

APPENDIX G
AGENCY COORDINATION SUMMARY

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APPENDIX G – AGENCY COORDINATION

Formal agency comments have been requested during the EIS process. All Lead Agency coordination and formal (letters) and informal (email) agency comments that have been received are documented in table H-1 and are included in this Appendix following the table.

Table G-1. Agency Coordination and Responses Included in Appendix H

Type of Coordination	Purpose of Correspondence	Agency Contacted or Responding Agency Contact Person	Date of Correspondence
Coordination email	Genetic viability of oyster stock	STAC - CBP - Denise Breitburg	01/22/04
Coordination	Coastal State scoping comments	RI CMRC - David Alves	02/11/04
Agency response email	Scoping comments	Baltimore District Corps - Claire O'Neil	02/20/04
Agency response email	Scoping comments	ASMFC - Lisa L. Kline, PhD	02/23/04
Agency response	Scoping comments	NOAA - Lowell Bahner	02/24/04
Agency response	Coastal State scoping comments	NJ Department of Environmental Protection - James W. Joseph	02/26/04
Agency response	Scoping comments	EPA, Region 3 - William J. Hoffman	02/27/04
Agency response	Ecological Risk Assessment (ERA) concept development	FWS- John P. Woflin	02/27/04
Agency response email	Scoping comments	EPA, Region 3 - William Arguto	03/04/04
Agency response	ERA concept development	EPA, Region 3 - William J. Hoffman	03/05/04
Response email	ICES protocol (2003 Code of Practice)	ICES - Dr. Stephan Gollasch	05/04/04
Coordination email	Peer review of research proposals	EPA CBP - Mike Fritz	06/03/04
Agency response memo	Human health issue coordination	MDE -- Kathy Brohawn (with copy to VA Department of Health)	07/02/04
Agency response	Scoping comments	EPA, Region 3 - John R. Pomponio	07/13/04
Project coordination letter	Study process, coordination letter	EPA, Region 3 - William Arguto	08/20/04
Project coordination letter	ESA, Section 7 coordination letter	FWS - Tom McCabe	08/20/04
Project coordination letter	State Rare, Threatened and Endangered (RTE) species coordination letter	MD DNR - Paul Peditto	08/20/04

Type of Coordination	Purpose of Correspondence	Agency Contacted or Responding Agency Contact Person	Date of Correspondence
Project coordination letter	Cultural resources coordination letter	MD Historic Trust (MHT) - Elizabeth Cole	08/20/04
Project coordination letter	EFH & ESA, Section 7 coordination letter	NOAA, NMFS - John Nichols	08/20/04
Project coordination letter	ESA, Section 7 coordination letter	NOAA, NMFS - Julie Crocker	08/20/04
Project coordination letter	Study process, coordination letter	NPS - Jonathan Doherty	08/20/04
Project coordination letter	State RTE species coordination letter	VA DCR - Project Review Coordinator	08/20/04
Project coordination letter	Cultural resources coordination letter	VA DHR	08/20/04
Coordination response email	ICES protocol (2003 Code of Practice), information response	VIMS ICES - Eugene Burreson	08/31/04
Project coordination email	ICES protocol (2003 Code of Practice), information request	ICES - Dr. Stephan Gollasch	09/14/04
Agency response letter	Cultural resources coordination	VA DHR - Joanna Wilson	09/17/04
Agency response letter	Cultural resources coordination	MHT - Stephen R. Bilicki	09/20/04
Agency Response	EIS research	EPA, CBP- Rebecca W. Hanmer	09/21/04
Agency response letter	ESA, Section 7 coordination letter	NOAA, NMFS - Mary A. Colligan	09/21/04
Agency response letter	ESA, Section 7 coordination letter	FWS - G. Andrew Moser	10/13/04
Agency response letter	EFH & ESA, Section 7 coordination letter	NOAA - Timothy E. Goodger	10/13/04
Coordination	EIS research	NOAA - Jamie King	10/18/04
Coordination	Development of Demographic Model	EPA - Dr. Steve Jordan	11/01/04
Agency response letter	State RTE species coordination letter	VA DCR – S. René Hypes	11/02/04
Coordination email	Oyster Advisory Panel (OAP) nominations	EPA CBP - Mike Fritz	11/04/04
Project coordination email	ICES protocol (2003 Code of Practice), information request	ICES - Dr. Stephan Gollasch	11/08/04
Coordination response email	ICES protocol (2003 Code of Practice), information response	ICES, Dr. Stephan Gollasch	11/09/04

Type of Coordination	Purpose of Correspondence	Agency Contacted or Responding Agency Contact Person	Date of Correspondence
Coordination letter	Oyster Advisory Panel (OAP) nominations	FWS - Dr. James G. Geiger	11/12/04
Coordination memo/letters	Coastal State scoping comments (DE and NJ joint position on <i>C. ariakensis</i>)	Memo: ISTC ISFMP Policy Board, Robert Beal Letters: DE Division of Fish & Wildlife, Patricia J. Emory NJ Fish & Wildlife, Martin McHugh	11/19/04
Agency response letter	Human health issues	MD House of Delegates - Del. Dan Morheim	12/02/04
Agency response	Human health issues	MD House of Delegates - Del. Dan Morheim	12/07/04
Agency response letter	Human health issues	MDE -- Kathy Brohawn	01/03/05
Agency response letter	Human health issues	MD DNR - Paula Hollinger	02/17/05
Coordination email	Oyster Advisory Panel (OAP) risk assessment expert	EPA CBP - Mike Fritz	03/24/05
Coordination email	Oyster Advisory Panel (OAP) integrity	EPA CBP - Mike Fritz	03/24/05
Coordination email	Peer review of Demographic Model	EPA CBP - Mike Fritz	03/28/05
Coordination email	EIS decision process	EPA CBP - Mike Fritz	03/29/05
Agency response letter	State RTE species coordination letter	MD DNR - Lori A. Byme	05/19/05
Coordination email	EIS schedule	EPA CBP - Mike Fritz	11/01/05
Coordination email	Peer review plan	FWS - Julie Thompson (Slacum)	12/14/05
Coordination	Cultural Assessment	EPA, Region 3 - William Arguto	12/16/05
Agency Coordination	E-mail regarding a European proposal to regulate nonnative species	NOAA - Jamie King	04/07/06
Coordination letter	EIS timeline	EPA, Region 3 - Rebecca W. Hanmer	06/12/06
Agency response letter	EIS timeline	EPA, Region 3 - Rebecca W. Hanmer (response from Norfolk District Corps)	06/29/06
Agency response letter	EIS timeline	EPA, Region 3 - Rebecca W. Hanmer (response from MD DNR)	07/07/06
Coordination email	<i>C. gigas</i> in Argentina	EPA CBP - Mike Fritz	07/13/06
Coordination email	Aquaculture	EPA CBP - Mike Fritz	07/31/06
Coordination email	Court decision	EPA CBP - Mike Fritz	09/19/06
Coordination email	EIS decision process	EPA CBP - Mike Fritz	09/22/06
Coordination email	Alternatives analysis	EPA CBP - Mike Fritz	10/23/06
Coordination email	Alternatives analysis	EPA CBP - Mike Fritz	11/15/06

Type of Coordination	Purpose of Correspondence	Agency Contacted or Responding Agency Contact Person	Date of Correspondence
Coordination email	Demographic Model	EPA CBP - Mike Fritz	07/16/07
Project coordination memo	Coastal State scoping comments	Delaware River Basin Commission - Carol R. Collier	08/02/07
Coordination email	Oyster escapement	EPA CBP - Mike Fritz	08/30/07
Coordination	Coastal State scoping comments	CT Department of Agriculture - Tessa Getchis	10/15/07
Coordination	Coastal State scoping comments	ME Department of Marine Resources - George D. Lapointe	10/24/07
Project coordination email	ICES protocol (2003 Code of Practice), information request	ICES - Dr. Stephan Gollasch	02/26/08
Project Coordination letter	CZMA coordination letter	MD DNR – R. Kerry Kehoe	02/29/08
Project Coordination letter	CZMA coordination letter	MDE - Elder Ghigiarelli	02/29/08
Project Coordination letter	CZMA coordination letter	VA DEQ - Laura McKay	02/29/08
Agency response letter Coordination	CZMA coordination letter	VA DEQ - Ellie L. Irons	03/14/08

-----Original Message-----

From: Breitburg, Denise [mailto:breitburgd@serc.si.edu]

Sent: Thursday, January 22, 2004 1:20 PM

To: O'Connell, Thomas

Subject: RE: ariakensis - important

Tom-

Here's the section I was talking about.

Denise

Clarification regarding the "Oregon strain" of *C. ariakensis*

The MD-DNR draft EIS that was available at the time of the workshop and the subsequent USACOE Notice of Intent specifically identify the "Oregon strain" of *C. ariakensis* as the proposed source for a diploid introduction. The workshop participants were nearly unanimous in their belief that it was important to consider a range of both phenotypic and genotypic variation within this species in assessing the risks and benefits of an introduction. We were nevertheless conscious that diluting the research effort and limited resources across a wide variety of stocks or strains of *C. ariakensis* could delay acquiring the information needed to inform the management decision. Thus, it would seem to be necessary to apply some limits to the call for investing an extremely wide range of *C. ariakensis* stocks.

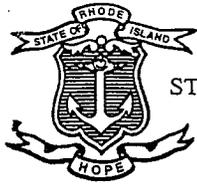
The term "Oregon strain" has been used to refer to descendents of a small number of *C. ariakensis* that were originally introduced by accident in shipments of *C. sikamea* from Japan to Oregon during the 1970's. A small number of these animals were spawned in a hatchery and attempts were made to establish populations from northern California to Washington, yet there are no reports of any of these populations becoming established (NAS report and references therein). At the present time there are no confirmed *C. ariakensis* in Oregon, either in the wild or in hatcheries (*C. Langdon*, pers. comm.) One commercial aquaculture company in Washington has a limited supply of *C. ariakensis* in their hatchery (85 diploid animals), but no field populations are established in Washington State (*Bill Dewey*, Taylor United Shellfish, pers. comm.). The initial importation of this stock of oysters to the east coast was to Rutgers University in the early 1990's, where they were kept in quarantine systems and further inbred to keep the lines going. Over the past few years those stocks were not bred and there are currently no significant *C. ariakensis* from this strain at Rutgers. The only remaining diploid individuals from this line are being held in the VIMS hatcheries at Gloucester Point and Wachapreague. The total numbers of the animals currently available totals just over a thousand animals. This is almost certainly too few animals to initiate an aggressive introduction effort. Moreover, given the very restricted nature of the original gene pool these stocks have very reduced genetic diversity relative to wild stocks. Because of successive inbreeding in the hatchery, these stocks are in great danger of suffering from inbreeding depression, which can severely limit their fitness. It would seem inevitable that an introduction would require that more brood stock be obtained.

The current state of our knowledge suggests that there are genetically distinct Northern (from north China, southern Japan, and probably Korea) and Southern (from south China and perhaps Vietnam) stocks. The "Oregon strain" oysters represent a very restricted subset of the Northern stock. Thus, the proposed action of introducing the "Oregon strain" will seemingly require

obtaining additional Northern stocks of *C. ariakensis* from Asia, which themselves exhibit phenotypic and genotypic variations. The minimal approach, therefore, to clarifying risks and benefits associated with an introduction will require that the diversity associated with the Northern stocks be incorporated into research efforts.

Recommendations below that specifically target the 'Oregon strain' should be considered to be more generally applicable to whichever stock of *C. ariakensis* is considered for introduction.

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fax - 443-482-2380



STATE OF RHODE ISLAND AND PROVIDENCE PLANTATIONS

COASTAL RESOURCES MANAGEMENT COUNCIL

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4808 Tower Hill Road, Suite 3
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(401) 783-3370
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February 11, 2004

Mr. Peter Kube
U.S. Army Corps of Engineers
Regulatory Branch
803 Front Street
Norfolk, VA 23510

Re: Comment on proposed *Crassostrea ariakensis* introduction.

Dear Mr. Kube,

As marine resource managers for the State of Rhode Island we strongly recommend that the introduction of any non-native species proceed with extreme caution. While we have great sympathy for the people who attempt to make their living from the water in the Chesapeake area, we have many people in the New England area who also make their living from the water. Many of those people make their living from the American oyster, *Crassostrea virginica*.

We believe that the largest barrier to this proposed introduction is the uncertainty of what the result will be. Will this introduced species spread up the east coast and affect our wild fishery and aquaculture farms? Where is the baseline research? Under what conditions does the proposed introduced species thrive? What ecological niches will this introduced species occupy? What unintended consequences will there be? We have seen no research on these very basic questions. We would want to see these questions addressed before an introduction was proposed. The situation that has arisen in North Carolina with the outbreak of a never before seen pathogen affecting the trial introduction of *C. ariakensis* is a result of this lack of a basic understanding of the animal in question. We do not want a similar experience to effect our industry.

Many in the scientific community are leery of any introduction without the proper research on the issue and having the proper safeguards in place. The Virginia Institute of Marine Science, in a position paper dated November 2001 stated:

"It is the general position of VIMS at this time that the intentional introduction of reproductively capable (diploid) *C. ariakensis* into the waters of the Commonwealth would be imprudent. The ecological consequences of introducing this oyster to the Chesapeake Bay are too uncertain to support such an introduction. From discussions to

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date, it is clear that the broader marine science community shares this view. *Further, we believe that the introduction of diploid C. ariakensis into the Atlantic coastal waters of the U.S. is a resource management decision of far reaching consequence. Such a decision should involve stakeholders beyond Virginia for the obvious reasons that colonization is enabled by larval transport and that the risks and merits of this species may vary spatially.*" (Italics added)

In 2002 the University of Maryland Center for Environmental Science issued a position paper entitled "Resolving the Benefits and Risks of *Crassostrea ariakensis* in Chesapeake Bay and Atlantic Coast Estuaries". In this paper they stated that:

As a contribution to this discourse, scientific experts within the University of Maryland Center for Environmental Science have collectively developed the following perspectives:

1. Efforts should continue to evaluate the feasibility of aquaculture of sterile, triploid *C. ariakensis*, but only with strict biosecurity and vigilant monitoring in place to minimize the risks of introduction.
2. Risks of the establishment of reproducing populations from triploid aquaculture should be carefully determined. While these risks probably cannot be totally eliminated, they potentially can be reduced to a very low level. Key objectives of this assessment should include quantifying risks in a manner so that decisionmakers can determine whether they are acceptable and evaluating the technical, economic and regulatory practicality of appropriate biosecurity.
3. Seed stock can be propagated in hatcheries in ways that eliminate the risk of infection by protist pathogens such as Dermo and MSX. This should be done in compliance with the internationally accepted code of practice. At present, similar controls on the transmission of viral diseases are not possible. Although there are no indications that such viral diseases pose a threat to the Eastern Oyster or other organisms, the potential for such cross-infection should be rigorously investigated.
4. Both the intentional introduction of reproductively capable *C. ariakensis* into Atlantic coast estuaries and experimental aquaculture trials that pose significant risks of this are irresponsible and should be guarded against until the potential impacts of such introductions on these ecosystems are thoroughly analyzed.
5. More concerted efforts are required to improve the level of confidence of predictions of the impacts (both beneficial and detrimental) of reproducing populations of *C. ariakensis*, not only in Virginia or the Chesapeake Bay as a

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whole, but in coastal environments along a likely range of habitation on the Atlantic coast. Developing such predictions must involve investigations of C. ariakensis in its native habitats and in areas where it may have been introduced, such as Oregon and northern California, as well as carefully managed experiments in the laboratory and in Atlantic coast field settings. (Italics added)

We would especially direct your attention to the last points raised in these papers on the need for further research involving all of the areas along the east coast that might be affected before the proposed introduction is conducted.

Until such peer reviewed information is available and widely distributed we must strenuously object to the continued introduction of *Crassostrea ariakensis*, in any form including triploid. We believe that the U.S. Army Corps of Engineers is not contemplating trading one regions oyster industry for another. But, in fact, without the knowledge gained through rigorous peer reviewed scientific research, this is what might happen.

We are not alone in questioning this proposed introduction. The National Research Council was asked to study the question. On October 14, 2003 **James L. Anderson, Ph.D** Co-chair of the Committee on Nonnative Oysters in the Chesapeake Bay Ocean Studies Board/National Research Council/The National Academies and Professor, Department of Environmental and Natural Resource Economics University of Rhode Island, Kingston and **Robert Whitlatch, Ph.D.** Member of the Committee on Nonnative Oysters in the Chesapeake Bay Ocean Studies Board/National Research Council/The National Academies and Professor, Department of Marine Science University of Connecticut, Groton, in testimony before the **Subcommittee on Fisheries, Conservation, Wildlife and Oceans Committee on Resources U.S. House of Representatives** had the following to report:

“Our committee was asked to assess the existing research on oysters and other introduced species to determine if there is sufficient information to analyze ecological and socio-economic risks associated with the following three management options: one, not introducing non-native *C. ariakensis* oysters at all; two, open-water aquaculture of non-native, infertile oysters; or three, the introduction of non-native reproductive, oysters.

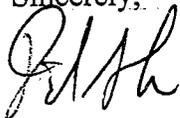
Our study revealed that despite the positive results of some oyster introductions, some extremely negative consequences have been observed as well. A major risk of introducing a non-native oyster comes from pathogens, such as MSX, or the introduction of other animals or plants that may be attached to oysters. And in Australia and New Zealand, introduced non-native oysters displaced native oysters.

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We concluded that there are shortcomings and gaps in the basic research on the biology of *C. ariakensis* and in the scientific community's understanding of the ecological consequences of introducing *C. ariakensis* into the Chesapeake Bay. Economic and cultural research is also lacking with relation to introduction of *C. ariakensis*, including evaluation of production and management systems. In addition, the institutional and regulatory framework is currently inadequate to monitor and oversee non-native oyster introductions. Given these limitations, a formal risk assessment is not possible.”

Of the choices you offer in your announcement we would choose alternative 3. We remind you of the success this type of management regime had in the Chesapeake stripped bass fishery in the mid 1980's. We now have a healthy fishery because of the management regime that was instituted. Nature is very resilient and if given the chance will come back. Thank you for the opportunity to comment on this proposal.

Sincerely,



David Alves, Fisheries and Aquaculture Coordinator
Coastal Resources Management Council

DA/pjc

Cc:

Senator Jack Reed
Senator Lincoln Chaffee
Representative Patrick Kennedy
Representative James Langevin

February 20, 2004

**Baltimore District US Army Corps of Engineers (CENAB)
Comments on the Outline for the EIS (MES e-mail to PDT on 2-11-04)**

From: Claire O'Neil
To: Peter Kube/ MES
cc: Abadie, William D NAB02; Martin, Doug NAO02; Washington, Walt NAB02;
Lorenz, Carl J NAB02
Subject: EIS Outline
Date: 2/20/04

Peter/Kate,

Here are comments from our NEPA team leader in Baltimore on the *C. ariakensis* EIS outline:

- This thing is pretty generic and not that specific of an outline. A good starting point.
- Realize the no action alternative would be to continue with the current native oyster restoration plan(s).
- Would also need some sort of mitigation plan to address unavoidable adverse impacts.
- Appendixes would need to include agency coordination letters (T&E, EFH, SHPO, etc.)
- Is USFWS preparing a Fish and Wildlife Coordination Act report?
- Need to perform calculations to determine if a Clean Air Act general conformity determination is necessary (includes both direct and indirect emissions).
- Need to include discussion of permit needs/requirements (eg, 404, 10, 401. . . .).
- I assume they are intending on constructing reefs? If so, how are they going to handle specific actions and where reefs would be constructed? Since this is a programmatic EIS, would they do an EA or supplemental EIS for specific actions (specific sites)? Set up certain criteria for approval of specific actions/sites (similar to a general permit)?
- If the construction of reefs is included in the proposed action, then most likely a Clean Water Act 404(b)(1) evaluation will be necessary.
- Scope of EIS should also include the acquisition of shell/reef material unless coming from an existing commercial source (but/for test).

Thanks for the opportunity to review,
claire

-----Original Message-----

From: Kate Meade [<mailto:KMEAD@menv.com>]

Sent: Wednesday, February 11, 2004 03:07

To: pjensen@dnr.state.md.us; lowell.bahner@noaa.gov;
prfc@crosslink.net; fritz.mike@epa.gov; greiner.jennifer@epa.gov;
jamie.king@noaa.gov; lkline@asmfc.org; Kube, Peter R; Martin, Doug;
O'Neill, Claire D; julie_thompson@fws.gov; jtravelste@mrc.state.va.us;
Wayne Young; JGill@dnr.state.md.us
Cc: Thomas O'Connell (E-mail); kkeen@dnr.state.md.us;
pjones@dnr.state.md.us; hking@dnr.state.md.us,;
preston.pate@ncmail.net; Abadie, William D

Subject: Working Outline for non-native Oyster EIS - 2-12-04 PDT
meeting at Colonial Beach, VA

<< File: working outline for oyster EIS.doc >> Please find attached a
Draft working outline for the Non-native Oyster EIS. This is being
distributed to the Project Delivery Team (PDT) for discussion and
recommendations.

<<working outline for oyster EIS.doc>>

Thank you,

-k

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February 23, 2004

Atlantic States Marine Fisheries Commission (ASMFC)
Public Scoping Comments

-----Original Message-----

From: lkline@asmfc.org [mailto:lkline@asmfc.org]

Sent: Monday, February 23, 2004 2:49 PM

To: O'Connell, Thomas

Subject: ASMFC comments

Tom --

The Commission is pleased with the amount of work being focused on the EIS for potential introduction of the Asian oyster in Maryland and Virginia tidal waters and our involvement in this process. At this time we have no major comments on the Notice of Intent and only one comment in regards to the EIS and risk assessment. In the risk assessment there are several comments regarding evaluation of the probability of colonization of coastal waters outside the Bay. We take this to mean that the EIS and risk assessment will evaluate the potential for movement/colonization of *C. ariakensis* in waters of adjoining state jurisdictions. We encourage the Corps to make sure that this is included in the EIS.

Again, we are very pleased with the overall risk assessment, EIS outline, and research being conducted on this issue. The proposal for ASMFC involvement in this process has been approved and we are currently asking for appointments to the Interstate Shellfish Transport Committee. Our ISFMP Policy Board will be meeting on March 11 and may have additional comments at that time. I will forward these comments to you following the meeting.

Thanks -- Lisa

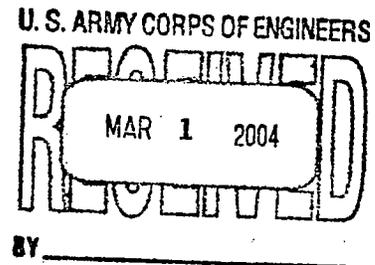
Lisa L. Kline, Ph.D.
Director of Research and Statistics
Atlantic States Marine Fisheries Commission
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lkline@asmfc.org



U.S. DEPARTMENT OF COMMERCE
National Oceanic and Atmospheric Administration
NOAA Chesapeake Bay Office
410 Severn Avenue, Suite 107A
Annapolis, MD 21403-2524
Tel: (410) 267-5660 Fax: (410) 267-5666 <http://noaa.chesapeakebay.net>

February 24, 2004

Mr. Peter Kube
U.S. Army Corps of Engineers
Regulatory Branch
803 Front Street
Norfolk, VA 23510



Re: Federal Register Notice of Intent (Fed. Reg. 69(2):330-332)

Dear Mr. Kube,

The National Oceanic and Atmospheric Administration (NOAA) is pleased to serve as a Cooperating Agency on the programmatic Environmental Impact Statement (EIS), which will evaluate the proposed introduction of non-native oysters in Chesapeake Bay and alternative actions. As the federal science agency for fisheries, oceans, and coasts, NOAA's mission and primary interest in this project is to ensure that the EIS is based upon sound science.

Two documents set the standard for scientific information needed to produce a credible EIS.

1) The National Research Council's 2004 publication, entitled *Non-native Oysters in the Chesapeake Bay*, provides a comprehensive synthesis of the issues related to non-native oyster introduction, as well as general research recommendations. 2) A research plan recently produced with NOAA support by the Scientific and Technical Advisory Committee (STAC) of the Chesapeake Bay Program identifies and prioritizes specific ecological research needs of the EIS study (some alternatives and issues, such as aquaculture and socio-economics, are not covered by the STAC research plan). NOAA endorses both of these documents, and views the guidance they provide as central to a successful EIS project.

The topic of this study is of national importance, and the EIS can be expected to receive intense scrutiny in the future. Therefore, we encourage the Army Corps of Engineers, as the lead federal agency, to exert strong leadership throughout the course of the EIS. We support your role to keep the project on track and make certain the process satisfies all procedural and substantive requirements of the National Environmental Policy Act (NEPA) and the Council on Environmental Quality (CEQ). It is imperative for the integrity of the EIS study and subsequent management decisions that the process we follow is beyond reproach and the scientific assessments are rigorous and thorough.

NOAA remains committed to working with you and the other partner agencies on the EIS Project Delivery Team to accomplish a high quality, science-based EIS.

Sincerely,

Lowell Bahner
Director





State of New Jersey

James E. McGreevey
Governor

Department of Environmental Protection

Bradley M. Campbell
Commissioner

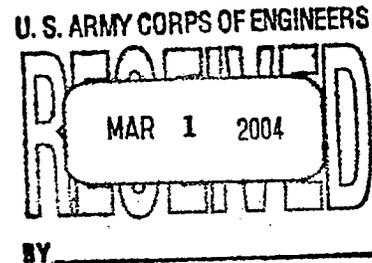
Division of Fish and Wildlife
P.O. Box 400

Trenton, NJ 08625-0400

Martin J. McHugh, Director

Visit our Division Website: www.njfishandwildlife.com

February 26, 2004



Mr. Peter Kube
U.S. Army Corps of Engineers
Regulatory Branch
803 Front Street
Norfolk, VA 23510

Re: Comments on Programmatic EIS for the Proposed Introduction of *Crassostrea ariakensis* into the Waters of Maryland and Virginia.

Dear Mr. Kube:

The New Jersey Division of Fish and Wildlife's Bureau of Shellfisheries has reviewed the U.S. Army Corps of Engineers' (USACE) "*Intent to Prepare a Programmatic Environmental Impact Statement for a Proposed Introduction of the Oyster Species, Crassostrea ariakensis, into the Tidal Waters of Maryland and Virginia to Establish a Naturalized, Reproducing and Self-sustaining Population of this Oyster Species*" and offer the following comments on the scope of the Environmental Impact Statement (EIS), specific issues for analysis and some of the alternatives to the proposed action.

Many of the issues and concerns regarding the current proposal were addressed in the National Academy of Sciences (NAS) report "*Non-Native Oysters in the Chesapeake Bay (December 2003)*". In assessing the potential consequences of a diploid introduction, the NAS report identified the following risks: introduction of disease (even if ICES protocols are followed); disease reservoir; susceptibility to endemic diseases and/or parasites; ecosystem impacts such as interspecific competition with native oyster for space, food, habitat, etc.; dispersal beyond the bay (and potential coastwide impacts); genetic interactions; reef building capacity and ecological function.

The introduction of diploid *C. ariakensis* presents a number of concerns due to the unknown risks associated with placing into U.S. coastal waters a non-native species for which many uncertainties exist. In an attempt to address some of these uncertainties, the EIS should examine a number of additional issues. In addition to those items already identified for analysis within the programmatic EIS, the following issues should be addressed:

- Assess the probability of dispersal to waters outside those of Maryland and Virginia, and the likely rate of dispersal. An attempt should be made to develop a hydrodynamic model to assess potential dispersal outside of the Chesapeake Bay.
- Susceptibility to natural diseases and predation compared to native oysters (*C. virginica*), and if more susceptible, the potential for such infections within *C. ariakensis* to impact native oysters or result in a "reservoir" for other types of infection. The recent discovery of *Bonamia sp.* in triploid *C. ariakensis* field trials demonstrates this potential and susceptibility.

- Competitive interaction with *C. virginica* and other estuarine organisms.
- Reproductive capabilities of *C. ariakensis* and the potential to impact *C. virginica* reproduction (e.g., potential to act as a "gamete sink").

The USACE document listed six specific alternatives to the proposed introduction of diploid *C. ariakensis*. Given the uncertainties associated with the use of either sterile triploid or diploid *C. ariakensis*, of the six alternatives specified in the current proposal, a combination of alternatives two and four would appear to present the best options to safely increase oyster production within Maryland and Virginia waters. By re-evaluating and expanding current restoration efforts (Alternative 2), including the use of disease resistant strains of *C. virginica*, as well as re-assessing current fishery management practices, the potential exists to enhance stocks to a level which would restore the economic viability of the Chesapeake Bay oyster fishery. Expansion of aquaculture operations in an environmentally-sound manner using disease resistant strains of *C. virginica* would provide a boost to current aquaculturists and traditional oyster fishermen without the risks associated with the use of a non-native species.

Although the impetus for the NAS study was a proposal to begin open water aquaculture using triploid *C. ariakensis*, the NAS report considered the option of introducing reproductive diploid *C. ariakensis*. The NAS Committee identified numerous concerns regarding the introduction of reproductively capable *C. ariakensis*, one of which echoed the primary concern of the State of New Jersey - that is, the potential of dispersal of animals beyond "the Bay". The NAS report stated that, "Objections to the introduction could arise because of concerns that the introduction could expand and displace otherwise healthy populations of the native oyster throughout the eastern seaboard and into the Gulf of Mexico." This concern resonated at the Maryland Public Scoping meeting by recommendations to evaluate impacts elsewhere (outside of Chesapeake Bay) and to attempt to coordinate hydrodynamic modeling to assess the risk for coast-wide impacts (looking at probable larval dispersal rates, etc.). The NAS report also discussed effectiveness of ICES (International Council for Exploration of the Seas) protocols, but it is clear that the committee recognized that the existence and adherence to ICES protocols do not remove potential for the release of "hitchhiking" species (via rogue introductions) or disease introduction. In discussing the risk assessment process associated with a diploid *C. ariakensis* introduction, the report states that: "disease introduction, though greatly reduced, would still present an unknown hazard from vertically transmitted pathogens even if ICES protocols are followed and perfectly effective." The report adds: "The risk of disease outbreak in either native or non-native oyster populations, following an introduction is not zero, even if ICES protocols are followed. If ICES protocols are applied, the risk of disease outbreak has low probability but potentially high impact if it occurred." Ultimately, this risk would not be limited to the waters of Maryland and Virginia.

There seemed to be a consensus among the NAS Committee's membership that proceeding with the deployment of reproductively-capable *C. ariakensis* in the absence of substantial, scientifically validated information regarding the ecological risks and benefits associated with such an introduction would be irresponsible given the poorly understood risks. At the very least, the New Jersey Division of Fish and Wildlife stresses that any introduction should be supported by sound science, which is clearly lacking. We unquestionably lack basic knowledge regarding the biology of *C. ariakensis* in its native environment, let alone in our U.S. estuaries. Given this absence of baseline scientific information, the three options examined within the NAS report (Option 1: prohibition on the introduction of any non-native oyster; Option 2: open water aquaculture of sterile triploid *C. ariakensis*; and Option 3: introduction of diploid *C. ariakensis*) recommended further research on the general biology of *C. ariakensis* (such as those activities identified in the NAS report: growth, reproduction, larval behavior, pathogen/parasite susceptibility and ecological interactions with *C. virginica*). However, the time required to perform the needed research and the associated costs will undoubtedly not permit an informed decision regarding the proposed introduction in the near future.

The NAS report stated that the introduction of reproductive non-natives enjoyed strong support by some sectors and that essential to that support was the assumption that a diploid introduction would generate large populations of *C. ariakensis* oysters "after a few years with little to no adverse effects." The NAS Committee emphasized that this assumption is "weak," adding that too little is known about *C. ariakensis*. In discussing the uncertainties and potential negative consequences of introducing diploid *C. ariakensis* into Chesapeake Bay, the NAS report stated that, "the irreversibility of introducing a reproductive non-native oyster and the high level of uncertainty with regard to potential ecological hazards makes Option 3 (a diploid introduction) an imprudent course of action." Finally, the NAS Committee plainly stated that this option "would essentially be irreversible and would be ill advised given current knowledge." Since the NAS report was just completed in December 2003, this conclusion is warranted at this time as well.

In an article ("Deliberate Introductions of Exotic Shellfish Species: The Benefits Can Be Great But the Consequences are Difficult to Predict") appearing in the January 2004 National Shellfisheries Association newsletter, Dr. Robert Whitlach (member of the NAS Committee) stated, "it is well recognized that once a species is introduced into a new area it is virtually impossible to control or remove them. Hence, the proposed introduction should not simply be viewed as of concern only to Chesapeake Bay. If *C. ariakensis* is able to establish self-sustaining populations, it is highly likely it will eventually spread outside the Bay and could potentially impact coastal ecosystems and native oyster populations along a significant portion of the U.S. eastern seaboard." The NAS Committee also suggested the identification of an interjurisdictional decision-making group that would have binding authority over introductions that could affect the coastal areas of several states. The Atlantic States Marine Fisheries Commission (ASMFC) or various federal agencies must play a critical role in this regard as the decision regarding the introduction of *C. ariakensis* has potential ramifications far beyond the confines of Chesapeake Bay.

In summary, given the lack of information about *C. ariakensis*, the potential ramifications (within the waters of the Chesapeake Bay and other Atlantic coast states) of introducing diploid Suminoe oysters into the waters of Maryland and Virginia and the findings contained within the NAS report, a combination of alternatives two and four (expansion and improvement of current restoration efforts and aquaculture, using disease resistant strains of native oysters where possible) should be initiated as they present the best options to safely increase oyster production within Maryland and Virginia waters. Finally, given the time and expense necessary to begin to conduct research to address the uncertainties of the proposed introduction of diploid *C. ariakensis*, which would undoubtedly not provide the information necessary to adequately the issues raised in the programmatic EIS, it may be a more productive to devote available resources (financial and personnel) to implementing alternatives two and four.

Thank you very much for providing the opportunity to comment on the proposed programmatic EIS for this important proposal. The New Jersey Division of Fish and Wildlife welcomes the opportunity to provide future input on the proposed introduction of *C. ariakensis* as this situation evolves. If you would like to discuss the contents of this correspondence or any other issue, please feel free to contact me at the above address or via telephone (609-292-3093).

Sincerely,



James W. Joseph, Chief
New Jersey Bureau of Shellfisheries

c. M.J. McHugh
T. McCloy



UNITED STATES ENVIRONMENTAL PROTECTION AGENCY
REGION III
1650 Arch Street
Philadelphia, Pennsylvania 19103-2029

FEB 27 2004

Mr. Peter Kube
U.S. Army Corps of Engineers
Norfolk District
Regulatory Branch
803 Front Street
Norfolk, VA 23510

Subject: Scoping comments - Notice of Intent to Prepare a Programmatic Environmental Impact Statement (EIS) for a Proposed Introduction of the Oyster Species *Crassostrea ariakensis* Into the Tidal Waters of Maryland and Virginia (Federal Register 69(2): 330-332, January 5, 2004).

Dear Mr. Kube:

In accordance with the National Environmental Policy Act (NEPA) of 1969 and Section 309 of the Clean Air Act, the Environmental Protection Agency (EPA) is responding to the Norfolk District's request for scoping comments on the subject Environmental Impact Statement (EIS). Attached are detailed comments that relate to the scope of the planned EIS.

I want to emphasize here several issues that we believe are critical to the timely and successful completion of this EIS, including agreement on purpose and need for the proposal, the establishment of concurrence points in the process and the need to have a rigorous and scientifically based analysis which supports the fundamental purpose of any NEPA document: the ability to help inform a major governmental decision.

Concurrence points have been successfully used during the planning process for many major transportation projects during the past several years, to expedite agency approvals and to promote constructive interagency collaboration. We believe that establishment of such points for this programmatic EIS would add value to the process and result in a streamlined timeframe.

The NOI states "the draft programmatic EIS is expected to be available for public review in the spring of 2005 or as quickly as a rigorous, scientifically based EIS can be produced." We look forward to participating in the development of a project work plan and a schedule that provides for rigorous scientific evaluation, but without undue delay. We anticipate that this planning will need to recognize that certain elements of the EIS cannot be fully completed on parallel tracks, but are dependent upon one another in a sequential fashion. For example, certain essential research must be completed prior to the completion of an adequate environmental risk assessment, which in turn must be completed prior to the completion of the DEIS. The recently completed report of the Chesapeake Bay Program's Scientific and Technical Advisory Committee listing research priorities for Bay oyster restoration should serve as an initial point of reference driving the needed research framework. We recommend that the Corps immediately

contact the CBP STAC to request formation of a scientific advisory panel for purposes of providing independent advice regarding the completion of the scope of work for the EIS and ERA, including the necessary research agenda, and to provide peer review of research proposals developed for the necessary research.

Also of special significance in framing the scope of the EIS is the discussion of the underlying purpose and need for the proposal, which serves as the basis for development of the alternatives to be analyzed. We strongly recommend that purpose and need be framed in terms of establishing oyster populations capable of supporting an economically viable fishery, either through open water harvest or aquaculture. We have included for your consideration a proposed statement of Purpose and Need in the attached comments.

Because the specific method(s) of deployment under both native and non-native oyster alternative scenarios may not be fully described in the EIS, and because case law is still evolving, we believe it would be prudent to refrain from making any determinations regarding application of the federal Clean Water Act to the alternatives likely to be analyzed in the programmatic EIS until after the EIS is completed.

EPA is committed to playing an active role as a Cooperating Agency in the development of this EIS. We will be forwarding separate correspondence regarding our role, which is expected to include both financial and technical assistance, particularly in the development of a scientifically adequate risk assessment. We look forward to working with you and the many other parties involved as the EIS unfolds. If you should have any questions regarding this letter, please contact either Mr. William Arguto, NEPA Team Leader, at (215) 814-3367, or Mr. Michael Fritz, Chesapeake Bay Program, at (410) 267-5721.

Sincerely,



William J. Hoffman, Chief
Environmental Programs Branch

Enclosures:

1. Attachment with Detailed EIS Scoping Comments
2. National Research Council Report "Non-Native Oysters in the Chesapeake Bay" 2004
3. CBP STAC Report from the December 2003 Oyster Research Workshop

ATTACHMENT

EPA Region III Detailed Comments on Scope of the Programmatic EIS for Proposed Introduction of Non-Native Oysters into the Tidal Waters of Maryland and Virginia

General Comments

From EPA's perspective, the proposed introduction of non-indigenous oysters to Chesapeake Bay and the Mid-Atlantic region is a national issue. The catastrophic consequences of numerous non-native species introductions, both intended and unintended, have been well-documented and are well known to the public (e.g., zebra mussel, gypsy moth, nutria, mute swan). The proposal to introduce non-native oysters may affect an area larger than the Chesapeake Bay. Therefore, the EIS should thoroughly evaluate the potential dispersal of any introduced non-native oyster species. The Bay is not a closed system and impacts to the Bay from such an introduction could directly impact the Delaware Bay, Pamlico and Albemarle Sounds and numerous smaller coastal bays in the Mid-Atlantic region, including state waters from New England to the Gulf Coast. For this reason, adjacent states and EPA Regions should be included in the coordination of this EIS.

In the Chesapeake Bay, the Chesapeake Bay Program (CBP) partners are about to adopt management plans for six non-native species which - among many others - pose threats to the aquatic health of the Bay, including the zebra mussel, nutria, mute swan, Phragmites grass, purple loosestrife and water chestnut. The ecological and economic impacts of these species and others in the Mid-Atlantic region and elsewhere in the United States might have been avoided had we known more about risks and potential consequences of their introduction beforehand. The programmatic EIS represents an unprecedented opportunity to apply lessons learned from the history of catastrophic non-indigenous species introductions, to develop a scientific basis for evaluating risks and potential consequences of the proposed introduction, and to rigorously evaluate alternative means of revitalizing the oyster resource in Chesapeake Bay. When completed, this analysis doubtless will serve as a much-needed model for future evaluations of proposed introductions here and elsewhere in the United States.

As is recognized in the Corps' Notice of Intent, EPA agrees that the proposed EIS must be rigorous and scientifically based. Fortunately, our collaborative efforts in this EIS scoping process will have the benefit of the advice and recommendations from two highly esteemed scientific institutions, the National Research Council (NRC) and the CBP Scientific and Technical Advisory Committee (STAC). Together, the August, 2003 NRC report "Non-Native Oysters in the Chesapeake Bay" and the February, 2004 STAC report "Identifying and Prioritizing Research Required to Evaluate Ecological Risks and Benefits of Alternative Actions to Restore Oysters to Chesapeake Bay: Introducing *Crassostrea ariakensis* and Other Alternatives" provide comprehensive lists and justifications for the information needed to

support a responsible decision on this issue. We have enclosed copies of both reports with these comments.

In order to provide an adequate basis for comparing the alternatives evaluated, it will be essential that analysis such as the ecological risk assessment be applied to the proposed action as well as all the other alternatives to the proposed action that will be evaluated in the EIS. Similarly, the comparison of alternatives will require an equitable evaluation of the direct, secondary and cumulative impacts of all the alternatives.

The Chesapeake Bay Program has the necessary policy to guide this process. The partners of the CBP have adopted and are implementing an appropriately precautionary policy concerning the introduction of non-native species. The Chesapeake Bay Policy for the Introduction of Non-Indigenous Aquatic Species, was signed and adopted in 1993 by the Chesapeake Executive Council (i.e., the Governors of the Commonwealth of Pennsylvania, the Commonwealth of Virginia, and the State of Maryland, the Mayor of the District of Columbia, the Administrator of the Environmental Protection Agency (for the U.S. Government) and the Chair of the Chesapeake Bay Commission (an interstate commission of state legislators). The policy is as follows:

“It shall be the policy of the Jurisdictions in the Chesapeake Bay basin to oppose the first-time introduction of any non-indigenous aquatic species into the unconfined waters of the Chesapeake Bay and its tributaries for any reason unless environmental and economic evaluations are conducted and reviewed in order to ensure that risks associated with the first-time introduction are acceptably low. The signatories to the Adoption Statement are committed to sharing information and to carefully assessing through a joint review process all proposed first-time introductions of non-indigenous aquatic species in the Chesapeake Bay basin. The signatories to the Adoption Statement are also committed to working together to prevent unintentional introductions of non-indigenous aquatic species and to minimize the negative effects of undesired aquatic species within the Chesapeake Bay ecosystem.”

The partners of the CBP have remained committed to this policy and have implemented it successfully since its adoption. We believe the current EIS process is and should be consistent with this policy. It will allow a thorough evaluation and review of environmental and economic risks and potential consequences (including benefits). It will also provide a framework for sharing information and close collaboration on final decisions concerning the wisdom of the introduction and the selection among alternatives.

Specific Comments

Jurisdictional Issues

The applicability of the Clean Water Act (CWA) and other federal authority to regulate the proposed introduction has been raised during interagency discussions prior to the initiation of this EIS process. As the federal agency with ultimate responsibility for implementation of the Clean Water Act, we reserve judgement on CWA jurisdiction for the following reasons:

- Since the EIS will be programmatic in nature, it appears unlikely that specific modes of deployment of non-indigenous oysters will be defined during this analysis. Specific methods of deployment are not described in the current proposal and may not be described in the programmatic EIS. It would, therefore, be premature to try to determine the applicability of any Clean Water Act requirements to the alternatives likely to be analyzed in the programmatic EIS.
- The question of CWA authority over introductions of non-indigenous aquatic species may be further informed through litigation now in the courts or in new cases that develop while this EIS is being developed.

In light of the foregoing, we consider it prudent to withhold judgement on this question. In the interim, we recommend that neither the Corps, the States, nor other cooperating agencies make any definitive conclusion concerning the applicability of CWA jurisdiction over the proposed introduction.

Supporting Scientific Research Needs

There are numerous critical information gaps that must be addressed before an adequate risk assessment, alternatives analysis and EIS can be prepared. For purposes of identifying the research necessary to support the EIS, we have enclosed the following relevant documents:

- “Nonnative Oysters in the Chesapeake Bay”, National Research Council, National Academies Press, 2004. We refer specifically to Chapters 9 and 10 which address elements of risk assessment and research needs.
- “Identifying and Prioritizing Research Required to Evaluate Ecological Risks and Benefits of Alternative Actions to Restore Oysters to Chesapeake Bay: Introducing *Crassostrea ariakensis* and Other Alternatives”, Chesapeake Bay Program, Scientific and Technical Advisory Committee, February, 2004. Four critical research questions are posed in the Executive Summary of this report:
 - 1) Can self-sustaining populations of *C. ariakensis* be established in Chesapeake Bay, and is there a greater likelihood of successful restoration using ‘Oregon’ or other strains of *C. ariakensis* than using wild- or disease tolerant strains of *C. virginica*?

- 2) What risks does *C. ariakensis* pose to *C. virginica* and other bivalve species, within Chesapeake Bay and in regions outside the Chesapeake?
- 3) What ecosystem services (e.g., water quality improvement through filtration, provision of vital habitat) might be provided by *C. ariakensis* relative to those already demonstrated for *C. virginica*?
- 4) Will *C. ariakensis* accumulate human pathogens to a greater degree than *C. virginica*, thereby impacting the economic viability of the fishery?

While the NRC and the CBP STAC recommendations are in many ways complementary in nature, we place particular emphasis on the STAC recommendations. Scientists on the STAC who produced the February, 2004 recommendations were familiar with the Chesapeake Bay oyster situation, and used the NRC report and other available research plans as a starting point, considering a broad range of issues. The STAC report also provides a useful prioritization of research needs, omitting topics that would impose undue delay on the analysis or that were judged to be of lower priority. As such, the STAC report, while not replacing the NRC report, is better focused on research needed to support the EIS.

In addition to the above, we recommend that the following information be obtained and included in the ecological risk assessment and/or alternatives analysis in the EIS:

- For purposes of evaluating potential water quality benefits of the proposed action and alternatives, it will be necessary to evaluate whether other suspension-feeding organisms are partially or fully performing this ecosystem function, and whether oysters would add to or replace their contribution to water quality maintenance.
- Potential water quality improvement benefits should be evaluated in the context of improvements anticipated to accrue as the Chesapeake Bay watershed jurisdictions intensify nutrient and sediment load reductions over the next decade and beyond to meet the recently developed water quality criteria for the tidal waters of the Bay.
- The evaluation of secondary impacts on other fauna should address potential impacts on fauna in other coastal regions where there may be organisms that do not exist in Chesapeake Bay, but that may be affected by a range expansion of *C. ariakensis* outside the Bay.
- The evaluation of direct and secondary economic consequences of the proposed action and alternatives should include an analysis of potential effects on the national oyster market. For example, how would a large increase in the supply of oysters from Chesapeake Bay affect oyster growers, processors, and vendors from the Gulf of Mexico or the Pacific Northwest?
- The evaluation of potential adverse effects of *C. ariakensis* introduction should include an analysis of the potential for hybridization, gene introgression and reproductive interference.

- For purposes of implementing the research to support the EIS, we strongly recommend establishment of and adherence to a stringent protocol to minimize and monitor the unintentional release of sexually competent *C. ariakensis*. A list of essential elements that should be included in the protocol is provided in the National Research Council's report (page 241). In this regard, we support the efforts of the NOAA Chesapeake Bay Office whose representative is leading the development of such a protocol and has said that the protocol should be completed by the end of March, 2004. We believe that establishment and implementation of this protocol will expedite pursuit of the EIS research agenda by providing a valuable template for use in permitting in-water experimentation with non-native oysters.

Ecological Risk Assessment (ERA) comments: Specific comments for the ERA are being developed and will be provided separately, as agreed upon at the interagency workshop in Colonial Beach, Virginia held on February 12, 2004. Some general concerns are provided below:

- Resource agencies should review and concur, if concurrence points are established, on scope of work and the work plan for the ERA, objectives of the study, problem formulation, endpoints, biocontrol protocols, assumptions, and studies for the ERA.
- The ERA must be completed prior to the DEIS, since it will serve as a major basis for the EIS alternatives analysis.

Purpose and Need

Since the range of alternatives evaluated is defined by the purpose and need for the proposed action or alternative action, it is imperative that the purpose and need be clearly identified in the EIS. As project alternatives discussed in an EIS are derived from the EIS's statement of purpose and need, a broader statement of the Purpose and Need will encompass alternatives to be explored such as native oyster restoration, oyster aquaculture and other alternatives. We offer the following statement of Purpose and Need for use in the EIS:

The purpose of the proposed action, or one or more of the alternative actions that are evaluated in this EIS, is to restore oysters as an economically valuable resource in the Chesapeake Bay region. Due to overharvest, habitat degradation, and disease, oyster harvests in Chesapeake Bay have declined severely since early in the 20th century. This decline has caused the loss of jobs and hardship for small businesses in waterfront communities, and threatens the existence of a valued component of the local cultural heritage. There is a need, therefore, to examine alternative ways to restore economic viability to the oyster fishery in the Chesapeake Bay region and to prevent the loss of the valued cultural heritage associated with oysters.

There also is a need to restore and protect the ecological integrity of Chesapeake Bay. The most critical issue in this regard is the restoration and protection of water quality that will support a diversity of healthy finfish and shellfish populations. The Chesapeake Bay Program partners are fully engaged in a major effort to identify actions necessary to achieve this through the development of tributary strategies to control nutrient and sediment pollution at their upland sources (e.g., agricultural runoff, waste water treatment plants, urban runoff). While oyster restoration may have the potential to contribute to water quality improvement and/or maintenance, oyster restoration has not been identified as a nutrient or sediment reduction mechanism for purposes of the tributary strategies. Water quality improvement, therefore, is not a purpose of the proposed action or its alternative actions, but may be a derived benefit.

The Purpose and Need should not be confused with the assumptions underlying the proposed action or with the assumed benefits or consequences of the proposed action. The proposed introduction of non-indigenous oysters appears to be based on the premise that native oyster restoration is not feasible. This represents an assumption, and not a Purpose and Need. The EIS should examine whether this assumption is valid. Therefore, the EIS should accurately characterize the record of native oyster management in the Chesapeake Bay. Restoration efforts should not be confused with efforts to sustain a put-and-take fishery on public oyster grounds, or management of private oyster grounds. The impacts of harvest mortality in the past and presently, including poaching in restoration sanctuaries, should be accurately characterized, both in terms of impacts on oyster population dynamics and in terms of impacts on habitat for future generations of oysters. Evaluations of the performance of past and current restoration efforts should also describe the effects of habitat quality (substrate conditions, hydrodynamics, and water quality) on native oysters in the restoration areas.

The Notice of Intent appropriately draws a distinction between the objective of the proposed action and the potential benefits of a rehabilitated oyster population. It will be important to maintain this distinction during the risk assessment and analysis of alternatives in the EIS. More specifically, while we support inclusion of the potential water quality benefits of a rehabilitated oyster fishery in Chesapeake Bay, we believe that it would be inappropriate to identify water quality improvement as an objective of the proposed action or as an element of the purpose and need. If water quality improvement were to be included as an objective or as a need, a much wider range of alternatives would need to be evaluated (e.g., upgrading wastewater treatment plants), making the EIS unreasonably complicated and causing undue delay. Alternatives to improve water quality in Chesapeake Bay are the subject of large and intensive efforts now ongoing in the CBP partner states. Whether oyster restoration should be included in water quality improvement strategies is an issue requiring additional research, water quality modeling and policy analysis.

Alternatives. The following comments on the evaluation of alternatives use the numbering of alternatives provided in the Notice of Intent.

Alternatives 1 and 2, Native Oyster Restoration: The EIS should thoroughly evaluate the native oyster alternatives identified in the Notice of Intent. The CBP partners expect to complete a native oyster restoration plan this spring. We recommend that it be incorporated in its entirety as a component of the EIS and its feasibility evaluated in biological and economic terms.

The EIS should include an evaluation of the feasibility of alternative oyster stock and harvest management strategies, including the "total allowable catch" strategy now in use in Delaware. The necessary population and harvest models should be developed to support this evaluation.

Alternative 4, Native Oyster Aquaculture: The EIS should include a thorough evaluation of native oyster aquaculture alternatives, including traditional on-bottom methods and modern, innovative off-bottom methods. Legislative, regulatory, and other constraints on the feasibility of native oyster aquaculture in Maryland and Virginia waters should be identified and alternative solutions should be included in the EIS. Obstacles to the development of aquaculture in MD and VA waters of the Chesapeake Bay should be identified and alternative solutions examined. For purposes of this analysis for Maryland, the EIS should include the findings and recommendations of the Maryland Aquaculture Development Conference (August 19-20, 2003). The EIS also should include a thorough evaluation of the practicability of aquaculture as currently practiced at oyster aquaculture operations now active in the Bay, including those of the Circle C Oyster Ranch, the York River Yacht Haven, and the Chesapeake Bay Foundation's York River operation. Operators of these facilities should be asked to contribute data relevant to an analysis of the biological and economic feasibility of native oyster aquaculture in Chesapeake Bay. Their perspectives and recommendations concerning regulatory and other constraints on further development of oyster aquaculture should be included and evaluated in the EIS.

Alternative 5, Triploid Non-indigenous Oyster Aquaculture: The EIS should evaluate thoroughly the risk that aquaculture using triploid non-indigenous oysters could lead to establishment of a diploid population in the Bay and surrounding waters. The full range of risk factors that could contribute to such an outcome should be characterized in a risk assessment, including:

- inadvertent loss of adult stock through theft,
- vandalism,
- mis-management or mis-handling of stock, or
- catastrophe; reversion of triploids to diploid condition;
- reproduction by diploids included among triploid hatchery broods, and
- any other factors that could compromise the biosecurity of triploid aquaculture and result in the establishment of a free-living diploid population.

Biosecurity protocols and other provisions necessary to prevent such an outcome also should be addressed in the EIS. An economic analysis of the costs of such provisions should be included in the characterization of the economic feasibility of this alternative. On-bottom and off-bottom triploid aquaculture alternatives should be evaluated and compared in terms of the

practicability of biosecurity, effects on water quality and living resources habitats, and economic feasibility.

Alternative 6 and the Proposed Action, Introduce Diploid Non-indigenous Oysters: A thorough risk assessment and risk-benefit analysis of the proposed introduction and other non-indigenous diploid introduction alternatives is necessary, including a comparative analysis against all other practicable alternatives. We will be providing additional comments on the proposed risk assessment protocol under separate cover.

Other Alternatives:

- The EIS should include an analysis of an alternative that includes the development of disease resistance in native oysters, including possible genetic modification to native oysters.
- The EIS should evaluate the potential of measures to confront MSX and Dermo head-on with chemical or biological control agents.
- In order to provide for a more clear analysis of differences among alternatives, the EIS should include a separate analysis of the introduction of diploid *C. ariakensis* alone, without concurrent native oyster restoration.
- Within the analysis of the no-action alternative, the EIS should include an evaluation of the potential of habitat improvement measures to contribute to native oyster recovery in the Chesapeake Bay (e.g., nutrient and sediment load reductions and the ensuing improvement to water quality and benthic habitat conditions).

Scientific Advisory Panel

We recommend that the Corps immediately contact the CBP STAC to request formation of a scientific advisory panel for purposes of providing independent advice regarding the completion of the scope of work for the EIS and ERA, including the necessary research agenda, and to provide peer review of proposals developed for the necessary research. We believe it is important to obtain independent scientific advice early on in order to ensure the development of an adequate, unbiased and scientifically sound EIS. Independent peer review of research results also should be included in the EIS process.

Additional Issues to be Addressed

In addition to the issues identified in the Notice of Intent, EPA recommends that the following issues be considered for inclusion in the EIS process:

Concurrence points: EPA recommends the establishment of concurrence points throughout the programmatic EIS process for the resource agencies and the cooperating agencies, similar to the streamlining process for transportation projects. Concurrence points could include:

- Purpose and Need
- Alternatives considered
- Alternatives retained
- Bio security and quality controls, including monitoring plans, and contingency plans
- Ecological Risk Assessment (ERA) studies required
- ERA problem statement/objectives/assumptions
- ERA end points
- ERA scope of work/workplan
- Pre draft EIS
- Pre final EIS

Invasive Species Executive Order 13112: Invasive species effects on water resources can be direct, as in the case of many aquatic nuisance species, or indirect, as in terrestrial species that change water tables, and other watershed attributes that in turn can alter water body conditions. Indirect social/behavioral effects of invasive species can result in significant water quality impacts as well; for example, fear of non-native pests may prompt more pesticide and herbicide use, potentially increasing the amount of these chemicals entering water bodies through runoff. Both terrestrial and aquatic invasive species can be harmful to our waters – some affect the water directly, while other species affect the land in ways that harm the water. The threat of invasive species should be evaluated and mitigation measures addressed. Specifically a determination should be made as to whether *Crassostrea ariakensis* could be an invasive species, and whether such introduction could unintentionally introduce other invasive species.

If *Crassostrea ariakensis* is determined to be invasive, EO 13112 then requires, among other things, that the federal agency not authorize, fund, or carry out actions that it believes are likely to cause or promote the introduction or spread of invasive species in the United States or elsewhere unless, pursuant to guidelines that it has prescribed, the agency has determined and made public its determination that the benefits of such actions clearly outweigh the potential harm caused by invasive species; and that all feasible and prudent measures to minimize risk of harm will be taken in conjunction with the actions.

Socioeconomic impacts: The DEIS should discuss the socioeconomic and cultural status of the area, including the demographic profile of the population affected by the proposal and the number of employees and/or jobs impacted as a result of the proposed project. Compliance with Executive Order 12898, “Federal Actions to Address Environmental Justice in Minority Populations and Low-Income Populations,” should be included. The EIS should address the expected increase or decrease of people/employees/jobs in relation to all of the alternatives considered. A comparative analysis of the economic cost and benefits of all of the alternatives should be prepared. In addition, a complete economic analysis should include the other sources of supply that affect the economics of this decision, such as the impact of Gulf Coast oysters currently shipped to the Chesapeake Bay for processing.

Cumulative/Secondary Impacts: Cumulative impacts can result from individually minor, but collectively significant, actions taking place over a period of time. The Council on Environmental Quality in 40 CFR 1508.7 defines cumulative impacts as “impacts on the environment which result from the incremental impact of the action when added to other past, present, and reasonably foreseeable future actions regardless of what agency (federal or non-federal) or person undertakes such other actions.” A cumulative impacts assessment should be an integral part of the EIS for the proposed action. Further guidance on cumulative impacts can be found in EPA 315-R-99-002/May 1999 “*Consideration of Cumulative Impacts in EPA Review of NEPA Documents*”.

The EIS should also address secondary impacts of the proposed action and alternatives, including secondary physical, chemical and biological effects. The EIS should address, for example, the potential positive effect of reestablished oyster reefs on shoreline erosion, nearshore water clarity, and the recovery of submerged aquatic vegetation; the potential adverse effect of concentrated oyster aquaculture on other benthic organisms through local water quality degradation; the potential effect of large oyster populations on other suspension feeding organisms with which they may compete; and the potential effects on other organisms that typically interact with *C. virginica* (e.g., oyster predators such as fish, crabs, and birds; and reef dwelling organisms.)

Threatened and Endangered Species: The Endangered Species Act (ESA) provides for the listing of endangered and threatened species of plants and animals as well as the designation of critical habitat for listed species. The ESA prohibits the taking of any listed species without (for federal agencies) an “Incidental Take Statement.” The definition of “taking” includes injury and harassment. The ESA also requires federal agencies to exercise their authorities, in consultation with designated agencies (for example, the U.S. Fish and Wildlife Service and National Marine Fisheries Services, as appropriate), to conserve endangered species. It further requires federal agencies to consult with these agencies on any action that may jeopardize the continued existence of any threatened or endangered species, which has been interpreted by regulation to require consultation for any action that “may affect” such species. For actions that may adversely affect species, the regulatory agencies may recommend mitigation. Such mitigation is required if an agency action would otherwise jeopardize the species existence, and it may be required if agency action will result in a take and, therefore, require an incidental take authorization. The EIS should provide a description of terrestrial, wildlife and aquatic species in the study area. Any threatened or endangered species must be listed. Critical habitat for threatened or endangered species should be properly identified. The EIS should describe the potential project impacts to these species. It is not clearly understood, at this stage in the project proposal, if the introduction of *Crassostrea ariakensis*, will in itself threaten any other species in the affected project area. The most recent state and federal threatened and endangered species coordination letters should be included in the EIS. In addition, we recommend that the appropriate state and federal agencies be contacted annually at a minimum regarding these issues.

Water Quality: The EIS should discuss the impacts of the alternatives on surface water quality, and outline measures for protection. Potential mitigation measures should address both short-term temporary impacts that could occur during implementation of the alternatives and long-term project impacts. Anticipating that native or non-native oyster projects could include shell dredging and discharge activities similar to the methods currently employed for native oyster management, potential impacts would include nutrient and sediment releases from dredge and fill operations, as well as physical destruction of benthic communities. Mitigation measures that may be implemented include time of year restrictions to accommodate aquatic life cycles and recreation activities.

Essential Fish Habitat: The EIS should include a section discussing Essential Fish Habitat (EFH) and the implications the proposed project may have on any EFH. Under the Magnuson-Stevens Act, Congress defined essential fish habitat for federally managed fish species as "those waters and substrate necessary for spawning, breeding, feeding, or growth to maturity." The conservation of essential fish habitat is an important component of building and maintaining sustainable fisheries.



United States Department of the Interior



FISH AND WILDLIFE SERVICE

Chesapeake Bay Field Office
177 Admiral Cochrane Drive
Annapolis, MD 21401

February 27, 2004

Mr. Peter Kube
U.S. Army Corps of Engineers-Regulatory Branch
803 Front Street
Norfolk, VA 23510

Mr. Tom O'Connell
MD DNR Fisheries Service
Tawes State Office Bldg. (B-2)
580 Taylor Ave.
Annapolis, MD 21401

RE: *Ecological Risk Assessment Concept Development, Asian Oyster (Crassostrea ariakensis): Introduction to Chesapeake Bay, February 12, 2004, Prepared by Versar, Inc.*

Dear Sirs:

The Fish and Wildlife Service, Chesapeake Bay Field Office has reviewed the subject document. The following comments are provided for your consideration.

General Comments

We agree with the approach that the Oyster Environmental Impact Statement (EIS) Project Development Team (PDT) has taken using the risk assessment model to quantify the risk associated with the proposed action and the described alternatives. However, we would prefer that additional explanation be provided describing how the risk assessment process fits into the overall EIS process. Additional text should explain that the purpose and objectives of the risk assessment is only one part of the overall EIS. As stated in the document, the purpose of the EIS is to evaluate the proposed action against 7 alternative actions for establishing an oyster population to the Chesapeake Bay watershed that is equivalent to the 1920s to 1970s oyster population. The EIS must take into account political and community preferences, cost, and the feasibility of implementing the proposed action. The purpose of the risk assessment is to evaluate the risk associated with all eight actions equally.

As stated in Section 6.0, there are three key components necessary in the risk assessment process Problem Formulation, Analysis Phase, and Risk Characterization. We suggest that:

1. Within the Problem Formulation section, two risk questions must be stated and addressed:
a.) What is the risk from implementing this alternative to the viability of the Chesapeake Bay oyster fisheries, and b.) What is the risk from implementing this alternative to the ecology of the Chesapeake Bay?
2. During the Analysis Phase, we recommend a list of stressors and effects associated with each risk question be identified for each alternative. It is possible to have redundancy and overlap in stressors between the alternatives. We suggest that the authors begin with stressors identified in the Scientific Technical Advisory Committee to the Chesapeake Bay Program 2004 report, and the National Research Council 2004 report.
3. Include in the analysis phase the specific measurement endpoints that are used to identify information gaps in ecology (e.g., species life history), stressors, or effects information. Once the analysis phase is complete, the resulting risk characterization and uncertainty analysis can be used to target and evaluate the risk associated with the different alternatives.

Specific Comments

1. We recommend that a tiered risk assessment process be used. The first tier should be primarily literature based and subsequent tiers would involve data collection. Higher tiers could (based on previous tier analysis) involve mesocosm (field or lab) type studies. The spatial context, food web, population model, energy flow/production analysis; and introduction/restoration of the oysters should also be tiered.
2. The title of this document should be changed. The risk assessment should remain unbiased in its evaluation of the proposed action and the alternatives, therefore, the title of this document should reflect this approach. We recommend the following title: "The Risk Assessment Concept Development Plan: Evaluation of the EIS Proposed Action and Alternatives to Restore a Self-Sustaining Oyster Population in the Chesapeake Bay."
3. Section 2.3 lists anticipated benefits of the proposed action. These benefits should be considered and evaluated in the problem formulation section of the risk assessment. For example, two questions to consider would be: a) what would be the extent of improved water quality, and b) how would it relate to reducing observed effects in the Bay. These questions could be addressed to some degree on page 15, Section 7.2.2. There also should be an evaluation/discussion of potential impacts of the action. Some important considerations, such as introducing disease or other non-native species and impacts to the ecosystem, such as changing the current balance of energy flow/ production, competition, disruption of existing food chains, appear to be omitted on page 11. Bioaccumulation of contaminants also should be considered, particularly in some areas.

4. Section 4.0, assumption 1 states, "*C. ariakensis* and *C. virginica* would fulfill the same ecological function within the Bay ecosystem and would sustain similar fisheries (e.g., catch per unit effort and economic value would be similar). We conclude that this assumption is implicit, since the stated objective of the proposed action is to create a self-sustaining "oyster" population (i.e., oysters are interchangeable)." The document needs to clearly state that this is an uncertainty that the risk assessment will investigate, and not an assumption upon which the Oyster EIS PDT agrees.
5. Section 7.1 suggests that a screening level risk assessment is not necessary because the ecological risk assessment process is related to chemical stressors in the environment and is, therefore, not relevant to this discussion. We disagree, the screening level risk assessment or first tier establishes the risk questions to be answered, establish the preliminary assessment endpoint and measures of effects. The outcome of Tier 1 Screening Level Risk Assessment is to determine information gaps that can be addressed in subsequent risk assessment tiers.
6. The author cites EPA 1998 throughout the document. We suggest that a reference be provided. We also recommend that the recent publication by EPA titled, "*Integrating Ecological Risk Assessment and Economic Analysis in Watersheds: a Conceptual Approach and Three Case Studies*" (EPA/600/R-03/140R), September 2003, be referenced as well. This document is available at the following site:
<http://cfpub.epa.gov/ncea/cfm/recordisplay.cfm?deid=56868>

The Service appreciates the opportunity to comment on this issue. Should you have any questions, please contact Chris Guy at (410) 573-4529.

Sincerely,



John P. Wolflin
Supervisor

- cc: Mike Fritz, EPA, Annapolis, MD
Jamie King, NOAA, Annapolis MD
Jack Travelstead, VMRC, Richmond VA
- bcc: Jamie Geiger, Fisheries, Hadley, MA
Steve Minkinen, Fisheries, Annapolis, MD
John Sweka, Northeast Fisheries Center, Lamar, PA
Julie Thompson, CBFO, Annapolis MD
Cliff Tipton, Fisheries, Annapolis, MD

References:

EPA, 1998. Guidelines for Ecological Risk Assessment, EPA/630/R-95/002F, April 1998

EPA, 2003. Integrating Ecological Risk Assessment and Economic Analysis in Watersheds: a Conceptual Approach and Three Case Studies, EPA/600/R-03/140R, September 2003

National Research Council, 2004. Non Native Oysters in the Chesapeake Bay. The National Academies Press, 500 Fifth Street, N.W. Washington D.C. 20001

STAC, 2004. Identifying and Prioritizing Research Required to Evaluate Ecological Risks and Benefits of Introducing Diploid *Crassostrea ariakensis* to Restore Oysters to Chesapeake Bay, Report of the STAC Workshop December 2-3, 2003 Annapolis, Maryland, February 20, 2004

March 4, 2004

**Environmental Protection Agency (EPA)
Comments on the Outline for the EIS (MES e-mail to PDT on 2-11-04)**

-----Original Message-----

From: Arguto.William@epamail.epa.gov

[mailto:Arguto.William@epamail.epa.gov]

Sent: Thursday, March 04, 2004 3:00 PM

To: O'Connell, Thomas

Cc: Slenkamp.Tom@epamail.epa.gov; Okorn.Barbara@epamail.epa.gov;

Fritz.Mike@epamail.epa.gov; Walsh.Marria@epamail.epa.gov

Subject: Comments on Table of comments for the Programmatic Oyster EIS

Tom:

One of the action items from the Feb PDT meeting was to provide written comments on the structure and language of the EIS Draft Outline prior to March 4. To date we (EPA Region 3) have provided detailed scoping comments for the EIS. We will also have formal comments on the Environmental Risk Assessment (ERA) signed out of the office by COB today. We have looked at the draft outline for the programmatic EIS and it appears to cover the typical areas of an EIS. We have a few comments on the outline as indicated below:

1. The purpose and need and alternatives as stated in the outline may change based on the comments we have provided in the scoping and ERA. We forwarded several suggestions and recommendations on Purpose and Need and if agreed upon they would change some of the language included in this outline.
2. The ERA will be a very significant aspect of the Programmatic EIS, to the extent that perhaps the selected preferred alternative will be based on much of the underlying data collected in the ERA. For this reason it may be appropriate to include the ERA as an appendix to the Programmatic EIS.
3. Not sure what the legal assessment, section 11.1 involves

We have a group of Region 3 NEPA reviewers assisting Mike Fritz and Tom Slencamp as this project progresses. Myself, Barb Okorn and Marria O'Malley Walsh will be providing NEPA process and technical assistance. We look forward to meeting you in the near future. Please feel free to contact me if you have any questions.

William Arguto
NEPA - Team Leader
215-814-3367
1650 Arch Street
Philadelphia, Pa 19103



UNITED STATES ENVIRONMENTAL PROTECTION AGENCY
 REGION III
 1650 Arch Street
 Philadelphia, Pennsylvania 19103-2029

March 5, 2004

Mr. Thomas O'Connell
 MD DNR Fisheries Service
 Tawes State Office Bldg. (B-2)
 580 Taylor Ave.
 Annapolis, Maryland 21401

Re: Request for Comments on the Ecological Risk Assessment (ERA) Concept Development Paper for Asian Oyster Introduction to Chesapeake Bay, Versar, Inc., February 5, 2004

Dear Mr. O'Connell:

The Environmental Protection Agency (EPA) has reviewed the subject document and offers the following comments for your consideration. The ERA is being developed in support of a programmatic Environmental Impact Statement (EIS) for a proposed introduction of the Oyster Species *Crassostrea ariakensis* into the tidal waters of Maryland and Virginia (Federal Register 69(2): 330-332, January 5, 2004). In addition to the comments provided below, we recommend that the risk assessors for each agency be identified and that this group meet to discuss the ERA in detail to assure that the project goals and objectives of the EIS are met.

General Comments

- ▶ EPA's scoping comments (enclosed) on the Programmatic EIS call for a broader statement of Purpose and Need, changes to which could influence the alternative actions under consideration. Within the ERA process, there must be flexibility to incorporate these potential changes.
- ▶ The Chesapeake Bay oyster population [entity] and the characteristics of this population [attributes; e.g. demography, life-history aspects] is identified as the assessment endpoint. Sample risk hypotheses and ecological effect characterizations, however, suggest the Chesapeake Bay ecosystem as the assessment endpoint. Endpoint inconsistencies need to be resolved.
- ▶ Management objectives drive the choice of assessment endpoints and the formulation of risk hypotheses, hence it is important to maintain differentiation between the objective and the potential benefits of the proposed action.
- ▶ It appears that this document formulates risk hypotheses based on desired outcomes rather than available data. Risk hypotheses should describe predicted relationships between



stressors and assessment endpoint responses. Risks may need to be characterized for various possible outcomes of a given stressor/response relationships.

- ▶ Although the title of this document (and the corresponding EIS) addresses the introduction of Asian oysters, the ERA must thoroughly evaluate all of the proposed alternatives (including native restoration and aquaculture options) and the ERA must be completed prior to the Draft Environmental Impact Statement (EIS). The ERA is a part of the EIS and will be used as a tool to make an informed NEPA decision.
- ▶ This document makes assumptions that appear premature. Ecological equivalence among oyster species may be an assumption implicit in the proposed action, but this cannot be assumed in the ERA. Important physiological, behavioral, and ecological differences may exist between *C. virginica* and *C. ariakensis*. In addition, it cannot be assumed that the non-native oyster will not be invasive. This is one of the questions that must be answered in the EIS/ERA process.
- ▶ We recommend that concurrence points be established for the ERA to assure all stakeholders agree on the assumptions and methodology used. All parties should agree with the objectives of the study, problem formulation, endpoints, biocontrol, assumptions, and studies for the ERA.

Specific Comments

- ▶ The complete reference for the 1998 ERA Guidelines should be provided.

7.1 Planning

- ▶ Geographic scale needs to include the probability for colonization outside of the Chesapeake Bay.
 - Conceptual models should be developed which assess both short and long-term risks to the bay and along the East and Gulf Coasts.
- ▶ Given the high degree of uncertainty surrounding *C. ariakensis* biology and life history, a screening-level problem formulation or tiered ERA should be considered to identify adverse ecological effects, ecological receptors, and assessment endpoints.
 - A Tier 1 Risk Assessment may be useful for identifying stressor-response relationships, assessment endpoints, and risk hypotheses. Once these elements have been identified, the most important relationships can be identified and assessed in Tier 2.
 - Adverse ecological effects should not be identified only in terms of the stated objective and anticipated ecological benefits; potential risks to human health and the natural heritage and overall ecology of the Bay should be articulated as well.



- ICES guidelines cannot guarantee that organisms are disease-free, only that organisms are free of the diseases we know about. Of particular concern are viruses and vertically-transmitted diseases. A basic "inventory" of what species (plants, bacteria, animals, viruses) may be commensal/parasitic on the *C. ariakensis* to determine the potential suite of candidate species that may be carried along with the non-native oysters if they are deployed should be conducted. This should be used to help establish an early detection/monitoring program for containment.

7.1.2 Conceptual Model Development

- Risk hypotheses describe predicted relationships between stressors and assessment endpoint responses. Care should be taken to formulate hypotheses based on available data rather than on desired outcomes. Risks may need to be characterized for various possible outcomes of a given relationship.
- The National Research Council (NRC) and the Chesapeake Bay Program's Scientific and Technical Advisory Committee (STAC), have identified research necessary to evaluate the risks of *C. ariakensis* introduction and the alternatives. In addition to those recommendations, EPA recommends that the following questions and issues be addressed as part of the ERA:
 - Will *C. ariakensis* form reefs?
 - Do we know whether non-native oyster can support native species that have co-evolved to live with/be harbored by the native oyster species? It is not clear how well interactions between *C. virginica* and other biotic components of the ecosystem are understood.
 - In addition to competition between the oyster species, consideration should also be given to whether *C. ariakensis* can suitably substitute for *C. virginica* as a substrate, shelter (beyond providing reef habitat) or food source for native biota.
 - High priority should be given to studying the genetic basis of phenotypic and physiological variation in *C. ariakensis*. Additional basic studies characterizing intra- and interspecific genetic variation should also be conducted, including a thorough phylogenetic analysis of the genus to allow for more informative comparisons among species and "strains".
 - Is there any risk for interspecific hybridization between the native and non-native oysters? Preliminary research indicates this is unlikely, but this conclusion may be an artifact of poor taxonomy and poor understanding of systematic relatedness among species within the genus. If hybridization is an issue, it may potentially lead to introgression and genetic extinction of one species over the other.



- What are the risks of natural toxin or man-made contaminant sequestering in *C. ariakensis*?
- Experiments should be conducted to accurately determine what *C. ariakensis* actually filters compared with *C. virginica*. It is possible that they filter different size fractions, which in turn could affect *C. ariakensis*'s impact on water clarity. Also, is there a difference in the environmental range under which *C. ariakensis* and *C. virginica* filter (e.g., does *C. ariakensis* shut down at higher turbidity levels?)?
- Assuming *C. ariakensis* will spread, how will it impact the native oyster in other estuaries and areas along the east coast? This is likely to require a whole different suite of demographic models because of latitudinal variations in temperature (among other variables) as well as the absence of MSX and dermo in the other sites. What are the impacts on the other indigenous fauna of the other bays and estuaries?
- How many *C. ariakensis* would it take to bring oyster populations back to that of the mid-1900s? Where are these oysters coming from?
- Do we know how fast *C. ariakensis* can reproduce?
- One of the biggest problems in the Gulf of Mexico is predation. Do we expect the same rates of predation?
- What is the potential for interspecific competition with *C. virginica*?

7.2 Risk Analysis – Exposure Characterization

- There will be great reliance on models for the risk analysis. It would be productive to put a step into the analysis to determine whether or not the model itself is useful/powerful enough for prediction. Consider putting decision criteria into the planning process to decide whether or not there is enough explanatory power to go forward with the predictions. This differs from sensitivity analysis, which assumes that the model is correct but the parameters are unknown, in that one must consider whether the basic assumptions of the model are likely to be violated.

7.2.2 Ecological Effects Characterization

- As mentioned previously, assessment endpoints should relate to management objectives rather than potential benefits of a proposed action.



- Describe stressor-response relationships, evaluate evidence for causality, and link measures of effect to assessment endpoints. Consider strength of association in stressor-response relationships.

7.3 Risk Characterization

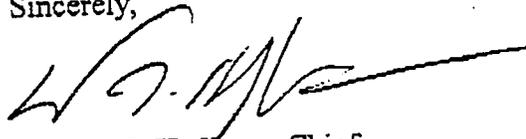
- Uncertainty in stressor-response relationships should be explicitly acknowledged.

Risk Communication

- Ensure that a mechanism is in place allowing for communication with Risk Managers.

Thank you for the opportunity to provide these comments. We look forward to working closely with you and the other agencies participating in the ERA and EIS. If you have any questions regarding these comments, please contact either Ms. Barbara Okorn, NEPA Team, at (215) 814-3330, or Mr. Michael Fritz, Chesapeake Bay Program Office, at (410) 267-5721.

Sincerely,



William J. Hoffman, Chief
Environmental Programs Branch

Enclosure

cc: P. Kube, Norfolk COE
J. Travelstead, VMRC
J. Thompson, U.S. F&WS
J. King, NOAA



From: SGollasch@aol.com [mailto:SGollasch@aol.com]

Sent: Tuesday, May 04, 2004 6:05 AM

To: O'Connell, Thomas; david@ices.dk; Stig.Carlberg@smhi.se; jacqueline.doyle@marine.ie; jpederso@MIT.EDU; ruizg@si.edu; KieserD@dfo-mpo.gc.ca

Subject: Re: ICES Working Group on Introductions - Suminoe Oyster / Chesapeake Bay

Dear Tom,

Thank you very much for your email. You are right, it is my pleasure to chair the ICES WGITMO.

The 2003 Code, available at www.ices.dk, includes all concerns expressed in the 1994 Code of Practice (ICES, 1995) and follows the precautionary approach adopted from the FAO principles (FAO, 1995) with the goal of reducing the spread of exotic species. It accommodates the risks associated with trade in current commercial practices including ornamental trade and bait organisms, research, and the import of live species for immediate human consumption (these are not species that are intended to be released to the environment and so a notification to ICES is neither appropriate nor practical). It also includes species that are utilized to eradicate previously introduced harmful and native species as well as genetically modified organisms (GMOs). It outlines a consistent, transparent process for the evaluation of a proposed new introduction, including detailed biological background information and an evaluation of risks.

ICES Member Countries contemplating new introductions are requested to present in good time **to the Council** a detailed prospectus on the rationale and plans for any new introduction of a marine (brackish) species; the contents of the prospectus are detailed in Section II of the Code and Appendix A . The Council may then request its Working Group on Introductions and Transfers of Marine Organisms to consider the prospectus and comment on it. The Working Group, in turn, may request more information before commenting on a proposal. Guidelines to be followed are described with details in appendices on the ICES website.

Tom, the appropriate contact persons are:

David Griffith
ICES Secretary General
david@ices.dk

Stig Carlberg
Chair, ICES Advisory Committee on the Marine Environment
Stig.Carlberg@smhi.se

Jacqueline Doyle
The Marine Institute, Fisheries Res. Centre
Dublin, Ireland
jacqueline.doyle@marine.ie

You may further wish to contact the US members of WGITMO

Judy Pederson
MITSG Center for Coastal Resources
MIT Sea Grant College Program
jpederso@MIT.EDU

Greg Ruiz
Smithsonian Environmental Research Center (SERC)
ruizg@si.edu

Further, I have copied this mail to the rapporteur of WGITMO, Dorothee Kieser, Dept. Fisheries and Oceans, Canada.

Hope this helps. Let me know if there is anything else I can do.

My best regards
Stephan Gollasch

Thema: **ICES Working Group on Introductions - Suminoe Oyster / Chesapeake Bay**

Datum: 03.05.2004 19:24:30 Westeuropäische Sommerzeit

Von: TOCONNELL@dnr.state.md.us

An: SGollasch@aol.com

Internet-eMail: (Details)

Stephan - The Maryland Department of Natural Resources and Virginia Marine Resources Commission, on behalf of the State of Maryland and Commonwealth of Virginia, respectively, are preparing an Environmental Impact Statement (EIS) on Oyster Restoration Alternatives. The Army Corps of Engineers, Norfolk, VA district is the lead Federal agency, MD and VA are the lead State agencies, and EPA, FWS and NOAA are the cooperating Federal agencies.

The proposed action to be evaluated in the EIS will be a proposal by the states to introduce the Asian oyster species, *Crassostrea ariakensis*, propagated from existing 3rd or later generation of the Oregon stock of this species, in accordance with the International Council for the Exploration of the Sea's (ICES) 2003 Code of Practices on the Introductions and Transfers of Marine Organisms, into the tidal waters of Maryland and Virginia. The purpose (objective) of the EIS is to identify the most appropriate strategy to establish an oyster population that reaches a level of abundance in Chesapeake Bay that would support sustainable harvests comparable to harvest levels during the period 1920–1970. The states are pursuing this objective because there is a need to restore the ecological role of oysters in the Bay and the economic benefits of a commercial fishery through native oyster restoration and/or an ecologically compatible non-native oyster species that would restore these lost functions.”

MD and VA want to formally notify ICES regarding this action in accordance with recommendations of ICES' 2003 Code of Practices on the Introductions and Transfers of Marine Organisms. ICES. Dr. Roger Mann from the Virginia Institute of Marine Sciences informed me that you are the Chairperson of the ICES Working Group on Introductions. If you are the appropriate person to notify regarding this action could you please forward me your contact information, and let me know if you would be available to answer some procedural questions related to ICES? If you are not the person we should be talking to would you please inform us who would be?

Thank you in advance for your cooperation.

Sincerely,

Tom O'Connell
MD DNR, Fisheries Service Estuarine and Marine Restoration Coordinator
(410)260-8261

<°))><
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Bahrenfelder Str. 73 a ><(((°>
22765 Hamburg, Germany
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www.ozean.tv

June 3, 2004

Environmental Protection Agency (EPA) to Project Delivery Team (PDT)

From: Fritz.Mike@epamail.epa.gov
Sent: Thursday, June 03, 2004 12:55 PM
To: jtravelste@mrc.state.va.us; peter.r.kube@usace.army.mil;
toconnell@dnr.state.md.us; lkline@asmfc.org; fritz.mike@epa.gov;
prfc@crosslink.net; jamie.king@noaa.gov; greiner.jennifer@epa.gov;
julie_thompson@fws.gov; Wayne Young; Kate Meade; pjones@dnr.state.md.us
Cc: Bisland.Carín@epamail.epa.gov; Hanmer.Rebecca@epamail.epa.gov;
Arguto.William@epamail.epa.gov; Okorn.Barbara@epamail.epa.gov;
Kluza.Daniel@epamail.epa.gov

Subject: Research for the Oyster EIS

NOTE TO THE OYSTER EIS PROJECT DELIVERY TEAM

This is to recommend engagement of the oyster EIS Peer Review Group of independent scientists for the purpose of advising NOAA and the EIS Project Delivery Team on the use of the \$1.9 million that the NOAA Chesapeake Bay Office now has to support research for the oyster EIS. (The NOAA RFP is in the Federal Register today.) Dr. Jamie King of the NOAA office and I discussed this morning and we recommend it as a way of supporting the interagency collaborative effort on the EIS with independent scientific advice from the panel that the EIS Project Delivery Team formed for such advisory purposes.

Jamie indicated intent to engage also the leadership of the CBP STAC (Dr. Denise Breitburg, et al.) to obtain the benefit of continuing advice from those who participated in the STAC workshop on research needs for the EIS. In addition, the NOAA RFP process will include external merit reviews by qualified experts.

To engage the EIS Peer Review Group in a timely way, and to avoid undue delay, we would envision a meeting of the group in mid-July, perhaps the week of July 19

Question to Peter Kube and Tom O'Connell: will you take the initiative to coordinate a meeting of the Peer Review Group for this purpose?

Mike Fritz

Michael A. Fritz
Coordinator, Living Resources Subcommittee
Chesapeake Bay Program Office, EPA
410 Severn Ave, Suite 109
Annapolis, MD 21403
Phone: 410-267-5721
FAX: 410-267-5777
Email: fritz.mike@epa.gov



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Robert L. Ehrlich, Jr.
Governor

Kendl P. Philbrick
Secretary

Michael S. Steele
Lt. Governor

**TECHNICAL AND REGULATORY SERVICES ADMINISTRATION
ENVIRONMENTAL RISK ASSESSMENT PROGRAM
SHELLFISH CERTIFICATION DIVISION**

Jonas A. Jacobson
Deputy Secretary

MEMORANDUM

To: Tom O'Connell, Maryland Department of Natural Resources Fisheries Service

From: Kathy Brohawn, Maryland Department of the Environment

Subject: *C. ariakensis* EIS, Identifying Priorities Related to Shellfish Sanitation

Date: July 2, 2004

CC: Robert Croonenbergs, Robert Wittman, Rich Eskin, George Harman

The Maryland Department of Environment (MDE) and Virginia Department of Health (VDH) are responsible for evaluating and classifying the sanitary quality of shellfish harvesting waters in Maryland and Virginia. After discussing the issue of evaluating priority research needs critical for decisions on introducing *C. ariakensis* to the Chesapeake Bay and completing the Oyster EIS, MDE consulted with Robert E. Croonenbergs, Ph.D. Director, Virginia Department of Health, Division of Shellfish Sanitation. MDE and VDH concur and offer the following recommendations:

Both Maryland and Virginia adhere to the practices under the National Shellfish Sanitation Program to classify the sanitary quality of shellfish growing waters. Growing water classification is the same for several species (including oysters, clams, and mussels), we concur with the NAS NRC report and see no reason to expect any different human health risks associated with *C. ariakensis* than are associated with *C. virginica* and see no reason to expect an increase in closed shellfish areas due to the introduction of *C. ariakensis*.

If *C. ariakensis* is introduced as a triploid this will necessitate that it be raised in some type of aquaculture setting, most likely on private oyster grounds. Under this scenario oysters may be harvested for market during the warm water months. Warm water shellfish growing area conditions significantly increase the risk of *Vibrio vulnificus* infections from ingestion of raw or undercooked oysters. Currently the Interstate Shellfish Sanitation Conference has adopted a *Vibrio vulnificus* control plan that requires specific harvest and processing controls if there are two or more cases of *Vibrio vulnificus* illness from a state's shellfish growing areas. Since the shellfish from the Chesapeake Bay and its tributaries have not been associated with cases of *Vibrio vulnificus* illness it is highly desirable to maintain this absence of disease. This can be achieved by development of controls on harvest of *C. ariakensis* during warm weather months. Research is needed to better define the specific conditions in the Chesapeake Bay that require controls for *Vibrio vulnificus*. These controls can prevent disease and death from *Vibrio vulnificus* in Chesapeake Bay oysters. The development of these controls accomplish two goals; the first is the protection of public health and the second is protecting the reputation of Chesapeake Bay oysters.

Additionally, if *C. ariakensis* is privately grown in existing closed areas with the expectation that relay (a process where oysters are removed from closed waters to open waters for natural cleansing) would be required prior to harvest, additional research would be necessary. A study, designed to determine the critical values for water temperature, salinity, and other environmental factors to demonstrate the effectiveness of the natural cleansing process would be required prior to any relay activities. The research for relay is not critical for decisions related to introduction, however should be included as necessary once a decision is made.



UNITED STATES ENVIRONMENTAL PROTECTION AGENCY
REGION III
1650 Arch Street
Philadelphia, Pennsylvania 19103-2029

P.02
1.02/03

Colonel Yvonne J. Prettyman-Beck
District Engineer, Norfolk District
U.S. Army Corps of Engineers
803 Front Street
Norfolk, VA 23510

JUL 13 2004

Dear Colonel Prettyman-Beck:

The Environmental Protection Agency recognizes the Corps of Engineers as the Lead Federal agency in the development of the EIS for non-native oysters in the Chesapeake Bay. The EPA serves as a Cooperating Federal agency and is a project delivery team member in that development process. The Lead and Cooperating Agencies that have the scientific and programmatic expertise are responsible for meeting the project goals inherent in the development of the EIS. To date, these project goals have been established and agreed upon through a collaboration of the participating agencies at both State and Federal levels. The Corps' Notice of Intent published in the Federal Register on January 5, 2004, reflected that collaboration related to the scope of alternatives analysis. The NOI listed seven preliminary alternatives to be considered, based on the stated purpose and need. Four of these alternatives (including the no action alternative) would involve restoration of native species.

EPA believes that the language of the Congressional appropriation was not intended, and should not be used, to serve as the basis for defining the action's purpose and need. We believe that a comprehensive analysis of the issues involved in restoring the ecological role of oysters and the economic benefits of a commercial fishery through native oyster species is warranted. We further believe that the language does not limit the EIS to consideration only of the introduction of non-native oyster species.

For purposes of NEPA, the purpose of the action should be defined in relationship to the need for the action, addressing the problem that is to be solved. In this case, the purpose and need should not be confused with the specific proposed action (i.e., the introduction of non-native oysters), but rather should be phrased in terms of the problem to be addressed and the goal to be achieved. As set forth in our February 27, 2004 EIS scoping comments, EPA continues to believe that an appropriate purpose and need for this EIS should be framed in terms of establishing oyster populations capable of supporting an economically viable fishery, either through open water harvest or aquaculture. We, therefore, recommend that the Corps continue to include consideration of native oyster species restoration as part of the EIS alternatives analysis process.



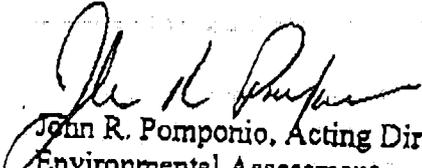
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Although Congress has the authority to waive NEPA with respect to any particular project, it must do so explicitly. In the Appropriations Act of 2004 that included the appropriation for the EIS, Congress clearly did not waive NEPA with respect to the appropriation. The appropriation specifically calls for an environmental impact statement, a term under NEPA that has been well defined by the Council on Environmental Quality (CEQ) and supported through case law. It is our opinion that NEPA applies and that the Corps must, therefore, rigorously explore and objectively evaluate all reasonable alternatives.

CEQ regulations implementing NEPA require that a full range of reasonable alternatives be considered, and, for alternatives which are eliminated from detailed study, briefly discuss the reasons for their having been eliminated. Reasonable alternatives include those that are practical or feasible from the technical and economic standpoint and using common sense, rather than simply desirable from the standpoint of prospective proponents. The full range of alternatives can and should include alternatives that may be outside the capability or jurisdiction of the Corps, if they are reasonable. Most importantly, CEQ has stated that alternatives that are outside the scope of what Congress has approved or funded must still be evaluated in the EIS if they are reasonable, because the EIS may serve as the basis for modifying the Congressional approval or funding in light of NEPA's goals and policies.

We remain committed to participating in the development of this Programmatic EIS and look forward to continued collaboration with the project delivery team. Please feel free to call me at 215-814-2702 if you wish to discuss this issue in greater detail.

Sincerely,


John R. Pomponio, Acting Director
Environmental Assessment and Innovation Division



MARYLAND
ENVIRONMENTAL
SERVICE

Robert L. Ehrlich, Jr.
Governor

John S. Sparkman
Director

August 20, 2004

Mr. William Arguto
Region 3
U.S. Environmental Protection Agency
1650 Arch Street
Philadelphia, PA 19103-2029

Re: NEPA Coordination Letter: Request for information for a Programmatic Environmental Impact Statement (EIS) for the proposed introduction of the oyster species, *Crassostrea ariakensis* into the tidal waters of Maryland and Virginia to increase oyster populations.

Dear Mr. Arguto:

The Maryland Environmental Service (MES) has been contracted by the Maryland Department of Natural Resources to develop a Programmatic Environmental Impact Statement (EIS) following the National Environmental Policy Act (NEPA) process for a proposed introduction of the non-native oyster species *Crassostrea ariakensis* into the tidal waters of the Chesapeake Bay. The objectives of the EIS are presented in the attached Notice of Intent (NOI). The Norfolk District, U.S. Army Corps of Engineers (CENAO) is the lead Federal agency; and the Maryland Department of Natural Resources (MDNR), on behalf of Maryland, and the Virginia Marine Resources Commission (VMRC), on behalf of Virginia, are the lead state agencies (States). Cooperating Federal agencies include the U.S. Environmental Protection Agency (EPA), National Oceanographic and Atmospheric Administration (NOAA), and U.S. Fish and Wildlife Service (FWS).

In preparation for consideration of alternatives in the EIS, this letter is written to initiate and document formal coordination with the U.S. Environmental Protection Agency. Specifically, MES is requesting on behalf of the state and federal lead agencies, any information that may guide the study process and provide information on the study area, which includes the Chesapeake Bay of Maryland and Virginia, and associated areas of potential impact that could possibly be affected by the proposed action or by any of the alternative actions listed in the attachment. Please provide the requested information to MES to assemble and disseminate to lead and cooperating agencies as appropriate. Information should be sent to MES by September 15, 2004.

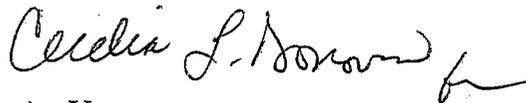
A coordination letter has also been sent to the National Oceanographic and Atmospheric Administration (NOAA), National Marine Fisheries Service (NMFS) to

respond in accordance with the Endangered Species Act within their jurisdiction of fish species, to FWS for information concerning listed species managed under their charter, the Maryland Department of Natural Resources, Wildlife and Heritage Division on State listed species, and the Virginia Division of Natural Heritage.

Please note that subsequent to publication of the NOI, the Norfolk District concluded that the language of the Congressional authorization constrains it to only considering the impacts of an introduction of *C. ariakensis*. Efforts to remove this limitation are in progress to enable the Norfolk District to consider the proposed introduction of *C. ariakensis* in the context of other oyster restoration alternatives as anticipated when the NOI was released. As requested by MDNR, in order to provide well supported informed decision-making, the information sought by this coordination letter is for all of the alternatives that were included in the NOI and those added through the NEPA scoping process.

Thank you in advance for your assistance. Please feel free to contact me if you have any questions regarding this request. I can be reached at 410-729-8343 or by email at wyoun@menv.com or you may contact our project manager, Kate Meade 410-729-8338 or by email at kmead@menv.com.

Sincerely



Wayne Young
Chief, Environmental Dredging and Restoration
Division

Attachments:

Notice of Intent

Cc: Peter Kube, CENAO
Pete Jensen, MDNR
Jack Travelstead, VMRC
Tom O'Connell, MDNR
Jamie King, NOAA
Mike Fritz, USEPA
Julie Thompson, USFWS



MARYLAND
ENVIRONMENTAL
SERVICE

Robert L. Ehrlich, Jr.
Governor

John S. Sparkman
Director

August 20, 2004

Mr. Tom McCabe
Acting Field Supervisor
U.S. Fish and Wildlife Service
Chesapeake Bay Field Office
177 Admiral Cochrane Dr.
Annapolis, MD 21014

Re: NEPA Coordination Letter: Request for information for a Programmatic Environmental Impact Statement (EIS) for the proposed introduction of the oyster species, *Crassostrea ariakensis* into the tidal waters of Maryland and Virginia to increase oyster populations.

Dear Mr. McCabe:

The Maryland Environmental Service (MES) has been contracted by the Maryland Department of Natural Resources to develop a Programmatic Environmental Impact Statement (EIS) following the National Environmental Policy Act (NEPA) process for a proposed introduction of the non-native oyster species *Crassostrea ariakensis* into the tidal waters of the Chesapeake Bay. The objectives of the EIS are presented in the attached Notice of Intent (NOI). The Norfolk District, U.S. Army Corps of Engineers (CENAO) is the lead Federal agency; and the Maryland Department of Natural Resources (MDNR), on behalf of Maryland, and the Virginia Marine Resources Commission (VMRC), on behalf of Virginia, are the lead state agencies (States). Cooperating Federal agencies include the U.S. Environmental Protection Agency (EPA), National Oceanographic and Atmospheric Administration (NOAA), and U.S. Fish and Wildlife Service (FWS).

In preparation for consideration of alternatives in the EIS, this letter is written to initiate and document formal coordination with the U.S. Fish and Wildlife Service (FWS). Specifically, MES is requesting on behalf of the state and federal lead agencies, any information that may guide the study process and provide information on any federally protected species that may inhabit or visit the study area, which includes the Chesapeake Bay of Maryland and Virginia, and associated areas of potential impact that could possibly be affected by the proposed action or by any of the alternative actions listed in the attachment. Potential impacts to federally listed rare, threatened, endangered, and candidate species in critical habitat will be assessed as part of the analysis of ecological impacts. A list of these species would be useful for the analysis, and is requested. Please provide the requested information to MES to assemble and

disseminate to lead and cooperating agencies as appropriate. Information should be sent to MES by September 15, 2004.

A coordination letter has also been sent to the National Oceanographic and Atmospheric Administration (NOAA), National Marine Fisheries Service (NMFS) to respond in accordance with the Endangered Species Act within their jurisdiction of fish species, the Maryland Department of Natural Resources, Wildlife and Heritage Division on State listed species, and the Virginia Division of Natural Heritage on State listed species.

Please note that subsequent to publication of the NOI, the Norfolk District concluded that the language of the Congressional authorization constrains it to only considering the impacts of an introduction of *C. ariakensis*. Efforts to remove this limitation are in progress to enable the Norfolk District to consider the proposed introduction of *C. ariakensis* in the context of other oyster restoration alternatives as anticipated when the NOI was released. As requested by MDNR, in order to provide well supported informed decision-making, the information sought by this coordination letter is for all of the alternatives that were included in the NOI and those added through the NEPA scoping process.

Thank you in advance for your assistance. Please feel free to contact me if you have any questions regarding this request. I can be reached at 410-729-8343 or by email at wyoung@menv.com or you may contact our project manager, Kate Meade 410-729-8338 or by email at kmead@menv.com.

Sincerely



Wayne Young
Chief, Environmental Dredging and Restoration
Division

Attachments:

Notice of Intent

Cc: Peter Kube, CENAO
Pete Jensen, MDNR
Jack Travelstead, VMRC
Tom O'Connell, MDNR
Jamie King, NOAA
Mike Fritz, USEPA
Julie Thompson, USFWS



MARYLAND
ENVIRONMENTAL
SERVICE

Robert L. Ehrlich, Jr.
Governor

John S. Sparkman
Director

August 20, 2004

Mr. Paul Peditto, Director
Wildlife and Natural Heritage Program
Maryland Department of Natural Resources
580 Taylor Avenue, E-1
Tawes State Office Building
Annapolis, MD 21014

Re: NEPA Coordination Letter: Request for information for a Programmatic Environmental Impact Statement (EIS) for the proposed introduction of the oyster species, *Crassostrea ariakensis* into the tidal waters of Maryland and Virginia to increase oyster populations.

Dear Mr. Peditto:

The Maryland Environmental Service (MES) has been contracted by the Maryland Department of Natural Resources to develop a Programmatic Environmental Impact Statement (EIS) following the National Environmental Policy Act (NEPA) process for a proposed introduction of the non-native oyster species *Crassostrea ariakensis* into the tidal waters of the Chesapeake Bay. The objectives of the EIS are presented in the attached Notice of Intent (NOI). The Norfolk District, U.S. Army Corps of Engineers (CENAO) is the lead Federal agency; and the Maryland Department of Natural Resources (MDNR), on behalf of Maryland, and the Virginia Marine Resources Commission (VMRC), on behalf of Virginia, are the lead state agencies (States). Cooperating Federal agencies include the U.S. Environmental Protection Agency (EPA), National Oceanographic and Atmospheric Administration (NOAA), and U.S. Fish and Wildlife Service (FWS).

In preparation for consideration of alternatives in the EIS, this letter is written to initiate and document formal coordination with the Maryland Department of Natural Resources. Specifically, MES is requesting on behalf of the state and federal lead agencies, any information that may guide the study process and provide information on State listed rare, endangered or threatened species that may inhabit or visit the study area, which includes the Chesapeake Bay of Maryland and Virginia, and associated areas of potential impact that could possibly be affected by the proposed action or by any of the alternative actions listed in the attachment. Potential impacts to State listed rare, threatened, endangered, and candidate species in critical habitat will be assessed as part of the analysis of ecological impacts. A list of these species would be useful for the analysis, and is requested. Please provide the requested information to MES to assemble

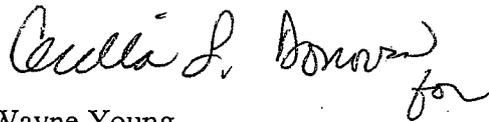
and disseminate to lead and cooperating agencies as appropriate. Information should be sent to MES by September 15, 2004.

A coordination letter has also been sent to the National Oceanographic and Atmospheric Administration (NOAA) and National Marine Fisheries Service (NMFS) to respond in accordance with the Endangered Species Act within their jurisdiction of fish species, to FWS for information concerning listed species managed under their charter, and the Virginia Natural Heritage Program.

Please note that subsequent to publication of the NOI, the Norfolk District concluded that the language of the Congressional authorization constrains it to only considering the impacts of an introduction of *C. ariakensis*. Efforts to remove this limitation are in progress to enable the Norfolk District to consider the proposed introduction of *C. ariakensis* in the context of other oyster restoration alternatives as anticipated when the NOI was released. As requested by MDNR, in order to provide well supported informed decision-making, the information sought by this coordination letter is for all of the alternatives that were included in the NOI and those added through the NEPA scoping process.

Thank you in advance for your assistance. Please feel free to contact me if you have any questions regarding this request. I can be reached at 410-729-8343 or by email at wyoung@menv.com or you may contact our project manager, Kate Meade 410-729-8338 or by email at kmead@menv.com.

Sincerely

A handwritten signature in black ink, appearing to read "Wayne Young" with a stylized flourish at the end.

Wayne Young
Chief, Environmental Dredging and Restoration
Division

Attachments:

Notice of Intent

Cc: Peter Kube, CENAO
Pete Jensen, MDNR
Tom O'Connell, MDNR
Jack Travelstead, VMRC
Jamie King, NOAA
Mike Fritz, USEPA
Julie Thompson, USFWS



MARYLAND
ENVIRONMENTAL
SERVICE

Robert L. Ehrlich, Jr.
Governor

John S. Sparkman
Director

August 20, 2004

Elizabeth J. Cole
Maryland Historic Trust
100 Community Place
Crownsville, Md. 21032-2023

Re: NEPA Coordination Letter: Request for information for a Programmatic Environmental Impact Statement (EIS) for the proposed introduction of the oyster species, *Crassostrea ariakensis* into the tidal waters of Maryland and Virginia to increase oyster populations.

Dear Ms. Cole:

The Maryland Environmental Service (MES) has been contracted by the Maryland Department of Natural Resources to develop a Programmatic Environmental Impact Statement (EIS) following the National Environmental Policy Act (NEPA) process for a proposed introduction of the non-native oyster species *Crassostrea ariakensis* into the tidal waters of the Chesapeake Bay. The objectives of the EIS are presented in the attached Notice of Intent (NOI). The Norfolk District, U.S. Army Corps of Engineers (CENAO) is the lead Federal agency; and the Maryland Department of Natural Resources (MDNR), on behalf of Maryland, and the Virginia Marine Resources Commission (VMRC), on behalf of Virginia, are the lead state agencies (States). Cooperating Federal agencies include the U.S. Environmental Protection Agency (EPA), National Oceanographic and Atmospheric Administration (NOAA), and U.S. Fish and Wildlife Service (FWS).

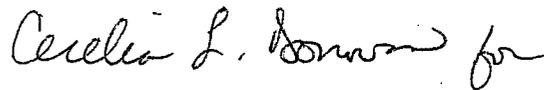
In preparation for consideration of alternatives in the EIS, this letter is written to initiate and document formal coordination with the Maryland Historic Trust (MHT) Maryland State Historic Preservation Office (SHPO). Specifically, MES is requesting on behalf of the state and federal lead agencies, any information that may guide the study process and information from your office on site investigations that may be required under the State Historic Preservation Act for the area that includes the Chesapeake Bay of Maryland and Virginia, and associated areas of potential impact that could possibly be affected by the proposed action or by any of the alternative actions listed in the attachment. Please provide the requested information to MES to assemble and disseminate to lead and cooperating agencies as appropriate. Information should be sent to MES by September 15, 2004.

A coordination letter has also been sent to the Virginia Department of Historical Resources for information on cultural resources in Virginia.

Please note that subsequent to publication of the NOI, the Norfolk District concluded that the language of the Congressional authorization constrains it to only considering the impacts of an introduction of *C. ariakensis*. Efforts to remove this limitation are in progress to enable the Norfolk District to consider the proposed introduction of *C. ariakensis* in the context of other oyster restoration alternatives as anticipated when the NOI was released. As requested by MDNR, in order to provide well supported informed decision-making, the information sought by this coordination letter is for all of the alternatives that were included in the NOI and those added through the NEPA scoping process.

Thank you in advance for your assistance. Please feel free to contact me if you have any questions regarding this request. I can be reached at 410-729-8343 or by email at wyoung@menv.com or you may contact our project manager, Kate Meade 410-729-8338 or by email at kmead@menv.com.

Sincerely,



Wayne Young
Chief, Environmental Dredging and Restoration
Division

Attachments:

Notice of Intent

Cc: Peter Kube, CENAO
Pete Jensen, MDNR
Jack Travelstead, VMRC
Tom O'Connell, MDNR
Jamie King, NOAA
Mike Fritz, USEPA
Julie Thompson, USFWS



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Robert L. Ehrlich, Jr.
Governor

John S. Sparkman
Director

August 20, 2004

Mr. John Nichols
National Marine Fisheries Service
Habitat Conservation Division
904 South Morris Street
Oxford, Maryland 21654

Re: NEPA Coordination Letter: Request for information for a Programmatic Environmental Impact Statement (EIS) for the proposed introduction of the oyster species, *Crassostrea ariakensis* into the tidal waters of Maryland and Virginia to increase oyster populations.

Dear Mr. Nichols:

The Maryland Environmental Service (MES) has been contracted by the Maryland Department of Natural Resources to develop a Programmatic Environmental Impact Statement (EIS) following the National Environmental Policy Act (NEPA) process for a proposed introduction of the non-native oyster species *Crassostrea ariakensis* into the tidal waters of the Chesapeake Bay. The objectives of the EIS are presented in the attached Notice of Intent (NOI). The Norfolk District, U.S. Army Corps of Engineers (CENAO) is the lead Federal agency; and the Maryland Department of Natural Resources (MDNR), on behalf of Maryland, and the Virginia Marine Resources Commission (VMRC), on behalf of Virginia, are the lead state agencies (States). Cooperating Federal agencies include the U.S. Environmental Protection Agency (EPA), National Oceanographic and Atmospheric Administration (NOAA), and U.S. Fish and Wildlife Service (FWS).

In preparation for consideration of alternatives in the EIS, this letter is written to initiate and document formal coordination with the National Oceanic and Atmospheric Administration (NOAA), and the National Marine Fisheries Service (NMFS). Specifically, MES is requesting on behalf of the state and federal lead agencies, any information that may guide the study process and provide information on Essential Fish Habitat (EFH) and any federally-protected species that may inhabit or visit the study area, which includes the Chesapeake Bay of Maryland and Virginia, and associated areas of potential impact that could possibly be affected by the proposed action or by any of the alternative actions listed in the attachment. Potential impacts to EFH and federally-listed rare, threatened, endangered, and candidate species in critical habitat will be assessed as part of the analysis of ecological impacts. A list of these species would be useful for the analysis, and is requested. Please provide the requested information to MES to assemble

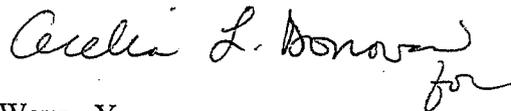
and disseminate to lead and cooperating agencies as appropriate. Information should be sent to MES by September 15, 2004.

A coordination letter has also been sent to FWS for information concerning listed species managed under their charter, to the Maryland Wildlife and Heritage Division, and the Virginia Division of Natural Heritage on State listed species.

Please note that subsequent to publication of the NOI, the Norfolk District concluded that the language of the Congressional authorization constrains it to only considering the impacts of an introduction of *C. ariakensis*. Efforts to remove this limitation are in progress to enable the Norfolk District to consider the proposed introduction of *C. ariakensis* in the context of other oyster restoration alternatives as anticipated when the NOI was released. As requested by MDNR, in order to provide well supported informed decision-making, the information sought by this coordination letter is for all of the alternatives that were included in the NOI and those added through the NEPA scoping process.

Thank you in advance for your assistance. Please feel free to contact me if you have any questions regarding this request. I can be reached at 410-729-8343 or by email at wyoun@menv.com or you may contact our project manager, Kate Meade 410-729-8338 or by email at kmead@menv.com.

Sincerely

Handwritten signature of Cecelia L. Donovan in cursive, with the word "for" written below the signature.

Wayne Young
Chief, Environmental Dredging and Restoration
Division

Attachments:

Notice of Intent

Cc: Peter Kube, CENAO
Pete Jensen, MDNR
Jack Travelstead, VMRC
Tom O'Connell, MDNR
Jamie King, NOAA
Mike Fritz, USEPA
Julie Thompson, USFWS



MARYLAND
ENVIRONMENTAL
SERVICE

Robert L. Ehrlich, Jr.
Governor

John S. Sparkman
Director

August 20, 2004

Ms. Julie Crocker
National Marine Fisheries Service
U.S. Department of Commerce
One Blackburn Drive
Gloucester, MA 01930-2298

Re: NEPA Coordination Letter: Request for information for a Programmatic Environmental Impact Statement (EIS) for the proposed introduction of the oyster species, *Crassostrea ariakensis* into the tidal waters of Maryland and Virginia to increase oyster populations.

Dear Ms. Crocker:

The Maryland Environmental Service (MES) has been contracted by the Maryland Department of Natural Resources to develop a Programmatic Environmental Impact Statement (EIS) following the National Environmental Policy Act (NEPA) process for a proposed introduction of the non-native oyster species *Crassostrea ariakensis* into the tidal waters of the Chesapeake Bay. The objectives of the EIS are presented in the attached Notice of Intent (NOI). The Norfolk District, U.S. Army Corps of Engineers (CENAO) is the lead Federal agency; and the Maryland Department of Natural Resources (MDNR), on behalf of Maryland, and the Virginia Marine Resources Commission (VMRC), on behalf of Virginia, are the lead state agencies (States). Cooperating Federal agencies include the U.S. Environmental Protection Agency (EPA), National Oceanographic and Atmospheric Administration (NOAA), and U.S. Fish and Wildlife Service (FWS).

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and disseminate to lead and cooperating agencies as appropriate. Information should be sent to MES by September 15, 2004.

A coordination letter has also been sent to FWS for information concerning listed species managed under their charter, to the Maryland Wildlife and Heritage Division, and the Virginia Division of Natural Heritage on State listed species.

Please note that subsequent to publication of the NOI, the Norfolk District concluded that the language of the Congressional authorization constrains it to only considering the impacts of an introduction of *C. ariakensis*. Efforts to remove this limitation are in progress to enable the Norfolk District to consider the proposed introduction of *C. ariakensis* in the context of other oyster restoration alternatives as anticipated when the NOI was released. As requested by MDNR, in order to provide well supported informed decision-making, the information sought by this coordination letter is for all of the alternatives that were included in the NOI and those added through the NEPA scoping process.

Thank you in advance for your assistance. Please feel free to contact me if you have any questions regarding this request. I can be reached at 410-729-8343 or by email at wyoun@menv.com or you may contact our project manager, Kate Meade 410-729-8338 or by email at kmead@menv.com.

Sincerely



Wayne Young
Chief, Environmental Dredging and Restoration
Division

Attachments:

Notice of Intent

Cc: Peter Kube, CENAO
Pete Jensen, MDNR
Jack Travelstead, VMRC
Tom O'Connell, MDNR
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Mike Fritz, USEPA
Julie Thompson, USFWS



MARYLAND
ENVIRONMENTAL
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Robert L. Ehrlich, Jr.
Governor

John S. Sparkman
Director

August 20, 2004

Mr. Jonathan Doherty
Director
National Park Service
U.S. Department of the Interior
Chesapeake Bay Program Office
410 Severn Avenue
Annapolis, MD 21403

Re: NEPA Coordination Letter: Request for information for a Programmatic Environmental Impact Statement (EIS) for the proposed introduction of the oyster species, *Crassostrea ariakensis* into the tidal waters of Maryland and Virginia to increase oyster populations.

Dear Mr. Doherty:

The Maryland Environmental Service (MES) has been contracted by the Maryland Department of Natural Resources to develop a Programmatic Environmental Impact Statement (EIS) following the National Environmental Policy Act (NEPA) process for a proposed introduction of the non-native oyster species *Crassostrea ariakensis* into the tidal waters of the Chesapeake Bay. The objectives of the EIS are presented in the attached Notice of Intent (NOI). The Norfolk District, U.S. Army Corps of Engineers (CENAO) is the lead Federal agency; and the Maryland Department of Natural Resources (MDNR), on behalf of Maryland, and the Virginia Marine Resources Commission (VMRC), on behalf of Virginia, are the lead state agencies (States). Cooperating Federal agencies include the U.S. Environmental Protection Agency (EPA), National Oceanographic and Atmospheric Administration (NOAA), and U.S. Fish and Wildlife Service (FWS).

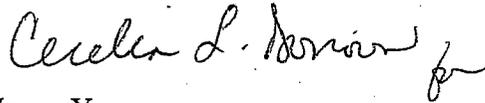
In preparation for consideration of alternatives in the EIS, this letter is written to initiate and document formal coordination with the U.S. Department of the Interior, National Park Service. Specifically, MES is requesting on behalf of the state and federal lead agencies, any information that may guide the study process and provide information on the study area, which includes the Chesapeake Bay of Maryland and Virginia, and associated areas of potential impact that could possibly be affected by the proposed action or by any of the alternative actions listed in the attachment. Please provide the requested information to MES to assemble and disseminate to lead and cooperating agencies as appropriate. Information should be sent to MES by September 15, 2004.

A coordination letter has also been sent to the National Oceanographic and Atmospheric Administration (NOAA), National Marine Fisheries Service (NMFS) to respond in accordance with the Endangered Species Act within their jurisdiction of fish species, to FWS for information concerning listed species managed under their charter, the Maryland Department of Natural Resources, Wildlife and Heritage Division on State listed species, and the Virginia Division of Natural Heritage.

Please note that subsequent to publication of the NOI, the Norfolk District concluded that the language of the Congressional authorization constrains it to only considering the impacts of an introduction of *C. ariakensis*. Efforts to remove this limitation are in progress to enable the Norfolk District to consider the proposed introduction of *C. ariakensis* in the context of other oyster restoration alternatives as anticipated when the NOI was released. As requested by MDNR, in order to provide well supported informed decision-making, the information sought by this coordination letter is for all of the alternatives that were included in the NOI and those added through the NEPA scoping process.

Thank you in advance for your assistance. Please feel free to contact me if you have any questions regarding this request. I can be reached at 410-729-8343 or by email at wyoun@menv.com or you may contact our project manager, Kate Meade 410-729-8338 or by email at kmead@menv.com.

Sincerely



Wayne Young
Chief, Environmental Dredging and Restoration
Division

Attachments:

Notice of Intent

Cc: Peter Kube, CENAO
Pete Jensen, MDNR
Jack Travelstead, VMRC
Tom O'Connell, MDNR
Jamie King, NOAA
Mike Fritz, USEPA
Julie Thompson, USFWS



MARYLAND
ENVIRONMENTAL
SERVICE

Robert L. Ehrlich, Jr.
Governor

John S. Sparkman
Director

August 20, 2004

Project Review Coordinator
DCR Division of Natural Heritage
217 Governor Street
Richmond, VA 23219

Re: NEPA Coordination Letter: Request for information for a Programmatic Environmental Impact Statement (EIS) for the proposed introduction of the oyster species, *Crassostrea ariakensis* into the tidal waters of Maryland and Virginia to increase oyster populations.

To whom it may concern:

The Maryland Environmental Service (MES) has been contracted by the Maryland Department of Natural Resources to develop a Programmatic Environmental Impact Statement (EIS) following the National Environmental Policy Act (NEPA) process for a proposed introduction of the non-native oyster species *Crassostrea ariakensis* into the tidal waters of the Chesapeake Bay. The objectives of the EIS are presented in the attached Notice of Intent (NOI). The Norfolk District, U.S. Army Corps of Engineers (CENAO) is the lead Federal agency; and the Maryland Department of Natural Resources (MDNR), on behalf of Maryland, and the Virginia Marine Resources Commission (VMRC), on behalf of Virginia, are the lead state agencies (States). Cooperating Federal agencies include the U.S. Environmental Protection Agency (EPA), National Oceanographic and Atmospheric Administration (NOAA), and U.S. Fish and Wildlife Service (FWS).

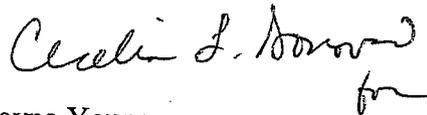
In preparation for consideration of alternatives in the EIS, this letter is written to initiate and document formal coordination with the Virginia Department of Conservation and Recreation. Specifically, MES is requesting on behalf of the state and federal lead agencies, any information that may guide the study process and provide information on State listed rare, endangered or threatened species that may inhabit or visit the study area, which includes the Chesapeake Bay of Maryland and Virginia, and associated areas of potential impact that could possibly be affected by the proposed action or by any of the alternative actions listed in the attachment. A list of these species would be useful for the analysis, and is requested. Please provide the requested information to MES to assemble and disseminate to lead and cooperating agencies as appropriate. Information should be sent to MES by September 15, 2004.

A coordination letter has also been sent to the National Oceanographic and Atmospheric Administration (NOAA) and National Marine Fisheries Service (NMFS) to respond in accordance with the Endangered Species Act within their jurisdiction of fish species, to FWS for information concerning listed species managed under their charter, and the Maryland Natural Heritage Program.

Please note that subsequent to publication of the NOI, the Norfolk District concluded that the language of the Congressional authorization constrains it to only considering the impacts of an introduction of *C. ariakensis*. Efforts to remove this limitation are in progress to enable the Norfolk District to consider the proposed introduction of *C. ariakensis* in the context of other oyster restoration alternatives as anticipated when the NOI was released. As requested by MDNR, in order to provide well supported informed decision-making, the information sought by this coordination letter is for all of the alternatives that were included in the NOI and those added through the NEPA scoping process.

Thank you in advance for your assistance. Please feel free to contact me if you have any questions regarding this request. I can be reached at 410-729-8343 or by email at wyoun@menv.com or you may contact our project manager, Kate Meade 410-729-8338 or by email at kmead@menv.com.

Sincerely



Wayne Young
Chief, Environmental Dredging and Restoration
Division

Attachments:

Notice of Intent

Cc: Peter Kube, CENAO
Pete Jensen, MDNR
Jack Travelstead, VMRC
Tom O'Connell, MDNR
Jamie King, NOAA
Mike Fritz, USEPA
Julie Thompson, USFWS



MARYLAND
ENVIRONMENTAL
SERVICE

Robert L. Ehrlich, Jr.
Governor

John S. Sparkman
Director

August 20, 2004

Virginia Department of Historic Resources
2801 Kensington Ave.
Richmond, VA 23221

Re: NEPA Coordination Letter: Request for information for a Programmatic Environmental Impact Statement (EIS) for the proposed introduction of the oyster species, *Crassostrea ariakensis* into the tidal waters of Maryland and Virginia to increase oyster populations.

To whom it may concern:

The Maryland Environmental Service (MES) has been contracted by the Maryland Department of Natural Resources to develop a Programmatic Environmental Impact Statement (EIS) following the National Environmental Policy Act (NEPA) process for a proposed introduction of the non-native oyster species *Crassostrea ariakensis* into the tidal waters of the Chesapeake Bay. The objectives of the EIS are presented in the attached Notice of Intent (NOI). The Norfolk District, U.S. Army Corps of Engineers (CENAO) is the lead Federal agency; and the Maryland Department of Natural Resources (MDNR), on behalf of Maryland, and the Virginia Marine Resources Commission (VMRC), on behalf of Virginia, are the lead state agencies (States). Cooperating Federal agencies include the U.S. Environmental Protection Agency (EPA), National Oceanographic and Atmospheric Administration (NOAA), and U.S. Fish and Wildlife Service (FWS).

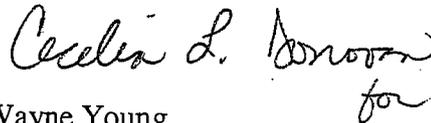
In preparation for consideration of alternatives in the EIS, this letter is written to initiate and document formal coordination with the Virginia Department of Historical Resources. Specifically, MES is requesting on behalf of the state and federal lead agencies, any information that may guide the study process and provide information on any cultural resources included in (or eligible for inclusion in) the National Register of Historic Places (NRHP) that are located in or near the study area, which includes the Chesapeake Bay of Maryland and Virginia, and associated areas of potential impact that could possibly be affected by the proposed action or by any of the alternative actions listed in the attachment. A list of any cultural resources that could be affected by proposed actions would be useful for the analysis, and is requested. Please provide the requested information to MES to assemble and disseminate to lead and cooperating agencies as appropriate. Information should be sent to MES by September 15, 2004.

A coordination letter has also been sent to the Maryland Historic Trust (MHT) Maryland State Historic Preservation Office (SHPO) for information on cultural resources in Maryland.

Please note that subsequent to publication of the NOI, the Norfolk District concluded that the language of the Congressional authorization constrains it to only considering the impacts of an introduction of *C. ariakensis*. Efforts to remove this limitation are in progress to enable the Norfolk District to consider the proposed introduction of *C. ariakensis* in the context of other oyster restoration alternatives as anticipated when the NOI was released. As requested by MDNR, in order to provide well supported informed decision-making, the information sought by this coordination letter is for all of the alternatives that were included in the NOI and those added through the NEPA scoping process.

Thank you in advance for your assistance. Please feel free to contact me if you have any questions regarding this request. I can be reached at 410-729-8343 or by email at wyoung@menv.com or you may contact our project manager, Kate Meade 410-729-8338 or by email at kmead@menv.com.

Sincerely

Handwritten signature of Cecelia L. Young in cursive script.

Wayne Young
Chief, Environmental Dredging and Restoration
Division

Attachments:

Notice of Intent

Cc: Peter Kube, CENAO
Pete Jensen, MDNR
Jack Travelstead, VMRC
Tom O'Connell, MDNR
Jamie King, NOAA
Mike Fritz, USEPA
Julie Thompson, USFWS

-----Original Message-----

From: Eugene Burreson [mailto:gene@vims.edu]

Sent: Tuesday, August 31, 2004 11:05 AM

To: O'Connell, Thomas

Subject: Re: FW: Oyster EIS

Tom,

The OIE designates reference laboratories and a single "reference expert" for each OIE listed disease. My laboratory is the OIE reference laboratory and I am the reference expert for Perkinsus (diseases caused by Perkinsus spp.) and Haplosporidiosis (diseases caused by haplosporidians like MSX). The OIE publishes a manual of diagnostic techniques; I wrote the chapters for Perkinsus spp. and Haplosporidium spp. So, yes, I can help you. There are very few "health records" from China, but we were actually funded a few years ago by NOAA Chesapeake Bay office to do a health survey of *C. ariakensis* in China. We sampled 5 different locations from North to South at two different times. My laboratory did standard histology analysis and Kim Reece's laboratory did molecular diagnostics for Perkinsus spp. and herpes virus. The analyses are almost complete, so the data should be available to include in the EIS. These data should satisfy the ICES recommendation, so I think you can check that box off. The *C. ariakensis* from China are pretty clean with regard to pathogens, but we did find two different species of Perkinsus (one new) and herpes virus at some locations.

Let me know what more you need. I will be at an OIE meeting in Paris from 22-24 September if you need clarification on anything.

Gene

Gene - Stan suggested I contact you regarding the issue described below that is in regards to a recent review of ICES protocols for evaluating a proposed introduction of a non-native species. We would appreciate it if you would review and let me know if you have information that can be used to address this ICES recommendation, and/or would be interested in assisting us with preparing this information, if it becomes necessary. Thanks

The EIS framework will address the majority of ICES recommendations, but there are a few items that we may still need to address. One item listed in Section III, if a decision is made to proceed with an introduction, is the following recommendation "Using internationally recognized protocols, such as the Office International des Épizooties (OIE), or any other appropriate protocols available at the time, review the health records of the donor location and surrounding area of the organisms to be introduced."

--

Eugene M. Burreson

Professor

Department of Environmental and Aquatic Animal Health

Virginia Institute of Marine Science

College of William and Mary

PO. Box 1346 (for mail)

Rte. 1208, Greate Road (For UPS, FedEx)

Gloucester Point, VA 23062 USA

Phone: 804-684-7015

Fax: 804-684-7796

Email: gene@vims.edu

Kate Meade

From: Kate Meade
Sent: Tuesday, September 14, 2004 11:02 AM
To: 'SGollasch@aol.com'
Cc: Thomas O'Connell (E-mail); Anna Krainer; Cassandra Carr; Cecelia Donovan; Elizabeth Habic; Gwendolyn Gibson; Kate Meade; Stephanie Maihan; Tammy Banta; Thomas Humbles; Tim Scripko
Subject: ICES Working Group on Introductions and Transfers - Suminoe Oyster / Chesapeake Bay

To: Dr. Stephan Gollasch, Chair of the ICES Working Group on Introductions and Transfers (WGITMO)
Re: ICES Working Group on Introductions and Transfers - Suminoe Oyster / Chesapeake Bay
Date: September 14, 2004

Dear Dr. Gollasch,

Thank you very much for your reply to Tom O'Connell's (MD, DNR) May 3, 2004 e-mail regarding ICES notification for the proposed action and procedural issues related to the ICES Code of practice. Tom O'Connell has requested that Maryland Environmental Service (MES) follow-up with a formal letter to the committee with additional information including the proposed project schedule and other additional background material on the project.

We would like clarification on a few issues concerning the appropriate ICES coordination process before we follow-up with a formal letter.

As we explained in our e-mail, we are developing an Environmental Impact Statement (EIS) that analyzes the proposed action - to introduce the Asian oyster species, *Crassostrea ariakensis*, propagated from existing 3rd or later generation of the Oregon stock of this species, in accordance with ICES 2003 Code of Practice, into the tidal waters of Maryland and Virginia. The EIS will also examine a range of alternative actions that address the need for the proposed action.

We are focusing our assessment efforts on addressing concerns expressed in the ICES Code of Practice and intend to address the questions that are posed in Appendix A and B in an Ecological Risk Assessment and in the EIS. In order to reduce duplication between NEPA and other regulatory requirements, we would like to know if we could incorporate the ICES prospectus into the EIS for presentation to the council for consideration.

A draft of the EIS will be ready for review by March 2005. Would review by ICES require any particular scheduling considerations to incorporate review time and would an EIS (with the required information from the ICES 2003 Code of Practice) be a suitable format for the described prospectus?

Thank you

-k

Kate Meade, Project Manager
Maryland Environmental Service
259 Najoles Road
Millersville, Maryland 21108
410-729-8338
kmead@menv.com



COMMONWEALTH of VIRGINIA

Department of Historic Resources

2801 Kensington Avenue, Richmond, Virginia 23221

W. Tayloe Murphy, Jr.
Secretary of Natural Resources

Kathleen S. Kilpatrick
Director

September 17, 2004

RECEIVED

SEP 24 2004

Tel: (804) 367-2323
Fax: (804) 367-2391
TDD: (804) 367-2386
www.dhr.state.va.us

Mr. Wayne Young
Maryland Environmental Service
259 Najoles Road
Millersville, MD 21108

Maryland Environmental Service
03

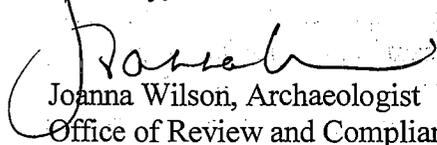
Re: Introduction of Non-native Oyster Species *Crassostrea ariakensis*
DHR File No. 2004-1335

Dear Mr. Young:

We have received information regarding the above referenced situation for our review and comment. We understand that the US Army Corps of Engineers, Norfolk District is the lead federal agency for this undertaking. At this time we are unable to provide specific information regarding the presence of historic resources as we have no project maps or other locational information with which to work. We do, however, wish to state that our concerns would most likely include physical affects to submerged or terrestrial resources (due to construction of habitat, dredging, etc) as well as the potential for secondary impacts to historic resources resulting from increased boat and other traffic in and around the Bay. As you know, the Chesapeake Bay and its tributaries contain known historic resources including submerged vessels and archaeological sites, and there are many architectural resources in the immediate area as well. We look forward to reviewing the Environmental Impact document once it is completed and to working with your organization and the consulting agencies throughout the environmental review process.

We request an opportunity to review any changes to project plans or boundaries. If you have questions about our comments, please call me at (804) 367-2323, Ext. 140.

Sincerely,


Joanna Wilson, Archaeologist
Office of Review and Compliance

Administrative Services
10 Courthouse Avenue
Petersburg, VA 23803
Tel: (804) 863-1624
Fax: (804) 862-6196

Capital Region Office
2801 Kensington Ave.
Richmond, VA 23221
Tel: (804) 367-2323
Fax: (804) 367-2391

Portsmouth Region Office
612 Court Street, 3rd Floor
Portsmouth, VA 23704
Tel: (757) 396-6707
Fax: (757) 396-6712

Roanoke Region Office
1030 Penmar Ave., SE
Roanoke, VA 24013
Tel: (540) 857-7585
Fax: (540) 857-7588

Winchester Region Office
107 N. Kent Street, Suite 203
Winchester, VA 22601
Tel: (540) 722-3427
Fax: (540) 722-7535



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SEP 24 2004

Maryland Environmental Service
03

Robert L. Ehrlich, Jr.
Governor
Michael S. Steele
Lt. Governor
Victor L. Hoskins
Secretary
Shawn S. Karimian
Deputy Secretary

September 20, 2004

Mr. Wayne Young
Chief, Environmental Dredging and Restoration Division
Maryland Environmental Service
259 Najoles Road
Millersville, Maryland 21108

Mr. Young:

This office has received your August 20, 2004 letter for NEPA on the proposed introduction of the oyster species, *Crassostrea ariakensis*, into tidal waters of Maryland. In preparing your review request, this letter had no site areas named or maps included to identify potential oyster introduction regions.

To make a determination, our office would require maps presenting potential tidal waters regions for the project and necessary bottom changes (i.e. pre-introduction dredging requirements or the addition of submerged structures for oyster attachment). Previous oyster introduction projects have required some bottom alterations and/or additions to enable these species the opportunity to develop and flourish. It is these site preliminary conditions that present the majority of impacts to submerged cultural resources. Secondly, if the species introduction proves successful and oyster yields present culling levels. Some present day oyster harvesting techniques will further destroy or damage submerged cultural resources.

When our office receives this indispensable permit material, our review can be performed. Thank you for your cooperation and assistance. If you have any questions or require further information, please contact Mr. Stephen R. Bilicki at (410) 514-7668.

Sincerely,

Stephen R. Bilicki
Underwater Archeologist
200402841

cc: Ms. Kate Meade (MES)
Ms. Elizabeth J. Cole (MHT)
Dr. Susan B.M. Langley (MHT)

September 21, 2004

Mr. C. Ronald Franks
Secretary
Maryland Department of Natural Resources
Tawes State Office Building
580 Taylor Avenue
Annapolis, MD 21401

Dear Secretary Franks:

I appreciated receiving your letter dated September 8, 2004, and thank you for taking the time to address the concerns of the Federal Cooperating agencies (EPA, FWS and NOAA) about the research framework being implemented by the Maryland Department of Natural Resources (MDNR) to support the Environmental Impact Statement (EIS) on Oyster Restoration Alternatives. The Federal Cooperating agencies support an ambitious timeline and a scientifically defensible EIS, and will continue to work with Maryland and Virginia to achieve this goal.

While we support an ambitious schedule, we remain concerned that the States' proposed timeline is likely insufficient to reduce the scientific uncertainty associated with introduction of the non-native oyster, *C. ariakensis*, to the Bay and to make a decision on a project of this magnitude and duration. At the March 2004 Project Delivery Team (PDT) meeting where the schedule was discussed, the Federal Cooperating agencies stated that the Corps of Engineers could utilize the timeline for the EIS Project Management Plan only if there were a decision or concurrence point prior to the Draft EIS in which the group could evaluate the level of uncertainty in the Ecological Risk Assessment (ERA) based upon the demographic models and research currently underway, and assess whether further information would be needed.

The Federal Cooperating agencies favor strongly an iterative process for developing the EIS, with quarterly scientific workshops to make rapid progress on the assessments, and with ongoing documentation and development of the draft EIS document. As different components of the EIS will be completed at different times, development of the EIS will be an ongoing process. However, this "living document" cannot be issued as a "Draft EIS" under the National Environmental Policy Act regulations until it has been deemed adequate for release to the public by the lead agencies and cooperating agencies. Through this iterative process, the PDT will have the assistance of the Scientific Advisory Group, the Peer Review Group and the Risk Assessment Advisory Group.

The Federal Cooperating agencies recently conducted a comprehensive review of currently-funded research on *C. ariakensis* and have identified a research framework (enclosed) needed to support a full evaluation of the proposed action and alternatives to achieve an adequate EIS. While we believe that the MDNR-funded projects start to address many of the research recommendations made by the Chesapeake Bay Program's (CBP) Scientific and Technical Advisory Committee (STAC) and the National Research Council (NRC), we have concerns that the States' desire to choose a preferred alternative by March 2005 does not allow the time to complete the research needed to make a decision based on sound science.

The research framework and timeline we have developed are based on informational needs identified as "essential" or "high priority" in the 2003 STAC report and are consistent with the 2003 NRC report. The consensus of the STAC workshop is that most of the important research questions can be addressed sufficiently within a five-year time frame. This estimated time frame is based on the number of issues that need to be addressed, the sequential nature of some of the required research, and the importance of experiments that utilize multiple age classes of animals. NOAA has been extremely active in obtaining funding to address many of the remaining research needs so that the work is initiated as quickly as possible.

Current work funded by MDNR is focused on the proposed action. There has been little discussion about what data are needed to evaluate adequately the other alternatives listed in the Notice of Intent and the socio-economic and cultural impacts of the seven alternatives. Such evaluations are critical elements in an EIS and need to be scoped out with a plan to acquire the needed information. The demographic model currently under development will be useful in predicting population growth relative to the proposed action and some of the identified alternatives (expanded native oyster restoration, harvest moratorium). The model will not be useful in assessing other alternatives such as aquaculture and will be limited in its ability to address assessment endpoints in the ERA. Also, assessment endpoints and measurement endpoints in the ERA will dictate what data are needed to support the ERA. At this point, the PDT has not seen any endpoints.

We believe the iterative process, which reflects our understanding of the March 2004 PDT agreement, will lead to an informed decision within the shortest time practicable. We continue to support MDNR's proactive efforts in restoring oysters to the Chesapeake Bay, and are committed to working with the lead agencies to complete a scientifically based EIS without undue delay.

I requested a meeting with you earlier this month so that we could discuss the research framework in the attachment before the Principals' Staff Committee (PSC) meeting on September 23, and I am sure you have questions. I have consulted with my counterparts in NOAA and FWS, and also with Col. Prettyman-Beck, about the relationship of the research framework and possible timing of the draft EIS. The Federal Cooperating agencies are available for a policy level discussion with you, Mr. Jensen and Sec. Tayloe Murphy, which I would be happy to schedule with everyone. In the meantime, the Federal Cooperating agency staff and I can visit with you and Mr. Jensen, in person or by conference call, within the next few days to explain the rationale behind the framework.

We look forward to seeing you at the PSC meeting in Fairfax. Best personal regards.

Sincerely yours,

Rebecca W. Hanmer
Director

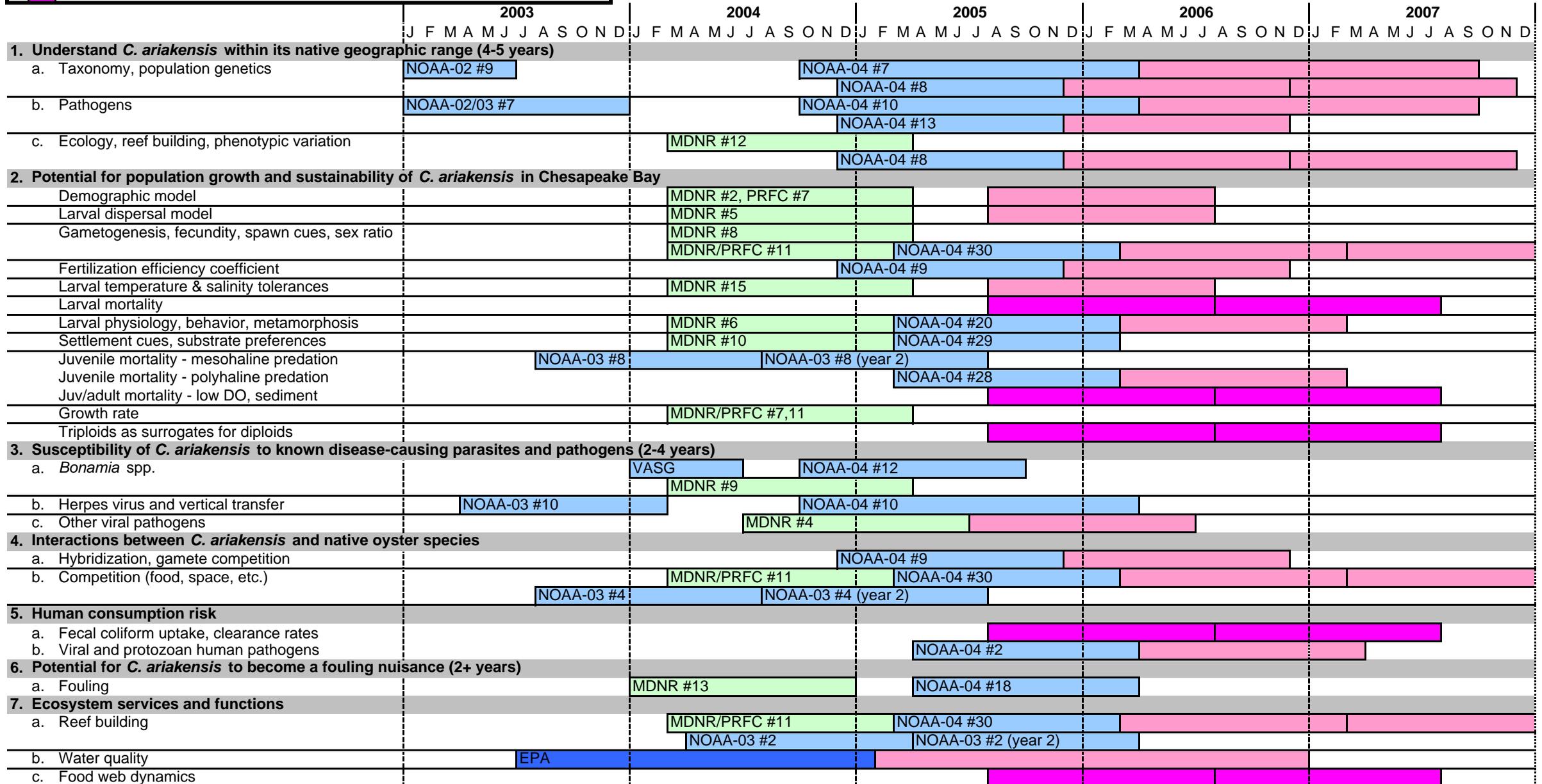
Enclosure: As stated.

Table 1. List of research needs to support Biological Assessments in the EIS, as identified by NRC, STAC, and ICES. Only essential and high priority topics are listed. Medium and low priorities are not included in this table.

LEGEND:

- Funded by Maryland DNR and/or Potomac River Fisheries Commission
- Funded by NOAA or a vehicle of NOAA such as state Sea Grant programs
- Funded by EPA
- Anticipated need for continuation of current research projects
- Anticipated need for future research on topics not yet addressed

States' Proposed
EIS Completion



UNITED STATES DEPARTMENT OF COMMERCE
National Oceanic and Atmospheric Administration
NATIONAL MARINE FISHERIES SERVICE
NORTHEAST REGION
One Blackburn Drive
Gloucester, MA 01930-2298

SEP 21 2004

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SEP 23 2004

Maryland Environmental Service
03

Wayne Young
Chief, Environmental Dredging and Restoration Division
Maryland Environmental Service
259 Najoles Road
Millersville, Maryland 21108

Dear Mr. Young,

This is in response to your letter dated August 20, 2004 requesting information on species listed under the jurisdiction of the National Marine Fisheries Service (NOAA Fisheries) that may be present in the Chesapeake Bay. We are providing this information relative to the proposed introduction of the non-native oyster species *Crassostrea ariakensis* into the tidal waters of Maryland and Virginia to increase oyster populations in Chesapeake Bay.

The federally endangered shortnose sturgeon (*Acipenser brevirostrum*) has been documented in the Chesapeake Bay. The NOAA Fisheries recovery plan (1998) indicates that shortnose sturgeon found in the Chesapeake Bay and its tributaries are considered part of the Chesapeake Bay population. Welsh *et al.* (1999) summarizes historical and recent evidence of shortnose sturgeon presence in the Chesapeake Bay. The first published account of shortnose sturgeon in the Chesapeake system was an 1876 record from the Potomac River reported in a general list of fishes of Maryland (Uhler and Lugger 1876). Other historical records of shortnose sturgeon in the Chesapeake include: the Potomac River (Smith and Bean 1899), the upper Bay near the mouth of the Susquehanna River in the early 1980's, and the lower Bay near the mouths of the James and Rappahannock rivers in the late 1970's (Dadswell *et al.* 1984). The US Fish and Wildlife Service Reward Program for Atlantic Sturgeon began in 1996. Incidental captures of shortnose sturgeon have been documented via this program. As of May 2003, fifty-four shortnose sturgeon captures had been reported via the reward program in the Chesapeake Bay and its tributaries – two from the Susquehanna Flats, eight from the Susquehanna River, two in the Bohemia River, six in the Potomac River, one in the Sassafras River, one in the Elk River, two south of the Bay Bridge near Kent Island, one near Howell Point, one just north of Hoopers Island, and two in Fishing Bay. The remaining shortnose sturgeon were captured in the upper Bay north of Hart-Miller Island. These fish were captured alive in either commercial gillnets, poundnets, fykenets, eel pots, hoop nets, or catfish traps.

Several species of sea turtles are known to be present in the Chesapeake Bay. Leatherback sea turtles (*Dermochelys coriacea*) are present off the Maryland coast but are predominantly pelagic. Loggerhead (*Caretta caretta*), Kemp's ridley (*Lepidochelys kempi*), and green sea turtles (*Chelonia mydas*) are present in the Chesapeake Bay mainly during late spring, summer and early fall when water temperatures are relatively warm. Aerial surveys of loggerhead turtles



north of Cape Hatteras indicate that they are most common in waters from 22 to 49m deep, although they range from beaches to waters beyond the continental shelf. In the Chesapeake Bay area, Kemp's ridleys frequently forage in shallow embayments, particularly in areas supporting submerged aquatic vegetation. Green sea turtles are known to occur in estuarine and oceanic waters along the East Coast from Long Island to the tropics. Recent data from sightings and incidental captures in fishing gear indicate that Loggerhead and Kemp's ridley are the species of sea turtles most likely to be found in the waters of Chesapeake Bay while Leatherback and Green sea turtles may be also in the area.

Atlantic sturgeon (*Acipenser oxyrinchus oxyrinchus*) are also present in the Chesapeake Bay. NOAA Fisheries has designated this species as a Species of Concern due to declines in abundance in portions of its range. It is likely that a status review will be initiated for Atlantic sturgeon in the near future and as such, it may be determined that listing under the ESA is warranted. While this species is not currently listed, we urge states and other agencies to keep this species in mind when permitting actions. For more information on the Species of Concern program, please visit http://www.nmfs.noaa.gov/prot_res/species/concern/index.html.

Section 7(a)(2) of the Endangered Species Act (ESA) of 1973, as amended, states that each Federal agency shall, in consultation with the Secretary, insure that any action they authorize, fund, or carry out is not likely to jeopardize the continued existence of a listed species or result in the destruction or adverse modification of designated critical habitat. Any discretionary federal action that may affect a listed species must undergo Section 7 consultation. As listed species may be present in the project area, the federal action agency is responsible for determining whether the proposed action is likely to affect any listed species. The agency would then submit their determination along with a request for concurrence, to the attention of the Endangered Species Coordinator, NOAA Fisheries, Northeast Regional Office, Protected Resources Division, One Blackburn Drive, Gloucester, MA 01930. After reviewing this information, NOAA Fisheries would then be able to conduct a consultation under section 7 of the ESA. Should you have any questions about these comments or about the section 7 consultation process in general, please contact Julie Crocker at (978)281-9328 ext. 6530.

Sincerely,



Mary A. Colligan
Assistant Regional Administrator
for Protected Resources

Cc: Williams, GCNE
Nichols, F/NER4
King, NOAA Chesapeake Bay Office
Mansfield, ACOE Norfolk
Fritz, EPA, Chesapeake Bay Program
Thompson, USFWS Annapolis Field Office



United States Department of the Interior

FISH AND WILDLIFE SERVICE
Chesapeake Bay Field Office
177 Admiral Cochrane Drive
Annapolis, MD 21401



October 13, 2004

RECEIVED

OCT 15 2004

Maryland Environmental Service
03

Mr. Wayne Young
Chief, Environmental Dredging and Restoration Division
Maryland Environmental Service
259 Najoles Road
Millersville, Maryland 21108

RE: Request for Endangered Species Information for a Programmatic EIS for the Proposed Introduction of Crassostrea ariakensis into the Tidal Waters of Maryland and Virginia to Increase Oyster Populations in the Chesapeake Bay

Dear Mr. Young:

This responds to your letter dated August 20, 2004, requesting information on the presence of species which are federally listed or proposed for listing as endangered or threatened within the tidal waters of Maryland and Virginia. We have reviewed the information you enclosed and are providing comments in accordance with section 7 of the Endangered Species Act (87 Stat. 884, as amended; 16 U.S.C. 1531 *et seq.*).

The federally-threatened Sensitive Joint-Vetch (*Aeschynomene virginica*) is an annual legume that occurs in freshwater tidal sections of river systems of the Chesapeake Bay. Extant populations are documented from Manokin Creek in Somerset County, Maryland and from the following four major river systems of Virginia: (1) Potomac River in Stafford County; (2) Rappahannock River in Essex, Richmond, and Westmoreland Counties; (3) York River in King, Queen, King William, and New Kent Counties; (4) James River in Charles City and James City Counties. This species is typically found within the freshwater intertidal zones of Chesapeake Bay tributaries, where populations are flooded twice daily. Bare to sparsely vegetated substrates appear to be a habitat feature of critical importance for establishment and growth of this species. The maximum salinity tolerated by this species at the Maryland site is unknown; however, monitoring of a single site in the Rappahannock River system suggests that 4.2 ppt may be the upper salinity tolerance for this species in Virginia. Sensitive Joint-Vetch is susceptible to water withdrawal projects or habitat loss, modification, or degradation caused by development.

The federally-threatened Puritan tiger beetle (*Cicindela puritana*) occurs in Maryland along shorelines of the Chesapeake Bay in locations with sandy beaches below high bluffs. The larvae of the beetle live in deep burrows on non-vegetated portions of the bluff face; the adults use both the bluff and the beach below it. Populations have declined due to habitat alterations resulting from shoreline development and shoreline stabilization (bulkheads, revetments, groins, breakwaters). The beetle larvae, in particular, are sensitive to natural and human-induced changes to beaches and bluffs, as well as human traffic and water-borne pollution.

The federally-threatened Northeastern beach tiger beetle (*Cicindela dorsalis dorsalis*) occurs on the Chesapeake Bay beaches of Maryland and Virginia. Adults may be active on warm, sunny days along the water's edge, where they are commonly seen feeding, mating, or basking. However, this species is most vulnerable to disturbance in the larval stage, which lasts two years. Larvae live in vertical burrows generally in the beach intertidal zone, where they are particularly sensitive to destruction by high levels of pedestrian traffic, off-road vehicles, and other factors such as beach changes due to coastal development and beach stabilization structures.

The federally-threatened bald eagle (*Haliaeetus leucocephalus*) occupies shoreline habitat of the Chesapeake Bay and its tributaries. This species feeds on fish, waterfowl and other species in tidal and non-tidal waters. The bald eagle requires large blocks of undisturbed mature forested habitat in proximity to aquatic foraging areas. The bald eagle is known to nest in both Maryland and Virginia, and ten of the eleven identified bald eagle roosting/concentration sites are located along the shores of these states (U.S. Fish and Wildlife Service, 1990). The principal threat to the continued recovery of the bald eagle is habitat loss due to shoreline development and other land use changes.

The federally-threatened piping plover (*Charadrius melodus*) occurs on sandy beach and associated intertidal habitats within the Chesapeake Bay in Virginia. Piping plovers nest above the high tide line on beaches, sandflats at the ends of sandspits and barrier islands, gently sloping foredunes, blowout areas behind primary dunes, sparsely vegetated dunes, and washover areas cut into or between dunes. Feeding areas include intertidal portions of ocean beaches, washover areas, mudflats, sandflats, wrack lines, and shorelines of coastal ponds, lagoons, or salt marshes. Loss and degradation of habitat due to development and shoreline stabilization have been major contributors to the species' decline. This species is also threatened by disturbance caused by humans and their pets and predation.

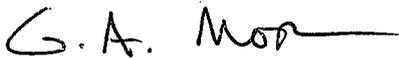
Any potential impacts on the above species or their habitat that may occur as a result of the introduction of *Crassostrea ariakensis* into the tidal waters of Maryland and Virginia should be analyzed as part of an environmental assessment. It is the responsibility of the federal action agency to determine whether the proposed action is likely to affect any federally-listed species. The federal action agency should then submit their determination, along with a request for concurrence, to the U.S. Fish and Wildlife Service Chesapeake Bay Field Office.

Except for occasional transient individuals, no other federally proposed or listed endangered or threatened species are known to exist within the area. Should additional information on the distribution of listed or proposed species become available, this determination may be reconsidered. This response relates only to federally protected threatened or endangered species under the jurisdiction of the U.S. Fish and Wildlife Service.

An additional concern of the Service is wetlands protection. Federal and state partners of the Chesapeake Bay Program have adopted an interim goal of no overall net loss of the basin's remaining wetlands, and the long term of increasing the quality and quantity of the basin's wetlands resource base. Because of this policy and the functions and values wetlands perform, the Service recommends avoiding wetland impacts. All wetlands within the project area should be identified, and if construction in wetlands proposed, the U.S. Army Corps of Engineers, Baltimore District should be contacted for permit requirements. They can be reached at (410) 962-3670.

We appreciate the opportunity to provide information relative to fish and wildlife issues, and thank you for your interest in these resources. If you have any questions or need further assistance, you may contact me at (410) 573-4537.

Sincerely,



G. Andrew Moser
Acting Program Supervisor, Threatened and Endangered Species

cc: Glenn Therres, Maryland Wildlife and Heritage Division, Annapolis, MD

U.S. Fish and Wildlife Service. 1990. Chesapeake Bay Region Bald Eagle Recovery Plan: First Revision. U.S. Fish and Wildlife Service, Newton Corner, MA. 80 pp.



UNITED STATES DEPARTMENT OF COMMERCE
National Oceanic and Atmospheric Administration
NATIONAL MARINE FISHERIES SERVICE

Habitat Conservation Division
904 South Morris Street
Oxford, MD 21654

October 13, 2004

RECEIVED

OCT 15 2004

Maryland Environmental Service
03

Wayne Young
Chief, Environmental Dredging and Restoration Division
Maryland Environmental Service
259 Najoles Road
Millersville, Maryland 21108

Dear Mr. Young:

This pertains to your request, dated August 20, 2004, for information on Essential Fish Habitat (EFH), and protected resources under National Marine Fisheries Service (NMFS) jurisdiction relative to the preparation of a programmatic Environmental Impact Statement for the proposed introduction of the non-native oyster species, *Crassostrea ariakensis*, into the tidal waters of the Chesapeake Bay in Maryland and Virginia.

Tidal waters of the Chesapeake Bay mainstem and tributaries to the Bay have been designated as EFH for a wide variety of finfish managed under the Magnuson-Stevens Fishery Conservation and Management Act (MSA). For each specific area of the Bay where proposed introductions of Asian oyster are planned, you can determine the managed species with designated EFH for that area by consulting the NMFS Habitat Conservation Division (HCD) web site at www.nero.nmfs.gov/ro/doc/hcd.htm.

On the HCD web site, you can access a map of the Chesapeake Bay, the southern portion of which has been subdivided into areas of EFH designations. In Virginia, the tidal waters of the Bay mainstem and tributaries to the Bay have been divided into 10' by 10' latitude and longitude squares. Each square has been numbered, and corresponds to a summary table with the defined boundaries of the geographic area contained within the square, and a listing of species and their respective life stages which have designated EFH within that geographic area. By "clicking" on any of the squares on this map, you will access the summary table of EFH designations for the area represented by that square. The web site also has definitions of EFH for the life stages of each managed species occurring in Virginia waters. EFH definitions provide more definitive information on the habitat requirements of each species, and therefore, can be used to more accurately determine whether a life stage of a particular species is likely to be found within a specific geographic area of the Bay system.

With the exception of the extreme southern waters of Maryland's portion of the Chesapeake Bay (i.e., waters in the vicinity of Smith Island and lower Tangier Sound, which are covered by 10' by 10' squares), EFH designations for majority of Maryland tidal waters have been based on the NOAA document, *Distribution and Abundance of Fishes and Invertebrates in Mid-Atlantic Estuaries*, Estuarine Living Marine Resources Program, Document #12, 1994 (ELMR). Data from ELMR have provided a series of six EFH designations for Maryland waters: 1) the Chesapeake Bay mainstem, which includes Virginia as well as Maryland; 2) Chester River estuary; 3) Choptank River estuary; 4) Patuxent River estuary; 5) Potomac River estuary; and, 6) Tangier Sound and Pocomoke Sound. Copies of the summary tables for each designation have been provided with this response (Attachment). EFH definitions for managed species occurring in Maryland waters can be obtained on our HCD web site. We have also provided summary tables for ELMR-based designations for the Rappahannock River, York River, and James River estuaries in Virginia.

For determining managed species with designated EFH for each specific area within Maryland tidal waters where introductions of Asian oyster are planned, you should consult the ELMR-based summary table for the tributary which is geographically closest to the introduction area, or which has the most a comparable



salinity regime relative to the introduction area. We recommend avoiding use of the summary designation for the entire Bay mainstem, because it includes both Maryland and Virginia waters (i.e., many species occurring in Virginia waters do not occur in Maryland waters). We have provided an example of how to select the appropriate ELMR-based summary table for a specific project site in Maryland tidal waters; i.e., the Sandy Point Oyster Bar (i.e., Natural Oyster Bars 4-3 and 4-7, off Anne Arundel County). For determining managed species which have designated EFH on this oyster bar, you should consult the EFH summary table for the Chester River Estuary. The Chester River estuary is geographically close to the Sandy Point Bar, and also has a salinity regime that is comparable to that occurring on the Sandy Point Bar.

The HCD web site also provides information on Habitats of Particular Concern (HAPC). As defined under the MSA, HAPCs are EFH critical to the life cycles of certain managed species, and which warrant an additional level of protection by regulatory processes. In the Chesapeake Bay watershed, HAPCs include submerged aquatic vegetation for juvenile and adult summer flounder (*Paralichthys dentatus*) and juvenile red drum (*Sciaenops ocellatus*), and waters of much of the southern Chesapeake Bay mainstem and its major tributaries for larval, juvenile, and adult sandbar shark (*Characharinus plumbeus*).

Section 305(b)(2) of the MSA requires that all federal agencies consult with NMFS on any action authorized, funded, or undertaken by that agency that may adversely affect EFH. Included in this consultation process is the preparation of an EFH Assessment. In the case of this proposal, the Corps of Engineers is the action agency, and is responsible for submitting an EFH Assessment to NMFS for our review. The MSA allows the Corps of Engineers to delegate preparation of the EFH Assessment to an alternate agency, including consulting firms such as Maryland Environmental Service. Additionally, the Corps of Engineers or agency preparing the assessment may use an existing regulatory review process, such as that affiliated with NEPA, for preparation of the assessment. Consequently, the EFH Assessment prepared for this proposal may be incorporated into the programmatic EIS, provided that it is clearly presented as a separate and distinct section within the EIS.

All EFH Assessments should contain the following information: 1) a complete description of the proposed action; 2) a listing of managed species with EFH affected by the proposal; 3) an analysis of the impacts of the proposed action on managed species, including indirect impacts such as effects on prey species, and cumulative impacts; 4) the federal agency's position on the impacts of the proposal; and, 5) any mitigative measures that have been incorporated into the proposal to reduce impacts on managed species.

The current proposal affects a broad geographic area of the Chesapeake Bay, including tidal waters throughout Virginia and Maryland. Furthermore, Virginia waters, including the southern Chesapeake Bay, support a broad array of managed species with designated EFH, including many with highly specialized life cycles. In contrast, Maryland waters, including the middle and upper Bay support only a handful of managed species with designated EFH. Therefore, we strongly suggest subdividing your EFH Assessment into two subsections; one for the southern Bay, and a second for the middle and upper Bay regions. Additionally, we concur with your decision to fully address the impacts on all alternatives being considered in the EIS on EFH and managed species.

Once you have submitted your EFH Assessment for this proposal, NMFS has 30 days in which to review and provide comments on the assessment, including EFH Conservation Recommendations. Please note that if NMFS provides EFH Conservation Recommendations, the Corps of Engineers is required to provide NMFS with a detailed written response to these recommendations, including a description of measures adopted by the Corps for avoiding, mitigating, or offsetting the impact of the project on EFH. In the case of a response that is inconsistent with NMFS' recommendations, Section 305(b)(4) of the MSA indicates that the Corps must explain its reasons for not following the recommendations, including scientific justification for any disagreements with NMFS over the anticipated effects of the proposed action and the measures needed to avoid, minimize, mitigate, or offset such effects.

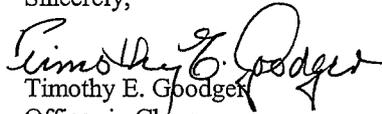
Finally, we have enclosed a copy of our agency's EFH Assessment Worksheet for Federal Agencies to assist you with preparation of your assessment. This worksheet addresses many of the issues and questions pertinent to making EFH determinations, and has, therefore, been found helpful to the Corps of Engineers Regulatory staff in preparations of assessments for Section 10/404 projects.

Protected Resources

A wide array of protected species under NMFS jurisdiction occur throughout the Chesapeake Bay, including marine turtles in the southern and middle Bay regions, and the endangered shortnose sturgeon (*Acipenser brevirostrum*) in the middle and upper sections of the Bay. We , therefore, recommend that you contact Ms. Julie Crocker of our Protected Resources Division staff in Gloucester, MA, (978) 281-9328, Julie.Crocker@NOAA.GOV, for information on protected resources and consultation procedures under Section 7 the Endangered Species Act.

If you have any additional information needs or questions, please contact John S. Nichols, (410) 226-5606, John.Nichols@NOAA.GOV.

Sincerely,



Timothy E. Goodger
Officer in Charge
Oxford Habitat Office

EFH ASSESSMENT WORKSHEET FOR FEDERAL AGENCIES (modified 08/04)

PROJECT NAME: _____ DATE: _____

PROJECT NO.: _____ LOCATION: _____

PREPARER: _____

Step 1. Use the Habitat Conservation Division EFH webpage, Guide to Essential Fish Habitat Designations in the Northeastern United States to generate the list of designated EFH for federally-managed species for the geographic area of interest (<http://www.nero.noaa.gov/hcd/index2a.htm>). Use the species list as part of the initial screening process to determine if EFH for those species occurs in the vicinity of the proposed action. Attach that list to the worksheet because it will be used in later steps. Make a preliminary determination on the need to conduct an EFH Consultation.

1. INITIAL CONSIDERATIONS		
EFH Designations	Yes	No
Is the action located in or adjacent to EFH designated for eggs?	<input type="checkbox"/>	<input type="checkbox"/>
Is the action located in or adjacent to EFH designated for larvae?	<input type="checkbox"/>	<input type="checkbox"/>
Is the action located in or adjacent to EFH designated for juveniles?	<input type="checkbox"/>	<input type="checkbox"/>
Is the action located in or adjacent to EFH designated for adults?	<input type="checkbox"/>	<input type="checkbox"/>
Is the action located in or adjacent to EFH designated for spawning adults?	<input type="checkbox"/>	<input type="checkbox"/>
If you answered no to all questions above, then EFH consultation is not required -go to Section 5. If you answered yes to any of the above questions proceed to Section 2 and complete remainder of the worksheet.	<input type="checkbox"/>	<input type="checkbox"/>

Step 2. In order to assess impacts, it is critical to know the habitat characteristics of the site before the activity is undertaken. Use existing information, to the extent possible, in answering these questions. Please note that, there may be circumstances in which new information must be collected to appropriately characterize the site and assess impacts.

2. SITE CHARACTERISTICS	
Site Characteristics	Description
Is the site intertidal, sub-tidal, or water column?	
What are the sediment characteristics?	
Is Habitat Area of Particular Concern (HAPC) designated at or near the site? If so what type, size, characteristics?	
Is there submerged aquatic vegetation (SAV) at or adjacent to project site? If so describe the spatial extent.	
What is typical salinity and temperature regime/range?	
What is the normal frequency of site disturbance, both natural and man-made?	
What is the area of proposed impact (work footprint & far afield)?	

Step 3. This section is used to describe the anticipated impacts from the proposed action on the physical/chemical/biological environment at the project site and areas adjacent to the site that may be affected.

3. DESCRIPTION OF IMPACTS			
Impacts	Y	N	Description
Nature and duration of activity(s)			
Will benthic community be disturbed?			
Will SAV be impacted?			
Will sediments be altered and/or sedimentation rates change?			
Will turbidity increase?			
Will water depth change?			
Will contaminants be released into sediments or water column?			
Will tidal flow, currents or wave patterns be altered?			
Will ambient salinity or temperature regime change?			
Will water quality be altered?			

Step 4. This section is used to evaluate the consequences of the proposed action on the functions and values of EFH as well as the vulnerability of the EFH species and their life stages. Identify which species from the EFH species list (generated in Step 1) will be adversely impacted from the action. Assessment of EFH impacts should be based upon the site characteristics identified in Step 2 and the nature of the impacts described within Step 3. The Guide to EFH Descriptions webpage (<http://www.nero.noaa.gov/hcd/list.htm>) should be used during this assessment to determine the ecological parameters/preferences associated with each species listed and the potential impact to those parameters.

4. EFH ASSESSMENT			
Functions and Values	Y	N	Describe habitat type, species and life stages to be adversely impacted
Will functions and values of EFH be impacted for:			
Spawning			
Nursery			
Forage			
Shelter			
Will impacts be temporary or permanent?			
Will compensatory mitigation be used?			

Step 5. This section provides the Federal agency=s determination on the degree of impact to EFH from the proposed action. The EFH determination also dictates the type of EFH consultation that will be required with NOAA Fisheries.

5. DETERMINATION OF IMPACT	
	<p style="text-align: center;">/</p> <p style="text-align: center;">Federal Agency=s EFH Determination</p>
<p>Overall degree of adverse effects on EFH (not including compensatory mitigation) will be:</p> <p>(check the appropriate statement)</p>	<p>There is no adverse effect on EFH</p> <p>EFH Consultation is not required</p>
	<p>The adverse effect on EFH is not substantial.</p> <p>This is a request for an abbreviated EFH consultation. This worksheet is being submitted to NMFS to satisfy the EFH Assessment requirement.</p>
	<p>The adverse effect on EFH is substantial.</p> <p>This is a request for an expanded EFH consultation. A detailed written EFH assessment will be submitted to NMFS expanding upon the impacts revealed in this worksheet.</p>

Step 6. Consultation with NOAA Fisheries may also be required if the proposed action results in adverse impacts to other NOAA-trust resources, such as anadromous fish, shellfish, crustaceans, or their habitats. Some examples of other NOAA-trust resources are listed below. Inquiries regarding potential impacts to marine mammals or threatened/endangered species should be directed to NOAA Fisheries' Protected Resources Division.

6. OTHER NOAA-TRUST RESOURCES IMPACT ASSESSMENT	
<p>Species known to occur at site (list others that may apply)</p>	<p>Describe habitat impact type (i.e., physical, chemical, or biological disruption of spawning and/or egg development habitat, juvenile nursery and/or adult feeding or migration habitat).</p>
alewife	
blueback herring	
rainbow smelt	
Atlantic sturgeon	
Atlantic menhaden	
American shad	
American eel	
American lobster	
blue mussels	
soft-shell clams	
quahog	
Other species:	

-----Original Message-----

From: Jamie King [mailto:Jamie.King@noaa.gov]

Sent: Monday, October 18, 2004 3:17 PM

To: Yonathan Zohar; Ximing Guo; William Pruitt; Walter Blogoslawski; Walt Washington; Victor Kennedy; Verna Harrison; Todd Bridges; Susan Roberts; Stan Allen; Slenkamp.Tom@epamail.epa.gov; Simeon Hahn; Ruiz Gregory; Roger Newell; Roger Mann; Robert Whitlatch; Rob Magnien; Randy Schneider; Pete Peterson; Pat Stuntz; okorn.barbara@epa.gov; mpaolisso@anth.umd.umd; Mike Roman; Mike Fritz; Michelle Harmon; Melanie Bishop; MDavenport@leg.state.va.us; Mathilde S. Egge; Mary Christman; mark.camara@oregonstate.edu; Mark Mendelsohn; Mark Luckenbach; Mario Tamburri; marinelli@cbl.umces.edu; Loren Coen; Kube Peter R NAO02; kluza.daniel@epa.gov; Kim Reece; Kevin Sellner; Kennedy T. Paynter; Katharine.C.Groth@NAO02.USACE.ARMY.MIL; Karl Blankenship; Jthompson@fws.gov; Jonathan Kramer; john_charbonneau@fws.gov; John Wolflin; John Stubblefield; John Nichols; Jim Kirkley; Jennifer Meyer; Jennifer Koss; Jennifer Greiner; Jeff Tinsman; Jack Travelstead; Jack Greer; Ivar Strand; Harry Mears; Hamor Michelle L NAO02; Goodger Tim; Gerardo Vasta; Geoff Scott; Gene Burreson; Gary Wikfors; Gary Matlock; Garry Mayer; Fredrika Moser; Fred Kern; Eric Hallerman; Elizabeth North; Ed Houde; Doug Martin; Donald Boesch; Don Meritt; Dlipton@arec.umd.edu; dking@cbl.umces.edu; Dave Schulte; Dave Bushek; Claire O'Neill; Chris Guy; Charlie Frentz; carnegie@vims.edu; Carin Bisland; Burke.Michael@epamail.epa.gov; Bridges Todd S ERDC-EL-MS; Breitburg Denise; Bill Rickards; Bill Richkus; bgoldsborough@cbf.org; Arthur Butt; Arguto.bill@epa.gov; Anne Lange; Ann Swanson; angela.sowers@usace.army.mil; Allen Nancy E NAO02; abbe@acnatsci.org; A.C. Carpenter; O'Connell, Thomas; Jones, Phil; Jensen, W. Pete; Bob Beal

Subject: Summary of Research Needs for EIS

Attached is a consensus document entitled "Summary of Research Needs for a Defensible EIS on the Non-native Oyster," developed by federal cooperating agencies on the EIS (NOAA, EPA, and FWS). The document was presented to congressional staff and endorsed by the Army Corps of Engineers on August 31, 2004. It has also been submitted as part of the formal EIS record. I have received numerous requests for this document, so I am emailing it to a large group in order to make it more accessible (please forgive if you have received duplicate copies). Please share this with anyone who may be interested.

Jamie

Jamie L. King, Ph.D.
NOAA Chesapeake Bay Office
410 Severn Avenue, Suite 107
Annapolis, MD 21403
410-267-5655 phone
410-267-5666 fax
410-279-4026 mobile

10/20/2004

Summary of Research Needs for a Defensible EIS on the Non-native Oyster

Prepared by the Federal Cooperating Agencies (EPA, FWS, NOAA)
August 31, 2004

The federal Cooperating Agencies have conducted a review of currently funded research on the non-native oyster, *Crassostrea ariakensis*, and have forecasted future steps needed to support a full evaluation of the proposed action and alternatives to achieve an adequate EIS. Associated costs have been estimated where possible, but additional scoping will be required for some items. This compilation is based on information needs and standards identified by the following sources:

- National Research Council (NRC, 2004)
- Chesapeake Bay Program Scientific and Technical Committee (STAC, January 2004)
- Council on Environmental Quality's Regulations For Implementing the Procedural Provisions of the National Environmental Policy Act (40 CFR Parts 1500-1508)
- International Council for the Exploration of the Sea (ICES) Code of Practice on the Introductions and Transfers of Marine Organisms (2003, U.S. is a signatory)

SUMMARY

- I. Establish a rigorous, tiered assessment process that includes the following five elements:
 - a. Develop a plan to fully evaluate the proposed action and all alternatives (cost?)
 - b. Identify assessment endpoints and analytical tools early in the process (cost?)
 - c. Hold quarterly workshops to share and apply research findings (\$100,000/year)
 - d. Obtain peer review of research results as they become available (\$24,000/year)
 - e. Conduct ongoing analyses and documentation (\$300,000/year)
- II. Continue to fill existing gaps in basic biological information about *C. ariakensis* (\$2M/year in FY05 and FY06)
- III. Provide for additional work to evaluate potential economic and socio-cultural impacts, particularly focusing on the following six areas:
 - a. Collect baseline economic and socio-cultural data (consult with academic and agency economists on cost)
 - b. Scale up the currently funded UMD socio-cultural project (\$150,000-200,000)
 - c. Utilize economic information from the Virginia Seafood Council Industry Trial (consult with VIMS on cost)
 - d. Obtain better information on public sentiment about a non-native oyster introduction (\$200,000?)
 - e. Obtain input from other states with native oyster populations and viable *C. virginica* fisheries and aquaculture industries (consult with ASMFC on cost)
 - f. Establish an Economics Advisory Group (no additional cost)
- IV. Fully implement all recommendations and guidance of the ICES Code of Practice on the Introduction and Transfers of Marine Organisms 2003, including submission of a detailed prospectus to ICES prior to a decision on the proposed introduction. (no additional cost?)

I. RISK ASSESSMENT AND EVALUATION PROCESS

The risk assessment and evaluation process is iterative in nature. A standard approach involves a succession of tiers, where the initial Tier 1 screening level analysis produces risk estimates with more uncertainty than a risk analysis conducted at a latter tier when more relevant data can be incorporated into the analysis to reduce reliance on conservative assumptions. As an analysis is refined through this iterative process, the risk estimates produced should become more definitive and certain, so that they form a more confident base for decision-making. The degree of refinement required, or how many tiers of analysis must be conducted, is a function of the tolerance of the decision making process to uncertainty in estimating risk and the consequences of making the wrong decision.

Work to date on the EIS can be considered a Tier 1 level of analysis. These efforts include the National Research Council report, which frames out many of the issues to be considered by the EIS, and current work being conducted by Versar, Inc. under contract to Maryland Department of Natural Resources (MDNR). This work is scheduled to be completed by March, 2005.

Full risk assessment at a Tier 3 level would include empirical, project-specific data, as described below in the sections on 'Biological Information' and 'Economic & Socio-cultural Information'. A Tier 3 assessment also provides a baseline against which to monitor project impacts if the proposed action is implemented in the future. The significance of the proposed action suggests that a plan to carry the risk assessment through to a Tier 3 level of analysis is warranted. However, this plan should be developed with the understanding that sufficiently characterized estimates of risks and benefits for specific alternatives may be developed at lower tiers of analysis, depending on the results of the analysis and decision-making needs for that alternative.

➤ **Establish a rigorous, tiered assessment process that includes the following five elements:**

a. Develop a plan to fully evaluate the proposed action and all alternatives

To date, the risk assessment process has been focused on gathering information and developing analytical tools to evaluate the proposed action, to the virtual exclusion of considering how the seven identified alternatives will be fully evaluated in the EIS. The EIS Project Delivery Team (PDT) should develop a plan for how it will accomplish a full evaluation of all the alternatives. These alternatives went through the public scoping process and have been agreed upon by the PDT:

Alternative 1 – No action

Alternative 2 – Expand native oyster restoration program

Alternative 3 – Harvest moratorium

Alternative 4 – Native oyster aquaculture

Alternative 5 – Non-native oyster aquaculture

Alternative 6 – Introduce an alternative non-native species other than *C. ariakensis*

Alternative 7 – Combination of alternatives

b. Identify assessment endpoints and analytical tools early in the process

Ideally, data needs for the EIS assessments would be prioritized on the basis of: 1) identified assessment endpoints and 2) parameters to which the analytical tools (e.g., population

models, economic models) exhibit the greatest sensitivity. In reality, to make progress on the EIS as quickly as possible these efforts are all occurring simultaneously, although not comprehensively. As noted above, little progress has been made on developing assessment endpoints and analytical tools for evaluating the alternatives. For the proposed action, assessment endpoints are currently being developed by Versar, Inc. (MDNR's contractor), but are not yet available for review by the Risk Assessment Advisory Group (RAAG). Versar and the University of Maryland expect to have model construction and sensitivity analyses completed between December 2004 and March 2005 for the population and larval transport models. In the meantime, research funding decisions have been made by NOAA on the basis of guidance from the NRC report, the STAC report, independent technical reviews of project proposals, and Lead and Cooperating Agency representatives. Additional work and modifications to projects underway may be required once the full suite of assessment endpoints and model sensitivity analyses are available.

c. Hold quarterly workshops to share and apply research findings

Scientists funded to conduct research in support of the EIS should meet quarterly to discuss their latest results and identify ways to make that information immediately available for ongoing data analysis and evaluations. NOAA can require attendance by Principal Investigators at quarterly workshops as a special award condition for all projects funded through the agency's FY04 non-native oyster research initiative, to ensure their participation at no additional cost. Additional resources that would be required for such quarterly workshops include:

- Meeting space and meals for 1-2 day workshops (\$20,000 quarterly)
- Travel expenses and stipends for participation of independent, subject-matter experts (\$5,000 quarterly)
- Agency staff time for workshop organization (no additional cost)

d. Obtain peer review of research results as they become available

It is critical to ensure the high quality of information being used in the EIS. In many cases, research findings will be incorporated into EIS evaluations before those results can be published in the peer reviewed literature. Thus, it will be important to provide a mechanism for rigorous, ongoing peer review as information becomes available. Federal agency staff are available at no additional cost to coordinate peer review, but minimal funds should be available to secure the necessary commitment of time by independent reviewers. (\$8,000 quarterly)

e. Conduct ongoing analyses and documentation

As research results become available, there will be a need to create and manage databases of information on specific topics being evaluated in the EIS. Manpower and other resources will be needed to complete thorough assessments of the proposed action and each alternative, and to document these analyses for the EIS. (\$300,000 annually in FY05, FY06, FY07)

II. BIOLOGICAL INFORMATION (see Table 1)

There are seven primary topics for which basic biological information on *C. ariakensis* is needed:

1. Understand *C. ariakensis* within its native geographic range in Asia
2. Potential for population growth and sustainability of *C. ariakensis* in Chesapeake Bay
3. Susceptibility of *C. ariakensis* to known disease-causing parasites and pathogens
4. Interactions between *C. ariakensis* and native oyster species
5. Human consumption risk
6. Potential for *C. ariakensis* to become a fouling nuisance
7. Ecosystem services and functions

Additional detail is provided in Table 1, along with estimated timelines for current and future research on each subtopic. All past and currently funded biological research is shown on Table 1, regardless of funding source (i.e., MDNR, NOAA, EPA). Only essential and high priority information needs are listed; medium and low priority needs are not considered.

NOAA is currently processing awards for the FY04 non-native oyster research initiative. Proposals for research totaling \$6.7M (\$4.7M in year-1) were received in response to the notice of available funding. As part of a rigorous review process, NOAA invited representatives from the Lead and Cooperating Agencies to form the final ranking panel to ensure a tight linkage between EIS project management and research funding decisions. Approximately 40% (13 out of 33) of the proposals have been recommended to NOAA Grants for funding. Due to limited funds, many excellent proposals on topics of importance to the EIS were not funded. Most of the proposals advanced for funding are 2- or 3-year projects.

As demonstrated in Table 1, it is anticipated that the research needed to obtain the essential and high priority information related to basic biology of the non-native oyster can be completed by the end of 2007. However, this estimate should be continually refined in response to the assessment process as described in the previous section. The research timeline may also need to be modified in light of research results. Scientific understanding of a topic typically proceeds from necessarily simplistic initial inquiries to more comprehensive investigations of the relevant factors and processes. A single study is almost never sufficient to obtain significant understanding of a topic that is being addressed for the first time. This is particularly true when the questions involve ecological interactions. It is even more true for research on *C. ariakensis*, which is virtually new to science as the taxonomy of this oyster has been in a state of confusion and species boundaries within its native range in Asia are currently being redefined using genetic techniques.

With sufficient resources within this timeframe multi-year projects could be completed and additional topics not yet addressed could be covered. This research timeline is short relative to the five years of basic biological research called for by the NRC and STAC panels, as emphasized in a recent letter from the STAC Co-Chair (Attachment 1). Thus, the Cooperating Agencies presently view this research timeline as an absolute minimum.

- **Continue to fill existing gaps in basic biological information about *C. ariakensis* (\$2M annually in FY05 and FY06)**

III. ECONOMIC & SOCIO-CULTURAL INFORMATION

At this time, very little is known about the economics of the oyster fishery in the Chesapeake Bay and whether increased oyster production will have cultural and economic impacts. The EIS Project Delivery Team (PDT) should determine what work is needed to accomplish adequate economic and socio-cultural assessments in the EIS, and how to obtain the necessary information to conduct such assessments.

Maryland Department of Natural Resources (MDNR) has independently funded two projects:

- “Economic component of an EIS for proposed introduction of the oyster species, *C. ariakensis*, into the tidal waters of Maryland and Virginia to re-establish a naturalized, reproducing, and self-sustaining population of oysters”. This study is being conducted jointly by the University of Maryland and the Virginia Institute of Marine Science under a \$52,122 contract from MDNR, and involves 3 months of effort by the Principal Investigators (PIs).
- “Cultural analysis for EIS on oyster restoration alternatives”. This \$37,571 study is being conducted by the University of Maryland under contract to MDNR, and involves 5 weeks of PI time.

These two proposals were not subjected to a competitive process or independent technical review prior to funding by MDNR. Economic and cultural experts from EPA and the Army Corps of Engineers provided after-the-fact reviews of the proposals, and concluded that the projects will be informative but inadequate in effort (PI time) and scope to fully address these issues for the EIS.

➤ **Provide for additional work to evaluate potential economic and socio-cultural impacts, particularly focusing on the following six areas:**

a. Collect baseline economic and socio-cultural data

The NRC report recommends the collection of baseline economic and socio-cultural data over a 5-10 year period. The following excerpt from Chapter 10 of the report describes the needed data:

The contemplated actions are likely to engender substantial changes in the economic organization of the fishery and fishing communities. Therefore, the states of Virginia and Maryland should establish programs to collect baseline economic and socio-cultural data. Such data should include economic information on production costs, including capital and labor expenditures, market trends and marketing practices, and changes in economic strategies and decision-making in response to changes in the fishery. Socio-cultural information should be collected on household and community level responses to changes in the oyster fishery, and how such changes modify traditional socio-cultural norms of such communities. The collection of the economic and socio-cultural data should be coordinated to maximize integration and complementarity. The data should be collected at different levels of scale, ranging from Baywide to subregions and communities where existing industry structures (e.g., public versus leased), ecological conditions (e.g., salinity), and harvesting practices (e.g., power dredging versus patent tonging) could result in different socio-cultural and economic consequences.

The cost of collecting baseline economic and socio-cultural data collection should be scoped out with academic and agency economists.

b. Scale up the currently funded UMD socio-cultural project

Increasing the time and scope of the socio-cultural analysis being conducted by the University of Maryland under contract to MDNR will allow the Principal Investigators to test the reliability and validity of results from the current project. The University of Maryland researchers working on this project estimate this scale-up will cost \$150,000-\$200,000 for a 12-18 month project.

c. Utilize economic information from the Virginia Seafood Council Industry Trial

Beginning in 2000, the Virginia Seafood Council (VSC) has been conducting studies to investigate the aquaculture potential of *C. ariakensis*. The current VSC project involves private growers at eight sites in Virginia waters. This industry project is supplemented with \$1M of NOAA funding which provides support for biosecurity and biological monitoring. In 2004 the federal permit for this project was extended from June 30, 2004 to April 1, 2005 in response to a request by the VSC and growers participating in the trial, who reported they needed additional time to bring to market the *C. ariakensis* deployed in 2004. The federal agencies, VSC, and VIMS researchers cooperated to complete a risk assessment, resulting in permit conditions that would allow the project continue with minimal risk of adverse environmental impacts.

The federal agencies have supported this industry trial because of the important economic and biological information it promises to provide. This information must be fully utilized in the EIS. Biological information from the VSC trial will be made available for the EIS as specified by one of the permit conditions. It is less clear whether the economic information will be made available for use in the EIS. While recognizing the sensitive nature of market data in raw form, it should be possible to extract relevant economic information in non-sensitive, summary form for use in EIS assessments. The need is for the growers' financial and marketing data to be compiled and summarized in a useful form that does not compromise the privacy of individual growers. Researchers at VIMS involved with the economic aspects of the VSC trial should be consulted to determine the cost of this work.

d. Obtain better information on public sentiment about a non-native oyster introduction

Comments received during the EIS public scoping process indicate substantial public concern about the proposed introduction. The majority of comments received from general citizens (as opposed to members of the fishery or representatives of special interest groups) were against putting a non-native oyster in Chesapeake Bay. The Chesapeake Bay is a public trust resource with high public visibility both regionally and nationally. Furthermore, there is presently consideration for an Executive Order identifying the Chesapeake as a national treasure. Thus, a decision to introduce a non-native species should weigh, among other factors, how the general public – both within the Chesapeake Bay region as well as nationally – would view such an action.

Additional effort should be made to survey and quantify the sentiments of the general public regarding the introduction of a non-native species. This information will be crucial to the decision-making process, both for informing the ultimate decision and for identifying possible public education needs. The Alliance for the Chesapeake Bay completed this type of public opinion survey within the Chesapeake Bay region at a cost of \$200,000 as part of the Chesapeake Bay Program effort to develop the Chesapeake 2000 Agreement.

e. Obtain input from other states with native oyster populations and viable *C. virginica* fisheries and aquaculture industries

Other Atlantic coast states, especially those with viable oyster fisheries or aquaculture industries based on the native *C. virginica*, have a particular interest in the EIS. These states can also provide significant information for use in the EIS assessments. For example, the Delaware Bay has successfully applied harvest management strategies based on annual stock assessments to maintain both a sustainable native oyster population and a viable industry in the face of disease. In other areas, such as Long Island Sound and Maine, states have assisted the development of successful oyster aquaculture industries. Data from those other regions may be useful in evaluating EIS alternatives. The Atlantic States Marine Fisheries Commission (ASMFC) may be an appropriate body to assist with the collection of relevant information from other Atlantic coast states. In FY04 NOAA provided \$10,000 to ASMFC to begin this type of interaction. ASMFC should be consulted to determine how they might provide further assistance, and to estimate appropriate costs.

f. Establish an Economic Advisory Group

Similar to the Risk Assessment Advisory Group that has been established to provide guidance for the ecological risk assessment effort, an Economic Advisory Group should be formed to steer efforts addressing economic considerations in the EIS. The federal Cooperating Agencies have previously made this recommendation to the PDT, however, no action has been taken in the absence of consensus on the need for such a group.

IV. ICES CODE OF PRACTICE

The International Council for the Exploration of the Sea, through its Working Group on Introductions and Transfers of Marine Organisms, has adopted an internationally recognized "Code of Practice" on the movement and translocation of non-native species for fisheries enhancement and mariculture purposes. The United States is a Member Country of ICES and is a signatory to the Code of Practice.

Two relevant sections of the Code of Practice are excerpted below, with their text given in italics.

II. Recommended procedure for all species prior to reaching a decision regarding new introductions

- a) Member Countries contemplating any new introduction are expected to submit to the Council well in advance a detailed prospectus (see Appendix A) on the proposed new introduction(s) for evaluation and comment.*

- b) *The prospectus should include the purpose and objectives of the introduction, the state(s) in the life cycle proposed for introduction, the native range, the donor location, and the target area(s) of release. The prospectus should also include a review of the biology and ecology of the species as these pertain to the introduction (such as the physical, chemical, and biological requirements for reproduction and growth, and natural and human-mediated dispersal mechanisms) and information on the receiving environment.*
- c) *The prospectus should also provide a detailed analysis of the potential impacts on the aquatic ecosystem of the proposed introduction. This should include wherever possible assessments from previous introductions. This analysis should include a thorough review of:*
 - i. *the ecological, genetic, and disease impacts and relationships of the proposed introduction in its natural range and donor location;*
 - ii. *the expected ecological, genetic, and disease impacts and relationships of the introduction in the proposed release site and projected range, as well as vectors for further distribution;*
 - iii. *economic assessment where appropriate.*
- d) *The prospectus should conclude with an overall assessment of the issues, problems, and benefits associated with the proposed introduction. An evaluation of risks (see Appendix B) should be included.*
- e) *Upon review of the prospectus, the ICES Council will provide comments and recommendations on the proposed introduction.*

III. *If the decision is taken to proceed with the introduction*

This section is relevant to implementation if, upon completion of the EIS, the decision is made to proceed with the introduction. This part of the Code specifies the containment of imported animals in quarantine facilities, and the release of only progeny into the natural environment after certain risk assessment conditions are met. This section also calls for a pilot phase and monitoring program as described in the following text:

- e) *During the pilot phase, the progeny, or other suitable life stages, should be placed on a limited scale into open waters to assess ecological interactions with native species, and especially testing of risk assessment assumptions. Contingency plans, including the removal of the introduced species from the environment, should be ready for immediate implementation.*
- f) *A monitoring programme addressing specific issues (see Appendix D) of the introduced species in its new environment should be undertaken, and annual progress reports should be submitted to ICES for review at meetings of the Working Group on Introductions and Transfers of Marine Organisms until the review process is considered complete.*

- **Fully implement all recommendations and guidance of the ICES Code of Practice on the Introduction and Transfers of Marine Organisms 2003, including submission of a detailed prospectus to ICES prior to a decision on the proposed introduction.**

The information specified for inclusion in the prospectus is essentially the same as that required for a comprehensive EIS. Thus, this ICES requirement could easily be integrated into the latter stages of the EIS process once a Draft EIS has been produced.

Note regarding NOAA budget: The additional capability described in this document was not included in the President's budget and is not a priority of the Department of Commerce. The Department does not support the addition of funds for any project that would result in the reduction of funding for other projects included in the budget.

Table 1. List of research needs to support Biological Assessments in the EIS, as identified by NRC, STAC, and ICES. Only essential and high priority topics are listed. Medium and low priorities are not included in this table.

	2003												2004												2005												2006												2007											
	J	F	M	A	M	J	J	A	S	O	N	D	J	F	M	A	M	J	J	A	S	O	N	D	J	F	M	A	M	J	J	A	S	O	N	D	J	F	M	A	M	J	J	A	S	O	N	D	J	F	M	A	M	J	J	A	S	O	N	D
1. Understand <i>C. ariakensis</i> within its native geographic range																																																												
a. Taxonomy, population genetics																																																												
b. Pathogens																																																												
c. Ecology, reef building, phenotypic variation																																																												
2. Potential for population growth and sustainability of <i>C. ariakensis</i> in Chesapeake Bay																																																												
Demographic model																																																												
Larval dispersal model																																																												
Gametogenesis, fecundity, spawn cues, sex ratio																																																												
Fertilization efficiency coefficient																																																												
Larval temperature & salinity tolerances																																																												
Larval mortality																																																												
Larval physiology, behavior, metamorphosis																																																												
Settlement cues, substrate preferences																																																												
Juvenile mortality - mesohaline predation																																																												
Juvenile mortality - polyhaline predation																																																												
Juv/adult mortality - low DO, sediment																																																												
Growth rate																																																												
Triplods as surrogates for diploids																																																												
3. Susceptibility of <i>C. ariakensis</i> to known disease-causing parasites and pathogens																																																												
a. <i>Bonnamia</i> spp.																																																												
b. Herpes virus and vertical transfer																																																												
c. Other viral pathogens																																																												
4. Interactions between <i>C. ariakensis</i> and native oyster species																																																												
a. Hybridization, gamete competition																																																												
b. Competition (food, space, etc.)																																																												
5. Human consumption risk																																																												
a. Fecal coliform uptake, clearance rates																																																												
b. Viral and protozoan human pathogens																																																												
6. Potential for <i>C. ariakensis</i> to become a fouling nuisance																																																												
a. Fouling																																																												
a. Reef building																																																												
b. Water quality																																																												
c. Food web dynamics																																																												

States' Proposed EIS Completion

LEGEND:
 Filled box: Funded by Maryland DNR and/or Potomac River Fisheries Commission
 Box with diagonal lines: Funded by NOAA or a vehicle of NOAA such as state Sea Grant programs
 Box with horizontal lines: Funded by EPA
 Box with vertical lines: Anticipated need for continuation of current research projects
 Box with dots: Anticipated need for future research on topics not yet addressed

November 1, 2004

Michael Fritz
USEPA Chesapeake Bay Program

Thanks for the opportunity to attend the oyster modeling and research workshop. It was the best of many oyster workshops I've participated in, because the current work promises several significant advances in our understanding of both *Crassostrea virginica* and *C. ariakensis*.

Both modeling projects appear to be soundly conceived (with the reservations expressed below) and are showing good progress. It is the linkage between the two models that is least satisfactory. The larval model is designed to transport oyster larvae from spawning stocks to areas where they may or may not settle. The demographic modelers propose to use a spat:spawner ratio for individual oyster bars or aggregated areas to generate numbers of spat as new recruits to these subpopulations. This compromise is suggested because the larval transport model cannot generate actual numbers of larvae or settled spat, nor can the demographic model directly quantify spat or their early post-settlement dynamics. Neither I nor several other workshop attendees I talked with believe that spat count data from either Maryland or Virginia are suitable for parameterizing a demographic model, no matter how the data are applied. I suggest that the two models be used independently; the larval transport model generating probabilities of spat set (of unknown or perhaps ordinal magnitude) and the demographic model initiated with yearling oysters. Yearlings (age 1+) are relatively easy to identify in the extensive size-frequency data from both states, and would give much more confident estimates of recruitment to the oyster populations. Although such an uncoupled model might be somewhat less elegant, I believe it would be more robust and less subject to large errors than are likely in the current approach. From a risk assessment perspective, probabilities of spat settlement generated by the larval model would be one risk factor, and the outcomes of the demographic model another set of risk factors. Or, perhaps once the two models are completed, linkage could be explored through correlations and calibration. The Powell-Hofmann modeling group has considerable experience and skill with individual-based models of oyster larval dynamics. Although their work appears to be more in the academic realm than the *C. ariakensis* risk assessment requires, it would be worth some attention.

Dr. North is properly concerned with the question of what actually constitutes suitable habitat for spat settlement, and how this critical spatial variable will be handled in the model. Although some data exist to help with this question (Dr. Gary Smith's work with fine scale acoustics and video is most relevant), a significant effort, including field ground-truthing, may be required to generate a realistic spatial data set. Should it turn out from the research program that the settlement dynamics of the two oyster species are very different, this problem could be even tougher.

The demographic modelers should explore alternatives to the Von Bertalanffy (VB) model for estimating oyster growth parameters. Other methods of curve fitting could

yield better results that are less sensitive to the L_{inf} parameter, and require estimating only two parameters instead of three. This matter is a common problem in stock assessments that is easy to overcome. The point of this component is to model growth accurately, not to adhere to the VB paradigm. Equations of the form $Y = aX^b$ can give good fits to growth data and are no less theoretically correct than VB (they are used routinely by physiologists to model various biological processes).

There seemed to be a misunderstanding by the modelers about the effects of freshets. Occasionally, oyster subpopulations at the extreme low salinity range are killed by freshets, but this effect is minor compared to other dynamics. Except for extreme events, freshets are more often associated with reductions in disease pressure on the populations. The stocks in very low salinity areas probably are not critical to the population as a whole anyway, because of negligible recruitment and slow growth.

I did not hear enough from the demographic modelers about how they are going to deal with fishing mortality. This was a major weakness of the discussions. They seem to be handling F as a constant based on (what?). The deplorable decline of *C. virginica* stocks in Maryland over the past two decades has been strongly related to the combined effects of unconstrained fishing mortality and parasitic diseases. It is my professional opinion, supported by my own analyses of data and modeling work, that the native oyster can recover if fishing mortality can be adjusted to compensate for high rates of natural mortality. Therefore, the demographic modelers need to give serious, critical attention to estimating F and its variability.

Dr. Volstad's approach to natural mortality is questionable. There is no evidence that multiplying 'new box' counts from fall surveys by 10 is any more accurate than using total box counts to estimate annual natural mortality. Both methods are subject to unknown errors, biases, and untested assumptions. Our recent publications (Jordan et al. 2002, Jordan and Coakley 2004) discuss the issues involved in using total box counts and provide some evidence that this is a reasonably accurate method. There are data from an intensive oyster mortality study conducted in the late 1980s (Christmas and Jordan 1987, Christmas 1988) that include weekly samples from several oyster bars in the lower Choptank River estuary and comparisons of new and old box counts over short time scales. These reports and the underlying data could be very useful in resolving some of these questions.

The modelers and research groups are making important contributions to a rigorous risk assessment of the proposed *C. ariakensis* introduction. This process should be deliberate, take full advantage of the ongoing research, and involve continuing critical evaluation of the models. If it is not already in place, I suggest that a formal risk assessment protocol should be established and implemented iteratively as data and models improve.

Regards,
Stephen J. Jordan, Ph.D.
USEPA, Gulf Ecology Division
Gulf Breeze FL

- Christmas, J. F. and S. J. Jordan. 1987. Biological monitoring of selected oyster bars in the lower Choptank River. In: G.B. Mackiernan (ed.). Dissolved Oxygen Processes in the Chesapeake Bay: Processes and Effects. Maryland Sea Grant Publ. UM-SG-TS-87-03, College Park.
- Christmas, John F. 1991. Choptank River oyster mortality study : an analysis of biological and physicochemical data associated with a study of seven Choptank River oyster bars, 1986-1988. Maryland Tidewater Administration Chesapeake Bay Research and Monitoring Division Habitat Impacts Program. Available through MD DNR Library.
- Jordan, S.J. and J.M. Coakley. 2004. Long-term projections of eastern oyster populations under various management scenarios. *J. Shellfish Res.* 23:63-72.
- Jordan, S.J., K.N. Greenhawk, C.B. McCollough, J. Vanisko and M.L. Homer. 2002. Oyster biomass, abundance and harvest in northern Chesapeake Bay: trends and forecasts. *J. Shellfish Res.* 21(2):733-741.

W. Tayloe Murphy, Jr.
Secretary of Natural
Resources



Joseph H. Maroon
Director

COMMONWEALTH of VIRGINIA
DEPARTMENT OF CONSERVATION AND RECREATION

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RECEIVED

NOV 04 2004

November 2, 2004

Maryland Environmental Service
03

Kate Meade
Maryland Environmental Service
259 Najoles Road
Millersville, Maryland 21108

Re: Environmental Impact Service (EIS) for the proposed introduction of the oyster species, *Crassostrea ariakensis* into the tidal waters of Maryland and Virginia to increase oyster populations.

Dear Ms. Meade:

In response to your recent request, please find attached a list of natural heritage resources that may be directly or indirectly impacted by the introduction of *Crassostrea ariakensis*. Due to the legal status of some of the natural heritage resources, DCR recommends coordination with the United States Fish and Wildlife Service and the Virginia Department of Game and Inland Fisheries. DCR looks forward to reviewing the draft EIS.

The Virginia Department of Game and Inland Fisheries maintains a database of wildlife locations, including threatened and endangered species, trout streams, and anadromous fish waters, that may contain information not documented in this letter. Their database may be accessed from http://www.dgif.virginia.gov/wildlife/info_map/index.html, or contact Shirl Dressler at (804) 367-6913.

Please feel free to contact me at 804-371-2708 if you have any questions. Thank you for the opportunity to provide this information.

Sincerely,

A handwritten signature in cursive script that reads "S. René Hypes".

S. René Hypes
Project Review Coordinator

CC: Andy Zadnik, VDGIF
Eric Davis, USFWS

Natural Heritage Resources within the proposed study area for introduction of the oyster species, *Crassostera ariakensis*

Scientific Name	Common Name	Global Rank	State Rank	Federal Status	State Satus
<i>Sterna antillarum</i>	Least Tern	G4	S2B/SZN		SC
<i>Sterna caspia</i>	Caspian Tern	G5	S1B/S2N		SC
<i>Sterna dougallii</i>	Roseate Tern	G4	SHB/SZN	LE	LE
<i>Sterna maxima</i>	Royal Tern	G5	S2B/SZN		
<i>Sterna nilotica</i>	Gull-billed Tern	G5	S2B/SZN		LT
<i>Sterna sandvicensis</i>	Sandwich Tern	G5	S1B/SZN		SC
<i>Pelecanus occidentalis</i>	Brown Pelican	G4	S1B/S3N		SC
<i>Haliaeetus leucocephalus</i>	Bald Eagle	G4	S2S3B/S3N	LT/PDL	LT
<i>Caretta caretta</i>	Loggerhead	G3	S1B/S1N	LT	LT
<i>Lepidochelys kempii</i>	Kemp's Ridley	G1	S1N	LE	LE
<i>Charadrius melodus</i>	Piping Plover	G3	S2B/S1N	LT	LT
<i>Rynchops niger</i>	Black Skimmer	G5	S2B/S1N		

STATE LEGAL STATUS

The Division of Natural Heritage uses similar abbreviations for State endangerment.

- LE - Listed Endangered
- PE - Proposed Endangered
- SC - Special Concern - animals that merit special concern according to VDGIF (not a regulatory category)
- LT - Listed Threatened
- PT - Proposed Threatened
- C - Candidate
- NL - no state legal status

For information on the laws pertaining to threatened or endangered species, please contact:

- U.S. Fish and Wildlife Service for all **FEDERALLY** listed species;
- Department of Agriculture and Consumer Services, Plant Protection Bureau for **STATE** listed plants and insects
- Department of Game and Inland Fisheries for all other **STATE** listed animals

Conservation Sites Ranking

Rank is a rating of the significance of the conservation site based on presence and number of natural heritage resources; on a scale of 1-5, 1 being most significant. Sites are also coded to reflect the presence/absence of federally/state listed species:

Conservation Site Ranks

- B1 - Outstanding significance
- B2 - Very High significance
- B3 - High significance
- B4 - Moderate significance
- B5 - Of general Biodiversity significance

Legal Status of Site

- FL - Federally listed species present
- SL - State listed species present
- NL - No listed species present

Mike Fritz

To: "Pete Jensen (E-mail)" <pjensen@dnr.state.md.us> 11/04/2004 07:10
cc: "AC Carpenter (E-mail)" <prfc@crosslink.net>, PM"Bob Beal (E-mail)" <rbeal@asmfc.org>,jack.travelstead@mrc.virginia.gov, "Jamie King (E-mail)" <jamie.king@noaa.gov>, JenniferGreiner/CBP/USEPA/US@EPA, "Julie Thompson (E-mail)" <julie_thompson@fws.gov>, "Kate Meade (E-mail)" <KMEAD@menv.com>, Mike Fritz/CBP/USEPA/US@EPA, "Peter Kube (E-mail)" <peter.r.kube@usace.army.mil>, "Phil Jones (E-mail)"<pjones@dnr.state.md.us>, "Thomas O'Connell (E-mail)"<toconnell@dnr.state.md.us>,mark.mansfield@usace.army.mil, TomSlenkamp/R3/USEPA/US@EPA, William Hoffman/R3/USEPA/US@EPA,William Arguto/R3/USEPA/US@EPA, BarbaraOkorn/R3/USEPA/US@EPA, Stefaniahamet/R3/USEPA/US@EPA, Catherine Libertz/R3/USEPA/US@EPA, Daniel Kluza/DC/USEPA/US@EPA, Steve Jordan/GB/USEPA/US@EPA, Carin Bisland/CBP/USEPA/US@EPA, Michael Burke/CBP/USEPA/US@EPA, Mike Fritz/CBP/USEPA/US@EPA

Subject: Independent Advisory Panel Nominations

NOTE TO: Pete Jensen, MD DNR SUBJECT: Oyster EIS Independent Advisory Panel Nominations

CC: Oyster EIS Project Delivery Team and EPA Oyster EIS Team

This is to provide further comment on the nominations you are considering for the oyster EIS independent expert advisory panel that Secretary Franks announced last week. The Secretary's commitment convene such a panel is a very constructive step. Now it is important that the panel be formed and its mission defined so that it's findings are credible.

In my opinion, the National Research Council offers the best method to achieve a balanced, expert, and credible review. It is their mission and they are very good at it. But there may be a way to achieve the functional equivalent through our own interagency collaborative process. If this latter course is preferred, I suggest that the Chesapeake Bay Program's Scientific and Technical Advisory Committee could assist with the task of forming an independent expert panel and managing the review. The STAC, as you may know, like the CBP, is not an EPA entity but an entity of the CBP partnership. The STAC's composition and mission is described in the CBP publication "A Who's Who in the Chesapeake Bay Program" which is available at the CBP web site www.chesapeakebay.net

As I indicated in an earlier note, the selection of a panel chair is one of the most important decisions in the process of forming and commissioning such a panel. In the present case, this decision should be made through consultations among the lead and cooperating agencies for the EIS. Also, the panel membership should be comprised of a balance and diversity of experts who are not already part of the EIS process, including the research funded by MD, VA, and NOAA to support the EIS.

Based on consultations with several colleagues in the federal cooperating agencies for the EIS, Dr. Brian Rothschild would not be a good choice to chair the panel, and I recommend against

selecting him for that position.

Further, I doubt the panel would be credibly independent if it included Dr. Roger Mann and Dr. Michael Roman, both of whom are directors of laboratories very much engaged in research funded by MD DNR to support the EIS. I recommend against including them on the panel. Instead, they and their respective teams of scientists should brief the panel on their research work related to the EIS, their analytical conclusions, and their recommendations for further work.

Finally, I offer the following suggestions for experts who should be considered for inclusion in the independent panel. I have not contacted these people, so their willingness to serve should not be assumed:

Eric Powell, Haskin Shellfish Research Laboratory, Rutgers University
John Boreman, Director, NOAA Science Center, Woods Hole Nancy
Targett, Professor of Marine Biology and Biochemistry at the Graduate
College of Marine Studies at the University of Delaware Robert
Whitlatch, Professor of Marine Sciences at the University of
Connecticut (if not already funded for EIS-related research).

I will look forward the opportunity for further collaboration on this matter.

Mike Fritz

Michael A. Fritz
Coordinator, Living Resources Subcommittee
Chesapeake Bay Program Office, EPA
410 Severn Ave, Suite 109
Annapolis, MD 21403
Phone: 410-267-5721
FAX: 410-267-5777
Email: fritz.mike@epa.gov

Kate Meade

From: Kate Meade
Sent: Monday, November 08, 2004 2:37 PM
To: 'SGollasch@aol.com'
Cc: Thomas O'Connell (E-mail); Tammy Banta; Elizabeth Habic
Subject: ICES Working Group on Introductions and Transfers - Suminoe Oyster / Chesapeake Bay

To: Dr. Stephan Gollasch, Chair of the ICES Working Group on Introductions and Transfers (WGITMO)
Re: ICES Working Group on Introductions and Transfers - Suminoe Oyster / Chesapeake Bay, East Coast, United States
Date: November 8, 2004

Dear Dr. Gollasch,

This is in follow-up to our September 13 and October 7 e-mails concerning the development of an EIS on the introduction of a non-native oyster into the Chesapeake Bay, East Coast, United States

We are using the ICES Code of Practice to guide the development of the Ecological Risk Assessment and the Environmental Impact Statement (EIS). In order to reduce duplication between NEPA and other regulatory requirements, we plan to incorporate the ICES prospectus into text of the EIS document.

A draft of the EIS will be ready for review by March 2005.

Please let us know if your working group will have any additional comments concerning the appropriate ICES coordination process and whether there is a need for written consultation with ICES.

-k

Kate Meade, Project Manager
Maryland Environmental Service
259 Najoles Road
Millersville, Maryland 21108
410-729-8338
kmead@menv.com

From: SGollasch@aol.com

Sent: Tuesday, November 09, 2004 8:29 AM

To: Kate Meade; david@ices.dk

Cc: toconnell@dnr.state.md.us; Tammy Banta; Elizabeth Habic

Subject: Re: ICES Working Group on Introductions and Transfers - Suminoe Oyster / Che...

Dear Kate,

Thanks for your recent email. I have forwarded this to David Griffith, the Secretary General of ICES. He replied the following:

Regarding the questions from Kate Meade (Maryland) about any need for coordination and consultation with ICES - the answer to the first (Coordination) is None. Just go ahead and use the Code of Practice. Consultation - only as suggested in the Code, and following the Irish example, that a documented case for any introduction should be brought to the Working Group, in the first instance, for evaluation.

Kate please note that WGITMO meets by correspondence only in 2005. Once you have material ready for the group to look at let me know and I will circulate this.

Hope this helps and let me know in case you have any further question.

Greetings
Stephan

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Dr. Stephan Gollasch (GoConsult)
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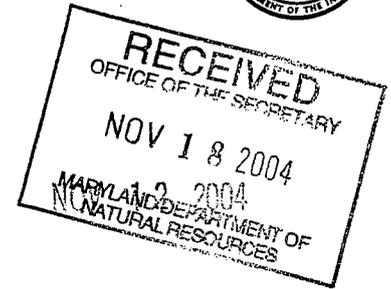
United States Department of the Interior

FISH AND WILDLIFE SERVICE

300 Westgate Center Drive
Hadley, MA 01035-9589



In Reply Refer To:
FWS/R5/FR



Mr. C. Ronald Franks
Maryland Department of Natural Resources
Tawes State Office Building
580 Taylor Avenue
Annapolis, Maryland 21401

RE: Oyster EIS Independent Advisory Panel Nominations

Dear Mr. Franks:

This is in regard to your announcement that the lead State agencies intend to form a 6 to 10 member independent panel of "international experts" to conduct a full review of the data and analysis being used to develop a Draft Environmental Impact Statement (EIS) in early 2005. The U.S. Fish and Wildlife Service (Service) agrees that formation of such a panel has utility in determining whether the currently funded research is sufficient to support a scientifically defensible EIS. It is extremely important that the Oyster EIS Project Delivery Team (PDT) assure the credibility of such a panel and their report by avoiding involvement in the selection of panelists. We suggest that you utilize organizations such as the National Research Council or the Chesapeake Bay Program's Scientific and Technical Advisory Committee to assemble the panel and manage the review process. This would provide a mechanism for a balanced, expert, and credible review. The Oyster EIS PDT should meet as soon as possible to discuss the panel's mission and to determine the most effective way to form an independent and credible panel.

Thank you for your consideration of this matter.

Sincerely,

Dr. James G. Geiger
Assistant Regional Director
Fisheries

cc: Colonel Yvonne Prettyman-Beck, Army Corps of Engineers, Norfolk District
W. Tayloe Murphy, Virginia Marine Resources Commission
Don Welsh, Environmental Protection Agency
Bill Hogarth, NOAA/NMFS

Atlantic States Marine Fisheries Commission
1444 Eye Street, NW, 6th Floor
Washington, D.C. 20005
(202) 289-6400 phone
(202) 289-6051 fax

MEMORANDUM

TO: Interstate Shellfish Transport Committee
ISFMP Policy Board

FROM: Robert Beal, Director, ISFMP *REB*

RE: Delaware and New Jersey Joint Position on *Crassostrea ariakensis*

DATE: November 19, 2004

Attached please find the Joint Position on *Crassostrea ariakensis* from New Jersey and Delaware. The position and the associated cover letters were submitted to the ISFMP Policy Board at the ASMFC Annual Meeting last week.

The states of New Jersey and Delaware asked that this document be distributed to the Interstate Shellfish Transport Committee (ISTC).

During the meeting the Policy Board agreed that the ISTC should continue to be involved with the development and review of the environmental impact statement on oyster restoration in the Chesapeake Bay. As this document nears completion another meeting of the ISTC will be scheduled to provide input on the progress. This meeting will most likely occur in early 2005.

If you have any questions or need any additional information please call me.

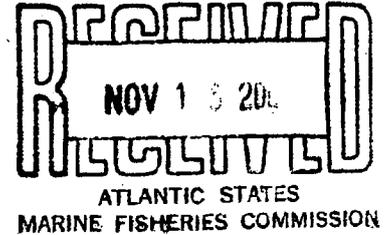
cc: John V. O'Shea



STATE OF DELAWARE
DEPARTMENT OF NATURAL RESOURCES
& ENVIRONMENTAL CONTROL
DIVISION OF FISH AND WILDLIFE
89 KINGS HIGHWAY
DOVER, DELAWARE 19901

OFFICE OF THE
DIRECTOR

November 9, 2004



Mr. John Nelson, Chair
Atlantic States Marine Fisheries Commission
2 Hazen Dr.
Concord, NH 03301

Dear Mr. Nelson,

Delaware has a long history of involvement in exotic oyster research and proposed introductions on the U.S. Atlantic coast. One major concern is that the biology and ecology of any candidate species be known as thoroughly as possible, so unintended impacts may be minimized. Another concern is that the decision to introduce an exotic oyster not be made unilaterally, by one or two states, but only after extensive dialog and buy-in by all Atlantic coast states. With the recent reactivation of the Interjurisdictional Shellfish Transport Committee of the ASMFC, I request that the committee provide a forum for regional dialog and I offer the enclosed Joint New Jersey-Delaware position on this issue for your consideration.

Sincerely,

Patrick J. Emory
Director
Delaware Division of Fish and Wildlife

cc: Mr. John V. O'Shea, Executive Director, ASMFC
Mr. Robert Beal, ASMFC Staff, ISTC

Delaware's good nature depends on you!



State of New Jersey

Department of Environmental Protection

Division of Fish and Wildlife

P.O. Box 400

Trenton, NJ 08625-0400

Martin J. McHugh, Director

Visit our Division Website: www.njfishandwildlife.com

November 10, 2004

James E. McGreevey
Governor

Bradley M. Campbell
Commissioner

John I. Nelson, Chairman
Atlantic States Marine Fisheries Commission
1444 Eye Street, 6th Floor
Washington, DC 20005

Dear Chairman Nelson:

I am writing to you regarding the intent of Maryland to introduce the non-native oyster, *Crassostrea ariakensis*, to the waters of Chesapeake Bay as early as next spring, after only one year of study. Attached please find a joint position statement regarding this introduction on the behalf of the States of New Jersey and Delaware.

At this time both New Jersey and Delaware oppose the introduction of diploid *Crassostrea ariakensis* on the U.S. Atlantic coast. In our opinion, there is still inadequate knowledge of the biology and ecology of this oyster. In addition, any unilateral introduction by any single state will ultimately impose whatever ramifications that may occur to neighboring jurisdictions and the resources they manage.

I request that the Atlantic States Marine Fisheries Commission's, Interstate Fishery Management Program (ISFMP) Policy Board take a more active role in the discussion regarding this proposed introduction since it has the potential to impact all member States of the Commission. On behalf of New Jersey, I strongly recommend that the Policy Board attempt to persuade the State of Maryland to proceed cautiously regarding this introduction until such time as an adequate review process has been conducted and many of the unknowns regarding *Crassostrea ariakensis* have been answered.

Thank you for providing the opportunity through the ISFMP Policy Board to facilitate discussions on this very important issue of mutual interest.

Sincerely,

Martin J. McHugh
Director

c: Commissioner Bradley M. Campbell
Assistant Commissioner John S. Watson Jr.
Administrator Tom McCloy
Chief James Joseph

**Joint Position of the States of New Jersey and Delaware on the Proposed
Introduction of *Crassostrea ariakensis* on the U.S. Atlantic Coast and the E.I.S.
Process Supporting That Introduction**

November 9, 2004

BACKGROUND

Since 1989, the states of New Jersey and Delaware have been continuously involved in Asian oyster research issues in Delaware and Chesapeake Bays. On an annual basis, we have been involved in review of research proposals and commented on research permit applications. New Jersey has issued permits for experimental field deployment of *Crassostrea gigas* on several occasions. Delaware, as a signatory of the Chesapeake Bay Exotic Species Plan, has provided technical input to annual *ad hoc* exotic oyster panels, convened to review field research proposals and commercial trials, focusing on bio-security issues. In the mid-1990's, both states petitioned the International Council for the Exploration of the Seas (ICES) Workgroup on Transfers of Marine Organisms regarding bio-security issues involved in exotic oyster research, the only U.S. states to do so. Initially on opposite sides of the exotic oyster issue, New Jersey and Delaware have been in agreement on this issue since 1995.

When the concept of using non-native species to offset the decline of American oyster in Chesapeake Bay arose approximately 15 years ago, the primary candidate was *Crassostrea gigas*. This oyster is a native of Asia, where it is the major commercial oyster. It has been introduced extensively around the world, including Europe, North America and Australia and its biology and ecology are well documented in the scientific literature. Despite this, it took almost a decade of field experiments to conclude that its growth and survival was no better than that of the native oyster in the moderate and low salinity waters of Chesapeake Bay. Furthermore, its thin shell and susceptibility to the commensal polychaete, *Polydora websteri*, as well as various predators make it a poor choice for introduction in the mid-Atlantic region.

In marked contrast, the current exotic oyster of interest is a virtual unknown. There has been very little published regarding the biology and ecology of *Crassostrea ariakensis*. To make matters worse, the historical literature on the species, which might have served as input information for predictive population models, has been cast into doubt. Recent genetic testing indicates that more than a single species was used in these studies, making their value questionable (King, personal communication, 2004). In addition, recent trips to Asia, by oyster researchers to study *C. ariakensis* in Asian habitats, which form the basis of current opinions of reef building characteristics, are now in doubt. On-going genetic testing of 210 oysters collected at two sites has shown that over 94% of putative *C. ariakensis* are actually *C. gigas*, a known reef builder (Luckenbach *et. al*, 2004). This work, conducted, in part, to determine whether *C. ariakensis* is a reef builder, failed to make that determination, at this time. The reef building characteristics of *C. ariakensis* remain unknown.

Although the use of triploid oysters is not a major issue in this proposed diploid introduction, the issue provides a good example of how long it can take to learn about biological issues,

even when we think we know all the facts at the outset. In the early 1990's, chemically-induced triploids were proposed as a means of inducing sterility and ensuring bio-security. Triploid oysters were thought by some researchers to be 100% stable. Reversion from triploid to the normal diploid was said to be "unknown in the animal kingdom." (Allen, personal communication, (1994). In January 1995, in an *in situ* study in Virginia, 26.5% of triploid oysters were found to have begun the reversion process, seven months after deployment. Six percent had become "virtual diploids." (Outten, personal communication, 1995) As a result, chemically-induced triploids were replaced as a bio-security measure with "mated" triploids. These tetraploid-diploid crosses were also thought to be 100% triploid and 100% stable. Subsequent research has shown that neither of these presumptions is true (Kern, personal communication, 2000, 2003). "Mated" triploids revert at a lower rate and each batch contains an undetectable level of normal diploid individuals. The characteristics of triploidy are among the most important issues impacting bio-security during the work over the last 15 years, yet it has taken over 10 years to get to our current, imperfect level of understanding and important questions remain. It is not unrealistic to expect that it may take a similar amount of time to adequately examine the biology and ecology of *C. ariakensis*. This process may reveal fatal flaws in the candidacy of *C. ariakensis* for introduction, as was the case with *C. gigas*. Certainly the extreme susceptibility of *C. ariakensis* to *Bonamia*, a naturally occurring parasite on the Atlantic coast, is one example of an unanticipated risk associated with introducing an exotic species into a new habitat. How *Bonamia* will affect *C. ariakensis* and, in turn, how *C. ariakensis* may serve to spread *Bonamia* if the proposed exotic oyster introduction is carried out in the mid-Atlantic is completely unknown at this time. Answering this question with the confidence necessary to prevent a potential ecological disaster would certainly take several years.

In the past several years, a number of high level expert panels has grappled with the problem of the introduction of a non-native oyster species. Each has developed recommended research needs and a projected timeline for their completion. The National Academy of Sciences has recommended studies over a five year period (2003). In 2003, the Chesapeake Bay Program Scientific and Technical Advisory Committee (STAC) has made specific research recommendations, also covering a five year time span. The federal cooperating agencies have recommended research needs for a defensible environmental impact statement (E.I.S) which extend through 2007, the end point of a five year federally-funded research effort which began in 2003. Maryland alone proposes another timeline, proposing to review its single year of studies in December 2004, with a possible decision to unilaterally introduce the non-native in February 2005.

STATEMENT OF POSITION

The states of New Jersey and Delaware oppose the proposed diploid introduction of *Crassostrea ariakensis* on the U.S. Atlantic coast, at this time, for two reasons. First, in our view, there is inadequate knowledge of the biology and ecology of this oyster. A responsible decision to introduce this exotic species should not be made under these circumstances. Second, we believe that no single state has the right to impose the introduction of an exotic oyster on neighboring jurisdictions. Public policy issues which have interstate ramifications

call for overriding federal or regional approval, as is the case in pollution-related situations where there are interstate impacts. In addition, given its role in interstate fishery management issues, the Atlantic States Marine Fisheries Commission must play a more active role in this matter and convene the Shellfish Transport Committee in a series of meetings to review the proposed introduction throughout the E.I.S. process.

The states of New Jersey and Delaware oppose any departure from the research framework outlined by the Federal Cooperating Agencies in support of E.I.S. development. Moreover, we believe the decision to conclude the E.I.S. process should be made when there is consensus that adequate supporting research has been conducted, rather than being tied to an arbitrary timeline. It is possible this process may take more than five years.

Maryland officials have been quoted in recent press releases as saying that the reasons for considering an exotic oyster introduction are disease and over fishing. The states of New Jersey and Delaware recommend that Maryland enhance and expand efforts to employ traditional fisheries management techniques, such as total allowable catch (quotas) and area closures when stock assessment information collected by the state indicates that spawning stock biomass is critically low on particular oyster beds, as suggested in Jordan and Coakley (2004). The authors modeling efforts suggest that a 40% reduction in fishing mortality over a period of a decade would virtually assure stock restoration and an enhanced fishery.

The states of New Jersey and Delaware are concerned about recent statements by Maryland officials and Corps of Engineers personnel regarding the N.E.P.A. process. It would appear that these individuals may have pre-judged the issue and are not considering all E.I.S. alternatives, but rather are moving to expedite the introduction of the non-native oyster with an abundance of optimism and a relative dearth of information. The N.E.P.A. process must remain an objective, data-based, professional decision making process.

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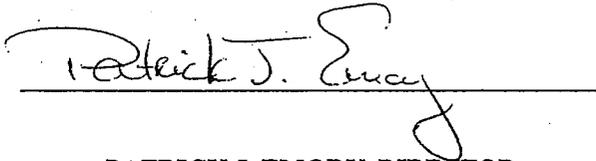
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ENDORSEMENT FOR THE STATE OF DELAWARE

A handwritten signature in cursive script, reading "Patrick J. Emory", is written over a horizontal line. The signature is written in dark ink and is positioned above the printed name and title.

**PATRICK J. EMORY, DIRECTOR
DELAWARE DIVISION OF FISH AND WILDLIFE**

DAN K. MORHAIM, M.D.
11th Legislative District
Baltimore County

Health and Government
Operations Committee

Chairman
Subcommittee on
Government Operations

Vice Chair
Joint Committee on
Health Care Delivery and Financing

Joint Committee on Administrative
Executive and Legislative Review



THE MARYLAND HOUSE OF DELEGATES
ANNAPOLIS, MARYLAND 21401-1991

Annapolis Office
3040 Lower House Office Building
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1-800-431-7122 Ext 3342
Fax 410-321-7543

District Office
2 Park Center Court #100
Owings Mills, Maryland 21117-1809
410-321-8712

E-Mail dan_morhaim@house.maryland.gov

December 2, 2004

DEC 02 2004

Governor Robert Ehrlich
State House
Annapolis, Maryland 21401-1991
Fax 410-974-5152

Re: Asian Oyster

Dear Governor Ehrlich:

There has been much discussion about the implications of the possible introduction of the Asian oyster into the Chesapeake Bay and that attention has focused on potential problems regarding impact on other species in the Bay.

However, in the interests of having as full a scientific investigation as possible, please review the enclosed letter. As you can see, these scientists raise significant concerns about the possible impact of the Asian oyster on human health, via spread of dangerous pathogens. This represents a risk we should not be willing to take.

Before any further steps are taken, I urge you to fully analyze the issues raised here. I would be happy to work with you and your staff in this regard.

Sincerely,

Delegate Dan Morhaim, M.D.

DEPARTMENT OF EPIDEMIOLOGY
AND PREVENTIVE MEDICINE



UNIVERSITY OF MARYLAND
SCHOOL OF MEDICINE

December 1, 2004

Delegate Dan Morhaim, M.D.
8 Park Center Court, #100
Owings Mills, Maryland 21117

Dear Delegate Morhaim,

As per your request for an opinion regarding the potential public health consequences of introducing Asian oyster (*Crassostrea ariakensis*) into the Chesapeake Bay, please review the following. As researchers in the area of bacterial infectious disease, we offer you our expert opinion based on the best scientific information available. We have over twenty published papers on pathogenic bacteria and their environmental assessment and have grant funding from NIH, CDC and FDA.

Currently, the American oyster (*Crassostrea virginica*) is a primary vehicle for transmission of a number of important human pathogens, including *Vibrio vulnificus*, *Vibrio parahaemolyticus* and enteroviruses, in the United States. *Vibrio parahaemolyticus* is noted for having caused several large outbreaks of gastroenteritis in the U.S. in recent years. *Vibrio vulnificus* is the leading cause of death associated with the consumption of raw oysters in the U.S., with approximately 50-70 cases per year, 50% of which die. Both of these organisms live naturally in marine environments, including Chesapeake Bay, and can be cultured from all oysters in the bay, particularly during the summer. In Asia, *V. parahaemolyticus* causes endemic outbreaks, as opposed to the sporadic outbreaks experienced to date in the U.S., additionally the incidence of *V. vulnificus* disease and death is also much higher in Asia. Whether the increased incidence of disease is associated with oyster species is unknown.

Our concern with the potential introduction of the Asian oyster into Chesapeake Bay is that there is insufficient data to know whether these oysters will modify the disease transmission patterns of *V. parahaemolyticus*, *V. vulnificus* and other pathogens to humans. There is the potential, due to their faster growth rate and increased size relative to the American oyster, that they will also acquire high body-burdens of these naturally occurring pathogens through filter-feeding. Higher body-burdens may translate to increased disease incidence and death caused by these pathogens. Differences in oyster physiology may also select for particularly virulent strains of these pathogens. The lack

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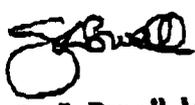
of scientific data, both locally and internationally, does not allow us to determine with confidence whether the Asian oyster can be introduced and not impact human health. It is also worth noting that should *V. vulnificus* disease be found associated with Maryland oysters (either *C. virginica* or *C. arkansensis*) strict oyster harvest regulations, such as those currently implemented in the Gulf Coast States, would be applied to Maryland.

To summarize our concern, certain bacterial pathogens associated with oysters can cause severe illness in humans. In Asia, incidence of these diseases is much higher than in the U.S. These pathogens are known to live in the Chesapeake Bay, although fortunately for us at low levels. However, if the higher incidence of disease is because the Asian oysters are a better home for the pathogens than the American oyster, then introducing the Asian oysters would be expected to cause the incidence of these diseases to increase in the U.S. and potentially close oyster beds to harvest. This risk depends only on how well the bacteria grow in Asian oysters and not where those oysters originate. The possible association between the level of pathogenic bacteria and the species of oyster can be tested.

For these reasons, we are concerned that the introduction of the Asian oyster could have serious consequences for human health. Although with appropriate funding for about 3 years, this concern can be tested, thus far this possibility has not been sufficiently researched or fully considered.

Thank you for giving us the opportunity to share our concerns, and please do not hesitate to contact us if further information is desired. We are available to review this with your legislative colleagues and others in government if desired.

Sincerely,



Jan L. Powell, M.P.H., Ph.D.
Assistant Professor



O. Colin Stine, Ph.D.
Associate Professor
Scientific Director, Biopolymer/Genomics Core

Department of Epidemiology
University of Maryland School of Medicine



Robert L. Ehrlich, Jr., Governor

Michael S. Steele, Lt. Governor

C. Ronald Franks, Secretary

December 7, 2004

Delegate Dan Morhaim, M.D.
The Maryland House of Delegates
Lowe House Office Building
Annapolis, Maryland 21401

Dear Delegate Morhaim:

Thank you for your letter to Governor Robert L. Ehrlich regarding recovery of oysters in Chesapeake Bay and in particular your concerns about the possible impact of the Asian oyster on human health. The Governor has reviewed your letter and asked me to respond on his behalf.

Please be assured, we are looking very closely at the impact of Asian oysters on human health. This issue was addressed in the report issued by the National Research Council (NRC) titled "Non-native Oysters in the Chesapeake Bay." In the report, the NRC states there is no reason to expect the human health risks of *C. ariakensis* (Asian oyster) harvested from the Chesapeake Bay to be any different from those of consuming *C. virginica* (native oyster).

The Maryland Department of Environment and the Virginia Department of Health also have reviewed the issue and concur with the NRC report. Both departments see no reason to expect any different human health risks associated with the Asian oyster. Also, they do not see any reason to expect an increase in closed shellfish areas due to the introduction of the Asian oyster.

Even with these credible opinions, however, we have funded research with both the Virginia Institute of Marine Sciences and the University of Maryland Center for Marine Biotechnology to assess the risk of viral pathogens as well as the virulence of known parasites that exist in Chesapeake Bay. We have received preliminary results from the research, but we are not yet in a position to make a decision on whether there will be any unacceptable risks associated with the proposed introduction of the Asian oyster. We expect to be in a position in early 2005 to review the analyses and research, which will be completed by then.

I assure you that we will not proceed with the introduction of the Asian oyster if unacceptable risks are identified. I am committed to restoring the health of the Chesapeake Bay, not endangering it, or introducing any human health problems.

Delegate Dan Morhaim, M.D.
Page 2

Once again, thank you for your letter. Governor Ehrlich appreciates hearing from you, and on his behalf, I thank you for your interest in the recovery of oysters in the Chesapeake Bay and the possible impact of the Asian oyster on human health. If I may be of further assistance, please do not hesitate to contact me or Associate Deputy Secretary Pete Jensen at 410-260-8100, toll-free number at 1-877-620-8367.

Sincerely,



C. Ronald Franks
Secretary

Cc: Governor Robert L. Ehrlich, Jr.



MARYLAND DEPARTMENT OF THE ENVIRONMENT

1800 Washington Boulevard • Baltimore MD 21230

410-537-3000 • 1-800-633-6101

Robert L. Ehrlich, Jr.
Governor

Kendl P. Philbrick
Secretary

Michael S. Steele
Lt. Governor

Jonas A. Jacobson
Deputy Secretary

MEMORANDUM

TO: Tom O'Connell, Department of Natural Resources, Fisheries Service

FROM: Kathy Brohawn, Maryland Department of the Environment
Robert E. Croonenberghs, PhD and Robert J. Wittman, PhD, Virginia Department of Health

SUBJECT: Issues Related to Human Pathogens and *C. ariakensis*

DATE: January 3, 2005

The Maryland Department of Environment (MDE) and Virginia Department of Health (VDH) are responsible for evaluating and classifying the sanitary quality of shellfish harvesting waters in Maryland and Virginia. MDE and VDH offer the following comments regarding human pathogens and the possible increase in human illnesses associated with consumption of introduced *C. ariakensis*.

The National Shellfish Sanitation Program (NSSP) is the federal/state cooperative program recognized by the U. S. Food and Drug Administration (FDA) and the Interstate Shellfish Sanitation Conference (ISSC) for the sanitary control of shellfish produced and sold for human consumption. Member states, including all coastal states, and MOU countries (including: Canada, Chile, Republic of Korea, Mexico, and New Zealand) follow strict adherence to the NSSP to minimize the risk of human illness associated with the consumption of all edible species of oysters, clams, and mussels. Both Maryland and Virginia adhere to the practices under the National Shellfish Sanitation Program (NSSP) to classify the sanitary quality of shellfish growing waters. Growing water classification is the same for several species (including oysters, clams, and mussels). We concur with the NAS NRC report and see no reason to expect any different human health risks associated with *C. ariakensis* than are associated with *C. virginica* and see no reason to expect an increase in closed shellfish areas due to the introduction of *C. ariakensis*. This program has been successful in reducing the risk for illnesses associated with consumption of shellfish for over 75 years and the sanitary controls utilized under this program are practiced uniformly for all species of molluscan shellfish. The west coast of the US grows a variety of species of oysters and clams, including *C. gigas* and *C. ariakensis*, with no record of an increase in human illnesses. Sanitation practices there are the same as those for all growing waters in the US and MOU countries. The NSSP has safeguards built in to accommodate species-specific concerns, e.g., microbiological analysis of shellfish meats for relay, depuration, etc.

Vibrio spp. (including *V. vulnificus* and *V. parahaemolyticus*) are naturally occurring bacteria found in ocean waters and estuarine waters worldwide, including the Chesapeake Bay. Not all strains are pathogenic. The ISSC, FDA and the joint Food and Agriculture Association of the United Nations (FAO) and World Health Organization (WHO) Risk Assessment on *Vibrio* spp. in oysters (Expert Consultations on Risk Assessment of Microbiological Hazards in Foods, Hazard identification of *Camphylobacter* spp. in broiler chickens and *Vibrio* spp. in seafood, July 2001) does not differentiate between species of oysters when assessing the risk of human illness from vibrios or in developing management strategies to reduce the risk. Warm water shellfish growing area conditions significantly increase the risk of *Vibrio vulnificus* infections from ingestion of raw or undercooked oysters. Currently the ISSC has adopted a *Vibrio vulnificus* control plan that requires specific harvest and processing controls if there are two or more cases of *Vibrio vulnificus* illness from a state's shellfish growing areas. Since the shellfish from the Chesapeake Bay and its tributaries have not been associated with cases of *Vibrio vulnificus* illness it is highly desirable to maintain this absence of disease. This can be achieved by development of controls on harvest of *C. ariakensis* during warm weather months. It is widely accepted that the sanitary control measures and practices are reliable for all species of molluscan shellfish. Research is needed to better define the specific environmental conditions (temperature and salinity) that may require control measures to reduce the risk for *Vibrio vulnificus*, regardless of the species being harvested.



Robert L. Ehrlich, Jr., Governor

Michael S. Steele, Lt. Governor

C. Ronald Franks, Secretary

February 17, 2005

Paula Colodny Hollinger, Chairperson
Miller Senate Office Building
2 West Wing
11 Bladen St.
Annapolis, MD 21401-1991

Dear Chairperson Hollinger:

The hearing on SB 405 highlighted how difficult it is to bring to the Committee's attention to all of the background and complexities involved in the preparation of an environmental impact statement (EIS) to analyze ways to restore oysters to Chesapeake Bay. Further complicating this difficulty are public perceptions created by press reports that do not accurately or fully reflect the states' (Maryland and Virginia) proposal and isolated personal opinions based on faulty presumptions.

One notable example is the often cited worry that introduction of the west coast strain of *C. ariakensis* will introduce a new disease or parasite. The fact is that the oyster being considered is from the same brood stock as oysters being used in the Bay for research since 1996. In other words, the scientific community has already concluded through the conduct of these experiments that the risk is either not present or is acceptable. Further, it has been determined by the Virginia and Maryland health authorities that the NRC (National Research Council) report accurately reflects that the human health risk associated with consuming Asian oysters is no different than those of consuming native oysters.

It is not readily known or reported that the states' request to the U.S. Army Corps of Engineers to assist in the preparation of an EIS preceded the issuance of the report from the National Research Council (NRC). We were convinced, and remain convinced, that there is some urgency to undertaking a thorough and comprehensive scientific and public review of the likelihood of recovery of native oyster populations and other alternatives including an oyster that is not native to Chesapeake Bay. An EIS, prepared in accordance with national guidelines, pursuant to the National Environmental Policy Act (NEPA) that is surrounded by a body of case law is the appropriate venue for public notice and participation in the process of decision-making. It is a well-tested process.

The NRC report validates our approach to the study. Some excerpts from the report may be of interest and value to understand some of their views about restoring oysters to Chesapeake Bay:

"It will take decades and possibility centuries to restore native oyster populations and oyster reefs. The time frames presented in the Chesapeake Bay 2000 Agreement appear ambitious and possibly naïve."
(Page 144)

“...Regulatory and enforcement measures should be taken to reduce the risk of a rouge introduction.”
“The committee’s review of the case studies clearly indicates that the greater ecological or economic harm typically arises from organisms that are inadvertently introduced with the foreign oyster”. (Page 233)

“Assuming that monitoring of water quality and shellfish sanitation practices are followed, there is no known reason to expect the human risks of consuming triploid or diploid *C. ariakensis* harvest from the Chesapeake Bay to be any different than those of consuming *C. Virginica* from the Bay (page 209)

“Long term research goals, though not immediately applicable to a decision about introducing the nonnative oyster within the next few months or years, are needed, nevertheless, to address larger questions about the ecological role and future abundance or success of native and nonnative oysters in Chesapeake Bay/” (page 234).

“...”As long as unselected oysters survive and reproduce, it is unlikely that the overall level of resistance in the bay will improve measurably.” (Page 85)

“...Given their functional and ecological similarities, it seems likely that both oyster species will utilize similar food and spatial resources.” (Page 202)

“...It seems likely that *C. ariakensis* is capable of providing similar types of ecosystem services as the Eastern oyster if sufficient populations densities existed in the bay.” (Page 204)

Other parts of the report are instructive. Table 3.2 lists reported introductions of nonnative oysters to the east and gulf coasts of North America, beginning in the 1930’s.

There are other portions of the report that point out the risk the deployment of triploid (sterile) oysters includes the probability that a self-sustaining population of nonnative oysters may result because of reversion of the triploids to spawning condition and the presence of diploid oysters among the triploids placed in the bay. The report further states that it is very likely that *C. ariakensis* is capable of establishing wherever *C. virginica* was established historically in the Chesapeake Bay, with the exception of areas where sedimentation now prevents or inhibits larval settlement (both native and nonnative).

As indicated in remarks at the hearing, there is a worldwide trade in live oysters. Oysters from all over the world come into the United States regularly, year around and are on restaurant menus throughout the Bay watershed. This highlights the caution in the NRC report that if responsible action is not taken timely to evaluate the benefits and risks of nonnative oysters, the likelihood and possibility of a rogue introduction of oysters (along with the unknown “hitchhikers”) from anywhere in the world is increased.

If that were to happen the public complaint would be similar to what we hear now about species that were intentionally or accidentally introduced without the benefit of the type of full review and analysis represented by the EIS: “Why wasn’t action taken to control or evaluate this introduction before it occurred?” It seems to be lost in the debate that the EIS is exactly what is appropriate and responsible in light of past experiences with nonnative species introduced without review.

In the course of the hearing, it was suggested that a moratorium on the harvest of the native oyster should be considered. Time did not allow us to enumerate all of the alternatives being considered in the EIS (eight, in fact), including whether a moratorium should be placed on the harvest of native oysters. Another alternative will evaluate expanding the native oyster restoration program including the use of disease resistant oysters, particularly in lower salinity areas of the Bay.

A central question to be evaluated in the consideration of whether a nonnative oyster should be introduced is the likelihood of recovery of the native oyster. It is an accepted and stated fact that oysters are a keystone species in the Bay, critical to recovery of water quality and maintenance of a healthy ecosystem. That is an integral element in the EIS and the associated risk assessments as part of the decision-making. If the analyses being undertaken conclude that the NRC report is correct that decades and possibly centuries are required to restore native oysters, then the question is how much risk is associated with the continued decline in the ecological health of the Bay while we wait for the recovery of the native oyster?

A further point of clarification that we could not get into because of time constraints is the very nature of considerations required under NEPA and in an EIS. The issues to be addressed in an EIS include not only the ecological and environmental impacts of a proposed action and alternatives, but also the “human environment” that includes economic and social impacts associated with an action. All of these aspects of the proposal and all of the alternatives will be analyzed in the EIS and be available for public comment.

The public debate, and the predominant subject of the hearing, has centered on “how much research is necessary regarding nonnative oysters?” to the exclusion of the broader question of what is necessary to restore oysters and the associated ecological benefit of a keystone species? This has resulted in some prejudgments, in our view, that are impeding the progress of a timely assessment of how much we know and how much additional we might need to know to support decisions on how to proceed with restoration of oysters in Chesapeake Bay, native or nonnative. It is not a question of how many years of research are required. It is a question of an orderly process to assemble what we do know, make measured judgments, based on the best available information (another national standard) and proceed to the next step, whether it is to implement a decision, or conduct further research before implementation. We believe that time is of the essence and if a decision can be made based on information available this year, why wait several more years before a decision based on a presumption that we might not know enough?

When Virginia and Maryland initiated the EIS process in 2003 we made the commitment to fund the research as well as pay the cost of preparation of the EIS. When the NRC report was released we compiled all of the recommendations in the report and met jointly with most known oyster researchers in the Bay area, primarily the University of Maryland and Virginia Institute of Marine Sciences. We asked them if they could design research to address the NRC recommendations to acquire additional information on the west coast strain of *C. ariakensis* and native oysters. Based on their responses and proposals, based on prior work they had conducted on both native and nonnative oysters, we funded research proposals that we believe address all of the NRC recommendations and provide information to prepare a well informed and legally defensible EIS. We then proceeded with the public scoping and public notices required.

A question was raised in the hearing about the EIS, namely, how many are there? This confusion appears to be related to the referenced “standard” of the Scientific and Technical Advisory Committee

(STAC) in the EPA Bay Program. NRC and STAC made research recommendations based upon literature reviews, not based on a quantitative risk assessment. NRC and STAC recommendations were used in developing the initial research framework but the focus for whether or not more research is needed must be decided based on the risk assessment. The STAC reviewed the recommendations in the NRC report and made separate recommendations for research. We then reviewed those recommendations and compared them with the research we had already initiated and made several changes to accommodate their recommendations in concert with the EIS process, timetable, and analyses being performed. Their recommendations do not constitute a “standard” that needs to be satisfied in the EIS. In fact, their report suggested that their recommendations “should be taken into consideration”, which they were.

There is only one EIS. It is a state EIS, being prepared by the Maryland and Virginia with the collaboration and assistance of the US Army Corps of Engineers (Norfolk District) to assure that the standards of NEPA and Council on Environmental Quality (CEQ) guidelines are met to be a scientifically and legally defensible EIS. The national standards we are following are extensive, have been tested in the courts repeatedly, and are well understood. As indicated in SB 405 the decision is a state decision even though we have chosen to follow national standards.

The involvement of the federal agencies is extensive and helpful. Six separate review committees have been formed to provide professional technical review of the products from the various contractors preparing writings and analyses for the EIS. Technical review members include the Corps of Engineers, National Oceanic and Atmospheric Administration, US Environmental Protection Agency, US Fish and Wildlife Service, as well as members of STAC and personnel from other states. They have been meeting regularly since the inception of the EIS process in late 2003 and have been actively involved in shaping the data and analyses and will continue to be involved to the completion of the EIS. More than 50 public and technical meetings have been held and fully documented. The records of all of these meetings are part of the public record associated with the EIS and available for public review. As we indicated in the hearing we also are regularly briefing the members of the Atlantic States Marine Fisheries Commission (states from Maine to Florida) on the progress of the EIS.

Enclosed are revised amendments that we believe will meet the Committee’s intent and clarify the provisions of the bill.

Thank you for your interest and understanding of the complexities and importance of this undertaking. We are always available to assist in whatever way we can.

Sincerely,

C. Ronald Franks
Secretary

Enclosure

March 24, 2005

**Environmental Protection Agency (EPA) Chesapeake Bay Program (CBP)
to the Project Delivery Team (PDT)**

To: mark.mansfield@usace.army.mil, toconnell@dnr.state.md.us,
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Shamet/R3/USEPA/US@EPA, Catherine Libertz/R3/USEPA/US@EPA, Daniel
Kluza/DC/USEPA/US@EPA, Steve Jordan/GB/USEPA/US@EPA, Carin
Bisland/CBP/USEPA/US@EPA, Michael Burke/CBP/USEPA/US@EPA, Mike
Fritz/CBP/USEPA/US@EPA, Stephanie Branche/R3/USEPA/US

Subject: Recommending Risk Assessment Expert for EIS Panel

This is to further my strong recommendation that the peer review panel (i.e., the Rothschild panel) for the nonnative oyster EIS include an expert in risk assessment. As demonstrated in the bulletin below, risk assessment is a serious discipline in the field of environmental management and one that deserves our particular attention in the nonnative oyster EIS context. Here's an extract from the bulletin describing the Harvard University professor who is the featured speaker in the advertised seminar:

Dr. Evans is Senior Lecturer on Environmental Science, Department of Environmental Health, Harvard School of Public Health. Dr. Evans' research has focused on risk assessment, uncertainty analysis, and decision-making in environmental health. One challenge for risk assessment has been to characterize the degree of uncertainty in the estimates of health risks due to environmental exposures. Much of Dr. Evans' work has involved the development and application of methods for characterization of uncertainty in estimates of exposures to and risks from contaminants in the environment.

Perhaps Dr. Evans himself would be willing to serve on the Rothschild panel, or he may be able to recommend one of his peers in the discipline.

To Mark and Tom, please assure that my recommendation is communicated to Dr. Rothschild and the panelists for their consideration at the panel's first meeting.

Mike Fritz

Michael A. Fritz
Coordinator, Living Resources Subcommittee
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March 24, 2005

**Environmental Protection Agency (EPA) Chesapeake Bay Program (CBP)
to the Project Delivery Team (PDT)**

From: Fritz.Mike@epamail.epa.gov

Sent: Thursday, March 24, 2005 10:57 AM

To: Mansfield, Mark T NAO

Cc: O'Neill, Claire D NAB02; Seltzer, Craig L NAO; Jamie King;
greiner.jennifer@epamail.epa.gov; jtravelste@mrc.state.va.us;
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Subject: NAS Guidance and Peer Review Panel Integrity

Following is the web site for the National Academy of Sciences "Policy on Committee Composition and Balance and Conflicts of Interest for Committees Used in the Development of Reports":

<http://www.nationalacademies.org/coi/index.html>

The January 14, 2005 OMB "Final Information Quality Bulletin for Peer Review" says in paragraph II.2.b. "Conflicts: The agency -- or the entity selecting the peer reviewers -- shall . . . (ii) in selecting peer reviewers who are not government employees, adopt or adapt the National Academy of Sciences policy for committee selection " (Federal Register Vol 70, No. 10, page 2675, January 14, 2005).

While I would not want the Rothschild panel to lose the benefit of Dr. Mann's and Dr. Roman's considerable scientific expertise, I suggest that we find a mechanism for their participation other than full membership (e.g, testimony). Their status as managers of institutions that are contracted for work to support the EIS and as managers of institutions that have a clear stake in the issue would appear to compromise the integrity of the panel if they are fully participating members of the panel (see op. cit., page 2668, column 2).

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March 28, 2005

**Environmental Protection Agency (EPA) Chesapeake Bay Program (CBP)
to the Project Delivery Team (PDT)**

From: Fritz.Mike@epamail.epa.gov

Sent: Monday, March 28, 2005 4:52 PM

To: Kate Meade

Cc: Anna Krainer; okorn.barbara@epamail.epa.gov; Christopher P. Guy (E-mail); Craig Seltzer (E-mail); kluza.daniel@epamail.epa.gov; Elizabeth Habic; Jessica Farrar (E-mail); Jamie King (E-mail); greiner.jennifer@epamail.epa.gov; Jack Travelstead (E-mail); Julie Thompson (E-mail); Jon Helge Vølstad Ph. D.; Kate Meade; Mark Mansfield (E-mail); Peter Kube (E-mail); Pete Jensen (E-mail); Phil Jones (E-mail); AC Carpenter (E-mail); Bob Beal (E-mail); Simeon Hahn (E-mail); Tammy Banta; Thomas O'Connell (E-mail); Todd S. Bridges Ph. D. (E-mail)

Subject: Oyster Demographic Modeling and the Rothschild Panel

To the EIS PDT and ERAG:

While I would be surprised if it were not already the intention to do so, this is to recommend that the Rothschild panel be explicitly requested to examine carefully the parameterization of the oyster demographic modelling used in risk assessment.

Based on communications today with Dr. Steve Jordan, EPA, there are still unresolved and significant oyster demographic issues for oyster demographic modeling.

1. Estimation of natural mortality rates.
2. Estimation of spat production from a stock-recruitment relationship.

One way to help the panel approach these questions would be to have Dr. Jordan and Dr. Jon Volstad, among others, invited to testify and interact with the panel at one of its first meetings. The panel should hear the scientific debate about these important components of the population modeling.

Mike Fritz

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March 29, 2005

**Environmental Protection Agency (EPA) Chesapeake Bay Program (CBP)
to the Project Delivery Team (PDT)**

From: Fritz.Mike@epamail.epa.gov

Sent: Tuesday, March 29, 2005 6:19 PM

To: Kenny Keen (E-mail); Nancy Allen (E-mail); AC Carpenter (E-mail);
Bob Beal (E-mail); Craig Seltzer (E-mail); Jack Travelstead (E-mail);
Jamie King (E-mail); Greiner.Jennifer@epamail.epa.gov; Julie Thompson
(E-mail); Kate Meade; Mark Mansfield (E-mail);
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chris_guy@fws.gov

Subject: Comments on Draft Decision Criteria Matrix

TO: Nonnative Oyster EIS Project Delivery Team (PDT)

FROM: Mike Fritz, US EPA

This is to provide my comments on the draft oyster EIS decision criteria matrix (copy attached) that was provided for review by Tom O'Connell on March 23.

1. General Comment: The PDT's initiative to collaborate on establishing up-front decision criteria is one of the most important functions of the PDT. The draft matrix is a good basis for focusing the beginning of our discussions, but I expect that such a matrix alone will not suffice to support a well-constructed multi-criteria decision analysis. I anticipate that there will be further work at the PDT to identify exactly how the matrix will be used, so I will limit these comments to the question of whether the current draft is a good objective listing of the risk and benefit issues that should go into our multi-criteria process. I believe that at this stage, we should strive for establishing an objective structure, unweighted by our respective biases that would weight one criterion over another.
2. Beginning at the left hand margin of the draft, I suggest that an additional column be added to separate 3 larger categories of criteria. The three gross categories could be titled Feasibility, Risks, and Benefits. See further breakout under these categories under point 5 below.
3. In the interest of preserving objectivity in this stage of the analysis, the criteria category "Key Bay Restoration Goals" should be deleted from the table. The objective ecological issues related to restoration goals will be addressed under ecological risks and ecological benefits (see suggestion in point 5, below), and including them here in a separate category introduces a subjective weighting that is inappropriate at this stage of analysis. The consideration of

contribution or detriment to bay restoration goals can be considered later in the process when criteria are weighted.

4. The category "Unsanctioned Introduction " should be deleted from the table. This is not a calculable risk and is a red herring in this analysis. It's inclusion suggests that current law cannot be enforced, which, if true, makes the rest of this exercise moot. Furthermore, the rogue introduction scenario increasingly appears to be implausible given the limited availability of *C. ariakensis* in common circulation.
5. I suggest the following breakout of subcategories in the next columns to the right:
 - A. Feasibility
 - A.1. Attainment of Project Purpose - using the original definition project purpose in the Federal Register. I object to use of the 2015 timeline on population analysis as a decision criteria. Doubtless we're going to have to have more discussion about this.
 - A.2. Implementation Cost
 - B. Risks
 - B.1. Marine Animal Disease (includes introduction of new disease, susceptibility to endemic pathogens or parasites, alteration of current diseases)
 - B.2. Human Health (list adverse health effects examined in the EIS)
 - B.3. Adverse Ecological Effects (list potential adverse effects examined in the EIS)
 - B.4. Adverse Economic/Cultural (list adverse effects examined in the EIS)
 - B.5. Cost to Repair Unforeseen Damages
 - C. Benefits
 - C.1. Ecological Benefits (list potential ecological benefits, including water quality, SAV)
 - C.2. Economic/Cultural Benefits

Thank you for this opportunity. I look forward to continuing our collaboration on this very important part of the evaluation process. I suggest that we are nearly at the point at which expert facilitation would be very helpful to establish a multi-criteria decision making framework that is transparent and attentive to our respective and collective interests and responsibilities.

(See attached file: Decision criteria.xls)

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MARYLAND
DEPARTMENT OF
NATURAL RESOURCES

Robert L. Ehrlich, Jr., Governor

Michael S. Steele, Lt. Governor

C. Ronald Franks, Secretary

May 19, 2005

Ms. Kate Meade
Maryland Environmental Service
259 Najoles Road
Millersville, MD 21108

RECEIVED

MAY 25 2005

Maryland Environmental Service

RE: Environmental Review for Proposed Introduction of Non-native Oyster Species (*Crassostrea ariakensis*) into Tidal Waters of Chesapeake Bay, Maryland.

Dear Ms. Meade:

The Wildlife and Heritage Service's Natural Heritage database indicates that there are records for the following rare, threatened or endangered species known to occur within tidal waters of the Maryland portion of the Chesapeake Bay, where this project is proposed:

<u>Scientific Name</u>	<u>Common Name</u>	<u>State Status</u>
<i>Acipenser brevirostrus</i>	Shortnose Sturgeon	Endangered, also Federally Endangered
<i>Acipenser oxyrinchus</i>	Atlantic Sturgeon	Rare
<i>Eretmochelys imbricata</i>	Atlantic Hawksbill Turtle	Endangered, also Federally Endangered
<i>Fundulus luciae</i>	Spotfin Killifish	Rare

Thank you for allowing us the opportunity to review this project. If you should have any further questions regarding this information, please contact me at (410) 260-8573.

Sincerely,

Lori A. Byrne,
Environmental Review Coordinator
Wildlife and Heritage Service
MD Dept. of Natural Resources

ER #2004.2782.tidal
Cc: R. Esslinger, CAC
T. Lamey, WHS

November 01, 2005

**Environmental Protection Agency (EPA) Chesapeake Bay Program (CBP)
to Project Delivery Team (PDT)**

From: Fritz.Mike@epamail.epa.gov

Sent: Tuesday, November 01, 2005 12:16 PM

To: Kate Meade; sergeant.anne@epamail.epa.gov; Christopher P. Guy (E-mail); Claire O'Neill (E-mail); Craig Seltzer (E-mail); Jamie King (E-mail); Jack Travelstead (E-mail); Julie Thompson (E-mail); Mark Mansfield (E-mail); Mike Slattery (E-mail); Peter Kube (E-mail); Phil Jones (E-mail); AC Carpenter (E-mail); Thomas O'Connell (E-mail); Arguto.William@epamail.epa.gov; Bill Abadie (E-mail)

Cc: Slenkamp.Tom@epamail.epa.gov; Hoffman.William@epamail.epa.gov; Arguto.William@epamail.epa.gov; Okorn.Barbara@epamail.epa.gov; Shamet.Stefania@epamail.epa.gov; Libertz.Catherine@epamail.epa.gov; Jordan.Steve@epamail.epa.gov; Bisland.Carlin@epamail.epa.gov; Burke.Michael@epamail.epa.gov; Fritz.Mike@epamail.epa.gov; Branche.Stephanie@epamail.epa.gov; Garvin.Shawn@epamail.epa.gov; sergeant.anne@epamail.epa.gov

Subject: EIS Management Challenge and Opportunity

Recommendation to the Oyster EIS Project Management Team:

Following our discussion last week about the pending NOAA RFP, the focus and utility of NOAA's quarterly research reviews, a January workshop on the status of demographic modeling and risk assessment, the establishment of Corps-state agreements that will result in the production of a single EIS fully consistent with NEPA, independent peer review, and the current timeline for issuance of a DEIS (June 2006), it has become clear that we are at a moment of key opportunity in the management of the EIS project. The opportunity - and the challenge - for the management team is to define a project completion plan that includes a process and a timeline to identify and address outstanding information gathering and analytical tasks and assure a high quality DEIS product.

Our discussion of how to assist NOAA in defining priorities in a FY 2006 RFP, as reflected in the draft minutes Kate has provided below, is a very positive step in this direction. The constructive steps we agreed to on that question are a beginning of a transition from a period of competing agendas and timelines to a process in which information gathering and analysis, document drafting and independent peer review proceed under a single plan for production of a single, scientifically sound, defensible EIS.

My recommendation to the management team is that you seize upon this moment and lay out such a plan and corresponding timeline. The recommendations we agreed to

regarding the NOAA-funded research and the pending NOAA RFP are a good starting set of steps for the plan.

Additional steps could include a comprehensive workshop for a thorough discussion among the PDT, the Rothschild panel, the modeling and risk assessment contractors, the ERAG, and all funded researchers for the purpose of a full exchange of information and opinion regarding remaining information and analysis gaps and a process and timeline to fill them.

Other steps in the plan should describe processes for pre-draft review by lead and cooperating agencies, independent peer review (I recommend engaging the CBP STAC), pre-draft publication of component parts (if appropriate under NEPA), and executive-level engagement for critical decision points.

I am more optimistic than ever that we will be able to complete a DEIS that meets the high standards that were set out by the management team at the beginning of the process. As always, I would welcome further dialogue to pursue this outcome.

Mike

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December 14, 2005

US Fish and Wildlife Service Comments on the Peer Review Plan to support the Programmatic Environmental Impact Statement for Evaluating Oyster Restoration Alternatives for the Chesapeake Bay, Including the Use of Native and Non-Native Oysters

Prepared by: Julie A. Thompson, Chesapeake Bay Field Office

Suggestions for word changes are provided in the attached file: DraftOMBPeerReviewPlanRecommendationJTEdits. The following comments are provided to address the content of the plan.

Page 5, 4th bullet: The larvae transport model has not been completed, the new estimated timeframe of completion should be inserted here; Also, update the new estimated timeframe of completion for the demographic model since the demographic model cannot be completed until the results of the larvae transport model are incorporated. Also, we may want to call them "Draft Assessments" since peer review will take place and additional work may be needed for each assessment.

Page 5, 5th bullet: Again, we recommend updating the timeframe for the ecological risk assessment based on delays with the demographic and larvae transport models; there also should be an effort to solicit input from Versar and the Ecological Risk Assessment Advisory Group regarding a realistic timeframe for completion.

Page 5, 6th bullet: Edit to read that there will be a June 2006 "checkpoint" for addressing the sufficiency of scientific information and analysis to determine whether or not a Draft EIS should be released. At this time, the lead and Federal agencies will be better able to determine the actual timeframe for completion of a Draft and Final EIS.

Page 5, 7th bullet: Delete this sentence

Page 8-Water Quality Model: Although I agree we do not need additional peer review of the model it might be good to look at CBP's comments that they received during their approval process to look at issues with assumptions, etc. that could influence interpretation of the output data.

Page 9

While we have a lot of respect for Dr. Paolisso's expertise in cultural anthropology and his objectivity, we believe we are putting him in an uncomfortable position coordinating and leading the peer review of his own work. We are quite sure that he would be happy to advise us on who would be appropriate to lead that peer review.

Peer Review by the Ecological Risk Assessment Advisory Group: This group has been very closely involved in the development of the ERA. While we think that they will provide very useful input throughout the process, we do believe it would be prudent to

have a risk assessor outside the group review the end-product. This could be achieved by adding a risk assessment expert to the Advisory Panel. It would not be too late since some of the major assessments, including the risk assessment have not been completed. We recommend making a request to the Chesapeake Bay Program's Scientific and Technical Advisory Committee to advise us on who that person should be.

Page 10: Again, we believe it is prudent to have a risk assessment expert, particularly one involved with assessing the introduction of non-native species or other non-contaminants related issues, on the Oyster Advisory Panel. Most of the Oyster Advisory Panel's charge involves assessing risk, reducing risk, etc. While we do believe that the current Panel membership has broad and diverse expertise, risk assessment is a science in itself and therefore requires someone who is skilled in that field of science.

Page 11: Mike Roman and Roger Mann

These are not just people that supervise some of the funded Principal Investigators, these are Directors of labs from two major institutions in Maryland and Virginia that could have an economic stake or bias with regard to the outcome of the EIS. We believe that it is necessary to have representatives from these two institutions advise the Panel on issues but they should not be members of the Panel. We also do not agree that these two Panelists have unique expertise that could not be found elsewhere in the country. The Service sent a letter to the Maryland Department of Natural Resources citing our concerns with the composition of the Panel before MDNR decided on the membership.

General comment: We should also request that the CBP's STAC make recommendations on researchers needed to fill vacancies in the Peer Review Group.

Suggested agenda items for January PDT meeting

- Decision criteria: what system are we going to use to weigh the decision criteria; we need to solicit assistance from Todd Bridges to look at the list and suggest a weighting system that is consistent across the agencies. We also need to solicit input from ERAG on how we deal with uncertainty for the different criteria
- Risk Assessment Update
- Discuss OMB Peer Review Plan and resolve agency issues
- Peer Review Group: Update on whether membership vacancies have been filled. Plan for dealing with volume of research (we need to consider NOAA's funded research).
- Drafting timeframes for completion of assessments to get a clearer picture of where we are in the EIS process.
- Evaluation of information supporting alternatives analysis and decision criteria.



UNITED STATES ENVIRONMENTAL PROTECTION AGENCY
REGION III
1650 Arch Street
Philadelphia, Pennsylvania 19103-2029

December 16, 2005

Mr. Mark Mansfield
Planning and Policy Branch
803 Front Street
Norfolk, Va. 23510

Re: Cultural Analysis for the EIS on Oyster Restoration Alternatives, Including *Crassostrea ariakensis*.

Dear Mr. Mansfield

The Environmental Protection Agency (EPA) has reviewed the above referenced report prepared in support of the development of a Programmatic Environmental Impact Statement (EIS) for a proposed introduction of the oyster species *Crassostrea ariakensis* into the tidal waters of Maryland and Virginia.

The report provides a very informative discussion on assessing the diverse cultural aspects of the many alternatives that are proposed for the draft EIS. The report does not include a discussion on the Environmental Justice issues that may be involved with this project. Environmental Justice is considered a socio economic issue in the analysis of an EIS; however it may not have been part of the scope of this report. It may be helpful to develop a technical report for the environmental justice issues similar to this cultural analysis report. EPA has had several significant comments on the environmental justice sections of recent EISs. A predraft technical report on the environmental justice section may identify any concerns early in the EIS development process and avoid delay. It may also be helpful to discuss how this report will be incorporated into the EIS? One suggestion would be to use this report as an appendix and summarize it in the body of the EIS.

A few minor issues are mentioned below regarding the cultural report. It is suggested that the report avoid conclusive statements. For example the sentence on Page 7 (copied below) may be considered a conclusion that should be avoided and left to the reader in analyzing all aspects of the EIS.

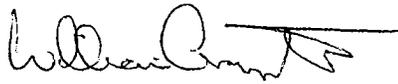
"Thus, a productive non-native oyster, either alone or in concert with the native oyster, will provide more oysters for harvesting, and theoretically (market permitting) improve the economic situation of commercial watermen, growers and processors."

The statements on page 76, also copied below, may also offer a conclusion or a recommended direction for the EIS.

So, culturally, we're conflicted over the potential of native and non-native oysters. Resolution of this cultural conflict will require that we move beyond the issue of native versus non-native oyster for restoration and view the Bay more dynamically, as a Bay that is evolving and changing. We need to culturally broaden our understanding of restoration, not back to nature, but forward to a different Bay.

Thank you, for the opportunity to offer these comments. If you have any questions please call me at 215-814-3367.

Sincerely,

A handwritten signature in black ink, appearing to read 'William Arguto', with a horizontal line extending to the right from the end of the signature.

William Arguto,
NEPA Team Leader

-----Original Message-----

From: Jamie King [mailto:Jamie.King@noaa.gov]

Sent: Friday, April 07, 2006 11:16 AM

To: O'Connell, Thomas; Mark Mansfield; Kube, Peter R NAO; Carin Bisland; Tom Slenkamp; Bill Arguto; Fritz.Mike@epamail.epa.gov; Julie Thompson; Chris Guy; Michelle O'Herron

Subject: new non-native policy in EU

FYI, I came across the article below on proposed measures regarding non-native introductions for aquaculture in the EU.

Jamie

IP/06/462

Brussels, 6 April 2006

Commission proposes measures in aquaculture to ensure greater protection for biodiversity

The European Commission has proposed measures to regulate the introduction of non-native species in aquaculture so as to prevent their possible negative impact on the surrounding environment. Non-native or alien species, such as rainbow trout or Pacific oyster, have played a crucial role in the rapid growth of the European aquaculture industry. However, in some cases, the introduction of non-native species can have an adverse impact on ecosystems and cause significant loss of biodiversity. These measures would therefore regulate the introduction of such species through the setting up of a permit system. The Commission proposal, which was subject to wide consultation with stakeholders, would not only enhance the protection of ecosystems but would also contribute to the continued development of the aquaculture industry.

"Aquaculture plays an increasing role in our fisheries sector. Diversification is essential to its continued development, as is the need for a balanced and healthy environment. These measures will help ensure that the two are more compatible.", commented Joe Borg, European Commissioner for Fisheries and Maritime Affairs.

The core of the present proposal is the establishment at national level of a system of permits for all new species which are introduced for aquaculture. Under the proposed measures, all projects to introduce a non-native species would have to be submitted for approval to a national advisory committee, which would determine whether the proposed introduction was 'routine', or not. In the case of non-routine introductions, an environmental risk assessment (ERA) would have to be carried out. Only movements which are assessed as being low risk could then be granted a permit. If the risk was considered to be medium or high, the advisory committee would enter into dialogue with the applicant to see whether adequate mitigation procedures or technologies which could reduce the risk to an adequately low level were available.

In the case of non-routine movements, the proposal provides for quarantine procedures, and in certain cases, the national authorities may also require a pilot release to be implemented prior to full-scale commercial introduction. The proposed regulation also sets out a number of requirements concerning contingency plans, monitoring procedures, and the keeping of national registers.

The scope of the current proposal is limited to movements of fish stocks which fall under the Common Fisheries Policy. Ornamental fish are therefore not concerned by these measures. The spreading of parasites and pathogens is already covered by Community legislation on animal health, so this issue is not addressed here either. The Commission is aware of the problems potentially posed by genetically modified organisms, but believes that these are best addressed by the substantial and evolving Community legislation specific to this field.

Non-native fish and shellfish species are species that are brought from an area, sometimes located on another continent, to an aquaculture installation in the EU. Such species represent a real economic opportunity for European aquaculture, both as a form of diversification, and for their characteristics which may make them better suited to rearing in captivity than native varieties. However, their introduction into European ecosystems has, in some cases also led to a loss of biodiversity. Addressing this issue thus represents a major step forward in the process of integrating environmental concerns into the Common Fisheries Policy (CFP).

The new measures should not lead to undue delays as strict time limits are set out in the proposal. Member States will decide who pays, but it is envisaged that industry will normally bear the cost. Aquaculture operators could form associations to share the costs. As the permit can cover a five-year period, costs should not hinder the future development of aquaculture.

The measures contained in the present proposal have been informed by an extensive consultation exercise carried out over a period of several years. They build on the voluntary codes of practice formulated by the International Council for the Exploration of the Sea (ICES) and the European Inland Fisheries Advisory Commission (EIFAC), as well as on existing Community instruments for biodiversity protection. In 2001, in its Biodiversity Action Plan for Fisheries, the Commission undertook to examine the impact of the introduction of non-indigenous species on the wider environment. The EU 2002 Strategy for Sustainable Development of European Aquaculture included a commitment to introduce management rules to address the possible negative consequences of such movements.

The proposed Regulation will make a real contribution to achieving the objective of halting biodiversity loss as set out in the EU's 6th Environmental Action Programme and in the EC Strategy for Sustainable Development. The proposed measures will also contribute to implementing the Community's international commitments under the Convention on Biological Diversity and the follow-up process to the World Summit on Sustainable Development.



UNITED STATES ENVIRONMENTAL PROTECTION AGENCY

REGION III
Chesapeake Bay Program Office
410 SEVERN AVENUE
ANNAPOLIS, MARYLAND 21403

JUN 12 2006

Colonel Yvonne Prettyman-Beck
District Engineer
U.S. Army Corps of Engineers
803 Front Street
Norfolk, Virginia 23510

Dear Colonel Prettyman-Beck,

This is to document the Environmental Protection Agency's concern over the currently projected target delivery date, May 2007, for the draft Environmental Impact Statement (EIS) on the proposal by the State of Maryland and the Commonwealth of Virginia to introduce the non-native oyster, *Crassostrea ariakensis*, to the Chesapeake Bay. As we had discussed with you and the other members of the EIS Executive Committee when we met in Richmond on November 30, 2005, in our opinion the EIS timeline should reflect the time required to complete the critical research which was recommended by the National Research Council and the Chesapeake Bay Program's Scientific and Technical Advisory Committee, and for which the National Oceanic and Atmospheric Administration (NOAA) has received significant appropriations from the Congress. *

It is highly unlikely that the EIS-related non-native oyster research being funded by NOAA will be completed by May 2007. While NOAA's FY 06 non-native oyster research funding is the final year for which funds from the Congress are likely to be available, NOAA has not yet awarded the FY 06 funds to researchers. They expect to be able to do so within the next two months. Based on results from the NOAA competitive grants process, there will be several new projects funded with the FY 06 funds, and the results from those projects and some of the ongoing, continuing projects will not be available until late in calendar year 2007 or early 2008. For this reason, we remain in support of the "checkpoint" approach to the EIS timeline to which the EIS Executive Committee had agreed on November 30.

As a cooperating agency in the EIS project, we look forward to continuing to work with the Corps, the State of Maryland, and the Commonwealth of Virginia to produce a draft EIS that will pass the test of scientific defensibility. In that regard, we would appreciate the opportunity to participate in EIS Executive Committee discussions of the progress of the project at the next checkpoint in December 2006.

Sincerely yours,

Rebecca

Rebecca W. Hanmer
Director

cc: C. Ronald Franks, Secretary of Natural Resources, MD
Preston Bryant, Secretary of Natural Resources, VA
John Wolflin, U.S. Fish and Wildlife Service
Lowell Bahner, NOAA



REPLY TO
ATTENTION OF

DEPARTMENT OF THE ARMY
NORFOLK DISTRICT, CORPS OF ENGINEERS
FORT NORFOLK, 803 FRONT STREET
NORFOLK VIRGINIA 23510-1096

June 29, 2006

*C.C. Mike Slattery
Honor King
Tom O'Connell*

RECEIVED
OFFICE OF THE SECRETARY

JUL 03 2006

MARYLAND DEPARTMENT OF
NATURAL RESOURCES

Executive Office

Ms. Rebecca W. Hanmer
Director
Chesapeake Bay Program Office
Region III
Environmental Protection Agency
410 Severn Ave.
Annapolis, Maryland 21403

Dear Ms. Hanmer:

Thank you for your letter of June 12, 2006 which served to document the Environmental Protection Agency's (EPA) concern over the currently projected target delivery date of May 2007 for the draft Environmental Impact State (EIS) on the proposal by the State of Maryland and the Commonwealth of Virginia to introduce the non-native oyster, *Crassostrea ariakensis*, to the Chesapeake Bay. Your letter further indicated that the opinion of EPA remains that the timeline should reflect the time required to complete the critical research which was recommended by the National Research Council and the Chesapeake Bay Program's (CBP) Scientific and Technical Advisory Committee (STAC) and for which the National Oceanic and Atmospheric Administration has received significant appropriations from Congress.

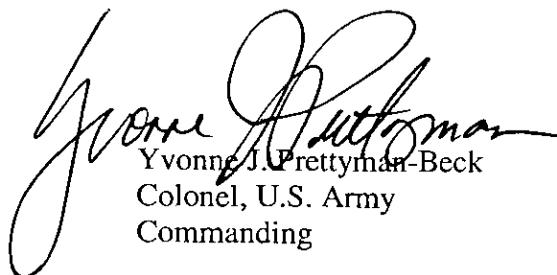
The joint lead agencies for the preparation of the EIS remain committed to a scientifically based decision and to continue the collaborative process with the cooperating Federal agencies. To that end, we are participating in a series of ongoing workshops and forums in order to continue to engage the various stakeholders in the collaborative process. Most recently, we met with the STAC and CBP Implementation Committee on March 15, 2006 and April 20, 2006, respectively, and plan to continue these activities. Additionally, we continue to sponsor forums to discuss the status of oysters in the Chesapeake Bay such as via the Environment Virginia 2006 conference held on April 19, 2006. The focus of that conference was the realization of the key linkage of the economic and environmental health of the Chesapeake Bay. Over 800 people participated in the conference, including a broad range of the scientific and industry communities, the details of which can be viewed via:

<http://www.environmentva.org/Agenda/BreakoutDescriptions/Chesapeake.pdf>

I would like to indicate that our June 15, 2006 press release indicates that we have built checkpoints into the schedule which will allow for decision makers to continue to have input into the EIS process. We invite and encourage your continued participation in these efforts. In that connection, your letter concluded that EPA would appreciate the opportunity to participate in the EIS Executive Committee discussions on the progress of the EIS at the next checkpoint in December 2006. We invite and encourage your participation in the next checkpoint in December 2006 and will continue to include the EPA in the project delivery team efforts forward.

A copy of this letter is being sent to C. Ronald Franks, Maryland Secretary of Natural Resources, L. Preston Bryant, Jr., Virginia Secretary of Natural Resources, John Wolfm, U.S. Fish and Wildlife Service, and Lowell Bahner, National Oceanic and Atmospheric Administration. Thank you for your letter and your comments.

Sincerely,



Yvonne J. Prettyman-Beck
Colonel, U.S. Army
Commanding



Robert L. Ehrlich, Jr., Governor

Michael S. Steele, Lt. Governor

C. Ronald Franks, Secretary

July 7, 2006

Rebecca W. Hanmer
U.S. Environmental Protection Agency, Region III
Chesapeake Bay Program Office
410 Severn Avenue
Annapolis, MD 21403

Dear Rebecca,

Thank you for sending me a copy of your June 12, 2006 correspondence letter to Colonel Yvonne Prettyman-Beck regarding the Environmental Impact Statement (EIS) being prepared to evaluate native and nonnative oyster restoration alternatives for the Chesapeake Bay. Specifically, your concerns included the Oyster EIS Executive Committee's decision to establish a May 2007 target date for delivery of a draft EIS that precedes the completion of the nonnative oyster research program funded by the National Oceanic and Atmospheric Administration (NOAA), and your desire to participate as a cooperating federal agency at the Executive Committee's December 2006 checkpoint meeting.

Let me first assure you of my continued commitment to actively collaborate with the senior management of the cooperating federal agencies. This is a principal responsibility of the Oyster EIS Executive Committee. With the exception of the May 5, 2006 meeting, the cooperating federal agencies have been provided an opportunity to meet with the Executive Committee at their previous meetings.

The May 5, 2006 meeting of the Executive Committee was limited to the lead agencies for the purpose of briefing the new leadership at Virginia's Department of Natural Resources and providing them an opportunity to inquire about the EIS. A secondary purpose of the meeting was to review the current status of the EIS project in an effort to prepare for the June 2006 checkpoint announcement that was established in November 2005. Based upon this review, the Executive Committee established a new checkpoint (December 2006) and target date (May 2007) for preparing a draft EIS for public review. The basis for this modification was consistent with the establishment of the June 2006 checkpoint (also referred to as the modified target date in the December 2005 press release) for which the lead and cooperating federal agencies agreed upon in November 2005.

The Executive Committee had planned to schedule a meeting with the cooperating federal agencies in June 2006, but determined at their May 5th meeting that a follow-up meeting in June was no longer necessary based upon the current status of the EIS. Instead, the Executive Committee directed the Management Team to prepare a press release for the June 2006 checkpoint announcement in collaboration with the cooperating federal agencies.

In response to your letter, I inquired about the level of collaboration that occurred in preparing the June 2006 press release. I was told that the Project Delivery Team was informed at their May 15, 2006 meeting that a draft press release was being prepared by the Management Team and that it would then be provided to the cooperating federal agency representatives of the Project Delivery Team for coordination within their agency. The cooperating federal agencies received the draft press release on June 2nd, and were requested to provide their comments by noon on June 8th. The only comments received on time were from your agency, and I was informed that they were supportive of the press release. Apparently, however, your agency's comments were withdrawn soon thereafter and the U.S. Army Corps of Engineers, Norfolk District received a phone call notifying them that you would be expressing your concerns in a letter to Colonel Prettyman-Beck. Comments from the U.S. Fish and Wildlife and NOAA were received later that afternoon and reviewed by the lead agencies for incorporation into the final press release, but I was disappointed to hear that no comments were ever received from your agency.

I note, in retrospect, that there could have been greater collaboration with your and the other senior administrators from the cooperating federal agencies regarding the Executive Committee discussions on May 5, 2006. You can be assured that I will request that the cooperating federal agencies be invited to participate in discussions of the Executive Committee at the December 2005 checkpoint meeting in a similar format as was conducted in November 2005.

I also want to take this opportunity to express my concerns about the viewpoint of one or more of the cooperating federal agencies' that this EIS should not be completed until after the NOAA funded nonnative oyster research program is fully complete, which is projected to be sometime in 2008. I recall the Executive Committee discussing this issue with you and the other cooperating federal agencies at our meeting in November 2005. My understanding at that time was that the lead and cooperating federal agencies had differing viewpoints on the amount of research and associated timeline that would be needed to support a scientifically defensible EIS. However, it was also my understanding that there was a commitment to rely upon the EIS process to facilitate the agencies' conclusions on this issue. This commitment was reflected in the December 2006 press release, "The agencies involved agreed to establish the June 2006 checkpoint when they will assess the information gathered and analyses completed as they determine whether a draft EIS should be released at that time. If it is determined that critical research gaps remain, the modified target date will make it possible to more efficiently direct available funding towards addressing the critical outstanding issues."

It now appears that the cooperating federal agencies are no longer committed to using this EIS, supported by a comprehensive scientific evaluation and peer review, to determine how much research is needed, but rather intend to rely upon a pre-determined research timeline that was established nearly three years ago. It is possible that the additional time needed to complete the NOAA funded research program will be necessary, but I would encourage you to remain open-minded and rely upon the EIS process to make this determination. In the end, Congressional authorization for this EIS and Maryland legislation requires that the critical research questions identified by the National Research Council and the Chesapeake Bay Program Scientific and Technical Advisory Committee research recommendations be addressed.

Oyster restoration is a critical component to our overall strategy to improving the health of the Chesapeake Bay. This EIS is providing us with a scientific and transparent process to assess the risks and benefits of both native and nonnative oyster restoration alternatives. Given the State of Maryland's management authority over the Bay's oyster resource, the cooperating federal agencies' partnership in restoring oysters to the Bay, and our shared concerns regarding a nonnative oyster introduction, it is essential that we maintain a strong partnership and close collaboration throughout the EIS process. I believe you will agree that the level of collaboration among the involved agencies has improved over the past year. I do not anticipate that our agencies will agree on all issues, but I am optimistic that we will continue to work closely to discuss our agencies' differing viewpoints.

Please do not hesitate to contact me at 410-260-8100 if you have any questions and/or concerns.

Sincerely,

C. Ronald Franks
Secretary

cc: Colonel Yvonne Prettyman-Beck
Secretary L. Preston Bryant, Jr.

July 13, 2006

**Environmental Protection Agency (EPA) Chesapeake Bay Program (CBP)
to Project Delivery Team (PDT)**

-----Original Message-----

From: fritz.mike@epamail.epa.gov [mailto:fritz.mike@epamail.epa.gov]

Sent: Thursday, July 13, 2006 3:00 PM

To: AC Carpenter (E-mail); Arguto.William@epamail.epa.gov; Bob Beal (E-mail); Claire O'Neill (E-mail); Craig Seltzer (E-mail); Jack Travelstead (E-mail); Jamie King (E-mail); Julie Thompson (E-mail); Kate Meade; Mark Mansfield (E-mail); fritz.mike@epamail.epa.gov; Mike Slattery (E-mail); Peter Kube (E-mail); Phil Jones (E-mail); Tammy Banta; Thomas O'Connell (E-mail); Todd Bridges (E-mail); Slenkamp.Tom@epamail.epa.gov

Cc: carl@vims.edu; breitburgd@si.edu

Subject: For the EIS: Non-native oysters in Argentina (two citations)

While I was in Argentina recently, an Argentine biologist told me that there are areas along the Argentine coast (Atlantic, temperate) where non-native oysters (*C. gigas*) have become a nuisance, physically impairing recreational access on beaches. The establishment of *C. gigas* in Argentina was mentioned in the NAS report.

Today, I googled "Oysters Argentina" and came up with one or two leads, including the following:

<http://www.olympus.net/IAPSO/abstracts/IB-03/IB03-46.htm>. It is likely that serious research could turn up more and more relevant information.

Also, at the following link, there is an article in the Annual Review of Ecology, Evolution, and Systematics, which addresses in some depth, as its title says, "Introduction of Non-native osyters: Ecosystem Effects and Restoration Implications"
<http://arjournals.ann>

I request that the two articles associated with these two citations be made part of the EIS record, Kate, and I recommend that available scientific information regarding the history and present situation with *C. gigas* in Argentina be described in the biological background in the EIS, if not already included.

Mike

Michael A. Fritz
Coordinator, Living Resources Subcommittee
Chesapeake Bay Program Office, EPA
410 Severn Ave, Suite 109
Annapolis, MD 21403
Phone: 410-267-5721
FAX: 410-267-5777
Email: fritz.mike@epa.gov

July 31, 2006

**Environmental Protection Agency (EPA) Chesapeake Bay Program (CBP)
To the Project Delivery Team (PDT)**

From: fritz.mike@epamail.epa.gov

Sent: Monday, July 31, 2006 12:56 PM

To: AC Carpenter (E-mail); Arguto.William@epamail.epa.gov; Bob Beal (E-mail); Claire O'Neill (E-mail); Craig Seltzer (E-mail); Jack Travelstead (E-mail); Jamie King (E-mail); Julie Thompson (E-mail); Kate Meade; Mark Mansfield (E-mail); fritz.mike@epamail.epa.gov; Mike Slattery (E-mail); Peter Kube (E-mail); Phil Jones (E-mail); Tammy Banta; Thomas O'Connell (E-mail); Todd Bridges (E-mail); Slenkamp.Tom@epamail.epa.gov

Cc: Megan Simon; Hanmer.Rebecca@epamail.epa.gov

Subject: Oyster Aquaculture and the EIS

The following news clip describes developments in native oyster aquaculture in Virginia. Those involved, including A.J. Erskine, Roger Mann, Lake Cowart and Ronnie Bevans apparently see much greater potential for further development.

I would like to know that the ongoing EIS will include a thorough evaluation of the potential productivity of these and other innovations in native oyster aquaculture, but I am not clear on what that treatment will be in the EIS. Perhaps this would be a good topic for discussion at a future EIS Project Delivery Team meeting.

For the time being, I request that this article be made part of the EIS record for future reference.

The Richmond Times Dispatch For oysters, an aquacultural revolution: A traditional Virginia industry begins to embrace innovation

http://www.timesdispatch.com/servlet/Satellite?pagename=RTD%2FMGArticle%2FRTD_BasicArticle&c=MGArticle&cid=1149189700799&path=%21news&s=1045855934842

Michael A. Fritz
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For oysters, an aquacultural revolution

A traditional Virginia industry begins to embrace innovation

BY LAWRENCE LATANE III

TIMES-DISPATCH STAFF WRITER

Monday, July 31, 2006

LOTTSBURG - It looks as if a shop class tried to build a party barge with materials from Home Depot: galvanized metal, salt-treated lumber and a big black paddle wheel that never stops turning.

The device - all 63 feet of it - was the center of attention last week at a Northern Neck oyster farm where two watermen are struggling to keep their family businesses alive.

Part barge, part dock, the curious rig is symbolic of the innovative thinking behind the fledgling aquaculture industry on the Chesapeake Bay.

The industry is something Virginia will be famous for in years to come, predicted Roger Mann, director of research and applied science at the Virginia Institute of Marine Science. "It's all just emerging from the dark, at the moment," he said.

Virginia's tradition-bound oyster industry had little room for innovation as Northumberland County oyster packer Lake Cowart Jr. and his father once knew it.

"We didn't worry about aquaculture," Cowart said at a tour of his aquaculture facilities last week. Instead, growers bought seed oysters from the James River and planted them in their local waters. In three years, they reaped a profitable harvest.

But disease-causing parasites struck the bay in the mid-1980s and wiped out most of the bay's oysters, Cowart said.

Thus the "floating upweller system" tied to the end of a dock at a Cowart-family shucking house beside the Coan River.

It's called Flupsy, for short.

"We hope it will keep us in the oyster business for years to come," Cowart said as he stood on its thick wooden deck. Cowart and Westmoreland County oyster grower Ronnie Bevans joined forces last year to build Flupsy and raised 2 million oysters that they will soon harvest.

This year they intend to grow 6 million oysters - 18,000 bushels worth - with Flupsy's help. "This has quite a bit of potential," said A.J. Erskine, a Virginia Institute of Marine Science graduate who is leading Cowart and Bevans' oyster-aquaculture operation.

Erskine returned from visiting aquaculture farms on the West Coast with the idea for Flupsy. It is adapted from machines used in Oregon's and Washington's oyster businesses.

Steel wells sunk in the deck of the device hold fish-scale-sized baby oysters. The paddle wheel stirs up water and phytoplankton from the bottom and sends it the oysters' way. The steady diet allows the baby oysters to feed 24 hours a day and fatten into coin-sized seed oysters. After five weeks, they will be placed overboard in protective mesh cages. By that time, they will be so accustomed to overeating that they will reach 3-inch market size in as little as 12 months, Erskine said.

The short harvest time speeds up the return on the growers' investment. It allows the oysters to mature before disease-causing parasites MSX and Dermo have time to kill them. The cages - about the size of bed mattresses - help defend the oysters from their newest threat, hungry cow-nosed rays.

Adding to the oysters' rapid growth is their unique biology. The seed oysters are produced at a private Virginia nursery through a breeding process that leaves them with an odd number of chromosomes. The condition makes them sterile, and all their energy is devoted to growth.

Cowart declined to say how much he and Bevans have invested in the floating upweller, saying only that the sum is considerable. The device is believed to be the largest of its kind in use among the small number of oyster farms in the state.

The barge-like Flupsy is an ungainly addition to a waterfront region known for the graceful wooden work boats that have served generations of watermen.

Down the green shore of the Coan, so many black buoys mark Cowart's underwater cages it looks like a flock of black sea ducks just landed.

Some people balk at the change of scenery, but Cowart notes that as Virginia's seafood-packing houses close they are invariably replaced with waterfront houses and condominium units that forever alter the landscape and the culture.

"We'd like to keep some of these waterfront areas around for the working watermen," he said. "But, nothing's feasible unless we have a local [oyster] resource."

Contact staff writer Lawrence Latané III at llatane@timesdispatch.com or (804) 333-3461.

This story can be found at: http://www.timesdispatch.com/servlet/Satellite?pagename=RTD%2FMGArticle%2FRTD_BasicArticle&c=MGArticle&cid=1149189700799&path=!news&s=1045855934842

[Go Back](#)

Comments on larval transport model From: Sowers, Angela NAB02 [Angela.Sowers@nab02.usace.army.mil] Sent: Monday, August 21, 2006 9:42 AM To: O'Neill, Claire D NAB02 Subject: Comments on larval transport model
Hi Claire, Here are a few comments. I think I'm going to give Elizabeth a call this week to discuss some of these and some other thoughts. Do you just want me to forward the comments to her to initiate my discussions?
Thanks,
Angie

1. Figure 5, page 11-This is a good analysis. It may also be important to consider variance of the two hydrodynamic models with distance up estuaries. Based on Figure 4, it does not appear that ROMS boundaries extend as far into tributaries.
2. p18-What is the source of the presented probabilities for swimming behavior (paragraph 3)?
3. Is there any information about the probability of a pediveliger crossing an oyster bar and not setting in the wild?
4. p 20, last paragraph- 'reflective horizontal boundary condition'- Why isn't a particle that moves out of the boundary horizontally considered dead or lost? Is the thinking that these particles would be returned by flow or behavior into the domain? Has there been any analysis to understand what proportion of the particles actually did 'leave' and had to be reflected back into the domain?
5. p 26- Are there any estimates of how many gametes are actually released into the water column/year? In other words, do the number of particles released by this simulation represent 1%, 10%, 50%, etc. of natural release? Could the model be run on a subestuary scale with a number of particles that is representative of the magnitude of a) a historical release and b) a current typical release? Would it be worthwhile to compare the results of the whole Bay model run with the fewer number of particles with those of (b) to check if the model is capturing the transport of a typical release?
6. Figure 17- There appears to be very little, if any, loss of *C. ariakensis* to the Atlantic Ocean. This could be interpreted as a 'natural' barrier to *C. ariakensis* invasion of other Atlantic Coast estuaries. Chesapeake Bay is essentially acting as a trap estuary for *C. ariakensis*. Would this be an accurate conclusion if used to calm fears and complaints of those in Delaware Bay, North Carolina, the Gulf Coast, etc.?
7. Figure 24- How can this information be validated or field verified? If interpreted with respect to where the majority of good reefs exist today, does it hold up? Maryland and Virginia mainstem dots are confusing. The Maryland mainstem is shown as one dot in the northern Bay, but it actually stretches down to the Maryland line. Therefore, its high connectivity is not surprising, but how great a contribution do mainstem bars actually make today to the Bay population?
8. Table 6- The connectivity matrix does show connectivity, but no basins (except the mainstem) receives any significant proportion of particles. Continuing on my thoughts of comment #7, does this make sense in the context of the role mainstem bars actually have in the current Bay population?
9. p38, first paragraph, last full line- Should the 1% be 100%?
10. Figure 26- 'Catching bars'- Only a few bars in the tributaries are identified as catching a high density. However, historically the prime beds are in the tributaries, not the mainstem. Have the habitat areas of tributaries bars been reduced in a greater proportion than those in the mainstem? Do you think a larger good habitat area in the tributaries affect the catch in the tributaries?
11. p 40, B. Validation and sensitivity studies- Why was Virginia data not included in the analysis?
12. p 41- Are there plans to compare the Maryland measured spatfall data with information produced by the demographic model?
13. Figure 33- lower left panel-The purple dots are very hard to recognize. Can a different color or symbol be used to present this information in a clearer way?

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September 19, 2006

**Environmental Protection Agency (EPA) Chesapeake Bay Program (CBP)
to the Project Delivery Team (PDT)**

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**Subject: Federal District Court Decision on the Regulation of Invasive
Species in Ballast Water**

You might be interested in reading the attached court decision issued yesterday.

To Mark and Kate, Tammy, and Megan: I request that the attached document be added to the official record for the nonnative oyster EIS as it appears to be important background legal information potentially relevant to defining the legal context for the proposal to introduce nonnative -- and likely invasive -- oysters to Chesapeake Bay. At your convenience, please drop me an email to confirm that this has been done.

To Brent: Please share this with the members of the Mid-Atlantic Panel on Aquatic Invasive Species.

Thank you.

Mike Fritz

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IN THE UNITED STATES DISTRICT COURT
FOR THE NORTHERN DISTRICT OF CALIFORNIA

NORTHWEST ENVIRONMENTAL
ADVOCATES, et al.,

No. C 03-05760 SI

Plaintiffs,

**ORDER GRANTING PLAINTIFFS’
MOTION FOR PERMANENT
INJUNCTIVE RELIEF**

THE STATES OF NEW YORK, ILLINOIS,
MICHIGAN, MINNESOTA, WISCONSIN
AND THE COMMONWEALTH OF
PENNSYLVANIA,

Plaintiff-Intervenors,

v.

UNITED STATES ENVIRONMENTAL
PROTECTION AGENCY,

Defendant,

SHIPPING INDUSTRY BALLAST WATER
COALITION,

Defendant - Intervenor.

_____ /

Plaintiffs have moved for a permanent injunction in this case. Having considered the parties’ argument, and for good cause appearing, the Court GRANTS plaintiffs’ motion and REMANDS this case to EPA for further proceedings. The Court will vacate the regulation at 40 C.F.R. § 122.3(a)¹ on September 30, 2008.

¹Plaintiffs have indicated that they challenge only the vessel-discharge exemption contained in 40 C.F.R. § 122.3(a) and do not intend to disturb the remainder of the regulation. Accordingly, the Court will limit its remedy to those portions of the regulation that exempt vessel discharges from regulation under the National Pollution Discharge Elimination System.

BACKGROUND

1
2 Plaintiffs in this action challenge a regulation originally promulgated under the Clean Water Act
3 (“CWA”) more than 30 years ago. The regulation at issue, 40 C.F.R. § 122.3(a), exempts effluent
4 discharges “incidental to the normal operation of a vessel” from regulation under the National Pollution
5 Discharge Elimination System (“NPDES”).² In 2003, plaintiffs filed suit in this Court, seeking to have
6 the regulation declared *ultra vires* to the CWA. The Court agreed, and, on March 31, 2005, granted
7 summary judgment in plaintiffs’ favor.

8 The question now before the Court is what remedy is most appropriate to address the *ultra vires*
9 regulation. This is a complicated question, primarily because the regulation at issue has stood
10 unchallenged since 1973. In addition to the regulation’s longstanding history, the question is
11 complicated by EPA’s protestations that it will be unable to address the issue effectively in a timely
12 fashion, as well as by the dramatic effect this Court’s ruling may have on the shipping industry and the
13 agencies that issue NPDES permits. The Court must weigh these factors against the CWA’s overarching
14 goal: “to restore and maintain the chemical, physical, and biological integrity of the Nation’s waters.”
15 33 U.S.C. § 1251(a). Because of the complicated nature of the question before it, the Court will provide
16 the background of this case in some detail.

17
18 **1. The Clean Water Act and the National Pollution Discharge Elimination System**

19 In 1972, Congress enacted significant amendments to the Clean Water Act (“CWA”) in order

20
21 ²The challenged regulation provides:

22 The following discharges do not require NPDES permits:

23 (a) Any discharge of sewage from vessels, effluent from properly functioning marine
24 engines, laundry, shower, and galley sink wastes, or any other discharge incidental to the
25 normal operation of a vessel. This exclusion does not apply to rubbish, trash, garbage,
26 or other such materials discharged overboard; nor to other discharges when the vessel
is operating in a capacity other than as a means of transportation such as when used as
an energy or mining facility, a storage facility or a seafood processing facility, or when
secured to the bed of the ocean, contiguous zone or waters of the United States for the
purpose of mineral or oil exploration or development.

27 40 C.F.R. § 122.3(a). Plaintiffs challenge only the first sentence of the regulation; they do not seek to
28 affect EPA’s prohibition on discharges of “rubbish, trash, garbage, or other such materials” or of
discharges from vessels that are “operating in a capacity other than as a means of transportation.”

1 “to restore and maintain the chemical, physical, and biological integrity of the Nation’s waters.” 33
 2 U.S.C. § 1251(a). “To achieve these desirable goals, the Act ‘establishes a comprehensive statutory
 3 system for controlling water pollution. To that end, it establishes the . . . NPDES permit system for
 4 regulating discharges of pollutants into the waters of the United States.’” *Ass’n to Protect Hammersly,
 5 Eld, and Totten Inlets v. Taylor*, 299 F.3d 1007, 1009 (9th Cir. 2002) (quoting *Nat’l Wildlife Fed’n v.
 6 Consumer Power Co.*, 862 F.2d 580, 582 (6th Cir. 1988)). An NPDES permit “allows a polluter . . . to
 7 discharge a specified amount of a pollutant” into the navigable waterways of the United States.
 8 *Fairhurst v. Hagener*, 422 F.3d 1146, 1148 (9th Cir. 2005) (internal quotation marks omitted). “[T]he
 9 discharge of pollutants without an NPDES permit, or in violation of a permit, is illegal.” *Waterkeepers
 10 Northern Cal. v. AG Indus. Mfg., Inc.*, 375 F.3d 913, 915 (9th Cir. 2004).

11 The Ninth Circuit has recently described the NPDES as follows:

12 The [CWA] offers two approaches for controlling water pollution: technology-based
 13 regulations and water quality standards. Technology-based regulations reduce levels of
 14 pollution by requiring a discharger to make equipment or process changes, without
 15 reference to the effect on the receiving water. Water quality standards set the
 16 permissible level of pollution in a specific body of water without direct regulation of the
 17 individual sources of pollution.

18 The [NPDES] permit program governs implementation of both technology-based
 19 requirements and water quality standards. 33 U.S.C. §§ 1311(b)(1)(C), 1342(a)(1); 40
 20 C.F.R. § 122.44(a), (d)(1). An NPDES permit sets specific limits that apply to individual
 21 polluters. Discharges from any “point source” into the waters of the United States are
 22 prohibited unless the discharge complies with the limits and requirements of the NPDES
 23 permit. 33 U.S.C. § 1311(a), 1362(12), (14).

24 *City of Arcadia v. U.S. Emt’l Protection Agency*, 411 F.3d 1103, 1105 (9th Cir. 2005).

25 NPDES permits may not last longer than five years. 33 U.S.C. § 1342(a)(3), (b)(1)(B). Permits
 26 may be issued either to individual entities or as “general permits” that cover many dischargers. *See*
 27 *Waterkeepers*, 375 F.3d at 915. Individual permits are issued on a case-by-case basis, taking into
 28 account local environmental conditions. *Fairhurst*, 422 F.3d at 1148. “General permits, on the other
 hand, are issued for an entire class of hypothetical dischargers in a given geographical region and are
 issued pursuant to administrative rulemaking procedures.” *Nat. Res. Def. Council v. U.S. Emt’l
 Protection Agency*, 279 F.3d 1180, 1183 (9th Cir. 2002) (internal citations omitted). General permits
 operate as follows:

After a general permit has been issued, an entity that believes it is covered by the general

1 permit submits a “notice of intent” to discharge pursuant to the general permit. A
 2 general permit can allow discharging to commence upon receipt of the notice of intent,
 3 after a waiting period, or after the permit issuer sends out a response agreeing that the
 4 discharger is covered by the general permit. Whichever of these three authorization
 5 methods is used in the general permit, the permit issuer can require a particular
 6 discharger to undergo the individual permit application process.

7 *Id.* (internal citations omitted).

8 Although primary responsibility for enforcing the CWA lies with EPA, “Congress has given ‘the
 9 Governor of each State desiring to administer its own permit program’ permission to do so, provided
 10 that the EPA Administrator approves the Governor’s program.” *Fairhurst*, 422 F.3d at 1148 (citing 33
 11 U.S.C. § 1342(b)). EPA must approve state permit programs if they meet certain criteria. *Defenders
 12 of Wildlife v. U.S. Env’tl Protection Agency*, 420 F.3d 946, 950 (9th Cir. 2005). “When a state program
 13 is in force, the federal permit program is suspended.” *Fairhurst*, 422 F.3d at 1148. Under this
 14 “cooperative federalism” scheme, EPA establishes the minimum requirements that must apply to all
 15 entities regulated under the CWA, and states may adopt more stringent standards where they see fit.
 16 33 U.S.C. § 1342(b); 40 C.F.R. § 123.1.

17 **2. Pollution from Vessel Discharges**

18 The challenged regulation exempts discharges “incidental the normal operation of a vessel.” 40
 19 C.F.R. § 122.3(a). Although this includes such discharges as gray water, bilge water, deck runoff, and
 20 blackwater,³ plaintiffs make no secret that the type of discharge they are primarily concerned with is
 21 ballast water.

22 Ballast water is water that is taken on by cargo ships to compensate for changes in the ship’s
 23 weight as cargo is loaded or unloaded, and as fuel and supplies are consumed. Ballast water may be
 24 used for a number of different purposes, such as maintaining stability, maintaining proper propeller and
 25 bow immersion, and to compensate for off-center weights. *See* Decl. of Kathleen Moore (“Moore
 26 Decl.”), ¶ 4. Thus, ballast water is essential to the proper functioning of cargo ships, as well as to the
 27 safety of its crew.

28 ³Grey water is water that has been slightly used, such as water from laundry or bathing. Bilge water is water that has collected on the inside of a vessel and is pumped out. Black water is sewage.

1 Because ballast water is primarily used to compensate for changes in cargo, it is generally taken
2 in or pumped out at the ports along a ship's route. Decl. of Richard A. Everett ("Everett Decl."), at ¶ 4.
3 When a ship takes on ballast water, whether freshwater or saltwater, organisms found in that water are
4 typically taken in as well. *Id.* These organisms are carried in the ballast tanks of the ship until the ship
5 arrives at its next port, where, due to changes in the distribution of the ship's cargo, they may be
6 released into a new ecosystem. Due to the size of ballast tanks on modern cargo ships, and the speed
7 with which these ships can reach their destinations, organisms are increasingly able to survive the
8 journey to a new ecosystem. All told, "more than 10,000 marine species each day hitch rides around
9 the globe in the ballast water of cargo ships." Decl. of Deborah A. Sivas in Support of Pl. Mot. for
10 Summary Judgment ("Sivas Decl."), Exh. C, at 4. A number of these species are released into U.S.
11 waters in the more than 21 billion gallons of ballast water released in the United States each year. *Id.*

12 If these foreign organisms manage to survive and reproduce in the new ecosystem, they can
13 cause severe problems in the natural and human environment. For example, zebra mussels, native to
14 the Caspian Sea region of Asia, were brought into the Great Lakes in the ballast water of cargo ships.
15 "Zebra mussels have clogged the water pipes of electric companies and other industries; infestations in
16 the Midwest and Northeast have cost power plants and industrial facilities almost \$70 million between
17 1989 and 1995." Sivas Decl., Exh. E, at 4. As another example, according to a 2001 EPA report,

18 [a]n introduced strain of cholera bacteria, possibly released in the bilge water of a
19 Chinese freighter, caused the deaths of 10,000 people in Latin America in 1991. This
20 cholera strain was then imported into the United States from Latin America in the ballast
21 tanks of ships that anchored in the port of Mobile, Alabama. Fortunately, cholera
22 bacteria were detected in oyster and finfish samples in Mobile Bay . . . and no additional
23 deaths occurred from exposure to this pathogen.

24 Sivas Decl., Exh. A., at 47.

25 With a lack of natural predators, invasive species can multiply rapidly and quickly take over an
26 ecosystem, threatening native species. Sivas Decl., Exh. H, at 3, ("Invasive species have also had a
27 devastating effect on natural areas, where they have strangled native flora, taken over wetland habitats,
28 and deprived waterfowl and other species of food source."). Indeed, invasive species "are a major or
contributing cause of declines for almost half the endangered species in the United States." *Id.* at 10.
Once established, invasive species become almost impossible to remove, leading "[s]cientists, industry

1 officials, and land managers [to] recogniz[e] that invasive species are one of the most serious, yet least
2 appreciated, environmental threats of the 21st century.” *Id.* at 7.

3 In economic terms, invasive species can also have a devastating effect. *See* Sivas Decl., Exh. C,
4 at 9 (“A recent report estimated that over \$5 billion per year in economic damage are caused by [Aquatic
5 Nuisance Species (“ANS”)].”). The Department of Agriculture spends millions of dollars per year to
6 detect and prevent invasive species. Sivas Decl., Exh. H, at 4 (“In fiscal years 2000, USDA spent about
7 \$556 million on a wide range of invasive-species related activities.”). One study cited by the GAO
8 concluded that “total annual economic losses and associated control costs [are] about \$137 billion a year
9 – more than double the annual economic damage caused by all natural disasters in the United States.”
10 *Id.* at 8.

11 12 **3. Other Regulations Protecting Against Introduction of Invasive Species**

13 Despite the fact that EPA has exempted vessel discharges from the NPDES for the past 30 years,
14 the problem of invasive species in ballast water has not gone unaddressed. In 1990, Congress passed
15 the Non-Indigenous Aquatic Nuisance Prevention and Control Act (“NANPCA”), Pub. L. No. 101-646,
16 104 Stat. 4761 (1990), *codified at* 16 U.S.C. §§ 4701-4751. Congress later amended NANPCA with
17 the National Invasive Species Act of 1996 (“NISA”), Pub. L. No. 104-332, 110 Stat. 4073 (1996).
18 Together, these statutes seek to regulate the problem of invasive species in ballast water. The Coast
19 Guard promulgates regulations under both acts.

20 The Coast Guard's regulations are codified at 33 C.F.R. Part 151, Subparts C and D. Under these
21 regulations, any vessel equipped with ballast water tanks must file a report with the Coast Guard 24
22 hours prior to arrival at a United States port. 33 C.F.R. § 151.2041. All vessels equipped with ballast
23 water tanks must also have a ballast water management plan. 33 C.F.R. § 151.2035(7). These
24 regulations, voluntary at first, were made mandatory in September 2004. *See Mandatory Ballast Water*
25 *Management Program for U.S. Waters*, 69 Fed. Reg. 44,952, 44,961 (July 28, 2004).

26 In addition to the above, Coast Guard regulations require that all vessels equipped with ballast
27
28

1 water tanks entering U.S. waters from beyond the “exclusive economic zone”⁴ must use one of three
2 practices designed to reduce the amount of invasive species in their ballast water. These vessels must:
3 (1) perform a complete ballast water exchange⁵ 200 nautical miles or more from shore; (2) retain ballast
4 water on board the vessel; or (3) use an environmentally sound method of ballast water management that
5 has been approved by the Coast Guard. *Id.*

6 Recently, the Coast Guard has promulgated regulations that placed stronger restrictions on
7 vessels that enter the Great Lakes with no ballast water on board, known as “NOBOB” vessels. Ballast
8 tanks in such vessels often contain residual ballast water that may contain invasive species. This latest
9 regulation asks vessels entering the Great Lakes to either conduct open-ocean exchange or flush their
10 ballast tanks with salt water, in order to kill any invasive freshwater species that may exist in the
11 residual ballast water. *Ballast Water Management for Vessels Entering the Great Lakes that Declare*
12 *No Ballast Onboard*, 70 Fed Reg. 51,831, 51,835 (Aug. 31, 2005). The regulation, however, has not
13 been made mandatory.

14 There have also been international efforts to manage ballast water discharges. The International
15 Maritime Organization has addressed the problem through the International Convention for the Control
16 and Management of Ships’ Ballast Water and Sediments, Feb 13, 2004, IMO 1620M, RMC 1.7.250
17 (“Convention”). The Convention includes requirements:

18 (1) for a ballast water management plan (approved by the vessel’s flag nation) and a
19 vessel ballast water record book, to be maintained on-board and used to document each
20 ballast water operation; (2) that ships perform ballast water exchange with an efficiency
21 of at least 95% volumetric exchange (for ships that use the “pump through” method,
22 pumping through three times the volume of each ballast tank will be considered
equivalent to meeting the 95% standard); (3) for phased implementation, on a schedule
of fixed dates, of a concentration-based performance standard that prescribes the
maximum number of viable organisms per unit volume of ballast water, as well as a

23 ⁴The exclusive economic zone extends 200 nautical miles seaward from the territorial coast.
24 *Yakutat, Inc. v. Gutierrez*, 407 F.3d 1054, 1058 n.1 (9th Cir. 2005).

25 ⁵Under the regulations, ballast water exchange may be conducted in one of two ways. First,
26 “[t]he tank (or pair of tanks) is pumped down to the point where the pumps lose suction, and then the
27 tank is pumped back up to the original level.” 69 Fed. Reg. at 44,953. Second, “mid-ocean water is
28 pumped into a full tank while the existing coastal or fresh water is pumped through or pushed out
through another opening. . . . [A] volume of water equal to three times the ballast tank capacity must
be pumped for a flow-through exchange.” *Id.* Due to the “physical, chemical, and biological
conditions” of water in the open ocean, “[o]rganisms contained in ballast water that is exchanged in
mid-ocean will not, or are unlikely to survive in an open ocean system.” *Id.*

1 maximum number of colony forming units per unit of volume for indicator microbes.

2 Moore Decl., ¶ 16.

3 The Convention, however, has not yet been ratified, and estimates are that it will not be for
4 another several years. Even then, the treaty will not enter into force until twelve months after it is
5 ratified. Further, the Convention includes a phase-in provision that does not require new vessels to meet
6 performance standards until 2009, and existing vessels need not meet the standards until 2014. Shipping
7 Coalition Br., at 19.

8 9 **4. Procedural History**

10 In January 1999, plaintiffs filed an administrative petition requesting that the EPA repeal 40
11 C.F.R. § 122.3(a) because it conflicts with the Clean Water Act, which does not exempt “discharges
12 incidental to the normal operation of a vessel” from the requirement that a polluter obtain an NPDES
13 permit. Sivas Decl., Ex. J (“Petition to Repeal 40 C.F.R. § 122.3(a)”), at 1-2. After considering public
14 comments, the EPA denied the petition to repeal the exemption. 68 Fed. Reg. 53,165 (September 9,
15 2003); *see also* Decision on Petition for Rulemaking to Repeal 40 C.F.R. 122.3(a) (“EPA Response”),
16 *available at* http://www.epa.gov/npdes/pubs/ballast_report_petition_response.pdf.

17 After the denial of their administrative petition, plaintiffs filed a complaint in this Court against
18 EPA, requesting a declaration that EPA’s failure to rescind 40 C.F.R. § 122.3(a) in response to
19 plaintiffs’ petition was in clear violation of the CWA, and an injunction directing the EPA to repeal and
20 rescind the regulation. Plaintiffs asserted two claims: 1) that EPA’s promulgation of 40 C.F.R.
21 § 122.3(a) was inconsistent with the its statutory authority in the CWA and thus was unlawful and
22 subject to review under the Administrative Procedure Act (“APA”), 5 U.S.C. § 706(2); and 2) that
23 EPA’s denial of plaintiffs’ petition was arbitrary, capricious, and an abuse of discretion.

24 In an order filed March 31, 2005, the Court granted plaintiffs’ motion for summary judgment.
25 In its summary judgment order, the Court first addressed EPA’s argument that plaintiffs’ challenge to
26 the regulation was barred by the six-year statute of limitations that applies to actions against the United
27 States. *See* 28 U.S.C. § 2401(a). The Court rejected this argument, finding that the six-year statute of
28 limitations did not apply because plaintiffs claimed the regulation was *ultra vires* to the CWA. *See*

1 *Wind River Mining Corp. v. United States*, 946 F.2d 710 (9th Cir. 1991) (holding that a challenge to a
 2 regulations on the grounds that it exceeded the agency's statutory authority could be brought more than
 3 six years after the regulation was promulgated). As to the merits, the Court found that Congress had
 4 directly expressed its intention that discharges from vessels be regulated under the CWA, and that the
 5 regulation at issue contradicted that intention. The Court further found that Congress's inaction over
 6 the past 30 years could not be interpreted as congressional acquiescence. Thus, the Court held that the
 7 regulation was *ultra vires* to the CWA.

8 Given the national significance of the issues and the potential for confusion inherent in vacating
 9 a longstanding EPA regulation, at a subsequent case management conference the Court invited briefing
 10 on the proper selection of remedy going forward. Because the parties' positions are fairly divergent,
 11 the Court will set them out here:

- 12 • Private plaintiffs⁶ propose that the Court issue a two-tiered remedy. They suggest that
 13 the Court give EPA 90 days to decide whether it will implement regulations governing
 14 discharges incidental to the normal operation of a vessel. If EPA decides not to
 15 implement new regulations, plaintiffs proposed that the Court set aside 40 C.F.R.
 16 § 122.3(a) 180 days later (270 days after the date of the Court's order). If, at the end of
 17 the 90 day period, EPA informs the Court that it intends to implement new regulations,
 18 plaintiffs propose that the Court provide EPA 180 more days to publish proposed
 19 regulations, and an additional 270 days to finalize the regulations. Thus, under this
 20 second alternative, the Court would vacate the existing regulation 540 days after its
 21 order.
- 22 • State plaintiff-intervenors⁷ propose that the Court require EPA to establish interim
 23 regulations by April 1, 2006, and final regulations by October 1, 2007.
- 24 • EPA asserts that the only proper remedy is for the Court to set aside EPA's denial of
 25 plaintiffs' administrative petition and to remand the administrative petition to the agency
 26 for further proceedings. EPA strongly denies that the Court has the ability to address the
 27 challenged regulation. EPA also requests that the Court limit its summary judgment
 28 order to ballast water discharges.
- Like EPA, defendant-intervenor⁸ the Shipping Industry Ballast Water Coalition
 ("Shipping Coalition") requests that the Court limit its summary judgment order to
 ballast water discharges. The Shipping Coalition also requests that the Court leave the

25 ⁶These plaintiffs include Northwest Environmental Advocates, the Ocean Conservancy, and
 26 Waterkeepers Northern California.

27 ⁷By order filed May 27, 2005, New York, Illinois, Michigan, Minnesota, Wisconsin, and
 28 Pennsylvania were allowed to intervene in this action.

⁸By order filed June 22, 2005, the Shipping Coalition was permitted to intervene.

1 existing regulation intact and remand to EPA to develop new regulations on its own
2 timetable. Alternatively, the Shipping Coalition argues that the Court should impose on
3 EPA the same timetable as is contemplated in the IMO treaty. The Coalition also argues
4 that the Court should stay the remedy it imposes pending review of its summary
5 judgment order.

6 LEGAL STANDARD

7 Typically, when an agency violates the Administrative Procedure Act, the appropriate response
8 is to “vacate the agency’s action and remand to the agency to act in compliance with its statutory
9 obligations.” *Defenders of Wildlife*, 420 F.3d at 978. “In certain instances, however, ‘when equity
10 demands, the [challenged action] can be left in place while the agency follows the necessary
11 procedures.’” *Id.* (quoting *Idaho Farm Bureau v. Babbitt*, 58 F.3d 1392, 1405 (9th Cir. 1995))
(alteration in original).

12 District courts possess “broad discretionary power” to fashion equitable relief, *see Lemon v.*
13 *Kurtzman*, 411 U.S. 192, 200 (1973), and they are able to use that power to enforce prompt compliance
14 with a court order by an administrative agency. *See Idaho Watersheds Project v. Hahn*, 307 F.3d 815,
15 823, 834-35 (9th Cir. 2002) (affirming district court’s injunction requiring agency to undertake an
16 environmental review of sixty-eight permits on an expedited schedule); *High Sierra Hikers Ass’n v.*
17 *Blackwell*, 390 F.3d 630, 642 n.6 (9th Cir. 2004) (upholding injunction that required Forest Service to
18 “complete the NEPA process analyzing the cumulative impacts of pack stock operations no later than
19 December 31, 2005”). This power is not diminished when a district court considers equitable relief
20 under the CWA. *See Weinberger v. Romero-Barcelo*, 456 U.S. 305, 311-20 (1978); *Alaska Ctr. for*
21 *Env’t v. Browner*, 20 F.3d 981, 986 (9th Cir. 1994) (affirming district court’s exercise of remedial
22 powers because “[t]he district court has broad discretion in fashioning equitable relief when necessary
23 to remedy an established wrong”).

24 “The requirements for the issuance of a permanent injunction are (1) the likelihood of substantial
25 and immediate irreparable injury; and (2) the inadequacy of remedies at law.” *Dream Palace v. County*
26 *of Maricopa*, 384 F.3d 990, 1010 (9th Cir. 2004). “In issuing an injunction, the Court must balance the
27 equities between the parties and give due regard to the public interest.” *High Sierra Hikers*, 390 F.3d
28 at 642. “Environmental injury, by its nature, can seldom be adequately remedied by money damages

1 and is often permanent or at least of long duration, i.e., irreparable.” *Id.* (quoting *Amoco Prod. Co. v.*
2 *Village of Gambell*, 480 U.S. 531, 542, 107 S. Ct. 1396 (1987)).

3
4
5 **DISCUSSION**

6 **1. Limitation of Remedy to Ballast Water Discharges**

7 Both EPA and Shipping Coalition contend that the Court’s remedy should apply only to ballast
8 water, and not to other discharges from vessels, such as gray water, bilge water, or blackwater. The
9 Court, however, finds that its remedy should apply to all discharges from vessels, not just ballast water.⁹

10
11 **A. Scope of Agency Action**

12 EPA first argues that the Court lacks jurisdiction to address vessel discharges other than ballast
13 water because the scope of the agency action at issue was limited to ballast water. *See E.P. Paup Co.*
14 *v. Director, Office of Workers’ Compensation Programs*, 999 F.2d 1341, 1348 n.2 (9th Cir. 1993) (citing
15 general rule that “absent exceptional circumstances, a reviewing court will not consider contentions not
16 raised before the administrative agency at the appropriate time”); *Marathon Oil Co. v. United States*,
17 807 F.2d 759, 767-68 (9th Cir. 1986). EPA claims that plaintiffs’ administrative petition was based only
18 on ballast water discharges, and that its response to the petition was therefore limited to ballast water.
19 Because it has not yet considered other vessel discharges, EPA argues, the Court lacks jurisdiction to
20 address types of vessel discharges other than ballast water.

21 In support of this argument, EPA points to numerous passages from plaintiffs’ submissions to
22 EPA, this Court, and the Ninth Circuit, all of which focus on the effects of ballast water discharges,
23 rather than the effects of other vessel discharges. *See* EPA Br. at 5-6. EPA argues that all of these
24 passages demonstrate that plaintiffs focused on ballast water, and not other vessel discharges.

25 While the Court agrees that ballast water was the primary focus of plaintiffs’ complaint, the

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27

⁹Of course, the Court places no limitation on the manner in which EPA addresses the different
28 vessel discharges. EPA is free to fashion different regulatory requirements for the different types of
discharges at issue.

1 Court does not believe that plaintiffs' challenge was as limited as EPA contends. Plaintiffs have
2 consistently made clear that their overall aim is the repeal of the exemptions contained in 40 C.F.R.
3 § 122.3(a). For example, plaintiffs' petition was titled "petition for repeal of 40 C.F.R. § 122.3(a)."
4 Sivas Decl., Exh. J. EPA's response to plaintiffs' petition is similarly titled: "Decision on Petition for
5 Rulemaking to Repeal 40 C.F.R. 122.3(a)." Moreover, EPA's response recognized that plaintiffs sought
6 repeal of the entire regulation. *See* EPA Response at 1 ("On January 13, 1999, the Pacific
7 Environmental Advocacy Center submitted the petition . . . seeking the repeal of a regulation . . .
8 published at 40 C.F.R. § 122.3(a)."). Similarly, plaintiffs' complaint in this Court requested the repeal
9 of 40 C.F.R. § 122.3(a) in its entirety. *See, e.g.*, Compl. at ¶ 1 ("This is an action for declaratory and
10 injunctive relief challenging the legality of 40 C.F.R. § 122.3(a), which exempts vessel discharges from
11 the [NPDES] permit requirements . . ."); *see also* Compl. at ¶ 18 ("Such vessel discharges include,
12 among other things, ballast water, bilge water, cooling water, deck runoff, graywater, and oil or oily
13 water."). Plaintiffs' summary judgment brief was likewise not limited to ballast water. *See* Pl. Br. in
14 Support of Mot. for Summary Judgment, at 2-3 (pollution sources include, "gray water, bilgewater,
15 blackwater (sewage), ballast water, anti-fouling paints (and their leachate), hazardous materials, and
16 municipal and commercial garbage and other wastes"), 10 ("Beyond these two classes of express
17 exemptions, any other discharge of a pollutant from a vessel or other floating craft into the territorial
18 seas or other navigable waters of the United States can only occur pursuant to an NPDES permit.").
19 Although plaintiffs' arguments focus on ballast water, given that the regulation deals with vessel
20 discharges in a blanket manner, it is understandable that plaintiffs would treat vessel discharges in a
21 similar fashion.

22 Plaintiffs sought from the beginning to invalidate the entire regulation at issue. EPA may not
23 now seek to narrow the claims that plaintiffs legitimately presented. The Court therefore DENIES
24 EPA's request to limit its remedy to ballast water discharges.

25 26 **B. Standing**

27 Both EPA and the Shipping Coalition argue that plaintiffs lack standing to challenge all effluent
28 discharges that are "incidental to the normal operation of a vessel" because plaintiffs have alleged injury

1 only with respect to ballast water discharges. EPA Br. at 7; Shipping Coalition Br. at 31-32. In
2 response, plaintiffs have produced a declaration from one of their members, describing his concerns with
3 vessel discharges other than ballast water. Decl. of Mark Riskedahl in Support of Pl. Reply Br.
4 (“Riskedahl Decl.”). In the declaration, Riskedahl states that he frequently uses the Columbia River for
5 recreation and aesthetic enjoyment, and that he has altered his behavior based upon his concerns about
6 pollution in the waterway. The Court finds that the declaration is sufficient to give plaintiffs standing.
7 *See Friends of the Earth, Inc. v. Laidlaw Env’tl Servs. (TOC), Inc.*, 528 U.S. 167, 181 (2000) (holding
8 that concern over the environmental effects of pollution is sufficient injury to confer standing);
9 *Colorado Env’tl Coalition v. Bureau of Land Mgmt.*, 932 F. Supp. 1247, 1250 (D. Colo. 1996)
10 (considering supplemental affidavits and declarations on standing issue); *Humane Soc. of U.S. v.*
11 *Babbitt*, 849 F. Supp. 814 (D.D.C. 1994) (same).

12 13 **C. *De Minimis* Sources of Pollution**

14 Finally, both EPA and the Shipping Coalition argue that the exemption for vessel discharges
15 other than ballast water should remain in place because the other discharges are “*de minimis* sources of
16 pollution.” EPA Br. at 9-10; Shipping Coalition Br. at 33. The Ninth Circuit has previously found that
17 “the EPA . . . is permitted . . . to exempt *de minimis* sources of [pollution] from pollution controls.”
18 *Ober v. Whitman*, 243 F.3d 1190, 1195 (9th Cir. 2001). Defendants argue that EPA should likewise be
19 able to exempt trivial sources of pollution from the NPDES permit system.

20 This argument is untimely. EPA had the opportunity to present this argument at the summary
21 judgment phase, when it briefed the Court on whether the regulation at issue complied with the CWA.
22 Having lost on summary judgment, EPA may not now return to the Court in an eleventh-hour effort to
23 limit the scope of the Court’s adverse ruling. Indeed, at this point the Court has no way of evaluating
24 EPA’s argument – other than EPA’s contentions, there has been no briefing the quantitative
25 environmental effect of vessel discharges other than ballast water. Nor is it clear that such evidence
26 would be appropriate, given that the Court is not reviewing the rationale for EPA’s decision, but rather
27 the mandates of the CWA.

28 Even assuming that *de minimis* sources of pollution can be exempted from the NPDES permit

1 system, the Court finds it undesirable to cross that bridge at this juncture. Rather, EPA may consider
2 whether any vessel discharges produce only *de minimis* pollution on remand from this Court. *Cf. Fed.*
3 *Power Comm'n v. Idaho Power Comm'n*, 73 S. Ct. 85, 86-87 (1952) (appellate court “usurped an
4 administrative function” by dictating how agency should respond to its ruling).

6 **2. Limitation of Remedy to EPA’s Denial of Plaintiffs’ Petition**

7 EPA’s next argument is that this Court’s remedy should be limited to the final agency action that
8 gave rise to judicial review – EPA’s denial of plaintiffs’ administrative petition. EPA Br. at 10-11. But
9 as this Court made clear in its summary judgment order, plaintiffs properly brought an *ultra vires*
10 challenge to the regulation at issue. *See* Order Granting Plaintiffs’ Motion for Summary Judgment;
11 Denying Defendant’s Motion for Summary Judgment, dated March 31, 2005 (“Summary Judgment
12 Order”), at 11. Thus, this Court has jurisdiction not only over the denial of plaintiffs’ petition, but also
13 over the challenged regulation. *See Public Citizen v. Nuclear Regulatory Comm’n*, 901 F.2d 147, 152-
14 53 (D.C. Cir. 1990) (“[A] claim that agency action was violative of statute may be raised outside a
15 statutory limitations period, by filing a petition for amendment or rescission of the agency’s regulations,
16 and challenging the denial of that petition.”); *Legal Environmental Assistance Found, Inc. v. U.S. Env’tl*
17 *Protection Agency*, 118 F.3d 1467, 1473 (11th Cir. 1997) (“[I]n the course of reviewing EPA’s order
18 denying LEAF’s petition, over which our jurisdiction is not questioned, we also have jurisdiction to
19 entertain LEAF’s contention that the regulations upon which EPA relies are contrary to statute and
20 therefore invalid . . .”). Thus, the Court finds that it has the ability to set aside the regulation at issue
21 for being *ultra vires* to the CWA.

23 **3. Injunctive Relief**

24 In considering which of the parties’ positions most closely approximates the proper remedy in
25 this case, the Court is primarily guided by one factor: the EPA regulation is plainly contrary to the
26 congressional intent embodied in the CWA. For this reason, the Court believes that it is appropriate to
27 set aside the regulation at issue, and that the proposed remedies of the EPA and the Shipping Coalition,
28 both of which would leave the regulation in place indefinitely, are inadequate.

1 Nevertheless, the Court is influenced by the fact that the regulation at issue has stood for the past
2 30 years, and by the fact that the effects of an immediate vacatur would be so dramatic as to make such
3 an option a practical impossibility. Indeed, not even plaintiffs request an immediate vacatur of the
4 challenged regulation. While the practical implications of the Court's order make the Court wary of
5 imposing a deadline on EPA that is too ambitious, the potential harm that ballast waters represent to our
6 nation's ecosystems leads the Court to conclude that there is an urgency to promulgating new
7 regulations that EPA has not, to this point in the litigation, acknowledged. Thus, the Court must decide
8 upon a time frame for vacating the regulation that balances the need for prompt action against the need
9 to allow EPA adequate freedom to address a complicated issue.

10 The most substantial question confronting the Court is whether to issue injunctive relief ordering
11 EPA to act in accordance with the Court's order by a certain date. In light of the arguments the parties
12 have presented, the Court finds that the preferable route is to give the agency a certain date on which
13 the regulation will be vacated, and to allow the agency freedom to work around that date to find an
14 appropriate solution to the problem of vessel discharges. Indeed, in considering the variety of technical
15 arguments the parties have presented about the appropriate remedy, the Court has been reminded that
16 EPA holds an expertise in this area that the Court cannot approach.¹⁰ Thus, the Court believes that EPA
17 should be given wide latitude, within broad constraints, to address the problem of discharges from
18 vessels. Accordingly, the Court rules as follows: the Court will GRANT plaintiffs' motion for a
19 permanent injunction, and will set aside the challenged regulation as of September 30, 2008.¹¹ Absent
20 a compelling justification, the Court will not act further to supervise how EPA responds to this order.

21
22
23 ¹⁰As one example, the parties have submitted declarations describing the feasibility of using
24 existing wastewater treatment technologies for treating vessel discharges. Plaintiffs' declarant, Andrew
25 N. Cohen, describes the possibility of using vessel- or land-based treatment facilities to treat ballast
26 water and other vessel discharges. EPA's declarant, Commander Kathleen Moore, discusses the
27 difficulties associated with such technologies. Obviously, the Court's knowledge of either subject is
28 very limited, especially given the limited briefing the parties have presented on the issue. EPA
possesses the requisite expertise to make such decisions, and it is not this Court's place to dictate what
those decisions should be. The Court's sole concern is that Congress's intent be effectuated in as timely
a manner as possible.

¹¹If EPA decides upon final action earlier than September 30, 2008, it may petition this Court
to vacate the regulation at an earlier date.

1 **A. Permanent Injunctive Relief**

2 The Court finds that permanent injunctive relief is warranted in this situation. As an initial
3 matter, plaintiffs have established that there is an immediate threat of irreparable injury. Environmental
4 injury ordinarily constitutes irreparable injury, *High Sierra Hikers*, 390 F.3d at 642, but the
5 environmental injury in this case – introduction of invasive species – is more certainly irreparable than
6 most. There is no dispute that invasive species have been, and continue to be, introduced into the
7 marine ecosystems of this country through ballast water discharges. There is also no dispute over the
8 consequences that their introduction can have on the environment. Once introduced, invasive species
9 can spread rapidly, threaten native species with extinction, and become almost impossible to eradicate.
10 *See, e.g.*, Sivas Decl., Exh. A, C, G, H. The broad and significant effects that invasive species have on
11 their new environment, combined with the generally impossible task of removal once those species
12 become established, easily satisfies the threshold requirement of irreparable injury.

13 The Court also believes that other remedies are inadequate to address this injury. Money
14 damages are plainly insufficient to remedy plaintiffs’ injuries. *Amoco Prod. Co. v. Village of Gambell*,
15 480 U.S. 531, 545, 107 S. Ct. 1396 (1987) (“Environmental injury, by its nature, can seldom be
16 adequately remedied by money damages”). Although EPA argues that a declaratory judgment
17 would be an adequate remedy, the Court disagrees. Given the immediate threat posed by invasive
18 species, simple remand to EPA, with no timetable for a replacement regulation, is insufficient to address
19 the problem. Rather, the Court finds that equitable relief is necessary to ensure that this significant
20 problem is addressed in a prompt fashion.

21 Nor does the Court believe that existing regulations are adequate to address the threat of invasive
22 species. EPA claims that the federal government has acted effectively to prevent the introduction of
23 invasive aquatic species through ballast water, citing the Coast Guard regulations and the IMO
24 Convention in support. But both of these protections are incomplete. The IMO Convention has not
25 been ratified by the United States, nor has it entered into force. Thus, EPA’s claims that the Convention
26 provides a protective barrier against introduction of invasive species rings completely hollow. While
27 the Coast Guard regulations provide a starting point in the defense against invasive species, they are not
28 completely effective at addressing the problem. Pl. Reply Br., Exh. A. (“While we have made

1 significant progress domestically under the current legislative framework, there is no question that this
2 framework needs to be upgraded to move us to a greater level of protection.”). Indeed, many of the
3 Coast Guard regulations remain voluntary. More importantly, the Coast Guard regulations do not
4 relieve EPA of its duty to follow the mandates that Congress has established.¹²

5 Finally, the Court finds that the balance of equities weighs in favor of injunctive relief. *See, e.g.,*
6 *Amoco*, 480 U.S. at 545 (“[T]he balance of harms usually favors issuance of an injunction to protect the
7 environment.”). For 30 years now, EPA has had a rule in place that is contrary to the intent of Congress,
8 resulting in the release of numerous invasive species into our aquatic ecosystems. EPA’s failure to
9 comply with Congress’s intent strongly tips the equities in favor of an injunction. Although EPA and
10 the shipping industry have argued that an injunction will bring catastrophic results to the global shipping
11 industry, the Court believes that their concerns are dramatically overstated. Their arguments are based
12 on the assumption that ballast water discharges will be absolutely and immediately prohibited. Since
13 the Court is giving EPA two years to develop a system, within the constraints of the CWA, that will
14 allow ballast water to be discharged within certain parameters, the Court does not see the same risk of
15 catastrophe.

16 Although the Court recognizes that its two-year time frame is ambitious, it does not believe that
17 it will impose an undue burden on either EPA or the shipping industry. EPA has now had over six years
18 – since the plaintiffs filed their administrative petition in 1999 – to consider the problem of regulating
19 vessel discharges under the NPDES. The materials that EPA submitted in this lawsuit indicate that it
20 is intimately familiar with the problem. Thus, the Court believes two years is an adequate amount of
21 time to allow EPA to take action to correct the *ultra vires* exemption for vessel discharges. In addition,
22 both the Coast Guard regulations and the IMO Convention demonstrate that ballast water discharges
23 can be regulated in a straightforward manner. To the extent that future EPA regulations place any
24 burden on the shipping industry, the Court believes that two years is a significant enough amount of time
25 to allow the shipping industry to gradually adjust its practices.

26
27 ¹²EPA may be correct in its argument that the Coast Guard would have been the most appropriate
28 agency to regulate vessel discharges. That judgment, however, was for the Congress, not this Court,
to make.

1 Finally, EPA's arguments about the practical difficulties of regulating vessel discharges ignores
2 the numerous tools it has under the CWA. General permits allow it to regulate large numbers of vessels,
3 and a provision of the APA allows it to promulgate rules without opportunity for public comment when
4 an agency finds "good cause" that notice and comment would be impractical. 5 U.S.C. § 553(b)(B). In
5 addition, the CWA adopts a flexible approach to controlling water pollution, allowing EPA to adjust its
6 regulations as new technologies appear and existing technologies are improved. Indeed, the CWA
7 requires that EPA base its pollution limitations on the "best available technology economically
8 achievable." 33 U.S.C. § 1311(b)(2)(A). Moreover, the requirement that NPDES permits last only five
9 years serves to ensure that permits evolve to reflect advances in technology. *See* 33 U.S.C. §
10 1342(b)(1)(B) (NPDES permits "are for fixed terms not exceeding five years"); 33 U.S.C. §
11 1342(b)(1)(A) (NPDES permits must apply the "best available technology" requirement of 33 U.S.C.
12 § 1311). Thus, the Court believes that EPA has the tools at its disposal to comply with the September
13 30, 2008, deadline.

14
15 **B. Appropriateness of September 30, 2008 Deadline**

16 According to the dates submitted by the parties, the Court believes its September 30, 2008,
17 deadline is reasonable. It is not a significant delay over the dates proposed by the plaintiffs and
18 plaintiff-intervenors, who requested final agency action within 18 months of this Court's order and by
19 October 1, 2007, respectively. The Court also believes that two years is sufficient to allow EPA room
20 to address the issue. Further, it is sufficient to provide both the entities who issue NPDES permits and
21 the shipping industry sufficient time to become aware of, and to adjust to, the fact that vessel discharges
22 will be subject to the NPDES.

23 Plaintiffs argue that this Court should be more active in monitoring EPA's progress in
24 responding to this Court's summary judgment order, but the Court cannot agree. To begin with,
25 plaintiffs' accusations of delay by EPA in this litigation are overstated. While it is true that EPA has
26 not yet shown any signs of moving to repeal the challenged regulation, it is also true that there has been
27 no final order in this case. Until this juncture, EPA did not know with certainty what the final remedy
28 would be, nor has it been able to appeal or seek a stay of this Court's order pending appeal. Thus, the

1 Court finds no reason to presume that EPA needs active oversight from the Court.

2 More importantly, the Court finds that plaintiffs' proposed schedule would create a host of
3 practical problems that would run the risk of interfering with the agency's exercise of its authority. For
4 example, were the Court to adopt plaintiffs' proposed 90-day "check-in" from EPA, EPA might very
5 well feel pressure to choose a certain course in order to buy itself more time to wrestle with the
6 substantive issues it faces, or to mitigate the impact of its actions on agencies that issue NPDES permits.
7 The Court believes it desirable to avoid these results. It also trusts that EPA knows the magnitude of
8 the danger presented by invasive species. *See* Pl. Reply Br., Exh. A (congressional testimony of
9 Kathleen Moore). Accordingly, the Court believes EPA will act promptly, in accordance with
10 Congress's mandate, to address that danger.

11 For similar reasons, the Court rejects plaintiff-intervenors' proposed remedy of requiring that
12 interim controls be put in place immediately. Because EPA is altering a longstanding and established
13 regulation, the Court believes EPA must have the ability to exercise its expertise in an environment free
14 from unrealistically tight time constraints. Moreover, requiring EPA to take the specific step of enacting
15 interim controls would overly interfere with the operation of the agency's discretion.

16 Defendants argue against the imposition of any deadline, arguing that immediate action is
17 unnecessary and possibly counterproductive. Defendants also argue that imposing a tight deadline will
18 have an enormously burdensome effect on both the industry and the agencies that issue NPDES permits.
19 All these arguments, however, fly in the face of the overriding fact that the challenged regulation is *ultra*
20 *vires* to the CWA. The question is not, in the Court's view, a policy decision of how to eventually
21 regulate vessel discharges. Rather, the question is how, on a reasonably swift basis, Congress's express
22 mandate can be fulfilled. Rather than viewing the question as how much time the Court is taking away
23 from EPA's decision on how to act, the proper question is how much time is the Court placing in the
24 way of the fulfillment of Congress's goals.

25 EPA also argues that a deadline would be difficult to meet and may be counterproductive, due
26 to the fact that ballast water treatment technologies have not been fully developed. But this argument
27 ignores the flexibility inherent in the CWA. As discussed above, EPA must only apply the "best
28 available technology economically achievable"; it need not rush to develop new pollution control

1 technologies. In addition, the Court notes that EPA is not working with a blank slate. In promulgating
2 new regulations EPA will have before it substantial work that has been done by both the Coast Guard
3 and by the IMO. Indeed, it appears likely that the “best available technology” will include many of the
4 measures that the Coast Guard has required through its regulations. Thus, the Court believes that EPA
5 has overstated its concerns over rushing to install new technologies that may turn out to be detrimental
6 in unforeseen ways.

7 EPA’s concerns about disruption to the shipping industry and the administrative permit system
8 raise important points. As spelled out in the defendants’ briefs, the economic consequences of
9 misguided regulation on the North American and global shipping industry could be enormous. The
10 Court is confident, however, that EPA has both the expertise and discretion to find an adequate solution
11 to the problem at hand. Moreover, EPA, the industry, and the regulatory agencies all have more than
12 two years to prepare for any behavioral change that results from EPA’s action. The Court believes this
13 is a sufficient amount of time to soften the suddenness of the regulatory change.

14 Importantly, while the Court is sensitive to the fact that the regulation at issue has existed for
15 the past three decades, few of defendants’ arguments about the practical difficulties that regulation of
16 vessel discharges will cause are due to the longstanding nature of the regulation. Rather, defendants’
17 protestations are largely based on the difficulty of the regulation itself, and thus would have had to have
18 been confronted 30 years ago had EPA acted according to its statutory mandate. In such a circumstance,
19 the Court does not believe that the fulfilment of Congress’s intent should be unduly delayed.

20 21 **4. The Shipping Coalition’s Request for a Stay**

22 The Shipping Coalition argues that this Court should stay its remedy pending appeal. Federal
23 Rule of Civil Procedure 62(c) governs such requests, and provides:

24 When an appeal is taken from an interlocutory or final judgment granting, dissolving,
25 or denying an injunction, the court in its discretion may suspend, modify, restore, or
26 grant an injunction during the pendency of the appeal upon such terms as to bond or
otherwise as it considers proper for the security of the rights of the adverse party.

27 Fed. R. Civ. P. 62(c). Thus, by the terms of the rule there must be a final judgment and an appeal before
28 a stay may be granted. Neither has yet occurred in this case. In any event, given the significant time

1 period allocated to EPA to respond to this Court's order, the Court is doubtful that a stay is necessary.
2 Accordingly, Shipping Coalition's request pending appeal is DENIED without prejudice to raising the
3 issue again through properly noticed motion once final judgment has issued and an appeal has been
4 taken in this case.

5
6 **CONCLUSION**

7 For the foregoing reasons and for good cause shown, the Court hereby GRANTS plaintiffs'
8 request for a permanent injunction (Docket No. 83) and REMANDS this matter to EPA for further
9 proceedings consistent with this Court's orders. The blanket exemption for discharges incidental to the
10 normal operation of a vessel, contained in 40 C.F.R. § 122.3(a), shall be vacated as of September 30,
11 2008.

12
13 **IT IS SO ORDERED.**

14
15 Dated: September 18, 2006



16 SUSAN ILLSTON
17 United States District Judge
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September 22, 2006

**Environmental Protection Agency (EPA) Chesapeake Bay Program (CBP)
to the Project Delivery Team (PDT)**

From: fritz.mike@epamail.epa.gov

Sent: Friday, September 22, 2006 4:59 PM

To: O'Connell, Thomas; jtravelste@mrc.state.va.us;
mslattery@dnr.state.md.us; ac.prfc@verizon.net; Seltzer, Craig L NAO;
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Simon; Kate Meade
Cc: Bisland.Carín@epamail.epa.gov; Slenkamp.Tom@epamail.epa.gov

Subject: Native Oyster Scenarios for EIS

To the PDT,

First, I appreciate the indulgence to have more time to think about the native oyster scenarios we reviewed on Thursday. I did think more about them and want to share with you what I think could be an important consideration in the design of scenarios. These are preliminary comments to raise the question. I expect that my EPA colleagues and I will want to expand upon these comments after we see the native oyster scenarios described early next week. Nonetheless, I would like these comments to be entered into the EIS record.

In short, contrary to a statement I made at the PDT meeting on Thursday, I'm not sure the best guideline for scenario design across alternatives is that of equivalent effort. Instead, I suggest using the models to estimate the effort necessary to design each of the alternative scenarios to satisfy the purpose and need.

Consider an analogous EIS for a new highway bridge to carry a given flow of traffic across a river. Certainly we wouldn't arbitrarily establish a cap on construction effort or project cost and then evaluate alternative bridge alignments not even knowing whether the cap might prevent one or more alignments from reaching the other side of the river. Instead, wouldn't we ask the bridge engineers and traffic modelers to develop alternative designs and alignments that would achieve the purpose and need, and then include a comparative analysis costs and benefits in the EIS?

Why wouldn't we do the same in the oyster EIS?

Mike

Michael A. Fritz
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October 23, 2006

**Environmental Protection Agency (EPA) Chesapeake Bay Program (CBP)
to the Project Delivery Team (PDT)**

From: fritz.mike@epamail.epa.gov

Sent: Monday, October 23, 2006 4:04 PM

To: Megan Simon

Cc: Doug Lipton (E-mail); Julie Thompson (E-mail); Kate Meade; Nicole Dery (E-mail); Peter Kube (E-mail); Phil Jones (E-mail); Thomas O'Connell (E-mail)

**Subject: Re: PDT subgroup conference call for Oyster EIS moratorium
specs. for alternative scenarios**

I have done a little googling around for literature on fishing overcapacity buyout programs. I found some interesting reading at the following sites:

1. The NOAA Fisheries, Office of Management and Budget site about buybacks, which has links to several buyback rules as published in the Federal Register:

http://www.nmfs.noaa.gov/mb/financial_services/buyback.htm

2. The FAO site for the FAO report "International Plan of Action for the Management of Fishing Capacity":

<http://www.fao.org/docrep/006/x3170e/x3170e04.htm>

Another FAO site on the subject:

http://www.fao.org/figis/servlet/static?xml=ipoa_capacity.xml&dom=org&xp_nav=4

3. The NOAA, NMFS site for the "United States National Plan of Action for the Management of Fishing Capacity" , August 2004

http://www.nmfs.noaa.gov/sfa/reg_svcs/npoa.capacity.8.4.04.pdf

4. NMFS December 2002 "Report to Congress on Northeast Multispecies Harvest Capacity and Impact of Northeast Fishing Capacity Reduction"

http://www.nmfs.noaa.gov/sfa/state_federal/02neharvest_rptcongress.PDF

Happy reading!

Mike

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November 15, 2006

**Environmental Protection Agency (EPA) Chesapeake Bay Program (CBP)
to the Project Delivery Team (PDT)**

From: fritz.mike@epamail.epa.gov

Sent: Wednesday, November 15, 2006 3:04 PM

To: Bob Beal (E-mail); Claire O'Neill (E-mail); Craig Seltzer (E-mail);
Jack Travelstead (E-mail); Jamie King (E-mail); Julie Thompson (E-mail);
Kate Meade; Mark Mansfield (E-mail); Megan Caldwell (E-mail);
frtiz.mike@epamail.epa.gov; Mike Slattery (E-mail); Peter Kube (E-mail);
Phil Jones (E-mail); Tammy Banta; Thomas O'Connell (E-mail); Todd
Bridges (E-mail); Slenkamp.Tom@epamail.epa.gov

Subject: For PDT Discussion: Moratorium Scoping Notes

For discussion on November 16, attached please find notes from a
November 2 PDT sub-group discussion about how to define the fishing
moratorium scenario for analysis in the nonnative oyster EIS.

(See attached file: MoratoriumScoping.doc)

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November 15, 2006

DISCUSSION PAPER FOR THE NONNATIVE OYSTER EIS PDT

SCOPING A HARVEST MORATORIUM SCENARIO

The purpose of this paper is to present questions and options for discussion by the PDT concerning the definition of one or more native oyster harvest moratorium scenarios for analysis in the ongoing nonnative oyster EIS. These questions and options were identified in a November 2, 2006 discussion among members of a sub-group of the PDT which was formed for this purpose. The sub-group included: Doug Lipton, Nicole Dery, Tom O'Connell, Julie Thompson, Peter Kube, Kate Meade, and Mike Fritz.

In order to define a harvest moratorium scenario for analysis in the EIS, the PDT should:

1. Identify the desired outcome(s).
 - a. Option: Eliminate the wild fishery entirely without regard to its future potential?
 - b. Option: Continue a sustainable wild fishery during stock restoration?
 - c. Option: Re-open a sustainable fishery when it can support sustainably the harvest of 5-6 million bushels annually?
 - d. Option: Fair compensation for watermen?
2. Provide essential model input parameters.
 - a. Set fishing mortality at zero to model moratorium effects on oyster demographics.
 - b. Can we reasonably estimate the fishing mortality rate now?
3. Determine fair compensation rates.
 - a. Option: to retire inactive licenses (latent effort), provide one flat compensation payment? Compensation funds would go a lot further if only active licensees were compensated for lost income.
 - i. Would need to define "inactive" license.
 - b. Option: Compensate active fishers for projected future earnings over some limited term?
 - i. Option: use the demographic model to project sustainable harvests over the term, and compensate accordingly.
 - ii. Would need to define the limit of the term of compensation.
 - c. Option: Declare the term of the moratorium and hold a reverse auction to establish compensation rates for active fishers.

July 16, 2007

**Environmental Protection Agency (EPA) Chesapeake Bay Program (CBP)
to the Project Delivery Team (PDT)**

From: fritz.mike@epamail.epa.gov
Sent: Monday, July 16, 2007 3:42 PM
To: Mansfield, Mark T NAO
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Jamie King; jtravelste@mrc.state.va.us; julie_thompson@fws.gov; Kate
Meade; Oliver, Lawrence R NAE; mcaldwell@asmfc.org; Megan Simon; Kube,
Peter R NAO; AC Carpenter (E-mail); pwjones@netzero.net; Bob Beal
(E-mail); Tammy Banta; O'Connell, Thomas; Arguto.William@epamail.epa.gov

Subject: Comments to PDT on uncertainty and Rothchild on mortality

Mark and the PDT,

I regret that I'll miss the PDT meeting on July 19, but I want to contribute to the discussion the idea that is probably obvious to all: that is that as we agree to move forward with an analysis of alternatives in the face of huge uncertainty, the characterization of that uncertainty and its effects on the discernability of differences among alternatives in terms of potential environmental impact will be essential to our and the public's ability to recommend one or more preferred alternatives based on the DEIS. For example, where the model outputs carry large error bars such that there is no discernable difference among alternative modeled scenarios, this should be graphically illustrated and the consequences explained in the text. Further, where this results in large uncertainties in the outputs from relative risk assessment, it should be similarly illustrated and explained.

Also, at the Executive Committee meeting, Dr. Rothchild seemed to be oversimplifying mortality factors to include disease only, ignoring predation, when he summarized his view that *C. ariakensis*'s lower disease mortality and more rapid growth would build a population more rapidly than *C. virginica*. Or perhaps he was speaking only of his expectation about what the Versar model would show. In any case, we should be careful about such oversimplifications, especially when there is some evidence that *C.a.* is more vulnerable to blue crab predation than *c.v.*, if I remember correctly.

Mike

Michael A. Fritz
Acting Associate Director for Ecosystems
Chesapeake Bay Program Office, EPA
410 Severn Ave, Suite 109
Annapolis, MD 21403
Phone: 410-267-5721
FAX: 410-267-5777
Email: fritz.mike@epa.gov



REPLY TO
ATTENTION OF

DEPARTMENT OF THE ARMY
NORFOLK DISTRICT, CORPS OF ENGINEERS
FORT NORFOLK, 803 FRONT STREET
NORFOLK, VIRGINIA 23510-1096

August 2, 2007

Planning and Policy Branch

Ms. Carol R. Collier
Executive Director
Delaware River Basin Commission
P.O. Box 7360
West Trenton, NJ 08628-0360

Dear Ms. Collier:

I am writing to advise the Delaware River Basin Commission (DRBC) of the current status of the Environmental Impact Statement (EIS) for restoring oysters in the Chesapeake Bay. This effort is being conducted to identify a preferred alternative(s) for establishing an oyster population that reaches a level of abundance in the Chesapeake Bay comparable to levels seen between 1920 and 1970. A need exists to restore the ecological role of oysters in the Chesapeake Bay, and the economic benefits of a commercial fishery through native oyster restoration and/or an ecologically compatible nonnative oyster species that would restore lost functions.

The U.S. Army Corps of Engineers is the lead Federal agency engaged with the States of Maryland and Virginia, along with cooperating Federal agencies including the U.S. Environmental Protection Agency, the U.S. Fish and Wildlife Service, and the U.S. National Oceanic and Atmospheric Administration in producing an EIS for this effort. Together, we will evaluate a number of potential courses of action in the EIS.

I am enclosing a comprehensive progress report which was recently released, as well as a copy of a press release with today's date addressing this issue. We will continue to keep the DRBC apprised of the status of the EIS. The following webpage links provide background information:

<http://www.nao.usace.army.mil/OysterEISprojects/civil%20works%20projects/Non-Native%20Oyster%20EIS/homepage.asp>

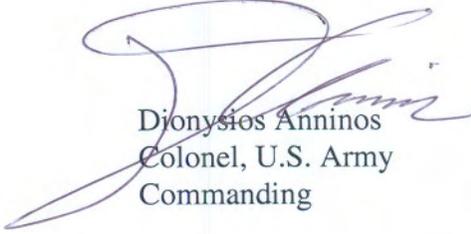
<http://www.dnr.state.md.us/dnrnews/infocus/oysters.asp>

<http://www.vims.edu/abc/CA.html>

<http://noaa.chesapeakebay.net/nonnativeoysterresearch.aspx>

Should you have any questions, please feel free to contact Maryland Secretary of Natural Resources John Griffin (410-260-8101), Virginia Secretary of Natural Resources L. Preston Bryant (804-786-0044), or me (757-201-7601).

Sincerely,



Dionysios Anninos
Colonel, U.S. Army
Commanding

Enclosure

August 30, 2007

**Environmental Protection Agency (EPA) Chesapeake Bay Program (CBP)
to the Project Delivery Team (PDT)**

From: fritz.mike@epamail.epa.gov

Sent: Thursday, August 30, 2007 2:31 PM

To: Dionysios.Anninos.col@nao02.usace.army.mil; Thomas O'Connell (E-mail); Mark Mansfield (E-mail); AC Carpenter (E-mail); Ellen Cosby (E-mail); Jack Travelstead (E-mail); Jamie King (E-mail); Julie Thompson (E-mail); Christopher P. Guy (E-mail); Angie Sowers Ph. D. (E-mail); Claire O'Neill (E-mail); fritz.mike@epamail.epa.gov; Arguto.William@epamail.epa.gov; Peter Kube (E-mail); Craig Seltzer (E-mail); Kate Meade; brichkus@versar.com

Cc: Megan Simon; Tammy Banta

Subject: Documenting Human Errors and other Unintended Escapes of *C. ariakensis*

To the Oyster EIS PDT members:

The current incident of missing *C. ariakensis* oysters at one of Dr. Paynter's research sites is another example of why it is important that the EIS describe specifically the various incidents that illustrate in a very real way the significant risk that, despite the best of intentions to control risk, human error or other unforeseen event such as severe weather will result in the escape of nonnative species when nonnative species are used in aquaculture. This inevitable truth, which was recognized by the National Research Council and, at the initiation of the EIS itself, stipulated by all the agencies involved, must not be ignored in the EIS.

I therefore recommend to the lead agencies for the EIS that a complete description of the current incident and the several other incidents of mishandling and escape, or failure to recover experimental animals, be fully documented in the DIES. (Megan, please document this in the EIS record.)

Simultaneously, I want to let you know that I have begun compiling references from the scientific and natural resources conservation literature, both domestic and international, international treaties, and U.S. government policy documents, which I will use to compose a summary of the "precautionary principle" and how it should apply in the decision at the end of the EIS process. Among the significant related issues is that of "burden of proof". If you are interested in reading along, I would be glad to provide you the references as I find them. For openers, there is a chapter titled "Characterization and Incorporation of Uncertainty in Fisheries Management" in Fisheries Ecosystem Planning

for Chesapeake Bay (AFS 2006), which was adopted by the Chesapeake Executive Council for purposes of providing guidance for our collective pursuit of fisheries management in Chesapeake Bay. Copies are available from the NOAA Chesapeake Bay Office, I believe.

Of course, I welcome any contributions to this literature search that you may be able to provide.

Mike Fritz

Michael A. Fritz
Acting Associate Director for Ecosystems
Chesapeake Bay Program Office, EPA
410 Severn Ave, Suite 109
Annapolis, MD 21403
Phone: 410-267-5721
FAX: 410-267-5777
Email: fritz.mike@epa.gov

FAX COVER SHEET

TO: Megan Caldwell, Science Director ASMFC ISTC

Fax No. (202) 289-6051 Tel. No. _____

From: Tessa Getchis

CONNECTICUT SEA GRANT COLLEGE PROGRAM
University of Connecticut
1080 Shennecossett Road
Groton, CT 06340-6048



Tel: (860) 405-9128 Fax: (860) 405-9109

Date: _____ Time: _____

Number of pages (including cover sheet) _____

Comments:

*See attached statement
from Connecticut Dept. of
Agriculture re: Introduction of
C. anankensis to Chesapeake*



Sea Grant fosters the conservation and wise use of coastal and marine resources through research, outreach, and education. The program represents a partnership between NOAA and the University of Connecticut.





STATE OF CONNECTICUT

DEPARTMENT OF AGRICULTURE

Bureau of Aquaculture and Laboratory



FAX MESSAGE

DATE: 10/15/07

OF PAGES
(Including Cover) 6

TO: Tessa G.

FROM: **DAVID H. CAREY**
DIRECTOR
FAX #: 203-783-9976
TEL #: 203-874-0696

SPECIAL INSTRUCTIONS: ESA Statement



The Department of Agriculture Bureau of Aquaculture, the lead shellfish authority in Connecticut is providing the following information pertaining to the commercial oyster industry and the oyster resource located in Connecticut in opposition to the National Marine Fisheries endangered species act review. The five factors identified in section 4(a) (1) of the Endangered Species Act (ESA) to make the determination to list a species as threatened or endangered is warranted, are not applicable to the eastern oyster or commercial shellfishing in Connecticut and Long Island Sound. The eastern oyster remains a viable commercial resource with several indicators pointing towards a dramatic commercial recovery as a direct result of the cooperative work of the Bureau of Aquaculture, the commercial industry and hatcheries, and the protective management measures and statutes in place. The comments below specifically address Connecticut's shellfish program and the eastern oyster resource both historically and currently.

(1) Present or threatened destruction, modification, or curtailment of habitat or range:

The eastern oyster habitat in Long Island Sound has shown no evidence of destruction, modification, or curtailment of range. The habitat is the shallow hard bottom of the brackish waters of the coastline and inter-tidal rivers which oystermen spread clean oyster shells (cultch) just before the spawning season begins (July-Sept). Unlike other regions with a reef habitat the Long Island Eastern Oyster habitat is a natural occurring clean hard substrate overlaid with oyster shell.

The 1996-98-disease episode has reduced the number of natural growth seed oystermen working the Town and State Natural Oyster Beds, which therefore reduces the setting condition of the shell. However this is a short-term condition and in no way a permanent threat to the eastern oyster habitat. After the seed oystermen work the bottom and begin turning the shell productivity will continue to improve.

Furthermore the Long Island Sound (LIS) water quality continues to improve through improved cooperative management between municipalities, the Department of Environmental Protection, and the State. Connecticut's nitrogen credit program with a goal to reduce human sources of nitrogen by 58.5% by 2014 has had a tremendous favorable impact on water quality. The program has resulted in 55,000 fewer pounds of nitrogen a day entering the Sound. The elimination of excess nitrogen has helped prevent nuisance algal blooms and eutrophication.

(2) Over utilization from commercial, recreational, scientific, or education purposes:

The Connecticut oyster market harvest historical numbers are cylindrical by nature. Attachment 1, 2, 3. The highest harvest numbers recorded in the previous 75 years were in 1992 although the succeeding four years also exceeded any previously recorded harvests numbers for that time period. The 1990's harvest numbers were a result of an improved and renewed cultch program and the occurrence of a large oyster set in 1987. The recent decline in harvest numbers is a direct result of the outbreak of MSX and Dermo in the fall of 1996 into 1998. The recent historical harvest numbers have been based on natural set occurring on private, town and state natural beds artificially shelled by the

Department of Agriculture Bureau of Aquaculture or private companies. Commercial shellfisherman in Long Island Sound recognize and understand that planting shell increases the amount of set from natural setting areas and therefore sustains the commercial transplanting of the resource preventing over utilization or exploitation of the natural resource. Attachment 4 is a published study on the Time and Intensity of Setting of the Eastern Oyster, *Crassostrea Virginica*, in LIS. The variability of setting naturally influences the market harvest variability and therefore no justification exists to determine that over-utilization is a factor contributing to the present low market harvest numbers. Rather, Connecticut's commercial harvest data of the 1990's demonstrates the importance of managing the artificial planting of shell in the natural setting areas to increase the amount of set available for transplanting to the growing area. As a result of the 96-98-disease episode, transplant failures in 1999, no measurable set, and subsequently no artificial shelling, combined these actions continue to reduce the market harvest numbers. In the fall of 2004 the first measurable set since the episode was recorded. Attachment 5. The industry along with the Bureau of Aquaculture Laboratory had concentrated efforts on developing offspring from survivors of the outbreaks in order to improve a resistant brood stock line. The in-state commercial hatcheries are producing more than 18 million seed oysters per year up from 2 million at the outbreak of the disease episode. Connecticut oystermen also purchase seed from Long Island hatcheries. The Connecticut market harvest numbers include both categories of seed (hatchery and natural) although the significant factor is that both categories of oysters are reaching market harvest without negative signs of the diseases.

(3) Disease or Predation:

Two oyster diseases, DERM0 caused by the parasite, *Perkinsus Marinus* and MSX caused by the parasite, *Haplosporidium nelsoni* during 1996 through 1998 affected Connecticut's oyster population. These diseases transmit from oyster to oyster. Both diseases are considered a warm water pathogen, which proliferates most rapidly at temperatures above 77° F or 25°C. During the period of July - September 1996 the western Long Island Sound water temperature was 2.5 °C above the 20-year mean temperature for that area. Attachment 6. The harvest number for oysters annually had exceeded 700,0000 bushels the previous 4 years. (Attachment 2) Therefore the quantity of oysters, which were actually farmed in Long Island Sound, exceeded that number by two thirds in order to sustain a continued market harvest volume. The drop in the 1996 production was a result of disease onset, which went widely unreported. The close proximity of the large volume of oysters allowed rapid disease transmission and within 3 years production fell to 11% of the previous historical highs.

The Bureau of Aquaculture Laboratory, the commercial hatcheries, and the Shellfish Industry have cooperatively developed a protocol to increase resistance for the diseases recognizing there is an inheritable resistance to DERM0 and under heavy infection pressure, MSX. In Connecticut development of resistant strains of the eastern oyster has been facilitated by selective breeding in hatcheries or by saving part of the survivors of an epizootic in the brood stock sanctuaries (and not harvesting for three years) creates an opportunity to produce resistant seed. Attachment 7.

Connecticut has two commercial hatcheries, along with several Long Island hatcheries, which after the post disease outbreak have developed seed under this protocol, which has been and currently is under production in LIS and has reached market harvest without detectable signs of the disease. Attachment 8 has the prevalence of MSX and DERM0 and the intensity of DERM0 at a level that is not currently negatively impacting the growth or marketability of the eastern

oyster. The hatchery-raised disease resistant oysters have been and are being raised both on the bottom conventionally and in cages and racks with success. Connecticut's commercial hatcheries are producing 18 million seed oysters per year. During the three-year grow out to market size the disease resistant oysters are spawning and natural repopulating areas prior to market harvest.

The Bureau of Aquaculture manages the state natural beds and maintains set bags along the coastline and Quinnipiac River in order to monitor intensity of set. The level of spat collected on shells following the disease outbreak steadily declined until the dramatic rise in the fall of 2004. Attachment 5. Many factors influence the setting of oyster spat but with the development and grow-out success of these 3rd generation disease resistant oysters produced by adhering to the Bureau of Aquaculture management protocol has resulted in a greater number of resistant broodstock. The healthy vibrant broodstock oysters may be the resulting reason for the increased detectable spat documented in the fall of 2004, which subsequently survived the winter.

Connecticut has overcome the Dermo and MSX disease outbreaks through management of natural stocks and selective breeding at the hatcheries. The shellfisherman have successfully grown the oyster seen to maturity and harvested without any detectable signs of the diseases. The Bureau of Aquaculture laboratory will continue to work with commercial hatcheries and laboratories of adjoining states for the continued development of disease resistant seed in an attempt to prevent another devastating outbreak. Presently the Bureau staff is working under a cooperative grant with several state shellfish laboratories for the purpose of developing the next generation of resistant brood stock. Attachment # 9.

4). Inadequacy of existing regulatory mechanisms.

Connecticut developed an effective regulatory mechanism in the 1880's, which remains in place today and has been used as a guideline for many states attempting to revitalize or enhance a shellfish program. The mechanisms provide for private management of shellfish grounds as well as public management of defined Natural Oyster Beds, for the purpose of providing all licensed individuals access to oyster seed. This public oversight has prevented the exploitation of the resource and the destruction or damage of the resources and its natural habitat.

Private ownership rights to plant and cultivate shellfish for an annual fee on a specific parcel has created an incentive to properly manage and farm the bottom creating a sustaining program. The greater the investment in terms of time and resources provides that individual with a greater return.

The Connecticut Legislature in 1882 passed an act that directed the State Shellfish Commission to map the locations and descriptions of the Natural Oyster Beds and the task was completed by 1884. 5,500 acres of Natural beds were mapped and described in C.G.S. 26-193. The management of the state natural beds falls under C.G.S. 26-212, 26-213, and 26-215. The state requires all boats and each individual on the vessel to be licensed. The harvest of seed oysters is prohibited between July 20 and September 20th during the peak spawning period (C.G.S 26-232). The size and weight of the dredge must not exceed 30 pounds or one and one half bushel. No power can be used to operate a hoisting device other than hand power. Attachment 10

Furthermore under state law (1888 section 2326) local municipal shellfish commissions have protected 6,500 acres of town natural oyster beds, C.G.S. 26-258. The descriptions and maps were defined by decrees of the superior court. The language included in C.G.S. sec 26-212, 26-213, and 26-215 applies these statutes to any waters of the state, including the town natural beds, except private commercial grounds. State law additionally requires that local shellfish commissions shall prepare and periodically update a shellfish management plan. The plan shall be submitted to the Commissioner of Agriculture and any appropriate board of selectman, mayor, or warden for review and comment. Attachment 11.

These historical and existing regulatory mechanisms have sustained Connecticut's oyster industry for 125 years. The town and state natural beds continue to allow new individuals into the shellfish industry as a source for oyster seed.

(5). Other natural or manmade factors affecting its continued existence.

The Department of Agriculture Bureau of Aquaculture has no evidence that the long-term or short-term existence of the eastern oysters is in jeopardy in LIS. The Bureau of Aquaculture and the commercial shellfisherman have in the past and will continue to utilize cultch (planting of wet or dry shell) prior to the oyster spawn season to increase the amount of seed set. The Bureau of Aquaculture during the early 1980's began moving shell from offshore areas onto near shore natural beds using the "Yankee Oyster" state workboat. In addition small amounts of clean oyster shell was purchased and planted. The success of the management and restoration efforts and the positive affects are seen in the uniformity of the 1980 harvest numbers as compared to the prior 30-year period. Attachment #1. In 1987 the Connecticut Legislature passed Public Act #87-426, a three year bond package to plant clutch on the State Natural beds. Attachment 12. Between 1987 and 1990 2.8 million dollars was invested in dry cultch and a dramatic increase in oyster harvest numbers occurred. Attachment 13. The Bureau of Aquaculture also received dry cultch from the Iroquois Pipeline settlement during 1991. The clutch program enables the Bureau of Aquaculture and Industry to artificially enhance the oyster resource numbers by supplementing the amount of natural clean hard surface available for spat to attach to.

In conclusion the Bureau of Aquaculture has worked cooperatively with Industry hatcheries to develop disease resistant seed, natural survivors of the episode have reproduced on the natural beds, the Bureau has continued an annual 150,000 bushel wet cultch program, and the industry is presently harvesting oysters which are hatchery reared or naturally descendants of survivors. Attachment 14. The eastern oysters reaching market size in Long Island Sound are not showing signs of the disease. Additionally the Bureau of Aquaculture recorded the first seed oyster set in the fall of 2004 since the disease episode and the set has survived the winter.

As a result of the positive indicators and factors mention above the Bureau of Aquaculture currently is in the process of renewing the clutch program on a larger scale.

The high historical numbers of the 1990's were based on the planting of the dry clutch between 1987 and 1991. The Bureau through surveys of the Natural Beds has determined that the shell from the oyster that perished as a result of the disease outbreak of 1996-1998 remains on the bottom. A management and restoration effort to reclaim the shell, stockpile and dry the shell, and then plant the shell on the state and town natural beds prior to spawn season must be undertaken. This effort will return Connecticut oyster production to previously level. For the reason outlined the National Marine Fisheries Service should conclude that the Eastern oyster is not an endangered species and the conditions of the petition are not applicable to Connecticut and Long Island Sound.



STATE OF MAINE
DEPARTMENT OF
MARINE RESOURCES
21 STATE HOUSE STATION
AUGUSTA, MAINE
04333-0021

JOHN ELIAS BALDACCI
GOVERNOR

GEORGE D. LAPOINTE
COMMISSIONER

October 24, 2007

Colonel Dionysios Anninos
District Commander, Norfolk District
Army Corps of Engineers
803 Front Street
Norfolk, VA 23510

Secretary John R. Griffin
Maryland Department of Natural Resources
C-4 Tawes State Office Building
Annapolis, Maryland 21401

Secretary Preston Bryant
Commonwealth of Virginia
Office of the Secretary of Natural Resources
P.O. Box 1475
Richmond, VA 23218

Dear Colonel Anninos, Secretary Griffin, and Secretary Bryant,

I am writing in regard to the proposed commercial introduction of the exotic oyster (*Crassostrea ariakensis*) into the waters of the Chesapeake Bay. Maine has a very active, healthy aquaculture industry focused on the culture of the American oyster (*Crassostrea virginica*). Because of this, the State of Maine is extremely concerned about the potential impacts of the deliberate introduction of this non-native species on the Chesapeake Bay ecosystem and coastal waters beyond Chesapeake Bay. The National Academy of Sciences report acknowledges that the introduced stock will have coastwide impacts. While the extent of ecological impacts on coastal habitats, native fish and shellfish and the economic impacts on existing commercial fisheries of Atlantic coast states is unknown, they are potentially devastating.

Both state and federal governments are actively engaged in efforts to deal with invasive species and their impacts to native species and ecosystems. It has been estimated that the U.S. spends \$137 billion per year to deal with invasive species in all environments. Although there is less information on the economic damage caused by marine invasions, monitoring and control of the Mediterranean green seaweed and Chinese mitten crab on



PRINTED ON RECYCLED PAPER

OFFICES AT STEVENS SCHOOL COMPLEX, HALLOWELL

PHONE: (207) 624-6550

TTY: (207) 287-4474

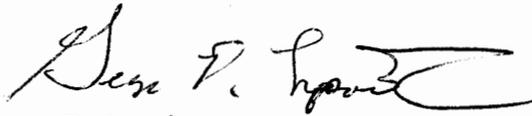
<http://www.maine.gov/dmr>

FAX: (207) 624-6024

the Pacific coast cost the state and federal governments \$2.3 and \$1 million, respectively, between 2000 and 2001.

Because of the unknown impacts of the introduction of an exotic oyster, and the likely impossibility of eradicating a nuisance species, I urge you to not move forward with approving the introduction of *Crassostrea ariakensis* in Chesapeake Bay.

Sincerely,

A handwritten signature in black ink, appearing to read "George D. Lapointe". The signature is fluid and cursive, with a prominent initial "G" and a long, sweeping underline.

George D. Lapointe
Commissioner

From: Kate Meade
Sent: Tuesday, February 26, 2008 11:14 AM
To: 'SGollasch@aol.com'
Cc: Megan Simon; Kate Meade
Subject: ICES Working Group on Introductions and Transfers - Suminoe Oyster / Chesapeake Bay, East Coast, United States

To: Dr. Stephan Gollasch, Chair of the ICES Working Group on Introductions and Transfers (WGITMO)

Re: ICES Working Group on Introductions and Transfers - Suminoe Oyster / Chesapeake Bay, East Coast, United States

Date: February 26, 2008

Dear Dr. Gollasch,

This is in follow-up to our e-mails dating back to 2004 concerning the development of an EIS on the introduction of a non-native oyster into the Chesapeake Bay, East Coast, United States. The ICES Code of Practice has been used to guide the development of the Ecological Risk Assessment and the Environmental Impact Statement (EIS) and the ICES prospectus has been used as a guide for the development of the outline of the EIS.

I am attaching a comprehensive progress report, which was recently released, as well as a copy of the most recent press release. In addition, the following webpage links can provide background information:

<http://www.nao.usace.army.mil/OvsterEISproiects/civil%20works%20proiects/Non-Native%20oyster%20EIS/homepage.asp>

<http://www.dnr.state.md.us/dnmews/infocus/ovsters.asp>

<http://www.vims.edu/abc/CA.html>

<http://noaa.chesapeakebay.net/nonnativeoysterresearch.aspx>

We will continue to keep the ICES Working Group on Introductions and Transfers apprised of the status of the EIS. The Draft EIS will be ready for review by the ICES Working Group on Introductions and Transfers in June 2008. Comments on the Draft EIS are being requested by 30-Jul-08. We look forward to receiving comments from the working group on the Draft EIS.

Thank you,

-k

Kate Meade, Project Manager
Maryland Environmental Service
259 Najoles Road
Millersville, Maryland 21108
410-729-8338
kmead@menv.com



Martin O'Malley, Governor

James M. Harkins, Director

February 29, 2008

R. Kerry Kehoe
Coastal Program Manager
Maryland Department of Natural Resources
Tawes State Office Building
580 Taylor Ave, E-2
Annapolis, MD 21401

Re: NEPA Coordination Letter: Request for information for a Programmatic Environmental Impact Statement (EIS) for the proposed introduction of the oyster species, *Crassostrea ariakensis* into the tidal waters of Maryland and Virginia to increase oyster populations.

Dear Mr. Kehoe:

The Maryland Environmental Service (MES) has been contracted by the Maryland Department of Natural Resources to assist in developing a Programmatic Environmental Impact Statement (EIS) following the National Environmental Policy Act (NEPA) process for a proposed introduction of the non-native oyster species *Crassostrea ariakensis* into the tidal waters of the Chesapeake Bay. The objectives of the EIS are presented in the June 2007 Progress Report (attached).

The Norfolk District, U.S. Army Corps of Engineers (CENAO) is the lead Federal agency, and the Maryland Department of Natural Resources (MDNR), on behalf of Maryland, and the Virginia Marine Resources Commission (VMRC), on behalf of Virginia, are the lead state agencies. Cooperating Federal agencies include the U.S. Environmental Protection Agency (EPA), National Oceanographic and Atmospheric Administration (NOAA), and Fish and Wildlife Service (FWS). In addition, the lead agencies are coordinating with the Potomac River Fisheries Commission (PRFC) and the Atlantic States Marine Fisheries Commission (ASMFC).

This letter is written to initiate and document formal coordination with the Maryland Department of Natural Resources (MDNR) regarding this proposed action. Specifically, MES is requesting on behalf of the state and Federal lead agencies, any information that may guide the study process and that may assist with meeting the requirements of the Coastal Zone Management Act, for the area that includes the Chesapeake Bay of Maryland and Virginia, and associated areas of potential impact that could possibly be affected by the proposed action or by any of the alternative actions listed in the attachment. Please provide the requested information to MES to assemble and disseminate to lead and cooperating agencies as appropriate. It would be appreciated if MES could receive this information by March 17, 2008.

A coordination letter has also been sent to the Maryland Department of the Environment and the Virginia Department of Environmental Quality in accordance with the Coastal Zone Management Act.

Thank you in advance for your assistance. Further information, such as public presentations, current research, and press releases can be found on the following web sites:

<http://www.nao.usace.army.mil/OysterEIS/>

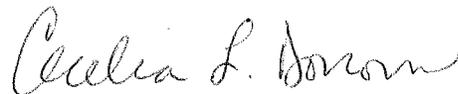
<http://www.dnr.state.md.us/dnrnews/infocus/oysters.asp>

<http://www.vims.edu/abc/CA.html>

<http://noaa.chesapeakebay.net/nonnativeoysterresearch.aspx>

Please feel free to contact me if you have any questions regarding this request. I can be reached at 410-729-8333 or by email at cdoono@menv.com or you may contact our project manager, Kate Meade, at 410-729-8338 or by email at kmead@menv.com.

Sincerely,



Cecelia Donovan
Chief, Environmental Dredging and
Restoration Division

Attachments:

June 2007 Progress Report

Cc: Mark Mansfield, CENAO
Jack Travelstead, VMRC
Tom O'Connell, MDNR



Martin O'Malley, Governor

James M. Harkins, Director

February 29, 2008

Elder Ghigiarelli, Jr.
Deputy Program Administrator
Federal Consistency Coordinator
Maryland Department of the Environment
Montgomery Park Business Center
1800 Washington Blvd, Suite 430
Baltimore, MD 21230-1708

Re: NEPA Coordination Letter: Request for information for a Programmatic Environmental Impact Statement (EIS) for the proposed introduction of the oyster species, *Crassostrea ariakensis* into the tidal waters of Maryland and Virginia to increase oyster populations.

Dear Mr. Ghigiarelli:

The Maryland Environmental Service (MES) has been contracted by the Maryland Department of Natural Resources to assist in developing a Programmatic Environmental Impact Statement (EIS) following the National Environmental Policy Act (NEPA) process for a proposed introduction of the non-native oyster species *Crassostrea ariakensis* into the tidal waters of the Chesapeake Bay. The objectives of the EIS are presented in the June 2007 Progress Report (attached).

The Norfolk District, U.S. Army Corps of Engineers (CENAO) is the lead Federal agency, and the Maryland Department of Natural Resources (MDNR), on behalf of Maryland, and the Virginia Marine Resources Commission (VMRC), on behalf of Virginia, are the lead state agencies. Cooperating Federal agencies include the U.S. Environmental Protection Agency (EPA), National Oceanographic and Atmospheric Administration (NOAA), and Fish and Wildlife Service (FWS). In addition, the lead agencies are coordinating with the Potomac River Fisheries Commission (PRFC) and the Atlantic States Marine Fisheries Commission (ASMFC).

This letter is written to initiate and document formal coordination with the Maryland Department of the Environment (MDE) regarding this proposed action. Specifically, MES is requesting on behalf of the state and Federal lead agencies, any information that may guide the study process and that may assist with meeting the requirements of the Coastal Zone Management Act, for the area that includes the Chesapeake Bay of Maryland and Virginia, and associated areas of potential impact that could possibly be affected by the proposed action or by any of the alternative actions listed in the attachment. Please provide the requested information to MES to assemble and disseminate to the lead and cooperating agencies as appropriate. It would be appreciated if MES could receive this information by March 17, 2008.

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Thank you in advance for your assistance. Further information, such as public presentations, current research, and press releases can be found on the following web sites:

<http://www.nao.usace.army.mil/OysterEIS/>

<http://www.dnr.state.md.us/dnrnews/infocus/oysters.asp>

<http://www.vims.edu/abc/CA.html>

<http://noaa.chesapeakebay.net/nonnativeoysterresearch.aspx>

Please feel free to contact me if you have any questions regarding this request. I can be reached at 410-729-8333 or by email at cdoono@menv.com or you may contact our project manager, Kate Meade, at 410-729-8338 or by email at kmead@menv.com.

Sincerely,



Cecelia Donovan
Chief, Environmental Dredging and
Restoration Division

Attachments:

June 2007 Progress Report

Cc: Mark Mansfield, CENAO
Jack Travelstead, VMRC
Tom O'Connell, MDNR



Martin O'Malley, Governor

James M. Harkins, Director

February 29, 2008

Laura McKay
Coastal Program Manager
Division of Environmental Enhancement
Virginia Department of Environmental Quality
629 East Main St.
Richmond, Virginia 23219

Re: NEPA Coordination Letter: Request for information for a Programmatic Environmental Impact Statement (EIS) for the proposed introduction of the oyster species, *Crassostrea ariakensis* into the tidal waters of Maryland and Virginia to increase oyster populations.

Dear Ms. McKay:

The Maryland Environmental Service (MES) has been contracted by the Maryland Department of Natural Resources to assist in developing a Programmatic Environmental Impact Statement (EIS) following the National Environmental Policy Act (NEPA) process for a proposed introduction of the non-native oyster species *Crassostrea ariakensis* into the tidal waters of the Chesapeake Bay. The objectives of the EIS are presented in the June 2007 Progress Report (attached).

The Norfolk District, U.S. Army Corps of Engineers (CENAO) is the lead Federal agency, and the Maryland Department of Natural Resources (MDNR), on behalf of Maryland, and the Virginia Marine Resources Commission (VMRC), on behalf of Virginia, are the lead state agencies. Cooperating Federal agencies include the U.S. Environmental Protection Agency (EPA), National Oceanographic and Atmospheric Administration (NOAA), and Fish and Wildlife Service (FWS). In addition, the lead agencies are coordinating with the Potomac River Fisheries Commission (PRFC) and the Atlantic States Marine Fisheries Commission (ASMFC).

This letter is written to initiate and document formal coordination with the Virginia Department of Environmental Quality (VADEQ) regarding this proposed action. Specifically, MES is requesting on behalf of the state and Federal lead agencies, any information that may guide the study process and that may assist with meeting the requirements of the Coastal Zone Management Act, for the area that includes the Chesapeake Bay of Maryland and Virginia, and associated areas of potential impact that could possibly be affected by the proposed action or by any of the alternative actions listed in the attachment. Please provide the requested information to MES to assemble and disseminate to lead and cooperating agencies as appropriate. It would be appreciated if MES could receive this information by March 17, 2008.

A coordination letter has also been sent to the Maryland Department of Natural Resources and the Maryland Department of the Environment in accordance with the Coastal Zone Management Act.

Thank you in advance for your assistance. Further information, such as public presentations, current research, and press releases can be found on the following web sites:

<http://www.nao.usace.army.mil/OysterEIS/>

<http://www.dnr.state.md.us/dnrnews/infocus/oysters.asp>

<http://www.vims.edu/abc/CA.html>

<http://noaa.chesapeakebay.net/nonnativeoysterresearch.aspx>

Please feel free to contact me if you have any questions regarding this request. I can be reached at 410-729-8333 or by email at cdono@menv.com or you may contact our project manager, Kate Meade, at 410-729-8338 or by email at kmead@menv.com.

Sincerely,



Cecelia Donovan
Chief, Environmental Dredging and
Restoration Division

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June 2007 Progress Report

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COMMONWEALTH of VIRGINIA

DEPARTMENT OF ENVIRONMENTAL QUALITY

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L. Preston Bryant, Jr.
Secretary of Natural Resources

David K. Paylor
Director

(804) 698-4000
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March 14, 2008

Ms. Cecelia Donovan
Chief, Environmental Dredging and Restoration Division
Maryland Environmental Service
259 Najoles Road
Millersville, Maryland 21108

RE: Scoping for the preparation of a Programmatic Environmental Impact Statement and Coastal Consistency Determination for the proposed introduction of the oyster species, *Crassostrea ariakensis* into the tidal waters of Maryland and Virginia to increase oyster populations.

Dear Ms. Donovan:

This is in response to your letter received on March 6, 2008 requesting information prior to the preparation of a Programmatic Environmental Impact Statement and Coastal Zone Consistency Determination.

Project Description

According to your letter, the goal of the Programmatic Environmental Impact Statement (PEIS) is to identify a preferred alternative or combination of alternatives for establishing an oyster population in the Chesapeake Bay that reaches levels of abundance capable of supporting harvests comparable to the harvests recorded during the period 1920 to 1970. Species to be considered include the native oyster, *Crassostrea virginica*, and the non-native oyster, *Crassostrea ariakensis*. The objective is to restore the ecological role of oysters in the Bay as well as the socioeconomic benefits of a commercial fishery.

The U.S. Army Corps of Engineers will be the lead Federal agency for the PEIS. The lead state agency in Virginia is the Virginia Marine Resources Commission and the lead agency in Maryland is the Maryland Department of Natural Resources.

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Maryland Environmental Service

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Environmental Review

The roles of the Virginia Department of Environmental Quality (DEQ) in relation to the project under consideration are as follows. DEQ's Office of Environmental Impact Review (this Office) will coordinate Virginia's review of any environmental documents prepared pursuant to the National Environmental Policy Act (NEPA) and comment to the U.S. Army Corps of Engineers on behalf of the Commonwealth. A similar review process will pertain to the federal consistency determination that must be provided pursuant to the Coastal Zone Management Act (CZMA). If the federal consistency determination is included as part of the PEIS, there can be a single review.

Federal Consistency under the Coastal Zone Management Act

Pursuant to the Coastal Zone Management Act of 1972, as amended, federal activities affecting Virginia's coastal resources or coastal uses must be consistent to the maximum extent practicable with the Virginia Coastal Resources Management Program (VCP) (see section 307(c)(1) of the Act and the Federal Consistency Regulations, 15 CFR Part 930, sub-part C). The U.S. Army Corps of Engineers must provide a consistency determination which involves an analysis of the activities in light of the Enforceable Policies of the VCP (first enclosure), and a commitment to comply with the Enforceable Policies. In addition, we invite your attention to the Advisory Policies of the VCP (second enclosure). The federal consistency determination may be provided as part of the NEPA documentation or independently, depending on your agency's preference; we recommend, in the interests of efficiency for all concerned, that it be provided together with the NEPA document and that 60 days be allowed for review in keeping with the Federal Consistency Regulations (see section 930.41(a)). Section 930.39 of the Federal Consistency Regulations and Virginia's Federal Consistency Information Package at <http://www.deq.virginia.gov/eir/federal.html> give content requirements for the consistency determination.

Project Scoping

While this Office does not participate in scoping efforts beyond the advice given herein, other agencies are free to provide scoping comments concerning the preparation of the NEPA documents for the proposed project. Therefore, we are sharing your letter with selected state and local Virginia agencies, which are likely to include the following (note: starred (*) agencies administer one or more of the Enforceable Policies of the Virginia Coastal Resources Management Program; see "Federal Consistency..." below):

- Department of Environmental Quality:
 - Office of Environmental Impact Review
 - Tidewater Regional Office*
 - Air Division*
 - Waste Division
- Department of Game and Inland Fisheries*

- Department of Conservation and Recreation:
 - Division of Soil and Water Conservation*
 - Division of Planning and Recreation Resources
- Marine Resources Commission*
- Department of Agriculture and Consumer Services
- Department of Health
- Department of Transportation
- Department of Mines, Minerals, and Energy
- Department of Forestry
- Department of Historic Resources
- Virginia Institute of Marine Science
- Hampton Roads Planning District Commission
- City of Chesapeake.

In order to ensure an effective coordinated review of the PEIS and the consistency determination, we will require 18 copies of the document when it is published. The document should include a U.S. Geological Survey topographic map as part of its information. We recommend, as well, that project details unfamiliar to people outside of your office be adequately described.

If you have questions about the environmental review process or the federal consistency review process, please feel free to call me at (804) 698-4325 or Anne Pinion of this Office at (804) 698-4488.

I hope this information is helpful to you.

Sincerely,



Ellie L. Irons, Manager
Office of Environmental Impact Review

cc: Michelle Hollis, DEQ-TRO
David Hartshorn, DEQ-NRO
Amy Ewing, DGIF
Robbie Rhur, DCR
Tony Watkinson, MRC
Susan Douglas, VDH
Ethel R. Eaton, DHR
Arthur Collins, Hampton Roads PDC



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Attachment 1

Enforceable Regulatory Programs comprising Virginia's Coastal Resources Management Program (VCP)

- a. Fisheries Management - The program stresses the conservation and enhancement of finfish and shellfish resources and the promotion of commercial and recreational fisheries to maximize food production and recreational opportunities. This program is administered by the Marine Resources Commission (VMRC); Virginia Code 28.2-200 to 28.2-713 and the Department of Game and Inland Fisheries (DGIF); Virginia Code 29.1-100 to 29.1-570.

The State Tributyltin (TBT) Regulatory Program has been added to the Fisheries Management program. The General Assembly amended the Virginia Pesticide Use and Application Act as it related to the possession, sale, or use of marine antifoulant paints containing TBT. The use of TBT in boat paint constitutes a serious threat to important marine animal species. The TBT program monitors boating activities and boat painting activities to ensure compliance with TBT regulations promulgated pursuant to the amendment. The VMRC, DGIF, and Virginia Department of Agriculture Consumer Services (VDACS) share enforcement responsibilities; Virginia Code 3.1-249.59 to 3.1-249.62.

- b. Subaqueous Lands Management - The management program for subaqueous lands establishes conditions for granting or denying permits to use state-owned bottomlands based on considerations of potential effects on marine and fisheries resources, tidal wetlands, adjacent or nearby properties, anticipated public and private benefits, and water quality standards established by the Department of Environmental Quality (DEQ). The program is administered by the Marine Resources Commission; Virginia Code 28.2-1200 to 28.2-1213.
- c. Wetlands Management - The purpose of the wetlands management program is to preserve wetlands, prevent their despoliation, and accommodate economic development in a manner consistent with wetlands preservation.
- (1) The tidal wetlands program is administered by the Marine Resources Commission; Virginia Code 28.2-1301 through 28.2-1320.
 - (2) The Virginia Water Protection Permit program administered by DEQ includes protection of wetlands –both tidal and non-tidal; Virginia Code §62.1-44.15:5 and Water Quality Certification pursuant to Section 401 of the Clean Water Act.

- d. Dunes Management - Dune protection is carried out pursuant to The Coastal Primary Sand Dune Protection Act and is intended to prevent destruction or alteration of primary dunes. This program is administered by the Marine Resources Commission; Virginia Code 28.2-1400 through 28.2-1420.
- e. Non-point Source Pollution Control – (1) Virginia's Erosion and Sediment Control Law requires soil-disturbing projects to be designed to reduce soil erosion and to decrease inputs of chemical nutrients and sediments to the Chesapeake Bay, its tributaries, and other rivers and waters of the Commonwealth. This program is administered by the Department of Conservation and Recreation; Virginia Code 10.1-560 et seq.

(2) Coastal Lands Management is a state-local cooperative program administered by the DCR's Division of Chesapeake Bay Local Assistance and 84 localities in Tidewater (see i) Virginia; Virginia Code §10.1-2100 –10.1-2114 and 9 VAC10-20 et seq.
- f. Point Source Pollution Control - The point source program is administered by the State Water Control Board (DEQ) pursuant to Virginia Code 62.1-44.15. Point source pollution control is accomplished through the implementation of:
 - (1) the National Pollutant Discharge Elimination System (NPDES) permit program established pursuant to Section 402 of the federal Clean Water Act and administered in Virginia as the Virginia Pollutant Discharge Elimination System (VPDES) permit program.
 - (2) The Virginia Water Protection Permit (VWPP) program administered by DEQ; Virginia Code §62.1-44.15:5 and Water Quality Certification pursuant to Section 401 of the Clean Water Act.
- g. Shoreline Sanitation - The purpose of this program is to regulate the installation of septic tanks, set standards concerning soil types suitable for septic tanks, and specify minimum distances that tanks must be placed away from streams, rivers, and other waters of the Commonwealth. This program is administered by the Department of Health (Virginia Code 32.1-164 through 32.1-165).
- h. Air Pollution Control - The program implements the federal Clean Air Act to provide a legally enforceable State Implementation Plan for the attainment and maintenance of the National Ambient Air Quality Standards. This program is administered by the State Air Pollution Control Board (Virginia Code 10.1-1300 through §10.1-1320).
- (i) Coastal Lands Management is a state-local cooperative program administered by the DCR's Division of Chesapeake Bay Local Assistance and 84 localities in Tidewater, Virginia established pursuant to the Chesapeake Bay Preservation Act; Virginia Code §10.1-2100 –10.1-2114 and Chesapeake Bay Preservation Area Designation and Management Regulations; Virginia Administrative Code 9 VAC10-20 et seq.

Attachment 2

Advisory Policies for Geographic Areas of Particular Concern

- a. Coastal Natural Resource Areas - These areas are vital to estuarine and marine ecosystems and/or are of great importance to areas immediately inland of the shoreline. Such areas receive special attention from the Commonwealth because of their conservation, recreational, ecological, and aesthetic values. These areas are worthy of special consideration in any planning or resources management process and include the following resources:
- a) Wetlands
 - b) Aquatic Spawning, Nursery, and Feeding Grounds
 - c) Coastal Primary Sand Dunes
 - d) Barrier Islands
 - e) Significant Wildlife Habitat Areas
 - f) Public Recreation Areas
 - g) Sand and Gravel Resources
 - h) Underwater Historic Sites.
- b. Coastal Natural Hazard Areas - This policy covers areas vulnerable to continuing and severe erosion and areas susceptible to potential damage from wind, tidal, and storm related events including flooding. New buildings and other structures should be designed and sited to minimize the potential for property damage due to storms or shoreline erosion. The areas of concern are as follows:
- i) Highly Erodible Areas
 - ii) Coastal High Hazard Areas, including flood plains.
- c. Waterfront Development Areas - These areas are vital to the Commonwealth because of the limited number of areas suitable for waterfront activities. The areas of concern are as follows:
- i) Commercial Ports
 - ii) Commercial Fishing Piers
 - iii) Community Waterfronts

Although the management of such areas is the responsibility of local government and some regional authorities, designation of these areas as Waterfront Development Areas of Particular Concern (APC) under the VCRMP is encouraged. Designation will allow the use of federal CZMA funds to be used to assist planning for such areas and the implementation of such plans. The VCRMP recognizes two broad classes of priority uses for waterfront development APC:

- i) water access dependent activities;
- ii) activities significantly enhanced by the waterfront location and complementary to other existing and/or planned activities in a given waterfront area.

Advisory Policies for Shorefront Access Planning and Protection

- a. Virginia Public Beaches - Approximately 25 miles of public beaches are located in the cities, counties, and towns of Virginia exclusive of public beaches on state and federal land. These public shoreline areas will be maintained to allow public access to recreational resources.
- b. Virginia Outdoors Plan - Planning for coastal access is provided by the Department of Conservation and Recreation in cooperation with other state and local government agencies. The Virginia Outdoors Plan (VOP), which is published by the Department, identifies recreational facilities in the Commonwealth that provide recreational access. The VOP also serves to identify future needs of the Commonwealth in relation to the provision of recreational opportunities and shoreline access. Prior to initiating any project, consideration should be given to the proximity of the project site to recreational resources identified in the VOP.
- c. Parks, Natural Areas, and Wildlife Management Areas - Parks, Wildlife Management Areas, and Natural Areas are provided for the recreational pleasure of the citizens of the Commonwealth and the nation by local, state, and federal agencies. The recreational values of these areas should be protected and maintained.
- d. Waterfront Recreational Land Acquisition - It is the policy of the Commonwealth to protect areas, properties, lands, or any estate or interest therein, of scenic beauty, recreational utility, historical interest, or unusual features which may be acquired, preserved, and maintained for the citizens of the Commonwealth.
- e. Waterfront Recreational Facilities - This policy applies to the provision of boat ramps, public landings, and bridges which provide water access to the citizens of the Commonwealth. These facilities shall be designed, constructed, and maintained to provide points of water access when and where practicable.
- f. Waterfront Historic Properties - The Commonwealth has a long history of settlement and development, and much of that history has involved both shorelines and near-shore areas. The protection and preservation of historic shorefront properties is primarily the responsibility of the Department of Historic Resources. Buildings, structures, and sites of historical, architectural, and/or archaeological interest are significant resources for the citizens of the Commonwealth. It is the policy of the Commonwealth and the VCRMP to enhance the protection of buildings, structures, and sites of historical, architectural, and archaeological significance from damage or destruction when practicable.