2321 Bixler Drive
Suffield, Ohio 44260
17 December 2002

Molly Holt
U.S. Department of Commerce
NOAA
1305 East-West Highway, Room 6111
Silver Spring, Maryland 20910

Dear Ms Holt:

I am writing about the Barnes Nursery dike and channel dug in wetlands adjacent to Lake Erie and Sheldon Marsh. The State of Ohio denied the Coastal Consistency of the project, and Barnes Nursery appealed the denial to the federal government. I support the State of Ohio's denial and urge you to refuse the appeal.

The Barnes Nursery dike and channel project has ignored all state and federal regulations from the time it was done in 2000. The only reason that the violation continues to this day is because (1) the U.S. Army Corps of Engineers mistakenly issued an after-the-fact Section 404 permit and (2) Barnes Nursery's consultants and lawyers continue to find ways to delay or circumvent the proper agencies and permits by filing appeals such as the one pending before you. In the meantime, Sheldon Marsh lies ruptured and bleeding. Restoration should have taken place long ago.

Plainly the project is illegal. It is not authorized and it is non-compliant with Ohio's coastal management plan. The dike and channel would never have been allowed if the proper agencies had been consulted in the initial planning stages.

The Barnes Nursery project is <u>not</u> consistent with the objectives or purposes of the Coastal Zone Management Act for at least three reasons: (1) It does not further the national interest in anyway whatsoever; (2) there are significant adverse coastal effects, both separate and cumulative; and (3) water for nursery stock could be purchased or obtained from deep wells instead of altering a public treasure such as Sheldon Marsh State Nature Preserve.

As a wetlands scientist with over 30 years of experience in freshwater ecosystems, and having worked extensively in the field in the Lake Erie basin, I can assuredly say that restoration to the original condition of the Sheldon Marsh wetlands complex is the only option to bring this area into consistency with Ohio's Coastal Zone Management Plan. I believe the case cannot be made to allow this illegal project to remain on the landscape. The solution is simple: the Barnes Nursery appeal to NOAA must be denied.

Thank you for your consideration.

Sincerely,

Jay Abercrombie

Jay Abercrombie, Ph.D.

Patricia S. Krebs
408 Kiwanis Avenue
Huron, Ohio 44839
419 433-2132

December 16,2002

Molly Holt, Attorney-Advisor NOAA
Office of the Asst Gen Council for Ocean Services
1305 East-West Highway Room 6111
Silver Springs, MD 20910

RE: Barnes Nursery appeal, Sheldon Marsh, Ohio

Dear Ms. Holt:

Public comment has been allowed for input on the Barnes Nursery appeal of the Ohio Department of Natural Resources denial of Coastal Consistency regarding the dike and channel project dug in the Sheldon Marsh wetlands complex, July of 2000. I ask you to decide in favor of the State of Ohio's decision since this project is far from consistent with the policies of the Coastal Zone Management Plan (CZMP) now in effect to protect our nations coastal resources.

As a nearby landowner I was incensed when we first saw the construction in the marsh without prior knowledge. We were aware of construction on the neighboring property in the fall of 1999 and the spring of 2000 but never expected Sheldon Marsh State Nature Preserve was in danger. Our main reason for purchasing our 25 acres to the east of the Barnes project, was to protect the area and become a privately owned natural buffer to the nature preserve which surrounds us on two sides. We were further dismayed to find the wetlands laws in place to protect these few and rare coastal areas, (this one publically owned) were so easily circumvented. The part played in this project by the Buffalo District of the Army Corps of Engineers (ACE) was the most disturbing.

Information on how this construction could be permitted in a top quality category III wetland was initially referred by the ACE to a 45 day FOIA request as the dredging and fill continued in prime growing season. Applying pressure on the ACE, state agencies, legislators, and FOIA requests, produced information even more alarming. The Clean Water Act regulations did not allow this action in a category III wetlands and the ACE permit was not applicable. The channel was thirty feet wider than the erroneous permit allowed and matched the previously dug channel on the Barnes property, also without permits. This permit applied for one day and granted the next allowed no time for scrutiny. The information on the pre- construction meetings was scarce or lost on ACE computer files. The information re-written from recollections of the ACE field staff Gary Buck, was incorrect. Mr. Buck in a previous dredge and fill violation in 1992 in the same area and involving one of the permit partners, Charles Corso, enforced restoration having determined the area to be wetlands Army Corps memos acquired through FOIA requests mentioned legal actions against citizens and asked US Fish and Wildlife to shred papers since they had decided to go with the NWP27, 12 days after it went into effect in Ohio. The Army Corps permit issued to CCCMB limited partnership did not have any signed authorizations from the partners until October 2000. One

partner, Cedar Point Inc., denied any participation. There has never been a coastal consistency agreement signed by Barnes and no other authorizations required on the improper ACE permit were ever sought until the after- the- fact 404 Permit application in March of 2001. All authorizing agencies have now recommended denial of this permit. The army Corps has advocated the applicant, perhaps to justify their errors, and continues to do so in their inappropriate issuance of a provisional 404 Permit while a State coastal consistency denial was under consideration. I also question the ACE discounting 1,200 public comments against this project.

Barnes Nursery's dike and channel project, under whatever name they have morphed it into, (deep water habitat and nesting islands, hydrology restoration or water storage for agricultural use) is not consistent with coastal plans for the environmental success of the habitat and ecosystem of Sheldon Marsh. The extensive adverse effects to the environment include water quality issues, plant and animal life changes, hydrology variances, sedimentation, turbidity and erosion problems, and disruption of the once naturally functioning filtration and marsh wetlands processes. An earthen wall, the dike, and a water wall, the channel has stopped the landward and lake ward free flow of waters. The deeper water creates habitat not previously existing in the marsh, inviting and fostering non-native invasive species. The fish spawning and aquatic life has been altered effecting commercial and sport fishing. The deeper channel also acts as a sump in low lake level times de-watering other areas of the marsh complex.

There is no national interest served by this business venture designed to benefit an individual's financial gain. Historically the water used without a restricting dike and channel was sufficient for the acreage used by the Nursery. Best Business practices for their growing interests must include stewardship of the lands and waters under their control and compliance with the laws in place to benefit every citizen's future interests. Alternatives do exist to supplement the nursery's water needs especially if used in combinations with the free flowing marsh, which existed before the dike and channel project. Restoration of Sheldon Marsh wetlands complex to its pre construction condition is essential to the survival of this area as the rare coastal ecosystem it is, special enough to be designated as a State Nature Preserve.

Please support the Ohio Department of Natural Resource's denial of coastal consistency and do not allow a precedent to be set with this bad project in the wrong place, which could undermine all wetlands protective laws in the nation.

Thank you for the opportunity to comment on this issue
Sincerely,

Patricia S. Krebs

Patricia S. Krebs
408 Kiwanis Avenue
Huron, Ohio 44839
419 433-2132
pskherarts1@aol.com

Photos taken of site

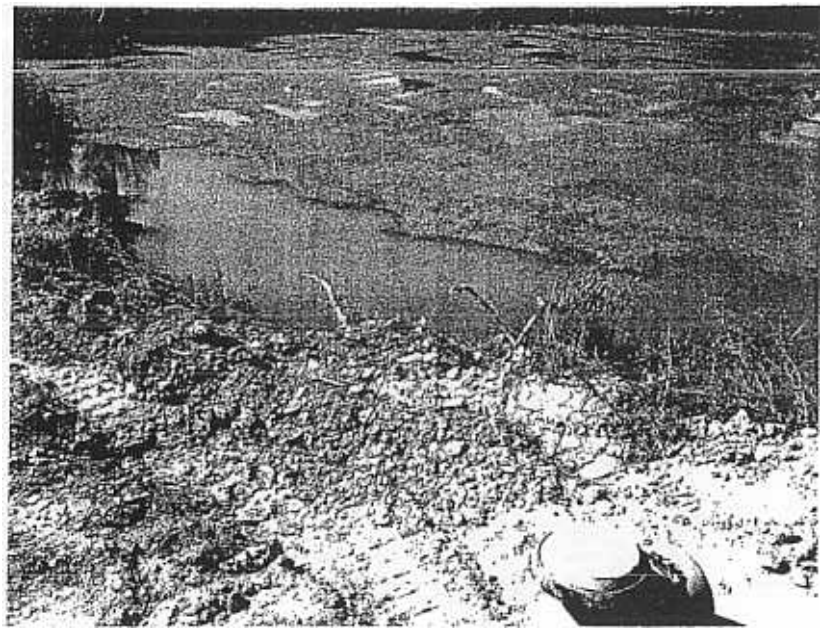
Summer 1991

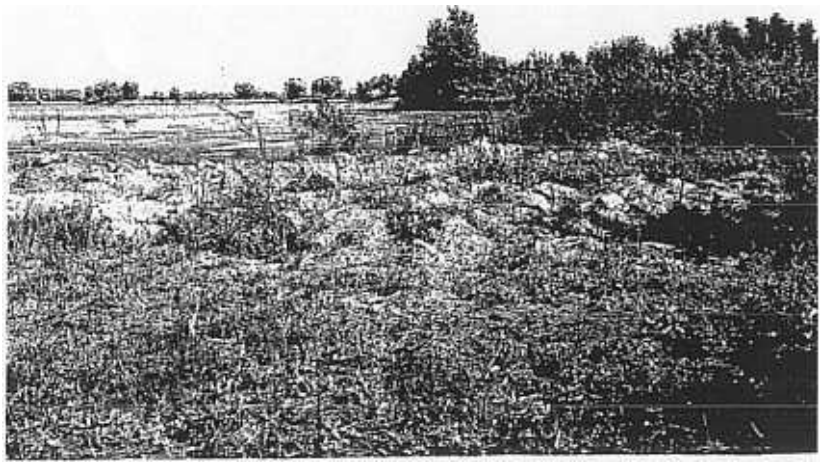
ACE Violation # 92-475-604

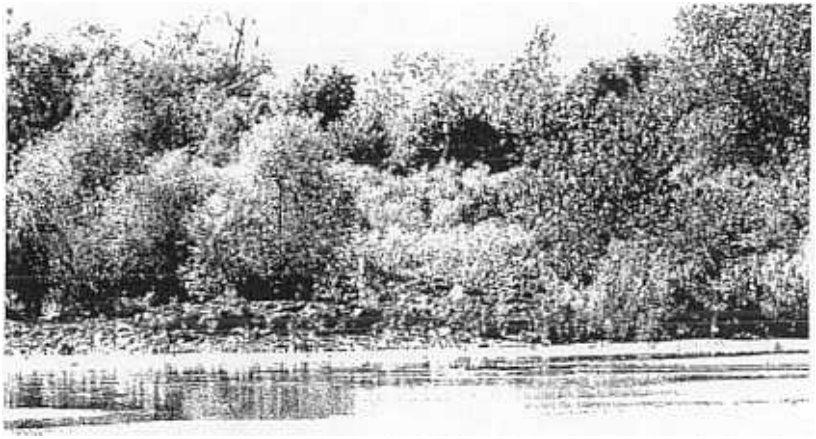
Charles Corso

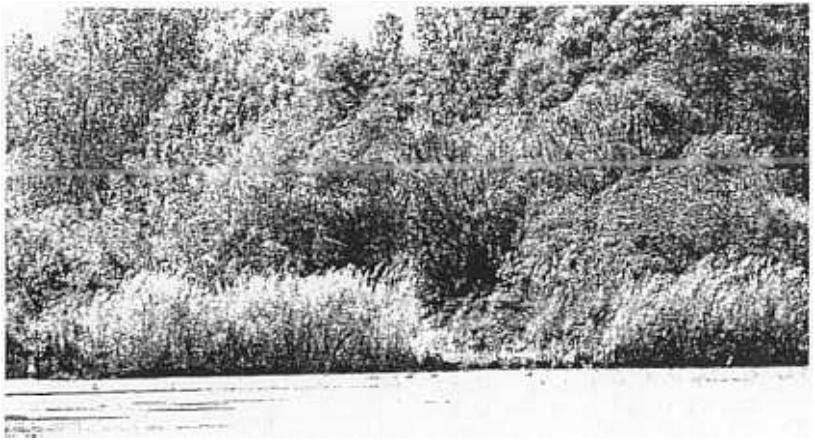
Erie County Ohio

Violation section 10/404









Lester W. Swaney
206 Castalia Ave.
Sandusky, OH 44870

December 16, 2002

Molly Holt
U.S. Department of Commerce (NOAA)
1305 East-West Highway, Room 6111
Silver Spring, MD 20910

Dear Ms. Holt:

Re: Barnes Nursery Project
Sheldon Marsh State Nature Preserve

We are writing to urge your department to support the State of Ohio's denial of Coastal Consistency of the Barnes Nursery Project dug in Sheldon Marsh wetland complex, which denial has been appealed by Barnes Nursery.

It is our understanding that the following are requirements which must be satisfied to be consistent with the objectives or purposes of the Coastal Zone Management Act.

The activity must further the national interest and/or furtherance of the national interest must outweigh adverse coastal effects.
COMMENT: This project not only does not further the national interest, it is harmful thereto. The wetlands being degraded are a state nature preserve owned by the people of the State of Ohio. The project did not have appropriate authorization, and construction, which was completed without proper permits or with permit(s) obtained through subterfuge, alters the hydrology of the free flowing marsh system. Only if environmental degradation in the form of sedimentation, turbidity, pollution and loss of aquatic habitat are in the national interest can this project be termed so.

There is no reasonable alternative available which would permit the activity to go forward consistently with the management program.
COMMENT: There are several alternatives, e.g.: deep wells, ponds, and purchase of county water, free flowing water when available. These have not been thoroughly investigated. They may, indeed, not be as profitable for the business involved; however, the citizens of Ohio and, indeed, the U.S. would be poor stewards of natural resources if wetlands are degraded, coastal damage permitted, and pollution encouraged for the purpose of increasing the profitability of one landscaping/nursery business.

Barnes Nursery has shown contempt for the laws and regulations of the State of Ohio and national agencies, for natural resources and for the citizenry in illegally commencing and further pursuing this project.

We request that the State of Ohio's denial of Coastal Consistency be upheld.

Yours truly,

Lester W. Swaney

Althea J. Swaney

December 12, 2002

Molly Holt
U.S. Department of Commerce
(NOAA)
1305 East-West Highway, Room 6111
Silver Spring, MD 20910

Dear Ms. Holt:

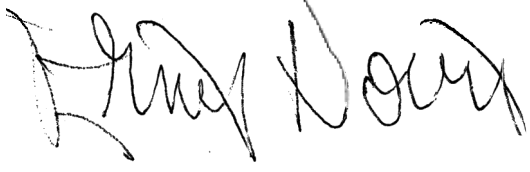
I am writing to support the State of Ohio's denial of Coastal Consistency of the Barnes Nursery project. I was amazed to find that this issue has remained unresolved for such a long period of time. My wife and I moved from Huron over two years ago and thought, by this time, the marsh would have been restored to its natural condition.

In a previous note on this subject I related the importance those of us living in the arid West place on water. We have had to be very practical and are often forced to modify the natural setting to obtain water to support the increased inhabitants. However, even with our desperate need, I don't think anything approaching the Barnes project would be accepted here. There are some issues that are so clear as to their negative environmental impact that it is obvious to the great majority when something must be done. The Barne's project, in my layman's opinion, is a clear case of "going too far" to obtain water.

My friends living in the Huron area have stayed much closer to this issue and have provided significant data to support reasons for stopping the Barne's project and restoring the marsh to it's "pre-excavation" condition. I will not reiterate all of these very sound arguments since I'm sure you are well aware of them. My position is much more simplistic. Dredging and permanently altering a precious resource like Sheldon Marsh is clearly a bad thing to do. To do such a thing would require overwhelming evidence that the good for all the citizens of Ohio required the canal. This is clearly not the case.

Thank you for giving me the opportunity to express my opinion.

Ernie Norris
1584 Ridge Road
Durango, CO 81303



Molly Holt
U.S. Department of Commerce (NOAA)
1305 East-West Highway, Room 6111
Silver Spring, MD 20910

Dec 11, 2002

Dear Molly,

I have been reading, with interest, the goings on with the "Barnes Nursery alters Sheldon Marsh" issue. It upsets me very much that someone would tamper with my (as a taxpayer and user of the area) wetlands for individual profit. The more I read about the way the whole project was handled the more angry I get.

Please do not allow Barnes Nursery to build their channel and dike at ~~Sheldon~~ near Sheldon Marsh. I think they should be fined for tampering with such a sensative eco-system. Their project is not a benefit to the National interest, it is only a benefit to their pockets.

Thank you for your time,

Jo Ellen Cuthbertson
421 Wayne St.
Sandusky, Ohio 44870
419-625-1189

U.S. DEPARTMENT OF COMMERCE
Secretary Donald L. Evans
Office of the Secretary
Room 5854
U.S. Department of Commerce
14th & Constitution Ave. NW
Washington, D.C. 20230

Dear Secretary Donald L. Evans,

On behalf of many concerned residents of Westchester, we urgently request your assistance in asking for an extension of the public comment period from the Department of Commerce for the Millennium Pipeline consistency appeal until January 15, 2003 (due to the holidays).

This request stems from the misinformation and lack of notification for several Southern Westchester Communities that may be impacted by the alternate routes brought forth in the New York State Department of State (DOS) brief. The Millennium Pipeline Company is engaging in the strategy of pitting community against community in Westchester County by writing and meeting with officials and citizens that would be potentially impacted by the DOS alternatives. Millennium notified certain communities the day before the November 13th public hearing in Tarrytown in order to stage public opposition on that day.

Communities have the right to be informed about this very serious process in order to properly comment on the potential impacts. In April of 2001, the delegation successfully influenced an extension from FERC of the comment period due to similar circumstances. It is imperative that communities that may be impacted by the alternate routes of the Millennium Pipeline be awarded the same courtesy.

Sincerely,

David and Jeannette Kurie
47 Sunset Drive Croton-on-Hudson, NY 10520

L. Scot Duncan
1530 Willow Drive
Sandusky, OH 44870
ph. 419-627-2945 fax 419-625-2904

December 8, 2002

Molly Holt, Attorney-Adviser NOAA
Office of the Asst Gen Council for Ocean Services
1305 East-West Highway Room 6111
Silver Springs, MD 20910

RE: Barnes project restoration - Sheldon's Marsh, Ohio

Dear Ms. Holt:

This letter is to express my personal and professional concern over the Barnes project in Sheldon's Marsh. I believe that the Barnes appeal should be denied because it is inconsistent with the Coastal Zone Management Act and that Barnes should be required to restore the damaged wetlands to their previous natural condition.

I have previously submitted detailed technical letters for both the Army Corps evaluation and the Ohio EPA evaluation of this project. Copies are enclosed for your reference. As an engineer and a shoreline resident living near Sheldon's Marsh, I have studied the dynamics of the shoreline and the Marsh for several years in an attempt to understand shoreline erosion trends in the area. The following is a summary of my conclusions regarding the Barnes project after considerable in-depth analysis of the alternatives.

1) There is no national, state or even local interest being served by the project. The economic necessity claimed by Barnes is illusory. Barnes Nursery is a multifaceted agribusiness with multiple area locations and many revenue streams not associated with the container farm for which they plan to use the water from the project. The majority of their employees work on installation and maintenance crews which are unaffected by the container farm. Container farms are common throughout Ohio and many exist without access to Lake Erie. There is no reason to endanger one of the few remaining natural coastal wetlands along the Lake Erie shore to support a nonessential business which could be readily relocated elsewhere in Erie County where it would cause no harm.

2) The flawed science that was provided in support of this project has no basis in fact or theory. It is based on average conditions, steady state hydrology and other assumptions that do not exist in the real world of Sheldon's Marsh. In its conditional approval of the project, the Army Corps of Engineers fell victim to this logic and lost sight of the fact that the water levels in Sheldon's behave much the

same as a tidal inlet. Channelizing Sheldon's Marsh is much the same as the channelization of the Florida Everglades, except on a smaller scale. Periods of low water during the past two years have illustrated the complex patterns of drainage which are being destroyed by the Barnes project.

Recent photos show that under low lake level conditions the Barnes intake channel remains full while the adjacent marsh has been drained dry. Since the channel is isolated from the lake, the water in the channel can only come from the higher elevations of the marsh. It is critical that the Barnes channel not be allowed to remain in place so that the natural marsh pools can be restored. The importance of examining the flows and pools of water during low water periods (not under average conditions) cannot be over-emphasized.

The Barnes analysis looks only at long term averages and concludes that the lake level controls the hydrology in the marsh. Under average conditions, the marsh does remain flooded. However, if the lake level always remained high enough to continuously flood the marsh and the intake channel, there would be no excuse for the intake channel or the proposed "feeder channel" since there would always be water throughout the marsh. It is the periodic changes in water levels that make the marsh work. It took nearly a century for scientists and politicians to understand the damage that was done through channelization of the Everglades. It is now costing billions to repair. There is no excuse for allowing similar damage to occur at Sheldon's only to decide later that it must be repaired.

3) Finally, there are cost effective alternatives to the proposed plan. Calculations indicate that the water supply rates that Barnes claims to need are sufficient to establish a rain forest on its 15 acres of container farm. With the application of proper conservation measures, the water requirements could be drastically reduced and satisfied with a small pipeline, a new well, or city water. Alternatively, the container farm can be moved to other Barnes properties in the area where water can be obtained without endangering one of the last remaining natural coastal wetlands on the south shore of Lake Erie.

********

I am confident that NOAA will see the flaws in the scientific and economic analyses presented by Barnes and uphold the State of Ohio's denial of the permit.

Very truly yours,

L. Scot Duncan

L. Scot Duncan

L Scot Duncan
P.O. BOX 1320 Sandusky, OH 4487
Ph. 419-627-2945 Fax 419-625-2904
e-mail scotduncan@alum.mit.edu

June 4, 2001

U. S. Army Corps of Engineers
Attn: Michael G. Montone
1776 Niagara Street
Buffalo, NY 14207-3199

Re: Application 2000-02170(1 (Barnes Nursery Project)

Dear Mr. Montone:

This letter is to urge you to deny the proposed application until it is modified to avoid unnecessary environmental risks. There are feasible alternatives to the proposed project which meet the applicant's stated business needs and comply with Ohio law without endangering the surrounding environment. Your review of the economic and environmental tradeoffs involved should lead to the conclusion that:

- There are equally cost effective solutions to the applicant's business requirements which avoid potentially harmful environmental effects.
- The proposed project may produce irreparable harm to an environmentally sensitive area.
- The claimed environmental benefits are illusory.
- There is no indication that the applicant has considered alternatives or has attempted to comply with Ohio law as required by 33 CFR 325.1(d)(7) and 33 CFR 325.1(d)(1).

## THE APPLICANT'S BUSINESS NEEDS

The application states that "The proposed project will reestablish a portion of the former channel that once flowed through the east bay in the vicinity of Barnes Nursery property, thereby providing a supply of irrigation water for nursery stock." The "Economic Justification" section of the application states that "without access to Sandusky Bay water, the nursery cannot survive." This implies that refusal of the permit will put the nursery out of business. No justification for this assertion was presented.

The application does not specify how much water is needed or what alternatives were investigated. A Sandusky Register article on January 4, 2001, reported that the nursery requires 350,000 gallons of water per night. This volume of water can be readily provided by an irrigation well or a feed pipe from deep water at little increase in operating cost since the water must be pumped anyway.

The specified water requirement (350,000 gallon per night) is the equivalent of about 1 inch of rain per week for the total area of the site, including parking lots, buildings, undeveloped land, etc. This indicates an intention to significantly over water the nursery stock areas. The nature of a nursery operation involves feeding container-grown and balled plants to maintain them in top condition prior to sale. One can reasonably assume that the excess nutrients from such an operation will be washed off the stock and will find their way back into the adjacent wetlands. There is also a concern regarding runoff from the lawn and landscape chemical application businesses which the applicant conducts from the site.

## OTHER CANAL WORK RECENTLY COMPLETED BY THE APPLICANT

A comparison of aerial photos of the site taken in 1997 and 2000 indicate that the applicant had dug a large canal directly connected to the wetlands and extending deep into the nursery area. It is unclear from the notice if this canal is a part of the project. If it is, it is not addressed in the application. If it is not, the issue arises of when and how was it permitted.

Whether it was permitted or not, the canal will definitely have a direct effect on the adjacent wetlands. If it remains connected to the wetland, this canal provides a direct link between the nutrients used in the nursery area and the adjacent wetland, creating the equivalent of an intravenous feed system for undesirable nutrients. It also increases the "prism" (drainage volume) of the wetland, thereby increasing currents and exacerbating erosion in the wetland and the adjacent Sheldon's Marsh Inlet and adjacent beaches.

## UNDERSTANDING THE HYDROLOGY OF THE IMPACTED AREA

The application describes the nature of the activity as:

- Restoration of former hydrologic circulation
- Establish new avifauna habitat on the barren mudflat
- Provide (channelized) deepwater habitat
- Promote development of coastal wetland on barren mudflat

The intentions in this activity are misguided on all points. The "restoration" activities are aimed at restoring features lost through

"sedimentation and wave attack." The justification is based primarily on extracts from reports of Lake Erie shore erosion studies dating from the 60's and 70's. Unfortunately, these studies did not address the present conditions in Sheldon's Marsh. First, the waters in the marsh are mostly quiescent and are certainly different from open lake conditions. Many of the "facts" cited relate only to open lake conditions. Second, the configuration of the marsh has changed significantly since the studies were conducted.

Two researchers have published in-depth studies focused specifically on Sheldon's Marsh. The most recent study, which is most useful in evaluation of the current proposed project, was Thomas Bray Jr., The Sedimentology and Stratigraphy of a Transgressive Barrier at Sheldon's Marsh State Nature Preserve, Erie County Ohio , University of Akron Master's Thesis, 1988. Bray produced an excellent pictorial representation of the evolution of Sheldon's Marsh from 1937 through 1988. The position of the barrier beach has remained relatively stable from 1988 until the present. Bray's exhibit is reproduced as Attachment 1. A 1997 aerial photo of the area is presented in Attachment 2. The exhibit shows how the barrier beach was continuous until 1972 at which time it was breached and a new permanent inlet was formed, feeding the portion of Sandusky Bay east of the 1957 Cedar Point Causeway. Bray recognized the similarities between the Sheldon's barrier beach and transgressive barrier beaches on the east coast and the Gulf of Mexico. At Sheldon's, wind "set-ups" perform exactly the same function as lunar tides along ocean coasts, creating reversing flows from the lake to the bay as the local lake level increases or decreases.

The earlier researcher to study Sheldon's in depth was Edwin Moseley. His study, entitled Formation of Sandusky Bay and Cedar Point was published in 1904 and pre-dates all three of the roads which the Boeckling Company constructed across the marsh and the bay. Moseley also recognized the tidal equivalence of the wind driven changes in lake levels. Moseley said that the channels in the marsh "may be compared to the tidal inlets in the salt water marshes."

Attachment 3 is a 1939 aerial photograph of the area obtained from the Erie County Engineer's Office. The photo reveals the configuration of the marsh during the period when Sheldon's was isolated from the open lake by the barrier beach and from Sandusky Bay by Boeckling's second road (Willow Road) constructed in 1919. This period lasted until the beach was permanently breached in 1972. The Black Channel during this period was a narrow stream immediately behind the barrier beach.

Since the 1972 permanent breach of the barrier beach, the tidal flow into Sheldon's has been directly into the lake rather than through the bay as it had been for several centuries previously. Interestingly, Moseley had

determined that the drainage creeks flowing from the area had discharged directly into the lake as late as the 17th century before the formation of the Black Channel.

## DETRIMENTAL EFFECTS OF THE PROPOSED ACTIVITIES

With that as background, we can now examine the merits of the proposed "restoration." The first question becomes "Restoration to what?" The applicant has stated that the Black Channel used to flow near his property and that the proposed activity is required to restore it. However, a review of aerial photographs from 1939, 1958, and 1964 do not reveal any indication of the channel anywhere near the applicant's property. The net effect of the formation of Sheldon's Inlet over the last 25 years was probably to deepen any pre-existing channel rather than fill it in as the application suggests. It is unclear how/why additional channels are required to provide additional deep water habitat. In fact, attempts to alter natural channels by changing the prism are likely to upset the present flow balance and serve to destroy, rather than create, habitat.

## IMPACT ON SHORELINE EROSION

In addition to having a negative impact on the hydrology of the marsh itself, the proposed increase in the prism is likely to adversely affect the Lake Erie shoreline to the northwest of the Sheldon's Inlet which has been highly stressed since the formation of Sheldon's Inlet. In The Evolving Coast, Richard A. Davis Jr. examines the formation and behavior of barrier islands. Davis says that three conditions are necessary to form a barrier island such as the one at Sheldon's: 1) sediment, 2)transport agents, and 3) an accumulation site. All three must have been present at Sheldon's for the beach to re-form during the 1980's.

The sediment to rebuild the Sheldon's barrier beach in the 80's can only have come from the area to the northwest along the Cedar Point spit. The shoreline to the East of Sheldon's, being fully armored, cannot be a significant source of sediment. The only available sediment in the area for the reformation of the barrier beach was located along the beach to the northwest of the inlet.

The transport agent for the process is the periodic northerly storm which produces a longshore current counter to the average littoral drift. The average littoral drift current along Cedar Point generally flows to the northwest, away from the inlet. Since the average littoral flow was to the northwest, (away from the Inlet) the erosion of the Cedar Point beach was assumed to be independent of the rebuilding of the bar at Sheldon's by shoreline researchers. For the most part, their research focused on overall

trends in shoreline erosion and not on localized anomalies like Sheldon's inlet.

As vividly shown in the Buffalo District's Lower Great Lakes Erosion Study Cedar Point web page, the sand beach which formerly protected the entire length of the Cedar Point is now noticeably absent at the southeast end of the spit and residents, as the Corps observes, are "fighting an obvious battle with flooding and erosion hazards and doing what they can to protect their property and the roadway." The Buffalo District's web page is reproduced as Attachment 4.

The recent private construction of a minibreakwall about a mile northwest from the inlet has demonstrated that there is a connection. Due to low water levels, the area between the new breakwall and the shore has filled with sand, forming a groin-like shore feature. During a northerly storm in March, 2001, the beach profile to the southeast of the structure showed the characteristics of a littoral flow towards the inlet with distinct erosion of the beach "down drift" of the structure. The pattern is shown in Attachment 5. This "signature" is one which the Corps' literature uses to identify significant long shore movement of sediment.

Based on the above, it should be assumed that any increase in the Sheldon's Marsh prism with create a corresponding increase in the well recognized erosion problems along the Cedar Point spit. As the prism increases due to dredging, the currents increase proportionately, since more water must flow in and out of the area to maintain an equilibrium with the lake level. This reason alone, should be sufficient for rejection of the application.

IMPACT ON WILDLIFE HABITAT

The barren mudflats which the applicant wishes to "restore" are presently feeding grounds for a wide variety of shorebirds. Thus, the proposed "restoration" for one purpose becomes destruction for another. The potential avian visitors to the mudflats include the piping plover. The (final) designation of Sheldon's Marsh as a Critical Habitat for the piping plover was announced by the U.S. Fish and Wildlife Service on May 3, 200 The inland boundary for critical habitat area was set at 500 meters inland from the normal high water line, placing a large portion of applicant's property in the critical habitat area.

The application also talks about silting and wave induced erosion occurring at the same time. However, there does not seem to be any data to quantify that any change has occurred and it is difficult to see how both could occur simultaneously. The waters of Sheldon's Marsh are largely

quiescent. With little depth outside of the channels and minimal fetch, wave action in the marsh does not create significant erosion. This can be readily verified by comparison of aerial photos from various time periods.

## CONSIDERATION OF ALTERNATIVES AND CONFORMANCE WITH OHIO LAW

While the above discussion has focused on the technical and environmental inadvisability of the project, there are also some administrative and procedural issues which were ignored in the implementation completed to date. These include the lack of economic analysis of the alternatives and a need to comply with the submerged land lease laws of the State of Ohio.

From the application, it is unclear if any alternatives were even considered. The applicant is in the best position to provide the Corps with the information needed to consider the cost benefit tradeoffs of alternatives. For example, using drip irrigation with far less water requirements and runoff. Such an approach would avoid investment, cut runoff, and save energy - all at the same time. Other possible approaches include drilling a well or running a pipe to open water to avoid affecting the Sheldon's Inlet prism with wasteful and ill-advised deepwater channels.

Ohio Revised Code §§1506.10 and 1506.11 specify that a submerged lands lease is required for any improvement or portion thereof that occupies land lakeward of where Ordinary High Water Mark intersects the natural shore prior to placement of any fill or structures. Since the applicant has indicated that the mudflats are below OHWM, a submerged lands lease is required by Ohio law for the structures/fill to be placed thereon.

The State of Ohio also has a ten year old program requiring users who have the capacity to draw more than 100,000 gallons per day from either the surface waters or the aquifers of the state to register and report their usage under Ohio Revised Code 1521.16. The applicant has neither registered or reported any withdrawals according to state records.

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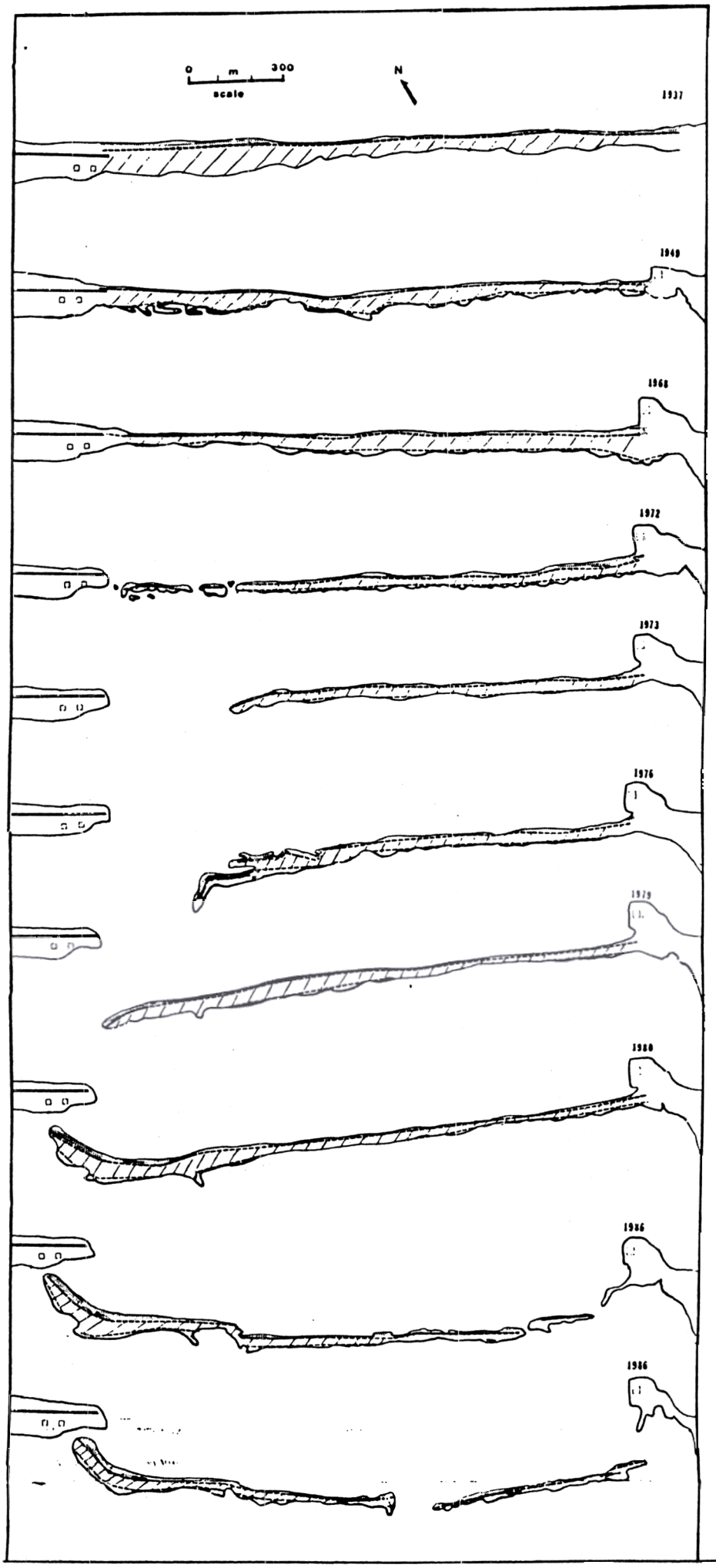
In summary, the business objectives of the proposed project can be met by alternative approaches which have less environmental risk. The proposed approach carries significant potential for environmental damage, both to the marsh and to the adjacent lake shoreline. In addition, it does not appear that the application meets the requirements included in the Code of Federal Regulations for consideration of alternatives and compliance with state law.

As an alternative to the proposed modification of the marsh, the Corps might suggest that the applicant consider alternate approaches for meeting his business needs, such as a well or an intake pipe from deep water. Such alternative approaches can meet the nursery's business requirements without harming the environment. Alternatives selected would still require compliance with Ohio Revised Code §1521.16 (Water Withdrawal Facility Registration). If the intake pipe option is selected, a leasing arrangement under ORC §§1506.10 and 1506.11 may be required.

As a concerned citizen, I thank you for your consideration on this matter of critical importance to the Sheldon's Marsh environment.

Very truly yours,

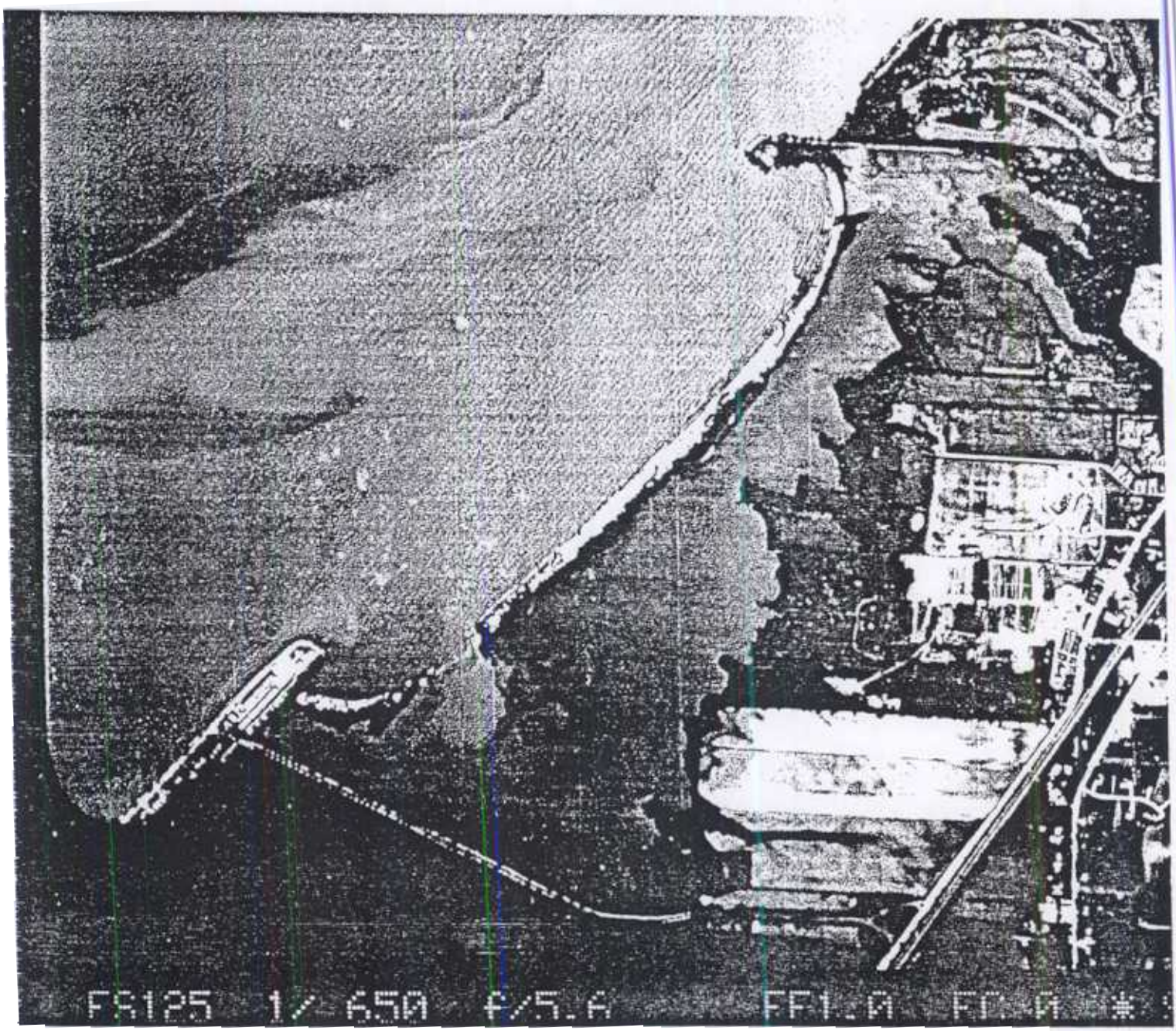
L. Scot Duncan




ATTACHMENT 1
SHELDON BARRIER BEACH
EVOLUTION FROM 1937 TO 1986
(FROM BRAY)

Figure 37. Changes in morphology and position of Sheldon's Marsh barrier from 1937 to 1986.

ATTACHMENT 2
SHELDON'S MARSH 1997




ATTACHMENT 3
SHELDON'S MARSH 1939

# Lower Great Lakes Erosion Study

ATTACHMENT 4

## U.S. Army Corps of Engineers - Buffalo District

What's New?

Home

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Study Team

Data Collection

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CZM Tools

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Presentations

U.S. Army
Corps of Engineers
Buffalo District
1776 Niagara Ave.
Buffalo, New York
14207
Phone: (716) 879-4257

## Cedar Point - Sheldon Marsh, Ohio

### General Description / Location

Guarding the City of Sandusky, Ohio and Sandusky Bay, Cedar Point is a large heavily developed barrier beach complex, perhaps best known for the Amusement Park located at it's north end. The Point is accessible from Sandusky via the Cedar Point Causeway, and from the east, via the Cedar Point Chaussee (Sandusky USGS Topo Map).

### Geological Characteristics

Cedar Point is heavily developed and much of it's natural condition has been obscured by development and shore protection construction. The southeast portion of the barrier is characterized by a narrow neck of development, fronted by the Cedar Point Chaussee Road and a huge armorstone revetment (Photo 1). There is no beach in this area. Moving north toward the Park, beach deposits begin to occur and reach a maximum width of around 21m (Photos 2-4). It would appear to dissipate again closer to the Park. The Park itself is heavily developed and very little natural shoreline is present.

### Coastal Hazards / Development

Residents here are fighting an obvious battle with flooding and erosion hazards and are doing what they can to protect their property and the roadway. Given the economic considerations here, it is expected that the battle will continue.

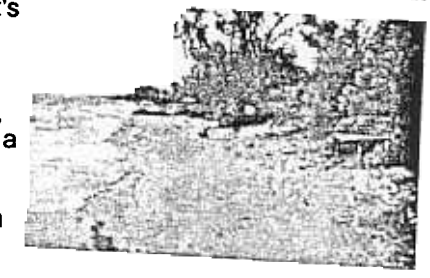
### Data Availability

The State of Ohio DNR is conducting an extensive data collection exercise for the entire Ohio shoreline. As such a wealth of data is available for this site.

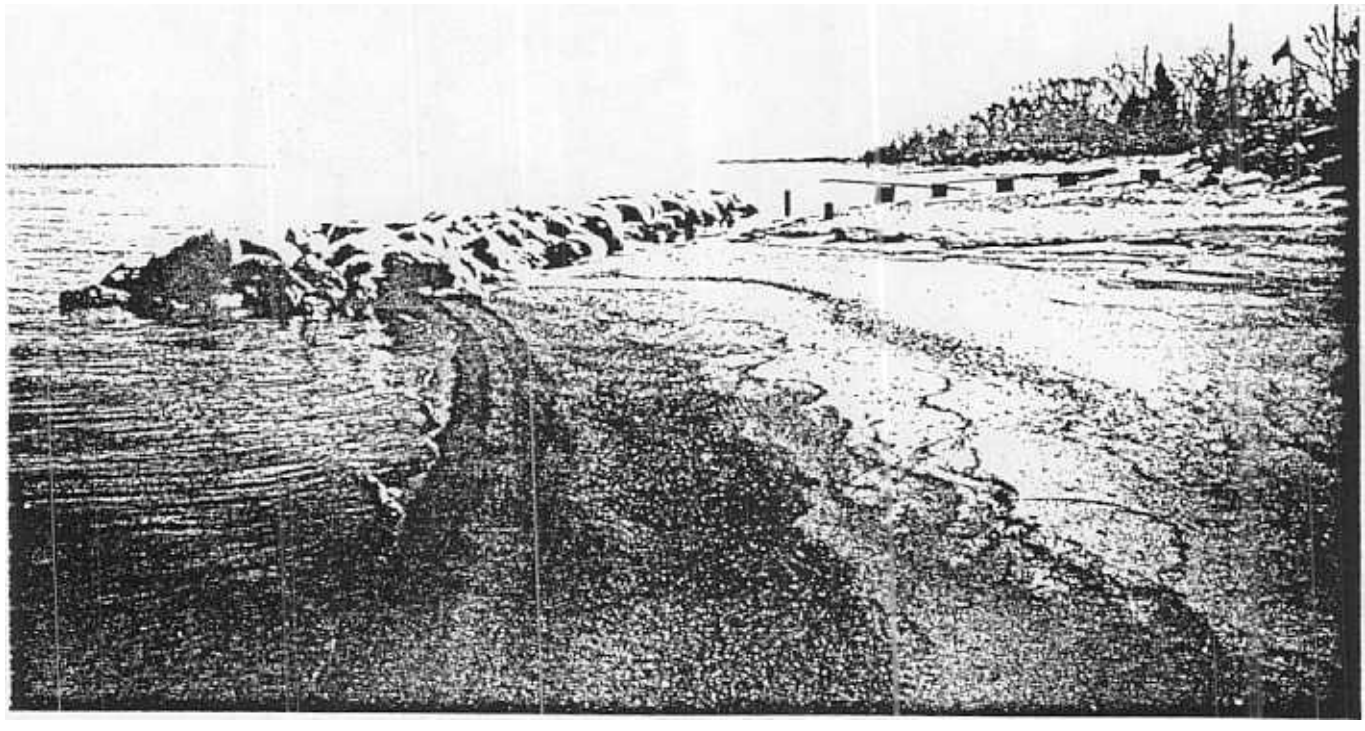
### Data Needs for FEPS Modelling

This site was not selected for FEPS modelling.

### Photographs
(click on photo for larger image)



ATTACHMENT 5
DOWNDRIFT EROSION
LOOKING EAST 500 BLOCK



L Scot Duncan
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June 18, 2001

Mr. Michael G. Montone
US Army Corps of Engineers
1776 Niagara Street
Buffalo, NY 14207-3199

Ms. Laura A. Fay
Ohio Environmental Protection Agency
PO BOX 1049
Columbus, OH 43216-1049

RE: Barnes Project and Public Hearing

Dear Mr. Montone and Ms. Fay:

This letter is to follow up on the Public Hearing held on the subject project and some of the additional facts brought out at that meeting and in Mr. Barnes' letter to Ms. Laura Fay dated May 25, 2001 regarding the project. The overwhelming public sentiment was that there must be a way to get Barnes the water which he needs and to avoid damaging the marsh. I agree that this should be the objective of both the Federal and State regulatory agencies involved. However, I think that the decision should be based on the facts of the situation and not on unsubstantiated statements by the applicant's team.

From my perspective as a concerned area resident with some knowledge of the technical, business and environmental issues involved, I do not feel that the Barnes application reflects the true facts of the situation. Of particular concern are:

- Inconsistencies in the business arguments presented
- The misstatement of historic environmental facts and research results
- The inadequate assessment of hydrologic concerns relative to the tidal environment.

The balance of this letter presents my concerns with the business issue analysis and then presents my concerns with the environmental issue analysis.

THE BUSINESS ISSUES Barnes Nursery is a diversified agribusiness which supplies lawn and tree services as well as landscape planning, retailing and installation to the entire northern Ohio area. They also operate the areas only compost recycling yard and are teamed with others in the operation of recycling yards throughout the state. At the public review, we were told that they employ 150 people and are the second largest employer in Huron Township.

In the letter to Ms. Fay, she was told that "Without access to East Sandusky Bay water the nursery can not operate. .... Without water, Barnes Nursery can not survive! ... thus, closing its doors after 50 years." Based on the extent of the applicant's agribusiness interests, this appears to be a gross overstatement of the situation, presented without any factual back-up.

The container farm which is to be supplied by the proposed dredging project contains 7 to 15 acres of tiled, gravel bedded, growing area. In the letter to Ms. Fay, the applicant claims to presently recover and recycle 60 per cent of the water applied in the irrigation process. At the same time, the applicant indicates a need to purchase or draw 350,000 gallons per day from the bay or alternate sources. However, that amount of water would be sufficient to irrigate an order of magnitude more area. If the cost of the water purchase alternative were reduced by a factor of 10 or 20, the feasibility of the purchased water alternative is entirely changed. While it is not the role of the Corps or the EPA to design the alternatives for the applicant, it should be their role to question bad assumptions and unsupported assertions in the application.

Similarly, the applicant's objections to the "pipe to the lake approach" are questionable. There is 15 feet of water under the Willow Road bridge. The applicant has indicated that he can not get permission to cross private lands for the pipeline. However, the applicant was in partnership with all of the affected land owners on the dredging project which was rescinded. Nearly 50% of the required trench for a buried pipe is already dug and the pipe could be buried before marsh restoration without any additional cost. Since all of the CCCMB parties were involved in the damage to the marsh, there should be no question about pipe burial access as a part of the restoration activity. An 8 to 12 inch pipe should be more than adequate for the Nursery's business needs.

The burden of proof for the economic justification is on the applicant and it has not been met. The Corps cannot, under law, permit the project without a clear demonstration that there are no feasible alternatives. At this time, it appears that there are at least two feasible alternatives.

THE HISTORICAL ENVIRONMENTAL ISSUES - The application's treatment of the historical environmental facts is as loose as the treatment of the business facts. The references of Moseley and Bray cited by the applicant are the two best sources of information regarding the historic development of the marsh area. However, the application has misattributed several facts and ignored others. The result is a gross misinterpretation of the findings of the original researchers.

Both Moseley and Bray recognized that the Sheldon's Marsh area behaves like a tidal marsh as the result of the wind set-ups which occur on Lake Erie. Tidal marshes and the adjacent barrier islands are, by their very nature, ephemeral. That is, they are constantly changing as the area around them changes. For this reason, it makes no sense to talk about an "historic Black Channel" within the marsh.

The current tidal creek, which the application asserts is the remnants of "the historic channel" is several hundred yards west of the channel shown in the 1909 surveyor's sketch presented in the application. In fact, there have been many channels through the marsh at various points in time. When Bray surveyed the area during the high water years of the 1980's, his soundings show no evidence of the present channel or of other significant channels. This is probably because his study was done at a time when

the barrier beach was frequently overwashed along much of its length. That is no longer the case. It is likely that the current channels formed since the closure of the spit in the last decade.

The application also incorrectly asserts that Moseley thought that Sawmill Creek fed into the East end of the bay. In fact, Moseley talks about the "marsh at the outlet of Sawmill Creek" on the lake side of the barrier beach as a source of peat blocks found on the barrier beach at Sheldon's. This matches the area survey map of 1896 which shows that Sawmill Creek fed into the lake and not the bay.

The application also includes a Figure 18 which has a designation of Sawmill Creek running into the east end of the bay. This figure is extracted from a map was originally drawn in 1909 and has been updated by the Erie County Engineer's office until recently. However, the notation regarding Sawmill Creek was apparently made by the applicant. It was not on a copy of the map which I obtained from the County Engineer in 1999. It was also not on the copy displayed at the applicant's public open houses. The original tracing of the map was missing and/or misfiled in early June. A review of the overall map from which Figure 18 was derived shows that the applicant's property was 1320 to 1980 feet from the water in 1909.

The location of the Black Channel in 1928 differed from both the modern location and the 1909 location. In 1928, the Ohio Supreme Court determined that the Black Channel "begins at the roadway (Willow Road) and runs northwest to the dredged cut of the G. A. Boeckling Company" 118 Ohio St. 360, (1928) at 367. At that time, Plum Brook flowed into the Black Channel near its mouth. The 1928 location of the channel was yet another ephemeral location of this ever moving waterway.

The application also asserts that the shoreline west of Sawmill Creek is actively receding at an average rate of 10 to 15 feet per year. Fortunately, this information is substantially outdated, being based on a report prepared in 1961. An examination of more recent data shows that the barrier beach has moved little in the past decade. Furthermore, the open lake wave/erosion data quoted in the application has little to do with the quiescent conditions present behind the barrier beach.

In summary, the application's assertions with regard to restoration of "historic conditions" make little sense in terms of inherent tidal marsh dynamics or historic fact. Many of the observations are historically incorrect, geographically inappropriate, or simply outdated. In fact, it makes far more sense to "let nature take its course." Over the past two decades, the marsh has adapted to the changes induced by naturally changing lake levels, and the construction of three causeway structures by Cedar Point over the past century. Cedar Point, of course, was one of the CCCMB partners, working with the applicant in the rescinded predecessor application

HYDROLOGIC CONCERNS IN THE TIDAL ENVIRONMENT - On page 10 of the May 25th letter to Ms. Fay, the applicant presents a large array of numbers to show that the project will not affect the marsh. However, the analysis is not only overly simplistic, it is totally inappropriate. The volume analysis presented is based on a marsh area of 12,660,000 square feet. It also assumes that the marsh area remains constant as the level changes. Not only is the assumed area far greater than the actual marsh area, the constant area assumption is inappropriate.

The area of the marsh changes constantly as the water level rises and falls. This is what creates mud flats. It also makes alterations far more damaging in low water periods than in high water periods. This "tidal prism" concept, developed in part by the Army Corps of Engineers researchers, is accepted by the worldwide tidal creek research community.

The greatest danger to the marsh occurs during low water conditions when rapidly changing water levels can cut shallow channels deeper and deeper with each tidal reversal. While the applicant's analysis looks incorrectly at the relative volumes of the water involved, the more serious error is a total failure to consider the flow paths from the marsh. Marshes are frequently considered the "kidneys of the environment." The proposed project is the equivalent of a kidney bypass operation. In simple terms, the proposed project will move the water out of the marsh and around the valuable filtration function. Instead, the flow will all be through the artificially created "short circuit" to open water. Rather than restoring the marsh, the proposed alternations will destroy it.

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All are in agreement of the desirability of meeting the applicant's business needs while protecting the environment. The major obstacle to doing both seems to be an the applicant's unrealistic assessment of the business economics, an assertion of the importance of "historic conditions" in an inherently ephemeral environment, and a misunderstanding of the natural hydrological processes involved.

It is my hope that the Corps of Engineers and the Ohio EPA will recognize the flaws in the application and ask the applicant to reconsider the alternatives and to revise the application.

Thank you for your time and consideration.

Very truly yours,

L. Scot Duncan

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email - scotduncan@alum.mit.edu

June 18, 2001

Mr. Michael G. Montone
US Army Corps of Engineers
1776 Niagara Street
Buffalo, NY 14207-3199

RE: Barnes Project Letters to Montone from Herdendorf of June 3, 2001, June 13, 2001

Dear Mr. Montone:

I recently received copies of the letters which Dr. Herdendorf wrote concerning the water level fluctuations and bottom profile in Sheldon's Marsh. While I realize that the comment period on this project is now closed, I want to point out technical errors involved in the analysis in case they were overlooked by the reviewing team.

First, Dr. Herdendorf indicates that the bottom of the area is essentially flat. This contradicts both observations of the marsh's gradual drainage in an offshore wind and the data in Bray's 1988 study. Bray made actual soundings in the marsh and found a four foot variation in depth. His data indicates a gradually changing bottom profile with deeper pools occurring at various points in the marsh. This is consistent with aerial photos. He did not report the existence of any distinct channels in the marsh.

Second, the application of Torricelli's Theorem to the dynamic problem of channelized tidal creek flow based on daily average tides is unfounded. Torricelli's Theorem applies to free gravity flow in a steady state condition. The conditions in the marsh are dynamic and the instantaneous pressure differentials do not relate to temporal changes in level. A photocopy from Prandtl's Essentials of Fluid Dynamics explaining the proper context for the application of Torricelli's Theorem is attached. An appropriate model for examining the channel dynamics would be the Army Corps of Engineers' DYNLET1 one dimensional model. However, to model the marsh would require a more complex model such as those available from the Danish Hydraulics Institute.

While the above points address two of the many flaws in the project implementation logic, it is the overall project concept which truly flawed. The proposed channel will short circuit the natural drainage and filtration of the marsh. In short, the project concept is the environmental equivalent of recommending an arterial bypass implant around the kidneys of a perfectly healthy human being.

Very truly yours,

L. Scot Duncan

cc: Ms. Laura Fay - Ohio EPA

The expression in brackets means the change in $u$ as we move along the stream-line, which we call $du$ for short; that is,

$$\frac{du}{dt}dx = \frac{\partial u}{\partial t}dx + u\,du.$$

If we assume for simplicity that the motion is steady, so that $\partial u/\partial t$, &c., are equal to zero, the left-hand side obtained by multiplying the equations (9) by $dx$, $dy$, $dz$ respectively, adding, and dividing by $\rho$ is

$$\frac{du}{dt}dx + \frac{dv}{dt}dy + \frac{dw}{dt}dz = u\,du + v\,dv + w\,dw = d\left(\frac{u^2+v^2+w^2}{2}\right).$$

If the body-forces have a potential $U$, i.e. if

$$X = -\frac{\partial U}{\partial x},\quad Y = -\frac{\partial U}{\partial y},\quad Z = -\frac{\partial U}{\partial z},$$

the corresponding terms obtained from the equations (9) are

$$-\left(\frac{\partial U}{\partial x}dx + \frac{\partial U}{\partial y}dy + \frac{\partial U}{\partial z}dz\right) = -\,dU.$$

Similarly we have $$\frac{1}{\rho}\left(\frac{\partial p}{\partial x}dx + \frac{\partial p}{\partial y}dy + \frac{\partial p}{\partial z}dz\right) = \frac{1}{\rho}dp,$$

so that, if we confine ourselves to points on a single stream-line, we obtain

$$d\left(\frac{u^2+v^2+w^2}{2}\right) + dU + \frac{dp}{\rho} = 0,$$

which comes to the same as equation (7*b*) (p. 41).

## 4. Deductions from Bernoulli's Theorem.

A large number of problems may be solved very simply by means of Bernoulli's theorem. Here we shall discuss three particularly important examples.

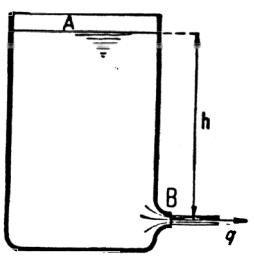

Fig. 2.6.—The efflux from a vessel

(*a*) *The Efflux of Liquid from a Vessel as a result of Gravity.*—If we trace back the stream-lines in the vessel in fig. 2.6 from the outflow B, we find that they lead to the free surface of the water at A; the latter slowly falls as the mass of water does so. The particles of water at A are acted on by the atmospheric pressure $p_0$, and so are those in the free jet * at B (see below). If the area of the water surface is large compared with that of the lower opening, the velocity at A is so small that its square may be neglected in comparison with that of the velocity at B. Hence, if $z_A$, $z_B$ are the heights of A and B above a standard level,

$$\frac{p_0}{\rho} + gz_B + \tfrac{1}{2}q_B^2 = \frac{p_0}{\rho} + gz_A + 0$$

* Here we neglect the weight of the air, which is permissible unless accuracy to the third decimal place is required.



by Bernoulli's theorem, so that

$$\frac{q_B^2}{2g} = z_A - z_B = h,$$

or
$$q_B = \sqrt{(2gh)}. \qquad \ldots \quad (10)$$

Thus the velocity of a particle of water flowing out at B is the same as it would have been if the particle had fallen freely through the height $h$. What happens in actual fact is that the particles at A are pulled down a little into a new position, the particles previously occupying that position are likewise drawn down further, and so on, and the amounts of work done by these particles (which, thanks to the internal mechanism of the liquid, are all transferred to the particle which actually flows out) add up to exactly the amount of work which would be done by a single particle of the size of the one which flows out in falling through the whole height. The relationship expressed by equation (10) is called *Torricelli's theorem.*

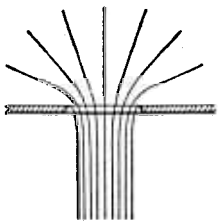
Fig. 2.7.—Flow through an opening in a straight wall

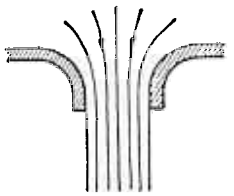
Fig. 2.8.—Flow through a rounded-off opening

The cross-section of the jet does not in general coincide with that of the orifice. For example, in the case of a jet emerging from a thin-walled circular opening the cross-section of the jet is about 0·61 to 0·64 of the cross section of the hole. This phenomenon, which is called *contraction,** is due to the fact that the fluid inside the vessel flows radially towards the hole and when it reaches the edge cannot immediately turn from the radial direction into the direction of the axis of the jet. A case of this kind is shown in fig. 2.7. In a rounded-off opening (fig. 2.8), however, where the change of direction of the stream-tubes is completed within the mouthpiece, the ratio mentioned above (which is called the coefficient of contraction) is almost equal to 1. $Q$, the quantity of fluid flowing through an orifice of cross-section $a$ per second, is given by $Q = \alpha a\sqrt{(2gh)}$, where $\alpha$ is the coefficient of contraction. For a non-circular thin-walled opening, $\alpha$ usually differs only slightly from its value for a circular opening, but the form of the jet in such a case is generally fairly complicated. For example, the jet from a square hole is transformed into one with a slender cross-shaped section, that from a rectangular hole into a ribbon perpendicular to the longer side of the rectangle.

* [The section at which the jet becomes parallel is referred to as the *vena contracta.*]

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September 3, 2001

Ms. Laura A. Fay
Ohio Environmental Protection Agency
PO BOX 1049
Columbus, OH 43216-1049

RE: Barnes Nursery, Inc. 401 Application No. 2000-02170(1)

Dear Ms. Fay:

This letter is intended to provide some additional facts and analysis for your consideration of the subject application. I recently reviewed your July 3, 2001 letter to the Applicant and its responses of July 24 and July 25. As an environmentalist, a resident of the Cedar Point Chaussee, a board member of the Cedar Point Property Owners Association, and president of the Cedar Cove Association, I have a significant interest in protecting the shoreline in the vicinity. As a Sandusky businessman, I also have very strong feelings that any business is entitled to fair consideration of their legitimate business needs.

For these reasons, this letter recasts the facts asserted by the applicant into a coherent picture of the applicant's actual business requirements. It also reviews the environmental assertions in light of the environmental history of the area. To keep this letter as brief as possible, I have not included calculations or detailed references. If you would like to see these, please give me a call.

For ease of understanding, the analysis is divided into the following sections:

The applicant's business assertions
- The economics of the situation
  Evaluation of the business burden
- The historic environmental record
- Environmental concerns.

THE APPLICANT'S BUSINESS ASSERTIONS - In the referenced response letters, the applicant asserts the following facts from which a picture of the business economics can be reconstructed.

- The Nursery recycles 60% of the irrigation water, catching it in an underground tile system which connects back to the pump intake channel which is directly connected to the newly created "hydrologic channel."
- The Nursery has a current water irrigation need of 350,000 gallons per night. (It is unclear whether this is a gross or net requirement. In evaluating the County water option, Applicant has treated it as a net requirement. In responding to your questions he has treated it as a gross requirement.)
  The water is required to irrigate 15 acres of container farm and sales areas.
- Irrigation is required for 6 months of the year.
  The bill for 350,000 GPD of County water would be $53,340/mo. (2003 figures)
  The County water connection fee would be $400,000, based on 350,000 GPD for 6 months of the year
- The Nursery currently irrigates 175 acres of nursery stock trees with 500,000 cubic feet of water at a cost of $12,000 annually.
- The business generates $1.1 million in taxes.
- The business will close its doors if it cannot get water.

Using these factual assertions made by the applicant, it is possible to assemble a picture of the water requirements of the business and the economic impact of various scenarios for satisfying those needs

THE ECONOMICS OF THE SITUATION - The cost of alternative irrigation approaches depends on the amount of water used and the cost per unit of the water. From the facts asserted by the applicant, it is possible to calculate both the application rates and the cost per unit of water.

As a first step, it is possible to calculate and compare the proposed water application rate with industry standards. The Midwest averages about 50 inches of rainfall per year, or one inch per week. Nurserymen typically plan for periods of zero rain and design for maximum application rates equal to the average rainfall. During periods of low rainfall, the Midwest application rate may approach the one inch per week figure and in wet periods, no irrigation will be needed at all. Applying 350,000 gallons per night to fifteen acres results in an average application rate of 10 inches per week. This is ten times as much water as is needed. If the runoff is truly being recycled at a 60% rate as the applicant claims, then the total application rate is 2.5 times the 350,000 gallons per night of "new" water and totals 25 inches per week.

Your letter of July 3 assumed that the 350,000 gallon per night figure included both the new water component (140,000 GPD) and the recycled water component (210,000 GPD). This is a logical assumption which I also made

initially, but the applicant seems to refute it in his response of July 25. His estimates of the cost for County water also indicate the higher rate. In either case, the amount of water being applied exceeds the amount of water needed by a factor of 10 to 25.

The applicant's southern field data is more enlightening. Here, drip irrigation is utilized to irrigate 175 acres of trees. Drip irrigation is the method of choice for nursery irrigation, especially in areas adjacent to estuaries because it minimizes the application rate required, as well as the runoff. (A Stake in the Environment, American Nurseryman, July 1, 2001, p49 - copy attached). In the southern fields, the application rate is 0.03 inches per week.

It appears that

- The applicant has overstated the water requirement by an order of magnitude, and
- A second order of magnitude reduction could be obtained by changing the application system from spray to drip. For anyone who has driven past the Applicant's sales lot when the spray system is running, this will come as no surprise.

The second step is to calculate the cost per unit of water. The applicant currently purchases 500,000 cubic feet per year at an annual cost of $12,000. This equates to 2.4 cents per cubic foot or 0.3 cents per gallon. Using the 2003 County water rates, the rate will increase to about 3.8 cents per cubic foot or 0.5 cents per gallon. It is unclear how the Applicant arrived at his cost figure of 3.14 cents per gallon. It appears that he made an order of magnitude error in his cost calculation.

In summary, it appears that the Applicant has overstated the costs of the County water option by at least an order of magnitude. With a partial conversion to drip systems in the container farm, the annual cost to irrigate 15 acres of container/selling area should be in the $30,000 range, or less. At the same time, 575,000 gallons per night of runoff into adjacent estuarine system would be prevented.

EVALUATION OF THE BUSINESS BURDEN - Once the economics are known, the EPA must then ask "Is this an unreasonable burden on the applicant?" The applicant has indicated that the business generates $1.1 million in taxes. This implies about $2.5 million in profits annually. Thus the irrigation costs with County water equate to less than 1% of profits. The decision on which approach to use should not be based on maximizing the business profits, but rather, on a tradeoff between potential environmental harm against acceptable business costs.

Another way to examine the same issue is to look at the cost of water per container grown plant. Most container plants cost between $10 and $100 at retail. Assuming that an "average" plant has foliage which is two feet in diameter, it occupies 3 square feet of space and needs six cubic feet of water during the growing season, assuming no rain. Using this analysis water costs less than twenty cents for the season. Again, the costs are not unacceptable.

While the Applicant has repeatedly asserted that it will be forced to close without water, it is clear that the necessary water is available through means other than the proposed channel.

THE HISTORIC ENVIRONMENTAL RECORD - The applicant asserts that it is entitled to undertake the project to restore portions of his open water environment which were destroyed by others. However, the notion that the project is required to restore the hydrology of East Sandusky Bay is ill-conceived and founded on historically incorrect assertions. Most of these involve the past location of Sawmill Creek and the Black Channel and imply that ODNR, The Corps of Engineers, and the Point Retreat developers all contributed to destroying hydrologic conditions which existed on the Applicant's property in the 1950's. In assessing these assertions, you should consider the following:

- Sawmill Creek - The only reference to Sawmill Creek flowing into East Sandusky Bay is Figure 18 of the Applicant's Individual Permit Application to the Corps dated March 27 2001. This notation was apparently added by the applicant since it did not previously appear on the tax map from which the figure was extracted.
  The Black Channel - The point of origin of the Black Channel was determined by the Ohio Supreme Court in 1928 as a matter of law from testimony of surveyors, residents and engineers taken under oath. The Court determined that the Black Channel was located west of Willow Road and that "It begins at the roadway and runs northwest to the dredge cut of the G. A. Beckling (sic) Company." East Bay Sporting Club v. Miller, 118 Ohio St. 360, (1928) at 367.

Since neither Sawmill Creek nor the Black Channel historically flowed in the vicinity of the Applicant's property, the basic premise of its "historic restoration" proposal appears to be fatally flawed. The evolution of the East Sandusky Bay area under the action of man is an extremely complex subject, but it does not have any relevance to the present application. The east end of Sandusky Bay is an ephemeral wetland and will continue to change with changing lake levels and manmade interferences for the balance of time.

ENVIRONMENTAL CONCERNS - Wetlands have often been analogized as "nature's kidneys." Wetlands serve the purpose of filtering runoff from adjacent

uplands. The Applicant's "hydrologic channel" concept is roughly analogous to imposing a kidney bypass operation on an unsuspecting victim. Instead of adding a riparian buffer for aiding in the retention of runoff, the existing site provides a tile field drainage system which delivers runoff directly to the intake channel adjacent to the bay. The intake channel, in turn, is directly connected to the hydrologic channel which the applicant now wants to connect directly to the lake. The current environmental regulations were not intended to allow the applicant to install a bypass channel through the wetlands.

There are numerous other distortions of fact, erroneous assumptions, inapplicable statistics and examples of outdated data in the application and the Applicant's response to your questions. To detail them all would take another ten pages.

At this point, I believe that you should have sufficient data to deny the application. If you need additional information on any of the points raised above, or wish to discuss any of the other issues raised by the Applicant, please feel free to give me a call.

Thank you for your help in this matter.

Very truly yours,

L. Scot Duncan

L Scot Duncan
P.O. BOX 1320 Sandusky, OH 44871
Ph. 419-627-2945 Fax 419-625-2904
e-mail scotduncan@alum.mit.edu

December 13, 2001

Ms. Laura A. Fay
Ohio Environmental Protection Agency
PO BOX 1049
Columbus, OH 43216-1049

RE: Supplemental comments to Barnes application following the hearing.

Dear Ms. Fay:

Based on your comments at the hearing, and the recent Corps decision in favor of the Barnes project, it appears that you do not fully appreciate the technical or economic aspects of this problem. The following points are made to attempt to clarify some of the issues on which you appeared unsure. The Army Corps Detroit region's data referenced can be found at http://huron.lre.usace.army.mil/levels/weekly.html.

1) Lake Erie marshes are unique in that they are subject to wind tides or set-up. The cause significant level variations. The Army Corps (Detroit) recently put the attached graph on the web. It shows a ten foot variation of lake level at a given time between Toledo and Buffalo due to wind set-up. Our local periodic variation commonly exceeds 2 feet and can be more.

2) The level of the lake is currently only 8 inches below the long term average and is 23 inches above the lowest since 1918. Averages during the 19th century were lower than the 20th century. At the present time, the area in Sheldon's where the feeder channel is proposed and the area adjacent to the illegal channel is currently dry. This means that the channel will serve as a drainage ditch and any water in the marsh will drain to the lake. The Corps missed this fact when they determined that the channel would not affect water level in the marsh. It definitely will drain surface water from the marsh at current lake levels since the lake level is below the floor of the marsh.

3) Lake Erie marshes are "self protecting" in that they tend to shoal over their inlet channels during dry periods to prevent drainage. This exists currently at Old Woman Creek and has existed in the past at Mentor Lagoons and Cranberry Creek (based on old court cases). During dry periods a northeast wind set-up forces water over the barrier into the marsh. When

the wind reverses, the barrier prevents the marsh from draining back into the lake. This also retains runoff from the upland areas. The phenomenon can also be observed at the east end of Sheldon's where a barrier protected channel exists. If Barnes digs and maintains a channel, the marsh no longer has the ability to be self protecting.

4) Barnes' stated water consumption is enough for a rain forest. Sharon Barnes indicated that they irrigate about 15 acres. This figure has not been verified. You correctly asked if the water consumption was net or gross, since they claim to recycle 60%. They said it was net, implying a total application rate of 350,000 gallons per day x 2.5. This equates to about 15 inches per week for the 15 acres. Since there are some roads, etc in the area, the applied rate to the growing area is probably about 25 inches per week. Since only an inch per week is required for healthy growth, both the application rate and the economics are grossly overstated. As a first guess, we may estimate by a factor of at least ten.

5) The current best management practice for nurseries is to use drip irrigation which reduces the water need by another order of magnitude. Spray irrigation is a wasteful, outmoded, and environmentally unfriendly practice. I previously sent you an article on this subject.

6) Barnes claims to pay one million dollars in taxes. With current tax rates this implies a profit level of 2.5 to 3 million dollars. Since the cost of the county water is likely to be $30,000 per year or less (rather than $300,000 as claimed) it is less than one percent of Barnes' profits. This is certainly a feasible alternative.

7) If Barnes can dig a channel across the marsh, why isn't he willing to bury a pipe across the marsh in place of his feeder channel? A buried pipe would not have nearly the harmful effect that the channel would. His arguments about the channel route are smoke and mirrors. The answer to this question seems to conclusively be that he wants a channel. Once a channel is established, it is available for navigation under federal and Ohio case law. **There is no existing channel. There never was a channel. And there doesn't need to be a channel. If one is created, it will be open to navigation as a matter of law.**

8) Barnes has spent over $100,000 on consultants to convince the permitting agencies that this was a historic restoration project. Even the Corps saw through this. Then they said that it is necessary for the survival of his business. This is not true either. His business is a diversified agribusiness and the container farm employs very few of the his 150 employees. Other parts of the business include the composting yard, tree care, lawn care and retail nursery operations. He will not "close his doors" if the permit is denied and their will not be 150 people on the street. The only possible explanation is that there is an unstated agenda. It is your job to get to the truth.

9) Barnes is a scofflaw. He has ignored the state requirements to register water withdrawal for more than a decade. He constructed one channel without any permit and had started constructing another without a permit. He then submitted a bogus restoration permit. To give him a permit at this point is to reward lawlessness.

I have already urged you to deny the permit. What I want to do now is to urge you to look long and hard at the data which Barnes has provided. Most of it is of questionable quality and is certainly not proof that the project is necessary or even advantageous for his stated business reasons. If CCCMB wants a permit for a marina channel, let them ask for it instead of trying to sneak it through with bogus claims about the economic need of the Barnes nursery.

I believe that the Corps' decision was much like their decisions in the Everglades during the last century and will come back to haunt them. They clearly didn't have the guts to take a stand against a politically powerful applicant because they lacked the expertise or understanding to adequately defend against a bogus application. They took the easy way out and left you holding the responsibility to deny the permit. I think they will regret their decision.

We are currently spending billions to fix the Corps mistakes in the Everglades. Sheldon's is too small of a project to make a blip on the nation radar screen, so it will probably not get a billion dollar restoration budget in the future. However, it is an important state resource and the full horsepower of the state resources should be applied to defend it.

Good Luck!

L Scot Duncan

L. Scot Duncan
cc by email to Addressee and to Permits Processing Unit

## Weekly Great Lakes Water Levels Update for December 7, 2001

**Recent Weather: Record setting warmth was experienced over the Great Lakes basin earlier this week before a cold front swept in and provided cooler air to the region. The recent period of well-above temperatures may cause the lake temperatures to stay higher for this time of the year. This could result in substantial lake effect snow when the weather finally turns colder. Early December precipitation remains below average for the entire Great Lakes basin.**

**Current Lake Levels: Lake Superior's water level is currently 5 inches below its long-term average and 8 inches above last year at this time. The Lakes Michigan-Huron water level is 13 inches below average and is 9 inches above last year. Lake St. Clair is 11 inches below average and is the same level as last year. Lake Erie is 8 inches below its average level and 2 inches below this time last year. Lake Ontario's level is at the long term average and is 2 inches above the level at this time last year.**

**Current Outflows / Channel Conditions: The Lake Superior outflow through the St. Marys River into Lake Huron is expected to be about 6% below the long-term average for December. Flows in the St. Clair and Detroit Rivers were 9% and 8% below average, respectively, in November. Flows into the Niagara River from Lake Erie were about 7% below average in November. The flow from Lake Ontario into the St. Lawrence River is currently 12% below average; and flow should remain below average through December.**

**Temperature/Precipitation Outlook: The National Weather Service outlook through the first week of December indicates a shift to more seasonal temperatures. However, outlooks into the third week of December indicate a return to above normal temperatures and precipitation for most of the Great Lakes region.**

**Forecasted Water Levels: The water level of Lake Superior is expected to decline 3 inches over the next four weeks. The water levels of Lakes Michigan-Huron, St. Clair and Erie are expected to decline slightly over the next four weeks. Lake Ontario may see a slight rise into January.**

**Alerts: Users of the Great Lakes, connecting channels and St. Lawrence River should keep informed of current conditions before undertaking any activities that could be affected by low water. Mariners should possess navigation charts and refer to current water level readings.**

**Further Information: Please visit the following web sites for more detailed information:**
**http://www.great-lakes.net/envt/water/levels/hydro.html**
**http://huron.lre.usace.army.mil/levels/hmpglv.html**
**http://www.ijc.org**
**http://huron.lre.usace.army.mil/ijc/superior.html**
**http://www.islrbc.org/**

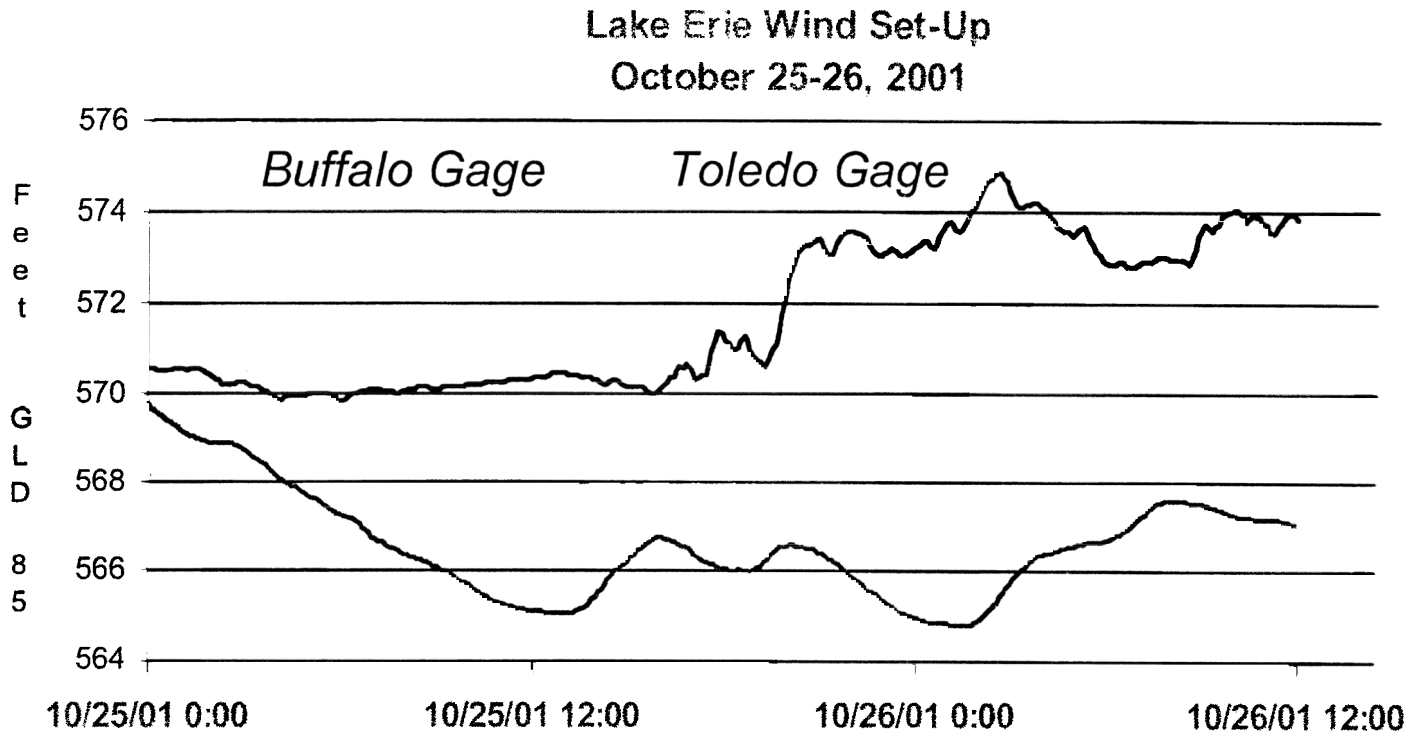
# WATER LEVELS OF THE GREAT LAKES
## WEEKLY DATA SUMMARY

Forecasted information provided by:
Department of the Army
Watershed Hydrology Branch
P.O. Box 1027
Detroit, Michigan 48231
(313) 226-3054

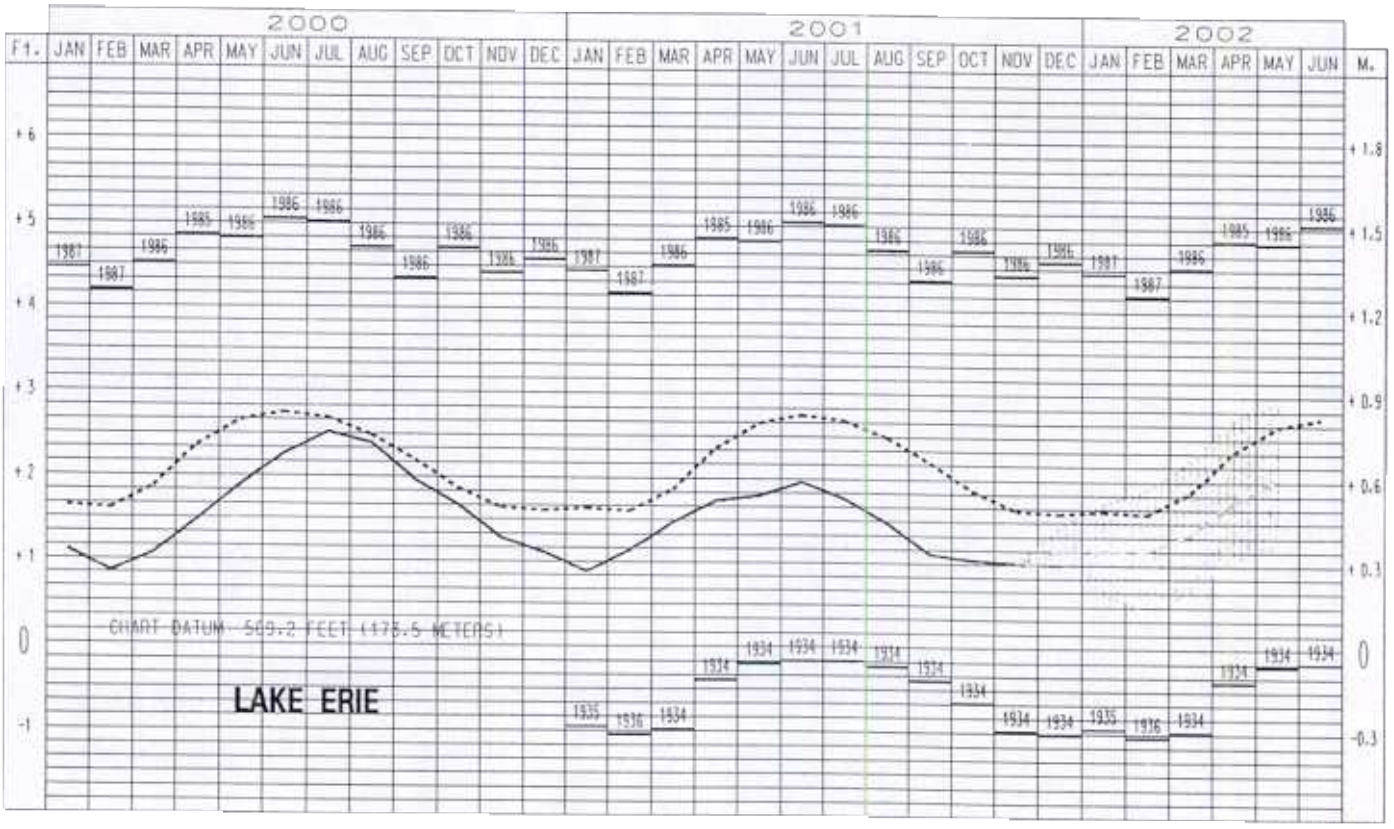
Recorded data (1918-PRESENT) provided by:
NOAA, National Ocean Service
SSMC4 Station 7523
1305 East-West Highway
Silver Spring, MD 20910-3233
(301) 713-2902

| | SUPERIOR | MICH-HURON | ST. CLAIR | ERIE | ONTARIO |
|---|---|---|---|---|---|
| Expected water level for **December 7, 2001**, in feet | 601.38 | 577.59 | 573.00 | 570.14 | 244.46 |
| Chart datum, in feet | 601.10 | 577.50 | 572.30 | 569.20 | 243.30 |
| Difference from **chart datum** in inches | + 3 | +1 | + 8 | + 11 | + 14 |
| Difference from **last month** in inches | 0 | -1 | - 3 | - 2 | +1 |
| Difference from **last year** in inches | + 8 | + 9 | 0 | - 2 | + 2 |
| Difference from **long-term monthly** average level for December, in inches | - 5 | - 13 | - 11 | - 8 | 0 |
| Difference from **highest** recorded monthly mean level for December, in inches | - 20 (1985) | - 48 (1986) | - 45 (1986) | - 44 (1986) | - 27 (1945) |
| Difference from **lowest** recorded monthly mean level for December, in inches | + 15 (1925) | + 17 (1964) | + 16 (1964) | + 23 (1934) | + 30 (1934) |
| **Projected change in levels by January 7, 2002, in inches** | - 3 | -1 | -1 | 0 | + 1 |

**ALL DATA SHOWN IN THIS SUMMARY IN IGLD 1985**




A very strong Autumn storm system moved slowly through the Great Lakes region on October 24-26, 2001 The southwest gale and storm-force winds roared right up the axis of Lake Erie, from Toledo, OH toward Buffalo, NY. The above water level graph indicates how the lake surface tilted - referred to as "wind set-up" -in response to the strong wind. The water level difference between Buffalo and Toledo neared 10 feet during the early morning hours of October 26. The wind then began veering westerly then northwest on the 26th allowing the water levels to return back to normal elevations.


2000
2001
2002
Ft.
M.
JAN FEB MAR APR MAY JUN JUL AUG SEP OCT NOV DEC
JAN FEB MAR APR MAY JUN JUL AUG SEP OCT NOV DEC
JAN FEB MAR APR MAY JUN
+6
+5
+4
+3
+2
+1
0
-1
+1.8
+1.5
+1.2
+0.9
+0.6
+0.3
0
-0.3
CHART DATUM: 569.2 FEET (173.5 METERS)
LAKE ERIE

701 Colegate Dr.
Marietta, OH 45750
13 December 2002

Molly Holt
US Dept. of Commerce (NOAA)
1305 East-West Highway, Rm. 6111
Silver Spring, MD 20910

Re: Barnes Nursery Project in Sheldon Marsh, Ohio

I fully support the State of Ohio's denial of Coastal Consistency of the Barnes Nursery project dug in July, 2000.This project is not consistent with the objectives of the Coastal Zone Management Act in that it does not further the national interest in a way that outweighs the project's adverse coastal effects nor is there not a reasonable alternative.

The State of Ohio acquired and has managed Sheldon Marsh State Nature Preserve in such a way as to further the goals of the CZMA. The appellant did not follow due process in that adjoining property owners were not notified, pertinent State agencies were circumvented, and no public information sessions were held.

Granting of a permit within a day of the application is not congruent with legal or ethical way of doing business. The fact that the north-south channel was already constructed before the COE permit was given. It is obvious the subject has thumbed its nose at all regulatory agencies with the intent to bypass the process that law-abiding citizens follow. To allow this to occur would set a precedent that would be very damaging to any permit system.

Meanwhile, violence is being done to the hydrology of the site. I am a field botanist and know how readily invasive exotic plant species will take advantage of this opportunity to the detriment of the integrity of the plant and animal communities.

I urge you to deny this appeal. It has no legal or moral standing.

Sincerely,

Marilyn Ortt

Marilyn Ortt