



DEPARTMENT OF THE ARMY
BUFFALO DISTRICT, CORPS OF ENGINEERS
1776 NIAGARA STREET
BUFFALO, NEW YORK 14207-3149

REPLY TO
ATTENTION OF:

December 4, 2001

Regulatory Branch

SUBJECT: Jurisdictional Determination for Department of the Army
Application No. 2000-02170(1)

Mr. Robert W. Barnes
Barnes Nursery Inc.
3511 Cleveland Road West
Huron, Ohio 44839

Dear Mr. Barnes:

I have reviewed the wetland delineation map you submitted for a proposed conservation easement located along the shoreline of East Sandusky Bay, Huron Township, in the City of Huron, Erie County, Ohio.

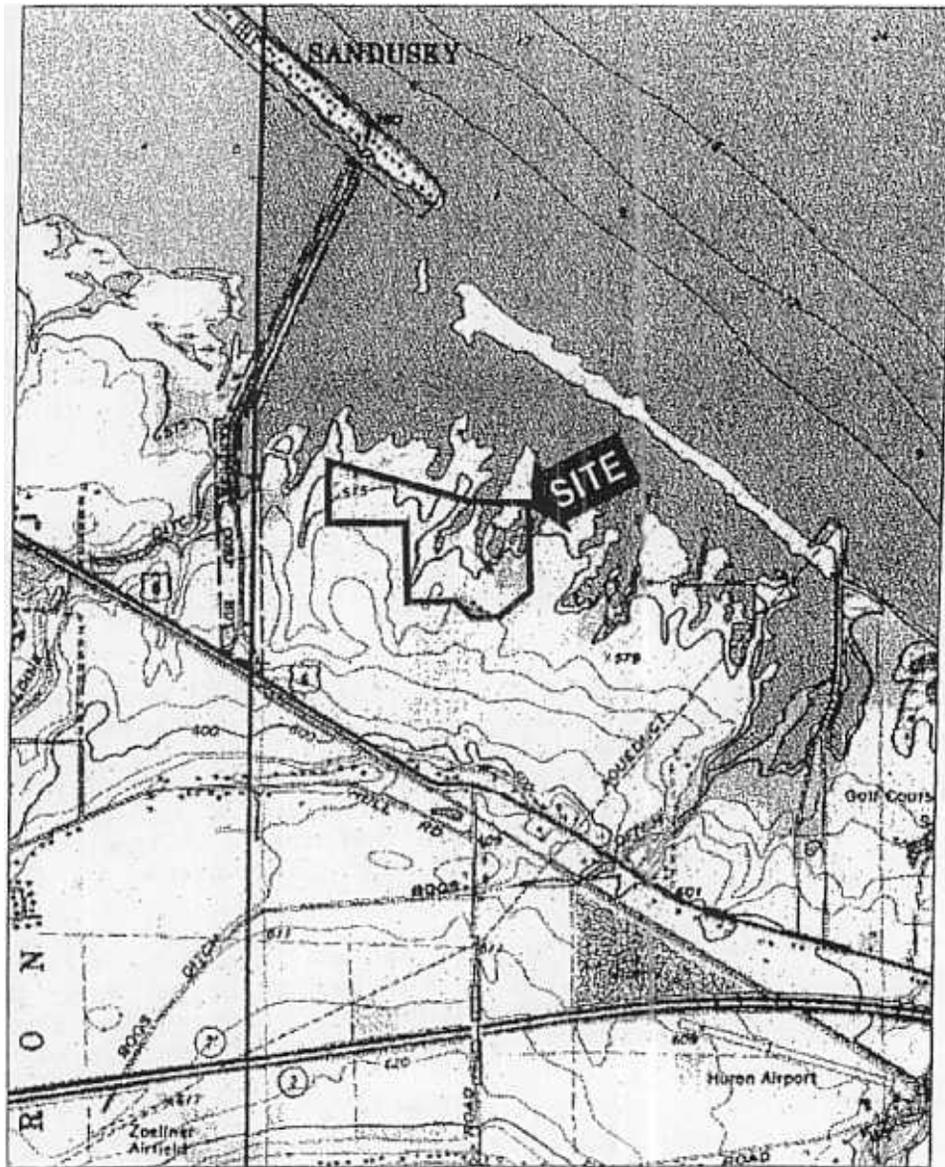
I am hereby verifying the Federal wetland boundary as shown on the attached wetland delineation map dated November 15, 2001. The delineation map identifies the location of approximately 26 acres of Federal wetlands. This verification was confirmed on November 15, 2001 and will remain valid for a period of five (5) years from the date of this correspondence. At the end of this period, a new wetland delineation will be required if a project has not been completed on this property.

Questions pertaining to this matter should be directed to me at (716) 879-4435, by writing to the following address: U.S. Army Corps of Engineers, 1776 Niagara Street, Buffalo, New York 14207-3199, or by e-mail at: michael.g.montone@usace.army.mil

Sincerely,


Michael G. Montone
Biologist

Enclosures



OHIO

HURON QUADRANGLE

OHIO - ERIE

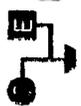
7.5 MINUTE SERIES (TOPOGRAPHIC)

QUADRANGLE LOCATION

U.S. S. M. D. E. I. C. I. R. P. 4

PROJECT: BARNES NURSERY
LOCATION: U. I. C. I. C.

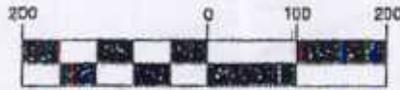
CHAGRIN VALLEY
ENGINEERING, LTD.



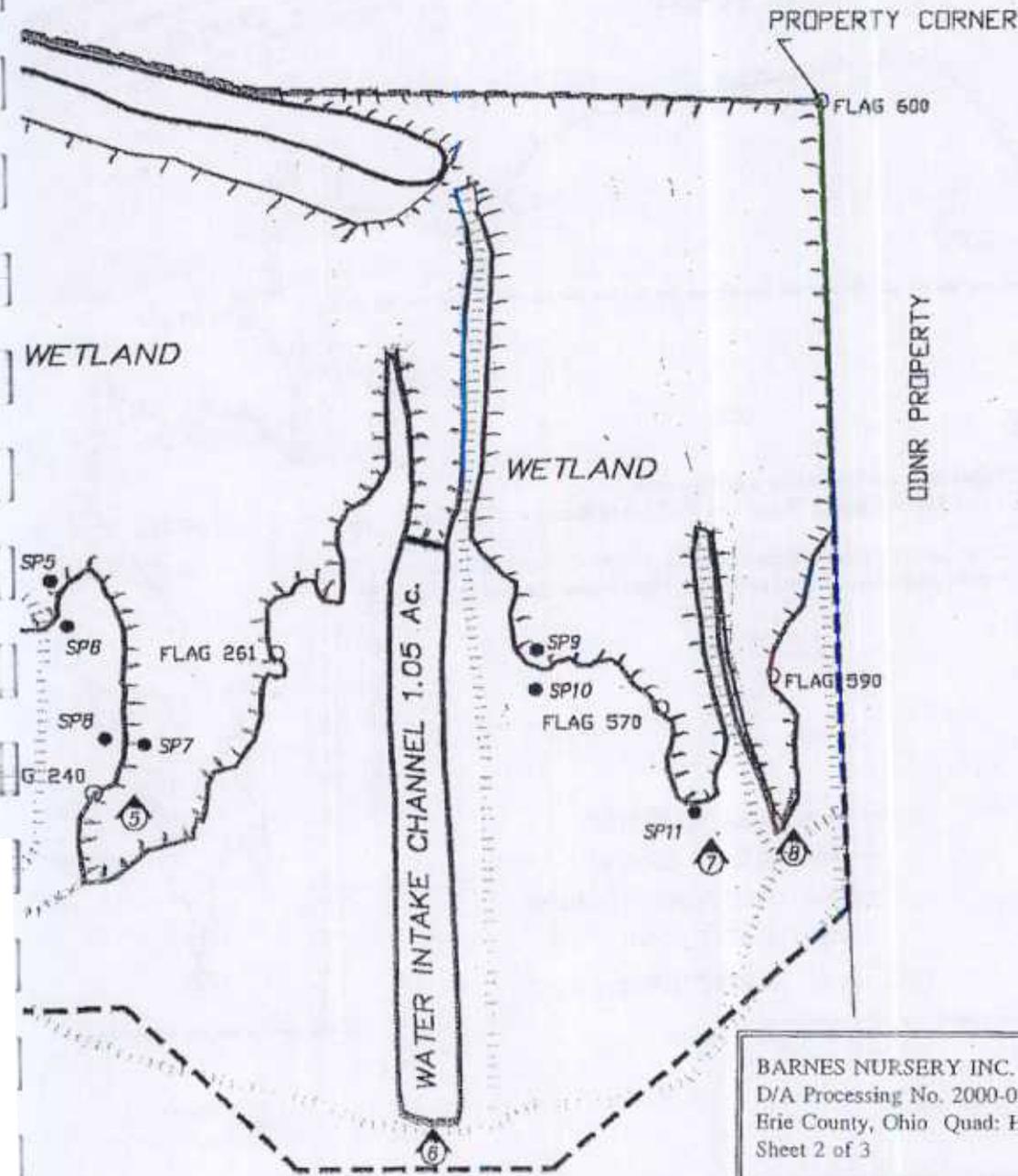
for 01231

BARNES NURSERY INC.
D/A Processing No. 2000-02170(1)
Erie County, Ohio Quad: HURON
Sheet 1 of 3

GRAPHIC SCALE



(IN FEET)
1 inch = 200 ft.



BARNES NURSERY INC.
D/A Processing No. 2000-02170(1)
Erie County, Ohio Quad: HURON
Sheet 2 of 3

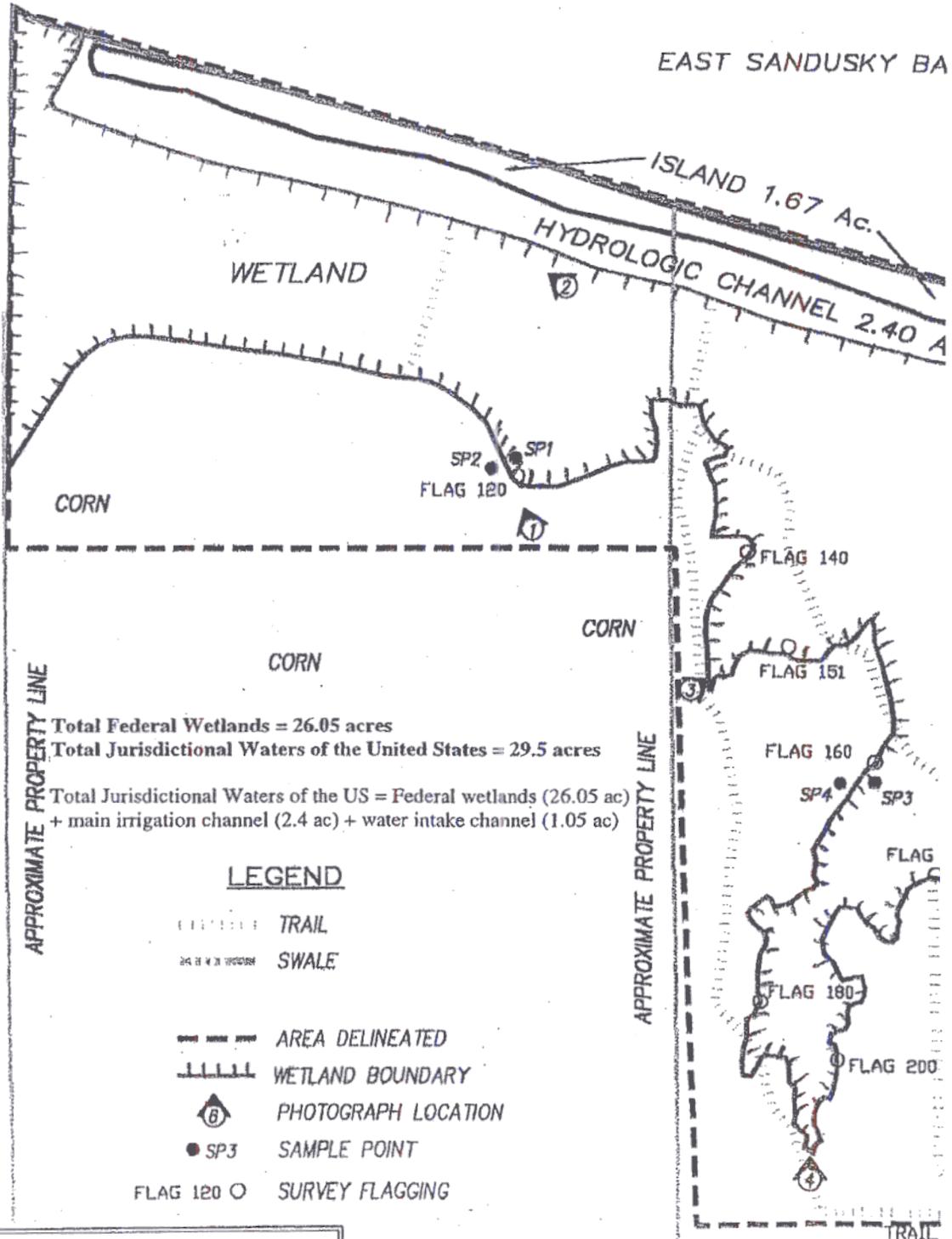
ARMY CORPS OF ENGINEERS ON NOVEMBER 15, 2001

APPROVED WETLAND LOCATION MAP FIGURE 1
CHAGRIN VALLEY PROJECT: BARNES NURSERY
ENGINEERING, LTD. LOCATION: HURON, OHIO

PROJECT No: 01231

EAST SANDUSKY BA

N
1



Total Federal Wetlands = 26.05 acres
Total Jurisdictional Waters of the United States = 29.5 acres
 Total Jurisdictional Waters of the US = Federal wetlands (26.05 ac)
 + main irrigation channel (2.4 ac) + water intake channel (1.05 ac)

LEGEND

- TRAIL
- SWALE
- AREA DELINEATED
- WETLAND BOUNDARY
- Ⓟ PHOTOGRAPH LOCATION
- SP3 SAMPLE POINT
- FLAG 120 ○ SURVEY FLAGGING

BARNES NURSERY INC.
 D/A Processing No. 2000-02170(1)
 Erie County, Ohio Quad: HURON
 Sheet 3 of 3

THE WETLAND DELINEATION SHOWN WAS REVIEWED AND APPROVED BY T

1 The island will provide the quiescent water for emergent wetland plants to spread across the barren mud flat and shallow water environment south of the reservoir channel.

A field reconnaissance of Barnes Nursery property adjacent to East Sandusky Bay was conducted on 7 September 2001 to document conditions occurring along the reservoir channel that provides irrigation water for the nursery. On 7 September, the majority of East Sandusky Bay was a mud flat while the channel providing irrigation water to Barnes Nursery (project area) was flooded (open water). Areas shoreward (south) of the channel and spoil placed north of the channel were vegetated (Photograph 1), indicating that the spoil pile provided a suitable medium for plant growth. The spoil pile also provided sufficient protection to the southern shoreline to enable wetland vegetation to colonize and grow to the channel's edge, whereas the open bay to the north was unsuitable for plants.

An analogous situation, protection from erosion and emergent plant growth, was noted in the area immediately south of the barrier island in East Sandusky Bay. This area received alluvial deposits from the island when it was over-topped during storm events. This area, immediately south of the barrier island, is sufficiently protected from waves generated in the Bay to enable emergent vegetation to grow south of the barrier island.

Currently, many species have colonized the spoil and shoreline in the project area (Table 1) such that portions of the shoreline area now meet the U.S. Army Corps of Engineers' definition of a wetland, i.e., the southern shoreline in the project area has appropriate soil, hydrology, and wetland plants. Additional management can significantly shape the wetland ultimately produced by nature. Management activities should be designed to help provide a competitive advantage to desirable natural species to enhance natural wetland development. Without management, invasive exotic species may predominate.

Factors that define wetlands, and that can be managed and manipulated to define the resulting wetlands are: soils, hydrology, and plants.

- **Soils:** much of the bay is Millsdale, a silty clay loam (Fig. 2), and it is classified as a hydric soil. These soils are defined as being in a depression poorly to very poorly drained with a water table ≤ 1.0 foot from the surface during the growing season . . . and soils are frequently ponded for long or very long duration during the growing season.

A band of Lenawee, also a silty clay loam follows the shoreline. According to a list of hydric soils provided by Erie County NRCS, and according to the NRCS, USDA listing and definition of hydric soils for Erie County, Ohio, Lenawee is not hydric. However, according to the NRCS, USDA listing and definition of hydric soils for the state of Ohio, Lenawee is hydric. While it is not considered a depressional landform, it is given hydric criteria ratings like those for the Millsdale.

In general, the project area has soils suitable for wetlands development.

- **Hydrologic regime:** the amount and timing of water will favor some species and hinder others. "The bay has a daily water level fluctuation of 0.6 feet", and "under average conditions, the water depth at the project site prior to construction was at least 0.6 feet." We are also informed that "fluctuations of water level in . . . [the] bay are primarily wind induced surges . . ." and that only "minor contributions of water to the East Sandusky Bay come from surface run off . . ." By managing the hydrology in the shoreline portion of the project area, Barnes Nursery can exert some control over future wetland development. We suspect that the addition of more water may be helpful in establishing and maintaining a "desirable, natural" emergent wetland shoreward of the canal. If so, passive devices, such as a shallow berm along the shoreward side of the ditch or other water retention devices should be investigated. Active devices to pump, retain, or control the flow of water may also be effective. A water budget should be developed that balances water input and output for the wetland type to be developed along the southern shoreline.
- **Plants:** the plants that colonize a wetland come from many sources. Wind, water, and animals disperse seed or plant fragments, or man can plant them. Perhaps one of the most important seed sources for an area like the shoreline in the project area is the existing soil. Because the area was previously an emergent wetland, viable seeds and vegetatively reproductive plant parts may remain in the soil. However, some time has passed since the area was last a "healthy" emergent wetland, reducing the likelihood of the seed bank in the soil spontaneously producing a wetland with a diverse assemblage of species. It is more likely that early successional species will colonize the area and that with time nature will produce a more diverse wetland.

Seeding, planting, and/or use of soil containing seeds/plant parts may be helpful in re-establishing a desirable species complement. The area may need to be prepared for seeding or planting, and control of undesirable species may be required.

Many invasive, exotic species are early successional colonizers, and when established, may out-compete native species that produce later seral stages, and thus sustain an un-healthy near monoculture. This is especially true in “disturbed” or less natural areas. Common reed (*Phragmites australis*) and purple loosestrife (*Lythrum salicaria*) are two of the best known and most difficult to control. Both were observed in the shoreline wetland. Runners (a major form of vegetative reproduction) of the common reed over 20 feet in length were observed. Control of species such as common reed and purple loosestrife may be required, especially when conditions favor the invasive species over the more desirable/natural species.

2. Wetland plants will colonize the slopes of the island, forming several community zones.

Management practices implemented for the island will ultimately determine the plant community composition and zones. We believe that the primary function of the island will be to protect the wetland plant community developing along the southern shoreline and in the channel, i.e., emergent wetland on the southern shoreline and submerged, floating, and emergent community in and paralleling the channel.

During the 7 September reconnaissance, it was noted that spoil placed on the island resulted in steep bank slopes from the crest of the island to its base and that much of the silty clay loam excavated from the channel was well drained and lacked organic matter that could provide a seed-bank and enhance retention of water. Measures that could be implemented to improve the gradual changes from lower to higher areas are:

- Make the slopes gentler. In general, the longer the slope, the greater the opportunity for zones to form.

Improve the soil. At this time, the soil is very poor in terms of its nutrients and in terms of its ability to hold water – it lacks organic material. It is a harsh environment, that is essentially dry to the “water’s edge.” It does not provide an environmental gradient that would lead to a change in species composition (zoning).

As a part of the application, Barnes’ Nursery proposes to grade the spoil slopes to a 4:1 ratio and to provide soil conditioning and augmentation as necessary. This will increase water-holding capacity, provide nutrients, and provide greater opportunity for development of a more diverse plant community.

3. The open bay, offshore of the island, will not be vegetated by emergent plants because it is not protected from wave disturbance, as is the interior side of the island.

During the field reconnaissance it was noted that the majority of East Sandusky Bay lacked water and, for the most part, lacked wetland vegetation. A notable exception was emergent vegetation in some areas south of the barrier island. This area is protected from wave action off Lake Erie and presumably from wave action within East Sandusky Bay when the Bay is flooded. An area at least 500-feet wide north of the spoil island paralleling Barnes' Nursery irrigation canal lacked emergent vegetation. Factors that may contribute to the lack of vegetation in this area include persistent wave action when East Sandusky Bay is flooded, winter kill of aquatic vegetation resulting from frost penetration of Bay sediment during winter, and/or damage by spawning carp and other fish species that increase turbidity or uproot plants.

By contrast, placement of spoil during channel construction has "protected" the channel and shoreline from the forces of the waves. This is a significant change in the physical environment, and it is probable that the protected area will differ from the open bay. Without the waves, emergents can become established and grow. Indeed, emergent plants and other vegetation are already becoming established on the shoreline side of the spoil (Photograph 1). The Barnes Nursery project will have no effect on the Bay north of the irrigation canal. If wave action has destroyed and/or prohibited establishment of emergents in the bay, then wave action will continue to prevent, destroy, and/or prohibit their establishment.

4. The island and channel will provide habitats for a diverse community of birds and other animals.

The management alternative(s) selected for the vegetative community in the project area will affect utilization of the area by birds and other animals. Several management strategies are possible that fall along a continuum for production of the following endpoints:

- **No management** – allow nature to select the species complement and diversity
- **Manage for the prevention of nuisance species** – avoid production of habitats (vegetation and physical features) that attract undesirable species, such as Canada geese and species of gulls
- **Manage for one or a few desirable species** – produce vegetation and physical features attractive to specific species, such as game or endangered species
- **Manage for greatest diversity** – which is the most probable outcome of producing a variety of physical features and a diversity of vegetation types

A no- or low-management alternative is most likely to be successful over time. If a no- or low-management alternative is effective for control of nuisance species and/or to attract desirable species, then it is the most practical choice. Among no- or low-management considerations are the following.

One no- or low-management alternative would be to allow or enhance continued development of eastern cottonwood trees (*Populus deltoides*) seedlings that have colonized the spoil pile, as observed on the island during the September

reconnaissance. Although now seedlings, they will develop to mature trees. Stands of cottonwood trees would be desirable in several ways:

- They are relatively incompatible with use of the island by Canada geese, and gulls, which are a nuisance in many communities or are undesirable for their adverse effects on an endangered species (piping plover),
- They are favored perching and roosting sites for bald eagles, an endangered species, and other raptors when situated along water bodies and separated from human disturbance
- They provide perching and stop-over habitat for migrating neotropical song-birds
- Their root masses would help protect the physical integrity of the islands

As more than one suitable management alternative exists, Barnes Nursery will encourage natural resource agencies and other interested parties to participate in guiding the management plan(s) for the project area.

5. The reservoir channel will provide a refugia for fish species when the open bay is dry or frozen to the bottom.

During the September reconnaissance, the Barnes Nursery irrigation channel provided the only deep-water habitat in the southern three-quarters of East Sandusky Bay. Water was also observed near the barrier island where the emergent plants were located, and near the old channel into which the Nursery proposed to make a connection. The existing channel, and its connector to the Black Channel remnant may provide the only areas that do not dry out in the Bay. Thus, the Nursery channel is one of a limited number of permanently wet refugia in East Sandusky Bay and the only refugium along the southern shoreline for species that cannot survive drying during spring, summer, and autumn. Because of its depth, we anticipate that the channel will not freeze to bottom during winter; thus, the channel will provide a refugium for protection of aquatic species from drying and freezing.

6. A diverse community of fish will inhabit the reservoir channel

In his response to the Ohio Environmental Protection Agency dated July 24, 2001, Robert Barnes noted that East Sandusky Bay could serve as habitat for a robust fish population. He indicated that 46 species use Lake Erie coastal marshes, most of which are abundant or common, including: bigmouth buffalo (*Ictiobus cyprinellus*), quillback carpsucker (*Carpionodes cyprinus*), shorthead redhorse (*Moxostoma macrolepidotum*), white sucker (*Catostomus commersoni*), crappie (*Pomoxis* spp.), bluegill sunfish (*Lepomis macrochirus*), largemouth bass (*Micropterus salmoides*), smallmouth bass (*Micropterus dolomieu*), pumpkinseed (*Lepomis gibbosus*), rock bass (*Ambloplites rupestris*), gizzard shad (*Dorosoma cepedianum*), carp (*Cyprinus carpio*), emerald shiner (*Notropis atherinoides*), spottail shiner (*Notropis hudsonius*), grass pickerel (*Esox americanus*), black bullhead (*Ameiurus melas*), yellow bullhead (*Ameiurus natalis*), brown bullhead (*Ameiurus nebulosus*), channel catfish (*Ictalurus punctatus*), white

perch (*Morone americana*), white bass (*Morone chrysops*), yellow perch (*Perca flavescens*), and freshwater drum (*Aplodinotus grunniens*). These species could colonize the deep-water channel when water levels in East Sandusky Bay permit movement of fish throughout the Bay.

Currently, the newly created aquatic habitat lacks the structural diversity to attract, hold, and sustain a diverse fish and benthic macroinvertebrate community. Over time, the aquatic habitat quality will change and improve as submerged, floating, and emergent plants colonize the canal. Aquatic habitat improvement through installation of submerging structures (trees, rootballs, or artificial reefs) would provide additional habitat for fish and substrate for invertebrates.

Again, Barnes Nursery will encourage natural resource agencies and other interested parties to participate in guiding the management for the fishery in the project area.

With the increase of vegetation in the irrigation water channel, the habitat will improve with regard to opportunities for sport and forage species to spawn. We anticipate that the channel will support a centrarchid-based fishery that includes crappie, largemouth bass and sunfish, with shiners and shad providing forage. With the variety of habitat types in the channel and a deep-water habitat, many species will find spawning substrates available for reproduction throughout the spring and early summer. Larvae and juveniles of these species will add to the forage base of the channel.

7. The openings between the reservoir channel and the open bay will provide an avenue for movement of fish and aquatic invertebrate species.

Based upon design elevations, the channels should be continuously connected so as to provide an avenue for movement of fish and aquatic invertebrate species.

8. Water turbidity in the channel and adjacent to the island will not be elevated above typical values in the open bay.

The island bordering the Barnes Nursery irrigation channel will protect the channel from wave action that can resuspend fine sediment. As the emergent vegetation community develops along the north shore of the island, that vegetation will reduce erosion to what would be the normal background level – equivalent to that coming from the past shoreline.

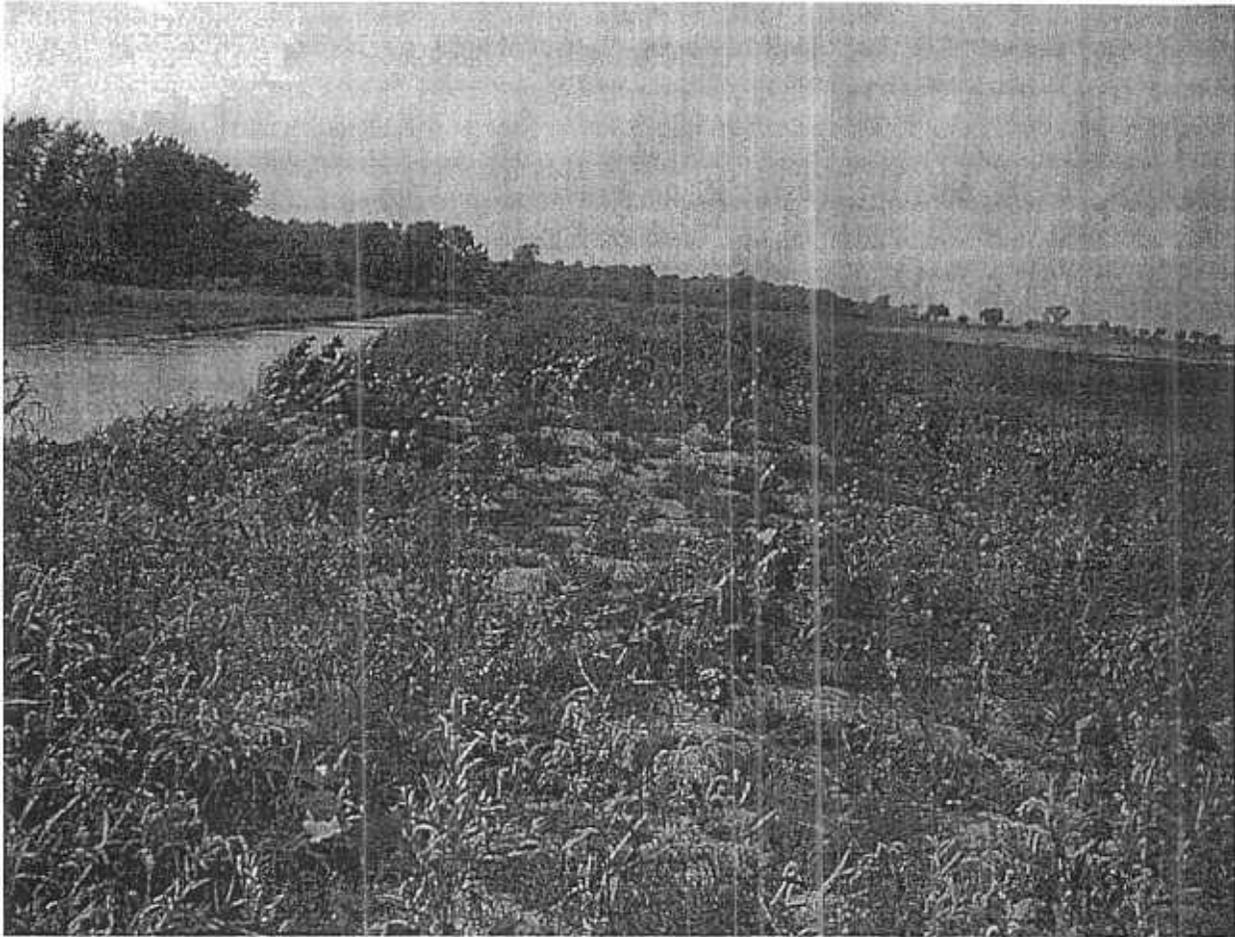
9. The stone weir at the bayward end of the intake channel will effectively screen large fish and debris from the intake channel and pump well.

Stone weirs are used by utilities to preclude fish from intake structures. Depending upon the size of stone used, pore size between stones, and width of the dike, they effectively screen detritus, fish, and other objects from water intakes. The use of the stone weir at the bayward end of the Barnes Nursery channel will effectively screen large fish and debris from the intake channel and pump well. Additional filtering of water

passing through stone weirs occurs when net-spinning caddisflies colonize weirs and use flow through the weir to capture suspended food particles, suspended fish eggs, and fish larvae.

10. The intake and reservoir channels will not “rob” water from the open bay and Sheldon Marsh.

Based upon the design elevations for the existing irrigation canal and the canal connection to the “Black Channel,” it appears that source water for Barnes’ Nursery will be Lake Erie water. If this is so, the elevation for the “connection channel” to the arm of Black Channel will provide a continuous source of water from Lake Erie through the breach in the barrier island. Lake Erie is such a large reservoir for water that there will be no detectable drawdown in East Sandusky Bay or any other hydrologic connection to the Lake. The connection to the lake negates any consideration of overland flow, water levels in the Bay or Marsh, or the source of those waters.



Photograph 1. Picture of, left to right, (1) vegetated area between shore and canal, (2) canal, (3) spoil pile, and (4) mud flat of the bay.

Fig. 1. NWI Map (from 1977 aerial photographs) of project area.

Fig. 2. NRCS soil survey map of project area.