record and included in section C.	These letters are included as part of the consultation record. See Part B of Volume 1.
Exhibit E Introduction	Reports	NYSDEC	12-Jan-09	Exhibit E - Environmental Report 1.0 Application: The draft application notes on page E-2 that deployments 1-3 resulted in data, but no final reports, and does not indicate whether final reports will ever be prepared.	The Draft License Application includes all data that was developed as part of the study plans and as such represents the final report for the studies. The Final License Application provides a summary report for the data collected during the RITE demonstration. Please also see Appendix A and B of the RMEE Plans in Volume 4.
Exhibit E Introduction	Stationary Netting	USACE	21-Jan-09	Exhibit E, Section 1.0, page E-2 states data from stationary netting will be provided in early 2009. The document should be updated wherever the stationary netting is mentioned to reflect that the stationary netting has not yet been conducted and should clarify when it will occur.	FERC Additional Information Request 9a and RMEE-3 of the Final License Application; Stationary Netting will not be conducted due to problems with this approach in the currents at the RITE site. Trawling will be performed as detailed in the RMEE plans in Volume 4.
Justification Statement	Fixed Hydroacoustics in East Channel	NYSDEC	12-Jan-09	Section 4 Justification Statement (2)\The license will be short term -- The Department has no conceptual objection to Verdant's request for a 10 year license for up to 30 East River units subject to the following two provisions: 2.) Rigorous post-construction monitoring including the use of fixed hydroacoustics is necessary within the East Channel. The studies done to date for the test field served to establish a baseline data set, and although the intent was that the information gained during these studies would be able to address the potential impacts associated with the full build-out, numerous questions still remain. It is still very important to determine how fish will react to a full array (or significantly larger) array of turbines, and whether fish distribution and behavior will be similar to that obtained during the baseline. Department staff emphasize that these issues can not be addressed with the level of monitoring currently proposed (two Didson surveys per year). The environmental variability, coupled with the operational variability, will likely alter how fish react in the East Channel. Both DIDSON and fixed netting surveys would present only a very tiny	Verdant has developed a RMEE Plan through consultation in 2009-2010 as included in the Volume 4 of the Final License Application.
Justification Statement	License Period	EPA	9-Jan-09	While EPA understands Verdant's request for a 10 year pilot license, we believe that a 5 or 6 year license would be more appropriate for this project, to allow for appropriate evaluation of hydrodynamic and fisheries impacts.	Verdant has provided substantiation of a 10-year license in order to develop its technology and O&M practices in a staged approach.
Justification Statement	License Period	NOAA/NMFS	12-Jan-09	Justification Statement: NMFS has significant concern about a pilot license extension to 10 years and ponders how this qualifies as "short term" under pilot project criteria. Ten years is a significant period of time that can extend over many generations of living marine resources, especially if severe impacts develop. It might be appropriate for FERC to consider more modest time options that may afford some level of flexibility regarding the five year maximum duration to qualify a project as "short term" under its pilot requirements.	Verdant has provided substantiation of a 10-year license in order to develop its technology and O&M practices in a staged approach.

Topic	Issue	Source	Date Published on Docket	Comment/Recommendation	Response/Location of Response
Justification Statement	Project Size	NOAA/NMFS	12-Jan-09	Justification Statement: The scale and scope of the proposed project (e.g., footprint) can have great significance to impacts on resources. In this situation, the number of turbines and footprint of deployment are probably more important than generation capacity in terms of potential impacts on our resources of concern. Unfortunately, Verdant relies solely on the cumulative 1.05 MW generating capacity of turbines that would be deployed at RITE East Channel as its basis for suggesting this proposal meets FERC's size criteria for a pilot project. NMFS requests that FERC require Verdant to expand its analysis to demonstrate why their project also meets the criteria for consideration as a "small" project in light of the number of units and project footprint proposed for the present project.	FERC Additional Information Request 2a and Volume 1 of Final License Application.
Justification Statement	Project Size	NOAA/NMFS	12-Jan-09	Justification Statement: We are concerned that the individual and cumulative effects of this proposal may exceed the thresholds associated with what was intended for a pilot hydrokinetic project and how this equates to habitat and living resource impacts. We note that the draft plot application depicts the RITE East Channel project as occupying a field that encompasses approximately 1/6 of the east branch footprint. The draft application discloses that a second pilot, RITE West Channel, is a 2-4 MW pilot being contemplated in the near future. Together, these projects would be at or near the maximum allowable generation limit in FERC's size criteria, given Verdant's determination to go forward with both of these projects. Our concerns for trust resources are the ability to identify and manage impacts on a cumulative as well as project specific sense into the project analysis. We recommend that FERC requires Verdant to consider the impacts of both pilot projects in its overall justification statement, and to explain their proposed approach in relation to piecemealing the project as would be prohibited under the National Environmental Policy Act.	Verdant Power has decided to forego project development in the West Channel; therefore, this comment no longer applies. See also FERC Additional Information Request 12c.
Justification Statement	Sensitive Areas	NOAA/NMFS	12-Jan-09	Justification Statement: We are glad to see the topic of "sensitive areas" in FERC's licensing considerations. The East River provides an important hydrologic connection between New York Bay and western Long Island Sound. Considering that many trust resources use this area as a migration corridor, for resident habitat and for other important ecological functions, the East River will include sensitive areas. We encourage FERC to take these critical uses into serious consideration in its deliberative process, and ensure that all sensitive areas are given adequate analysis for identification and protection in their licensing decision. We look forward to our coordination in this area.	Comment noted.
Justification Statement	West Channel	NYSDEC	12-Jan-09	Section 4, Justification Statement (2) The license will be short term -- The Department has no conceptual objection to Verdant's request for a 10 year license for up to 30 East River units subject to the following two provisions: 1.) The West Channel project should be considered under a separate Pilot License application as indicated in this draft application, with the condition that sufficient study be conducted under the successive preliminary permit (application currently pending) to establish an adequate environmental baseline in the West Channel before any Pilot License application proceedings get underway for the West Channel units. The baseline studies for the west channel of the East River would need to include fixed hydroacoustic monitoring. Our April 25, 2007 comment letter on the 60-day Interim Report, and our April 30, 2007 comments on the scoping Document urged Verdant to begin conducting appropriate studies in order to gain a sufficient understanding of how aquatic resources use the west channel. Staff emphasized that any study effort should be aimed at determining the specific species using the area and the location and extent of such use.	Verdant Power has decided to forego project development in the West Channel; therefore, this comment no longer applies. See also FERC Additional Information Request 12c.
Navigation and Land Use	East Channel Field	Bouchard Transportation Co	8-Jan-09	East Side of Roosevelt Island Site - As long as these Installations remain above the 36 Ave Bridge along the East side of Roosevelt Island they shouldn't interfere with any of our operations at the Ravenswood Generating Plant.	Verdant acknowledges and is compliant with comment. FERC Additional Information Request 12c and Final License Application
Navigation and Land Use	East Channel Field	Local 333 - United Marine Division	12-Jan-09	The area on the east side of Roosevelt Island sees relatively light traffic and isn't as big of a concern, but still warrants further consideration.	FERC Additional Information Request 12c and Final License Application
Navigation and Land Use	East Channel Field	THE Maritime Assoc of the Port of NY/NJ--Tug & Barge Committee	9-Jan-09	Field area one [the eastern shore of the East River north of the Bridge] is a seldom used by the tug and barge industry; however, it remains a vital backup channel for small vessels and tugs in the event of closure to the Main Shipping Channel. Therefore it is recommended that Field Area One be restricted to its current location providing sufficient maneuvering room to transit the channel and bridge.	FERC Additional Information Request 12c and Final License Application
Navigation and Land Use	East Channel Field	THE Maritime Assoc of the Port of NY/NJ--Tug & Barge Committee	9-Jan-09	Field area two -- the United Nations Security Zone -- is unacceptable. Expanding these turbines into a major shipping channel will impede the safety of vessels and their crews; endanger the environment; severely disrupt the energy needs of New England; and degrade our nations transportation network and therefore we strongly oppose the Verdant Power proposal for the United Nations Security Zone and restrict it to the original 25 yard agreement.	Verdant Power has decided to forego project development in the West Channel; therefore, this comment no longer applies. See also FERC Additional Information Request 12c.

Topic	Issue	Source	Date Published on Docket	Comment/Recommendation	Response/Location of Response
Navigation and Land Use	Maps	USACE	21-Jan-09	Exhibit E, Section 5.3.7.2, page 176 and page 177. Figure 5.3.7.2-1 and Figure 5.3.7.2-2 have the same title. Clarify the difference between the two figures and what each is meant to illustrate.	Verdant Power has decided to Final License Application forego project development in the West Channel; therefore, this comment no longer applies. See also FERC Additional Information Request 12c. Therefore, "Figure 5.3.7.2-2" is no longer applicable.
Navigation and Land Use	West Channel Field	Bouchard Transportation Co	8-Jan-09	Manhattan Shore Line Site - The proposed United Nations Project Area is unacceptable on both operational and safety standpoints. Considering traffic saturation and deep draft of some of the units transiting the East River, under keel clearance concerns become an issue. Considering conventional towing vessels; there is always a possibility that cables could be trailing in the water that would have the potential of becoming ensnarled in the turbine units. Additionally, installation and support activities for the submerged turbines would most likely have to be conducted during slack tide periods. These short periods of slack and reduced tidal current are also the times for East River transits for vessels passing through Hell Gate, any support craft, crane barges, etc would impede the safe navigation of vessels transiting the East River through this already narrow channel.	Verdant Power has decided to Final License Application forego project development in the West Channel; therefore, this comment no longer applies. See also FERC Additional Information Request 12c.
Navigation and Land Use	West Channel Field	Donjon Marine Co Inc	13-Jan-09	We have evaluated the proposed channel modifications and wish to express our concerns that these proposed modifications will pose a safety hazard to traffic transiting the area. The area in question is already fairly narrow before you factor in the reduced channel limits. Further there is also a significant current in the area which further influences transit of the area. By reducing the channel by approximately 50%, room to maneuver is restricted which, coupled with the significant current, reduces any room for error and could result in a greater probability for a casualty. Additionally, based upon the restricted channel width, any attempt to pass slower traffic or pass head to head would be either quite hazardous or impossible. I suggest that if this projects moves forward, the USCG vessel traffic group may need to oversee the transit of vessels in this area to assist in traffic safety which would cause delays to all traffic transiting the area. Therefore, Donjon Manne Co., Inc. and DMC Marine, LLC are opposed to any restriction of the current channel limits within the project area. This being said, as we normally only need approximately 25' of water depth to safely move our units thru the area, we would not be as concerned if the Channel was restricted to only Deep Traffic.	Verdant Power has decided to Final License Application forego project development in the West Channel; therefore, this comment no longer applies. See also FERC Additional Information Request 12c.
Navigation and Land Use	West Channel Field	Express Marine Inc	9-Jan-09	General concerns regarding navigation and traffic; Specific mentions of areas, "from northern tip of Roosevelt Island to Lawrence point" and "on the west side of Roosevelt Island anywhere between 14th street powerhouse to Lawrence Point."	Verdant Power has decided to Final License Application forego project development in the West Channel; therefore, this comment no longer applies. See also FERC Additional Information Request 12c.
Navigation and Land Use	West Channel Field	FERC's "Clarification of Information" Submitted after AIR response May 2009	1-May-09	In a letter filed January 13, 2009, Donjon Marine Company, Inc. (Donjon) stated that it opposes any restriction of the current channel limits within the project area. It is unclear whether the Donjon comments refer to the east or west channel of the East River. On February 11, 2009, you sent a letter to Donjon Marine requesting a meeting on March 10, 2009. In response, Donjon stated it would rather send a letter to the Commission to clarify its comments on the project in lieu of attending a meeting, thus the meeting was cancelled. Since Donjon has not filed a letter clarifying its comments, please contact them to clarify the channel of concern and document this consultation in the final application.	See Final License Application
Navigation and Land Use	West Channel Field	Harbor Safety, Navigation and Ops Committee of the Port of NY/NJ	9-Jan-09	General concerns regarding navigation and traffic; Specific mention of UN security zone: "These are still navigable waters! Even when the security zone is active a vessel may transit the area with permission from the USCG. Due to the nature of the tides and currents in the area, a lot of traffic moves through the area in a compressed timeframe resulting in periods of dense traffic flow. If turbines were installed it would effectively close this area to navigation therefore creating a hazard to navigation in an extremely dangerous waterway which is used by few ships but is heavily used by difficult to maneuver tugs and tows carrying tremendous amounts of petroleum product."	Verdant Power has decided to Final License Application forego project development in the West Channel; therefore, this comment no longer applies. See also FERC Additional Information Request 12c.
Navigation and Land Use	West Channel Field	Local 333 - United Marine Division - Intl. Longshoremen's Assoc, AFL-CIO	12-Jan-09	General concerns regarding traffic, tight maneuvering already: "The one-way traffic zone that it would require, and the available depth in the channel, would reduce maneuvering room in an area that experiences strong currents and is already a tight fit (off the United Nations Building)." Mention of experience with this during FDR Drive reconstruction project and UN Security zone. Request more time for comment and meeting, as well as to be contacted with more info and next steps.	Verdant Power has decided to Final License Application forego project development in the West Channel; therefore, this comment no longer applies. See also FERC Additional Information Request 12c.

Topic	Issue	Source	Date Published on Docket	Comment/Recommendation	Response/Location of Response
Navigation and Land Use	West Channel Field	New Jersey Sandy Hook Pilot's Association	9-Jan-09	We are opposed to the installation of tidal turbines in the west channel of the East River. Although Verdant has positioned these turbines in the UN security zone in the Federal East River Navigation Channel, presumably because they believe vessels cannot go there anyway; however, this zone is rarely activated. These are still navigable waters. Even when the security zone is active a vessel may transit the area with permission from the USCG. Due to the nature of the tides and currents in the area, a lot of traffic moves through the area in a compressed timeframe resulting in dense traffic flow. If turbines were installed it would permanently close this area to navigation and it would place a hazard to navigation in an extremely dangerous waterway which is used by some ships but is heavily used by difficult to maneuver tugs and tows carrying tremendous amounts of petroleum product. It is highly likely that these turbines will be struck at some time by a vessel of some type. It is against accepted practice to further restrict an already highly restricted navigable waterway.	Verdant Power has decided to Final License Application orego project development in the West Channel; therefore, this comment no longer applies. See also FERC Additional Information Request 12c.
Navigation and Land Use	West Channel Field	New York Sandy Hook Pilot's Association	9-Jan-09	We are opposed to the installation of tidal turbines in the west channel of the East River. Although Verdant has positioned these turbines in the UN security zone in the Federal East River Navigation Channel, presumably because they believe vessels cannot go there anyway; however, this zone is rarely activated. These are still navigable waters. Even when the security zone is active a vessel may transit the area with permission from the USCG. Due to the nature of the tides and currents in the area, a lot of traffic moves through the area in a compressed timeframe resulting in dense traffic flow. If turbines were installed it would permanently close this area to navigation and it would place a hazard to navigation in an extremely dangerous waterway which is used by some ships but is heavily used by difficult to maneuver tugs and tows carrying tremendous amounts of petroleum product. It is highly likely that these turbines will be struck at some time by a vessel of some type. It is against accepted practice to further restrict an already highly restricted navigable waterway.	Verdant Power has decided to Final License Application forego project development in the West Channel; therefore, this comment no longer applies. See also FERC Additional Information Request 12c.
Navigation and Land Use	West Channel Field	USACE	21-Jan-09	Exhibit E, Section 5.3.7.1, page 169. It appears that the RITE Preliminary Permit Field in the West Channel would be located in the East River Federal Navigation Channel (see Figure 5.3.1.1-1 on page E-171 of Volume 2). Verdant has not adjusted their proposal to take previous U.S. Army Corps of Engineers and U.S. Coast Guard sponsored Harbor Operations and Safety Committee comments into account regarding the inadvisability of locating the turbines in the East River Federal Navigation Channel.	Verdant Power has decided to Final License Application forego project development in the West Channel; therefore, this comment no longer applies. See also FERC Additional Information Request 12c.
Permits	Section 10/401/404	USACE	21-Jan-09	Exhibit E, section 4.2.1, page E-25. Please note that under Dept of the Army (DA) Permit Number NAN-2003-00402, Verdant Power constructed six temporary turbines in the East Channel of the East River. The existing DA permit for the six temporary turbines expires on May 5, 2009. Please be advised that both proposed turbine arrays (30 and 100 turbines) will require separate Dept. of the Army authorizations.	Acknowledged and Permit application will be filed for the RITE East Channel site only.
Project - General	Alternative Sites	NYSDEC	12-Jan-09	Exhibit E - Environmental Report Section 3.4.1 Alternative Sites Considered -- The alternatives analysis should be more substantial. It covers (a) the East side of Roosevelt Island, reduced in size because of a number of considerations (including inadequate velocities and commercial barge traffic), and (b) north of Roosevelt Island where there were objections from the USCG and recreational interests, but no mention is made of other alternatives in the NYC area, particularly for the West Channel since the East Channel is now the subject of the license application. Department staff believe further analysis of other sites is warranted in addition to a description of sites held by other preliminary permits.	Alternate sites are addressed in the Final License Application.
Project - General	Alternative Sites	NYSDEC	12-Jan-09	Exhibit E - Environmental Report Section 3.4.1 Alternative Sites Considered -- The last paragraph discusses reduction of the 180 acre area to 18.4 acres and seems to imply that analysis of the larger area produced a complete or full build-out proposal that would be "environmentally compatible." This analysis should not raise an implication or support a conclusion that one can extrapolate from this data to potential impacts or consequences involving a much larger area or a full-build out array. If such an implication or conclusion is being sought, it must first be vetted and agreed to by all participating agencies.	RMEE Plan Consultation 2009-2010 and Final License Application
Project - General	Reports	FERC's "Clarification of Information" Submitted after AIR response May 2009	1-May-09	In several instances, the draft application and information provided on March 30 refers to reports that have been filed in response to previously requested information. The final application must be the primary source of information and must include all relevant information gathered, even if the information was previously filed in progress reports.	The Draft License Application includes all data that was developed as part of the study plans and as such represents the final report for the studies. The Final License Application also provides a summary report of the data collected during the RITE demonstration. Please see Appendix A and B to the RMEE Plans of Volume 4.
Proposed Monitoring Plans	DIDSON/Hydroacoustics	NYSDEC	12-Jan-09	Proposed Monitoring Plan Page 2 Table 1-- Mobile DIDSON and Netting are proposed twice per year (Spring and Fall) for two years with Verdant consulting with the agencies for the timing and sequencing. Department staff caution that this is not a sufficient level of monitoring. As discussed above, the environmental variability, coupled with the operational variability, will likely alter how fish react in the East Channel. As proposed, both DIDSON and fixed netting surveys would only present a very tiny snapshot in time that will not be capable of capturing any variability.	RMEE Plan Consultation 2009-2010 and Final License Application, Volume 4 - RMEE Plans
Proposed Monitoring Plans	DIDSON/Hydroacoustics	USFWS	9-Jan-09	The Service is in general agreement that the proposed project meets the pilot licensing criteria and has no significant objections to the proposed 30 turbine project. We do, however request modifications to and clarification of the monitoring plan. Verdant is proposing to conduct mobile DIDSON (hydroacoustic) monitoring for fish in the project area twice a year for 2 years (4 days total). Monitoring would be performed during peak periods of fish use in the spring and fall. We recommend that two additional years of monitoring be added, preferably during years 5 and 8 of the license period. See Comment for rationale.	RMEE Plan Consultation and Final License Application

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Proposed Monitoring Plans	DIDSON/Hydroacoustics	USFWS	9-Jan-09	We also recommend that DIDSON monitoring be conducted when turbines are operational (i.e., not malfunctioning). The monitoring plan indicates that the DIDSON survey will be performed over all portions of the three tidal constituents (ebb, flood, slack), but should clarify that DIDSON surveying will occur during the entire daylight period to ensure that at least 8-10 hours of data are generated.	RMEE Plan Consultation 2009-2010 and Final License Application, Volume 4 - RMEE plans in Volume 4
Proposed Monitoring Plans	January 2009 Fish Report	NYSDEC	12-Jan-09	Proposed Monitoring Plan Page 6 - Methods and Equipment-- Department staff are not able to provide comments on this crucial aspect of the application since the draft application states that the results of this activity during deployment # 3 are still being processed and will then be reviewed in consultation with the agencies. Appropriate provisions need to be established to allow for adequate review and development of the monitoring plan.	Results were presented in February 2009 as part of the RMEE Plan Consultation 2009-2010; Volume 4 - RMEE Plans - Appendix A and B.
Proposed Monitoring Plans	Local Bird Species	USFWS	9-Jan-09	A number of birds may use the East River for feeding or resting. Dominant Species identified so far are the double breasted cormorant (Phalarocorax auritus) and a variety of gulls. The Service is also interested in better understanding the use of the project area by other birds that may use the area during migration. Diving ducks, cormorants, and terns migrate through the area from late March through mid-May. The fall migration of species such as the brown pelican (pelecanus occidentalis) or double-crested cormorant may peak in October, but species such as loons (Gavia spp.), gannets (Morus bassanus), scaup (Aythya spp.), and ring-necked ducks (Aythya collaris), may peak in November through mid-December, and many tern species (Sterna hirundo, S. forsteri, S. nilotica) migrate through the area in September.	Final License Application: Volume 4 -RMEE: 5 - Bird Observation
Proposed Monitoring Plans	Local Fish Species	USFWS	9-Jan-09	The East River, in the vicinity of the proposed project, supports a variety of fish species, notably, winter flounder (Pseudopleuronectes americanus), Atlantic tomcod (Microgadus tomcod), striped bass (morone saxatilis), and grubby (Myoxocephalus aenaeus). Other fish that may be found in high numbers include the bay anchovy (Anchoa mitchilli), Atlantic silversides (Menidia menidia), blueback herring (Alosa aestivalis), northern pipefish (Syngnathus fuscus), and Atlantic menhaden (Brevoortia tyrannus). Most species are seasonal and migrate throught the East River to over-wintering areas offshore or spawning grounds further upriver. The two relatively common fish species found in the East River over most life stages are the Atlantic silverside and northern pipefish.	Comment acknowleged; included in Final License Application
Proposed Monitoring Plans	Quality/Extent of Data	NOAA/NMFS	12-Jan-09	NMFS has significant concerns that past performance of equipment in the previous deployments diminishes the value of some of the past monitoring. For a pilot license to go forward, additional data and studies regarding fishery resources will be necessary. We strongly recommend that these study plans are developed prior to any turbine deployments, and that the final plan is acceptable to meet the needs of all involved state and federal agencies. We believe that these studies must continue to focus on characterizing fish occurrence and habitat uses in the project region; that any such studies must be ground-truthed to establish the species and life stages present and potential adverse impacts on individuals and their access to/use of habitats are identified and analyzed. More studies are necessary in both the east and west branch of the East River. Given the past sampling difficulties, it will be important that improved sampling strategies are developed in advance of a future deployment. In particular, we note the limited amount of data available for fish movements and behaviors when multiple turbines were functioning properly and also the need to ensure such data are collected, particularly during periods of time when large number of fish are present in	RMEE Plan Consultation 2009-2010 and Final License Application; Volume 4 - RMEE Plans
Proposed Monitoring Plans	Reports	NOAA/NMFS	12-Jan-09	NMFS requests that the pilot license application include the results of all previous monitoring and studies, and that the results of those efforts are reported clearly and concisely for the record.	Final License Application, Volume 4 - RMEE Plans - Appendices A and B
Recreational Resources	Kayakers	FERC's "Clarification of Information" Submitted after AIR response May 2009	1-May-09	The final application should quantify the number of canoeists and kayakers that use the Hallets Cove recreation site located near the proposed project	Final License Application - Exhibit E
RTE Species	Bald Eagle	USFWS	9-Jan-09	On August 8, 2007, the Bald eagle (Haliaeetus leucocephalus) was removed from the Federal Endangered Species list and is no longer protected under Section 7 of the Federal Endangered Species Act; however, bald eagles remain on the New York State list as a State-listed threatened species. Bald eagles are also protected under the Migratory Bird Treaty Act (16 U.S.C. 703-712; Ch. 128; July 13, 1918; 40 Stat. 755) and the Bald and Golden Eagle Protection Act (16 U.S.C. 668-668d). Bald eagles have previously been released by New York City Parks approximately 6 miles from the proposed project (Inwood Hill Park) as part of their Urban Park Ranger Eagle Program. If bald eagles are found within the project area, the Service recommends that you follow the Bald Eagle Management Guidelines found on our website (htttp://www.fws.gov/northeast/nyfo/es/section7.htm), prior to commencement of work.	Comment acknowledged and included in Volume 4 - RMEE-5 Bird observation

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RTE Species	Designation as non-Federal Rep (Sect 7 ESA)	NOAA/NMFS Protected Resources Div	12-Jan-09	As noted in previous correspondence, NMFS recommends that consultation pursuant to Section 7 of the ESA be initiated. FERC, and/or their designated non-Federal representative (i.e., Verdant Power), should submit a determination of effects along with justification for the determination and a request for concurrence to NMFS. If FERC determines that the project is "not likely to adversely affect" any listed species (i.e., when direct or indirect effects of the proposed project or its interdependent and/or interrelated actions on listed species are expected to be discountable, insignificant or completely beneficial) and NMFS concurs with this determination, NMFS will reply to FERC in a letter that will convey the concurrence, thus completing Section 7 consultation. If FERC determines that the project is "likely to adversely affect" any listed species (i.e., if any adverse effect to listed species may occur as a direct or indirect result of the proposed action or its interrelated or interdependent actions, and the effects are not: discountable, insignificant, or beneficial) or NMFS does not concur with FERC's "not likely to adversely affect" determination, formal	ESA Consultation commenced and ongoing; see Final License Application
RTE Species	Designation as non-Federal Rep (Sect 7 ESA)	USFWS	9-Jan-09	The Service does not object to the designation of Verdant as FERC's non-Federal representative to initiate Section 7 consultation under the Endangered Species Act. Verdant previously requested and was granted this designation by FERC in 2004.	ESA Consultation commenced and ongoing; see Final License Application
RTE Species	Sea Turtles	NOAA/NMFS Protected Resources Div	12-Jan-09	Listed sea turtles also occur seasonally in New York waters and are known to be present in western Long Island Sound and in the New York Harbor complex. The sea turtles in these waters are typically small juveniles with the most abundant being the federally threatened loggerhead (Caretta caretta) followed by the federally endangered Kemp's ridley (Lepidochelys kempi). New York waters have also been found to be warm enough to support federally endangered green sea turtles (Chelonia mydas) from June through October. While federally endangered leatherback sea turtles (Dermochelys coriaceø) may be found in the waters off Long Island during the warmer months as well, this species is less likely to occur in the action area for this project as it is typically found in more offshore waters. Like shortnose sturgeon, there have been no documented captures of sea turtles in the East River and it is not likely to be a high use area for these species. However, as sea turtles are known to occur in the waterbodies surrounding the East River, it is likely that occasional transient sea turtles occur in the East River. The best available information indicates that listed species may at least occasionally occur in the project area.	ESA Consultation commenced and ongoing; see Final License Application
RTE Species	Shortnose Sturgeon	NOAA/NMFS Protected Resources Div	12-Jan-09	As noted in previous correspondence with your office, several species listed by NMFS under the Endangered Species Act (ESA) of 1973, as amended, occur in New York waters. A population of the federally endangered shortnose sturgeon (Acipenser brevirostrun) occurs in the Hudson River and has been documented from the Troy Dam to the waters near Staten Island in New York Harbor, NMFS has recently convened a status review team to conduct a five year status review for shortnose sturgeon. A status review report is expected in 2009. Shortnose sturgeon have been captured near the confluence of the East River and New York Harbor and at least two shortnose sturgeon tagged in the Hudson River have been recaptured in the Connecticut River, It is unknown whether these fish traveled through the East River and through Long Island Sound (the most direct route) or exited New York Harbor into the Atlantic Ocean and swam around southern Long Island and back into Long Island Sound. As noted in your letter, the East River is not likely to be a high use area for sturgeon and there have been no documented captures of shortnose sturgeon in this waterbody. However, the best available information indicates that at least occasional transient shortnose sturgeon may	ESA Consultation commenced and ongoing; see Final License Application
RTE Species	Shortnose Sturgeon	USFWS	9-Jan-09	The Federally-listed endangered shortnose sturgeon (Acipenser brevirostrum) is found in the Hudson River near the project area. This species is under jurisdiction of the National Oceanic and Atmospheric Administration -- Fisheries (NOAA-F). The applicant should contact Mr. Stanley Gorski, Habitat and Protected Resources Division, Area Coordinator, NOAA-F, James J. Howard Marine Sciences Laboratory, 74 Magruder Road, Highlands, NJ 07732 for additional information (telephone 908-872-3037)	ESA Consultation commenced and ongoing; see Final License Application
RTE Species	Shortnose Sturgeon	USFWS	9-Jan-09	The shortnose sturgeon is also listed by the State of New York. The New York State Department of Environmental Conservation (NYSDEC) contact for the shortnose sturgeon is Mr. Peter Nye, NYSDEC, Endangered Species Unit, 625 Broadway, Albany, NY 12054-9767 (telephone: 518-439-7635).	ESA Consultation commenced and ongoing; see Final License Application
Verdant KHPS Technology	Anchoring	EPA	9-Jan-09	The environmental report should include the diagrams of the gravity based triframes found in Exhibit F, and should describe in more detail the method of securing the turbines, and possible impacts to the sediment.	FERC AIR 15 and Final License Application
Verdant KHPS Technology	Anchoring	NOAA/NMFS	12-Jan-09	NMFS will need additional information regarding the triframe mounting system in order to assess its differential impact on trust resources as compared with the original monopole design. NMFS also has questions about installation impacts, information on the triframe operation in a dynamic hydrologic environment, and similar details. We recommend that data collection include relevant impacts analysis related to this new design feature (e.g., disturbance to benthic substrate, fish behaviors and habitat uses, etc.).	FERC AIR 15 and Final License Application
Verdant KHPS Technology	Anchoring	NYSDEC	12-Jan-09	Exhibit E - Environmental Report Section 3.2.5: Project Design -- The anchoring of the triframes, and the use of the semi-permanent pile on page 5-15 should be explained in more detail.	FERC AIR 15 and Final License Application
Verdant KHPS Technology	Coatings: Anti-Fouling	USACE	21-Jan-09	Exhibit E, Section 3.2.2, page E-10. Specify what type of anti-fouling coating will be used. Non-toxic alternatives such as Teflon or silicon coatings are preferred to those that will leach contaminants into the waterway.	Final License Application
Verdant KHPS Technology	No-Load Operation	NYSDEC	12-Jan-09	Exhibit E - Environmental Report Section 3.2.5: The no load condition described on page E-16 should also be explained in terms of how often this condition could occur and what measures if any are taken to limit this condition.	No-Load condition removed in Verdant Power Gen5 technology description; please see Final License Application - Project Description
Verdant KHPS Technology	No-Load Operation	USACE	21-Jan-09	Exhibit A, Section 3.0, page A-21, states that turbines operating in "no-load" condition would operate for short periods at higher speeds. Quantify what is meant by "short periods" and specify how often these "short periods" would occur. Also quantify "higher speeds."	No-Load condition removed in Verdant Power Gen5 technology description; please see Final License Application - Project Description

Topic	Issue	Source	Date Published on Docket	Comment/Recommendation	Response/Location of Response
Verdant KHPS Technology	No-Load Operation	USACE	21-Jan-09	Exhibit E, Section 5.3.5.3, page E-152 states that the KHPS turbines rotate at slightly higher speeds in a no-load operation mode. Specify the no-load operation mode speed.	No-Load condition removed in Verdant Power Gen5 technology description; please see Final License Application - Project Description
Water Resources	Quality/Extent of Data	NYSDEC	12-Jan-09	Exhibit E - Environmental Report Section 5.3.2.2 Comparison of the pre- and post-deploy survey results for the Meso scale data is difficult as a different color scale is used. This should be clarified or changed if possible.	This has been revised in the Final License Application.
Water Resources	Water Quantity: Hydrodynamics	EPA	9-Jan-09	EPA recommends that Verdant LLC be required to prepare a hydrodynamic monitoring plan for the pilot project. Data to be collected would include, but are not limited to changes in current, salinity, temperature, and dissolved oxygen levels. This data would then be modeled to evaluate long term effects to the hydrodynamic regime caused by the pilot and full build out. While the environmental report discusses Verdant's in-house post processing of hydrodynamic data, EPA recommends that any new hydrodynamic model be peer reviewed. FERC should also assess the use of the model to evaluate the cumulative effects of this project, Verdant's West Channel project and other reasonably foreseeable hydrokinetic projects in the East River system. [See EPA's reference to DOE report in Comment]	FERC Additional Information Request 8b; RMEE consultation; Final License Application; RMEE Plans 1 and 2
Water Resources	Water Quantity: Hydrodynamics	FERC's "Clarification of Information" Submitted after AIR response May 2009	1-May-09	In response to item 8(d), you reference three study reports (Carbon Trust, EPRI, Bryden) that assess kinetic energy (velocity) flux extraction. You note that the Bryden report determined that a resulting reduction in flow speed from a kinetic energy flux extraction of as high as 25 percent would be at or below the limits of measurement. Further, you provided an excerpt from the Bryden report that states that 25 percent of the kinetic energy flux could be extracted with less than 7 percent reduction in the flow speed, close to the limits of effective measurement in the marine environment. The final application should explain why a 7-percent reduction in the flow speed would be close to the limits of effective measurement.	This reduction has been clarified in the Final License Application.
Water Resources	Water Quantity: Mapping	FERC's "Clarification of Information" Submitted after AIR response May 2009	1-May-09	You note that the Kings Point NOAA primary tidal station, used to obtain water level and water current data at the proposed project site, is located too far north and east to be displayed in figure 5.3.2.1-2 without losing necessary detail. Please consider adding a note to that effect in the final application, including the number of miles it is located from a reference point on the figure.	This has been added and clarified in the Final License Application.
Water Resources	West Channel Field	NYSDEC	12-Jan-09	Exhibit E - Environmental Report Section 5.3.2.4 Water Quality (Sediment) Page E-80 -- If the site specific information acquired during the 2005 survey was for the area of the test field only, additional sampling may be required for other areas of the east channel. Studies for the west channel should include a sediment quality study (and associated sediment sampling plan). Although sampling in the east channel revealed little or no soft (resuspendable) sediments, it cannot be assumed that the same conditions exist in the west channel.	Verdant Power has decided to Final License Application forego project development in the West Channel; therefore, this comment no longer applies. See also FERC Additional Information Request 12c.
Water Resources	Water Quantity: Hydrodynamics	FERC's "Clarification of Information" Submitted after AIR response May 2009	1-May-09	The hydrodynamics model is referred to as the 1-d model throughout the application. However, in response to additional information item 8(c), the model is referenced as ID. Please use a consistent reference in the final application.	This reference has been made consistent in the Final License Application.

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Alexander B. Grannis
Commissioner

Comments on the proposed Roosevelt Island Tidal Energy Project

January 9, 2008

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

Re: Agency Comments on the Draft Hydrokinetic Pilot Project License Application
Verdant Power, Inc.
Roosevelt Island Tidal Energy, FERC Project No. P-12611-003
East Channel of the East River, New York
DEC # 2-6204-01510/00001

Dear Secretary Bose;

The New York State Department of Environmental Conservation (Department) hereby provides our comments on the pre-filing materials including the draft license application and monitoring plans in accordance with the December 1, 2008, NOTICE OF INTENT TO FILE LICENSE APPLICATION, FILING OF DRAFT APPLICATION, REQUEST FOR WAIVERS OF INTEGRATED LICENSING PROCESS REGULATIONS NECESSARY FOR EXPEDITED PROCESSING OF A HYDROKINETIC PILOT PROJECT LICENSE APPLICATION, EXTENDING THE COMMENT PERIOD, AND SOLICITING COMMENTS. In this application for an original license for a kinetic hydropower pilot project, Verdant Power, Inc., (Verdant) proposes to install (1) a field array of thirty 35-kilowatt, 5-meter-diameter axial flow Kinetic Hydropower System (KHPS) turbine-generator units mounted on ten triframe mounts, with a total capacity of about 1 megawatt; (2) underwater cables from each turbine to five shoreline switchgear vaults, that would interconnect to a control room and interconnection points; and (3) appurtenant facilities for navigation safety and operation.

The Department has been actively engaged with the review of the Roosevelt Island Tidal Energy (RITE) project for several years. It issued Verdant permits on September 9, 2005 (valid until May 5, 2009) for the installation of, and studies conducted for, the six turbine test field, and participated in the various study groups. All of this was part of an effort to allow Verdant to develop studies and data in support of a Federal Energy Regulatory Commission ("FERC") license application. In addition to these efforts, the Department is likely to receive Verdant's application for a Water Quality Certificate (WQC) pursuant to §401 of the federal Clean Water Act ("CWA") (33 USC § 1341). If such an application is made, the Department must determine if the project will operate and be maintained in compliance with New York State's water quality standards, codified at 6 NYCRR parts 701-704.

Department staff appreciate the difficulties Verdant may have incurred in developing and implementing the study plans for this project, and have provided constructive comments in numerous letters to Verdant and FERC. Our specific comments on this Draft Kinetic Hydropower Pilot License Application are provided below under the headings provided in Volumes 1 -3 of the Application, but staff wish to emphasize a few significant issues concerning the project that need to be adequately addressed in the Pilot License application:

- Monitoring plan for the proposed Pilot project is not yet well defined or tested
- Extensive difficulties with the test field yielded much inconclusive data
- Final reports for the test field were not provided for review
- Predeployment baseline studies are necessary for the West Channel project
- Annual reporting frequency proposed under the Pilot License is inadequate

First and perhaps of most importance, is that adequate monitoring is necessary to determine the impact of the turbines on aquatic organisms. Our July 23, 2008 letter (attached) indicated that the Phase III deployment of two turbines will certainly provide some data which should be appropriately characterized, but emphasized that Phase III may best serve as a test of the monitoring equipment and methods. Department staff appreciate Verdant's decision to utilize the Pilot Program allowing a phased approach to the full project, but offer caution again, that an appropriate level of monitoring needs to be conducted at each phase.

A significant issue is that the draft license application precedes the final reports of the test field efforts, including the results and report of the two "ground-truthing" efforts using Vessel-based Aimable Mount for Sonar (VAMS) which were conducted for Phase III on 10/21/08 and on 12/7/08. Further, VAMS was initially developed as a means of ground-truthing hydroacoustics data and not as the sole means of monitoring the impacts of the project. Staff believe Verdant to be fully aware of this, but are troubled that the monitoring proposed for the Pilot as described on page 8 of the Proposed Monitoring Plans in Volume 2 of the Draft License application involves a change in the VAMS setup that is being proposed while the results of the initial ground-truthing activity are still being processed. Page 6 of the Monitoring Plan does state that the results of the ground-truthing will be reviewed in consultation with the agencies, and staff would urge both Verdant and FERC to make adequate provision for review and development of the monitoring plan within the time frame of the Pilot process. Our specific comments on the Monitoring plan are provided below under the respective heading.

Volume 1

Part B
Section 1 Request for Waivers

Staff have no conceptual objection to the request for waivers of the Integrated License Process procedures since many of those requirements have been met by the Traditional License Process proceedings that have occurred to date. However, success of the ILP process going forward will clearly depend on Verdant's capacity to adhere to critical procedural and substantive needs of the Department and other participating agencies and stakeholders, such as the aforesaid monitoring regime.

Section 4 Justification Statement
(2) The license will be short term

The Department has no conceptual objection to Verdant's request for a 10 year license for up to 30 East River units subject to the following two provisions:

1. The West Channel project should be considered under a separate Pilot License application as indicated in this draft application, with the condition that sufficient study be conducted under the successive preliminary permit (application currently pending) to establish an adequate environmental baseline in the West Channel before any Pilot License application proceedings get underway for the West Channel units. The baseline studies for the west channel of the East River would need to include fixed hydroacoustic monitoring. Our April 25, 2007 comment letter on the 60-day Interim Report, and our April 30, 2007 comments on the scoping Document urged Verdant to begin conducting appropriate studies in order to gain a sufficient understanding of how aquatic resources use the west channel. Staff emphasized that any study effort should be aimed at determining the specific species using the area and the location and extent of such use.

2. Rigorous post-construction monitoring including the use of fixed hydroacoustics is necessary within the East Channel. The studies done to date for the test field served to establish a baseline data set, and although the intent was that the information gained during these studies would be able to address the potential impacts associated with the full build-out, numerous questions still remain. It is still very important to determine how fish will react to a full array (or significantly larger) array of turbines, and whether fish distribution and behavior will be similar to that obtained during the baseline. Department staff emphasize that these issues can not be addressed with the level of monitoring currently proposed (two Didson surveys per year). The environmental variability, coupled with the operational variability, will likely alter how fish react in the East Channel. Both DIDSON and fixed netting surveys would present only a very tiny snapshot in time that will not be capable of capturing any variability. The data collected from single points in time will not provide us any sense of comparison when searching for changes in the fish community since the community structure is constantly changing due to non-constant environmental factors.

(6) Initiated with a draft application that is adequate as filed to support environmental analysis

The draft application states that the baseline as described in Exhibit E provides more than sufficient information to support the environmental analysis to issue a pilot license. As indicated in provision 2 above, staff concur that a baseline data set was established for the east channel, but do not agree this is the case for the West Channel. Staff are concerned that the recent successive preliminary permit application that Verdant filed on 12/1/08 (Attachment "A" of this application) proposes only mobile DIDSON monitoring and stationary netting for the West Channel, if necessary. The Department intends to file separate comments on the preliminary permit application advising that additional baseline sampling needs to be conducted in the West Channel. The movement of fish may be more concentrated in the West Channel, and if so, the potential for fish community impacts may be higher. However, staff maintain that only through comparable

sampling using similar gears (fixed hydroacoustics) will it be possible to understand the potential impacts of the turbine field build-out in the East and West channels.

Part C Communication record

Although the communication record is extensive, it does not include numerous letters from the Department regarding the environmental analysis, the various study plans and the Fish Movement and Protection Assessment (FMPA). There are nine additional Department letters (attached dated: 12/22/03, 6/18/04, 9/3/04, 7/25/05, 6/30/06, 2/14/07, 7/23/08, 8/8/08, 9/3/08) that staff request to be included as part of the record and included in section C.

Stakeholder List

This list should be updated to reflect agency staff currently involved with the project.

Volume 2

Exhibit E - Environmental Report
1.0 Application

The draft application notes on page E-2 that deployments 1 -3 resulted in data, but no final reports, and does not indicate whether final reports will ever be prepared. Department staff question this, and caution that it would be prudent to sufficiently evaluate monitoring and sampling efforts to date in order to determine the best way to proceed with the next phase.

Section 3.2.5 Project Design

The anchoring of the triframes, and the use of the semi-permanent pile on page 5-15 should be explained in more detail. The no load condition described on page E-16 should also be explained in terms of how often this condition could occur and what measures if any are taken to limit this condition.

Section 3.4.1 Alternative Sites Considered

The alternatives analysis should be more substantial. It covers (a) the East side of Roosevelt Island, reduced in size because of a number of considerations (including inadequate velocities and commercial barge traffic), and (b) north of Roosevelt Island where there were objections from the USCG and recreational interests, but no mention is made of other alternatives in the NYC area, particularly for the West Channel since the East Channel is now the subject of the license application. Department staff believe further analysis of other sites is warranted in addition to a description of sites held by other preliminary permits.

The last paragraph discusses reduction of the 180 acre area to 18.4 acres and seems to imply that analysis of the larger area produced a complete or full build-out proposal that would be "environmentally compatible." This analysis should not raise an implication or support a conclusion that one can extrapolate from this data to potential impacts or consequences involving

a much larger area or a full-build out array. If such an implication or conclusion is being sought, it must first be vetted and agreed to by all participating agencies**.**

Section 5.3.2.2

Comparison of the pre- and post-deploy survey results for the Meso scale data is difficult as a different color scale is used. This should be clarified or changed if possible .

Section 5.3.2.4 Water Quality (Sediment)
Page E-80

If the site specific information acquired during the 2005 survey was for the area of the test field only, additional sampling may be required for other areas of the east channel. Studies for the west channel should include a sediment quality study (and associated sediment sampling plan). Although sampling in the east channel revealed little or no soft (resuspendable) sediments, it cannot be assumed that the same conditions exist in the west channel.

Page E-93

The Fish Monitoring and Protection Plan (FMPP) was prepared by Verdant, not the agencies, but was subject to agency review, and Verdant incorporated agency comments into various revisions of the document. The statement at the end of the first paragraph that the new protocols are being executed through deployment # 3 is not accurate since deployment # 3 has concluded and stationary netting was not conducted in deployment # 3.

Page E-95

The Department provided numerous comments on the 60 day Interim Report and these comments (letter dated 4/25/07) should be included or otherwise addressed in the environmental analysis.

5.3.3.2 Environmental Effects
Page E-106

Department staff do not agree entirely with the statement that the Mobile DIDSON ground- truthing protocol was developed to attempt to observe fish behavior near operating turbines. The DIDSON may prove very useful to observe various aspects of fish movement or behavior. But Verdant indicated in the Project DIDSON/Split Beam Hydroacoustic Ground truthing Study (dated March 11, 2008, that objectives of this effort were to develop a realistic methodology to observe fish interaction/reaction, and ground-truth data collected by BioSonics' Split Beam Transducers (SBT) upstream and downstream of an array of operating hydrokinetic turbines, by using a mobile DIDSON in conjunction with a single SBT. The study plan indicated that the split-beam technique was to provide estimates of individual fish target strength, a measure that roughly corresponds to the physical size of the fish, and the DIDSON was to provide visual observation for both size (and potentially) species identification. Staff emphasize that ground-truthing is an essential aspect of the monitoring plan.

Page E-107

The statement that stationary netting would be completed in December must be revised since that action did not occur.

The statements made under #5, Assess Potential Effect of Commercial Array, regarding the prediction of the effects from 100 turbines, sufficient spacing enhancing fish avoidance, and that the commercial KHPS field having a minimal influence on fish abundance and movement, are somewhat speculative and should be revised or substantiated by the actual data.

Page E-108

The third bullet states that the extreme level of protocol used for the six-pack (test field) proved to be excessive, but offers no explanation. Additional discussion of this crucial aspect of the project must be required. While Verdant acquired a good deal of data during the operation of the test field, a host of factors, including the East River's challenging physical environment, produced technical difficulties with both the turbines and the monitoring equipment, resulting in data gaps and questions that temper the conclusions that can reasonably be drawn from available data.

Proposed Monitoring Plan
Page 2 Table 1

Mobile DIDSON and Netting are proposed twice per year (Spring and Fall) for two years with Verdant consulting with the agencies for the timing and sequencing. Department staff caution that this is not a sufficient level of monitoring. As discussed above, the environmental variability, coupled with the operational variability, will likely alter how fish react in the East Channel. As proposed, both DIDSON and fixed netting surveys would only present a very tiny snapshot in time that will not be capable of capturing any variability.

Page 6 - Methods and Equipment

Department staff are not able to provide comments on this crucial aspect of the application since the draft application states that the results of this activity during deployment # 3 are still being processed and will then be reviewed in consultation with the agencies. Appropriate provisions need to be established to allow for adequate review and development of the monitoring plan.

Section 2.2 Seasonal Stationary netting

Statements in this section which indicate stationary netting will be completed as part of deployment # 3 need to be revised since the stationary netting protocol was not implemented as part of deployment # 3.

In conclusion, the Department appreciates the opportunity to comment on the Draft Hydrokinetic Pilot Project License Application, and anticipates additional discussion and work with both FERC and Verdant to further develop the study plans and address the concerns for the Pilot License and ultimately, the full field build-out in the East and West Channels of the East River. If the Commission or Commission Staff have any questions, please contact me at (631) 444-0369.

Sincerely,

/s/

Kevin Kispert
Project Manager
Division of Environmental Permits

Enclosures
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Erin M. Crotty
Commissioner

December 22, 2003

Mr William Taylor
Verdant Power
4640 13th Street
Arlington, VA 22207-2102

Re: Roosevelt Island Tidal Energy Project
Initial Consultation Document (ICD)
FERC Project # P-12178-000

Dear Mr. Taylor:

The Department has reviewed the information provided in the above document filed on October 2, 2003 for Phase II of the Roosevelt Island Tidal Energy Project (RITE). In this phase, Verdant indicates plans to have a test field of 6 underwater turbines installed this summer (2004) on the west side of the east channel of the East River adjacent to the east side of Roosevelt island. The ICD indicates the 6 turbines will be placed on 18" to 24" diameter piles that are driven 20 to 40 feet into the bottom. According to the ICD, there is approximately 2 feet of sediment before bedrock is encountered. After they are installed, the piles will extend about 6 feet above the bottom. The turbine blades will be a maximum of 5 meters in diameter and will turn at a maximum rate of 31 rpm. Each turbine center will be about 12 feet above the bottom and will have at least 5 feet of water between the turbine tips and the surface. Cables from the turbines will be placed on the bottom (not buried) and will run to the on-shore facilities to be located in a trailer on Roosevelt Island for this phase of the project.

As of this writing, we have had some discussion with your company concerning this stage of the project, and information that will have to be provided and studies that will need to be conducted prior to the actual filing of the FERC license application. During those discussions, we also indicated that we need specific information concerning the project site and the potential impacts of Phase II on the resources in that area that we need before we could commence our review to determine if this project (test field) would meet the standards for permit issuance of the required permits. Based on the information provided in the ICD, the activities of Phase II would require permits under the Protection of Waters Program pursuant to Article 15 of the New York State Environmental Conservation Law (ECL) and portions of the New York State Navigation Law, and possibly the Tidal Wetlands Program pursuant to Article 25 of the ECL. Our comments on the ICD are as follows.

COMMENTS ON THE ICD

Literature:

1. A more complete review of the literature relative to the local flora and fauna is required.
2. A detailed description of the test site and the potential impacts to the aquatic environment (including benthic, pelagic and litoral organisms) from installation and operation of the proposed facility is required.

Impact assessments on-site:

1. An assessment of the potential impact of operating the turbine "6-pack" on those species found through the literature search must be provided. The assessment must provide clear information on tidal fluctuations, and proposed structures must be referenced to mean low water or mean high water as a reference point.
2. An assessment of impacts on marine mammals and turtles must be provided.
3. An assessment of impacts on the two sturgeon species that utilize the New York Harbor complex must be provided.
4. This project may require a Section 6 NMFS (National Marine Fisheries Service) permit relative to endangered species. You will need to provide proof of consultation with NMFS.

Impact assessments-lab tests:

1. Flume testing of the turbines to determine the extent of mechanical impacts upon eggs, larvae, juveniles and adult fish that utilize the area will be required. NYPA grants exist for this purpose. Testing facilities can be found at Utah State, and Alden labs, MA.

Sediment Chemistry:

1. Provide clear identification of contaminants in area of disturbance (data at locations north and south of the project shows has indicated contaminants at levels of concern).
2. Describe construction methods and operation in detail, and estimate/describe expected turbidity and measures to minimize it.

Potential Problems:

1. There must be a thorough explanation of the how the "no fishing zone" will be established and under what authority this will be authorized. The rationale and authority for this action must be fully articulated.
2. All navigation concerns must be completely described. Barges have been known to use the eastern channel around Roosevelt Island during high traffic periods, as do fuel barges servicing the KeySpan Ravenswood facility.
3. The use of Public Lands for this project must be fully explored with the appropriate agencies (NYS Office of General Services).
4. A description of all proposed biofouling measures must be provided .
5. NYCRR Part 608 requires DEC to determine if the proposed alteration to water resources are consistent with section 608.8 considering issues such as water course and waterbody integrity, water quality, aquatic habitats, adequacy of design and construction techniques for structures, operational and maintenance characteristics, and safe commercial and recreational use of water resources.

Data available:

DEC Central Office, Albany

1. Ravenswood Facility: Impingement/entrainment 9/91 to 9/92, and 2/93 to 1/94
2. Ravenswood Facility Article X Application: 5 to 6 months of data @ 2000/2001
3. Con Ed East River Facility: 1/93 to 12/93
4. Astoria Facility: 5/94
5. NYPA Poletti Facility:1/99 to 12/26/2000 Entrainment -all life stages

Other Sources

1. Studies in the Little Neck area
2. Sandy Hook Marine Lab
3. Marine sciences research Center (MSRC) Stony Brook: NY Harbor survey,
4. NYSDEC Division of Marine Resources, Western Long Island Sound Study
5. Hudson River Foundation
6. Harbor Dredge Project
7. River Project Pier 56

We would welcome additional discussion of the above items and we can provide some of the data as indicated above. However, we wish to clearly state that all the above questions and concerns must be addressed before we will be able to issue the required permits for Phase II (the 6-pack). If you have any questions, please contact me at (518) 402-9161.

Sincerely;

/s/

Kevin Kispert
Project Manager

cc: V. Yearick, FERC
M. Vissichelli, USACOE
D. Bryson, USFWS
D. Hay, NPS
D. Rusanowsky, NMFS
M. Paula, USEPA
LCDR E. Morton, USCG
V. Barr, NYSDOS
W. Taylor, Verdant Power
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Erin M. Crotty
Commissioner

June 18, 2004

Richard Tomer, Chief
Regulatory Branch, New York District
U.S.Army Corps of Engineers
26 Federal Plaza, Room 1937
Jacob Javits Federal Building
New York, NY 10278

Re: U.S. Army Corps of Engineers Public Notice
Application # 2003-00402-Y3
Roosevelt Island Tidal Energy Project
FERC Project # P-12178-000

Dear Mr. Tomer:

The New York State Department of Environmental Conservation (Department) has reviewed the Public Notice issued May 21, 2004. This notice states that the applicant, Verdant Power, has requested Department of Army authorization for the installation of six pile-mounted turbines (6-pack), electric cables, and the discharge of fill material into the East River, Manhattan, New York. The 0.88 acre turbine field would cover a 225 foot by 170 foot area in the east channel of the East River just north of the Roosevelt Island Bridge in an area where the water depth is approximately 30 feet. Project plans (sheet 7) indicate there would be approximately 6 feet of water above the highest point of the turbine at mean low water. Each of the six turbines would be connected to a land based electric grid system by individual cables that would lay on the bottom and be held in place by concrete blocks. A floating security barrier would be installed around the periphery of the 6-pack to be visible to boaters.

The stated purpose of the project as indicated in the Corps notice is, "...to construct a demonstration project of six underwater turbines to assess the efficiency of the turbines relative to their position in the water as well as the effects of the turbines on the surrounding environment and marine life. The demonstration project is intended to gather baseline information to be used in the future permitting of a large scale under water turbine field. Any future expansion of the turbine field would be the subject of a separate Public Notice."

This proposed project (6-pack) requires Department permits under the Protection of Waters Program pursuant to Article 15 of the New York State Environmental Conservation Law (ECL), possibly the Tidal Wetlands Program pursuant to Article 25 of the ECL, and would require the Department to issue a Water Quality Certification pursuant to section 401 of the Federal Water Pollution Control Act. Any applicant for a federal license or permit to conduct any activity including, but not limited to, the construction or operation of facilities that may result in a discharge into navigable waters as defined in Section 502 of the Federal water

Pollution Control Act (33 U.S.C. §§ 1251-1387), must apply for and obtain a water quality certification from the Department.

The Department has received draft permit applications including an application for a Water Quality certification, and anticipates providing Verdant Power with comments on these in the near future with the hope that our comments will be adequately addressed prior to Verdant's submission of the signed formal applications. The Department had relayed its initial comments and concerns for the project through our 12/22/03 letter (attached) commenting on Verdant's Initial Consultation document. Although Verdant has responded to those comments, our primary concerns regarding the impact of the 6-pack on both the biotic and abiotic environment have not been adequately addressed.

The Department is concerned that while Verdant has made progress compiling some information about the project location, no studies have been conducted or provided that would provide an indication of the actual impacts of the 6-pack on the aquatic environment including the condition of the sediments in the East River. On June 4, 2004, Verdant did provide draft study templates. However, these are fairly conceptual in nature, and to be conducted after the 6-pack is installed. Similar to the concerns raised by the US. Fish and Wildlife Service (USFWS), the Department is concerned that the installation and operation of 6-pack may have serious direct or indirect impacts on aquatic organisms, and to date, no study results have been provided to indicate otherwise. It is also important to note that prior to the receipt of these draft templates, there had been no presentation of any studies to be conducted in order to ascertain the impacts of the 6-pack. Therefore, the Department would concur with the USFWS request that the subject permit be held in abeyance pending the receipt of an acceptable study plan, and the receipt of additional data and documentation that would allows us to determine the impacts of the 6-pack on the aquatic environment.

Further, it should be noted that it may be difficult, if possible at all, to extrapolate the impacts of the full turbine field of 200 to 400 underwater turbines from the installation of the 6-pack. Although it may not be essential that this be determined in the review of the 6-pack application alone, it must certainly be reckoned with in the FERC licensing procedure.

If you have any questions, please contact me at (518) 402-9161. Thank you for this opportunity to comment.

Sincerely;
/s/

Kevin Kispert
Project Manager

cc: M. Salas (8 copies), FERC
T. Dean, FERC
M. Vissichelli, USACOE
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Erin M. Crotty
Commissioner

September 3, 2004

Jim Gibson
Devine Tarbel & Associates
Thruway Office Building
290 Elwood davis Road
Suite 290
Liverpool, NY 13088

Re: Roosevelt Island Tidal Energy Project
Phase II, Test field 6-pack
FERC Project # P-12178-000

Dear Mr Gibson:

The New York State Department of Environmental Conservation (Department) has reviewed the information and materials provided in the draft permit applications which included project site plans, a Supplemental Report (SR) for the Environmental Assessment, an Essential Fish Habitat Assessment, the Draft Study Templates that were distributed prior to the June 9 2004 public meeting, and Verdant's Response to Comments on Public Notice No. 2003-004402-Y3. Our general comments on the project have been provided to a certain extent in our June 18, 2004 letter in response to the USACOE May 21, 2004 Public Notice, but our specific comments on the various components of the draft applications and supporting documentation are now provided below.

Project site plans

1. The site plan must be revised to indicate the current location and configuration required by the USCG.

2. Existing and proposed structures must be clearly labeled on the plans that provide a cross section of the cable from the 6-pack to the control room.

3. Location of all monitoring/testing equipment must be clearly shown and labeled on the site plans.

4. The location of the three core samples must be clearly shown on the plans and the distances from the sampling locations to the turbines must be specified.

Supplemental Report (SR)

5.3 Sediment Overview

The Department's concerns with this project relate to the likely presence of sediment contamination in the project area and the possibility that those contaminated sediments will be resuspended in the water column by the spinning motion of the turbine blades. These issues, raised in our December 22, 2003 comment letter, have not yet been addressed. Specifically:

1. The applicant has not submitted sediment chemistry data for the project area. Section 5.3 of the Supplemental Report states that Verdant plans to collect and analyze a representative bottom sample prior to deployment. We would require that a minimum of three samples be analyzed to characterize the project area and that the collection and analysis be in accordance with our sampling protocol (copy attached). The results should be submitted as part of the permitting process for Phase II. If this project later proceeds to the full-scale installation, additional sediment sampling may be required to characterize the larger Phase III project area. We understand from the Supplemental Report that there may in fact be very little sediment over the rocky substrate in the area, but the information provided was from literature reviews of other projects in the East River region. We need information specific to this site.

2. Although our December 22 comment regarding sediment disturbance and turbidity during construction was adequately addressed, questions remain regarding turbidity that may be caused by the turbine blades spinning close to bottom sediments during unit operation. Section 6.12 of the Supplemental Report states that the effect of the turbulence that will occur around the edges of the turbine is as yet unknown. Although it seems reasonable to expect the effect of the Phase II six-pack to be small relative to the natural turbulence of the river, the magnitude of this effect needs to be established before a full-scale installation of hundreds of units could be approved. The applicant should, therefore, describe what studies they intend to conduct during Phase II to determine the amount of sediment resuspension caused by the operation of the turbines.

6.1 Impacts to fish

The SR compares the potential impacts of the 6-pack to those of traditional hydropower but that may not be appropriate. Please see the Department's comments below concerning the studies required to determine the impact of the 6-pack.

Essential Fish Habitat Assessment

The assessment and the SR provide a good deal of information on overall species inhabiting the East River, but does not provide a sufficient description of both numbers and species composition of fish using the specific 6-pack project site. Further, it does not provide any studies of describing similar equipment at other locations. Therefore, the Department is

requesting the following studies to be conducted prior to the installation of any equipment for the 6-pack project.

1. If the RITE is to be deployed in the East River for a six-month time frame, then pre-monitoring of the site using both hydroacoustic technology and netting must be conducted for the same six month period prior to deployment of the six-pack. The Department would recommend one year or longer of pre-monitoring and one year of deployment-monitoring to fully capture the seasonal fish movements in this portion of the East River.

2. Hydroacoustic Testing of Fish Movement: Verdant should provide all assumptions that will be used to estimate fish movement from the hydroacoustic data that will be collected. We recommend continuous (especially at the proposed deployment site) and mobile monitoring with hydroacoustic technology to get a more robust picture of the fish passage in the project area. It is essential to determine the portion(s) of the east channel that are possibly used to a greater or lesser extent by fish in order to determine turbine locations that will minimize fish strikes. A possible source of assistance in designing the program would be Pace Environmental in Pennsylvania regarding the hydroacoustic technology they are employing in the Delaware River.

3. Netting Study: The fish species composition in this particular portion of the East River must be determined and therefore the Department requires a comprehensive "netting" study. This study should not depend upon the hydroacoustics detecting large schools of fish in order to be to be implemented. The specific type of fish "netting" gear to be deployed must be accurately described. Since bottom trawls may be difficult in this body of water, Verdant may want to consult with Normandeau, LMS, Con Ed, Marine Sciences Research Center (Peter Woodhead), and others to discuss how they have sampled this difficult area.

4. Fish Impact Study: Based upon the information provided by Verdant, a full-scale flume study does not appear to be feasible. However, Verdant must design and conduct studies to address the following concerns and questions:

a) The physical effects of individual and multiple turbines upon eggs, larvae, juvenile and adult fish.
b) The possibility that fish will avoidance the turbines. Does a pressure wave really form in front of the turbine and does that effectively deter fish?
c) Fish behavior in general as they encounter one to multiple turbines must be explored further.
d) The probability of fish strikes as the turbine field ranges from one turbine to an array of multiple turbines. Turbine placement to minimize fish strikes must be explored.
e) The effect of the six-pack on the hydraulic flow of the river and how will that impact fish movement must be determined.

Fish movement evaluation

Please see our comments above

Water Quality Assessment

The draft plan is very "conceptual" in nature and will require much more detail before it can be approved in final form. We assume that this plan refers only to the Phase II "six-pack" deployment, not the full-scale installation. With those caveats in mind, we offer the following comments.

1. Pre-deployment Section
   a. Three core samples will be sufficient for the purposes of characterizing the sediment for the Phase II (six-pack) project. However, a more detailed sediment study will be required as part of the application process for a permit for Phase III (full scale) operation.
   b. Sediment samples should be analyzed for dioxins and pesticides in addition to those parameters listed in the draft study plan.
   c. The applicant should specify the analytical testing methods and detection limits.
   d. Results of the pre-deployment sediment testing must be submitted to DEC before Phase II deployment can be approved.

2. Post-deployment Section
   a. The references to "water and suspended sediment samples" is confusing. It sounds like these are separate samples. However depth integrated water column samples should be collected upstream and downstream of the turbines
   b. Dioxins and/or pesticides may be added to the list of water quality parameters for analysis depending on the results of the sediment chemistry analyses. The draft already states that the list of analytes will be finalized in cooperation with DEC.
   c. The applicant should specify the analytical testing methods and detection limits.
   d. The applicant should explain why a water quality sampling site located to the side of the turbines is included.
   e. The final study plan should specify the distances of the sampling locations from the turbines and explain how this distance was determined.
   f. The last paragraph should indicate : Sediment chemistry results must be submitted before Phase II deployment. Water column (post-deployment) results must be submitted before Phase III (full scale) operation can be considered.

In conclusion, as stated in the Department's June 18, 2004 letter providing comments on the U.S. Army Corps of Engineers Public Notice, it may be difficult, if possible at all, to extrapolate the impacts of the full turbine field of 200 to 400 underwater turbines from the installation of the 6-pack. Although it may not be essential that this be determined in the review of the 6-pack application alone, it must certainly be reckoned with in the FERC licensing procedure.

Sincerely,

/s/ (Jack A. Nasca, for)

Kevin Kispert
Project Manager
Division of Environmental Permits

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Denise M. Sheehan
Acting
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July 25, 2005

Jim Gibson
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Liverpool, NY 13088

Re: Roosevelt Island Tidal Energy Project
Phase II, Test field 6-pack
FERC Project # P-12178-000
DEC # 2-6204-01510/00001

Dear Mr Gibson:

The New York State Department of Environmental Conservation (DEC) staff recently discussed the Fish Movement and Protection Assessment Revision 5.1, dated March 30, 2005, and the June 29, 2005 letter from Devine Tarbell & Associates to the US Army Corps of Engineers with representatives of the US Fish and Wildlife Service (USFWS) and National Marine Fisheries Service (NMFS). The purpose of this discussion was to determine the changes required in the Fish Movement and Protection Assessment (study protocol) for this project in order to provide a sufficient assessment of the project's impact on aquatic resources. The following are DEC, USFWS, and NMFS concerns and comments regarding the study protocol.

1. <u>Adequate monitoring of the 6-pack(test field) is essential</u>
   USFWS, NMFS and DEC staff concur that the entire water column above and below each of the turbines must be monitored to the greatest extent practicable. This is essential to ensure fish movement around, above, below and/or through the turbines is monitored and accurately characterized. This may involve additional equipment (a 4th transducer on the fixed arrays), or an innovative approach that may involve the use of different equipment (such as the Didson camera) or different arrangement than described in the study protocol. Since one of the primary goals of the test field project is to determine/investigate how fish behavior may be affected by the turbines, it is essential to monitor fish movement above, below and through the turbines, whether the fish are considered "at risk" or not as indicated in your June 29, 2005 letter. In fact, until fish behavior around the turbines is adequately investigated, it may not be possible to determine which species are more or less vulnerable or at risk from the turbines.

Staff appreciate that Verdant plans to consult with the involved agencies after the deployment and operation of Phase I (installation of the 4 fixed arrays around the first set of turbines). However, USFWS, NMFS and DEC staff concur that all three sets of turbines in the test field (turbines 1 through 6) should be monitored by fixed arrays. This is essential in order to determine how fish negotiate the turbines. The present configuration in drawing C-102 dated 3/30/2005 (General Arrangement plan) does not show a fixed array, or any other means, to monitor turbines 3 and 4.

2. Demonstration of sampling efficiency is essential

To ensure that reliable data is collected, there should be a complete description of all bench and field calibrations as well as the QA/QC measures that will be conducted. These methods should include exercises involving floating models that can be used to field calibrate the equipment to make sure it can accurately monitor targets of varying size, density, number and speed as will be found in the project area. Calibration may need to be conducted on a routine basis to account for target sizes that are consistent with the results of the netting survey.

In addition, in order to evaluate the effectiveness of the test field sampling efforts, DEC staff request that the study protocol be revised to include a provision for a status report that will be submitted to DEC, USFWS, NMFS, and the other involved agencies 6 months after the deployment of the test field, and every 6 months after that for the duration of the project. This status report must completely describe and evaluate all sampling efforts conducted for the test field.

3. Sufficient baseline data is essential for the full field project

As indicated in our earlier letters, DEC staff concur that the data obtained during the operation of the test field will not, on it's own, satisfy the DEC's study requirements regarding aquatic impact analyses relative to the FERC licensing process for the proposed project's full build out of a larger field of turbines. Data obtained during the installation and operation of the 6-pack can certainly provide a supplement to the baseline studies required to adequately characterize fish movement in the vicinity of the full field project area.. The test field data must be evaluated in the context of fish movement through the East River and compared with other studies conducted in the East River such as those referenced in your letter of June 29, 2005 before it's value in characterizing the potential impacts of the full field build out.

It is evident that Verdant understands the need for additional study prior to the larger build out, and the study protocol for the test field states "This study is not, however, in lieu of additional studies that may be appropriate for the larger build out of the project." Staff feel it is essential that Verdant elaborate on the scope of additional studies that are contemplated at this time and should be aware that the scope may need to change depending on the results of the test field data analysis. We look forward to the review proposals in this regard at the appropriate time.

Staff anticipate working with Verdant to finalize the study protocol. If you have any questions, please contact me at (518) 402-9161.

Sincerely,

/s/

Kevin Kispert
Project Manager
Division of Environmental Permits

cc: R. Smith, Verdant Power
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Denise M. Sheehan
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June 30, 2006

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Re: Roosevelt Island Tidal Energy Project
Phase II, Test field 6-pack
FERC Project # P-12178-000
DEC # 2-6204-01510/00001

Dear Mr Gibson:

The New York State Department of Environmental Conservation (DEC) staff has performed an initial review of the study templates received on June 16, 2006. In accordance with our recent phone conversation on June 21, 2006, it is my understanding that there will be a series of additional meetings with various stakeholders over the next months to discuss the details of the various studies that will be used to evaluate the full RITE project as compared to the six study units. DEC staff looks forward to those discussions, and would like to take this opportunity to provide comments on the Water Quality Assessment and the Fish Movement and Protection Assessment.

Water Quality Assessment

While the overall approach taken in the sediment sampling plan for the test field is still applicable, the area to be sampled should be representative of the entire zone affected by the full build-out of the proposed project, including but not limited to the project footprint and any staging/anchoring areas. In addition the following changes should be incorporated:

1. Grab sampling should be conducted only if there is not enough material to collect a core sample and the sediment sampling plan should indicate the type of core sampling equipment that will be utilized if cores can be collected.

2. All samples should remain refrigerated while the grain size determination is made in the laboratory.

3. If fine-grained sediment which could be resuspended by the rotating blades is observed, Verdant will have to develop a sediment monitoring plan to be implemented when the turbines are operating. The details of the plan will depend on the amount of sediment observed and the level of contamination (or lack thereof). This has been discussed before and Verdant refers to it in the Water Quality study template, but no further action was taken in the area of the six test turbines since there was no resuspendable sediment in that area.

Fish Movement and Protection Assessment

DEC staff emphasizes again that there needs to be discussion of the transition from the implementation of the study units and subsequent studies thereof, to the deployment of the full field of turbines. The Fish Movement and Protection Assessment, Revision 6.0 dated 10-14-2005, provided as one of the study templates, was approved for monitoring of all six turbines in our October 27, 2005 letter. Our letter also cautioned, and Staff wishes to restate, that since there have been no changes to the section of the supplement concerning the studies required for the full-field design, additional, pre-construction research is likely to be required to assess potential impacts associated with any proposal for full-field design and/or construction.

As indicated in our other earlier letters, staff are in agreement that the data obtained during the operation of the test field will not, on it's own, satisfy the DEC's study requirements regarding aquatic impact analyses relative to the FERC licensing process for the proposed project's full build out. Data obtained during the installation and operation of the 6-pack can certainly provide a supplement to the baseline studies required to adequately characterize fish movement in the vicinity of the full field project area. The test field data must be evaluated in the context of fish movement through the East River and compared with other studies conducted in the East River such as those referenced in your letter of June 29, 2005 before it's value in characterizing the potential impacts of the full field build out can be determined.

It is evident that Verdant understands the need for additional study prior to the larger build out, and the study protocol for the test field states "This study is not, however, in lieu of additional studies that may be appropriate for the larger build out of the project." It is essential that Verdant elaborate on the scope of additional studies that are contemplated at this time and Verdant should be aware that the scope may need to change depending on the results of the test field data analysis. The study plan should include a means to assess turbine related mortality for key riverine species on a seasonal basis, investigate potential fish deterrent or fish protection systems to prevent fish from entering the turbine array, and include a provision for post deployment studies to determine the actual impact of the project to the fishery.

Staff anticipates working with Verdant to develop the study templates and address the concerns for the full field build out. If you have any questions, please contact me at (518) 402-9161.

Sincerely,

/s/

Kevin Kispert
Project Manager
Division of Environmental Permits

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February 14, 2007

Jim Gibson
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Re: Roosevelt Island Tidal Energy Project ("RITE")
Phase II, Test field 6-pack
FERC Project # P-12178-000
DEC # 2-6204-01510/00001

Dear Mr Gibson:

I am writing in response to your December 19, 2006 inquiry about the process for reconciling three modifications, which you propose to the test field study plan, that you believe would be different from the plans approved in your DEC permit, and to provide our initial comments on the December 19, 2006 packet containing the study plans for the test field of six turbines (6 study units).

Modifications to the study plan and Potential Permit Modification

The aforementioned modifications in the deployment and study plans consist of the deployment of only one of the two initial turbine units, a change in the sampling strategy that will not use mobile fish trawling surveys, and a change in the navigation buoy system to conform with US Coast Guard requirements. As discussed during our December 28, 2006 conference call, the Department of Environmental Conservation's ("DEC") permit conditions for the RITE Project reference the Fish Movement and Protection Assessment as a portion of the approved plans for the project, and this document must accurately reflect the regulated activities that are occurring on site. Since the permit presently authorizes the deployment of two turbines for 90 days prior to installation of the additional four turbines, your proposal to install only one of the two initial turbines does not require a permit modification. In addition, the Navigational Buoy System is not regulated by the Department and changes to this system do not require a modification of the current permit.

However, the omission of the mobile fish trawling from the Fish Movement and Protection Assessment constitutes a change that will require a permit modification. The trawling survey was an integral component of the overall monitoring system that was developed to

determine the impacts (including impacts on behavior) of the turbines on aquatic organisms. This data was intended to supplement the hydroacoustics data in an effort to characterize species composition, determine potential turbine-related injury/mortality, and ground-truth the hydroacoustics. The Fish Movement and Protection Assessment must therefor be revised to reflect the appropriate change (see following paragraph) in the study methods. As a practical matter, the Assessment should also be revised to reflect the current changes in configuration of the turbines and associated monitoring equipment even though this does not by itself require a permit modification.

Please note: DEC Staff emphasize that, since Verdant has indicated it will not conduct the mobile trawls, it must submit for the Department's approval additional discussion of potential survey methods. An approach that may have merit would be to collect hydroacoustics data in concert with the application of Didson camera technology (possibly additional units), and to supplement this with the recent data from the Keyspan Ravenswood facility to further understand aquatic species' use of the East River. After six months of study in this manner, it will be appropriate to consult with the involved agencies to determine if different monitoring methods are required to identify and document the impacts to resources using fixed gear. At that point it may become evident that additional study for another two seasons (i.e. 12 months) may be required. This would extend the duration of the study period from 18 months to 24 months.

December 19, 2006 Study Plans

Department staff have participated in the initial conference calls held with various stakeholders (i.e. the study groups) to discuss the details of the various studies that will be used to evaluate the full RITE project as compared to the six study units. DEC staff plan to continue participating in those discussions, but in the interest of expediency, would like to take this opportunity to provide our initial comments on the study plans as agreed during the study group discussions.

<u>Water Quality Assessment</u>

1. For the full build-out, more than 3 samples will be required if sediment is present. The total number can be determined once the final project footprint is determined and staff have an indication of whether or not soft sediments exist in part of or all of the site(s).

2. Attached please find an updated Table 1 from the TOGS. This is a recent update to reflect changes in laboratory testing methods. The study plan referenced the new test methods, but it was not updated to the new, lower detection limits.

3. The water column monitoring plan proposed for the initial test turbines was not fully developed because it turned out that there was no sediment in the test area. Staff will need the flexibility to develop the details of a pre-construction and/or post-construction water quality monitoring plan after the extent of soft sediments in the area and the level (if any) of contamination have been determined.

<u>Rare Threatened and Endangered Species Assessment</u>

1. Surveys for RT&E species need to occur throughout the year. Sea turtles are most likely to be moving through the project area during the warmer months (April - October), seals and whales more likely during cold months (October - April) with dolphins and harbor porpoise more likely in warmer months as well. The existing protocols for fish will help track resources that may attract RT&E species to the project site and may be sufficient for identifying use of the site by individuals and/or groups of animals. The bird survey protocols should also provide for recording any visual evidence of RT&E marine species that may be visible from the surface.

2. The December 2006 study plan indicates that potential measures to minimize, or mitigate for impacts to RT&E species are to be developed through consultation with FWS, NOAA Fisheries, and the New York Natural Heritage Program, contingent upon the findings of the assessment conducted during the deployment of the test field of six turbines. Staff caution against the delay in developing mitigation measures, and recommend that a discussion of appropriate and effective measures be included in the current study plan. This should include a well-developed response plan for dealing with issues such as reports of marine mammals nearing the channel (this last year's wayward manatee is a perfect example). Precautions should include the ability to quickly power down the turbines. The current time frame of 24 hours to power down the turbines may not afford sufficient protection/mitigation. Additional mitigation may come in the form of resources being provided to develop long term monitoring programs for the areas adjacent to the proposed turbine field(s).

Bird Observation Survey

1. Bird surveys should be spread throughout the migratory season. In lieu of consecutive daily surveys as proposed, bi-or tri-weekly surveys covering late March through May and Mid August - October would provide a better indication of avian activity.

2. To assess impacts to bird use at the turbine sites, consecutive day surveys should be conducted immediately before and after deployment of new turbines. Instead of conducting consecutive surveys for 5 days post deployment, staff advise straddling the deployment with consecutive surveys for 3 days before and 3 days after.

3. The bird survey protocols should also provide for recording any visual evidence of RT&E marine species that may be visible from the surface.

Mobile and Fixed Hydroacoustic Surveys, Hydrodynamic surveys

1. Staff's concerns regarding the omission of the trawling surveys from the Fish Movement and Protection Assessment and from the Mobile and Fixed Hydroacoustic Survey study plans are described above ("Modifications to the study plan and Potential Permit Modification"). As indicated during the Aquatic Study Group call, Staff look forward to subsequent discussion of this issue.

2. Numerous letters from the Department (6/16/04, 9/3/04, 10/15/04, 12/9/04, 7/25/05, 10/13/05, 10/27/05, 6/30/06), have stated that the data obtained during the operation of

the test field of six turbines will not, on its own, satisfy DEC's study requirements regarding aquatic impact analyses relative to the FERC licensing process for the proposed project's full build out of up to 300 turbines. Although one of the stated objectives of the December 2006 fixed Hydroacoustic Fish survey is to "Use data gathered from the six study units to assess the potential effect of a larger turbine array on fish populations in the vicinity of Roosevelt Island", the study plan still provides no further detail as to how this will be accomplished for fish or other aquatic resources. It is staff's strong opinion that the study plan for the FERC license application must address the potential impact of the full field of turbines.

3. With regard to item 2 above, the Hydrodynamic modeling, and other potential impacts for the full field, staff emphasize the need for additional discussion to resolve whether it is appropriate to address these issues in a post-license scenario. Department staff do not necessarily accept a presumption for reliance solely on post-licensing studies and monitoring, and at least one other agency raised this concern during the aquatic study group conference call on 1/25/07, and we therefore urge Verdant to take immediate action to address this issue.

Staff anticipates providing additional comments and working with Verdant to develop the study plans and address the concerns for the full field build out. If you have any questions, please contact me at (631) 444-0302.

Sincerely,

/s/

Kevin Kispert
Project Manager
Division of Environmental Permits

cc: R. Smith, Verdant Power
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Alexander B. Grannis
Commissioner

July 23, 2008

Mr Ron Smith
Verdant Power
4640 13th Street
Arlington, VA 22207-2102

Re: Roosevelt Island Tidal Energy Project (RITE)
Phase III, Test Field, Re-deploy 2 turbines
FERC Project # P-12178-000
DEC # 2-6204-01510/00001

Dear Mr Smith:

The New York State Department of Environmental Conservation (Department) has reviewed the following documents pertaining to the Fish Monitoring and Protection Plan with associated studies and data for the Roosevelt Island Tidal Energy ("RITE") Project.

- RITE Project Fish Movement and Protection Plan revision 7.1 (dated March 10, 2008)
- RITE Project Fixed Hydroacoustic Data – June 2007- March 2008 (memorandum dated April 14, 2008 ; revised June 11, 2008)
- RITE Project DIDSON/Split Beam Hydroacoustic Groundtruthing Study (dated march 11, 2008)

It is staff's opinion that these documents and associated analysis represent a good initial effort to characterize the relevant aquatic resources of the project area, and to begin to examine the potential impacts of the turbines on those resources. However, as the above reports indicate, technical difficulties with both the turbines and the monitoring equipment, due to a host of factors, including the challenging physical environment of the East River, resulted in some data gaps and questions that temper the conclusions that can reasonably be drawn from available data. Due to unforeseen and unavoidable circumstances, at this time, Staff cannot provide specific comments on data analysis. Therefore, the following comments are focused mainly on the proposed monitoring plan and issues associated with the re-deployment of the two turbines in Phase III, rather than the details of the data analysis. Staff envision an on-going iterative effort regarding the methods for analyzing the available data.

RITE Project Fish Movement and Protection Plan revision 7.1 (dated March 10, 2008)

As discussed during the May 29, 2008 meeting, the Department concurs with ACOE, USFWS and NMFS that the Fish Movement and Protection Plan should be revised to describe only activities proposed for the Phase III deployment of 2 turbines. The plan should include studies that will be conducted during Phase III to support any future build out of a larger number of turbines, but staff believe that any larger build out should have its own separate monitoring plan.

Table I (Study Schedule) is very helpful, and should be expanded/continued to show all proposed activities and the reporting/monitoring schedule.

Appendix C - Stationary Netting Supplemental Study Plan

Staff concur with the ACOE, USFWS and NMFS that a netting effort is crucial, that it should be conducted this fall, and that the use of more than one type of gear should be fully explored. Available data suggest that there is more fish movement at all stages of the tide during the fall, and therefore it is important that this pattern be examined this fall (2008). As indicated during prior discussions, we also have concerns for the limited number of episodes proposed (one flood tide each day for a period of two sequential days) for the netting and strongly urge Verdant to provide a sampling contingency in the event this effort is not successful.

Larger Field Build Out - FERC License

Department staff continue to offer the same caution provided in almost all of our earlier letters: the applicability of the fish movement and interaction data from a small number of turbines will not be very applicable to a much larger field of 30 to 40 turbines where the potential for interaction increases dramatically. Department staff share the USFWS concern that submission of a license application by December 2008, will have very limited fish-turbine interaction data. Status report # 21 indicates that 5 turbines were operating on 5/2/07 (the deployment date of Turbine 6), and the turbine failures began on 5/15/07. This provides a maximum of 13 days with 5 (not 6) turbines in operation, during one migration season and, obviously, there is no fish turbine interaction data for the fall of 2007.

We concur with ACOE, USFWS and NMFS that a 2 turbine study will not provide an adaquate evaluation of the effect of multiple turbines on fish movement, behavior and injury/mortality. Phase III will certainly provide some data which should be appropriately characterized, but Phase III may best serve as a test of the monitoring equipment and methods. Therefore, staff believe that any application for a larger field of turbines be proposed in phases, with an appropriate level of monitoring conducted at each phase.

Project DIDSON/Split Beam Hydroacoustic Groundtruthing Study (dated March 11, 2008)

Verdant's objectives in this study are to develop a realistic methodology to observe fish interaction/reaction and "ground truth" data collected by BioSonics' Split Beam Transducers (SBT) upstream and downstream of an array of operating hydrokinetic turbines, by using a mobile DIDSON in conjuction with a single SBT. Three separate on-water surveys are

proposed, supported if possible by supplemental netting. Section 3.3, data collection equipment, indicates that when possible, data from the same target (observed by the DIDSON and the SBT) will be compared and indexed.

Staff appreciate this innovative approach to groundtruthing the remote sensing devices, and look forward to reviewing the results. However, we caution that provision for additional surveys may be prudent given the difficulties encountered with monitoring equipment in this location. The supplemental netting could provide valuable insight but needs further description. It is not clear whether this is an additional effort to that described in Appendix C of the FMPP revision 7.1. As indicated by the USFWS , the relationships between the Groundtruthing Study, the fixed hydroacoustic monitoring and the supplemental netting study needs to be defined more clearly

Staff look forward to additional discussion of the monitoring plan and data analysis for Phase III. If you have any questions, please contact me at (631) 444-0302.

Sincerely,

/s/

Kevin Kispert
Project Manager
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cc: N. Handell, USACOE
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Alexander B. Grannis
Commissioner

August 8, 2008

Mr Ron Smith
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Re: Roosevelt Island Tidal Energy Project (RITE)
Phase III, Test Field, Re-deploy 2 turbines
Fish Movement and Protection Assessment revision 7.2 (dated July 25, 2008)
FERC Project # P-12178-000
DEC # 2-6204-01510/00001

Dear Mr Smith:

The New York State Department of Environmental Conservation (Department) has reviewed the Fish Movement and Protection Assessment (FMPA) revision 7.2 (dated July 25, 2008. The following comments and concerns are provided in the order of the various sections in the FMPA for ease of review, and any excerpts from the document are in italics. These issues should be addressed in a revised document and submitted to the Department for review.

1. Goal

The reference to six experimental units is no longer appropriate for Phase III based on the current project description

2. Introduction and Background

The Pre-deployment period should be described in more detail (i.e. types of surveys/activities) and illustrated in Table 1 RITE FISH MOVEMENT AND PROTECTION ASSESSMENT - SCHEDULE. For example, the pre-deployment survey period prior to the installation of any equipment ended on 11/22/05 with a fifth pre-deployment survey as described in progress Report # 5 dated 12/5/05.

3. Objectives

The first sentence in this section should use “fish communities” instead of “fish populations”, since the use of the word “populations” typically refer to individual species. This change should be made throughout the document unless the reference is to known species composition.

The specific study objectives should not reference the six pack deployment area since two turbines are to be deployed in Phase III. This comment applies when this same reference to the six pack is made throughout the document, and a more appropriate description of the study area should be provided to avoid confusion.

DEC staff suggest the following changes be made to the objectives.

Objective 2 should read: *characterize the use of the east channel of the East River (far-field) by fish communities on a seasonal basis with emphasis on a potential full deployment field of additional turbines*

Objective 3 should read: *evaluate fish behavior (direction and velocity of swimming) relative to tide direction and current speed near the individual turbines.*

Objective 4 should read: *evaluate the effects of multiple turbines on fish passing through the turbine field present during the deployment*

Objective 5 should read: *incorporate where practical the data gathered from the pilot study to make assertions relative to the potential effect of a larger turbine array on the fish community within the vicinity of the east channel of the east River near Roosevelt Island*

4. Study Area

The Study Area should not reference the six pack deployment area since two turbines are to be deployed in Phase III.

5. Methods

The last sentence in this section should indicate :
The intent is to augment the existing data collection with these studies during deploy #3 to develop data to support a FERC license application

The *appropriate, proportional monitoring for a full field buildout* would be included in the FERC license application and should not be noted here due to the uncertainty of the data set's ability to adequately address the impacts of a full field build-out.

6. Fixed Hydroacoustic study

As indicated in earlier comments, "fish communities" should be used instead of "fish populations", since the use of the word "populations" typically refer to individual species.

Please see comment below regarding approximate size classes as indicated in the following excerpt:

The continuous monitoring by the far-field fixed arrays (24 transducers on 8 frames) was intended to allow development of the estimated total numbers and approximate size classes of

fish approaching the footprint and fish that enter the footprint area as opposed to limited subsampling normally done for most fish collection studies.

At this point in time the data has only differentiated between small and large fish. Based on discussions Department staff have had with Verdant representatives, small fish are any signal < -30 dB (less than 30"), and large fish are any signal > -30 dB (longer than 30"). Staff believe that the document will be much more informative if all collection data is presented in 6" size classes (i.e. 0-6", 6-12", 12-18" etc. ,up to the largest fish collected. Size classes coupled with temporal distribution may allow reviewers to make inferences to species use of the study area.

Excerpt
For Deploy #3; viable transducers on Frames 1, 2, and 3 provide information for operating KHPS turbine in the T1 position. Transducers on Frames 4, 6 and 8 provide information on the operating KHPS turbine in T5 position. (See Figure 2). This information on fish distribution and abundance within the acoustic field (vertically in water column and river cross-section) will be summarized by Verdant for interpretation by the agencies; as was done in the collaborative discussions of Jan- May 2008. Fish distribution and swimming behavior (speed and direction) entering the first turbine row and exiting the 3 turbine row will be compared and evaluated for potential effects such as change in water column distribution, increased percentage going through the turbine blade zone (or other zone), and change in swimming behavior. We believe this arrangement will be adequate to evaluate the effect of multiple turbine row.

Please be aware the Department may request that similar studies be conducted to verify this assumption if multiple turbine rows are installed at some point in the future.

Excerpt
We believe the sample locations in the study plan detailed here will provide the information needed to assess both the potential impact of KHPS turbines on East Channel fish populations and also provide the information needed to evaluate any effects the turbine operation may have on fish populations

This sentence appears redundant and needs clarification. As indicated above the term "fish communities" should be used instead of "fish populations", since the use of the word "populations" typically refer to individual species.

7 Stationary Netting plan

Excerpt
This should be adequate to provide the hydroacoustic surveys with species, relative abundance, and length classes for the hydroacoustic data analysis.

Department staff cannot agree with this statement at this time. This is because size class distributions overlap between species and change with time. Therefore, this hydroacoustic verification is time specific. It represents a snapshot in time since the natural histories of different species are not constant within the overall fish community of the East River.

Excerpt

However, some netting effort will also be conducted regardless of hydroacoustic data to confirm that no or few fish occur in the area.

The text should be revised to indicate that due to variable net collection efficiencies and avoidance, the failure to catch any fish cannot definitively mean that no fish were present.

Excerpt
All collected fish will be identified to species and counted. A representative sub-sample of each species will be measured (lengths and weights) to provide a representative length-frequency histogram. Netted fish information will be used to partition the acoustic signals into size classes and assign species information to the acoustic size classes to develop algorithms to calculate acoustic fish lengths and density. This survey is not intended to be a complete netting study but to "groundtruth" the hydroacoustic data.

The species-specific sub-sampling needs to be described in detail for Department approval because the relative importance of the data collected from the net sample will vary depending on species.

Since the survey is not intended to be a complete netting study, this section of the document should indicate that the value of the length-frequency histogram would therefore be limited. The use of this very limited net sampling data should be restricted to groundtruthing the hydroacoustic data.

8. DIDSON/SBT Mobile Groundtruthing Study Plan

Excerpt
The design of this new study protocol is an attempt to advance the understanding of the utility of hydroacoustics to study fish presence and behavior near operating KHPS. This field effort of short duration data collection by dual pieces of equipment will support (ground truth) by visual observation the data previously collected and allow for real time observation of fish presence and behavior around operating KHPS turbines. Methods and equipment are described in Appendix B

Department staff cannot agree with this statement at this time as this hydroacoustic verification is time specific and represents a snapshot in time. The use of this very limited sampling data should be restricted to groundtruthing the hydroacoustic data. Department staff do not believe that groundtruthing can support visual behavioral data previously conducted, but should be able to support concurrent visual behavioral data. The use of this technique for a means of monitoring fish/turbine interactions should be explored.

Appendix A
Stationary Netting Study Plan

Introduction

The first paragraph in this section should read:

NYSDEC, USFWS, and NMFS have expressed interest in supplementing the ongoing hydroacoustic monitoring of fish abundance, distribution, and behavior in the vicinity of the RITE project test turbines with net sampling in the immediate vicinity of the turbines. The netting is to provide a limited set of net capture data, during a seasonal period of elevated fish abundance in the project vicinity to ground truth the primary and continuously recorded hydroacoustic data.

DEC staff do not agree that the proposed netting study will be appropriate to *provide data for interpretation on potential fish injury due to turbine blade contact through comparison with hydroacoustic data.*

Excerpt
While some live, uninjured fish may be captured, the catch will in no way be assumed to accurately represent overall species composition or abundance at the project site.

For the same reasons stated above in this same paragraph, the interpretation of potential fish injury due to turbine blade contact through comparison with hydroacoustic data will be inherently flawed.

Methods & Equipment

Excerpt
Verdant proposes to use a 42-foot stern trawler fully rigged for net handling, to deploy the stationary net at the north end of the 6-unit turbine field on flood tides. The boat will be positioned as close as safely possible to the turbines and will be held in place either with an anchor/mooring bow line and/or by using the engine to hold position against the tidal current

Gear avoidance would be a serious concern under this sampling scenario of using the engine to hold position against the tidal current .

Excerpt
Fish data – number, species, total length, and condition. The condition assessment will include any signs of turbine blade physical damage or injury. Turbine blade injury will be defined as fish having visible cuts, tears, visible skeletal (backbone) damage, or separation of body parts. Care must be taken not to confuse normal netting damage (loss of scales, stunned or dead fish due to compression forces in the cod end of the net) with turbine induced damage. Representative digital photos of total catch and high resolution photography of all fish with suspected injuries will be taken. When possible, all live and unharmed fish will be released after processing. Any suspected turbine injured fish will be retained and frozen to allow future examination and verification, if necessary .

Verdant should secure a biological sampling permit from DEC which includes conditions for potentially handling RT&E species.

Data Interpretation and Value

Excerpt

The purpose of this sampling in the turbine test field is to; 1) to ground truth the primary and continuously recorded hydroacoustic data and 2) to provide data for interpretation on potential fish injury due to turbine blade contact through comparison with hydroacoustic data.

DEC did not agree that the proposed netting study was appropriate for this stated purpose.
For the same reasons stated above in this paragraph, the interpretation of potential fish injury due to turbine blade contact through comparison with hydroacoustic data will be inherently flawed.

Excerpt
Verdant is assuming that an injured fish will lack ability, or have reduced ability, to avoid net capture.

Department staff do not agree with this assumption because many fish injuries due to blade strikes may not immediately impair their ability to avoid the collection nets, but their injuries could still be life threatening. This issue, as it relates to latent mortality, is a valid concern.

Excerpt
Conversely, a result of no injured fish captured when available hydroacoustic data suggest they are present in the project vicinity, would document that large scale fish damage is not occurring

As indicated in previous comments, it is not appropriate to make this assumption. This collection is merely a snapshot in time that cannot be compared to other "samples" due to great temporal and behavioral variability. The interpretation of potential fish injury due to turbine blade contact through comparison with hydroacoustic data will be inherently flawed.

Excerpt
and further support the pre-deployment theoretical models of passive fish transport through a turbine field that predict low likelihood of injurious turbine strikes on fish with this tidal turbine technology

As stated earlier, Department staff do not agree with this assumption as many fish injuries due to blade strikes may not immediately impair their ability to avoid the collection nets, but their injuries could still be life threatening.

Excerpt
If hydroacoustic data analysis indicates fish attraction or avoidance behaviors are occurring in the turbine vicinity, this sampling effort may provide insight on whether the theoretical models based on passive fish transport over or underestimate fish injury once the behavioral response of fish to the turbines is considered

Staff disagree as there is too much temporal variability associated with species-specific size class differences in behavior, abundance, etc. to make this broad scale determination. It would be highly speculative.

DIDSON/SBT Groundtruthing Study Plan – RITE Project

Introduction

Excerpt

It is critical to recognize that this study protocol is an experimental first attempt to capture fish movement in relation to operational KHPS turbines. As such, the protocol, data collection and analysis may have to be collaboratively adjusted to meet the objectives of groundtruthing abundance, with species distribution, with behavioral aspects in and around a field array of KHPS turbines

The text should specify whether the first attempt reference is for this project, or first attempt at this approach. It would be more appropriate to use characterize instead of capture.

The validity of conclusions based on such limited sampling will be questioned when addressing species distribution and abundance. Behavioral aspects in and around a field array will require extensive sampling to account for species specific temporal differences in behavior, attributed in part, to changing size class distribution within the overall community. (note: Do similar behaviors observed between a 12" fish in June and another 12" fish in September mean that the targets are from the same species of fish? or does observing two different sized fish behaving the same way mean that they are the same species? These assumptions as well as some contemplated cannot realistically be made.)

Method and Equipment

Excerpt

Additionally, it is hoped that stationary netting -- conducted during similar periods will assist with the species correlation. Using both spatial and temporal data from both units; Verdant seeks to ground truth the fish detection and observations and to provide some sense of the reaction to the kinetic hydropower operating units.

Hydroacoustic target should be substituted for fish. Staff reiterate that this collection is merely a snapshot in time that cannot be compared to other "samples" due to great temporal and behavioral variability.

Excerpt

Key elements of this methodology are:

- *To develop a standardized analysis pathway to reduce the effort associated with counting, measuring and tracking fish targets;*

- *To empirically obtain estimates of basic target information (e.g., size, abundance, speed, and direction of travel)*

Staff caution that these elements incorporated by Dr Boswell are for realtime applications or periods during which environmental variables remain relatively constant; including community species composition and size class-related behavior changes within species. Please discuss how these variables will be addressed in the groundtruthing study.

Excerpt
THIS IS A NEW PROTOCOL for observing real-time fish movement in and near operating kinetic hydropower units. No assumptions as to results can be made until an in-water test is executed. The protocol calls for a test (of equipment and methods) to be done pre-deployment and then adjusted as necessary to collect meaningful data on two follow-up on water periods. Because of the importance of this data; Verdant has factored in contingency and checks to ensure that adequate viable data is collected.

Department staff agree that this is a critical aspect of this study.

Staff look forward to additional discussion of the monitoring plan and data analysis for Phase III. If you have any questions, please contact me at (631) 444-0302.

Sincerely,

/s/

Kevin Kispert
Project Manager
Division of Environmental Permits

cc: N. Handell, USACOE
A. Secord, USFWS
D. Rusanowsky, NMFS
L. Knutson, USEPA
DEC Review Team

New York State Department of Environmental Conservation
Division of Environmental Permits, Region One
Stony Brook University
50 Circle Road, Stony Brook, New York 11790 - 3409
Phone: (631) 444-0365 • **FAX:** (631) 444-0360
Website: www.dec.state.ny.us

Alexander B. Grannis
Commissioner

September 3, 2008

Ron Smith
Verdant Power
4640 13th Street, North
Arlington, VA 22207-2102

Re: Roosevelt Island Tidal Energy Project (RITE)
Phase III, Test Field, Re-deploy 2 turbines
FERC Project # P-12178-000
DEC # 2-6204-01510/00001

Dear Mr. Smith:

The New York State Department of Environmental Conservation (DEC) staff have reviewed the revised Fish Movement and Protection Assessment (Revision 7.5 dated 9/3/08) that Verdant Power, LLC provided on 9/3/08 in accordance with condition # 3 of the above referenced permit. This document includes revisions made in response to our 7/23/08 and 8/8/08 letters, 9/2/08 e-mail and subsequent discussions.

DEC staff have determined that the Revision 7.5 of the Fish Movement and Protection Assessment can be approved for the purposes of satisfying condition # 3 of the DEC permit subject to the terms for agency consultation provided therein.

However, in accordance with our previous letters, staff continue to urge caution regarding the validity of conclusions based on limited sampling when addressing species distribution and abundance. This is because behavioral aspects in and around a field array will require extensive sampling to account for species-specific temporal differences in behavior, attributed in part, to changing size class distribution within the overall community. Staff believe that Phase III may best serve as a test of the monitoring equipment and methods, and that any application for a larger field of turbines be proposed in phases, with an appropriate level of monitoring conducted at each phase.

Staff appreciate Verdant's acknowledgment in the assessment that various aspects of the groundtruthing study plan may need to be collaterally adjusted, and look forward to those discussions and others regarding the monitoring plan and data analysis for Phase III. If you have any questions, please call me at (631)444-0302.

Sincerely,

/s/

Kevin Kispert
Project Manager

file
cc: N. Handell, USACOE
A. Secord, USFWS
D. Rusanowsky, NMFS
L. Knutson, USEPA
via e-mail
DEC Review team

OFFICE OF PARKS · RECREATION · HISTORIC PRESERVATION
NEW YORK STATE

New York State Office of Parks, Recreation and Historic Preservation

David Patterson
Governor

Carol Ash
Commissioner

Historic Preservation Field Services • Peebles Island, PO Box 189, Waterford, New York 12188-0189

518-237-8643

www.nysparks.com

December 22, 2008

Ms. Sarah Kulpa
Devine Tarbell & Associates
1304 Buckley Road, Route 202
Syracuse, NY 13212

Re: FERC #12611
Roosevelt Island Tidal Energy Project
Manhattan/Queens, New York/Queens Counties
07PR01953

Dear Ms. Kulpa:

Thank you for providing additional information for review by the New York State Historic Preservation Office (SHPO) for the proposed design and installation of the Roosevelt Island Tidal Energy Project. We have reviewed the information submitted in accordance with the provisions of Section 106 of the National Historic Preservation Act of 1966 and the relevant implementing regulations.

Douglas Mackey of our Archaeological Unit has reviewed the information submitted and feels the three wreck sites reported are well outside the current APE. Therefore, it is the opinion of the SHPO that the project will have No Adverse Effect on cultural and historic resources eligible for or listed on the National Register of Historic Places. The determination is based on the condition that the above-ground Control Rooms are located where they cannot be easily seen from historic resources or they are screened from view.

We appreciate your continued consultation on the project. If you have any questions, I can be reached at (518) 237-8643, ext. 3287. Should you wish to speak with Mr. Mackey, he can be reached at extension 3291. Please refer to the SHPO Project Review (PR) number in any future correspondences regarding this project.

Sincerely,

Elizabeth Martin

Elizabeth Martin
Historic Sites Restoration Coordinator
e-mail: elizabeth.martin@oprhp.state.ny.us

RITE Project Update:
New York State Department of State, Division of Coastal Resources

February 2, 2009
(Conference Call)

MINUTES

Attendees: Jeff Zappieri, NYS DOS
Matt Maraglio, NYS DOS
Ron Smith, Verdant Power
Mary Ann Adonizio, Verdant Power
Aaron Hernandez, Verdant Power

- Verdant Power provided an update on the RITE Project, from the most recent activities of the 6-turbine demonstration to the Company's 11/25/08 draft license application for a FERC hydrokinetic pilot license to expand the project to a 30-turbine field in the east channel of the East River.

- Verdant Power answered NYS DOS questions regarding various aspects of the project including:
  - Status of environmental studies, ongoing activities and related conclusions/final reports
  - Consultation with other resource agencies
  - Carrying capacity of the East River/Cumulative effects of activities on the river
  - RITE Project safety/emergency plans
  - Impact of RITE Project on local recreational activities

- NYS DOS provided an overview of its role in the licensing process and the Federal Consistency review, including information on applicable timelines, review scope and process, and resources for more information.

- Next Steps:
  - Verdant Power will add Mr. Zappieri and Mr. Maraglio to RITE Project consultation list, including invitation for upcoming webinar with RITE Project resource agency partners

- Verdant Power will provide Mr. Zappieri and Mr. Maraglio with copies of the Safeguard Plans for the proposed RITE pilot, submitted to FERC under CEII protection (to be maintained by NYS DOS)
- Verdant Power will provide Mr. Maraglio with contact information for core RITE Project resource agency partners
- Mr. Maraglio will be Verdant Power's point of contact for NYS DOS

Navigational Resources
FERC AIR 12c Consultation Record

FERC Additional Information Request 12c directs Verdant to consult with the US Coat Guard, Donjon Marine Company, Inc and United Marine Division of the International Longshoremen's Association Local 333 about the comments filed by DonJon and the Local 333 on the RITE Project Draft License application and the effects of the project on commercial navigation in the east channel of the East River

On **February 2, 2009** the US Coat Guard, Donjon Marine Company, Inc and United Marine Division of the International Longshoremen's Association Local 333 were sent a packet containing FERC's Additional Information Requests.

On **February 11, 2009** the Coat Guard, Donjon Marine Company, Inc and United Marine Division of the International Longshoremen's Association Local 333 were sent a letter requesting a meeting in Verdant's offices on March 10, 2009 to discuss concerns about commercial navigation in the east channel of the East River. The letter also stated that this meeting would not address Verdant's project in the west channel of the East River and navigational discussion about that project would take place in the summer.

The US Coast Guard
Dean Whatmoor of Verdant Power contacted Jeff Yunker and Lt. Edward Munoz about the March 10, 2009 meeting at Verdant's office on Roosevelt Island. They confirmed that they would attend the meeting.

United Marine Division of the International Longshoremen's Association Local 333:
On February 27, 2009 Mollie Gardner of Verdant called United Marine Division of the International Longshoremen's Association Local 333 to follow up about the meeting on March 10, 2009. Gardner spoke with Steve Orvetz. The Local 333 was thought that the meeting was about the Verdant Project in the west channel of the East River. Orvetz said the Local 333 had no problem with the project in the east channel of the East River. Gardner asked if they would still like to attend the meeting on March 10 and Orvetz said he would check with his boss. Gardner and Orvetz spoke again on March 4, 2009 and Orvetz stated that the Local 333 would not attend the meeting and would send a letter to FERC stating that they had no navigational issues with the RITE Project in the east channel of the East River.

Donjon Marine Company, Inc:
Mollie Gardner of Verdant Power called Donjon Marine Company, Inc on **February 26, 2009** and spoke with Jon Witte's assistant Kathy Domingos about the March 10, 2009 meeting at Verdant Power's office. Domingos was going to

check with Mr. Witte and get back to Gardner. Domingos called Gardner on **February 27** and stated that Mr. Witte could not attend the meeting but wanted to send a letter. Because the Local 333 was confused about the purpose of the meeting (east channel versus west channel of the East River) Gardner wanted to clarify with Mr. Witte. Domingos told Gardner to write her an email about the confusion.

On **March 2, 2009** Gardner sent an email as follows:

Kathy - here is the message that I wanted to leave Friday! Way too long for a message!

Dear Mr. Witte,

As a follow-up to the FERC Addition Information Request about your comments filed on January 13, 2009, we would like to know if your opposition was in regard to the development in the east channel of the East River or the west channel of the East River (in front of the UN building).

If your January 13 comments were regarding only the west channel, we would kindly ask that you send us correspondence stating this (by March 27). Please be assured however, that you will have an opportunity to discuss these issues on the west channel in a meeting this summer.

If your January 13 comments were related to the east channel, we would like to meet with you, either in person or via conference call, to further discuss these issues. Since you are unable to attend the meeting on March 10, we would ask that you propose a different date that matches your availability.

We are sorry for any confusion or inconvenience this matter may have caused.

Please feel free to contact me at any time.

Best,
Mollie Gardner
Verdant Power

Gardner followed-up the email with a phone call on **March 4**. Domingos said that Mr. Witte was clear about the east versus west channel. Gardner asked Domingos what the letter would state because if DonJon had a navigational issue with the RITE Project in the east channel Verdant would like very much to have a meeting with Mr. Witte. Domingos said she did not know and would get back to Gardner.

Because of the above consultation with the US Coat Guard, Donjon Marine Company, Inc and United Marine Division of the International Longshoremen's

Association Local 333 Verdant Power canceled the meeting on March 10, 2009. To the best of Verdant's knowledge all navigational issues about the Verdant Power's projects in the East River are limited to the preliminary permit Verdant has for the west channel of the East River in front of the UN Building.

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If your January 13 comments were related to the east channel, we would like to meet with you, either in person or via conference call, to further discuss these issues. Since you are unable to attend the meeting on March 10, we would ask that you propose a different date that matches your availability.

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Please feel free to contact me at any time.

Best,
Mollie Gardner
Verdant Power

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Association Local 333 Verdant Power canceled the meeting on March 10, 2009. To the best of Verdant's knowledge all navigational issues about the Verdant Power's projects in the East River are limited to the preliminary permit Verdant has for the west channel of the East River in front of the UN Building.

Recreational Resources
FERC AIR 11a Consultation Record
NYC Parks

FERC directed Verdant to consult with NYC Parks to characterize recreational use in Hallets Cove in their Additional Information request number 11a. Verdant's contact at NYC Parks is Nate Grove, marina manager, who has participated in Verdant Recreational resource meetings in early 2007.

- Nate Grove received an email notification about the submittal of the RITE Project Draft License Application, containing a link from which the application could be downloaded.
- NYC Parks did not comment
- Nate Grove received the **February 2, 2009** packet with FERC's Additional Information Requests
- Nate Grove was sent a letter on **February 11, 2009** asking NYC Parks to characterize recreational use in Hallets Cove in response to FERC Additional Information Request 11a.

February 26, 2009: Phone conversation notes with Nate Grove:

- Mr. Grove expressed support for the project.
- Mr. Grove said that Verdant can look online at NYC Park's water trail map to see the trails kayakers use.
- Mr. Grove said that there has been a request for kayak storage at Hallets Cove and this may lead to more kayak use of the cove. There is no date for storage construction yet.
- Mr. Grove said that Hallets Cove is a natural water access point, with parking and a beach but no ramp for cars. Boaters carry boats into the water.
- Mr. Grove said that regional kayakers generally launch at Hallets Cove because it is a natural launch (beach), not LIC Community Boathouse.
- Mr. Grove said in order to characterize the recreational use of Hallets Cove in more detail, Verdant should speak with LIC Community Boathouse and the Manhattan Island Foundation.
- Mr. Grove also said that a letter of consultation addressing FERC's Additional Information Request 11a should come from the commissioner level and directed Verdant to speak with Joshua Laird in the commissioner's office.

March 9, 2009: Phone conversation notes with Joshua Laird:
The purpose of the phone conversation was to introduce Mr. Laird to Verdant Power, give a brief history of the RITE Project and the FERC Additional Information Requests before he was sent the information via email.

On **March 11, 2009** Joshua Laird was sent an email that contained a link to download the RITE Project Draft License Application, the Recreational

Resources map made by Verdant for the Llicense Application (to give Mr. Laird a better idea of the project boundary) and the FERC Additional Information Requests. The email requested NYC Parks to respond to FERC Additional Information Request 11a. The email is as follows:

Dear Mr. Laird,

It was a pleasure to speak with you Monday. As we discussed, I am providing more detail on the additional information being requested by the Federal Energy Regulatory Commission (FERC) pursuant to Verdant Power's pilot hydrokinetic license application.

On November 25, 2008, Verdant Power filed a Draft License Application for a pilot license for the proposed Roosevelt Island Tidal Energy (RITE) Project in the East River of New York, NY. This Draft License Application can be downloaded from the FERC website (www.ferc.gov) or at the RITE Project website (http://theriteproject.com).

On January 27, 2009, based on FERC's review of this draft application, as well as agency and individual comments, FERC directed Verdant Power to provide additional information for its analysis of potential project effects. I have attached the document that outlines this Additional Information Request from FERC. As you will see, FERC has specifically requested that Verdant Power consult with NYC Parks in item 11a.

In order to meet this request, Verdant Power sent a packet with the attached Additional Information Request to Nate Grove of your agency on February 2, 2009. Mr. Grove has been Verdant Power's contact at NYC Parks at various points during the development of the RITE Project. Mr. Grove and I spoke regarding this additional information on February 26, 2009, when he directed me to consult with the Long Island City Community Boathouse and the Manhattan Island Foundation, which I have initiated. He also voiced support for the RITE Project. I asked Mr. Grove to submit a letter to Verdant Power addressing FERC's Additional Information Request 11a as well as stating his direction to consult with the entities above. Nate thought the letter should come from the commissioner's office and directed me to you.

I have also attached for your review the Recreational Map Verdant Power created for the Recreational Resource section of its Draft License Application so that you can see where the RITE Project would lie. The boundary of the project is the yellow field on the northern coast of Roosevelt Island.

Please send your letter to the address below. Thank you for your time and review of this information. Please don't hesitate to call me any time with questions.

VERDANT POWER

The Octagon
888 Main Street, Suite 1
New York, NY 10044
(212) 888-8887 (ph)
(212) 888-8897 (fax)
www.verdantpower.com

February 11, 2009

Nate Grove
NYC Department of Parks & Recreation
The Arsenal, Central Park
New York, NY 10021

Re: Project No. 12611-003; Roosevelt Island Tidal Energy Project –
AIR on Draft License Application – Consultation

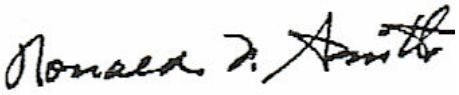
Dear Mr. Grove:

On February 2, 2009, Verdant Power provided you with a packet of correspondence outlining a FERC Additional Information Request related to Verdant Power's Draft License Application for the Roosevelt Island Tidal Energy (RITE) Project. In this correspondence, FERC directed that, in lieu of a technical conference, Verdant Power should consult with various entities and file the requested additional information within 60 days of January 27, 2009, allowing entities consulted at least 30 days to respond.

This letter initiates this consultation with New York City Parks, specifically to address FERC's Additional Information Request 11(a) (Schedule A, pg. 5), in which FERC directs Verdant Power to "please consult with New York City Parks and characterize recreational use, including an estimate of the number and type of recreation users, at Hallets Cove." In its Draft License Application, Verdant Power identified Hallets Cove as a recreational region, under the jurisdiction of New York City Parks, in the vicinity of the RITE project.

In order to meet the required timeline, Verdant Power kindly requests that any information, in response to FERC's Additional Information Request, that you can provide, be returned in written form to us no later than 30 days after receipt of this letter. In order to discuss this request further and answer any questions you may have, Mollie Gardner, Verdant Power Resource Analyst, will be calling you in the near future. If you have any questions in the meantime, please do not hesitate to contact Ms. Gardner at (212) 888-8887, ext. 611. Thank you for your time.

Very truly yours,



Ronald F. Smith
Chief Executive Officer

Cc: Mollie Gardner, Verdant Power
Mary Ann Adonizio, Verdant Power

The Octagon
888 Main Street, Suite 1
New York, NY 10044
(212) 888-8887 (ph)
(212) 888-8897 (fax)
www.verdantpower.com

February 11, 2009

Lt. Edward Munoz
Chief Waterways Oversight Branch, US Coast Guard
212 Coast Guard Drive
Staten Island, NY 10305

RE: Project No. 12611-003; Roosevelt Island Tidal Energy Project –
AIR on Draft License Application – Consultation

Dear Lt. Munoz:

On February 2, 2009, Verdant Power provided you with a packet of correspondence outlining a FERC Additional Information Request related to Verdant Power's Draft License Application for the Roosevelt Island Tidal Energy (RITE) Project. In this correspondence, FERC directed that, in lieu of a technical conference, Verdant Power should consult with various entities and file the requested additional information within 60 days of January 27, 2009, allowing entities consulted at least 30 days to respond.

Verdant Power is now contacting you to meet this directive and specifically to respond to FERC's Additional Information Request 12(c) (Schedule A, p. 6-7), which states, "Please consult with the United Marine Division, the Donjon Marine Company, and the US Coast Guard, and provide additional discussion that addresses any previously unforeseen concerns about the project's effects on commercial navigation in the east channel."

We would like to arrange a meeting to provide this additional discussion. Verdant Power proposes that this meeting be held on **Tuesday, March 10, 2009 at 1:00 p.m**. at our offices on Roosevelt Island. Please note that this meeting will be to discuss only Verdant Power's pilot project in the *east channel* of the East River. It is Verdant Power's intention to have a separate meeting in the near future with you and other entities, to discuss the Company's proposed development in the west channel.

A representative from Verdant Power will be contacting you shortly to further discuss the meeting and your availability. In the meantime, if you have any questions, please do not hesitate to contact me at (212) 888-8887, ext. 601.

Very truly yours,

Ronald F. Smith
Chief Executive Officer

Cc: Dean Whatmoor, Verdant Power
Mollie Gardner, Verdant Power
RITE FERC AIR 12 (c) Distribution List

The Octagon
888 Main Street, Suite 1
New York, NY 10044
(212) 888-8887 (ph)
(212) 888-8897 (fax)
www.verdantpower.com

February 11, 2009

Jeff Yunker
Waterways Management Coordinator, US Coast Guard
212 Coast Guard Drive
Staten Island, NY 10305

RE: Project No. 12611-003; Roosevelt Island Tidal Energy Project –
AIR on Draft License Application – Consultation

Dear Mr. Yunker:

On February 2, 2009, Verdant Power provided you with a packet of correspondence outlining a FERC Additional Information Request related to Verdant Power's Draft License Application for the Roosevelt Island Tidal Energy (RITE) Project. In this correspondence, FERC directed that, in lieu of a technical conference, Verdant Power should consult with various entities and file the requested additional information within 60 days of January 27, 2009, allowing entities consulted at least 30 days to respond.

Verdant Power is now contacting you to meet this directive and specifically to respond to FERC's Additional Information Request 12(c) (Schedule A, p. 6-7), which states, "Please consult with the United Marine Division, the Donjon Marine Company, and the US Coast Guard, and provide additional discussion that addresses any previously unforeseen concerns about the project's effects on commercial navigation in the east channel."

We would like to arrange a meeting to provide this additional discussion. Verdant Power proposes that this meeting be held on **Tuesday, March 10, 2009 at 1:00 p.m**. at our offices on Roosevelt Island. Please note that this meeting will be to discuss only Verdant Power's pilot project in the *east channel* of the East River. It is Verdant Power's intention to have a separate meeting in the near future with you and other entities, to discuss the Company's proposed development in the west channel.

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Very truly yours,

Ronald F. Smith
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Mollie Gardner, Verdant Power
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VERDANT POWER

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New York, NY 10044
(212) 888-8887 (ph)
(212) 888-8897 (fax)
www.verdantpower.com

February 11, 2009

John Witte
Donjon Marine Company
1250 Liberty Avenue
Hillside, NJ 02205

RE: Project No. 12611-003; Roosevelt Island Tidal Energy Project –
AIR on Draft License Application – Consultation

Dear Mr. Witte:

On February 2, 2009, Verdant Power provided you with a packet of correspondence outlining a FERC Additional Information Request related to Verdant Power's Draft License Application for the Roosevelt Island Tidal Energy (RITE) Project. In this correspondence, FERC directed that, in lieu of a technical conference, Verdant Power should consult with various entities and file the requested additional information within 60 days of January 27, 2009, allowing entities consulted at least 30 days to respond.

Verdant Power is now contacting you to meet this directive and specifically to respond to FERC's Additional Information Request 12(c) (Schedule A, p. 6-7), which states, "Please consult with the United Marine Division, the Donjon Marine Company, and the US Coast Guard, and provide additional discussion that addresses any previously unforeseen concerns about the project's effects on commercial navigation in the east channel."

We would like to arrange a meeting to provide this additional discussion. Verdant Power proposes that this meeting be held on **Tuesday, March 10, 2009 at 1:00 p.m**. at our offices on Roosevelt Island. Please note that this meeting will be to discuss only Verdant Power's pilot project in the *east channel* of the East River. It is Verdant Power's intention to have a separate meeting in the near future with you and other entities, to discuss the Company's proposed development in the west channel.

A representative from Verdant Power will be contacting you shortly to further discuss the meeting and your availability. In the meantime, if you have any questions, please do not hesitate to contact me at (212) 888-8887, ext. 601.

Very truly yours,

Ronald F. Smith
Chief Executive Officer

Cc: Dean Whatmoor, Verdant Power
Mollie Gardner, Verdant Power
RITE FERC AIR 12 (c) Distribution List

The Octagon
888 Main Street, Suite 1
New York, NY 10044
(212) 888-8887 (ph)
(212) 888-8897 (fax)
www.verdantpower.com

February 11, 2009

William Harrigan
United Marine Division International Longshoremen's Association, Local 333
552 Bay Street
Staten Island, NY 10304

RE: Project No. 12611-003; Roosevelt Island Tidal Energy Project –
AIR on Draft License Application – Consultation

Dear Mr. Harrigan:

On February 2, 2009, Verdant Power provided you with a packet of correspondence outlining a FERC Additional Information Request related to Verdant Power's Draft License Application for the Roosevelt Island Tidal Energy (RITE) Project. In this correspondence, FERC directed that, in lieu of a technical conference, Verdant Power should consult with various entities and file the requested additional information within 60 days of January 27, 2009, allowing entities consulted at least 30 days to respond.

Verdant Power is now contacting you to meet this directive and specifically to respond to FERC's Additional Information Request 12(c) (Schedule A, p. 6-7), which states, "Please consult with the United Marine Division, the Donjon Marine Company, and the US Coast Guard, and provide additional discussion that addresses any previously unforeseen concerns about the project's effects on commercial navigation in the east channel."

We would like to arrange a meeting to provide this additional discussion. Verdant Power proposes that this meeting be held on **Tuesday, March 10, 2009 at 1:00 p.m**. at our offices on Roosevelt Island. Please note that this meeting will be to discuss only Verdant Power's pilot project in the *east channel* of the East River. It is Verdant Power's intention to have a separate meeting in the near future with you and other entities, to discuss the Company's proposed development in the west channel.

A representative from Verdant Power will be contacting you shortly to further discuss the meeting and your availability. In the meantime, if you have any questions, please do not hesitate to contact me at (212) 888-8887, ext. 601.

Very truly yours,

Ronald F. Smith
Chief Executive Officer

Cc: Dean Whatmoor, Verdant Power
Mollie Gardner, Verdant Power
RITE FERC AIR 12 (c) Distribution List

VERDANT POWER

MEMORANDUM VIA EMAIL

**PRIVILEGED, CONFIDENTIAL BUSINESS INFORMATION,
MATERIAL AND DATA OF VERDANT POWER LLC
DO NOT RELEASE TO THE PUBLIC[1]**

TO: Kevin Kispert (NYSDEC) kakisper@gw.dec.state.ny.us
Naomi Handell (USACE) Naomi.J.Handell@nan02.usace.army.mil
Anne Secord (USFWS) Anne_Secord@fws.gov
Diane Rusanowsky (NOAA) diane.rusanowsky@noaa.gov
Lingard Knutson (USEPA) Knutson.Lingard@epamail.epa

DATE: February 23, 2009
FROM: Verdant Power; Mary Ann Adonizio, ma.adonizio@verdantpower.com
SUBJECT: **RITE Project status and update: 12-2009**
DEC Permit No. 2-6204-01510/00001/ ACOE Permit No. NAN-2003-402-EHA

Activities completed since last report:

- We are pleased to submit the final draft report for the Didson/SBT groundtruthing work. This consists of a report an appendix and 7 video clips. (Table 1)

- Selected fish and turbine DIDSON video clips from the 110/21, 11/11, and 12/17-18 groundtruthing operations have been posted to the site below. For each pertinent event, we have posted both an ".avi" video clip, which can be viewed on any media player (e.g., Windows Media Player, Real Player, etc.) ***You will receive a separate email that has links to the files.***

- As always; we request confidential treatment of these reports, as well as the video files under the protections noted.
- We continue to collect data from the fixed hydroacoustics; but will no longer provide monthly data summaries. We will evaluate the viability of this data in the spring.and will report back to you.
- FERC issued an AIR request on January 27th and we are working to answer this request; and provide information; as well as incorporation of comments in the Final License application. We appreciate your ongoing support to clarify outstanding issues with the pilot project. The submission of this report was a necessary element for your review of the DLA and proposed monitoring plans,

[1] Material is covered under NY State: Article 6 FOIL, § 87.2(d) and 6 NYCRR Part 616, and 616.7; Federal 15 C.F.R §4.9; 18 C.F.R. §388.112; 32 C.F.R §286, (INCLUDING 286.12 and 286.16); 43 C.F.R §2.13; and 5 U.S.C. Distribution is intended for internal agency use.

- Thank-you all for providing comments to FERC on the preliminary permit for the west channel, which was awarded on February 17, 2009. Pursuant to the order we will be submitting study plans within 45 days.
- Please note – we have included Matthew Maraglio of the NY DOS; as a recipient of information under the CZMA.

Upcoming activities:

- Please see separate email for down loading the video clips. If you have difficulties; please advise us.

- We would like to schedule a webinar to review this information with you. We propose Thursday or Friday ***March 5 or 6 at 11 AM*** as possibilities. Please advise of your avaialabilty or alternate dates.

- As discussed in December; we will plan to conduct stationary netting and Didson/SBT on-water observation in the Spring 2009. Looking at the 2008 data -- a window around May- June is likely for high spring abundance. While no KHPS turbines will be operating; the activity will provide needed information to supplement the license application and complete activities under the FMPP. We also plan to do the netting and VAMs in the west channel on a subsequent day.

- We have begun preparation planning to remove the 4 turbines and fixed hydroacoustic frames from the RITE demonstration project. We expect on-water activities now in May- June and will update you during the webinar.

- We also recognize that our joint DEC/ACOE permit expires on May 9, 2009 and are initiating consultation with the NYSDEC and USACE on the possible options and filing of the RITE buildout permit applications concurrently.

MAA/bms
Attachments; (report plus appendix)

cc: V. Yearick, FERC Vince.Yearick@ferc.gov
T. Dean, FERC Thomas.Dean@ferc.gov
G. Lampman, NYSERDA ggl@nyserda.org
M. Maraglio, NYDOS Matthew.Maraglio@dos.state.ny.us
R. Smith, VP rsmith@verdantpower.com

Table 1 - RITE KHPS Groundtruthing Video Clips -2008

VAMS	RITE clip #	Date/Timing/Video clip file	Tide	Key Content	KHPS Status	Relevance
VAMS #1-Oct 2008	1	2008-10-21_142000_HF 142259 school plus 1 intersect rotor B.avi	Flood	Fish school sense and move above rotor; object follows (See Figures 9a and 9b for stills)	T6P1 No-load ~60 rpm (Rotation in profile)	Actual operating KHPS; fish movement and swimming away to avoid rotating blades at higher than loaded speed
	2	2008-10-21_094000_HF 094418 39cm fish.avi	Slack	1 fish ~40 cm moving slowly on bottom	T5P5 Not rotating	Large fish swimming at slack; also profiled in SBT
	3	2008-10-21_143000_HF 143515 19 T5 at normal speed.avi	Flood	No fish observed while rotating	T5P5 at normal load speed ~35 rpm (Rotation in elevation)	Actual operating KHPS at normal load speed during flood
VAMS #2-Nov 2008	4	2008-11-11_121000_HF 121326 T5 at no-load speed.avi	Ebb	No fish observed while rotating	T5P5 at no-load speed ~85 rpm (Rotation in elevation)	Actual operating KHPS at normal load speed during flood
VAMS #3-Dec 2008	5	2008-12-17_150001_HF 150140 18cm fish.avi	Ebb	1 fish ~18 cm below rotor	T6P1 not rotating	Fish observed on tide
	6	2008-12-18_140001_HF 140300 2fish 10cm.avi	Slack	2 fish ~10 cm above rotor	T6P1 not rotating	Fish observed at slack
	7	2008-12-18_150001_HF 150159 1 fish 40cm.avi	Ebb	1 fish ~40 cm on bottom	T2P2 not rotating	Fish observed on tide

ORIGINAL

Local 333
UNITED MARINE DIVISION
INTERNATIONAL LONGSHOREMEN'S ASSOCIATION, AFL-CIO
552 Bay Street, Staten Island, N.Y. 10304
718-727-5675
FAX 718-727-5736

WILLIAM HARRIGAN
President & General Manager

MICHAEL BRANDON
Secretary-Treasurer

March 5, 2009

Anne Miles
Federal Energy Regulatory Commission
888 First St, NE
Washington D. C. 20426

Re: Verdant Power/Roosevelt Island and United nations Tidal Energy Expansion
Project No. 12611-003

Dear Ms. Miles;

We have reviewed the pilot project proposed by Verdant Power in the East Channel of the East River of New York. The East Channel is lightly traveled by the mariner's in the industry we represent and therefore we do not take issue with this portion of the project.

However, the West Channel (United Nations Building side) portion of the project remains of great concern to Local 333 and the mariner's we represent. This side of the river is the main channel for commercial tug and barge traffic as well as the occasional ship transit of the area.

Local 333 needs to remain informed about the project and express our concerns regarding the West Channel Project.

Your assistance in this matter is appreciated.

Sincerely,

Steven Oravets

Capt. Steven Oravets
Director of Special Projects
Local 333, United Marine Division, ILA, AFL-CIO

cc: William Harrigan, President, Local 333
Mollie Gardner, Verdant Power

Recreational Resources
FERC AIR 11a Consultation Record
Manhattan Island Foundation

At the direction of Nate Grove, from NYC Parks, Mollie Gardner of Verdant Power contacted Morty Berger of the Manhattan Island Foundation about the RITE Project.

Manhattan Island Foundation Background:

- Organizes swimming events in the waters around Manhattan
- Are most known for their swim around Manhattan Island
- During the swim around Manhattan swimmers swim in the west channel of the East River
- As of today there are no swims on the eastern side of Roosevelt Island

Notes from Phone Conversation: **March 11, 2009**

Mollie Gardner

- Mr. Berger knew of the RITE Project but not many details about it
- Mr. Berger was concerned that the surface currents would be effect by the turbines.
- Gardner explained that Verdant had done studies and modeling and there would be little to no effect on surface currents.
- Mr. Berger expressed that he did not think modeling was effective.
- Gardner asked if the Manhattan Island Foundation ever swam in the eat channel of the East River – on the eastern side of Roosevelt Island.
- Mr. Berger said that the project should prepared for the worst case scenario and expressed that there could be some dangerous scenarios like a storm pushing a boat or a swimmer into Verdant's exclusions zone.
- Gardner wondered if they did not hug Manhattan during their swim
- Mr. Berger said they take up the entire channel
- Gardner said that Verdant had worked very closely with the Coast Guard, tug and barge operators and recreational boaters and no one had any objection to the project.
- Gardner explained that even at extreme low tide there is about 6 feet of water above the turbine and if a boat was to hit a turbine it would be more likely that the turbine would be taken out, not the boat.
- Gardner also told Mr. Berger that in the two years of the demonstration project Verdant has seen only two boats come into the exclusion zone and the encroachments were barely inside the buoy line.
- Mr. Berger said that during the swim around Manhattan the west channel of the East River is closed to boat traffic and redirected to the east channel of the East River (this is confusing because the Manhattan Island Foundation website says there is boast traffic during the swim around Manhattan.

- Gardner asked if there would be any future swims in the east channel of the East River.
- Mr. Berger said there would not be as of now.
- Mr. Berger did not understand why Verdant had to affect New York's waters for a project that was not economically viable.
- Gardner explained that it was a showcase project, and the lack of economic viability was from the demonstration aspect of it – having to prove the technology and that it was environmentally benign but it would be economically viable in the future.
- Gardner also explained that this was very important to New York because it was a renewable energy and also power produced locally. New York has a local source of power that does not come through miles and mile of transmission lines or fossil fuels.
- Mr. Berger said he was going to stay neutral about the project but he wished nothing was going into the water.

After the phone call Gardner sent Mr. Berger an email with her contact info as well as a link from which to download the draft License Application

Recreational Resources
FERC AIR 11a Consultation Record
Long Island City Community Boathouse

At the direction of Nate Grove, from NYC Parks, Mollie Gardner of Verdant Power contacted LIC Community Boathouse about the RITE Project.

- Lea Singer and Erik Baard of LIC Community Boathouse participated in the Recreational Resource meeting help by Verdant in early 2007.
- Erik Baard, founder of LIC Community, received and email notification about the submittal of the RITE Project Draft License Application that contained a link from which he could download the application.
- LIC Community Boathouse did not comment

On March 4, 2009 Mollie Gardner of Verdant Power sent an email to Erik Baard about communicating with LIC Boathouse about the RITE Project. The email is as follows:

Dear Mr. Baard:

On November 25, 2008, Verdant Power, LLC filed a Draft License Application for a pilot license for the proposed Roosevelt Island Tidal Energy (RITE) Project in the East River of New York, NY.

On January 27, 2009, based on FERC staff's review of this draft application, as well as agency and individual comments, FERC directed Verdant Power to provide additional information for its analysis of potential project effects. In one of FERC's Additional Information Requests they direct Verdant to "please consult with New York City Parks and characterize recreational use, including an estimate of the number and type of recreation users, at Hallets Cove." FERC also directs Verdant to "please address the effects of the project on the kayakers' recreational experience. In addition, describe the visual impacts of the proposed buoy system on kayakers and those using the Hallets Cove beach." In the Draft License Application Verdant identified Hallets Cove as a recreational region, under the jurisdiction of New York City Parks, in the vicinity of the RITE project.

I have recently been in touch with Nate Grove from NYC Parks and he has directed me to you. I know you and Lea Singer have been involved in the project in the past, participating in the Recreational Resource meetings that were held in March 2007. I would like to re-open the conversation between LIC Community Boathouse and Verdant to characterize recreational use at Hallets Cove and effects of the project on kayakers. Please feel free to call or email. I am also available to present the project on one of your "Paddle Days."

Thanks,
Mollie Gardner

Verdant Power
When no response was hear Gardner sent an email on March 11, 2009 to licboathouse@gmail.com, the information email listed on the website, asking for Erik Baard's current email address.

RITE Project Monitoring Plans Call
4/10/2009

Attendees:

Mary Ann Adonizio (Verdant)
Mollie Gardner (Verdant)
Aaron Hernandez (Verdant)
Tim Konnert (FERC)
Jeff Browning (FERC)
Lingard Kuntson (EPA)
Kevin Kispert (NYSDEC)
Greg Lampton (NYSERDA)
Diane Rusanowski (NOAA)
Jack Nasca (NYSDEC)
Mark Woythal (NYSDEC)
Charles deQuilfelt (NYSDEC)
Matt Maraglio (NYSDEC)

Monitoring Plans filed in DLA are version 1
Version 1 is where Verdant stands to date on monitoring

Kevin Kispert: Not entirely comfortable with no fixed hydroacoustics. Not a lot of targets observed in the VAMS. VAMS was never approved and agreed to by agencies as a method for monitoring. The best way to monitoring is to use hydroacoustics.

Verdant wants to establish what we are trying to monitor. Behavior of fish around turbines?

NYSDEC: Verdant would have to have a vigorous sampling schedule to get accurate data on behavior with VAMS.

Everyone are surprised that hydroacoustics is not in the monitoring plan anymore. Fundamental issue with VAMS – is limited time on the water.

Fixed DIDSON – 2 week periods and spring and fall – after looking at fixed hydroacoustics to see fish movement periods – is a better option than VAMS

Stationary Netting: do netting pre-filing and if successful can drop that out of the pilot monitoring?

Hydrodynamic Modeling:

- Agencies want measuring in monitoring plan
- Verdant concern: don't want to try and look at pre and post – very, very difficult to see before and after change. Will measure after 30 machines are in – but can't give a delta.
- Likely Verdant will do study on hydrodynamic of triframe interaction for ourselves and will have a secondary effect on an environmental study.
- Agencies want to be able to justify the model

Sediment – Not concerned with sediment if can justify hydrodynamic model.

Bird Monitoring:
Timeframe of monitoring – monitor when expected to see peak bird migration
Coordinate with waterfowl biologist
Jamaica Bay Refuge - NPS – Doug Adamo – will know who to talk to.
Mark has birded – will send contacts

Action Items:
Send Matt Maraglio DLA CEII
Underwater lands lease – OGS not DOS!!! Typo.
Agencies make list of objectives of monitoring plan. What questions need to be answered with monitoring?

RITE Monitoring Plans Call
June 11, 2009 11:00 am

Attendees:
Lingard Knutson (EPA)
Tim Konnert (FERC)
Jeff Browning (FERC)
Greg Lampman (NYSERDA)
Kevin Kispert (NYSDEC)
Bill Little (NYSDEC)
Anne Secord (USFWS)
Matt Maraglio (NYSDOS)
Mary Ann Adonizio (Verdant)
Aaron Hernandez (Verdant)
Mollie Gardner (Verdant)
Jamey Gerlaugh (Verdant)
Jonathan Colby (Verdant)
Diane Rusanowsky (NOAA) – joined the call late

Mary Ann with Verdant introduction:

- FERC has given Verdant the go-ahead to advance to the final license application
- Schedule for filing is slipping for a few reasons one of which is the monitoring plan. Verdant wants language that is acceptable for everyone
- Electrical take off is also in discussion as well
- Verdant will probably file in October.
- Verdant is in the process of also discussing the extension of the ACOE/DEC permit
- Verdant participated in multiple DOE solisitations. A couple of which included environmental studies for the West and East channels as well as a macro fishery studies award. Will hear around September

Hydroacoustics

Kevin Kispert (NYSDEC) -

- Hydroacoustics cover most of the DEC's concerns. Woythol has minor comments
- Think fish studies are a bit of a snapshot
- Duration of studies are up for discussion
- Semi-permanent DIDSON may be of greater value
- Looking for more than one day tidal cycle (given with VAMS)

Mary Ann (Verdant) –

- A stationairy DIDSON focuses on one space, one turbine – Verdant would have to take leap of faith to extrapolate from one to 30.
- VAMS was meant to address this by looking at full field
- Instead of stationairy DIDSON, do increased VAMS time?
- Need to have cost discussion
- Are we trying to confirm that fish do not interact with blades and what is best way to do that?

Kispert -- this is fundamental question. NYSDEC is switching from thought that netting

during transition period with SBT in questionable status is not that valubabe. better spent during monitoring during project.

MA - we're comfortable with that. have volume of species info from DLA. EFH. Pre-pilot Stationary netting would add to that section in FLA. If diane is willing to accept historical data in FLA wo stat netting. we woudl forgo and bump up during pilot. to confirm species presence as well as injury mortality. two snapshots instead of one.

Secord -- Think it would be good, though with Woythal on line

Stationary Netting

Kispert (NYSDEC) -- Need to take closer look at stationary netting and decide goals.

Mary Ann (Verdant) – Verdant is still committed to doing stationary netting w/o turbines running (Fall). Commitment made in DLA to confirm species, not injury and mortalities.

Secord (USFWS) – Stationary netting is valuable, but still snapshot. Cannot make general statement from it.

Mary Ann (Verdant) -- What could we use to be more confident about that?

Kispert (NYSDEC) -- this is fundamental question. NYSDEC is switching from thought that netting during transition period with the SBT's in questionable status is not that valuable. Better spent during monitoring during project.

Mary Ann (Verdant) - we're comfortable with that. We have a volume of species info from DLA. EFH. Pre-pilot Stationary netting would add to that section in FLA. If Diane is willing to accept historical data in FLA w/o stationary netting we would forgo and only do netting during the pilot to confirm species presence as well as injury mortality. This would be two snapshots instead of one.

Another proposal -- ALDEN labs study. Use their flume to look at turbine blade tip rotation and pass fish through flume to see mortality. Akin to conventional hydro project. But Verdant is concerned that this does not represent an open design and fish would be forced into rotor blade. While the study will show what species of fish can survive, it is missing whether fish will actually be hit at all because there is no way to avoid the turbine.

Are we still seriously concerned about mortality? That was what netting was to test -- through field. VAMS and netting cause impact on natural setting

Adaptive Management

Secord (USFWS) – is it possible to incorporate adaptive management during the license if monitoring is not effective?

Konnert (FERC) -- could be possible, will look into it. Seems like a potentially ideal solution.

Mary Ann (Verdant) -- Verdant is comfortable with adaptive management. But fixed

units are very expensive. Moving an SBT from vault to vault is very expensive. Money has to factor in to the adapting.

Hydroacoustics

Mary Ann (Verdant) -- Verdant will consider looking at some type of stationary design that might allow for movement. Lets say no stationary netting this fall and do one pass during pilot. Verdant will see about putting in a stationary DIDSON, perhaps with mount that could be moved, in lieu of VAMS monitoring. This still monitors on a micro level - looking at blades, but looking at it in two positions (if able to move the stationary DIDSON). This was intent of VAMS (as shown with two-arrow on fig).

Kispert (NYSDEC) -- thanks for offer -- need to have fishery agencies on line (Diane and Mark) to weigh in. Problem with VAMS is that the risk of not finding fish is so great with all effort expended. Longer duration would be more productive. A small group will convene to discuss these potential changes.

Not much input from Woythal on bird studies. This is his area (does it for wind).

Diane (NOAA) – EFH assessment is important. Open to suggestions on how to accomplish this. Not simply desktop exercise.

EFH assessment is Integral to understand community fish assemblage, direct/indirect cumulative effects. How can fish use/not use area? How are the excluded from the field? Is their access to prey changed? Questions cannot be answered with a desktop exercise. That said NOAA has concerns about utility of going out for day or two (limited deployments) of any kind of equipment --- netting, DIDSON, etc). Adaptive management may work, but needs to be worked out.

Mary Ann (Verdant) – Directed to Diane (NOAA) pre-pilot netting was commited as part of EFH and Protected species test protocol to suplement the DLA. NYSDEC has said this is not necessarily productive and more productive to move into pilot. How do you feel about this? Is it necessary for FLA? Or is historic data adequate?

Diane (NOAA) -- Definitely have concern that short term deplomentt has limited utility, stationary netting included. If Verdant is relying on stationary netting for big results -- can understand that a pre-pilot netting to test out methodology would be useful but will only provide limited answers as far as EFH species goes. Need to make internal determination if advantages.

Verdant is looking for text on agency's priorities of what to achieve with the monitoring plan. Are we answering priorities with monitoring plan actions?
Verdant is trying to monitor on a micro, meso and macro level. Up until now we have been very focused on monitoring at a micro level. The pilot is shifting to meso, and macro (longer term and broader changes). Not sure if monitoring plans are looking at this as we move away from VAMS. VAMs intended to bridge gap between meso and macro. With VAMS you can at least see how fish were moving as they pass through the field. It is a snapshot, but over a period of years.

Action Items

- Kispert will lead the action (with a smaller group) to make bulleted list of priorities to meet during the pilot.
- FERC look into adaptive management in Pilot License Monitoring Plans
- Reconvene
- **June 24th at 3:00 pm -- tentatively.**

RITE Monitoring Plans Call
July 2, 2009

Mary Ann Adonizio (Verdant)
John Smith (FERC)
Mark Woythol (NYSDEC)
Jonathan Colby (Verdant)
Tim Oaks (KA)
Jamey Gerlaugh (Verdant)
Kevin Kispert (NYSDEC)
Anne Secord (USFWS)
Aaron Hernandez (Verdant)
Mollie Gardner (Verdant)
Stacy Jensen (USACE)
Bill Little (NYSDEC)
Jack Nasca (NYSDEC-late)

Started by going over comments submitted June 23 by NYSDEC
Kevin Kispert –
Netting may not be valuable without turbines operating
Goals (no new goals): How fish react to turbines in a broad sense
NYSDEC is aware of data generated and effort put in from the RITE Demo Project but don't think we've reached all the goals

Mary Ann –This is a monitoring plan that tries to determine how best to monitor the effects of 30 turbines over 8-10 years, long term macro effects of a turbine field. Verdant thinks the macro effects are how we should discuss the monitoring plan. Techniques in this plan try to get at broader effects of key issues.

Want monitoring plans that answer macro questions about 30 turbines – commercially operating in a long-term array. We are the leaders in setting this kind of policy and can't think demo study – think operation of array in a commercial sense. What is the scale we are monitoring, what are we going to achieve, what are the long-term effects.

Plans:
East channel of the East River – 30 turbines, no more.
West channel of the East River – still studying what is possible there. DOE grant application to do studies. Navigation constraints and RA will probably only let Verdant put a narrow strip of turbines. Not likely to be larger than the east channel.

Anne Secord – USFWS appreciates how patient everyone is being. USFWS is concerned with what is the appropriate level of monitoring – don't want to request too much or too little. That's why adaptive management is important.

Initial monitoring – VAM's and 6 fixed hydro. Can Verdant do a fixed DIDSON that could be moved? Mobile DIDSON only gives snapshot of what is going on. USFWS likes flexibility.

Mary Ann – What would be the time frame of actually recording with a fixed DIDSON. If Verdant does 3 days of mobile VAMs – get 18 hours of video. That snapshot is too small even repeated over a couple years and couple season?

Anne – hasn't seen any data. Maybe the time period is too short.

Mary Ann – We have sent out the data. We can package and send it to you. Pro side of VAMs – they give you full coverage around field, but is just a snapshot. In terms of fixed DIDSON - it can probably be deployed within field, near a turbine – on a bottom mount in line with tri frames and can see fish go through frame. Moving is a large effort. Positives – more continuous hours (put it down for two weeks) get a significant amount of data.

Kevin – software that triggers DIDSON when fish go by? Can fixed transducers trigger? Mark - May be possible. Biosonics has a trigger on a dam in Mohawk River.

Mary Ann - Why are we still looking at studying at a micro scale, looking at the individual turbines? A fixed DIDSON does not look at what a field of 30 turbines does to the macro scale ecosystem on the river?

Mark - Look at 3 points in the array – where they enter, middle, where exits. Haven't successfully answered question of micro yet.

Mary Ann – What are the key issues we need to monitor? Injury/mortality? Movement? Migration?

Mark – got a good idea of movement – size, peak migration time, numbers. How do the turbines effect fish, how do the fish move around the turbines? Is what we need to understand.

Mary Ann – What we are trying to show – confirm – avoidance of pilot field? Injury/mortality only a secondary response if indeed we observe through birds?

Mark - Primary first step = avoidance. If avoid = great.

MA – Zonal movement during operating turbines during the Demo of show there is no difference between two seasons.

Mark – Cover two migration periods – spring and fall with the fixed DIDSON. Only find peak migration by continuously monitoring hydroacoustics. 5 days fixed DIDSON? Two weeks fixed DIDSON? Ideally the DIDSON would move from

triframe 1 to 5 to 10? Or on one end during one migration, other migration other end?

Anne Secord – Do we even need fixed hydro year round?

Mary Ann – the SBTs are all automatic. Doesn't mater how long they are collecting data, unlike the DIDSON that takes 5 hours to process every 1 hour of data.

Mark – 2 weeks in spring and two weeks in the fall and one week in the summer?

MA – fixed hydro = very high initial capital cost of setting up and getting operating. But once done they run all the time and there is not a lot of effort or cost. DIDSON = high initial cost of deployment and retrieval and lots of data processing. Cost in moving the DIDSON is also quite high.

Anne Secord – a years worth of data may be enough if all turbines are working.

Mark – We should do a step–wise study, if….then monitoring, adaptive management plans.

Analysis of injury/mortality would only kick in if observed strikes on DIDSON?

May use netting to test the protocols in the first year

Mary Ann – need some kind of baseline netting dead fish protocol?

Mark – calibrate with a lemon, something that has passed through the blades so you know where to put the nets.

You can re-work the stationary netting text. First year do netting just to see where something, through the blades, goes and if you can catch it. If you don't see injury don't have to study it in year two. As long as all turbines running, all gear working, etc.

MA – So mobile DIDSON and VAMs are off the table?

Mark- VAMs - not enough repetition

Tim Oakes – is what happens to the fish going to the next triframe from the one with a DIDSON going to be a question/concern? What about tagging? Would that give a better answer?

Mark - Tagging – don't have a confined field as in hydro

Mary Ann – Look again at data produced in demo. Still have valid data with machines running that show fish density. Frame to frame, distance to distance that we have proven with fixed SBTs. If patterns are the same as demo – then confirm that the pilot confirms demo conclusions. Conclusions - move on slack – avoid zones with rotating machines- whether they are operating or not.
If nothing is found on meso and micro – will there then be macro effect questions that are important to the agencies? What macro effect will need to be monitored.

John Smith – adaptive management? We have to have that discussion

Action items
Verdant – look at DIDSON mount
Look at SBT to show what beam coverage could be

Agency:
Internal discussion on adaptive management?
What is FERC willing to do?
Write – what you envision DIDSON/SBT coverage – why, when, how much time.

VERDANT POWER

MEMORANDUM VIA EMAIL

**PRIVILEGED, CONFIDENTIAL BUSINESS INFORMATION,
MATERIAL AND DATA OF VERDANT POWER LLC
DO NOT RELEASE TO THE PUBLIC[1]**

TO: Kevin Kispert (NYSDEC) kakisper@gw.dec.state.ny.us
Naomi Handell (USACE) Naomi.J.Handell@nan02.usace.army.mil
Anne Secord (USFWS) Anne_Secord@fws.gov
Diane Rusanowsky (NOAA) diane.rusanowsky@noaa.gov
Lingard Knutson (USEPA) Knutson.Lingard@epamail.epa

DATE: November 5, 2009
FROM: Verdant Power; Mary Ann Adonizio, ma.adonizio@verdantpower.com
SUBJECT: **RITE Project status and update: November 2009**
DEC Permit No. 2-6204-01510/00001/ ACOE Permit No. NAN-2003-402-EHA

Activities completed since last report:

- In March 2009, Verdant filed a joint DEC/ACOE permit modification and extension request and began consultations with the NYSDEC and USACE as a transition permit; allowing for instrumentation to remain in the water until a filing for the RITE 30 KHPS buildout is made.
    - NYSDEC acted on the extension request July 31, 2009; extending the permit to 5/5/2012 (or until an alternate application is made)
    - USACE action is pending; In August; the Corps requested additional drawings in support of the transition project; which were submitted October 2 2009.

- Verdant filed a 6-month FERC progress report for the RITE preliminary permit P-12611 on July 31, 2009.

- In August- September, consistent with the permits, Verdant acted to remove all 4 of the remaining KHPS from the East River, thus completing the RITE demonstration. The Gen4 machines were inspected and information for the revised Gen5 design was verified. Three(3) of the fish frames were also removed- leaving (5) frames 2,3 and 6,7, and 8 in the water. At that time 8 active transducers were still recording data.

- Since September 09, five (5) of the 8 active transducers have failed – leaving only 3 transducers on frame 6 collecting data. The data from these transducers still records the

[1] Material is covered under NY State: Article 6 FOIL, § 87.2(d) and 6 NYCRR Part 616, and 616.7; Federal 15 C.F.R §4.9; 18 C.F.R. §388.112; 32 C.F.R §286, (INCLUDING 286.12 and 286.16); 43 C.F.R §2.13; and 5 U.S.C. Distribution is intended for internal agency use.

presence and abundance in patterns seen with the full 24 transducer array- confirming that a few transducers will give adequate monitoring patterns. Data through October 31 is attached for the entire 2 + year period.

- Verdant has consulted with Resource agencies to discuss the finalization of Monitoring Plans for RITE East Channel Pilot. Agencies were convened via teleconference/webinar for these purposes on the following dates:

  March 6, 2009
  April 10, 2009
  June 11, 2009
  July 2, 2009

  Progress has been made to finalize monitoring plans in developing mutually agreeable terms and content of plans. Two action items were outstanding from that last meeting:
  - Verdant was to explore design/discussions with vendors on deployment methods and hardware and software systems to meet the objectives of the full 30 KHPS pilot monitoring.
  - FERC/agencies were going to consider draft language for Pilot license adaptive operational monitoring.

Upcoming activities:

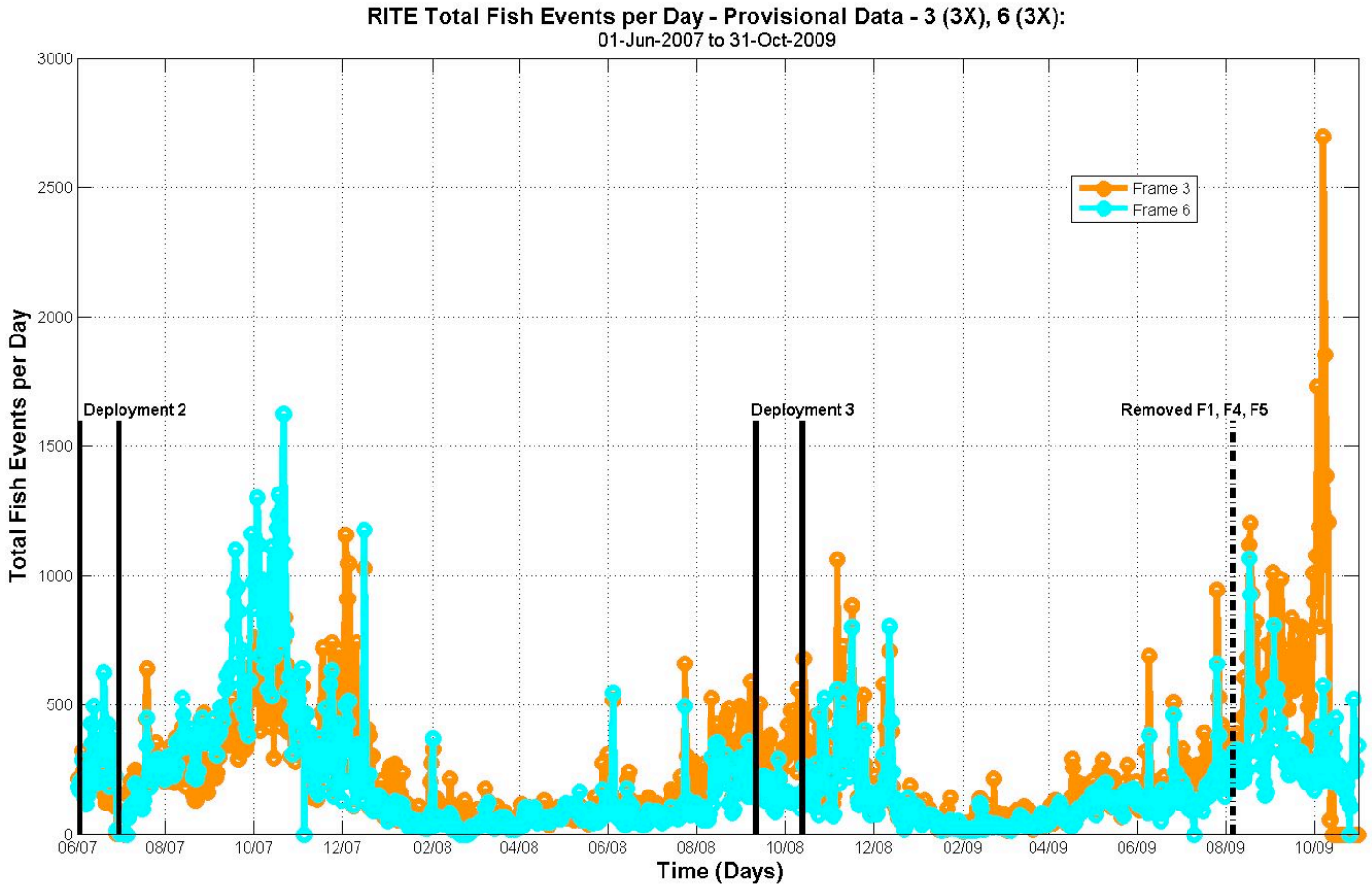
- Verdant was not successful with DOE AWWP 2009 grant funding, however Verdant is actively seeking alternative funding for renewed activities at RITE to advance the Final License application and Pilot project installation.

- Velocity instrumentation will be installed to continue our technology grant activities under the DOE Advanced Water Power Project. This effort is vital to the RITE pilot buildout design.

MAA/bms
Attachments; (1)

cc: V. Yearick, FERC Vince.Yearick@ferc.gov
T. Dean, FERC Thomas.Dean@ferc.gov
G. Lampman, NYSERDA ggl@nyserda.org
M. Maraglio, NYDOS Matthew.Maraglio@dos.state.ny.us
R. Smith, VP rsmith@verdantpower.com

Figure 1 - RITE Transducer Data 2007- 2009



RITE Update & Planning Meeting
April 15, 2010
(via web and phone conference at 11 AM)

MINUTES

Attendees: **NYSDEC:** Kevin Kispert, Bill Little, Steve Zahn; Charles deQuillfeldt; **NYSERDA:** Greg Lampman; **FERC:** Tim Konnert; **NYSDOS:** Jeff Zappieri, Matt Maraglio, Fred Landa; **USACE:** Naomi Handell; **USFWS:** Steve Sinkevich**; NOAA/NMFS:** Diane Rusanowsky (PPT viewing only);
Verdant Power: Mary Ann Adonizio, Jamey Gerlaugh, Aaron Hernandez, Mollie Gardner, Jonathan Colby

Mary Ann Adonizio provided an overview of the meeting agenda, included in the meeting Powerpoint presentation, "RITE Project Update – April 15, 2010" (provided via web conference and post-call as PDF to call participants).

Ms. Adonizio provided an update on Verdant Power's technology advancement path and RITE schedule. This included an overview of Verdant Power's Advanced Waterpower Program (AWPP) project, sponsored by the US Department of Energy (US DOE). The goal of the AWPP project is to develop a higher-power, longer-lived and more cost-effective composite turbine rotor that can also be scaled up to larger sizes. The culminating activity of this project is a 2-week in-water test of the updated turbine rotor. Verdant Power has proposed a window of Jan 10-Feb 28, 2011 for this test to take place in the East Channel of the East River at the site of the RITE 6-turbine demonstration. The AWPP test would utilize the existing dynamometry turbine utilized in the RITE demonstration, retrofitted with a 5-meter diameter version of the updated composite rotor. The non-generating turbine would be placed on Pile 5 of the demonstration field. The test would include performance data acquisition, reduction, and reporting focused on rotor hydrodynamic performance (dynamometry) and blade load data (strain gauge package).

Ms. Adonizio stated that Verdant Power understood that, as outlined in the RITE Pilot Project Transition Plan (PPTP), this test activity would require modifications to the RITE NYSDEC/USACE permits, and may also require additional fishery study activity, based on agency input.

Ms. Adonizio introduced for discussion the issue of potentially conducting fishery study activity during the AWPP test. Kevin Kispert asked why the test was being

held during the winter season, which poses operational challenges. Ms. Adonizio stated that this was required to meet Verdant Power's technology development path as well as DOE AWPP contractual requirements. Mr. Kispert and Charles deQuillfeldt stated a concern that limited fish monitoring data could be gathered in such a short period of time and with only one unit operating.

Matt Maraglio stated that NYSDOS would be interested in receiving data gathered from the 2 ADCP units being installed as part of the test. Mr. Kispert stated that the NYSDEC would also like to receive this data. Jonathan Colby stated Verdant Power could provide this data as requested.

It was stated that Diane Rusanowsky was no longer on the call, but wanted to provide comments on the issue of monitoring during the AWPP test. Ms. Adonizio stated that she would follow up with Ms. Rusanowsky to gather her input.

Ms. Adonizio gave status update (as of July 2009) of 30-turbine RITE buildout and associated Monitoring Plan. Ms. Adonizio stated that she had discussed possible updated usages of split-beam hydroacoustic sensors (SBT) with Biosonics, which recommended using 2 SBTs placed at rows 2 and 9 of proposed 30-turbine field. Mr. Kispert asked whether this would capture fish potentially avoiding the field, and whether one of the SBTs might be placed upstream of the field to do so. Ms. Adonizio stated that she would review this possible approach based on data gathered during the 2006-08 6-turbine demonstration and discuss further with group on upcoming call.

After further discussion on utility of conducting fishery studies during AWPP test, it was decided that a follow up call would be held to further discuss the issue, especially how potential fishery study during the AWPP test could support monitoring activities for the RITE 30-turbine pilot, recognizing that the application for the permit modification should be made by July 1 to allow for processing and in-water testing in Dec - January 2012 timeframe.

Ms. Adonizio stated that she would gather Ms. Rusanowsky's as well as Mark Woythal's (NYSDEC) comments by the follow up call and prepare draft language for permit modifications related to AWPP test.

Meeting was adjourned at 12:20.

RITE Update & Planning Meeting
August 3, 2010 – 2:00 PM EDT
(via teleconference)

MINUTES

PARTICIPANTS:
NYSDEC: Kevin Kispert, Bill Little
USACE: Naomi Handell
Verdant Power: Mary Ann Adonizio, Mollie Gardner, Jonathan Colby, Aaron Hernandez

Mary Ann Adonizio commenced the meeting stating that the two main purposes for the call were to:

1) Discuss updates to permit modifications required to conduct activities related to Verdant Power's US Department of Energy (DOE) Advanced Water Power Program (AWPP) project (ADCP/ADV installation and in-water rotor test) scheduled for January-February 2011; and

2) Re-initiate discussion with agencies on finalizing a RITE Monitoring of Environmental Effects (RMEE) plan for submission as part of Verdant Power's Final License Application (FLA) for the RITE Pilot Project by year end 2010.

Ms. Adonizio indicated that item number 1 was a priority, to allow for NEPA review of the proposed AWPP project to move forward.

1) Permit Modifications
Naomi Handell stated that the US Army Corps of Engineers (USACE) issued a permit modification (Modification 2) to Verdant on the existing permit on July 20, 2010, extending the permit to May 5, 2012 and allowing for the installation and operation of ADCP/ADV instrumentation at the RITE Project site in preparation for the proposed AWPP in-water rotor test and input to RITE Pilot project site design. This permit requires the execution of the Pilot Project Transition Plan, Revision 4.0, dated July 31, 2009. Ms. Adonizio stated that this was great news, however that Verdant Power had not yet received the hard copy permit via US mail, but would expect it to arrive soon at its Octagon offices on Roosevelt Island.

Ms. Adonizio provided an overview of a draft permit modification application submitted by Verdant Power to the New York State Department of Environmental Conservation (NYSDEC) and USACE on July 15, 2010. This application requests a modification (Modification 3) of the NYSDEC/USACE permits to allow for in-water testing of the prototype AWPP rotor (installed on a non-generating dynamometry turbine) at the RITE East Channel site. This 2-week test would demonstrate longevity of the advanced blade and validate design models for future blade scale up activities. The draft

modification application included 7 drawings and a proposed Environmental Monitoring plan appendix.

The permit modification would allow for installation (and subsequent removal) of a KHPS composite rotor (installed on T1 dynamometry turbine) mounted on Pile 1 at the RITE East Channel site to conduct a 2-week in-water test (Jan- Feb 2011):

- Coordinate on-water activity with USCG for test
- Install test rotor on T1 on RITE Pile 1 (Week 1: 1-2-days)
- Construction sequence:
    - Mobilize barge/divers
    - Install cabling/test
    - Install rotor/turbine on slack
    - Release slings (but rotor is stopped)
- Perform data acquisition, reduction and reporting (Weeks 1-2: 3-9 days)
    - Rotor hydrodynamic performance (dynamometry)
    - Blade load data (strain gage package)
    - Allow to run for additional week
- Perform environmental monitoring (Week 2 - if required)
- Removal of rotor/turbine and cables (Week 3: 1-2 days)

Ms. Adonizio stated that the remaining issue to discuss with agencies was what environmental monitoring should be conducted during the test. Verdant Power's draft permit modification application proposed a potential 3-day Vessel-based Aimable Mount for Sonar (VAMS) monitoring during week 2 of the AWPP in-water test when the single turbine is to be operating. Ms. Adonizio asked agencies for their thoughts on the appropriateness of such monitoring, considering the short duration (2 weeks) of the test with a single rotating turbine, and the test being conducted during low fish abundance period (Jan/Feb 2011).

Mr. Kispert stated that in previous discussions in April 2010 this potential monitoring was discussed and that representatives from NOAA and US Fish and Wildlife Service (USFWS) were open to obtaining any data that would be helpful. Mr. Kispert stated that while NYSDEC agreed with this, he also understood that data gathered during the 2-week test may only provide minimal benefits and may not be the most effective use of limited resources. Mr. Kispert stated that it may be better to focus resources on environmental monitoring during the RITE Pilot.

Mr. Kispert stated that NYSDEC did not see the need for environmental monitoring during the 2-week AWPP in-water test, but instead would prefer to focus on monitoring during RITE Pilot. He recommended that Verdant Power confirm this plan with NOAA and USFWS. Ms. Handell agreed with this approach, as USACE would consult with NOAA and USFWS in making its determination regarding the permit modification request. Ms. Adonizio agreed to conduct the consultations as a result of this discussion and secure concurrence with this approach and incorporate this into the permit modification request.

Mr. Kispert requested that, based on these discussions, Verdant Power revise the Pilot Project Transition Plan (PPTP) to Revision 5.0, dated August 2010, to include these discussions and submit this revised PPTP with the permit modification request. The PPTP Revision 5.0 will include:

- General update of completed activity and removed structures as of September 2008;
- Discussion and reporting on the conclusion of fixed hydroacoustic monitoring completed in November 2009;
- Revision of the schedule to include ADCP/ADV installation in the November to February 2011 timeframe;
- Inclusion of the AWPP 2-week in-water rotor test provisions and drawings;
- Discussion of justification and agreement [if concurred by NOAA and USFWS] to defer any environmental monitoring to the RITE Pilot Project;
- Commitment by Verdant to continue to pursue RMEE discussions with the agencies for the RITE Pilot.

Verdant agreed to do so and set a timeline for the week of August 16th for the permit modification application. Ms Handell further requested that the drawings package be issued in black and white.

2) RITE Pilot License Application

Mr. Kispert inquired as to Verdant Power's intended process and timeline for submitting the FLA for the RITE Pilot. Verdant, in conjunction with the agencies, arrived at the following proposed schedule:

- Verdant Power will provide a draft Version 3 of the RITE Monitoring of Environmental Effects (RMEE) plan for agency review in late August.
- A follow-up call with the agencies would be held in September.
- Verdant would plan a 2-day, face-to-face workshop in October in NYC to resolve any outstanding issues related to ESA and EFH consultations, monitoring plan, and other FERC Exhibit E issues.
- Verdant intends to file the FLA in mid-December 2010.

Ms. Handell also asked Verdant to provide NOAA and USFWS with an overview of this process toward FLA submission. Ms. Adonizio agreed to do so and also to provide a proposed agenda for the workshop for discussion with all involved parties, since this workshop will need to cover a variety of issues related to the FERC Pilot License.

Bill Little inquired as to Verdant's plans for completing the FLA and if a settlement agreement was being considered. Ms. Adonizio stated that a formal settlement agreement was not contemplated at this time, hoping that all parties could come to resolution during the October workshop, for filing with the FLA. However, should that not be possible, a parallel settlement agreement approach could be an option.

The meeting adjourned at 2:48 p.m. EDT.

VERDANT POWER

MEMORANDUM VIA EMAIL

**PRIVILEGED, CONFIDENTIAL BUSINESS INFORMATION,
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DO NOT RELEASE TO THE PUBLIC[1]**

TO: Kevin Kispert (NYSDEC) kakisper@gw.dec.state.ny.us
Naomi Handell (USACE) Naomi.J.Handell@nan02.usace.army.mil
Steve SInkevich (USFWS) steve_sinkevich@fws.gov
Diane Rusanowsky (NOAA) diane.rusanowsky@noaa.gov
Lingard Knutson (USEPA) Knutson.Lingard@epamail.epa

DATE: August 25, 2010
FROM: Verdant Power; Mary Ann Adonizio, ma.adonizio@verdantpower.com
SUBJECT: **RITE Project status and update: 08-2010**
DEC Permit No. 2-6204-01510/00001/ ACOE Permit No. NAN-2003-402-EHA)

Verdant proposes to resume this reporting structure through the transition period and the filing of the FERC Final License Application.

Activities completed since last report:

- We have received the USACE permit modification 2 to allow for the instrumentation installation. However, there is a condition in the permit requiring ten buoys to be installed; when three buoys have been installed throughout the demonstration in accordance with the US Coast Guard NY Harbor directives. The USCG and USACE are in discussions regarding this condition.

- As discussed August 3, Verdant has contacted NOAA; USFWS to discuss the RITE Pilot Transition Plan for a planned 2-week test of the Verdant Gen5 composite blade, under the DOE Advanced Water Power Program. (AWPP). NOAA and USFWS generally concur that since the test is taking place in January- February (periods of low fish abundance) that no environmental monitoring is required., but Verdant will include such plans in the RITE Pilot monitoring Plan.

- Verdant has filed a request (August 25, 2010) for a modification of the permits to conduct the test. This package consists of: Letter, drawing package and Version 5 of the RITE Pilot Transition Plan (RPTP). (Included here for information).

[1] Material is covered under NY State: Article 6 FOIL, § 87.2(d) and 6 NYCRR Part 616, and 616.7; Federal 15 C.F.R §4.9; 18 C.F.R. §388.112; 32 C.F.R §286, (INCLUDING 286.12 and 286.16); 43 C.F.R §2.13; and 5 U.S.C. Distribution is intended for internal agency use.

- As discussed on the August 3 call; Verdant would like to reinitiate consultation for the finalization and filing by December of the FERC Final License Application (FLA). To accomplish this, Verdant has engaged Kleinschmidt & Associates (KA) to assist in the consultations and filing. Verdant also proposes the following activities.

Upcoming activities:

- As discussed – Verdant suggests a face-to face workshop at Verdannt's NYC Octagon office on Roosevelt Island primarily focused on fishery and monitoring plan issues. A draft agenda for the workshop is attached.

  It is preferred that key personnel from the consulting agencies be available to participate in this meeting. We suggest **Tuesday- Wednesday – October 12-13**; and have arranged the meeting to allow for Tuesday AM travel. Please advise of availability and proposed invitees/participants directly to Mollie Gardner at Mollie Gardner mgardner@verdantpower.com.

- NYSDEC and USACE requested, a Version 3.0 of the RITE Monitoring of Environmental Effects (RMEE) plan. However, we find that with material changes in the execution of the Pilot project in stages; it may be premature to be working with a full document. Therefore, we attach a "discussion document" that continues to advance the negotiation of a monitoring plan for the Final License Application. As such it outlines some of the previous discussions and the current thinking and options for the consideration by the working group
  A conference call was suggested sometime in September to discuss this further.
  We suggest: Monday September 13 at 2 PM or Friday September 17 at 11 AM. Please advise.
  We think this will give us a jump-start on discussions in October, which would be focused on a working Revision 3.0.

- Planning for installation of velocity instrumentation for November 8 and DOE in-water test- 2 weeks in window of January 17 to February 28.

Thank-you in advance for your efforts to date to evaluate and make the RITE project a success. We look forward to a productive hydrokinetic pilot project licensing process.

Attachment;

Draft Agenda for October Workshop
RITE Pilot Transition Plan (RTPP) Ver5
RITE Monitoring of Environmental Effects; Discussion Document: August 2010

cc: V. Yearick, FERC Vince.Yearick@ferc.gov
T. Dean, FERC Thomas.Dean@ferc.gov
T. Konnert, FERC Timothy.Konnert@ferc.gov
G. Lampman, NYSDEC ggl@nyserda.org
M. Maraglio, NYDOS Matthew.Maraglio@dos.state.ny.u

Conference call with NMFS re Verdant RITE Section 7 Consultation

Thursday September 9, 2010 8:30am

Attendees:

Julie Crocker-lead NMFS permit writer for Project

Danielle Palmer – back-up NMFS permit writer for Project

Mollie Gardner - Verdant

Chris Tomichek- Kleinschmidt Associates

Purpose of the call was to discuss moving forward with informal consultation for ESA Section 7 Consultation for the Verdant RITE Project . Chris asked Julie what she would need to conduct her analysis. Julie indicated she would need :

- Project Description;
- Outline of phased construction,;
- Time line for installation;
- Analysis of habitat impacts; and,
- Analysis of blade strike impacts including an estimate of injury and/or mortality.

Julie asked for a Project update. Mollie gave a description of future plans. She indicated that Verdant plans on filing the FERC application by the end of the year and expects to receive a license by late next year. She indicated that the project is still in technical development phase and Verdant will follow a phased build-up by first deploying 3 turbines for 180 days and then an additional 6-9 turbines for 365 days.

We then had a discussion to determine if it was reasonable to begin informal consultation prior to the license application being submitted to FERC. Julie thought it would be reasonable but will check with her staff as she indicated FERC would wait until the license review period to begin consultation. Julie would also like to check with FERC about moving forward prior to the license being submitted and would like to know who the Project Manager is at FERC for this project. We indicated we would email this information to Julie.

Julie indicated that the decision on whether or not to list Atlantic sturgeon should be out October 18, 2010. If they do get listed we will have to address impacts on this species too. Chris indicated that CT DEP researcher Tom Savoy who is tracking Atlantic sturgeon for NMFS has indicated to her that they do not use the East River as a migration pathway from Long Island Sound to the Hudson River. Chris will follow up with Tom Savoy to get more specific data.

Julie asked what other Federal permits are required as she her assessment will include all federal permits, Mollie indicated only ACOE permit (either modification of existing permit or new permit) was needed. Mollie also indicate that EPA is a participant in the process but no permits are required and Coast Guard would have FERC sign-off for navigation and safety.

Chris mentioned that Verdant is planning an agency meeting to review the work to date and discuss the future monitoring plan. Julie was very interested in participating in this meeting and Mollie will provide her information and meeting dates as soon as possible.

Chris summarized the call and all the NMFS requirements. Requirements include Section 7 assessments for shortnose sturgeon, sea turtles, possibly Atlantic sturgeon which Julie will oversee; marine mammal impact assessment which someone from the NMFS Silver Springs, MD Office will conduct (Julie will check and email a name); and the Essential Fish Habitat Assessment which Diane Rusanowsky from the NMFS Milford, CT office will review.

Action Items:

Julie Crocker: Check to see if we can move forward with informal consultation prior to submitting the license application. She will also send along the name of the staff in the Silver Springs, MD Office who will conduct the marine mammal assessment.

Mollie Gardner: Email Julie information and dates for the October agency meeting and also the name of the FERC Project Manager for this Project.

Chris Tomichek: Meet with Tom Savoy to get more information about shortnose and Atlantic sturgeon movement in the East River.

Roosevelt Island Tidal Energy Project

P-12611-003

Verdant – Environmental Agency Workshop

Preparation for Final License Application

October 14, 2010

9:00 a.m.

Attendees:

Ron Smith, Verdant Power	Mark Woythall, NYSDEC*
Mary Ann Adonizio, Verdant Power	Kevin Kispert, NYSDEC
Molly Gardner, Verdant Power	Bill Little, NYSDEC*
Jonathan Colby, Verdant Power	Matthew Maraglio, NYSDOS*
Jamey Gerlaugh, Verdant Power	Lingard Knutson, EPA
Aaron Hernandez, Verdant Power*	Diane Rusanowsky, NOAA
Dean Corren, Verdant Power*	Stanley Gorski, NOAA*
Tim Oakes, Kleinschmidt Associates	Peter Colosi, NOAA*
Chris Tomichek, Kleinschmidt	Sean McDermott,NOAA*
Laura Cowan, Kleinschmidt	Naomi Handell, USACE*
	Steve Sinkevich, USFWS
	Tim Konnert, FERC*
* by telephone	Greg Lampman, NYSERDA

Ron Smith from Verdant Power opened the meeting at approximately 9:15 a.m. with an update on the field of marine renewable energy. He noted that Verdant's goal is to continue the advancement of the Verdant technology with operating Gen5 KHPS turbines in the water by 4Q2011. To this end he was appreciative of all of the agency efforts to date and hoped that the current plan for staged Pilot project reconfiguration, monitoring plans and the objective to obtain a FERC Pilot operating license could continue, with the intent of commercializing this US-based renewable energy source.

Mary Ann Adonizio from Verdant then provided a brief review of the Project (i.e. location and status) and discussed the agenda.

Dean Corren from Verdant (on phone) then discussed the technology advancements of the updated turbine design (Gen5) and compared it to the previous design (Gen4). This discussion covered the information provided in the technical handout, and includes the new composite blades; cast hub and nacelle; and braking system.

There was Q&A on the braking system and technology:

- Turbine blades begin turning when water velocity is 0.8 m/s; generation begins when water velocity is 1 m/s
- The RPM is approximately the same as Gen 4 – the velocity at the tip of the blade is the same for Gen4 and Gen5.
- Brake is an on/off situation (i.e. it cannot regulate speed)
- The brake would automatically come on when water velocities exceeded 2.5 m/s to protect the unit, although Verdant does not expect to see velocities this high.
- The production of power by nature slows the rotation rate, but otherwise there is no mechanical means to slow (as opposed to stop) the turbine blade.
- There is little thermal energy created from braking system: the rotor is stopped quickly and very little heat is generated from friction.
    - Heat could cause o-ring to shrink; Verdant has considered this, but so little heat is produced that this would not happen.
    - Units will be fitted with sensors to identify temperature issues (as well as vibrations, leaks, etc).

Some of the agencies asked about using the braking system to seasonally restrict turbine operations to reduce or prevent environmental impacts. Verdant responded that this was not the intent of the brake; and excessive use would cause wear and tear. Though the brake could facilitate stoppage now in an emergency situation, Verdant prefers to stay focused on operations and monitoring determining whether there were any impacts before considering operational restrictions

Mary Ann provided an overview of the reconfigured plan for the Pilot project. This was previewed to the group on October 7.

- Install A: 2 units installed on existing Pile 1 and Pile 5
    - Goal: proving Longevity and Reliability; Units will run for 180 days.
    - After 180 days, if units are functional, Verdant proposes to either remove/inspect for wear and tear, or to run them longer to evaluate their longevity. (provided permitting allows)
    - This allows Verdant to operate Gen5 technology without the costs and risk of the new triframe design.
- Install B1: Install 3 units on 1 Tri-Frame
- Install B2: Install 6-9 more units on 2-3 triframes
- Install C: Install up to 30 units (total) on 10 triframes

Tim Oakes from Kleinschmidt provided an overview of the FERC timeline and where Verdant stands.

- Verdant filed a Draft License Application in November 2008 and received comments from FERC and agencies in January- March 2009.
- Verdant has addressed many issues raised by agencies by updating technology and cancelling plans for installing units in the West Channel.
- Several key issues that have not yet been resolved:
    - Quality and extent of data- noting that much has been collected and analyzed; but limited with operating machines
    - Monitoring plan and protocols – noting that some consultation has occurred since 2008 and the RITE Monitoring of Environmentall Effects plan (RMEE) is in draft version 3.
    - ESA consultation; just initiated.

Jonathan Colby from Verdant then reviewed some of the fisheries data collected to date.

- Reviewed a 3-season graph of split beam transducer (SBT) data June 2007- November 2009
- Showed table providing information about data that was successfully collected; while KHPS were operating (~172 days)
    - NOAA noted that this information was interesting but not enough to model field effects for the full build-out.
- Verdant took and action to summarize all data to date and also to provide a new analysis of fish zonal presence and abundance versus depth.

Chris Tomichek from Kleinschmidt discussed what the most common species in the East River are:

- Based largely on over 10 years worth of fish impingement data at the Ravenswood steam electric station which is just upstream of the proposed project location; The spike in numbers of fish passing the project in the late fall appears to correlate closely with blueback herring outmigration in the river.
- Impingement data is only part of the species characterization; since large fish are not impinged because they are good swimmers. Verdant has proposed and continues to suggest that some netting or trawling still needs to be conducted to characterize species. The Ravenswood data is useful in that it can serve as a base of information and that it is consistent with what you would expect in the area (i.e. same as what is found in the Long Island Sound).

Mollie Gardner from Verdant discussed a Staged Operation Monitoring approach for the RMEE:

- Monitoring is based on 3 scales – micro; meso and macro and matches techniques to questions/issues
- Monitoring and operations may adjust over time
- Staged install and staged monitoring:

- Approach is to revisit monitoring plan before and after each install. Monitoring will be modified based on results/need for data with a detailed plan developed for install A now and a framework plan for monitoring future installations.

- FERC needs assurance that monitoring will continue throughtthe Pilot, since they are ultimately authorizing 30 units.
- Tim Konnert from FERC understood Verdant's idea that the license and 401 conditions would include a process of consultation and agreement prior to each install, but he was not sure that this was a possible route within the FERC framework since having a complete monitoring plan is a requirement for the pilot license.
- Later discussions indicated that NOAA and other agencies would prefer to develop a complete monitoring plan for all stages now instead of deferring until after the first phase was complete. The preference was to have most detailed monitoring during install B when the effects of several turbines could be installed prior to the full build-out. Verdant will take action to include this in the RMEE.

RMEE - Monitoring Plans

- Verdant and the agencies discussed methods of collecting fisheries data relevant to the Pilot project.
- There were questions about adequacy of existing data to answer questions about the resources at risk and address direct, indirect, and cumulative fish impacts.
- One essential question that needs to be answered is whether fish are being injured by the project. While no evidence of this was seen in the demonstration (up to six KHPS) future installs B and C sill still need to address this issue.
- There were also questions about whether the units would influence fish behavior and some discussion about the difficulty in assessing behavioral impacts.
- It was concluded that a matrix framework for the RMEE to cover all 3 Install periods and the components – fixed hydroacoustics; DIDSON, netting; and other would provide a useful framework for discussion and finalization for the FLA.
- Verdant took an action to develop a matrix/summary to clearly state:
    - What monitoring method is proposed and why—based on prior lessons learned
    - When, in the staged Pilot project it is most effective to monitor; and what and when is the appropriate duration
    - What questions will monitoring attempt to answer
    - What decisions will the results inform for the next stage of monitoring

Monitoring Techniques:

Netting Survey

- Original plans called for conducting stationary netting during flood and ebb tidal events.
- Verdant and Kleinschmidt had concerns about the logistics of sampling in high velocity currents and the value of the data if collecting fish such as blueback herring which can easily be killed by sampling.
- Verdant proposes to conduct netting surveys near-slack; as the most effective way to capture fish. This is supported by the fact that it has been shown that fish aren't moving

(voluntarily) during flood or ebb, field work is difficult at higher velocities; and the netting gear likely would cause increased injury/mortality during high water velocities.
- Verdant would work with the agencies to estimate a target period – based on the lunar cycle period when fish are most likely to move.
- Data regarding fish movement and the correlation to the lunar cycle is in a report from March 2009; Verdant will provide this link.

DIDSON:

- Verdant explained that seasonal stationary DIDSON monitoring of a single operating KHPS on a pile (Install A) and the triframe (Install B-1) is possible for 3- week periods.
- This protocol will be discusses in the summary RMEE above.

Discussion on Endangered Species Act (ESA)

- ESA listed species: Shortnose/Atlantic Sturgeon and sea turtles.
- Chris Tomichek explained that Verdant would develop the draft Biological Assessment or opinion? and provide blade strike impact for ESA species for multiple size classes
- Chris noted that approximately 200 Atlantic sturgeon had been tagged by NOAA with sonic tags that had a six year life and they were being monitored throughout the region but they were not being monitored in the East River.
- As part of the RMEE; Verdant proposes installing hydrophones in both East and West Channels to provide data to detect tagged Atlantic Sturgeon for input to this concurrent study. At this time there is NO data as to the presence/abundance of Atlantic Sturgeon in the East River.
- NOAA will discuss internally to determine if this is a useful.
- NYDEC will provide name of staff person to coordinate with on ESA issues.

Essential Fish Habitat

- Chris Tomichek provided the list of species to consider for essential fish habitat, and indicated that the FLA will have an appendix discussing EFH for these species.
- NOAA added skates to this list.

Marine Mammals Protection Act

- Verdant will consult with NOAA and NYSDEC designated contacts on 2007 and 2009 Harbor Seal sitings in greater NY Harbor area and another, transient whale siting.

401/404/10 Application Procedure

- There was discussion about how best to structure FERC application in order to coordinate it with existing and future permit approvals.
- There was general agreement that it would be best to perform Install A work under a modification of the existing 401/404/10 permit with a detailed Install A monitoring plan.

- USACOE will need to see completed application before they can provide comments.
- Verdant will request a modification and extension of the existing 401/404/10 permit with detail on Install A and include the Install A monitoring plan. (Expires May 2012)
- Verdant will submit a new 401/404/10 permit application for Installs B and C, and include the monitoring plan for Installs B and C in it. File this with/after Final License Application
- FERC Pilot License Application will describe all 3 installs; with a RMEE plan that is consistent with above.

Action Items

- Verdant will provide notes from meeting and links to past reports
- Verdant will develop summary and justification of monitoring plans for Installs A, B, and C for discussion in a webinar call first week in November to discuss the monitoring plan summary
- NOAA will provide a response on the idea of installing hydrophones in the East River and they and other agencies will provide specific response to monitoring plan protocols
- Verdant will develop the final draft of the RITE Monitoring of Environmental Effects (RMEE) Plan by week after Thanksgiving; based on comments in the webinar
- Verdant, as part of the FERC Final License Application (FLA) will summarize all fishery data collected and reported; including a new analysis of hydroacoustic data by water depth
- Verdant will draft the BA and EFH; as appendices to the FLA
- Verdant will follow up with MMPA and SHPO
- Verdant will finalize the approach for the USACE/NYSDEC 401/404, Section 10 for the new RITE configuration (Install A, B, C)
- Verdant intends to file the FERC Final License Application by December 15

VERDANT POWER

MEMORANDUM VIA EMAIL

**PRIVILEGED, CONFIDENTIAL BUSINESS INFORMATION,
MATERIAL AND DATA OF VERDANT POWER LLC
DO NOT RELEASE TO THE PUBLIC**[1]

TO: Kevin Kispert (NYSDEC) kakisper@gw.dec.state.ny.us
Naomi Handell (USACE) Naomi.J.Handell@nan02.usace.army.mil
Steve SInkevich (USFWS) steve_sinkevich@fws.gov
Diane Rusanowsky (NOAA) diane.rusanowsky@noaa.gov
Lingard Knutson (USEPA) Knutson.Lingard@epamail.epa

DATE: November 3, 2010
FROM: Verdant Power; Mary Ann Adonizio, ma.adonizio@verdantpower.com
SUBJECT: **RITE Project status and update: 11-2010**
DEC Permit No. 2-6204-01510/00001/ ACOE Permit No. NAN-2003-402-EHA)
FERC Project 12611

Activities completed since last report:

The following is the status of action items from the October 14, 2010 workshop:

- Verdant provided notes of the workshop on October 26, 2010.

- Attached please find the executive summary of the RITE Monitoring of Environmental Effects (RMEE) plans version 3.1 which incorporates the discussions from the October 2010 workshop.
  Specifically, it addresses – in matrix form -- all three Installations and how the progression of techniques and studies begin to provide a framework of proportional monitoring for the Pilot project.

- Prior reports and summaries have been uploaded to a shared file folder
  To Access Shared Files and Folders
  Use the following link(s) to access the shared file(s) or folder(s):

RITE Fishery Reports.zip (42.8 MB bytes) =>
https://www.onlinefilefolder.com/4sIdombGHea9XE

[1] Material is covered under NY State: Article 6 FOIL, § 87.2(d) and 6 NYCRR Part 616, and 616.7; Federal 15 C.F.R §4.9; 18 C.F.R. §388.112; 32 C.F.R §286, (INCLUDING 286.12 and 286.16); 43 C.F.R §2.13; and 5 U.S.C. Distribution is intended for internal agency use.

- RITE Fishery Reports.zip contains all previously provided data including:
    - October 2003: Initial Consultation Document for the RITE Project
    - March 5th, 2007: 60-Day Interim Monitoring Report for the RITE Project Fish Movement and Protection (FMPP)
    - November 25th, 2008: FERC Draft License Application – Volume 2 – Exhibit
    - February 2009: FMPP Report on DIDSON/SBT Groundtruthing and Appendix to FMPP report
- New summary material will be uploaded by **Monday November 8**; and we will provide a new link. This will include:
    - Appendix A and B referenced in the RMEE Executive Summary
    - Individual RMEE plan details
- As discussed – Verdant suggests a **conference call on Monday November 15 at 11 AM** to discuss the contents of the RMEE matrix and plans.
  We have tried to accommodate everyone's schedule and find that this is the soonest we can have most of the parties present. Call invitation numbers will be sent next week.

Upcoming activities:

- NOAA will provide a response on the idea of installing hydrophones in the East River and they and other agencies will provide specific response to monitoring plan protocols
- Verdant will develop the final draft of the RITE Monitoring of Environmental Effects (RMEE) Plan by week after Thanksgiving; based on comments on version 3.1
- Verdant will draft the BA and EFH; as appendices to the FLA
- Verdant will follow up with MMPA and SHPO
- Verdant will finalize the approach for the USACE/NYSDEC 401/404, Section 10 for the new RITE configuration (Install A, B, C)
- Verdant intends to file the FERC Final License Application by December 15
  We are still actively trying to meet this schedule.

We hope this provides the information that we outlined in the October 14, 2010 workshop that will move the RMEE along to the Final License application submittal.

Attachment;
RITE Monitoring of Environmental Effects; RMEE v3.1 November 2010

cc: V. Yearick, FERC Vince.Yearick@ferc.gov
T. Dean, FERC Thomas.Dean@ferc.gov
T. Konnert, FERC Timothy.Konnert@ferc.gov
G. Lampman, NYSDEC ggl@nyserda.org
M. Maraglio, NYDOS Matthew.Maraglio@dos.state.ny.u

UNITED STATES DEPARTMENT OF COMMERCE
National Oceanic and Atmospheric Administration
NATIONAL MARINE FISHERIES SERVICE
NORTHEAST REGION
55 Great Republic Drive
Gloucester, MA 01930-2276

NOV 9 2010

Ms. Mary Ann Adonzio
Verdant Power
The Octagon
888 Main Street
New York, NY 10044-0213

Dear Ms. Adonzio:

Thank you for providing minutes from the workshop regarding the Roosevelt Island Tidal Energy Project[1] that was held on October 14, 2010 at 'The Octagon Building' on Roosevelt Island. As indicated in your minutes, NOAA National Marine Fisheries Service (NMFS) representatives attended in person and by telephone. We have reviewed the minutes and compiled the following comments to clarify several points and to raise issues that have emerged in our internal discussion subsequent to the meeting. These comments appear below as bullets arranged in the same sequence as presented in the minutes. We appreciate the opportunity to provide these comments as part of our ongoing consultation process.

- Attendance list: Charles Lynch, ESQ., who participated by telephone, was inadvertently omitted from the list of NOAA representatives

- Introductory comments by Ron Smith and Mary Ann Adonzio: No comments.

- Dean Corren's discussion of technology advancements: While it is Verdant's preference to remain focused on operations and monitoring for potential environmental impacts, NOAA staff would suggest that they remain open to using the pilot license as an opportunity to develop a braking system or other suitable option to address impacts that may accrue during the later stages of the pilot study when field effects could change the dynamic of fish interactions with the turbines. It is plausible that seasonal restrictions could be imposed and it would be important to be able to evaluate whether this length of shutdown would impair effectiveness and longevity of the turbines. We note that if the Install A units are left in place, they might be available for studying this issue.

- Mary Ann Adonzio's overview of the reconfigured Pilot Project: NOAA staff agrees that a longevity and reliability test for the most recent generation of turbines is advisable, and

[1] This project is the subject of filings under the Federal Energy Regulatory Commission's [FERC] Docket Number P-12611 and also in the proceedings for NYSDEC Permit No. 2-6204-01510/00001 and Army Corps of Engineers Permit No. NAN-2003-402-EHA.

do not have issue with these tests being conducted on existing Piles 1 and 5. We note that the hydrologic changes associated with the proposed triframes, and any associated fish behavior changes that they may manifest, are unknown. Some level of monitoring may be desirable, even if it were brief [1-2 day], monthly deployments of DIDSON monitoring in the micro and meso scales. Such deployments have the added advantage of expanding upon the baseline information, which NMFS indicated may be desirable and that the proposed sequencing and scale of deployments proposed in the reconfigured pilot were logical and appropriate for the given setting. The proposed plan also lends itself to adaptive management that may be necessary as the scope of work unfolds. NMFS participation in discussions with Verdant in 2010 have been limited to a review call in September and the October 14th meeting which is the subject of these minutes. We view the October 14, 2010 engagement as a resumption of substantive pre-consultation talks since 2009 that will lead to a substantiated record upon which NOAA can consult and establish resource protections in the event that they are warranted.

- Tim Oakes' overview: We note the clarification regarding the cancellation of the west channel proposal and agree that the key issues listed remain to be resolved. We wish to clarify that NMFS Protected Resources Division staff will be the contacts for the Endangered Species Act consultation process. We also wish to add clarification to the statement that the RMEE is in a third version. This statement is somewhat misleading because it does not acknowledge that the project has been evolving continually over time, even as recently as October, when Verdant noted that the west channel activities were being cancelled. Consequently, this requires the involved parties to return to the monitoring proposal to judge its suitability and probable efficacy for producing the necessary information to evaluate the latest turbine design, field effects, and other project aspects that remain to be addressed with respect to NOAA trust resource interactions.

- Jonathan Colby's review of selected fisheries data: Several NOAA staff participants noted that the June-November data presented by Jonathan Colby do not address the full annual profile and variability of species presence both in terms of daily fish events and species present. The minutes accurately reflect our concern that these data are not sufficient to model field effects for the full build-out, and notes Verdant's intention to provide a new analysis of fish zonal presence and abundance versus depth. We await these data with interest. It was our recollection that other analyses such as presenting daily occurrences of fish events at least by generic size class ["large" vs. "small" targets], by lunar/tidal stage, and other combinations were discussed and potentially would be informative for the baseline data. These data would have applicability for future monitoring studies and decision points for the adaptive management process within the proposed monitoring plan.

- Chris Tomichek's presentation: NOAA staff agrees that impingement data from the Ravenswood steam electric station may be used *as a component of* the data available for characterizing species occurrence in the project reach, but *did not* agree that these data can serve *as the primary basis for* information. Limitations of these data stated by NMFS include that the impingement data are not indicative of the full suite of species present nor are they representative of all life stages that would encounter turbines deployed in the east channel as denoted in the current pilot design. We do agree that fish collections must be conducted to characterize species and to better inform conclusions that may be drawn from the hydroacoustic monitoring and are open to further discussion on how these collections can best be undertaken. We appreciate Verdant's inclusion of fish sampling in the methods that will be included in the monitoring plan and look forward to coordinating with Verdant to bring a final design forward.

- Mollie Gardner's presentation: NOAA staff agrees that continued staged installations and appropriate levels of monitoring will be necessary for activities undertaken under a pilot hydrokinetic license and that the "micro", "meso" and "macro" scale efforts are good frames of reference for study design purposes. We also agree that close and careful coordination among the involved agencies should be undertaken before and after each installation. FERC will need to clarify how or whether an adaptive management approach is a permissible route under the pilot license process. In addition, we confirm our position that the most intensive or detailed monitoring is best accomplished during installation "B" and "C", but urge Verdant to review its dataset to ensure that a seasonal baseline has been characterized adequately in order to support key decision points regarding the amount and intensity of monitoring that would be proposed under the pilot. At this time, NMFS is not confident that the existing fish event data reflect typical conditions in the east branch of the East River. The install A and B-1 events would be an opportunity to collect additional data on fish abundance in months where only one season's data are available, to field test the efficacy of fish sampling gear on site prior to making final equipment selection prior to deployments to meet actual monitoring milestones, and similar information. These deployments need not necessarily be detailed or longstanding in nature.

- RMEE Monitoring Plans: NOAA agrees that the monitoring must produce data that adequately characterize and evaluate the resources at risk and address direct, indirect and cumulative effects as required by our regulations. Verdant's note that the issue of potential fish injury remains to be answered is correct. It is our opinion that deployments of multiple turbines during periods of higher fish events are more likely to produce the necessary monitoring and analysis of this issue and we think this is a critical part of Verdant's monitoring during the pilot license activities during install "B2" and "C". While difficult to assess, the monitoring also should include components to evaluate changes in fish behavior, notably in the meso and macro scales. We appreciate Verdant's willingness to present proposed monitoring techniques in a matrix indexed to the turbine rollouts as a framework for subsequent discussion. As we have noted in

previous coordination opportunities, NOAA is particularly interested in the monitoring addressing questions including:

- 1. What species of fish are present in the vicinity of the project area and when/where do they occur (tidal cycle, diel and seasonal use)?
- 2. What is the density of fish by species and when are they present in the potential impact zone?
- 3. How is fish behavior influenced by the hydrokinetic units?
- 4. Are fish susceptible to being entrained in the unit?
- 5. What happens if a fish is entrained in the unit?

These questions serve to develop the process model for monitoring and are generally consistent with/would build upon previous monitoring efforts. We are encouraged that it appears the past and future data can be analyzed and reported to address these kinds of management issues. We also note that it will be important that the units are working properly while monitoring is ongoing, and that we have reasonable confirmation/assurance that data are being collected, particularly during the peak fish target periods, as these issues limited the utility of some of the previous monitoring work.

- Monitoring Techniques – Netting Survey: We agree that past fish collection attempts under high velocity current conditions in the east channel created logistical problems. Verdant's suggestion that sampling near slack tide during a period of highest fish abundance seems to be an option for consideration to characterize the fish community. We would appreciate Verdant providing appropriate graphics that explain how they would propose to schedule particular sampling events, or if these figures are already in the record, to indicate where we may find them. It is of great importance to us that the fish collections are undertaken in a manner that adequately characterizes the fish that occur in the east channel. In this regard, there may be other sampling options that surface from the discussion for consideration of how we accomplish this task. Further, with respect to hydroacoustics, it would be desirable to have contemporaneous netting work to ground truth those data. Sampling techniques to provide the best usable data for the project setting should be evaluated.

- Monitoring Techniques -- DIDSON: We request clarification on whether Verdant intends its DIDSON work in deployments of three consecutive weeks, or three weeks' efforts taken cumulatively over a season. The difference will affect the temporal scope of sampling and influence how the data can be used in analysis. We understand that there are advantages and disadvantages associated with each option and are interested in knowing how Verdant views this.

- Endangered Species Act Discussion: As noted previously, our counterparts in the Protected Resources Division will be coordinating with you on Section 7 issues. We have

requested their response regarding the proposed hydrophone work and several other line items, and they will be getting back to us on this. We note that Verdant will be seeking a collection permit from New York, and suggest that this issue be taken up with PRD as part of your consultation with them.

- Essential Fish Habitat Discussion: We note that the Habitat Conservation Division website includes a variety of information regarding the requirements for an EFH assessment. Please consult with us early in the process of its development. In general, it will be necessary to consider the direct, indirect and cumulative impacts of installing, operating and monitoring the turbines. These terms are defined in our EFH implementing regulations. To the extent that particular project siting or design features are relevant, it may be appropriate to include any mitigation that is included in the project design as part of the analysis. We remind all parties that our agency will consult with FERC, but the regulations permit the applicants or third parties to supply the federal action agency with technical information to facilitate their assessment. In this regard, information from the monitoring plan will form the basis for the consultation with FERC. Coordinating among parties to develop a monitoring plan that addresses the consultation needs will facilitate that federal consultation process.

- Marine Mammals Protection Act Discussion: Again, we advise that you consult on these issues with our Protected Resources Division. We agree that marine mammals have been seen in the general project vicinity in recent years and that this issue should be addressed prior to a pilot license decision.

- 10/404 Discussion: We were under the impression that the matter surrounding an orderly transition from the permitted demonstration project and pilot license activities has not been resolved, and that the FERC and Corps were going to look into this and instruct all parties on how to proceed. That said, if this ultimately is the chosen approach, we stand ready to coordinate on these issues as part of our interagency interactions with FERC and the New York District, Corps of Engineers. We offer no objections to Install A with appropriate monitoring plan actions proceeding under the existing permits if that can be negotiated, and all further work under a new permit. Please advise us on the status of this line item at your earliest convenience as this has significant implications for how the planned installations would proceed and how the necessary authorization processes would be implemented.

- Action Items: We look forward to continued coordination with Verdant on the noted action items and participating in the upcoming webinar. We appreciate Verdant's willingness to reschedule this coordination event to November 23, 2010 as this would permit all of the involved agencies to participate at the same event. The summary and justification that Verdant offers to provide may help focus future discussions of the current draft monitoring plan as Verdant is now proposing it. It is our position that Verdant would facilitate the review process by ensuring the draft monitoring plan is

completed and has addressed the outstanding issues prior to filing their Final License Application. Taking a little extra time now may save steps later. This position was supported by comments of the participating FERC staff that indicated a complete monitoring plan was required in the final pilot license application. We are concerned that the aggressive timeline toward filing the application may not permit adequate coordination and negotiations to satisfy agency needs and meet the complete monitoring plan requirements for the final pilot license application. It will be important for the agencies to have sufficient time to review and reflect upon the revamped data before commenting on the draft monitoring plan. To that end, NOAA indicated at the October 14 meeting that if the monitoring plan cannot be completed by Verdant's 12/15/2010 target, that it would be advisable to continue the filing to a later date.

Thank you again for providing us with minutes for our recent meeting. The above comments are intended to clarify our recollection of events and to present comments now that we have had time to reflect upon them. Please contact Diane Rusanowsky if you have any questions regarding this correspondence.

Sincerely,

Peter Colosi

Peter D. Colosi
ARA for Habitat Conservation

cc: Minutes distribution list

11/10/10- Nick Morgan called the NOAA Silver Spring office and left a message.

11/16/10- NOAA Silver Spring office left a message at Kleinschmidt saying I should contact Mary Culligan at 978-281-9116

11/16/10- Nick Morgan called Mary Culligan and left a message. No response.

11/23/10- Chris Tomichek contacted Julie Crocker from NOAA to get contact information for Marine Mammal Protection Act permitting. Julie gave the name of Michelle Magliocca in the Silver Spring Office at Michelle.Magliocca@noaa.gov or 301-713-2289.

11/23/10- Nick Morgan left a message with Michelle Magliocca.

11/29/10- Michelle Magliocca left a voicemail saying she was not familiar with the area and suggested calling either the Northeast Fisheries Science Center or the Northeast Regional Office.

12/3/10- Nick Morgan sent an email to Julie Crocker to get a specific name for someone in the Northeast Fisheries Science Center or the Northeast Regional Office. No response.

12/8/10- Nick Morgan called and left a voicemail with Julie Crocker to get a specific name for someone in the Northeast Fisheries Science Center or the Northeast Regional Office. No response.

12/16/10- Nick Morgan contacted the Northeast Fisheries Science Center and left a message with a secretary who is going to have someone call back that might help.

12/16/10- Nick Morgan contacted the Northeast Regional Office and got Mary Culligan. She said the Julie Crocker is the best person to find out who knows about marine mammals using the East River.

12/16/10- Nick Morgan left an additional phone message with Julie Crocker to find another contact in the Northeast Fisheries Science Center.

Verdant – Agency Meeting

November 23, 2010

1:30 p.m.

Conference Call

Attendees:

Mary Ann Adonizio – Verdant Power
Jonathan Colby – Verdant
Aaron Hernandez – Verdant
Mollie Gardner, Verdant
Jamey Gerlaugh, Verdant
Stan Gorski - NMFS
Peter Colosi – NMFS
Julie Crocker – NMFS
Diane Rusanowksy - NMFS
Naomi Handell – ACOE (partially)
Sean McDermott - NOAA
Kevin Kispert - NYDEC
Bill Little - NYDEC
Mark Woythal - NYDEC
Matt Maraglio - NYDOS
Chris Tomichek - Kleinschmidt
Tim Oakes - Kleinschmidt
Laura Cowan - Kleinschmidt

Mary Ann Adonizio from Verdant opened the meeting at 1:35. She explained that the purpose of the meeting was to obtain feedback from agencies on the proposed environmental monitoring plans that would be part of the upcoming Pilot License Application to FERC. The draft plans were transmitted to the agencies on November 4 (executive summary) and November 10 (detailed plans and supporting appendices).

Tagged fish study

Julie Crocker from NMFS noted that the plans propose using the VEMCO hydrophones to detect tagged sturgeon. NMFS expressed concern that because some sturgeon are tagged with LOTEK tags (by the NYDEC) rather than VEMCO tags, some of the likely tagged sturgeon would not be

detected. They suggested that Verdant coordinates with NYDEC and consider adding LOTEK receivers to the area if they are not already present.

Chris Tomichek said that there are 605 Atlantic and 350 shortnose sturgeon that are tagged with VEMCO tags in the Atlantic coast. Julie or Kevin will get the contact information for the NYDEC representative to Chris Tomichek to get more information regarding the LOTEK tagging.

Netting/Trawl survey

Julie Crocker from NMFS asked Verdant to clarify the duration for an individual trawl. Chris Tomichek noted that it would likely be the length of a typical research trawl time period (approximately 15 minutes) to avoid hurting fish. Julie agreed and recommended that it be less than 30 minutes.

Julie also encouraged Verdant to consider whether take permit coverage is necessary to carry out these studies. If it is listed, the Atlantic sturgeon listing is scheduled for October 6, 2011 and after that, take of Atlantic sturgeon would be illegal. Also should consider whether Section 7 or 10 would be more applicable. The shortnose sturgeon is already listed so an ESA permit will be required.

NMFS is operating under the assumption that sturgeon exists in the East River. If these studies do not detect sturgeon that would not serve as conclusive evidence that sturgeon are not present in the River.

Diane Rusanowsky from NMFS requested that Verdant expand the netting effort to identify species during the spring. She did not suggest to sample as intensely in the spring as Verdant proposes to sample in the fall, but they would like to document that the species assemblage is similar. The spring effort would give assurance that if the assemblage is similar to the fall, that the fall would be a good model to use the DIDSON/hydroacoustics for the whole project.

The current proposal is to net 6 days during low tidal velocity periods from Sept 15 – Dec 15, and NMFS suggests expanding this effort to include one sampling date in the May to June timeframe and another in the July to August timeframe. Diane does not want this to be in lieu of days in the fall; it would be in addition to the days in the fall.

DIDSON Study:

NMFS discussed this plan internally and agreed with this approach. They discussed the need for considering additional deployments during C, or in the event that the spring group of fish proved to be significantly different than the assemblage in the fall. Mark Woythal from NYDEC noted that he is somewhat uncomfortable agreeing to not conduct sampling during Install C if we don't see an interaction (not detecting an interaction between the fish and the turbine does not necessarily mean that there is no interaction).

Seasonal fixed hydroacoustics

NMFS noted that they might want to add additional studies in the spring time frame if they found that the spring assemblage is different than the fall assemblage. NMFS also asked about the position of the transducers relative to the turbine field in C. Moving them inside may give them another perspective as to how the turbines are affecting the fish.

Mary Ann explained their rationale, but they are open to placing the monitors in other locations. Biosonics did not provide advice on viability or quality of data if they were moved inside the array, but there would not be a physical problem with installing them within the array, rather than at the leading/trailing edge as depicted. Mary Ann suggested that we conduct the first phase B-2 in the current location and then evaluate the need to move them farther in (between triframe rows 2and 3 and between units 7 and 8).

Bird observations

NMFS (Diane) noted that the bird observation have a great potential as an alarm condition for confused or injured fish.

Noise monitoring

No agency comments.

Additional comments or concerns:

Kevin Kispert from the DEC asked about overall monitoring of hydrodynamics; Matt Maraglio from NYDOS is also interested in seeing related modeling confirmed. Verdant will plan to continue ADCP monitoring after the field is constructed and will add a reference to ADCP monitoring to one of the existing plans.

Verdant will work to revise the monitoring plans and include them in the final Pilot License Application, currently scheduled for submittal to FERC around December 15, 2010. The Install A portion of the plan will be included in a permit amendment application for the existing 401/404 permit for the demonstration project. The longest that the DEC can extend the permit is 10 years. The plan is to extend the permit to May 2013 (10 years would be 2015). The work contemplated under the Pilot License would be subject to a new permit that Verdant will be applying for.

The 2-week test is proposed to be conducted in August rather than in January – February, and no monitoring is proposed for this period, since it is a short term operation in a period of low fish abundance.

NMFS noted that their major desire is that the units are operating reliably at the time of the studies.

Mary Ann noted that they attempted to put all of the known data Appendix A and B and the executive summary. NMFS will put together comments and send a formal letter with their comments, essentially covering the information that they expressed today.

Call adjourned at 2:40 pm.

Conference call with NMFS re Verdant RITE RMEE-4

Thursday December 2, 2010 10:00am

Attendees:
Kathy Hattala-NYSDEC Bureau of Marine Resources, Hudson River Fisheries Unit
Amanda Hicks – NYSDEC Bureau of Marine Resources, Hudson River Fisheries Unit
Chris Tomichek- Kleinschmidt Associates

Purpose of the call was to discuss RMEE-4, Tagged Species Detection Plan.

During the agency conference call on November 23, 2010, Julie Crocker, NMFS, noted that the Tagged Species Detection Plan proposes using the VEMCO hydrophones to detect tagged sturgeon and expressed concern that because some sturgeon are tagged with LOTEK tags rather than VEMCO tags, some of the tagged sturgeon would not be detected. She suggested that Verdant coordinate with NYDEC and consider also adding Lotek receivers in the area. This call served to address NMFS request for coordination between Verdant and NYDEC.

Chris Tomichek initiated the call and described her background in sturgeon research specific to tagging and tracking studies. Kathy had questions about the species characterization netting and agreed that sampling at slack tide makes sense. She wanted to know when sampling would occur and Chris indicated that NMFS wants sampling to begin in the spring but, if needed, we will most likely not have an ESA research permit by then. She indicated that in her experience it takes about 1-2 years to get the ESA research permit.

Kathy was interested in the Verdant RITE timetable for turbine installation. Chris briefly discussed the time table presented in *Table 1. RMEE Summary of Monitoring Plans*. and indicated that the license application will be submitted soon and turbine deployment will be outlined in detail in the application.

Discussion then turned to the NYDEC tagging study. Both Kathy and Amanda indicated that they would prefer to use VEMCO tags to take advantage of the network of receivers along the Atlantic Coast. However they specifically want to pinpoint locations, via mobile tracking, where Atlantic sturgeon conjugate in the Hudson River, specifically for spawning and foraging, and VEMCO does not make a mobile tracking receiver. Twenty-nine Atlantic sturgeon in the Hudson River were surgically implanted with Lotek tags. Tagging took place in 2008 and the tag battery life is 5 years.

Besides these 29 tagged Atlantic sturgeon, there are also 33 Atlantic sturgeon tagged in the Hudson River with satellite and pop-up tags. The batteries on these tags will function until 2013. Kathy mentioned that there are plans to tag more Atlantic sturgeon with VEMCO tags.

American shad (50 fish) in the Hudson River were tagged with dual mode (VEMCO/Lotek) tags. However the batteries on these tags only lasted 150 days.

Kathy asked if Verdant is planning to purchase and install a Lotek receiver. Chris indicated that she could not speak for Verdant but will present the information from the call to them. The discussion ended with more questions from Kathy on the FERC license application process since she has never been involved with FERC.

Call ended at 10:50am.

UNITED STATES DEPARTMENT OF COMMERCE
National Oceanic and Atmospheric Administration
NATIONAL MARINE FISHERIES SERVICE
NORTHEAST REGION
55 Great Republic Drive
Gloucester, MA 01930-2276

DEC 13 2010

Ms. Mary Ann Adonizio
Verdant Power
The Octagon
888 Main Street
New York, New York 10044-0213

Dear Ms. Adonizio:

Thank you for organizing the recent interagency teleconference on November 23, 2010 regarding Verdant's environmental monitoring proposal for the Roosevelt Island Tidal Energy Project (RITE). Verdant's communications refer to this as their proposed RITE Monitoring of Environmental Effects (RMEE) plan. Representatives from NOAA's National Marine Fisheries Service's (NMFS) Habitat Conservation (HCD) and Protected Resources Divisions (PRD) took part in the call. As indicated at the conclusion of the call, we are providing these written comments to present our key points and recommendations regarding the current RMEE. NMFS' primary interest and objectives in this regard focus on whether the proposed methods and approach will produce data that adequately characterize and evaluate the resources at risk, and also address direct, indirect and cumulative effects as required by our regulations. In order to do so, we must collectively ensure the RMEE is designed and executed in a manner that 1) identifies the resident and transient species assemblage that occurs in the water column at the project vicinity; 2) provides information on when and where in the habitat those organisms would be expected to occur; 3) evaluates the influences of hydrokinetic units on fish behavior; 4) determines whether fishes and other aquatic organisms are susceptible to interaction with the turbines; and should this occur, 5) establishes whether such interactions among biota and hydrokinetic units have adverse consequences for affected individuals.

Our general impression of the RMEE is favorable. We found the current organization of the various monitoring techniques presented the methodology and intent of each module clearly and succinctly. With some modest (but important) modifications, it is our opinion that the RMEE will be capable of generating appropriate information for evaluating the pilot project in its chosen setting. We offer the following summary to commemorate our most recent pre-filing coordination for the hydrokinetic pilot licensing process.[1] Additionally, this letter provides comments specific to species currently listed under the Endangered Species Act (ESA) of 1973, as amended, and species currently proposed for listing.

General Comments:

The current RMEE version covers a variety of activities Verdant proposes to undertake as it completes a final equipment installation under its demonstration project permits and subsequently phases into a larger scale deployment of up to 30 units under a pilot hydrokinetic license. As presented in the RMEE,

[1] Our comments in this coordination specifically refer to the draft monitoring plan version and accompanying support documents for which Verdant provided an access link on November 10, 2010.

condition due to potential differences in the species assemblage. We note from the RITE project fish abundance tables (RMEE Appendix A) that fish event totals recorded within the study area occurred in what we consider significant numbers from approximately late May through December and in far less frequency for the balance of the time in the years reported. Since the existing data can only inform us of the relative numbers and generic size classes of fish that would be present, it will not be possible to know whether the fall fish community would adequately represent the spring/summer assemblage and serve as a surrogate for studying all potential fish-turbine interactions. For this reason, it is important that the adaptive management strategy for this monitoring module explicitly includes provisions for additional deployments during the spring and/or summer in later pilot years should the species characterization results suggest that the fall assemblage would not suffice for our mutual evaluation needs. In addition, the adaptive management options should provide for additional deployments in the event that the monitoring falls short of its expected goals due to equipment failure, low abundance of fish moving though the system, or other issues outside of Verdant's control. We consider this contingency necessary to provide the information that would be necessary to support a potential permanent license application should Verdant or a successor wish to file one.

Finally, we wish to reiterate our question regarding the proposed deployment C, where the present plan deploys monitoring gear on the two "leading edges" of the turbine field. From our perspective, these positions would monitor similar conditions and a third unit placed at a more interior portion of the field would likely provide valuable additional data. Since the monitoring plan likely will evolve as additional units are installed and data are collected and analyzed in the earlier deployments, a decision about the location of monitoring gear and other pertinent details should be finalized prior to the final installations through the proposed adaptive management process.

DIDSON Monitoring:

The DIDSON gear is a dual-frequency identification sonar system that provides an important means of monitoring micro-and meso-level fish movements and behaviors in real time. The DIDSON complements the fixed hydroacoustic data by providing a means of verifying fish from other targets from the fixed hydroacoustics by producing real-time, near video-quality data clear enough to study the behavior of darting fish, even in low visibility waters as often is the case in the East River. Verdant's past deployments of the DIDSON at the RITE site demonstrate that the gear is capable of producing high resolution images within 15 m of a turbine. At this level of resolution, and by deploying DIDSON units on strategically located, amiable mounts, Verdant proposes to judge fish behavioral responses to the turbines by determining whether fish swim around/over a turbine, or pass through and potentially are struck by its blades. These goals and objectives appear realistic for the DIDSON technology in the East River and may represent the best available technology at this time to evaluate the equipment *in situ*.

Regrettably, past experience dictates that the maximum deployment of DIDSON at high resolution is limited to approximately 3 weeks due to biofouling. This limitation is unfortunate because it limits Verdant's ability to conduct this critical monitoring component to relatively brief deployments. Verdant proposes to maximize the useful deployment of DIDSON by taking advantage of the baseline observation on past fish movements in conjunction with other physical parameters such as the phase of the moon, to predict when the fall peak in fish movements will most likely occur in order that the DIDSON may be in position at the appropriate time. We agree that a planned deployment of this nature may prove more efficacious than attempting to mobilize in response to hydroacoustic data, but caution that other factors could come into play that alter the expected patterns of fish movements. We therefore

suggest that the monitoring plan allows for equipment cleaning or maintenance that would permit extended use or additional DIDSON deployments as may be necessary to ensure that the planned monitoring will produce adequate observation of both large and small fish size classes and an appropriate representation of species that occur in the East River during the second half of any calendar year. This would ensure that the fish behavior data reflect an appropriate demographic spectrum since species, fish trophic level, and size class all could be potential fish behavior factors that must be considered to address our questions and information needs. In addition, should some of the practical limitations for deploying DIDSON gear at high resolution be overcome in the interim between filing the final pilot license application and a particular deployment being undertaken, it would be desirable to extend the planned deployment to expand the data set and increase the likelihood of observing interactions among fish and hydrokinetic units.

Netting/Fish Collections:

Verdant proposes to collect fish by mid-water trawl at or near slack tide every two weeks from mid-September through mid-December during deployments A, B-2 and C. This method of collection is designed to focus on the species assemblage that would be most susceptible to entrainment or injury by the turbines. The overall approach and resultant data appear generally sound and appropriate for collecting representative pelagic species. As indicated during the conference call and in some of the previous sections of this letter, NMFS requests that additional collections are undertaken to cover the late spring and summer. NMFS specifically suggests monthly sampling for the late May through August timeframe as these sampling opportunities primarily are intended to verify the generic species presence and absence relative to the more intensive fall collections. These additional trawls would provide Verdant or its contractors an opportunity to identify appropriate trawling lanes and otherwise test the trawling protocols in advance of the more intensive fall collections. It is acceptable to us that Verdant will document its representative catch photographically. Should any dead or injured fish be collected in the trawls, we request that they be frozen and archived for potential forensic examination.

As you know, Verdant must obtain a New York State collector's permit before conducting any fish sampling. We wish to remind you that the New York permit does NOT cover you for any directed or incidental collections of any federally listed or managed fish or wildlife. Please note that, as explained on the November 23 conference call, any permit that may be issued by the State of New York does not provide any authorization to capture or handle any species listed by NMFS under the ESA. As you may know, Section 9 of the ESA prohibits the take of listed species. Take is defined in Section 3 of the ESA as "harass, harm, pursue, hunt, shoot, wound, kill, trap, capture, or collect, or to attempt to engage in any such conduct..." Federally endangered shortnose sturgeon (*Acipenser brevirostrum*) may occur in the project area. Shortnose sturgeon are known to be vulnerable to capture in trawls. As such, the potential exists for the capture of shortnose sturgeon in Verdant's proposed netting/fish collections. If a listed species is targeted for research purposes, an applicant may obtain authorization for this take through a Scientific Research Permit issued through Section 10 of the ESA. If take of a listed species is incidental to an otherwise lawful activity authorized, funded, or carried out by a Federal agency, an exemption from the Section 9 prohibitions on take may be obtained through an Incidental Take Statement associated with a Biological Opinion produced by NMFS. A Biological Opinion is the result of a formal ESA Section 7 consultation conducted between NMFS and a Federal agency authorizing, funding or carrying out an action that may affect listed species. While NMFS understands that project operations are authorized by the Army Corps of Engineers and FERC, it is unclear whether the proposed netting/fish collections may be considered to be activities authorized, funded or carried out by a Federal agency or if any take of

Verdant would adopt a multi-modal strategy to collect data featuring split beam hydroacoustics, DIDSON, fish collections, visual surveys, and hydrophone deployments to collect information on fish and wildlife occurrences in the project vicinity. Besides monitoring aquatic resource use by resident and transient organisms, the RMEE also calls for physical measurements to develop a baseline of ambient noise levels in the east branch of the East River and to compare these results with data collected when multiple units are running in order to determine whether a field of operating units would have a discernible impact on the acoustic environment. The monitoring design uses these different approaches as mutually complementary techniques to address explicitly stated research questions intended to evaluate both patterns of aquatic resource use in the project vicinity and potential interactions among organisms and the hydrokinetic units.

The organization and refinements incorporated in the November 10, 2010 RMEE submittal were helpful for clarifying the underlying rationale for the proposed monitoring design. We found inclusion of specific research or follow up questions in each module particularly helpful on several counts. In particular, the questions: 1) define the scope of issues that will be addressed through pilot monitoring; 2) demonstrate how the questions are appropriate for their corresponding data acquisition strategies and further anchor how the plan would meet the expected goals, objectives and outcomes under FERC's hydrokinetic pilot license process; and 3) provide structure for approaching any adaptive management strategies or coordination that may be necessary to ensure that the monitoring plan is collecting necessary and sufficient data to meet the pilot project evaluation needs. The inclusion of the rollout table for the various monitoring elements and the additional appendices added greater clarity and rationale to the overall presentation. The supplemental data summaries made particularly effective use of previous baseline monitoring and provided strong logical support for some important monitoring plan design considerations and decision points. Accordingly, we think it would facilitate post-filing activities (particularly the public review component) for the final RMEE to retain the organization of the November 10, 2010 iteration and also to incorporate the supplemental information as explicit appendices rather than simply incorporating this information by reference.

Fixed Hydroacoustic Monitoring:

The proposed hydroacoustics monitoring would use a new and improved version of split bean transducer technology (SBT) with improved passive target tracking that allows examination of fish movements and potentially extends it to recording reactions to the hydrokinetic gear. The SBTs would be deployed during the B and C pilot installations when multiple turbines are in service. This seems appropriate. In devising the pilot project and monitoring, Verdant has made thoughtful and effective use of the baseline data to design how a one to thirty unit installation may be undertaken at the project site while affording probable mitigation against harm to resident and transient fishes by positioning the turbines in the more offshore positions occupied during the demonstration project where fish events occurred with much less frequency. By making observations during the peak fish abundance period, the monitoring plan concentrates upon the time of year that fishes are known to move at stages of the tide when turbines are operating and also would afford the opportunity to evaluate large numbers of fish representing two different size classes (L vs. S).

While we agree that the peak fish presence appears to occur during the autumn months, and that this information suggests that this period may be the most opportune time to monitor fish-turbine interactions, we recommend that Verdant also consider performing additional monitoring at other times of year if there is a concern that the fall assemblage would not adequately model the spring or summer

listed species would be incidental or direct. As such, NMFS encourages Verdant to work with PRD staff to determine whether take is likely to occur, if this take is incidental or directed, and to seek authorization under the ESA for this take. Additionally, please note that NMFS recently proposed listing for five Distinct Population Segments of Atlantic sturgeon (*Acipenser oxyrinchus*) under the ESA. Atlantic sturgeon are likely to occur in the East River and also may be vulnerable to capture in mid-water trawls. As such, NMFS encourages Verdant to work with PRD staff to determine if impacts to this species are likely to occur from the proposed sampling.

NMFS also encourages Verdant to determine whether the proposed sampling has the potential to affect any marine mammals. All marine mammals receive protection under the Marine Mammal Protection Act (MMPA) of 1972, as amended. The MMPA prohibits, with certain exceptions, the take of marine mammals in U.S. waters and by U.S. citizens on the high seas, and the importation of marine mammals and marine mammal products into the U.S. NMFS encourages Verdant to work with NMFS' Office of Permits, Conservation and Education Division at (301)-713-2332 to determine if any authorization under the MMPA is necessary.

Hydrophone Monitoring:

Verdant proposes to purchase, install, and operate hydrophones in order to detect whether previously tagged fish, including Atlantic sturgeon are present within the general project area. Verdant is proposing to install VEMCO receivers; however, the New York State Department of Environmental Conservation (NYSDEC) primarily uses LOTEK tags for tracking studies of Atlantic sturgeon. LOTEK tags are not detected by VEMCO receivers. As such, in order to maximize the potential for hydrophones to detect the presence of any acoustically tagged Atlantic sturgeon that may occur in the project area, NMFS suggests that Verdant also install LOTEK receivers. It is our understanding that NYSDEC has provided Verdant with specific details on the necessary equipment. NMFS also concurs with NYSDEC's request to Verdant that the receivers be deployed year-round to maximize the likelihood of detection of any tagged Atlantic sturgeon that may be present in the project area. NMFS also notes that NYSDEC has coordinated with Stony Brook University and the University has indicated that the proposed VEMCO receivers will be capable of detecting Atlantic sturgeon tagged by the University. However, Verdant must ensure that the hydrophone is not a VR2W-180kHZ receiver as this type of receiver will not be capable of detecting the Atlantic sturgeon tagged by the University. NMFS encourages Verdant to coordinate closely with NYSDEC and their contacts to ensure that the receivers chosen for deployment maximize the potential for detection of tagged sturgeon. NMFS also concurs with the comments provided by NYSDEC urging Verdant to work with VEMCO to ensure proper deployment and placement of the receivers.

While hydrophone monitoring is a useful approach for detecting these previously tagged fishes, positive information will only be obtained if the fish swim through the detection array. It is important to reaffirm that while this methodology may provide important information on the use of the project area by previously tagged fish, a "negative" result (i.e., no detections of tagged fish) does not necessarily indicate that this species is absent from the project area or will not be impacted by the proposed turbine project. Based on the best available information, Atlantic sturgeon are likely to occur in the East River and shortnose sturgeon may also be occasionally present. However, the number of individuals of these species that contain currently transmitting tags is small. Therefore, the failure to detect a tagged fish will not be viewed by NMFS as an indication that the species is not present in the project area. Nonetheless, this option provides a convenient and non-lethal method of monitoring for the potential presence of se-

lected fishes and adds another dimension to assist in characterizing the local fishery resources by potentially allowing for passive detection of coastal migratory fishes for most of the year.

Bird Observations:

We do not have specific comments or concerns on this component of the monitoring plan as it is relevant to NMFS' concerns to a very limited degree, namely, do fish-predating birds aggregate near operating turbine units? While the demonstration project deployments did not demonstrate this kind of effect, it is impossible to discern definitively whether that is because units did not have an adverse effect on fish while birds were being monitored, if the relatively short duration that turbines were operating was a factor, or if fish could simply avoid the few units occupying the water column at any given time. Should heightened bird activity take place during the longer term and more intensive deployments envisioned for the pilot project, it would be appropriate to notify the involved agencies since this could provide an indirect suggestion that the turbines were killing, injuring, or at least confusing fish and rendering them available for the avian community to exploit. Such an eventuality might require short term shut down of the turbines or other adaptive measures to protect aquatic life.

Underwater Noise:

Verdant proposes to develop a baseline of ambient noise levels in the east branch of the East River and to subsequently determine whether the operating units have a discernible impact on local underwater noise levels. Since the project area is already heavily used by commercial vessels, and there are substantial urban noises emanating from Roosevelt Island, mass transit, and other sources, it may be difficult to detect small numbers of units that are deployed and operating. Nonetheless, these measurements will provide valuable information on the potential effects of deployment on underwater noise levels in the project area. As is true for the other monitoring plan elements, the underwater noise investigation includes ample opportunities for making adjustments in the subsequent turbine deployments as the need for them is warranted.

Conclusion:

To summarize, NMFS finds the November 10, 2010 RMEE makes effective use of the RITE demonstration project data in defining the approach that would be taken to evaluate the environmental monitoring requirements for further evaluating Verdant's hydrokinetic units under a pilot license. The current proposal endeavors to address both issues that were not resolved during the demonstration deployments and also begins inquiry into the potential impacts that would accrue to aquatic resources in conjunction with installation of a turbine field. We recommend that the following specific features and minor modifications be incorporated in the RMEE included in Verdant's pilot license filing:

- Retain the organization and refinements of the November 10, 2010 version. Presenting the various monitoring plan components using a parallel structure that includes the intended research questions not only provides logical support for the plan itself, but also provides structure for evaluating the ensuing results of each phase of deployment. This information should assist Verdant and the participating agencies in determining what, if any, adaptive management decisions would be necessary as additional units are deployed.

- Include explicit provision for additional monitoring deployments as may be warranted during the pilot license. For instance, if a solution for the DIDSON deployment limitations is deter-

mined, it would be invaluable to extend use of that gear to further enhance understanding and interpretation of data collected through the other proposed modalities. Similarly, in the event that DIDSON monitoring of fish behavior in the fall is determined to be an inappropriate surrogate for the late spring through summer period, it would be necessary to do additional DIDSON work during those other periods to meet our mutual regulatory requirements.

- Revise the hydrophone monitoring plan details to include provision for both LOTEK wireless monitoring and VEMCO acoustic telemetry capabilities. We also advise that the gear is tested at the project site well in advance of required monitoring to ensure that the equipment will perform effectively in the chosen project setting as this gear was not used during the demonstration project. While the general site geometry appears consistent with the capabilities of these devices, understanding of how effectively the two different hydrophones sample across the waterway given ambient noise, the hardened shoreline and similar site conditions remains unknown and will be important for evaluating resultant data.

- Attach all supplemental information that accompanied the November 10, 2010 RMEE as appendices of the version that will be filed with the final pilot license application rather than simply incorporating them by reference. This information provides a clear nexus for how Verdant plans to move from the demonstration deployments to a pilot project and provides general support for a number of decision points that should be of interest to potential commenters during the public review period of FERC's pilot licensing process.

- Resolve any and all permitting issues regarding the proposed studies as soon as practicable. In particular, it will be important that all involved parties should be in agreement as to how ESA and MMPA issues will be undertaken since a New York State collector's permit will not cover Verdant or its contractors for any potential takes. As we have described in this letter and in previous technical assistance NMFS has provided, certain documentation and coordination must be exchanged between the federal action agencies and this agency for a Section 7 consultation, or potentially in conjunction with a Section 10 action. All parties should be in agreement on how to meet these, and any other coordination requirements, would be addressed. We note the potential for conflict between the FERC process timeline; the time it will take for coordination materials to be developed, submitted to NMFS and evaluated; and any consultation issues to be concluded. This is a critical timeline that could affect other important project elements including installing units and undertaking monitoring.

We appreciate the opportunity to coordinate with you on the environmental monitoring proposal for the RITE Pilot license application during the pre-filing process. The current plan addresses many of our substantive concerns for activities that would occur under a pilot license. This letter summarizes our comments and recommendations for inclusion in the monitoring plan that will accompany your pilot license filing and constitute our continued technical assistance in the pre-filing portion of FERC's pilot license process. As such, the contents of this letter should not be construed as notice of conclusion of coordination pursuant to the statutory authorities and associated legal mandates under which we are

engaged in this matter. Should you have any questions regarding this matter, please contact Julie Crocker (Julie.Crocker@noaa.gov) regarding protected resources issues and Diane Rusanowsky (Diane.Rusanowsky@noaa.gov) for any other matters pertaining to these comments. We look forward to continued coordination with you and Verdant's other representatives as the RITE pilot application is finalized and filed with FERC.

Sincerely,

Patricia A. Kurkul
Regional Administrator

CC: Same service list as 11/09/10 letter

Verdant Power Communication with DonJon Marine Co., Inc.

On **December 14, 2010** Mollie Gardner of Verdant Power spoke with John Witte Jr. to talk about his letter to FERC in response to Verdant's Draft License Application for the RITE East Channel Project. Mr. Witte clarified that he was only opposed to the project in the West Channel. Ms. Gardner asked Mr. Witte if he could send a letter to FERC clarifying as well. Mr. Witte said he would if Ms. Gardner sent him an email with FERC's address and his original letter to FERC.

Below is the email Ms. Gardner sent to Mr. Witte after their phone conversation:

Mr. Witte,

Good to talk to you today. Attached is the letter you sent to FERC on January 6, 2009 (posted on the docket January 13, 2009). Can you please clarify, in a new letter to FERC, that you were opposed to the project in the West Channel of the East River, not the project in the East Channel of the East River?

FERC's address:
Office of the Secretary
Federal Energy Regulator Commission
888 First Street NE
Washington DC 20426

Verdant Power's project number is P-12611.

Thank you,

Mollie Gardner

PILOT LICENSE APPLICATION
ROOSEVELT ISLAND TIDAL ENERGY PROJECT

FERC NO. 12611

EAST CHANNEL PILOT

FINAL

EXHIBIT A
PROJECT DESCRIPTION AND OPERATION

DECEMBER 2010

Submitted by:

VERDANT POWER

PILOT LICENSE APPLICATION
ROOSEVELT ISLAND TIDAL ENERGY PROJECT
FERC NO. 12611

EAST CHANNEL PILOT

FINAL

EXHIBIT A
PROJECT DESCRIPTION AND OPERATION

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EAST CHANNEL PILOT

FINAL

EXHIBIT A
PROJECT DESCRIPTION AND OPERATION

1.0 INTRODUCTION

Verdant Power, LLC ("Verdant" or "Verdant Power") is proposing to develop the Roosevelt Island Tidal Energy (RITE) Project, East Channel Pilot (RITE East Channel Pilot) under the Commission's new Hydrokinetic Pilot Project Licensing Process. The project is located in the East River in New York City (See Figure A-1). The RITE East Channel Pilot builds on the successful RITE demonstration that has been operating in the East River for several years (See Volume 2, Appendix A for further details). The RITE East Channel Pilot would consist of:

1. A field array installation of a maximum of 30 hydrokinetic hydropower turbines (KHPS), installed in a staged manner which will comprise an initial install (B1) of 3 KHPS units on a single triframe mount (105kW), followed by the further installation (B-2), of up to 9 additional KHPD units on 3 triframe mounts (420kW). A final installation (C) will follow some time later to increase the field size to 30 KHPS units on 10 triframe mounts. Each KHPS unit is a 5 meter diameter axial flow turbine with a individual nominal capacity of 35kW, this will create a total maximum field capacity of 1MW;
2. Underwater cables from each triframe mount to up to five shoreline switchgear vaults, that interconnect to a Control Room and interconnection points; and
3. Appurtenant facilities to ensure safe navigation and turbine operation.

While initially it was Verdant Power's intention to file for a 30-50 year license for the full commercial development of the RITE Project in the East Channel Field, based on agency feedback and the Commission's introduction of the Hydrokinetic Pilot Project Licensing Process, Verdant Power proposes a staged approach to commercially develop the RITE Project:

- Stage 1 (2010-2020): Hydrokinetic pilot license and operation of a 1 MW pilot project located in the East Channel Field, called the "RITE East Channel Pilot" (subject of this application);
- Stage 2 (2015-2020): Relicensing for the 1MW RITE Project to operate as a commercial project (application process would begin in 2014). The size of this project will never exceed the maximum size described herein. (30 units)

The expected build-out of this project is intended to be in line with the following phases:

- Install A: Two redesigned KHPS turbines ('Gen5') on existing monopiles from RITE demonstration phase (This effort would be conducted under a proposed modification and extension to the existing NYSDEC/USACE permit (expires May 2012) and the FERC Verdant order and would not be under a FERC pilot License.)
- Install B-1: Install three 'Gen5' KHPS turbines on one triframe
- Install B-2: Install 6-9 additional KHPS turbines on up to three triframes
- Install C: Install the balance of 15-18 KHPS turbines on up to six additional triframes, for a total of no more than 30 turbines.

A schedule depicting this approach can be found in Volume 1, Part A, Attachment A. It is appropriate to note that the initial install A will be operated for a minimum continuous period of 180 days in order to generate a suitable quantity of data to validate the design before progressing to Install B-1.

The following project and operations description generally follows the requirements of §4.61(c) for Exhibit A, with some needed expansions and adjustments to accurately describe a kinetic hydropower project.

Figure A-1. Project location map.

2.0 DETAILED PROJECT DESCRIPTION

Verdant's Kinetic Hydropower System (KHPS) is based around a downstream axial-flow turbine with a proprietary fixed pitch, three-blade rotor[1]. The rotor drives a speed increaser, which is in turn connected to an induction generator. The gearbox and generator are encased in a waterproof streamlined nacelle mounted on a streamlined pylon. The turbine structure and hydrodynamic elements are made out of materials such as mild steel, stainless steel and reinforced plastics, with high performance anti-corrosion and anti-fouling coatings. All internal mechanical and electrical components are designed to be highly rugged, reliable and intended for tidal or river environments.

The basic design of the Verdant KHPS − electrical and mechanical − has been proven to work in tidal conditions through the RITE demonstration ('Generation 4' design ref. Volume 1, Appendix A). For the RITE East Channel Pilot, Verdant will install the next-generation (Generation 5 or "Gen5") KHPS, which is similar to the Generation 4 design, though with fewer parts and enhanced strength for durability. In install B-1, Verdant will anchor the turbines to the riverbed using a new gravity-based, tri-frame foundation design that will eliminate the need for drilling into the river bed floor as was required for the monopiles used in the original RITE demonstration.

The Gen5 KHPS turbine, including the riverbed mount, that will be used for the RITE East Channel Pilot is currently under final design. The Gen5 rotors will be manufactured and tested in August 2011.

The three components of the KHPS technology are discussed below: 1) KHPS turbine and field array; 2) underwater cabling, shoreline switchgear vaults, control room, and interconnection; and 3) appurtenant facilities for navigation safety and instrumentation.

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[1] Intellectual property coverage for the Verdant KHPS and related technologies includes nine filed patent applications, two provisional applications, 17 patent disclosures, and 11 technical concepts in patent development. A detailed list is available upon request.

2.1 KHPS TURBINE AND ARRAY ARRANGEMENT

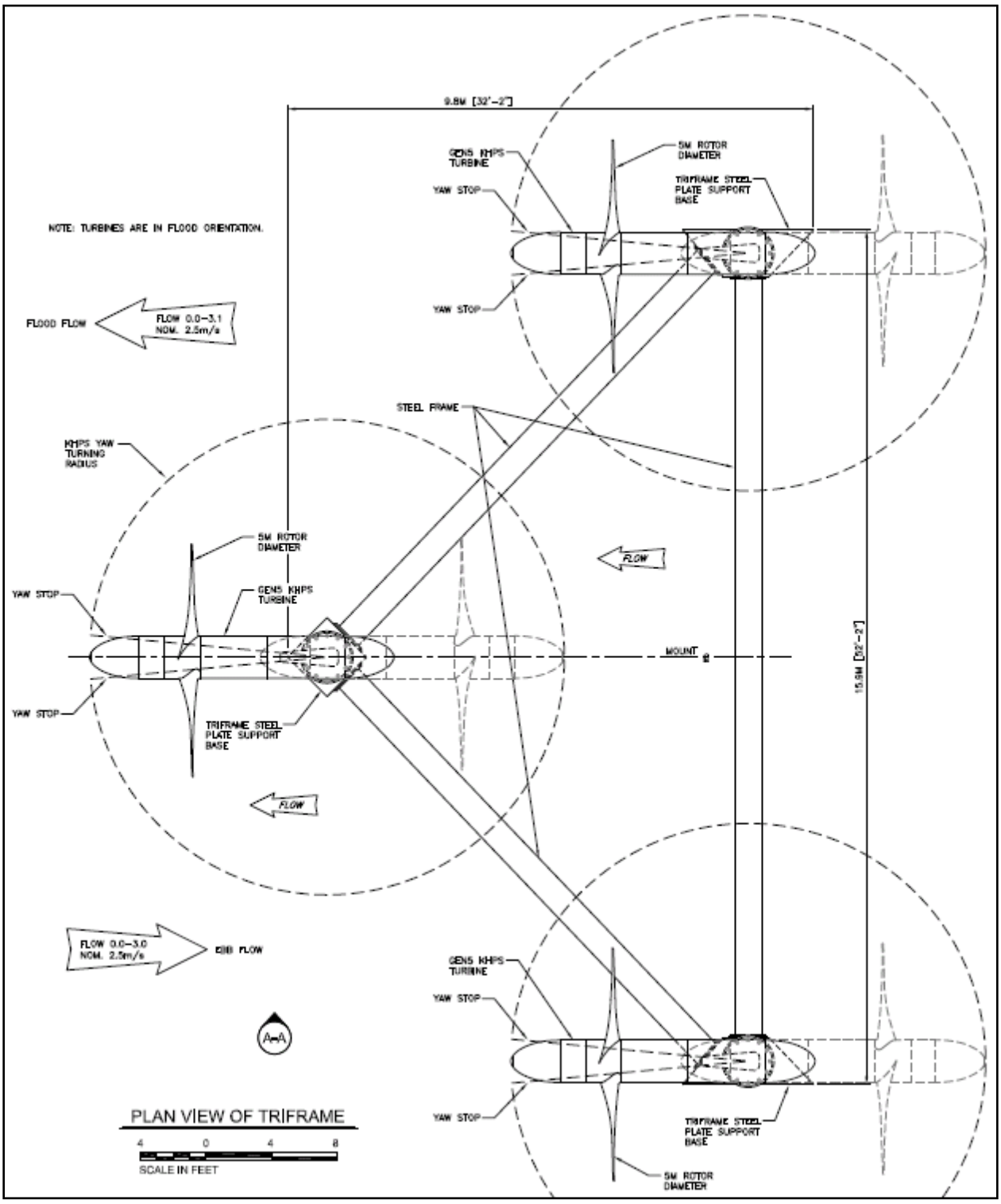
The Verdant Gen5 KHPS turbine consists of four major components:

- Rotor with 3 fixed blades;
- Nacelle, pylon and yaw mechanism;
- Generator and drivetrain; and
- Riverbed mounting system, (3 KHPS turbines on one tri-frame mount)

Table A-1 summarizes the key technology parameters of the Verdant KHPS proposed for the RITE East Channel Pilot. These components are repeated to create an array of 30 KHPS turbines in 10 rows. Three turbines are installed on a single triframe mount (See Exhibit G). Figures A-2 and A-3 show plan and elevated views of the RITE triframe mount.

The RITE East channel pilot project of 30 KHPS turbines would encompass a project boundary of approximately 19.91 acres, which includes 18.84 acres of underwater land lease and 1.02 acres of shoreline right-of-way for the Control Room, Cable Vaults and two underground transmission lines.

Figure A-2. Conceptual RITE triframe mount (plan view).



2.1.1 Rotor

A 5-meter-diameter, three-bladed turbine rotor will be used. The blades are fixed-pitch, with varying thickness, chord length, and twist. The three blades are mounted on a cylindrical hub with a diameter of 0.75 meters, and an axial length of approximately 0.5 meters. The blades are fabricated from composite materials (FRP) for increased strength and reliability over the original aluminum magnesium alloy blades used in the RITE Gen 4 demonstration.

2.1.2 Nacelle, Pylon and Yaw Mechanism

The nacelle (horizontal body of the turbine) is a 0.75-meter-diameter cylindrical equipment housing made of mild steel with stainless steel end flanges that contain O-ring grooves for sealing. The total axial length of the turbine body, including nosecones at either end, is 4.3 meters. The nacelle is a main structural member that carries the weight, torque, and other forces operating through the main bearing housing from the rotor and other equipment, back to the vertical mounting pylon. It is also the water-sealed protective housing for the turbine's main drive shaft, gearbox and generator. The latter is a simple and rugged induction generator that will be connected to the local electric grid via underwater cable. The fixed blades of the turbines rotate at a relatively slow and constant speed of approximately 40 revolutions per minute (rpm), with tip-speeds in the order of 35 feet per second. This is well below normal water vessel propeller speeds and conventional hydropower turbine blade speeds.

The nacelle is attached to the foundation by way of a vertical pylon. This pylon incorporates the yaw mechanism for the turbine and is bolted to the nacelle at its top. The pylon features a fairing to reduce the "tower shadow effect" thus minimizing flow disruption. The bearing for the yaw mechanism is incorporated into the bottom of the pylon and has a mounting flange to allow connection to a riverbed mounting system (see below).

The pylon is installed over an inner pylon which extends from the fixed foundation structure. The lower mounting flange of the pylon connects directly to the foundation and allows the pylon, nacelle and turbine to rotate around the inner mounting pylon. This allows the turbine to self-rotate into the prevailing current flow (weathervane) so that the blades are optimally aligned to generate energy on both the ebb and flow tides. The yaw bearings are water-wetted and comprised of plastic bushings and a thrust washer running on stainless steel bearing surfaces applied to the pylons. The pylon rotation is restricted so as to prevent wind-up of the power and signal cables. This yaw method avoids the use of slip-rings and the need to seal the pylon and yaw bearing assembly. The yaw bearing allows passive rotation of the entire turbine assembly up to 170 degrees during slack tide. Watertight electrical connectors are located within the area of the nacelle/pylon flange. Electrical cables travel along the exterior of the pylon assembly, down to the mounting system to the riverbed, and then to the shore.

Unlike the Gen 4 demonstration, the Gen5 turbine includes an automatic, spring-applied braking system that restricts rotation of the turbine blades in certain circumstances. The brake operates in a fail-safe mode whereby if a system fault is incurred or grid connection lost, the brake is automatically applied and will prevent rotation.

In the case of a grid failure at full power, the specification of the brake is such that it will limit the transient rotor speed to approximately 20% higher than nominal velocity for a few seconds prior to stopping the rotor fully.

Because of the power characteristics of the KHPS turbine rotor in water, it is possible to load it near-optimally with a quasi-fixed speed generator, even as the water current speed varies. While the power output of each turbine depends upon the actual water velocity at a given location, based on Verdant's operating experience at the RITE demonstration, the nominal rated capacity of each KHPS turbine to be used in the RITE East Channel Pilot is 35 kW, with a 56kW peak capacity. Because of spatial and temporal variation, velocities can vary widely

within the array and on ebb and flood currents, at any given time all turbines in the array may not be generating power; or some turbines may be producing significantly more or less than the nominal 35kW. All drivetrain components are designed to operate conservatively, well below any speed and stress ratings, in order to provide long maintenance cycles and long life.

2.1.3 Riverbed Mounting System

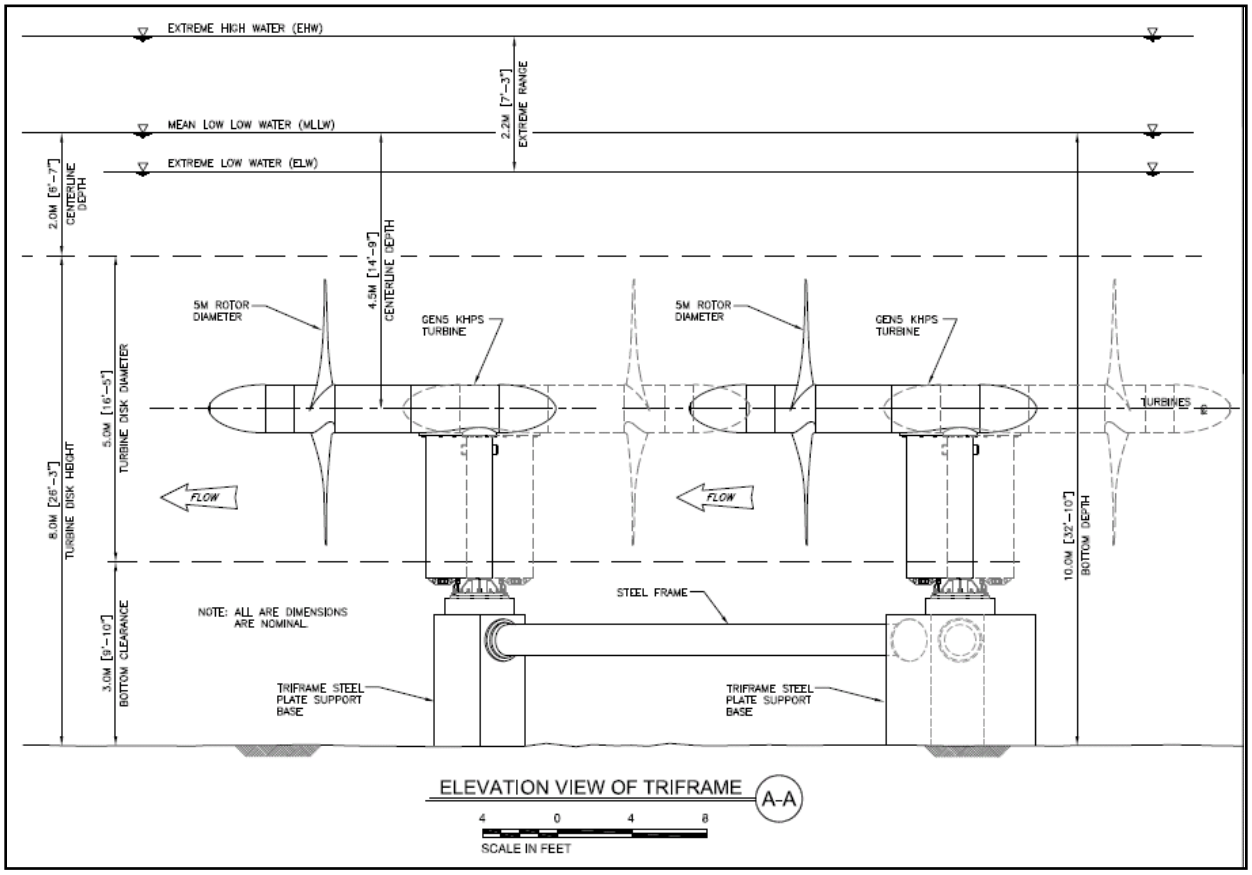
Verdant Power is continuously reexamining alternative mounting systems that can be economically and accurately deployed and retrieved, have a small bottom footprint, and are stable and suitable for long-term operation in fast water on the riverbed with limited or no anchoring. At the current time, the approach to the riverbed mounting system under design and analysis is what is being called a 'triframe' mount. This structure is a 'hybrid' structure that uses a combination of gravity and physical shape to secure to the riverbed. See figures A-2 and A-3 for details.

While a monopile system was used in the RITE demonstration and was shown to be successful, it is felt that the optimal design for a commercial field array is a riverbed mounting configuration that allows for minimal environmental footprint, simplicity in deployment, structural integrity, ease of maintenance retrieval and cost effective construction. Analysis and evaluation of foundation criteria and design has been a focus of Verdant's technology development for the past 3 years.

The current design is a steel space-frame structure that can support multiple (three) turbines. The design relies primarily on shape and weight for restraining the system from the water current forces. One advantage to this approach is that multiple turbines are installed with one deployment operation. The structure is designed to be securely mounted with no additional fastening required, however for certain substrate types, such as rock with very little to no covering sediment, the structure may need to be 'pinned' to provide additional restraint against horizontal (sliding) motion. It is possible that these substrates

may be encountered in the east river and in such case, the structure will be 'pinned' to the riverbed using small rock anchors, installed by divers. Other than this 'pinning' the design does not require significant drilling or explosives for installation.

Figure A-3. Conceptual RITE triframe mount (elevated view).



2.1.4 Generator and Drivetrain

The drivetrain consists of a 5-inch-diameter main shaft on which the rotor hub is mounted. In place of the former off-the-shelf drivetrain components used in the Gen4 demonstration, the Gen5 turbine features a custom designed drivetrain unit that integrates the bearing housing with a special long-life planetary gearbox. At the rotor end this unit incorporates high performance mechanical shaft seals and at the gearbox exit, this also includes an integrated

adapter for direct mounting of the generator. The driveshaft continues through the generator and is further connected to a fail-safe brake mechanism.

The KHPS turbine generator is a standard 480 VAC, 1,800 rpm (four-pole) induction motor with a maximum rated power of 56kW, operated at a nominal maximum power of 37 kW (50 hp), with design elements intended for a hostile, humid environment. It has the ability to handle greater power levels for short periods.

The gearbox is a custom planetary-type, designed to increase the rotor speed of approximately 40 rpm to that of the generator which will be approximately 1,800 rpm at full power. All drivetrain components are designed to operate conservatively, in order to provide long maintenance cycles and long life. The nominal target maintenance period is 2 years.

2.1.5 Water-to-Wire Efficiency

A key metric for all developers of kinetic hydropower technology is the proven water-to-wire efficiency ($\eta_{w\text{-}w}$): the ultimate efficiency of an entire system from the power in the flowing water to the electrical power inserted into the grid (or other final end-use). This includes the cascaded efficiencies (losses) of the rotor (including all flow-related losses due to real-world structures); load-matching; drivetrain, including seals, bearings, and gearing; generator; cabling; and power conditioning (if any).

The overall $\eta_{w\text{-}w}$ of the entire full-scale grid-connected Verdant KHPS was measured during the RITE demonstration. Over numerous tide cycles, for each of the five generator turbines, the representative $\eta_{w\text{-}w}$ ranges from 30% - 40%.

Table A-1 Key KHPS technology parameters (RITE Gen5).

ROTOR	
Rotor hub diameter:	1.0 m
Rotor tip diameter:	5.0 m
Number of blades:	3 - Gen5
Material of construction:	Rotor: Composite (FRP) construction Rotor Hub: Ductile Iron casting
Pitch control:	No
Yaw control	Passive
Ducted or open rotor:	Open
Solidity ratio:	16% (based on blade frontal area / total rotor area)
Rpm @ full load:	~40 rpm
Rpm limit: no load	Transient, ~20% over full-load velocity for a few seconds until brake fully applied and rotation stopped:
DRIVETRAIN	
Geared drive:	Yes, planetary
Shaft diameter:	0.127m stainless steel (RITE Gen 4 35kW)
Number of bearings:	2 main shaft, tapered roller bearings
Mechanical efficiency:	~93%
Lubrication:	gearbox: synthetic (PAO) gear oil; bearings: synthetic grease
GENERATOR	
Power produced on both ebb and flood tides:	Yes
Generator design:	induction, NEMA B
Synchronous:	near-synchronous
Rpm:	1800
Delivery voltage:	480VAC, 3 phase
Electrical efficiency:	~91.5% - 94.7%; NEMA Nominal 94.5%
Excitation:	self (induction)

2.2 Underwater Cabling, Shoreline Vaults, and Interconnection

2.2.1 Underwater Cabling

The Verdant KHPS is designed to have limited above-water facilities. The RITE East Channel Pilot will include 480V electrical cables (no hydraulic oil systems) from each of the 30 KHPS turbines. Cables will travel through the pylon assembly of each turbine to the triframe mount. For each triframe mount, the three turbine cables will be bundled together into a set, which will then be paired with another set and routed from the field, weighted along the riverbed, to five shoreline switchgear vaults (vaults), labeled A-E (see Exhibit G).

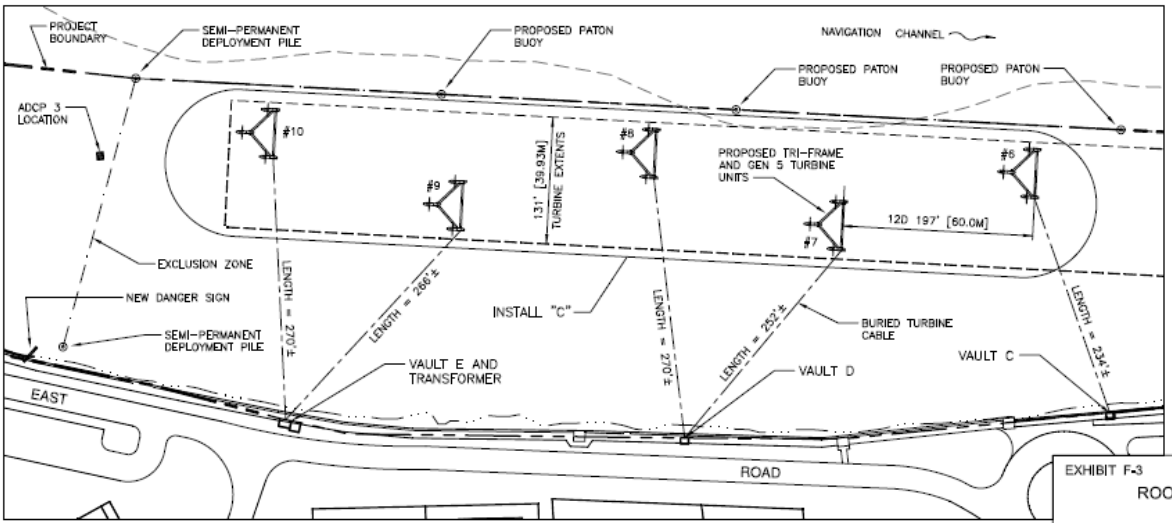


Figure A-4 turbine and cable layout for install C

An example cable layout is illustrated in figure A-4 for install C. Detailed layout plans provided in Exhibit F-1 which show the individual turbine cable lengths from the turbine-generator to the respective vaults these lengths range from 120 to 293 feet, with an average of 226 feet.

2.2.2 Shoreline Switchgear Vaults (Vaults)

Each shoreline vault is intended to manage six KHPS turbines (two triframes), providing for up to a maximum of five vaults. Within the vaults, the power cable from each turbine will be connected via switchgear to a common

power bus that is, in turn, connected to the grid. The vaults will contain this electrical bus, switchgear, and protective relaying, as well as automatic and manual controls for each of the turbines.

2.2.3 Interconnection

The current plan for interconnection assumes that the main Verdant bus lines connecting the three northern vaults (C, D, E) to Vault B will likely operate at 4kV or an intermediate voltage as determined by Consolidated Edison Co of New York, Inc. (ConEd − the local distribution utility). The bus from Vault A can operate at the main bus voltage, or at 480VAC, since it will carry the output of only four turbines to Vault B.

The KHPS turbine's induction generator must be connected to a grid in order to generate power, since the grid supplies the generator's excitation. Unlike synchronous or variable-speed generators, the induction machine is effectively connected across the line using a contactor. It has been found that the induction generator is the most appropriate system for the RITE East Channel Pilot (as it was for the RITE demonstration) based on the nearby access to a strong power grid and several identified loads that can readily accept the power from the KHPS.

During the RITE demonstration, five generator KHPS turbines (demonstration included one dynamometry turbine) were connected to the 480V customer-side of the grid. The interconnection met the standards (Specification EO-2115) required for protective relaying and power quality by ConEd, the State of New York, and other relevant standards organizations. For the east channel pilot, several enhancements due to the expanded field of 30 KHPS turbines are planned. Verdant has met several times with ConEd and continues to develop interconnection design, drawings, and documentation necessary to ConEd and regulatory authorities. An electrical one-line interconnection schematic is provided as Figure A-5 showing preliminary equipment configuration. It is understood that power-factor correction capacitors may be required for this

installation, and if the starting current of the generators proves problematic to the local grid, a soft-start unit can also be added.

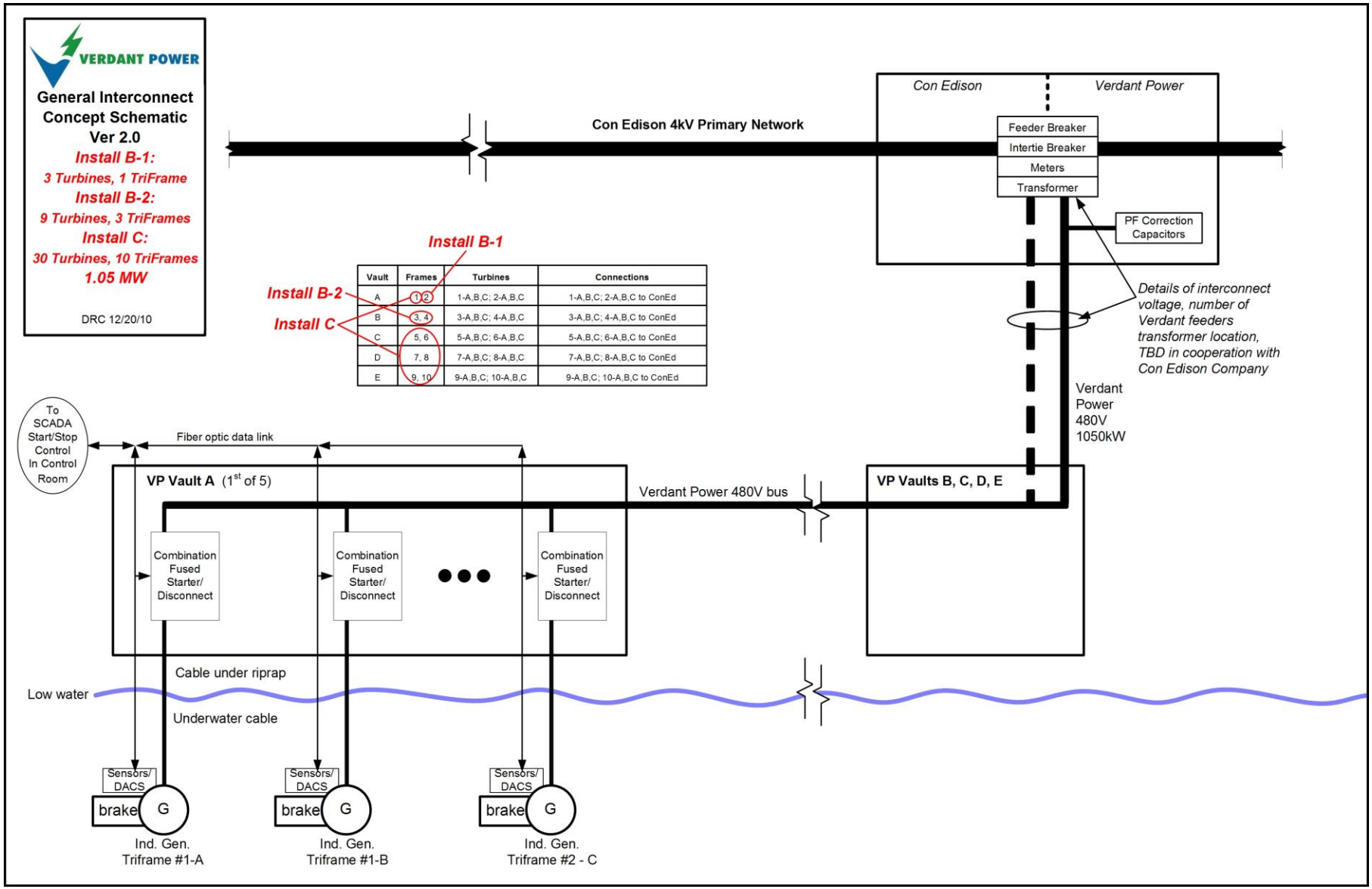
A simple control system strategy will control the cut-in and cut-out of the generators, as the tidal currents change speed and direction. This system connects the generators to the grid when flow speed grows high enough to generate power, and disconnects them as power declines towards zero. Each KHPS turbine will operate independently. In the 30-turbine array format, the individual generators may be linked logically so that they are prevented from starting simultaneously, so as not to impose significant voltage fluctuations on the local grid.

Cables from each of five vaults will route to a likely location at Vault B or C, where a transformer will step-up the power to either 4kV, 7.2kVor 13.8 kV for underground interconnection to a ConEd-Roosevelt Island feeder line, or to a local customer(s) identified at the Roosevelt Island Operating Company (RIOC), or other commercial building loads.

The primary interconnect line is planned to extend from the Verdant bus at Vault B to a Con Ed interconnection station. The cable will be approximately 700 feet long, and will be 4kV cable rated at 6kV. These details are currently being discussed with ConEd personnel.

At this time, the possibility exists that the power from two KHPS turbines in Vault A could be routed directly to the Metropolitan Transportation Authority (MTA) to power a load at the F line subway station on Roosevelt Island. If this option is exercised, the MTA plans to install a direct power cable to the subway station in order to accommodate up to 70 kW of power supply.

Figure A-5. Electrical one-line interconnection schematic



2.2.4 Control Room

The existing RITE demonstration Control Room will be retrofitted to serve as the RITE East Channel Pilot Control Room. Signal cabling for electrical status instrumentation and monitoring of the turbine array, as well as communication equipment for surveillance and Acoustic Doppler Current Profiler (ADCP) units, will also be housed in the Control Room.

2.3 Appurtenant Facilities

In order to comply with navigation and safety requirements, Verdant will install a safety system consisting of six lighted buoys, (PATON's - Public Aides To Navigation), and two lighted danger signs at each end of the array. For public education, Verdant will provide an informational project board at the Control Room, along with an information kiosk which will be installed at the time of Install C.

2.4 Project Design, Manufacturing, and Construction

As described in section 2.4.3 and in Volume 1: Justification Statement, the full commercial development of the RITE Project will be conducted in a staged approach, throughout the pilot license term.

2.4.1 Design

As previously noted, the KHPS to be used in the RITE East Channel Pilot is undergoing continuous design improvement of the technology itself, as well as manufacturing and construction (including deployment) methods. The Gen5 rotor design has been tested through the RITE demonstration and is ready for installation. In addition, the scaled up design of the next generation (Gen6) rotors and structure are in the early stages of design which is supported by a recent U.S. Department of Energy (DOE) Advanced Water Power Program grant.

2.4.2 Manufacturing

Verdant built, assembled, tested, and deployed an operating grid-connected KHPS made up of six full-scale turbines in New York City's East

River through the RITE demonstration[2]. By using experience gained manufacturing these initial six units, Verdant has been developing a manufacturing/scale-up plan to provide the 30 KHPS turbines (plus 6 spares) for the RITE East Channel Pilot.

To support this manufacturing scale-up, Verdant has received two awards from the New York State Energy Research and Development Authority (NYSERDA), including an April 2008 award entitled "KHPS Technology Manufacturing Cost Reduction, Scale-up and Commercialization." This 2-year, $1.17M project with a $500K NYSERDA funding commitment, will provide the framework for the scale-up manufacturing and delivery of the RITE East Channel Pilot turbines. Elements of this ongoing work include Gen5 KHPS Design & Manufacturing; Supplier prequalification and selection process for key components; and developing the supply chain for rate production of the 36 KHPS turbines (30 installed, plus 6 spares) for RITE East Channel Pilot. The focus of this work is on New York State manufacturing and on the key factors of suitability, quality control, and cost.

This ongoing NYSERDA work will support the development of a framework for monitoring and evaluating the fabrication process and ensuring final acceptance testing of the components to be installed at the RITE East Channel Pilot.

2.4.3 Construction and Installation Schedule

For the RITE East Channel Pilot, Verdant intends to use a staged installation procedure to ensure ongoing design validation.

[2] Supported by a grant from NYSERDA.

- **Install A: Install Two Gen5 Turbines on Existing Monopiles**
  - Installation would be accomplished in 4Q2011 on existing foundation mountings.
  - This installation would be conducted within the boundaries of the established RITE demonstration project.
  - This effort would be conducted under a proposed modification and extension to the existing NYSDEC/USACE permit (expires May 2012) and the FERC Verdant Order and would not be under a FERC pilot License.
  - This stage of the project would include a minimum operational period of 180 continuous days; and will include environmental monitoring as agreed to and installed under the terms of the existing NYSDEC/USACE described in (install 'A' monitoring plan) the environmental monitoring plan accompanying the license application.
  - Verdant will propose an extension to the existing permit term of 1 1/2 years to November 2013 to allow for flexibility in the schedule; and incorporation of the agreed to 'Install A' monitoring plan referenced and described in the environmental monitoring plan accompanying the license application.
- **Install B1: Install a single triframe with Three Gen5 Turbines**
  - Install B-1 would be governed by the terms of a FERC Pilot License, a new NYSDEC/USACE joint permit, and other requisite permits.
  - The initial purpose would be to test the new tri-frame mount component of the technology and prove operation and maintenance techniques.
  - The environmental monitoring from Install A continues, adding two additional elements as described in the environmental monitoring plan accompanying the license application.
- **Install B-2: Install up to Three Additional Triframes of Three Turbines Each**

- Install B-2 would be completed under the FERC Pilot License and additional authorizations; and expand the project to up to 12 operating turbines in 2013.
- This stage would include an additional element of environmental monitoring, as described in the monitoring plan accompanying the license application. This is intended to be within an array of multiple Gen5 machines to increase the understanding of environmental effects.
- The experience and lessons learned from the execution of previous RMEE elements will be incorporated into this stage.

- **Install C: Install up to Six Additional Triframes with no more than 30 turbines total**
  - Incremental build out of the full Pilot project; incorporating the results of technology and environmental testing in previous stages.
  - This would also be done under the FERC Pilot License and additional authorizations and likely completed in 2014.

Through the RITE demonstration, Verdant conducted three separate deployments, one of which (Deployment #3) included retrofitting installed turbines with new parts. Based on this experience, Verdant expects the construction periods for the RITE East Channel Pilot to be short. Ultimately, Verdant's in-water production rates are estimated to be approximately three turbines and one tri-frame mount per week. It is anticipated that many of the component parts will be manufactured and assembled at a staging area in the surrounding New York area and floated by barge to the project site.

Other key points of the construction process include:

- Electrical power vaults are likely to be prefabricated offsite, minimizing any local disturbances to the existing area.
- Aggregate shore ground disturbance is expected to be <1 acre.

- Diver intervention will be minimized, but still needed for shoreline cable weighting and connections.
- The use of four semi-permanent piles (as shown on Exhibit G-1) to assist in construction deployment and potentially maintenance is under consideration and may or may not be required.

A detailed construction schedule would be developed under this pilot license and would comply with the statutory mandate to begin construction within 2 years of receipt of a pilot license. Verdant expects to begin initial installation and construction within 6-8 months after receiving a pilot license (*i.e.* 4Q 2011), provided all other necessary permits are in place.

3.0 PROJECT OPERATION

The RITE East Channel Pilot will operate using the natural tidal currents of the East River. The Verdant KHPS captures energy from the flow in both ebb and flood directions by yawing with the changing tide, using a passive system with a downstream rotor. As the flow direction changes, hydrodynamic forces on the rotor, nacelle, and pylon all contribute to yaw torque to align the rotor with the flow. There are no sensors, controls, or actuators to yaw the turbine. Turbine yaw is limited at 170° to ensure that the turbine will rotate in the same direction as the tidal current changes to allow a simple power cabling arrangement without slip rings. The Gen5 turbine utilizes a fixed blade design which Verdant considers to be essential to reliable long-term underwater operation. These elements together contribute to a far simpler design than any active system to control turbine yaw or blade pitch, as there are far fewer elements to foul or fail.

The specific design of the KHPS turbine fixed-blade rotor allows good load-matching of the rotor over a range of water velocities to provide a near-constant speed to the induction generator. Generator control is limited to a contactor and brake which are operated automatically, via an internal multi-function relay with standard protective functions which is in turn controlled by a novel circuit used to close the contactor and release the brake when the

water velocity is adequate to provide power. The turbine brake is a fail-safe, spring-operated unit that prevents the rotor from turning until the water velocity is adequate to provide power. In addition the brake is automatically applied if certain failure modes occur. In line with Verdant's philosophy of simplicity and reducing failure modes, this function requires absolutely no additional sensors or instrumentation within the turbine, or associated data cabling, thus enhancing reliability. This simple control of the generator operates automatically and unattended.

A supervisory computer running custom software acquires generator status and performance for each turbine in the overall KHPS array. This is used for power accounting and maintenance indications and the equipment will be housed in the Control Room. A data acquisition and control system (DACS) will collect and store all generation data and provide secure remote internet-based access. The system will integrate information from the 30 turbines and ADCP instrumentation, allowing real-time and post-processed performance, monitoring and measurement.

The Verdant KHPS is intended as an independent system, passively yawing, starting-up, generating, shutting down and yawing again on slack. All nominal operations are unattended and monitored remotely. In addition, there are no hydraulic systems, therefore operational monitoring of levels or pressures is eliminated. During the RITE demonstration, which extended over 9,000 hours of operation, the system was monitored remotely daily and was only visited by technicians periodically for other instrumentation checks.

Specific network protection electrical relaying is intended to operate in the same manner as a remote hydro where devices are locked-out and require human intervention to reset. Verdant expects a similar scheme for the RITE East Channel Pilot, with remote-monitoring and no manned control center, but with the availability of dispatch technicians to check the interconnection as required.

The operation of the Verdant KHPS is unique in many distinct areas:

- The operation of the KHPS follows a very predictable tidal cycle, quite dissimilar to the hydrologic cycle of conventional hydropower. This predictive cycle

follows a four-time per day on-off cycle with slack tides of no generation, and monthly periods of high spring tides, and lower neap tides with corresponding higher and lower generation periods. While this cycle permits extreme predictability for generation (and O&M activities), it allows no flexibility in terms of seasonal alternative operation. Once deployed, the KHPS turbines continue to yaw (either under load or not) on both ebb and flood cycles. Although the Gen5 turbine features a brake, the Verdant KHPS design precludes the option for remote (routine) start/stop as operation of the brake outside the basic control functions is expected to shorten the life of both the brake and the turbine. This has been an acceptable operation mode, as discussed with the agencies and stakeholders during the RITE demonstration. Verdant discusses options for emergency stoppage of the RITE pilot in the Safeguard plans in Volume 3.

- A 30-turbine KHPS array will likely have periods when some percentage of the turbines are in a 'no-load' condition (i.e. not producing electricity) due to a mechanical or electrical issue. Verdant is optimistic that this percentage will be low due to the simple yet robust design concept of its technology. It should also be noted that, in a no-load condition, the automatic brake would be applied and turbine rotors would cease rotating. However, because of the first-ever nature of this scaled-up installation, and under the basic premise of a hydrokinetic pilot license operation, flexibility in maintenance decisions is the only alternative for operation of a field of KHPS turbines.

Table A-2. KHPS operating schedule (RITE).

Tide	Unit Condition	KHPS Rotors	Generating?	Duration
Slack tide	Transitioning (yaw) from flood to ebb	Rotating at 0-35 rpm	No	~1 ½ hrs
Ebb flow	Unit fully in ebb position	Rotating at loaded speed 35 rpm	Yes	~4 hrs
Slack tide	Transitioning (yaw) from ebb to flood	Ramp down from 35 to 0 and 0 to 35 rpm	No	~1 ½ hrs
Flood flow	Unit fully in flood position	Rotating at loaded speed 35 rpm	Yes	~4 hrs

Table A-2 illustrates the operating schedule for the RITE East Channel Pilot. As with the previous RITE demonstration, the RITE East Channel Pilot will operate in a passive manner. Each KHPS turbine will begin to rotate automatically when the water velocity is high enough for generation and will independently load and generate. As the water velocity begins to decrease the KHPS will trip off and lock the blades in position as slack tide approaches. The locking of the rotor during this phase of operation greatly reduces unwanted forces on the blades. During this time the machine will passively yaw to the flood position, where it will begin to rotate again, loading to the grid automatically and generating on flood tide. The application of the brake will prevent turbines from free rotating in a "no-load" condition and will therefore reduce maximum blade velocities and forces.

3.1 Project Transition

The 6-unit RITE demonstration project (described in Volume 2 Appendix A of the draft pilot license application) was deemed completed in December 2008. Two KHPS units operated in September − October 2008 with Gen5 blades and hubs, which were new designs retrofitted to the Gen4 nacelles. The operation of these rotors was successful and thus the demonstration proved the ongoing design. During this transition period between the end of the demonstration and any granting of the FERC license, Verdant conducted the following activities:

- All KHPS turbines were removed in 2009. Three of eight (total) fish monitoring frames were also removed in 2009 while the remainder is still in place.

The RITE demonstration project operated under a joint NYSDEC/USACE permit that expired May 5, 2009. During this transition period from the end of the RITE demonstration to the start of the East Channel Pilot installation (predicated on receiving a FERC project license and other permits, as well as project financing), Verdant is requesting a 3-year extension of the NYSDEC/USACE permit to allow for ongoing in-water operations. It is intended that Install A work, as described in section 2.4.3, will be performed under this extended permit.

3.2 Proposed Project Maintenance

The design philosophy of the Verdant KHPS includes an imperative for simplicity and ruggedness so that operating and maintenance costs are minimized. This is meant to minimize the mobilization and time-on-site costs for deployment-related equipment and personnel. The turbines are designed to be installed and then operate unattended. The minimum target service period is 2-3 years, which is a metric that Verdant seeks to validate through the RITE East Channel Pilot Project.

The proposed plan for maintenance, as was conducted in the RITE demonstration, is a remove-and-replace strategy with repairs or servicing being conducted on-shore. Both for construction and maintenance in a tidal current, the short 1.5 - 2 hour duration of slack tides is the only period suitable for maintenance activity. During Deployment #3 of the RITE demonstration (September 2008), Verdant was able to execute removal and replacement of one KHPS turbine in under 7 hours (during two tidal cycles). This will be the model for servicing the larger array of the RITE East Channel Pilot. No turbine servicing will be performed on site, but a local service shop is expected to be established to refurbish KHPS turbines for the array.

With 30 KHPS turbines planned to be installed through the RITE East Channel Pilot (as well as 6 planned spares), and depending on the attrition rate and location, the turbines may be serviced either on a regular schedule or an on-demand basis. For this size array, remote generator performance monitoring can give notice of a turbine failure or advance notice of an incipient failure. A detailed service cost model, which can be continuously updated, will be further developed through this pilot and other Verdant projects. Ultimately, this model will determine at which point a mobilization is warranted for turbines in a respective project.

4.0 ANNUAL ENERGY PRODUCTION

In order to develop an estimate of the dependable capacity and average annual energy production in kilowatt-hours (or mechanical equivalent) for a kinetic hydropower facility using

tidal resources, a slightly different approach to hydrologic analysis must be outlined, compared to the conventional hydroelectric requirements under the license application regulations.

- The minimum, mean, and maximum flow (in CFS) is not applicable. The tidal predictability is the key factor in determining dependable capacity.
- Since there is no impoundment, area-capacity curves are not applicable.
- The estimated minimum and maximum hydraulic capacity (typically flow Q on the y-axis and efficiency on the x-axis) is redefined for kinetic hydropower turbines as Velocity on the y-axis and efficiency on the x-axis. Therefore, rather than a flow duration curve, a tidal velocity exceedance curve is generated for the project sites. As there are no control or wicket gates, efficiency is further defined as cut-in speed and best efficiency of the unit. Generator output under these conditions can also be defined.
- Tailwater rating curves are not applicable as this is an open-channel device.
- Power plant capability curves versus head and maximum, normal and minimum heads are also not applicable, as tidal cycles impact the prediction of maximum, normal and minimum production of the turbines and fields.

Through the combined use of instrumentation such as Acoustic Doppler Current Profilers (ADCP), Verdant has continuously measured velocity data at the RITE Project site. The RITE ADCP data, tidal harmonics and the related National Oceanic and Atmospheric Administration (NOAA) tidal predictions can be extrapolated from 30 days to an annual basis. This known water velocity prediction, coupled with the known water-to-wire performance of the Verdant KHPS during the RITE demonstration can provide an accurate prediction of the kinetic hydropower energy production for the RITE East Channel Pilot on an annual basis.

Verdant has calibrated the actual power readings from a turbine (Turbine #5, or "T5") operating at the RITE demonstration during Sept - Oct 2008 with internal predictions for power based on predicted water velocity for the same time period. Figure A-5 shows this calibration visually, displaying a mean of 9.0 kW for predicted power generation and a mean of 7.4 kW for actual power generation. It is also important to note that, because the position of the ADCP

measuring water velocities differs from that of the operating turbine, some variability can be expected, as the location of the predicted data is different than the actual data. Even so, the close proximity of Verdant's predictions for power production and the actual power production from an operating turbine during this period provide Verdant with a high level of confidence in its ability to predict power generation over a long period of time.

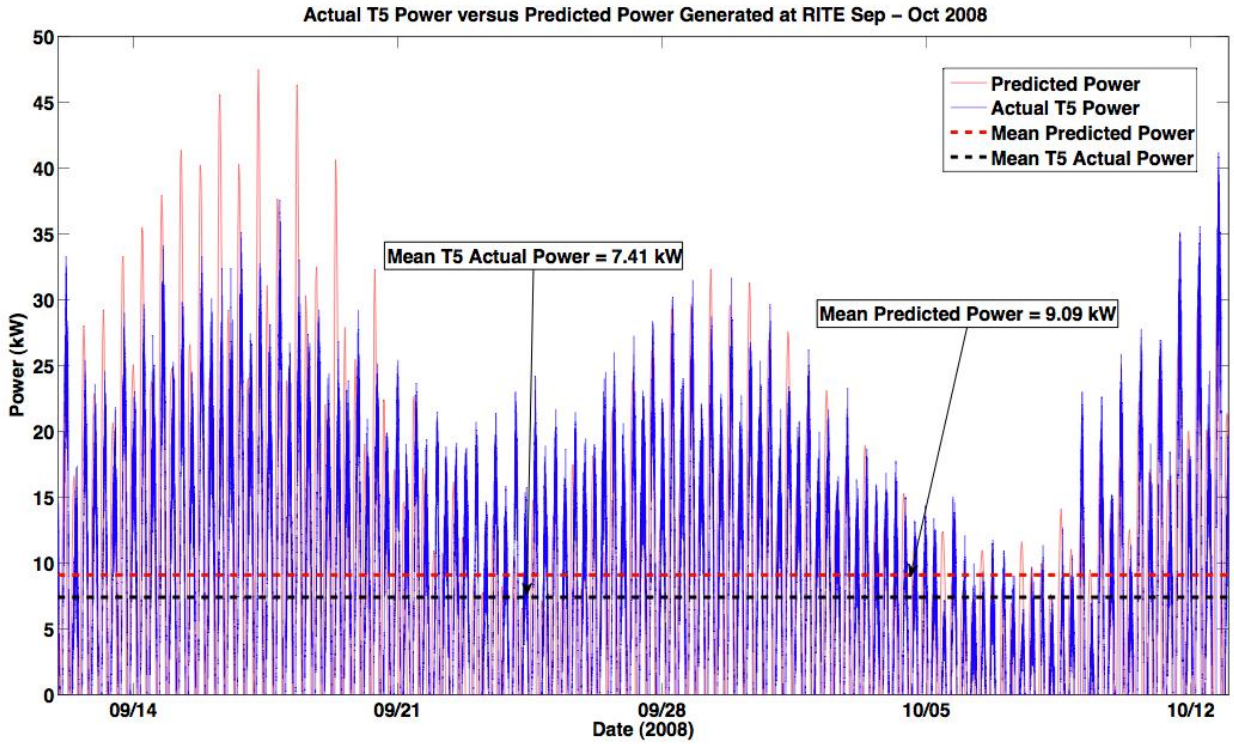


Figure A-5. RITE KHPS predicted power production vs. actual power produced (September - October 2008).

Given a good annual prediction of tidal velocity at a site, annual generation from the KHPS array can be estimated. This estimate for the annual RITE East Channel Pilot's power generation also includes factors such as water-to-wire efficiencies and the expected monthly harmonic tidal predictions. Therefore, based on the available tidal water resource, field collected data to date, and predictions of tidal velocities, Verdant estimates that the RITE East Channel Pilot, with a nominal rated capacity of 1 MW, should be expected to produce approximately 1680 - 2,400 MWh annually. This prediction also corresponds with the experience from Deployment #3 of the RITE demonstration, which had an actual energy production of 11 MWh from two KHPS turbines during a 30-day period.

There are at least two different types of capacity factors (CF) when predicting kinetic hydropower generation. The first is the innate CF of the resource. Given an acceptable individual kinetic hydropower energy conversion device (like the Verdant KHPS) that is rated at or near peak water velocity (V_W) and has a reasonable water-to-wire efficiency, the CF is solely a function of the velocity distribution or duration profile of the site. For example, at the RITE site with the KHPS, this CF is approximately 30%. A second CF is the *effective* CF of a particular array that would include arraying losses from temporal and spatial variations in velocity over the array, multiple turbine interactions, and any other power-limiting external effects, such as authority-required shutdowns, grid power losses, etc.

Another important distinction about the monthly tidal power predictions is that tidal flows are as a result of astronomical parameters and are not affected by hydrological cycles in the same way as conventional hydro. As a result, it should be understood that while tidal patterns and flows can be predicted extremely accurately in advance, the annual distribution of tides across months will vary. Hence January 2008 will not look like January 2009.

Verdant has determined the following requested information in Exhibit A is not applicable, based on kinetic hydropower technology and projects:

i) The estimated average head on the plant;

ii) The reservoir surface area in acres and, if known, the net and gross storage capacity;

iii) The estimated minimum and maximum hydraulic capacity of the plant (flow through the plant) in cubic feet per second and estimated average flow of the stream or water body at the plant or point of diversion; for projects with installed capacity of more than 1.5 megawatts, monthly flow duration curves and a description of the drainage area for the project site must be provided;

iv) Sizes, capacities, and construction materials, as appropriate, of pipelines, ditches, flumes, canals, intake facilities, powerhouses, dams, transmission lines, and other appurtenances.

5.0 PURPOSES OF PROJECT

The array of kinetic hydropower turbines installed through the RITE East Channel Pilot would be interconnected appropriately with the ConEd system in New York City. Verdant has investigated the following options for power market sales for the proposed generated power:

- Direct market power to commercial users (e.g., Roosevelt Island Operating Company (RIOC), Metropolitan Transit Authority (MTA) Roosevelt Island Coler-Goldwater Memorial Hospital, The Octagon, or other commercial property developer)
- Sale to local distribution company (*e.g.*, ConEd).
- Possible direct connection to the New York Metropolitan Transportation Authority (MTA) to power the Roosevelt Island F line station (1 - 2 turbines; up to 70 kW). The MTA would supply direct cable connection to a point of interconnection with the project at Vault A.

5.1 Estimate of the Cost to Develop the License Application

As one of the first kinetic hydropower developers in the United States, Verdant has conducted a great deal of 'firsts' in its progression toward the 1 MW pilot project proposed here. Over this time (2003-2008), Verdant conservatively estimates the costs of developing this license application to be in excess of $3 million, including costs for direct installation of environmental monitoring equipment, engineering consultants and contractors developing and executing the study plans described in Exhibit E, and internal Verdant personnel for management and execution of the data processing and draft pilot license application development. Verdant wishes to thank the City of New York and the New York State Energy Development Authority (NYSERDA) for supporting this effort with matching state funding for some of the studies.

5.2 The On-peak and Off-peak Values of Project Power, and the Basis for Estimating the Values, for Projects which are Proposed to Operate in a Mode other than Run-of-River

The project essentially runs in a run-of-river mode so this section is not applicable.

5.3 The Estimated Average Annual Increase or Decrease in Project Generation, and the Estimated Average Annual Increase or Decrease of the Value of Project Power Due to a Change in Project Operations (*i.e.*, minimum bypass flows, limiting reservoir fluctuations) for an Application for a New License

Not Applicable − Verdant is applying for an original license.

5.4 The Remaining Undepreciated Net Investment, or Book Value of the Project

This item is not applicable since this is a new project development.

5.5 The Annual Operation and Maintenance Expenses, including Insurance, and Administrative and General Costs

Verdant's experience with in-water operation and maintenance expenses associated with the RITE demonstration is unique in the industry. During 2 years Verdant has logged more than 9,000 operating turbine-hours and conducted three separate installations and three removal cycles, two replicating an on-water maintenance change out. Based on this experience with in-water Operation and Maintenance (O&M) expenses associated with the RITE Demonstration, Verdant has estimated ongoing O&M needs for the project and also included many non recurring expenses for first time startup costs associated with operating an array of KHPS for an extended period of time. These estimates are based on the FERC code of accounts and include all costs for both operation and maintenance of hydraulic plant and O&M of transmission facilities. Implicit in the ongoing O&M costs for Install C is a full O&M cycle on the entire field of machines in Years 5 and 8. Also included is capital and O&M costs for ongoing RITE monitoring of environmental effect (RMEE) plans, safeguard plans and financial assurance; including either relicensing or removal at the end of the license terms.

It should be noted that these cost estimates represent projections of an entry-level commercial kinetic hydropower project, and as such include, from experience, high contingencies associated with first time manufacturing, on-water maintenance and regulatory uncertainties. The annual O&M levelized cost is estimated at $850,000 per year. Approximately 40% of this number is for ongoing environmental monitoring associated with the execution of the RMEE and Safeguard plans. Verdant feels that this is a reasonable estimate for "first time" operation and maintenance expenses of the KHPS array, administration and general costs, and allowances for insurance and contingencies associated with array operation and obligations attributable to the Pilot license.

5.6 A Detailed Single-line Electrical Diagram

An electrical one-line interconnection schematic is attached as Figure A-4.

5.7 A Statement of Measures Taken or Planned to Ensure Safe Management, Operation, and Maintenance of the Project

As required by the Commission's Hydrokinetic Pilot Project Licensing Process, a safeguard plan should include but not be limited to the following five elements:

1. Methods for marking project devices;
2. Maps and drawings of competing uses including existing recreation;
3. Methods for recovering equipment that may break loose from any anchoring devices;
4. Proposed removal and site restoration plan;
5. Navigational safety plan developed in consultation with the U.S. Coast Guard, referencing both recreational and non-recreational use and management within, and adjacent to, the project boundary.

Verdant has reviewed these requirements and developed the three safeguard plans listed below to address these issues. Verdant has also developed and enforced similar safeguard requirements at the RITE Project since 2006 as part of the permit requirements

of its RITE demonstration. Therefore, the safeguard requirements listed below can be enacted to meet the requirements of the FERC Hydrokinetic Pilot Project Licensing Process. These will be consistent with standard and emergency operating procedures already in place at RITE.

The three proposed safeguard plans for the RITE East Channel Pilot are listed below and are detailed in Volume 3 of this license application:

1. Proposed RITE East Channel Pilot Public Safety Plan - Emergency Shutdown Plan;
2. Proposed RITE East Channel Pilot Removal and Site Restoration Plan;
3. Proposed RITE East Channel Pilot Navigation Safety Plan.

ATTACHMENT A

Application for a Successive Preliminary Permit
for the
Roosevelt Island Tidal Energy (RITE) Project

Verdant Power RITE Project:
Pre-Commercial KHPS Development and Demonstration

The Roosevelt Island Tidal Energy (RITE) Project is situated in the East Channel of the East River in New York, New York. Since 2002, Verdant Power has conducted pre-commercial testing and demonstration of its Kinetic Hydropower System (KHPS) technology through the project, ranging from prototype analysis to full-scale grid-connected demonstrations of advanced generation designs.

This work is in preparation for a full commercial pilot project at the site, expected to be commissioned in 2012, based upon the receipt of a Federal Energy Regulatory Commission (FERC) Hydrokinetic Pilot License, and other authorizing permits.

I. Technology

Kinetic Hydropower System (KHPS)

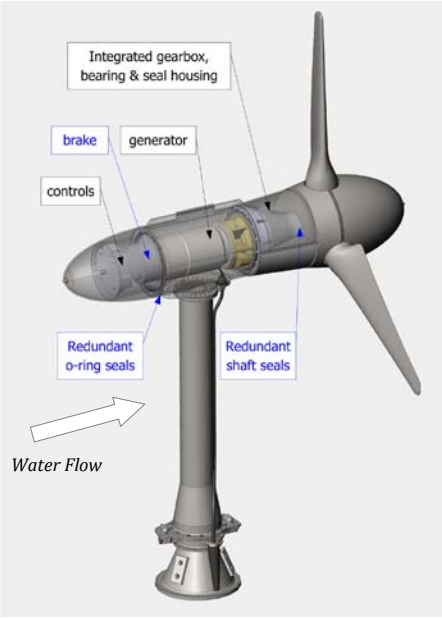


Fig. 1 - KHPS Turbine – Internal Cutaway (Gen5 - 2010)

Verdant Power's Kinetic Hydropower System (KHPS) utilizes an open, three-bladed turbine (Fig. 1) to capture the kinetic energy in fast-flowing rivers and tides (min 2.0 m/s). For tidal applications, a downstream rotor configuration is used, with the turbine assembly yawing (through a limited angle) on its pylon to align with the flow. The turbine rotor turns at a nearly constant, slow rate (~40 rpm), which is increased within the turbine nacelle by a custom-designed unitized drivetrain and gearbox to drive a customized induction generator. The power is connected to the electric grid via a simple and dependable control system. Various systems can be used to mount the turbines to suit site conditions.

Through early stage lab and in-water prototype testing, Verdant Power advanced the KHPS through a fourth generation (Gen4) design as of 2006. During 2006-08, Verdant Power conducted a grid-connected demonstration of a full-scale Gen4 KHPS at the RITE Project, generating operational and environmental data required to apply for a pilot commercial license, and to advance the KHPS to a commercial class design. Based on this data, Verdant Power completed and submitted its Pilot License Application to FERC in 2010. Verdant Power also completed design of its Gen5 KHPS, which is planned for in-water demonstration in 2011, ahead of full commercial operations planned to begin in 2012, based on receipt of a FERC license and other permits.

II. RITE Demonstration – Gen4 KHPS (2006-08)

During 2006-08, Verdant Power demonstrated a grid-connected Gen4 KHPS array comprised of six, full-scale, 5m diameter rotor turbines. The RITE Demonstration was conducted as part of the RITE Project in the East Channel of the East River, 200 feet north of the Roosevelt Island Bridge and adjacent to Roosevelt Island. The six turbines were deployed in three rows of two,

with each row set 100 ft apart and the turbines within each row spaced 40 ft apart on center (Fig. 2). The foundation mounting system for the demonstration turbines was a pile top mount onto six driven monopiles embedded in the riverbed. A safety exclusion zone surrounded the turbines on three sides, with the Roosevelt Island seawall forming the fourth side. (Figs. 3 & 4).

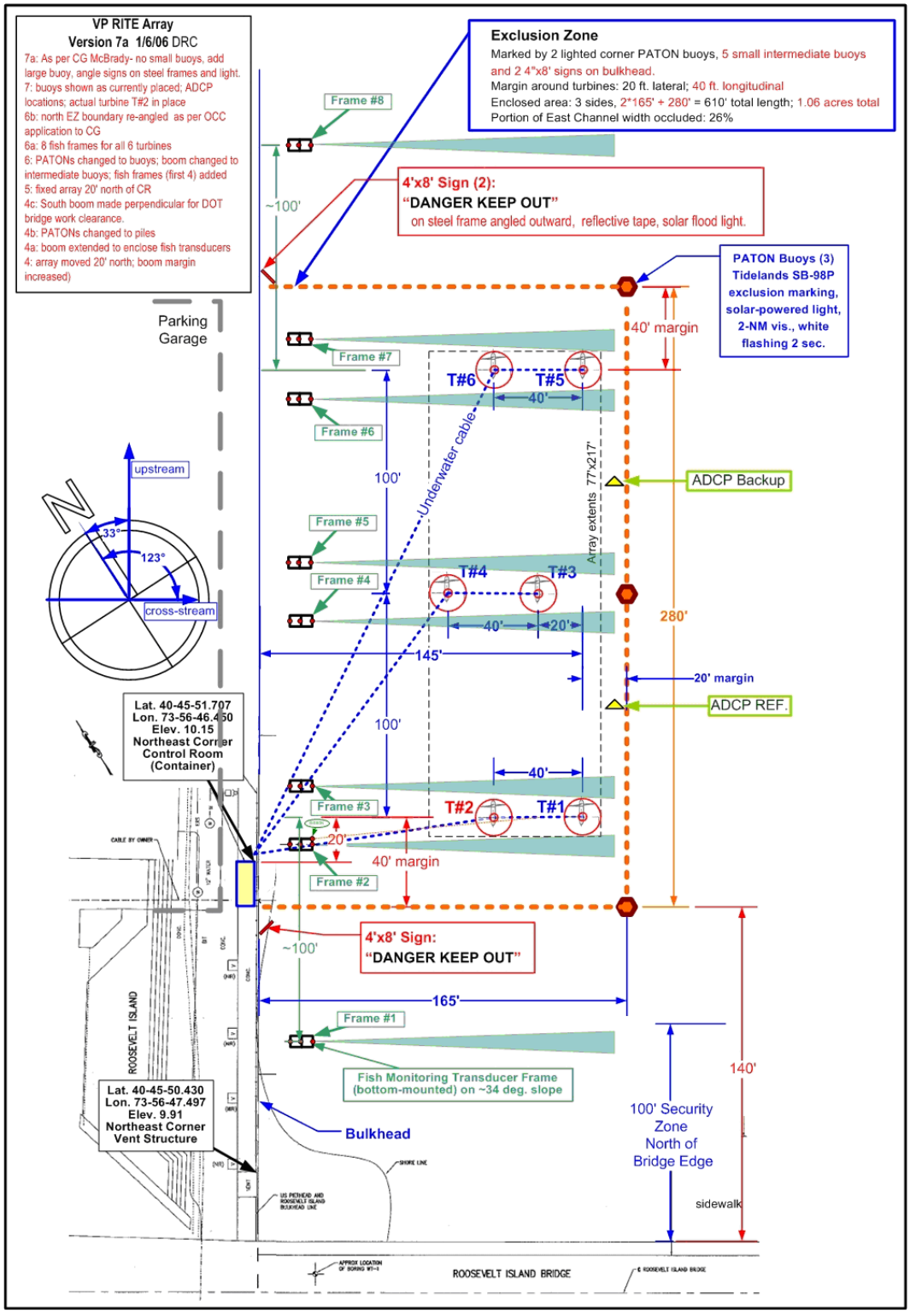


Fig. 2 - RITE Demonstration Turbine Array Configuration

Fig. 3 - RITE Demonstration Site (Aerial View)

Fig. 4 - RITE Demonstration Site and Surrounding Area

Five of the turbines included in the RITE Demonstration were equipped with induction generators rated at 35kW each, and one was a fully instrumented dynamometry version of the turbine used to load and test rotors and other turbine components. Under the 2005 "Verdant Order[1]," Verdant Power was allowed to transmit energy from the generating turbines for test purposes (without receiving revenue) to two adjacent end-users: a Gristedes Supermarket and the Roosevelt Island Operating Corporation (RIOC) "Motorgate" Parking Facility (Fig. 4).

Verdant Power received all operating permits, licenses, and easements for the installation of the demonstration field of turbines and appurtenant facilities, including permits from the New York State Department of Environmental Conservation (NYSDEC), US Army Corps of Engineers (USACE), FERC, and the New York State Office of General Services, among others. In addition, a suite of extensive study plans and environmental monitoring was conducted during the demonstration in consultation with the National Oceanic and Atmospheric Administration (NOAA) – National Marine Fisheries Service (NMFS), the US Fish and Wildlife Service (USFWS), the Environmental Protection Agency (EPA), and the US Coast Guard (USCG). The full body of environmental documentation is contained in Exhibit E of Verdant Power's Hydrokinetic Pilot License Application to FERC (P-12611), available for download at http://www.theriteproject.com.

The RITE Demonstration was conducted in three deployments over a two-year period (described below), and resulted in the following operational milestones:

- Proof of the complete water-to-wire system, with the delivery of approximately 70MWH of energy to commercial end users with no power quality problems;
- Rotor efficiencies from 41% to 52% in 2.2 m/s to 1 m/s flow respectively;
- Water-to-wire efficiencies (including all losses) up to 41%
- Approximately 9,000 turbine-hours of operation;

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[1] *Verdant Power LLC*, 111 FERC ¶61,024, *order on reh'g* 112 FERC ¶61,143 (2005)

- Meeting or exceeding projections for hydrodynamic, mechanical and electrical performance;
- Fully bidirectional operation – passive yawing with high efficiency on both ebb and flood tides;
- Automatic control and continuous, unattended operation;
- No fouling or damage from debris;
- No observation of fish injury or mortality, nor irregular bird activity indicating possible fish harm during the operation of the machines;
- Execution of environmental studies[2] that developed important data regarding the environmental effects of operating KHPS.

The KHPS operated during the RITE Demonstration stands as the world's first grid-connected array of tidal turbines. Key support for the RITE Demonstration was provided by the New York City Economic Development Corporation and the New York State Energy Research and Development Authority (NYSERDA), which also supported earlier prototype testing and has committed to future funding for the Commercial Pilot Project.

Below is a detailed overview of the RITE Demonstration deployments and respective results.

A. RITE Demonstration Deployment #1
(Dec 2006 - Jan 2007)

Installation of first two KHPS turbines: "T1" - the fully instrumented dynamometry version of the turbine and "T2" - the first of the 5 grid-connected generator (35kW) turbines. Results were as follows:

- Pre-deployment environmental studies conducted and stationary fish monitoring equipment (fixed hydroacoustics) installed;
- T1 and T2 installed on Dec. 11 and 12, respectively (Fig. 5)
- T2 operated superlatively between Dec 12 - Jan 21, 2007, generating power continuously into the grid on both flood and ebb tides and proving the functionality of every system and subsystem, including:
    - Continuous operation with 100% availability over 155 tides;
    - Fully bidirectional operation;
    - Water-to-wire efficiencies reaching over 40%;
    - No observation of fish injury, allowing regulators to approve 6-turbine install
    - 10 MWH of energy delivered with power quality problems

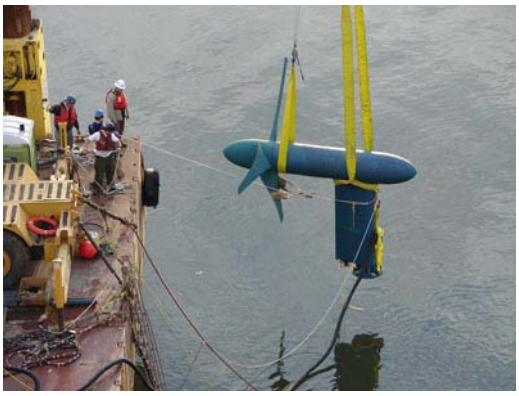

Fig. 5 – KHPS Turbine 1 (T1) Deployed December 11, 2006 (East River; New York, NY)

[2] A suite of eleven environmental studies and plans were executed during the RITE Demonstration, including both fixed and mobile hydroacoustics; bird observation for fish interaction; water quality; benthic habitat; hydrodynamics; underwater noise; recreation; cultural resources; navigation safety; and consultations on rare and endangered species.

B. RITE Demonstration Deployment #2 (Feb - July 2007)

During the course of Deployment #1, a failure of the rotor blades (Gen4a - Fiberglass Reinforced Plastic) required extraction of T1 and T2. The Gen4a rotor engineering design and manufacturing was assessed and updated rotors (Gen4b) were designed and fabricated of solid cast Aluminum alloy (AlMag 35). Deployment #2 proceeded with original turbine assemblies retrofitted with Gen4b blades. Results as follows:

- Six turbines installed to make up full grid-connected array, a world first (Figs. 6 & 7);
- Array successfully demonstrated every aspect of the KHPS design to be successful at the 5m rotor diameter level;
- Between April 18 and June 20, 2007 the array logged 7,128 turbine-hours of operation with 45 MWH+ of energy to commercial end users;
- Operational and environmental data was collected in accordance with monitoring plans, again with no observed fish injury or mortality;
- Analysis of longitudinal and horizontal wake interaction for energy production conducted, with original spacing (6 Diameters) proven, as expected, too close for optimal energetic production, leading to a revised spacing of 12D for Deployment #3.

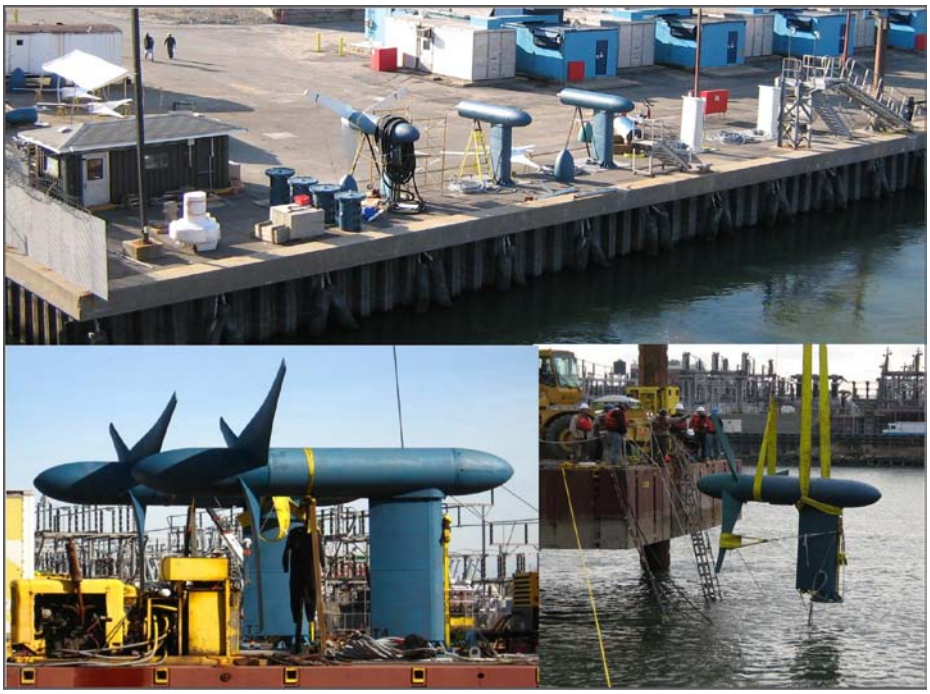

Fig. 6 – RITE Demonstration Deployment #2 - Turbine Assembly and Installation

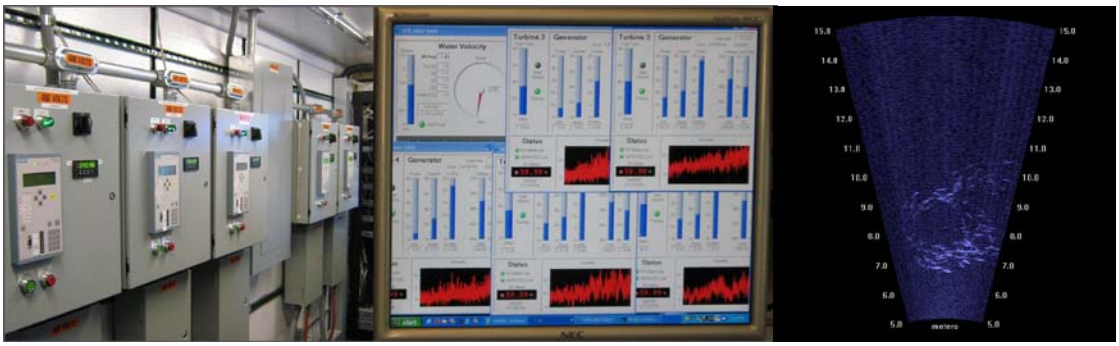

Fig. 7 – RITE Project Control Room equipped with Switchgear, Turbine Data Acquisition System and Environmental Monitoring Equipment

C. RITE Demonstration Deployment #3 (July 2007 – November 2008)

After sustained operation of the six-turbine array, a weakness in the rotor hub was detected and turbines were removed from service. Gen4b rotors were re-engineered to improve strength and hub connections. An updated rotor (Gen5a) and hub was developed improving the design with a test case manufactured and subjected to a comprehensive testing regimen at the US Dept of Energy's National Renewable Energy Laboratory (NREL) wind energy test facility (Fig. 8). The Gen5a rotor assembly passed NREL tests successfully without incident and were retrofitted onto two existing turbines and re-installed for demonstration. Results were as follows:

- Turbines equipped with Gen5a rotors delivered 12 MWH of energy and logged approximately 1,000 hours of grid-connected operation (Fig. 9).
- Gen5a rotors met or exceeded expectations in terms of reliability and efficiency.
- 'Retrieve and redeploy' operations were achieved during 2-slack period (a key milestone for commercial O&M).
- Environmental monitoring again confirmed no evidence of fish injury, during a period of increase seasonal fish presence and abundance. Environmental data collected supported the filing of a Draft License Application in November 2008.
- The RITE Demonstration was completed in October of 2008 and the KHPS turbines were removed and inspected in November 2008.

Fig. 8 – Gen 5a Rotor Assembly Testing Conducted at National Renewable Energy Laboratory

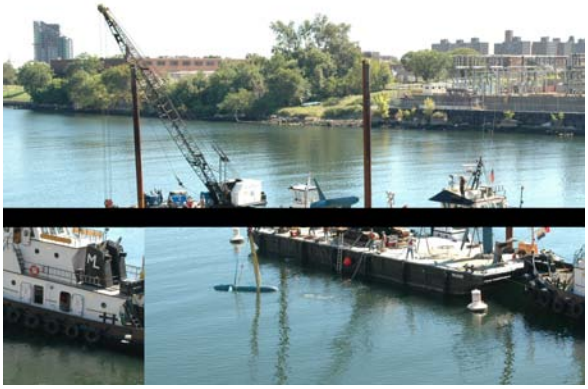

Fig. 9 - RITE Demonstration Deployment #3 - Two Turbines Retrofitted with Gen5a Rotors

III. Commercial Class KHPS (Generation 5)

Based on operating experience of the Gen4 units operated during the RITE Demonstration, Verdant Power developed a commercial class Gen5 KHPS turbine (Figs. 10 & 11). While the Gen4 units proved excellent performance in converting the energy in the tidal currents into grid-connected power, the Gen5 KHPS turbine is a design advancement aimed at high reliability, longevity, and cost-effective commercial manufacturing. Key design enhancements of the Gen5 turbine include the following, and are discussed briefly below:

i. Composite Fiber Reinforced Polymer (FRP) Blades and Ductile Iron Hub Casting
ii. Casting for Pylon/Nacelle Connection
iii. Integrated Gearbox and drivetrain
iv. Failsafe Brake

v. Redundant Dynamic and Static Sealing
vi. Non-toxic Fouling-Release Coating System

The end result is a Gen5 KHPS turbine and balance-of-system design that optimizes renewable energy generation, while dramatically improving commercial viability and enhancing environmental compatibility.

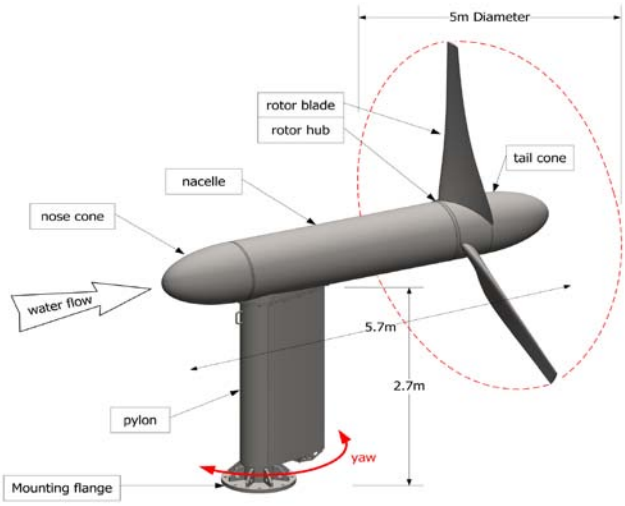

Fig. 10 - Gen4 KHPS Turbine

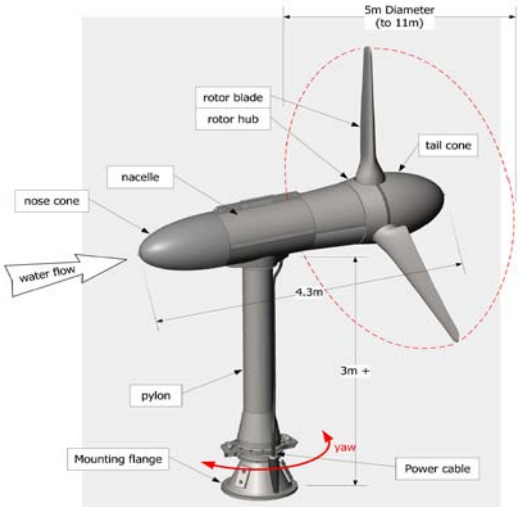

Fig. 11 - Gen 5 KHPS Turbine

i. Composite (FRP) Blades and Ductile Iron Hub Casting

Verdant Power conducted a full rotor design cycle to develop new blades fabricated from composite materials (FRP) with more strength, durability, ready scalability to larger sizes, particularly the 10m class turbine and better resistance to seawater corrosion than the previous generation (Fig. 12). The updated blades will also be capable of lower-cost production in volume. This design work included hydrodynamic and structural modeling and analysis and is followed by extensive strength and fatigue testing and full-scale in-water hydrodynamic dynamometry testing (at RITE 2011).

Fig. 12- KHPS Composite Turbine Rotor

This work has been supported in part by awards from the US Department of Energy (DOE) and in partnership with the DOE's National Renewable Energy Laboratory and Sandia National Labs, as well as the University of Minnesota's St. Anthony Falls Laboratory, and others.

ii. Casting for Pylon / Nacelle Connection

The pylon/nacelle connection for the Gen5 turbine has been redesigned as a casting for improved strength, along with cost-effectiveness in volume production. This casting eliminates the original steel tube and many fabrication and assembly steps. The overall nacelle shape has been reduced in length by approximately 25%.

iii. Integrated Gearbox/Shaft/Seals/Bearings

In place of the former off-the-shelf drivetrain components, the Gen5 turbine features a custom-designed unit that integrates the bearing housing with a special long-life planetary gearbox (Fig. 13). At the rotor end, this unit also incorporates high-performance mechanical shaft seals (now made redundant), and at the high-speed end, an adapter for direct mounting of the generator. The generator shaft further drives a direct-mounted failsafe brake (discussed below). The unit's cast iron housing mates directly to the pylon/nacelle casting and all o-ring seals are of redundant pressure-capable design.

This new design will provide necessary reliability and longevity for commercial operation. It will also simplify maintenance and speed near-site final assembly, deployment and on-site retrieval.

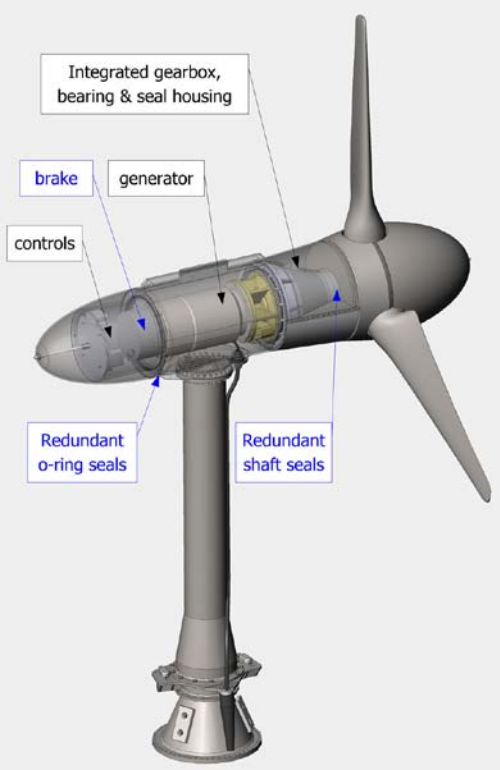

Fig. 13 – Gen5 KHPS Turbine (Internal)

iv. Failsafe Brake

Under normal power generation operation, KHPS turbine rotors (which have fixed blades) rotate at a nearly constant speed of approximately 40 RPM, with tip-speeds on the order of 10.5 m/s (34.5 fps) – a very slow rate, especially in comparison to vessel propellers. By design, the blades do not cavitate. The Gen5 turbine includes a brake, unlike the previous Gen4 turbine.

The Gen5 brake, limits the rotation rate (and the thrust loads on the rotor blades, turbine, mounting structure, and foundation). The brake is a "failsafe" type (spring-applied, electrically-released), so the default, unpowered position of the brake is "on" and the rotor is stopped. The brake is automatically controlled so that the rotors are only released to rotate when they are ready to generate, both in terms of adequate water speed (as indicated by a pair of array ADCPs), and all electrical parameters of the KHPS and the grid. This eliminates all pre- and post-generation rotation, avoiding rotation at speeds higher than normal generation speed, and reducing the total time the rotors actually rotate.

The Gen5 turbine brake is electrically released automatically during normal generation, and is automatically spring-applied on any failure of the generator, cable, control system, interconnection or the electrical grid itself. Under a condition of any malfunction of the generator or electrical system, the brake power is removed, returning it to the "on" position and stopping the rotor within a few seconds. Additionally, the turbine specification requires that even on loss of load at full power generation, the brake application will limit the transient (a few seconds) rotor speed to a maximum of 20% above normal speed prior to rotor stoppage. The brake can also be manually applied via a remote signal from shore that cuts power to any generator. This mode is useful during commissioning testing and for maintenance operations.

During normal operation, the Gen5 turbines begin rotating at approximately 1 m/s and automatically connect to the grid line to generate electricity through the range of water speeds.

At the end of the tide, as the water velocity slows and power output drops, the turbines are automatically disconnected from the grid.

It should be noted that operation of the brake beyond the basic control functions described above (i.e. electrical system faults or testing) can shorten the life of both the brake and the turbine. Accordingly, there is no provision for integrating the brake operation with a signal from another type of instrumentation. This operation is not advisable due to the limitations of the sensing devices and sensing strategy, and the effect on the life of the turbines.

v. Redundant Dynamic and Static Sealing

The KHPS turbine uses a single common circulating lubricant for its gearbox and main bearings. The gearbox and bearing oil chamber are designed to operate at 50% fill and contain approximately 34-38 liters (9-10 gal) of lubricant. The lubricant is a Mobil SHC 100% synthetic (PAO-type), ISO grade 220 gear oil. This is suited to the severe conditions with potential moisture, and has good seal compatibility, corrosion and oxidation resistance, and thermal stability for long life between changes.

For containment of this oil, and exclusion of seawater, the main shaft has dual high-performance mechanical face seals – one to contain the oil in the oil chamber and one to exclude the external water. Between the two face seals is a chamber that would allow any leakage of either to accumulate in a closed container within the nacelle, which itself is sealed with redundant o-ring seals. Upon initial deployment, the nacelle will contain a dry gas charge that will partially balance the water pressure at the deployment centerline depth. During operation, the net pressure under water will tend to force water into the nacelle. Sensors will detect any leakage as well as water ingress into the oil, at which point the turbine can be shut down and ultimately retrieved and maintained.

vi. Non-toxic Fouling-Release Coating System

Most of the KHPS turbine and mounting structure must be coated to prevent corrosion and biofouling. For the Gen4 system, this generally involved using an epoxy coating for corrosion protection, and outer copper-based coating for anti-fouling. For the Gen5 system, a new coating system will be used that is non-toxic, with Verdant Power proposing to use one of the following coating systems at the time of writing:

1. Silicone (E.g. Hempel Hempisil X3) - This system involves relatively standard epoxy coating for corrosion and mechanical protection followed by the application of a “tie” coat and then a coating of silicone. The silicone surface mechanically resists biofouling.
2. Ecospeed (Subsea Industries, Hydrex) - This is a unique system that uses a single coating material for both corrosion protection and to provide a mechanically non-fouling surface. The material incorporates glass platelets in a vinylester resin matrix. This material would likely require more frequent cleaning.

Both systems are applied with standard painting equipment, and provide for an entirely non-leaching, non-toxic coating.

IV. RITE 'Install A' – Gen5 KHPS Demonstration

In 2011, Verdant Power will install two Gen5 KHPS turbines for grid-connected demonstration at the RITE Project site prior to planned Pilot commercial development. The Gen5 turbines will be installed on two existing monopiles used in the RITE Demonstration and will be operated and monitored for a minimum of 180 days. As with the RITE Demonstration, the effort will be conducted under the FERC 'Verdant Order' and a modified and extended joint NYSDEC/USACE permit, with energy generated from the turbines delivered to the same commercial end users that participated in the Gen4 Demonstration (Gristedes and Motorgate).

Based upon this demonstration, and the receipt of a FERC Hydrokinetic Commercial Pilot License, this RITE 'Install A' will be followed by successive installations of additional turbines[3] to comprise the proposed 30-turbine, 1 MW commercial RITE Project (See Fig. 14, Table 1).

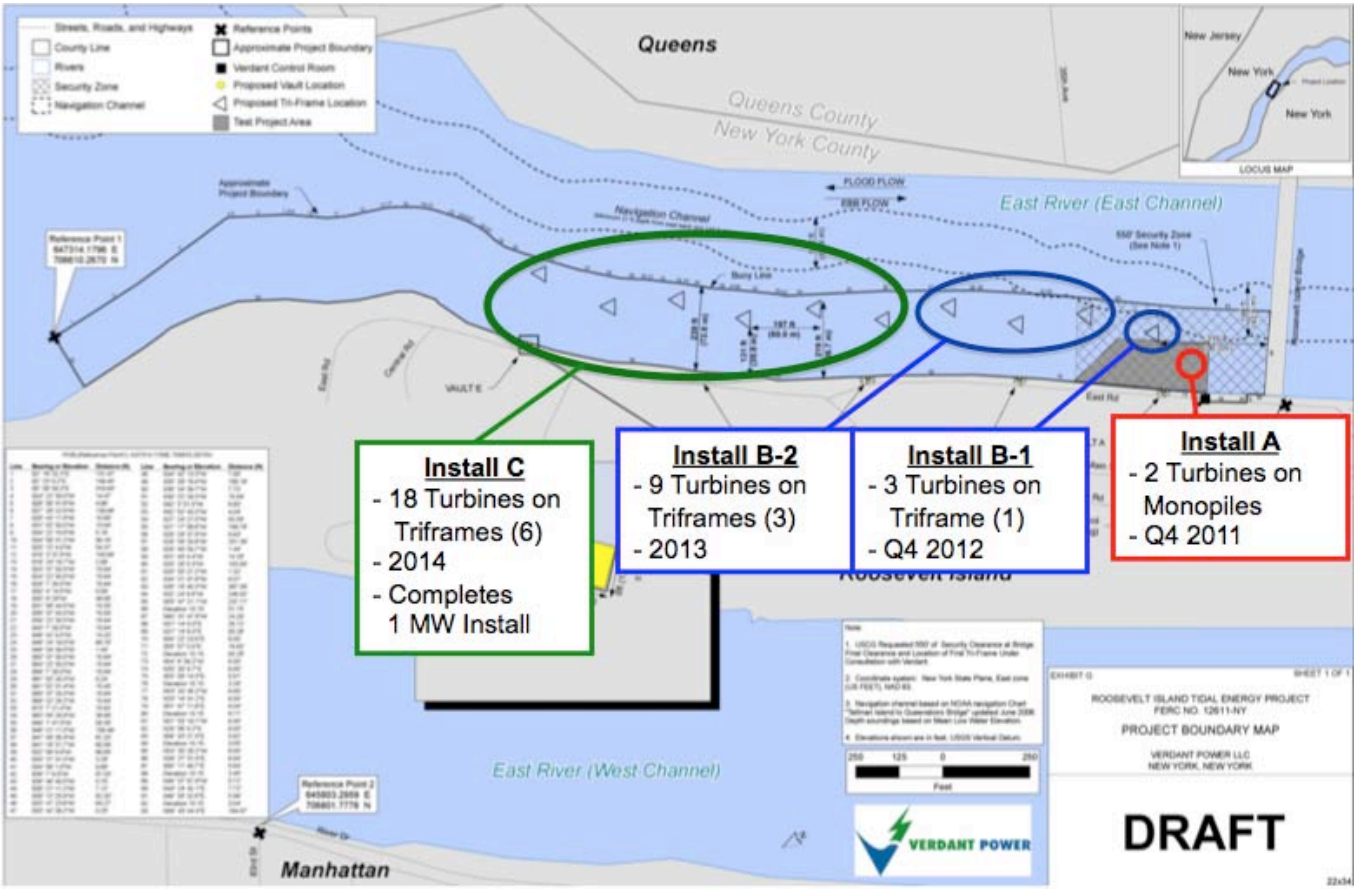

Fig. 14 – RITE Project Commercial Installation Plan - DRAFT

[3] Verdant Power expects to utilize a triangular 'triframe' anchoring device capable of supporting three turbines each for Installs B & C at RITE.

Table 1. RITE Installation Plan

Element/Features	RITE Demonstration	Install A	Install B-1	Install B-2	Install C
Installed Capacity	175 kW	70 kW	105 kW	420 kW	1,050 kW
Installation Dates	2006 - 08	4Q 2011	4Q 2012	2013	2014
# of KHPS Turbines/Mounting	6 (Gen4) on monopiles	2 (Gen5) on monopiles	3 (Gen5) on 1 triframe	9 (Gen5) on 3 triframes	18 (Gen5) on 6 triframes
Regulatory Authority	NYSDEC/USACE joint permit	NYSDEC/USACE joint permit	FERC Pilot License; and other permits	FERC Pilot License; and other permits	FERC Pilot License, and other permits
Navigation Security	3 lighted buoys[4]	3 lighted buoys	3 lighted buoys	4 lighted buoys	6 lighted buoys
Cabling	6 direct to Onshore Control Room	2 direct to Onshore Control Room	3 bundled to Onshore Control Room	4 bundled to 2 Shoreline Vaults, to Control Room	10 bundled to 5 Shoreline Vaults, to Control Room
Interconnection	Direct to load	Direct to load	Metered interconnection	Metered interconnection at Vault B	Metered interconnection at Vault B
Water Resource Instrumentation	Stationary ADCP	2 stationary ADCPs	2 stationary ADCPs	3 stationary ADCPs	3 Stationary ADCPs
Environmental Effects Monitoring	Multiple studies and monitoring under FMPP[5]	Proposed RMEE[6] Plans (Install A)	Proposed RMEE Plans (Install B-I)	Proposed RMEE plans (Install B-2)	Proposed RMEE Plans (Install C)

[4] Private Aids to Navigation (PATON)
[5] Negotiated term of permit embodied in RITE Fish Monitoring and Protection Plan (FMPP) Versions 6.0 and 7.5
[6] Proposed RITE Monitoring of Environmental Effects (RMEE) plans - 6 progressive study plans to analyze fish interaction and effects. See Volume 4 of the RITE Final License Application.