



PUBLIC NOTICE

US Army Corps
of Engineers
New York District
Jacob K. Javits Federal Building
New York, N.Y. 10278-0090
ATTN: Regulatory Branch

In reply refer to:

Public Notice Number: NAN-2006-125-WCA

Issue Date: May 21, 2007

Expiration Date: June 11, 2007

To Whom It May Concern:

The New York District, Corps of Engineers has received an application for a Department of the Army permit pursuant to Section 10 of the Rivers and Harbors Act of 1899 (33 U.S.C. 403), and Section 404 of the Clean Water Act (33 U.S.C. 1344).

APPLICANT: Marsh Resources Inc.
2800 Post Oak Boulevard, Level 17
Houston, Texas 77056

ACTIVITY: Discharge fill material into waters of the United States to facilitate the construction of a wetland mitigation bank.

WATERWAY: Moonachie Creek (Hackensack River Watershed)

LOCATION: Borough of Carlstadt, Bergen County, New Jersey.

A detailed description and plans of the applicant's activity are enclosed to assist in your review.

The decision whether to issue a permit will be based on an evaluation of the probable impact including cumulative impacts of the proposed activity on the public interest. That decision will reflect the national concern for both protection and utilization of important resources. The benefit which reasonably may be expected to accrue from the proposal must be balanced against its reasonably foreseeable detriments. All factors which may be relevant to the proposal will be considered including the cumulative effects thereof; among those are conservation, economics, aesthetics, general environmental concerns, wetlands, historic properties, fish and wildlife values, flood hazards, floodplain values, land use, navigation, shoreline erosion and accretion, recreation, water supply and conservation, water quality, energy needs, safety, food and fiber production, mineral needs, considerations of property ownership and, in general, the needs and welfare of the people.

The Corps of Engineers is soliciting comments from the public; Federal, state, and local agencies and officials; Indian Tribes; and other interested parties in order to consider and evaluate the impacts of this proposed activity. Any comments received will be considered by the Corps of Engineers to determine whether to issue, modify, condition or deny a permit for this proposal. To make this decision, comments are used to assess impacts on endangered species, historic properties, water quality, general environmental effects, and the other public interest factors listed above. Comments are used in preparation of an Environmental Assessment and/or an Environmental Impact Statement pursuant to the National Environmental Policy Act. Comments are also used to determine the need for a public hearing and to determine the overall public interest of the proposed activity.

ALL COMMENTS REGARDING THE PERMIT APPLICATION MUST BE PREPARED IN WRITING AND MAILED TO REACH THIS OFFICE BEFORE THE EXPIRATION DATE OF THIS NOTICE, otherwise, it will be presumed that there are no objections to the activity.

Any person may request, in writing, before this public notice expires, that a public hearing be held to collect information necessary to consider this application. Requests for public hearings shall state, with particularity, the reasons why a public hearing should be held. It should be noted that information submitted by mail is considered just as carefully in the permit decision process and bears the same weight as that furnished at a public hearing.

Our preliminary determination is that the activity for which authorization is sought herein is not likely to affect any Federally endangered or threatened species or their critical habitat. However, pursuant to Section 7 of the Endangered Species Act (16 U.S.C. 1531), the District Engineer is consulting with the appropriate Federal agency to determine the presence of and potential impacts to listed species in the project area or their critical habitat.

The Magnuson-Stevens Fishery Conservation and Management Act, as amended by the Sustainable Fisheries Act of 1996 (Public Law 104-267), requires all federal agencies to consult with the National Oceanic and Atmospheric Administrations Fisheries Service (NOAA-FS) on all actions or proposed actions, that are either permitted, funded, or undertaken by the agency, that may adversely affect Essential Fish Habitat (EFH). Based upon a review of the "Guide to Essential Fish Habitat Designations in the Northeastern United States," issued by the National Oceanic and Atmospheric Administration/National Marine Fisheries Service, the EFH for several aquatic species and their life stages in the proposed project area could potentially be impacted by the proposed work. Further consultation with NOAA-FS regarding EFH impacts and conservation recommendations is being conducted and will be concluded prior to a final decision on the application.

Based upon a review of the latest published version of the National Register of Historic Places, there are no known sites eligible for, or included in, the Register within the permit area. Presently unknown archeological, scientific, prehistorical, or historical data may be lost by work accomplished under the required permit.

Reviews of activities pursuant to Section 404 of the Clean Water Act will include application of the guidelines promulgated by the Administrator, U.S. Environmental Protection Agency, under authority of Section 404 (b) of the Clean Water Act and the applicant will obtain a water quality certificate or waiver from the appropriate state agency in accordance with Section 401 of the Clean Water Act prior to a permit decision.

Pursuant to Section 307 (c) of the Coastal Zone Management Act of 1972 as amended [16 U.S.C. 1456 (c)], for activities under consideration that are located within the coastal zone of a state which has a federally approved coastal zone management program, the applicant has certified in the permit application that the activity complies with, and will be conducted in a manner that is consistent with, the approved state coastal zone management program. By this public notice, we are requesting the state's concurrence with, objection to, or waiver of the applicant's certification. No permit decision will be made until one of these actions occur. For activities within the coastal zone of New Jersey the applicant's certification and accompanying information is available from the New Jersey Department of Environmental Protection, Bureau of Coastal Regulation, CN 401, 501 East State Street, Second Floor, Trenton, New Jersey 08625-0401, Telephone Number (609) 633-2289. Comments regarding the applicant's certification should be so addressed. In addition to any required water quality certificate and coastal zone management program concurrence, the applicant has obtained or requested the following governmental authorization for the activity under consideration: New Jersey Department of Environmental Protection Waterfront Development Permit

It is requested that you communicate the foregoing information concerning the activity to any persons known by you to be interested and who did not receive a copy of this notice. If you have any questions concerning this application, you may contact this office at (917) 790-8412 and ask for James Cannon.

CENAN-OP-RW

PUBLIC NOTICE NO. NAN-2006-125-WCA

For more information on New York District Corps of Engineers programs, visit our website at
<http://www.nan.usace.army.mil>

For/ *George Niles*
Richard L. Tomer
Chief, Regulatory Branch

Enclosures

WORK DESCRIPTION

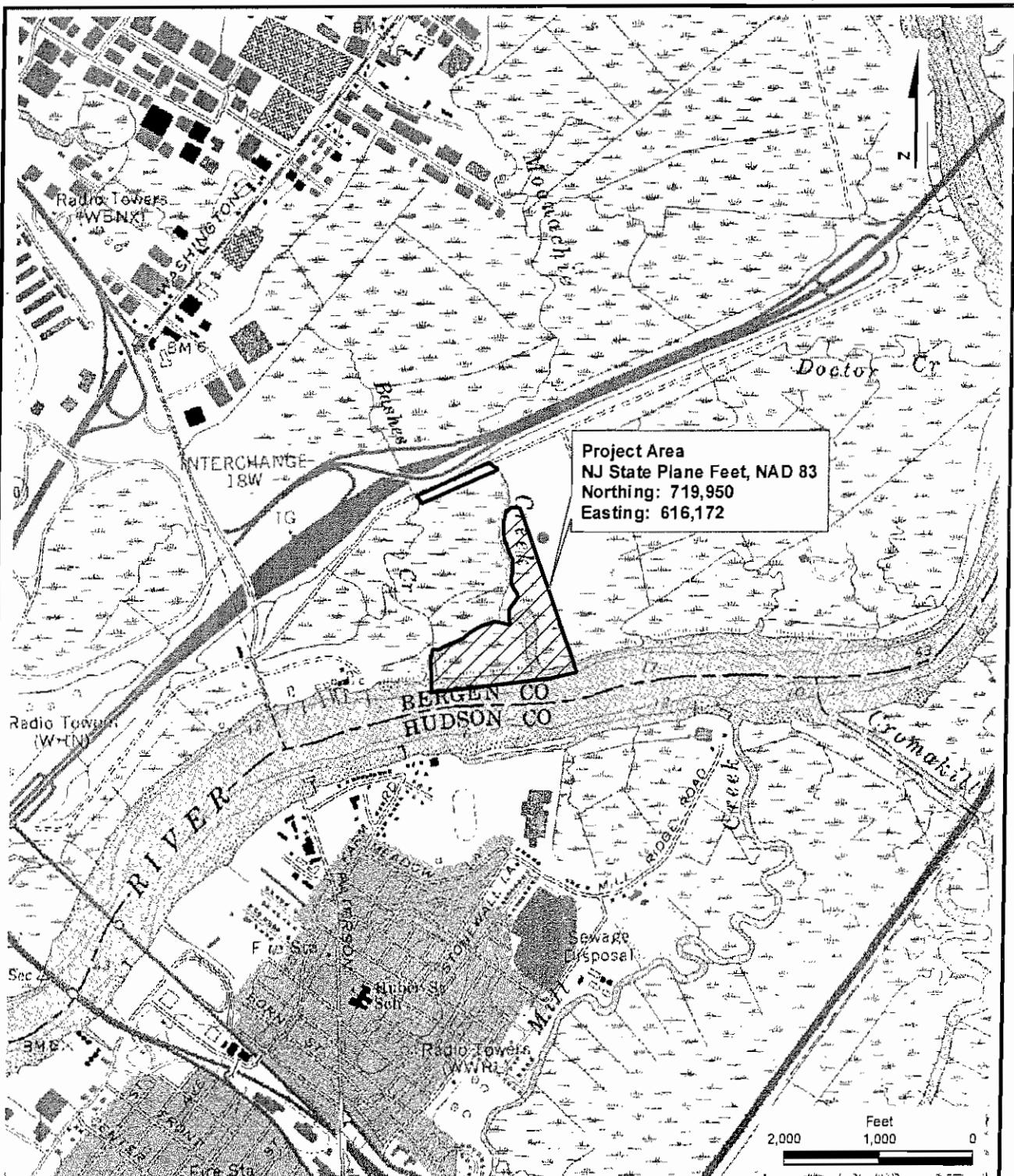
The applicant and Bank Sponsor, Marsh Resources Inc., a wholly owned subsidiary of Transcontinental Gas Pipe Line Corporation, has requested Department of the Army authorization to establish, enhance, and preserve approximately 20.88 acres of a 30.51 acre wetland for the construction of a mitigation bank. Approximately 7.66 acres of the site consists of upland berms, an existing upland service road, and open water areas associated with the Hackensack River and Moonachie Creek, and a 1.97 acre parcel is situated along the Transcontinental Service Road. Although portions of the 7.66 acre area and the 1.97 acre would be enhanced as part of the proposed activities, they would not become part of the proposed mitigation bank. The proposed bank would be known as the "Phase 3A Wetland Mitigation Bank", and would be situated in an area adjacent to Marsh Resources Inc.'s existing Phase I and 2 mitigation bank. The site is located within the Hackensack River Watershed, in the Borough of Carlstadt, Bergen County, New Jersey.

The proposed work would include excavation and grading activities that would lower the existing on site elevations thereby restoring tidal flow from the Hackensack River and portions of Moonachie Creek to the southern and eastern portions of the Phase 3A Bank site, aiding in the establishment and enhancement of meandering tidal channels, mudflat habitat, and associated tidal emergent marsh complexes. This 20.88 acre site is currently not subject to tidal flow and is dominated by common reed (*Phragmites australis*). As part of the proposed activities, approximately 2,841 cubic yards of fill material would be discharged into approximately 0.28 acres of existing non-tidal wetlands to establish upland berms, and approximately 459 cubic yards of sediments would be excavated from 0.14 acres of wetlands to establish tidal channels.

Upland berms would be reinforced using the on-site material to prevent tidal waters from entering adjacent properties, and would provide a diverse habitat for wildlife species within the surrounding wetlands. The primary wetland system within the proposed tidal wetland would be comprised of various tidal species of cordgrass (*Spartina spp.*). As a result of the proposed work at the 20.88 acre site, a total of approximately 18.85 acres of tidal emergent wetlands would be established, enhanced and preserved, with approximately 2.03 acres of uplands to be enhanced and preserved. During the proposed mitigation bank excavation and grading activities, the 1.97 acre area situated along the Transco Service road and north of the bank site would be used as a disposal area for excess excavated sediments. Upon completion of the Phase 3A Wetland Mitigation Bank construction activities, this 1.97 acre area would be enhanced as a non-tidal wetland meadow and upland herbaceous community. The service area of the proposed mitigation bank would remain consistent with Marsh Resources Inc.'s Phase 1 and 2 mitigation bank which includes U.S. Geological Service Hydrologic Units 02030101170, 02030103170, 02030103180, 02030104010, and 0203010315050.

The stated purpose of this project is to provide, through the Bank, economically, efficient and flexible compensatory mitigation opportunities for both public and private entities seeking to comply with compensatory mitigation requirements for unavoidable impacts to waters of the United States, including wetlands, which result from activities authorized under Section 404 of the Clean Water Act, Section 10 of the Rivers and Harbors Act of 1899, or the New Jersey Freshwater Wetlands Protection Act of 1987. The use of the proposed mitigation bank would contribute to the long term ecological functioning of the estuary, with an immediate goal of no net loss and a long-term goal of a net gain in wetland functions and values.

The U.S. Army Corps of Engineers (USACE) and the New Jersey Department of Environmental Protection (NJDEP) in consultation with a committee made up of federal and state agency representatives (which would include both the USACE and the NJDEP) known as the Mitigation Bank Review Team would oversee the establishment and operation of the proposed mitigation bank.



Legend

- MRI Phase 3A Project Boundary (30.51 acres)
- //// MRI Phase 3A Bank (28.54 acres)

Source: USGS Topographic Quadrangle, Weehawken NJ.

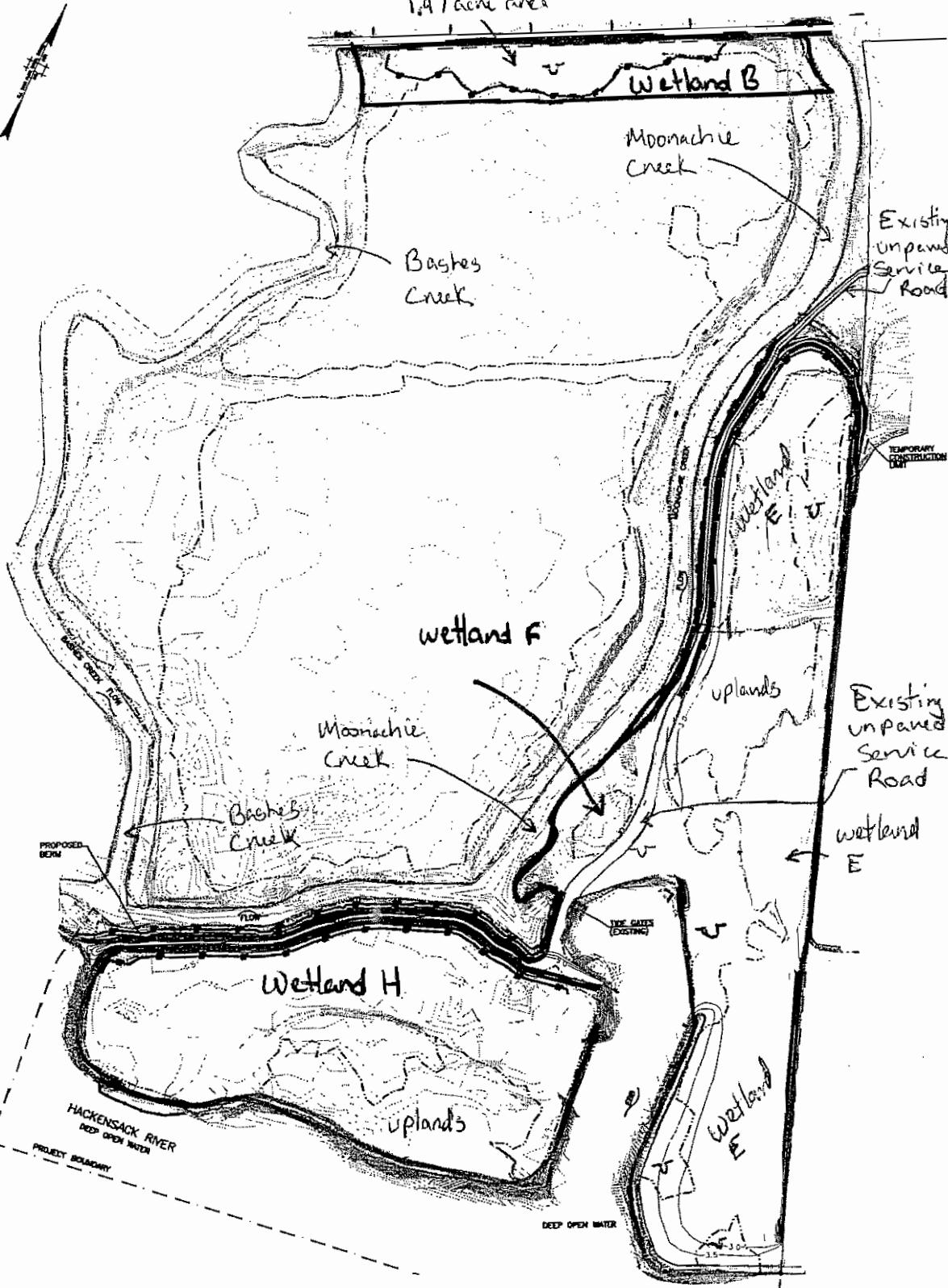
MARSH RESOURCES INC.
MEADOWLANDS MITIGATION BANK
PHASE 3A

SITE LOCATION MAP 1A



The Louis Berger Group, Inc.
30A Vreeland Road
Florham Park, NJ 07932

DATE
JAN 2007



MARSH RESOURCES INC.
MEADOWLANDS MITIGATION BANK
PHASE 3A

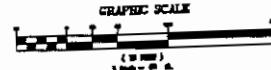
SITE LOCATION MAP 15

The Louis Berger Group, Inc.
33A Vreeland Road
Florham Park, NJ 07932

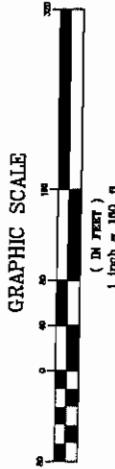
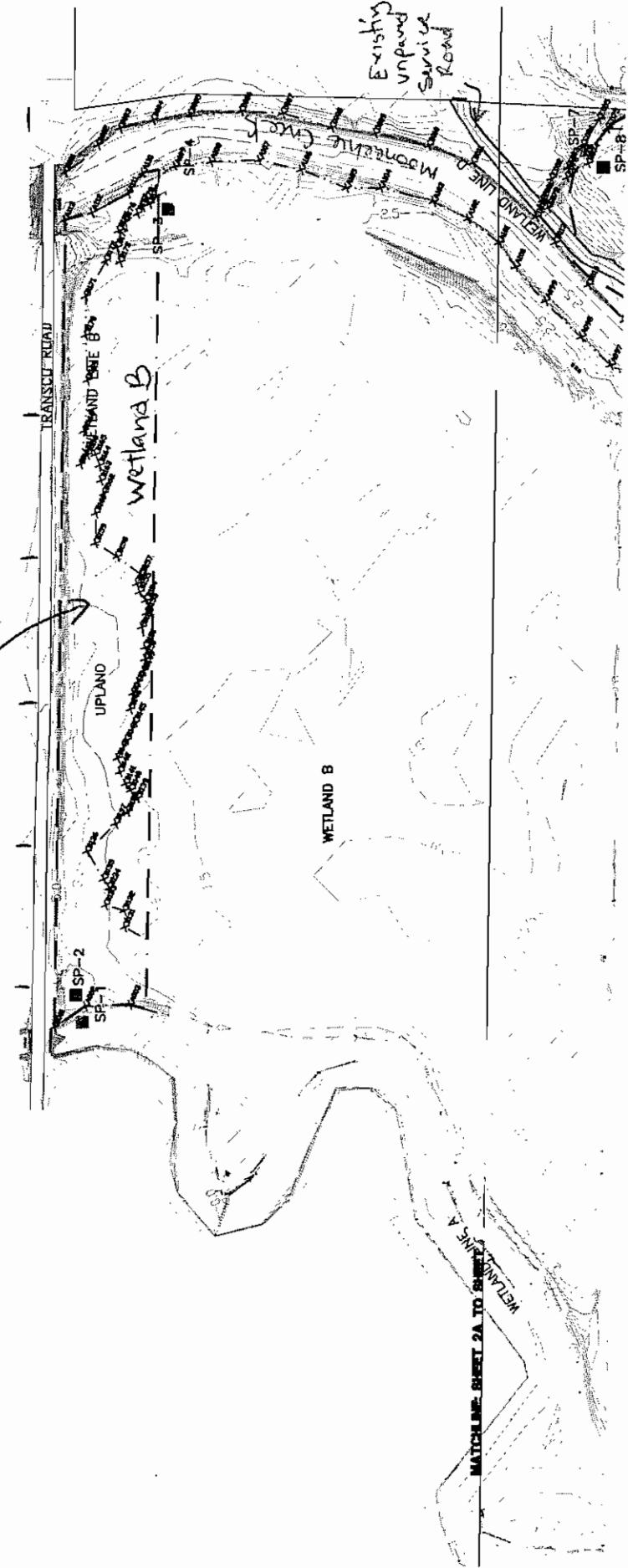
DATE
JAN 2007

LEGEND:

- PROJECT BOUNDARY
- WETLAND DELINEATION LINE
- uplands



1.97 acre area



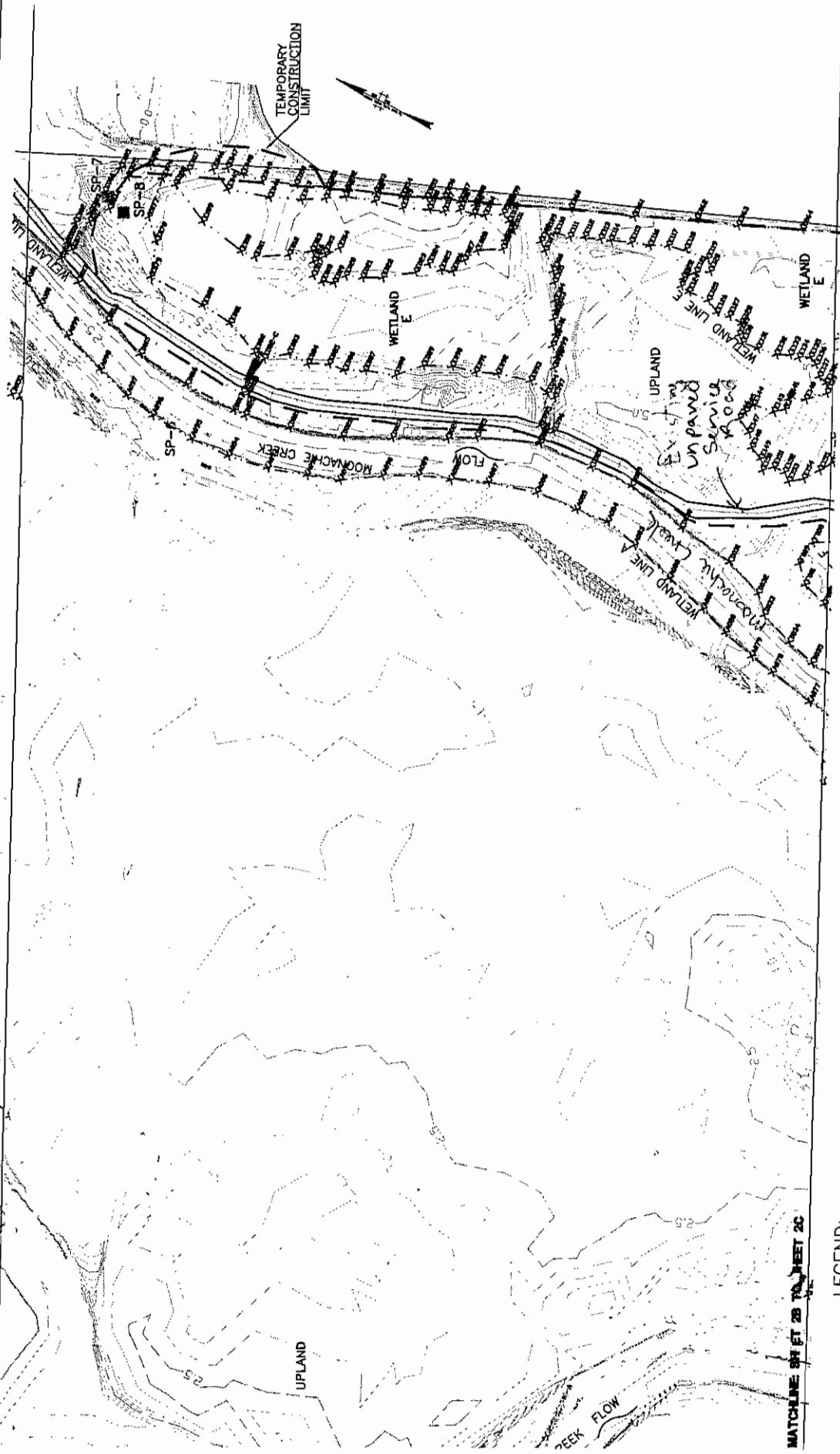
MARSH RESOURCES INC.

**MARSH RESOURCES
MEADOWLANDS MITIGATION BANK
EXISTING CONDITIONS
PHASE 3 A**

BOROUGH OF CARLSTADT, BERGEN COUNTY, NEW JERSEY
BLOCK 137, LOTS 2, 3, 6-9, 13, 15, 16

THE LOUIS BERGER GROUP, INC.
30 WRELAND ROAD
FLORHAM PARK, NEW JERSEY 07932
SCALE: AS SHOWN REVISED: MARCH 2007
JOHN T. AMOROSA
N.J. P.E. LIC. NO. 29431
CERTIFICATE OF AUTHORIZATION
24GAG27933700
SHEET 2A OF 8

MATCHLINE SHEET 2A TO SHEET 2B



MARSH RESOURCES INC.

**MARSH RESOURCES
MEADOWLANDS MITIGATION BANK
PHASE 3 A
EXISTING CONDITIONS**

EASING CONDITIONS



THE LOUIS BERGER GROUP, INC.
30 VREELAND ROAD
FLORHAM PARK, NEW JERSEY 07932

JOHN T. ANDROSA
N.J. P.E. LIC. NO. 29453
CERTIFICATE OF AUTHORIZATION
244-297-01000

GRAPHIC SCALE

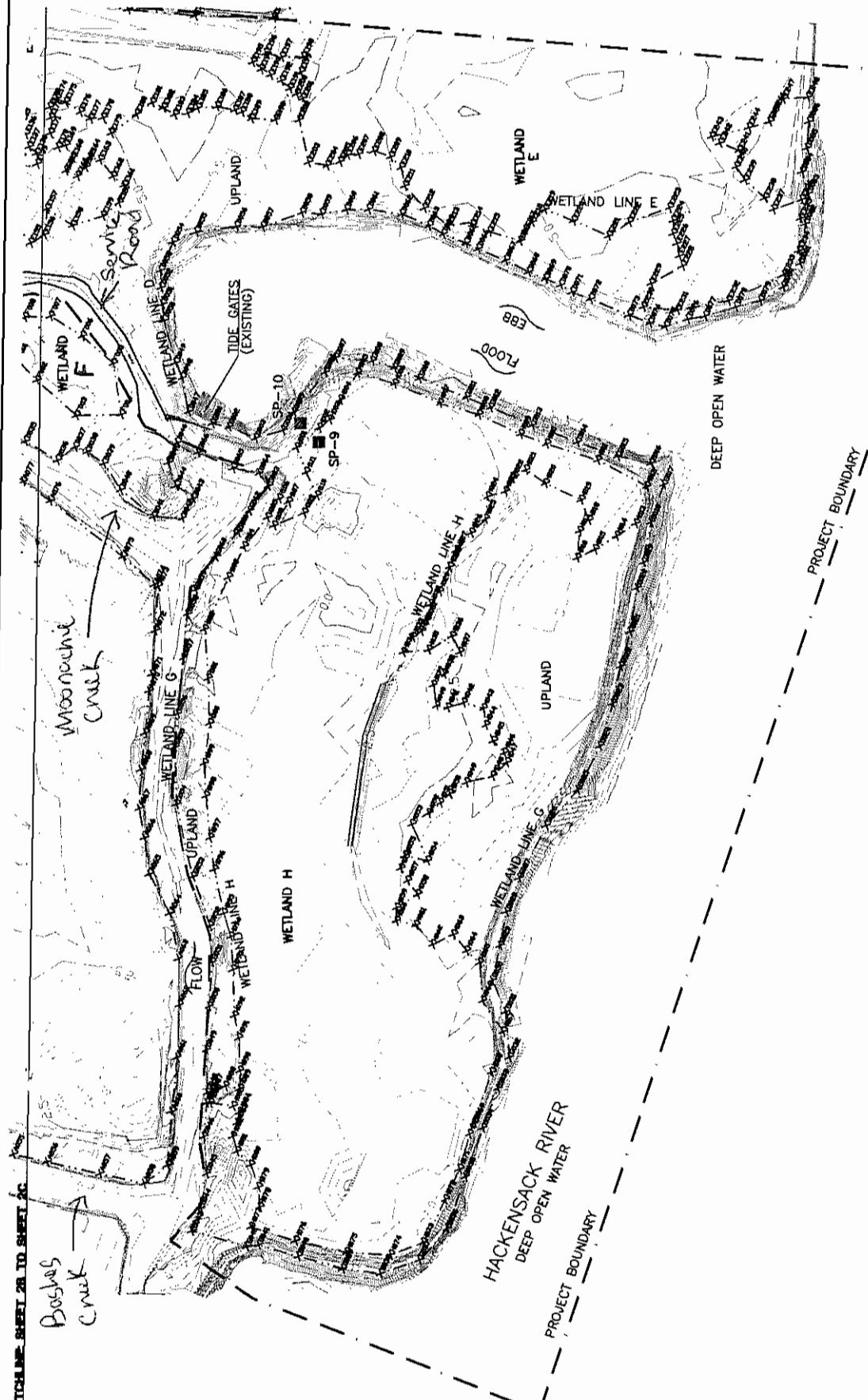
(IN FEET)

LEGEND:

PROJECT BOUNDARY WETLAND DELINEATION LINE SOIL POINT LOCATION
SP-9

NOTES:

1. MEAN HIGHER HIGH WATER LINE ELEVATION IS 4.26 FT. NCVD29
2. MEAN HIGH WATER LINE ELEVATION IS 3.90 FT. NCVD29
3. USACE JURISDICTIONAL DETERMINATION ISSUED MARCH 10, 2006



WATCHING SHEET MUSIC

LEGEND:

PROJECT BOUNDARY
WETLAND DELINEATION LINE
SOIL POINT LOCATION
WATER BODY
SP-9

NOTES:
1. MEAN HIGHER HIGH WATER LINE ELEVATION IS 4.26 FT. NCVD29
2. MEAN HIGH WATER LINE ELEVATION IS 3.93 FT. NCVD29
3. USACE JURISDICTIONAL DETERMINATION ISSUED MARCH 29, 2005



GRAPHIC SCALE
($\frac{1}{10}$ INCH)

WASH RESOURCES INC.

**MARSH RESOURCES
MEADOWLANDS MITIGATION BANK
PHASE 3 A
EXISTING CONDITIONS**

THE LOUIS BERGER GROUP INC
PO BOX 1370, CARLSTADT, BERGEN COUNTY, NEW JERSEY

FLORHAM PARK, NEW JERSEY 07932	REvised:	MARCH 2007	SHEET	2C OF B
AS SHOWN			CERTIFICATE OF AUTHORITY	
SCALE:			24A27833700	

1.97 acre area

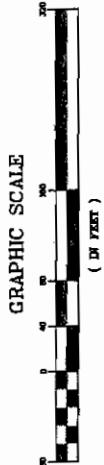


Wetland Creek

MATCHLINE SHEET 3A TO SHEET 3B

NOTES:

1. TOPOGRAPHIC SURVEY FOR BASE MAPPING SURVEYED BY MERCATOR LAND SURVEYING, LLC NEW YORK, NEW YORK IN SEPTEMBER 2005.
2. THE HORIZONTAL COORDINATE SYSTEM IN NEW JERSEY STATE PLANE COORDINATES, NAD83 AND THE VERTICAL COORDINATE SYSTEM IS NGVD29.
3. THERE IS 1.97 ACRES (INCLUDING 1.19 ACRES OF UPLAND HERBACEOUS AND 0.78 ACRES OF WET MEADOW), LOCATED WITHIN THE PROJECT BOUNDARY, BUT OUTSIDE THE LIMITS OF THE PHASE 3A BANK.

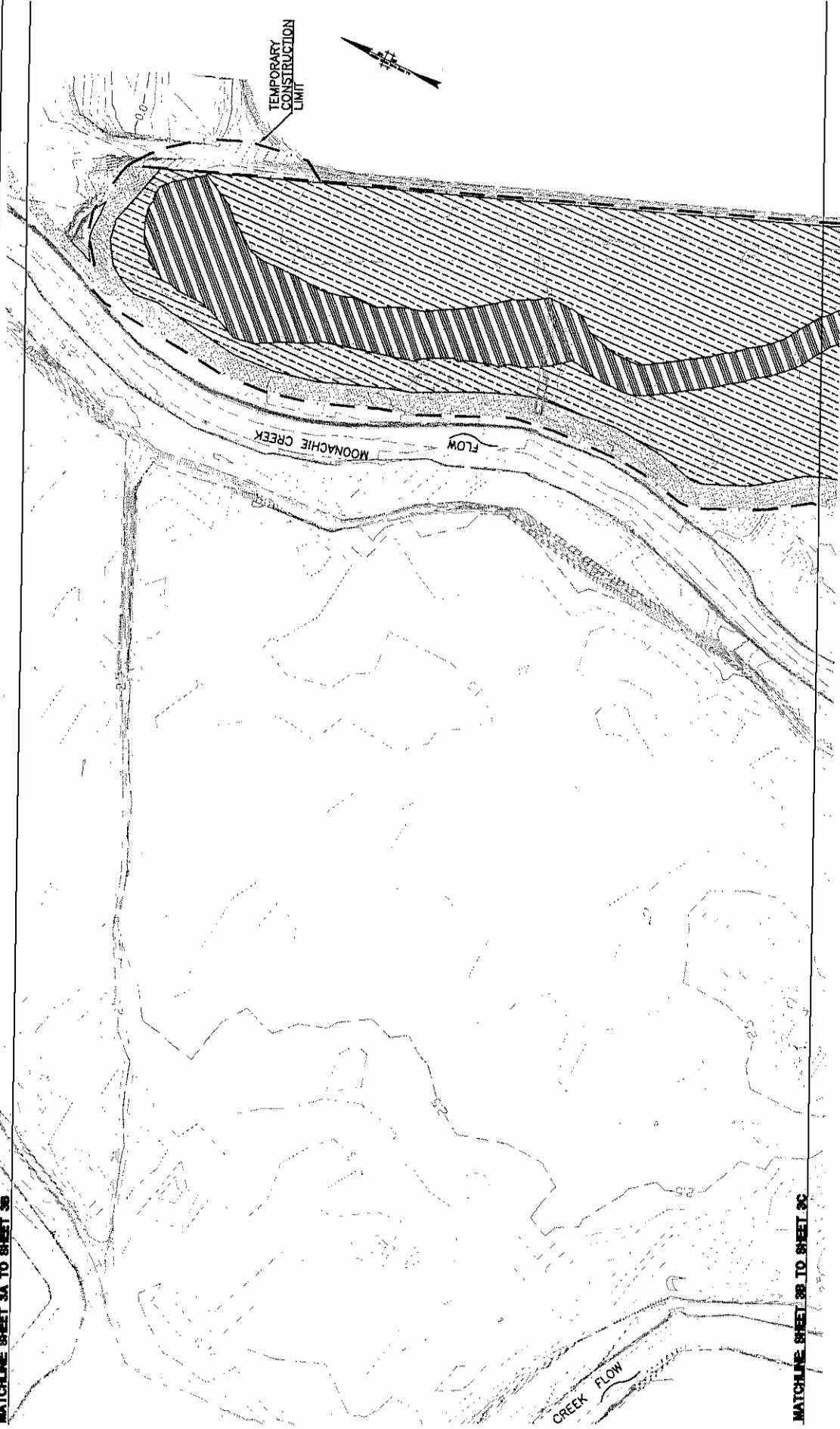


MARSH RESOURCES INC.

**MARSHLANDS MITIGATION BANK
PHASE 3 A
PROPOSED CONDITIONS**

BOROUGH OF CARLSTADT, BERGEN COUNTY, NEW JERSEY
BLOCK 137, LOTS 2, 3, 6-9, 13, 15, 16

	THE LOUIS BERGER GROUP, INC. 50 WREELAND ROAD FLORHAM PARK, NEW JERSEY 07932	JOHN T. AMOROSA N.J. P.E. LIC. NO. 29431 CERTIFICATE OF AUTHORIZATION # 24642783750
SCALE: AS SHOWN	REVISED: MARCH 2007	SHEET 3A OF 8



NOTES:

1. TOPOGRAPHIC SURVEY FOR BASE MAPPING SURVEYED BY MERCATOR LAND SURVEYING, LLC NEW YORK, NEW YORK IN SEPTEMBER 2005.
2. THE HORIZONTAL COORDINATE SYSTEM IN NEW JERSEY STATE PLANE COORDINATES, NAD83, AND THE VERTICAL COORDINATE SYSTEM IS NGVD29.
3. THERE IS 1.97 ACRES (INCLUDING 1.19 ACRES OF UPLAND HERBACEOUS AND 0.78 ACRES OF WET MEADOW), LOCATED WITHIN THE PROJECT BOUNDARY, BUT OUTSIDE THE LIMITS OF THE PHASE 3A BANK.



MARSH RESOURCES INC.

**MARSHLANDS MITIGATION BANK
PHASE 3 A
PROPOSED CONDITIONS**

BOROUGH OF CARLSTADT, BERGEN COUNTY, NEW JERSEY
BLOCK 137, LOTS 2, 3, 6-9, 13, 15, 16

THE LOUIS BERGER GROUP, INC.
30 VREELAND ROAD
FLORHAM PARK, NEW JERSEY 07932
SCALE: AS SHOWN REVISED:
1 JOHN T. AMROSA
N.J. P.E. LIC. NO. 294321
CERTIFICATE OF AUTHORIZATION
246-27933700
SHEET 3B OF 8

Existing unpaved Road

MATCHLINE SHEET 3B TO SHEET 3C

PROPOSED
BERM

Worrell
Creek

FLOW

HACKENSACK
DEEP OPEN RIVER

TIDE GATES
(EXISTING)

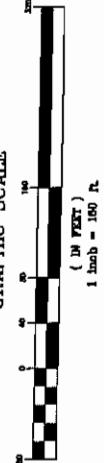
(Flood)
(Ebb)

PROJECT BOUNDARY

LEGEND:

UPLANDS	
EARTHEN ROAD	1.1 ACRES
UPLAND FOREST / SCRUB SHRUB	1.0 ACRES
UPLAND HERBACEOUS	1.2 ACRES
TIDAL	
EMERGENT MARSH	11.1 ACRES
OPEN WATER / MUD FLAT	5.7 ACRES
SCRUB SHRUB	0.1 ACRES
DEEP OPEN WATER	7.5 ACRES
NON-TIDAL	
WET MEADOW	0.8 ACRES
MISC.	
UNDISTURBED	2.0 ACRES
TOTAL	30.5 ACRES

GRAPHIC SCALE



NOTES:

1. TOPOGRAPHIC SURVEY FOR BASE MAPPING SURVEYED BY MERCATOR LAND SURVEYING, LLC NEW YORK, NEW YORK IN SEPTEMBER 2005.
2. THE HORIZONTAL COORDINATE SYSTEM IN NEW JERSEY STATE PLANE COORDINATES, NAD83 AND THE VERTICAL COORDINATE SYSTEM IS NGVD29.
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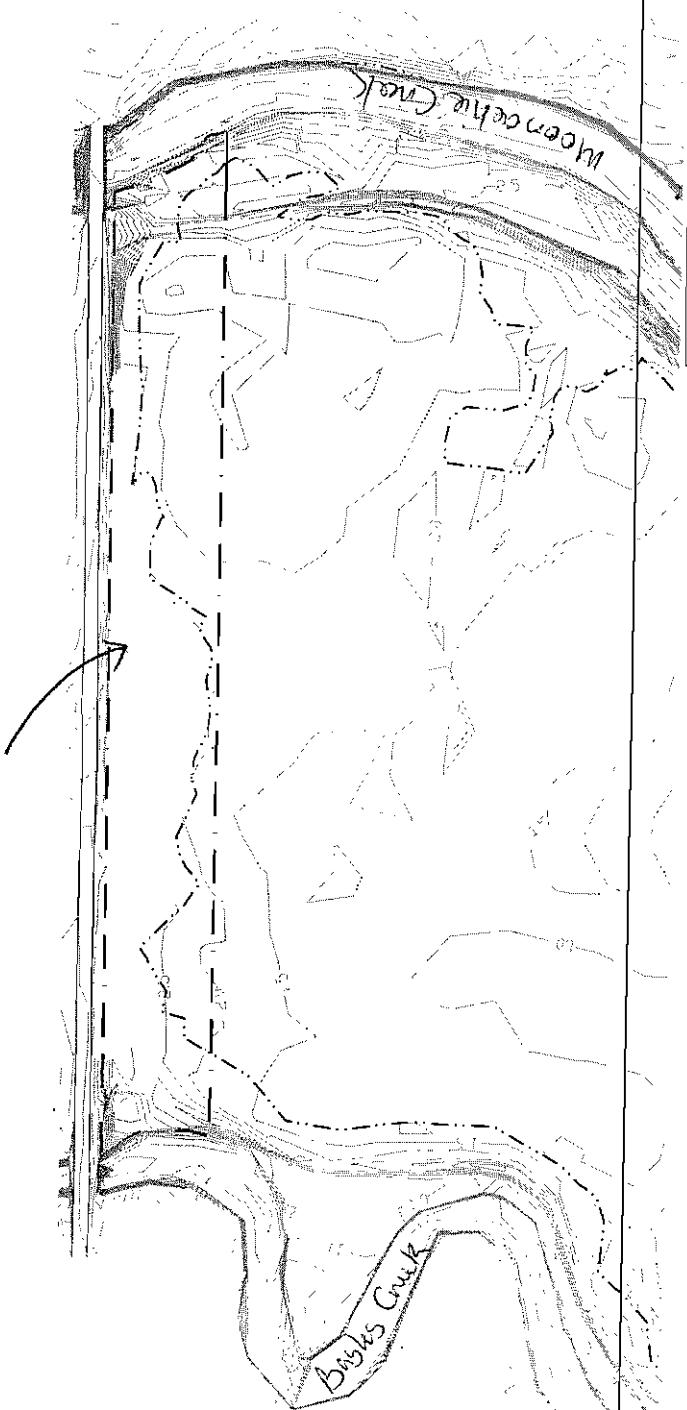
MARSH RESOURCES INC.
MEADOWLANDS MITIGATION BANK
PHASE 3 A
PROPOSED CONDITIONS

BOROUGH OF CARLSTADT, BERGEN COUNTY, NEW JERSEY
BLOCK 137, LOTS 2, 3, 6-9, 13, 15, 16

THE LOUIS BERGER GROUP, INC.
30 WEELED ROAD
FLORHAM PARK, NEW JERSEY 07932
SCALE: AS SHOWN REVISED: MARCH 2007
AS SHOWN REVISED: MARCH 2007

JOHN T. AMROSA
N.J. P.E. LIC. NO. 29431
CERTIFICATE OF AUTHORIZATION
24G4279433700
SHEET 3C OF 8

1.97 acre area



4B

4A

GRAPHIC SCALE



1 inch = 160 ft.

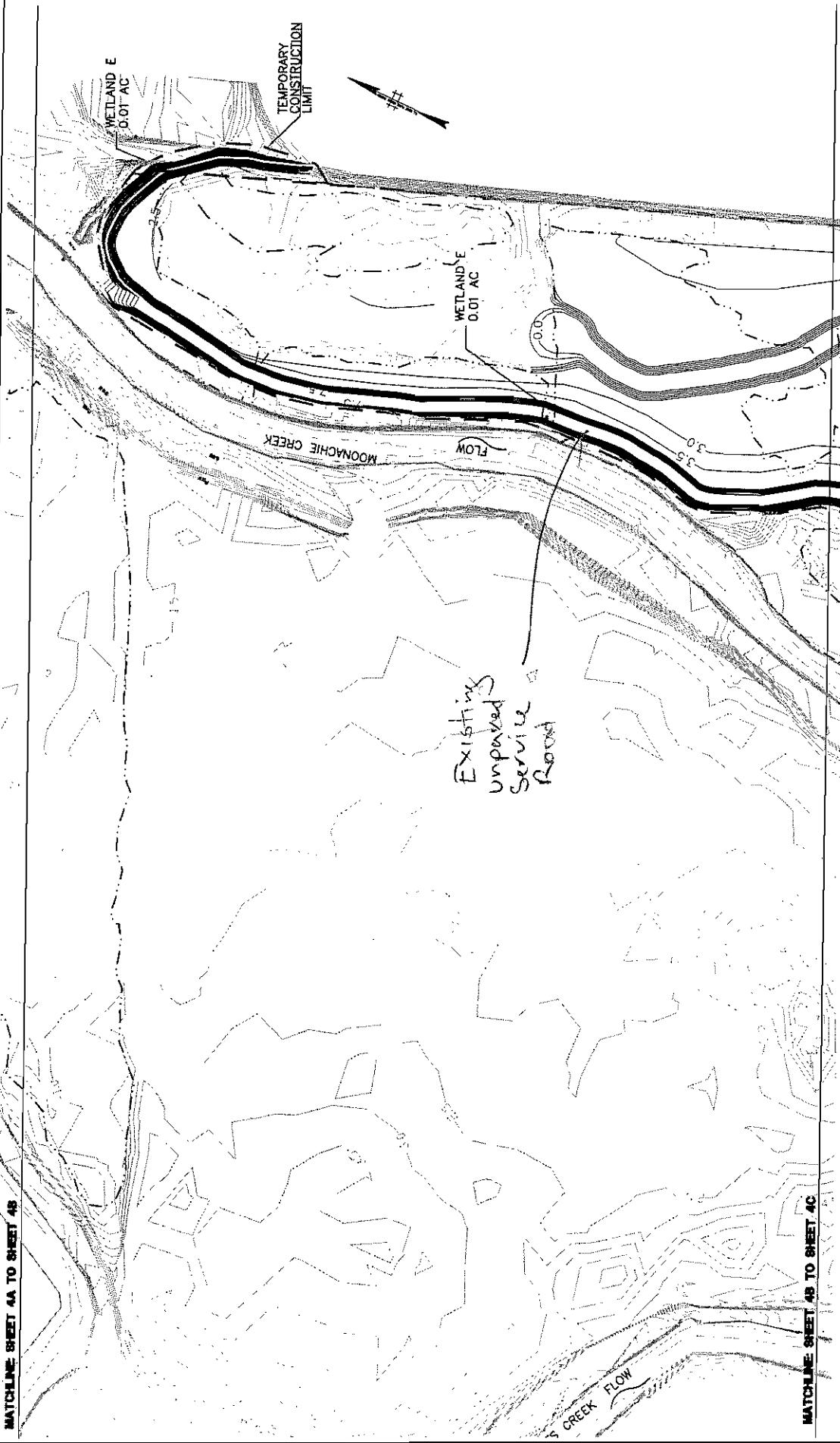
LEGEND:

- — — PROJECT BOUNDARY
- · · · · WETLAND DELINEATION LINE
- · · · · PROPOSED WETLAND IMPACT - FILL

PROPOSED IMPACT
— EXCAVATION BELOW MEAN HIGH WATER (MHW)
ELEVATION 3.90 NGVD29 (FT.)

MARSH RESOURCES INC.	MARSH RESOURCES / PROPOSED IMPACTS	
MEADOWLANDS MITIGATION BANK		PHASE 3 A
BOROUGH OF CARLSTADT, BERGEN COUNTY, NEW JERSEY		BLOCK 137, LOTS 2, 3, 6-9, 13, 15, 16
THE LOUIS BERGER GROUP, INC.		JOHN T. ANDROSA N.J. P.E. LIC. NO. 29431 CERTIFICATE OF AUTHORIZATION 24G-27933700
SCALE: AS SHOWN	REVISED: MARCH 2007	SHEET 4A OF 8

NOTES:
1. TOPOGRAPHIC SURVEY FOR BASE MAPPING SURVEYED BY
MERCATOR LAND SURVEYING LLC, NEW YORK, NEW YORK IN SEPTEMBER 2005.
2. THE HORIZONTAL COORDINATE SYSTEM IN NEW JERSEY STATE PLANE COORDINATES,
NAD27 AND THE VERTICAL COORDINATE SYSTEM IS NGVD29.



MATCHLINE SHEET 4B TO SHEET 4C

GRAPHIC SCALE

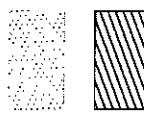
NOTES:

1. TOPOGRAPHIC SURVEY FOR BASIC MAPPING SURVEYED BY MERCATOR LAND SURVEYING LLC, NEW YORK, NEW YORK IN SEPTEMBER 2005.
2. THE HORIZONTAL COORDINATE SYSTEM IN NEW JERSEY STATE PLANE COORDINATES, NAD27 AND THE VERTICAL COORDINATE SYSTEM IS NGVD29 (FT.).

MARSH RESOURCES INC.	MARSH RESOURCES MEADOWLANDS MITIGATION BANK	GRADING PLAN / PROPOSED IMPACTS
BOROUGH OF CARLESTADT, BERGEN COUNTY, NEW JERSEY BLOCK 137, LOTS 2, 3, 6-9, 13, 15, 16	JOHN T. AMOROSA N.J. P.E. LIC. NO. 28431 CERTIFICATE OF AUTHORIZATION 24642C7935700	
THE LOUIS BERGER GROUP, INC. 10 WRELAND ROAD FLORHAM PARK, NEW JERSEY 07932	SCALE: AS SHOWN REVISED: MARCH 2007	SHEET 4B OF 8

LEGEND:

- — — PROJECT BOUNDARY
- — — WETLAND DELINEATION LINE
- — — PROPOSED WETLAND IMPACT — FILL
- — — PROPOSED IMPACT
— EXCAVATION BELOW MEAN HIGH WATER (MHW)
ELEVATION 3.90 NGVD29 (FT.)



WETLAND DELINEATION LINE

PROPOSED WETLAND IMPACT — FILL

PROPOSED IMPACT
— EXCAVATION BELOW MEAN HIGH WATER (MHW)
ELEVATION 3.90 NGVD29 (FT.)



WETLAND DELINEATION LINE

PROPOSED WETLAND IMPACT — FILL

PROPOSED IMPACT
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WETLAND DELINEATION LINE

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PROPOSED IMPACT
— EXCAVATION BELOW MEAN HIGH WATER (MHW)
ELEVATION 3.90 NGVD29 (FT.)



WETLAND DELINEATION LINE

PROPOSED WETLAND IMPACT — FILL

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— EXCAVATION BELOW MEAN HIGH WATER (MHW)
ELEVATION 3.90 NGVD29 (FT.)



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PROPOSED IMPACT
— EXCAVATION BELOW MEAN HIGH WATER (MHW)
ELEVATION 3.90 NGVD29 (FT.)



WETLAND DELINEATION LINE

PROPOSED WETLAND IMPACT — FILL

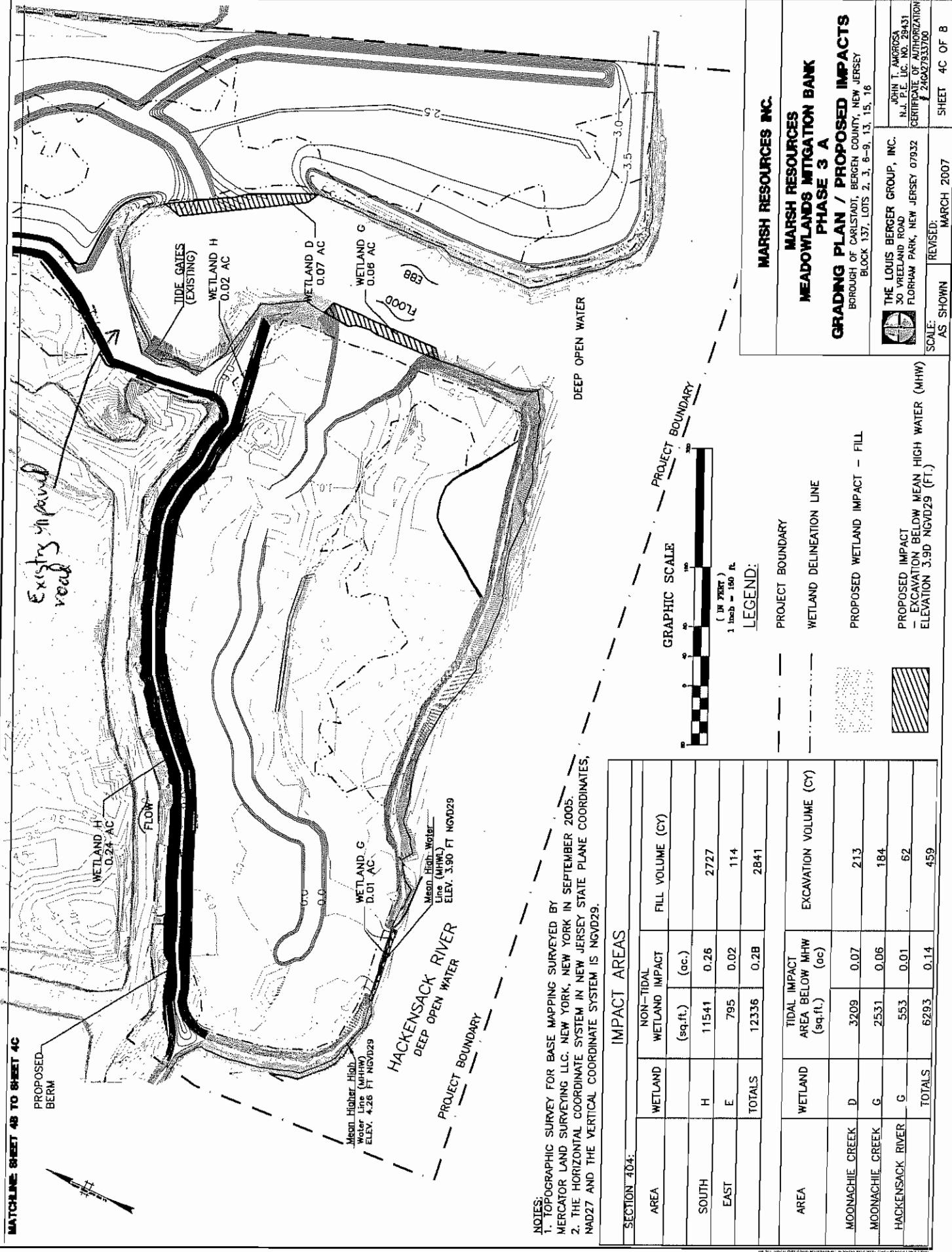
PROPOSED IMPACT
— EXCAVATION BELOW MEAN HIGH WATER (MHW)
ELEVATION 3.90 NGVD29 (FT.)



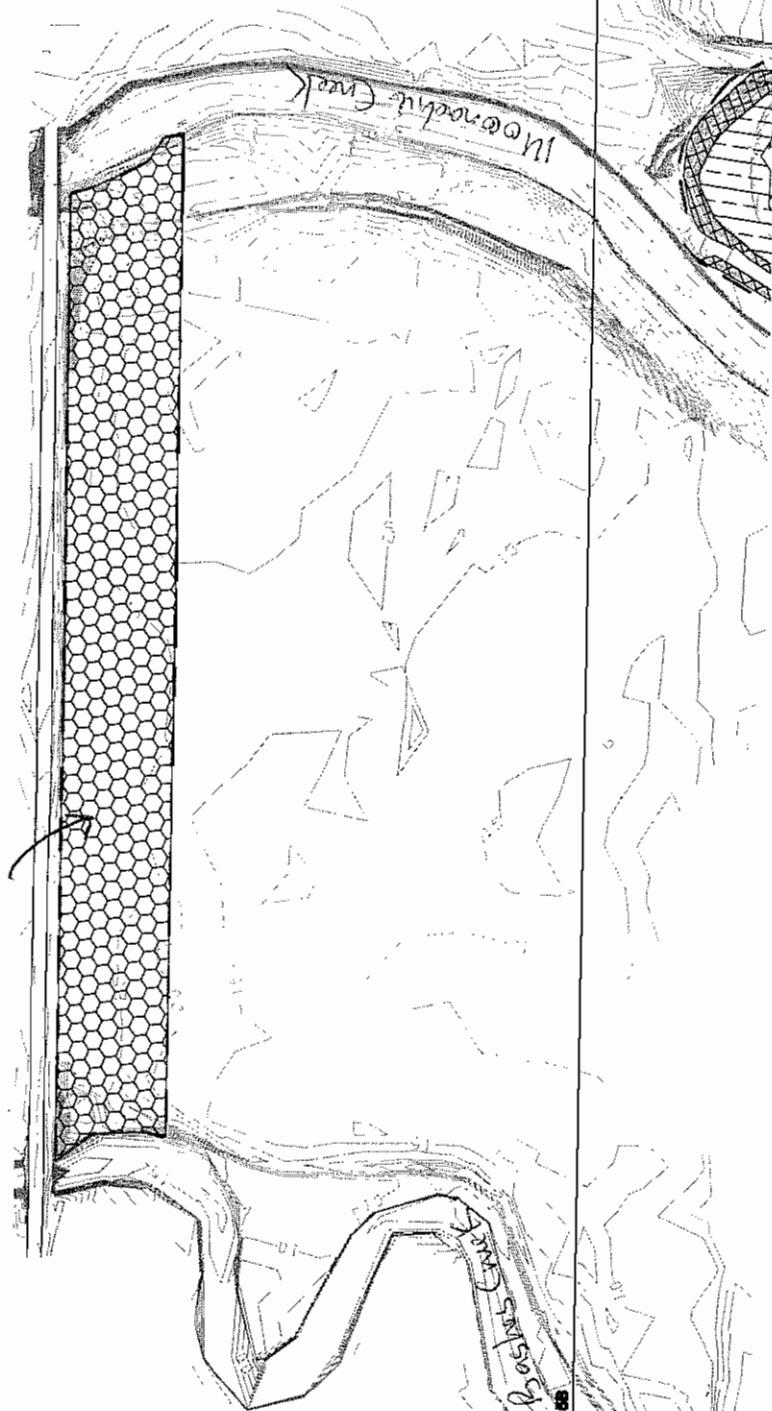
WETLAND DELINEATION LINE

PROPOSED WETLAND IMPACT — FILL

MATCHLINE SHEET 4B TO SHEET 4C



1.97 acre area



MATCH LINE: SHEET 3A TO SHEET 3B

GRAPHIC SCALE



(IN FEET)
1 inch = 160 ft.

MARSH RESOURCES INC.

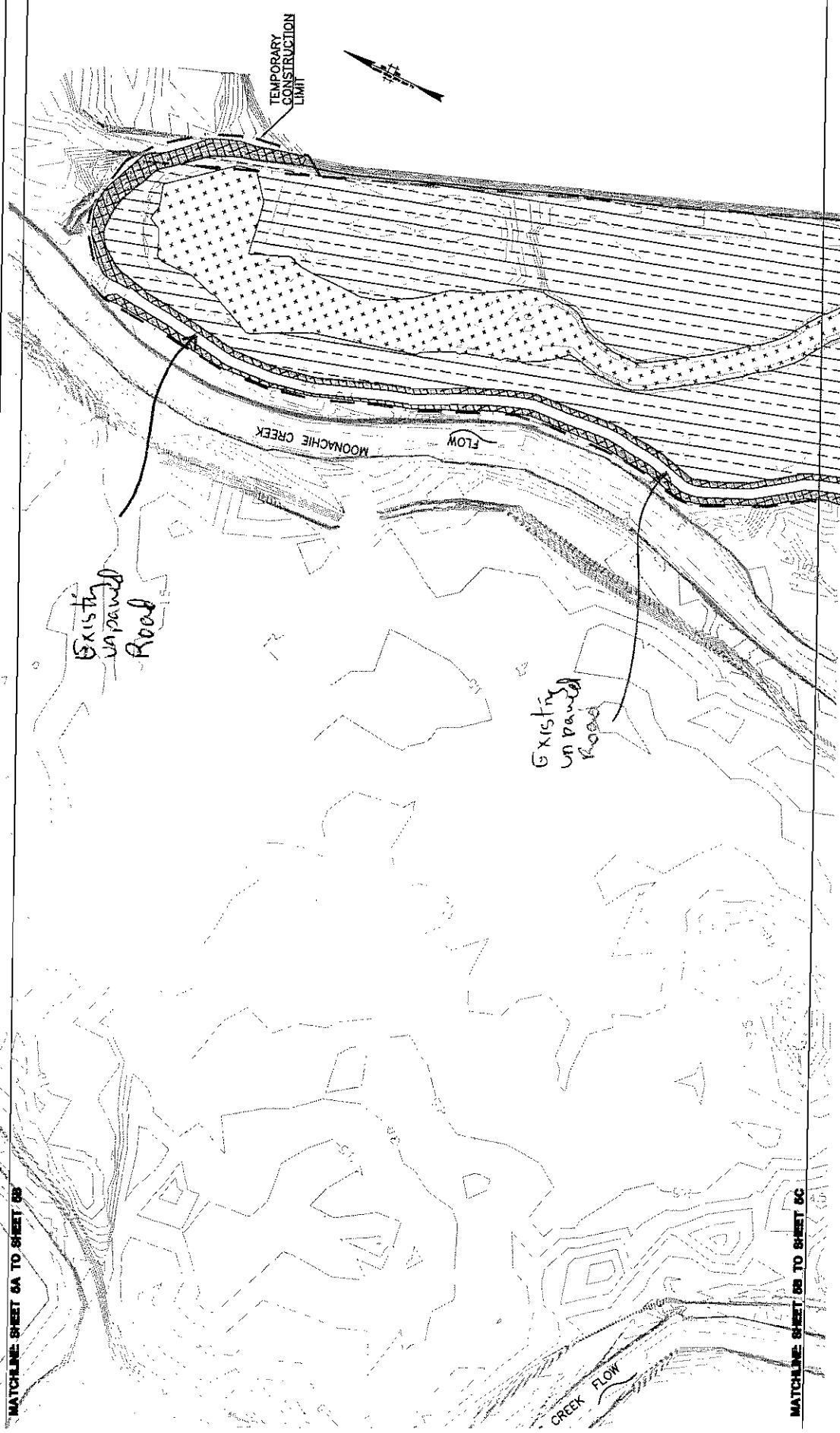
**MARSH RESOURCES
MEADOWLANDS MITIGATION BANK
PLANTING PLANS
PHASE 3 A**

BOROUGH OF CARLSTADT, BERGEN COUNTY, NEW JERSEY
BLOCK 137, LOTS 2, 3, 6-9, 13, 15, 16

THE LOUIS BERGER GROUP, INC.	JOHN T. AMOROSA, N.J. P.E. LIC. NO. 29431
30 VREELAND ROAD	CERTIFICATE OF AUTHORIZATION 2400P/933700
FLORHAM PARK, NEW JERSEY 07932	
SCALE: AS SHOWN	REVISED: MARCH 2007

SHEET 3A OF 8

MATCHLINE SHEET 6A TO SHEET 6B



MARSH RESOURCES INC.

**MARSH RESOURCES
MEADOWLANDS MITIGATION BANK
PLANTING PLANS
PHASE 3 A**

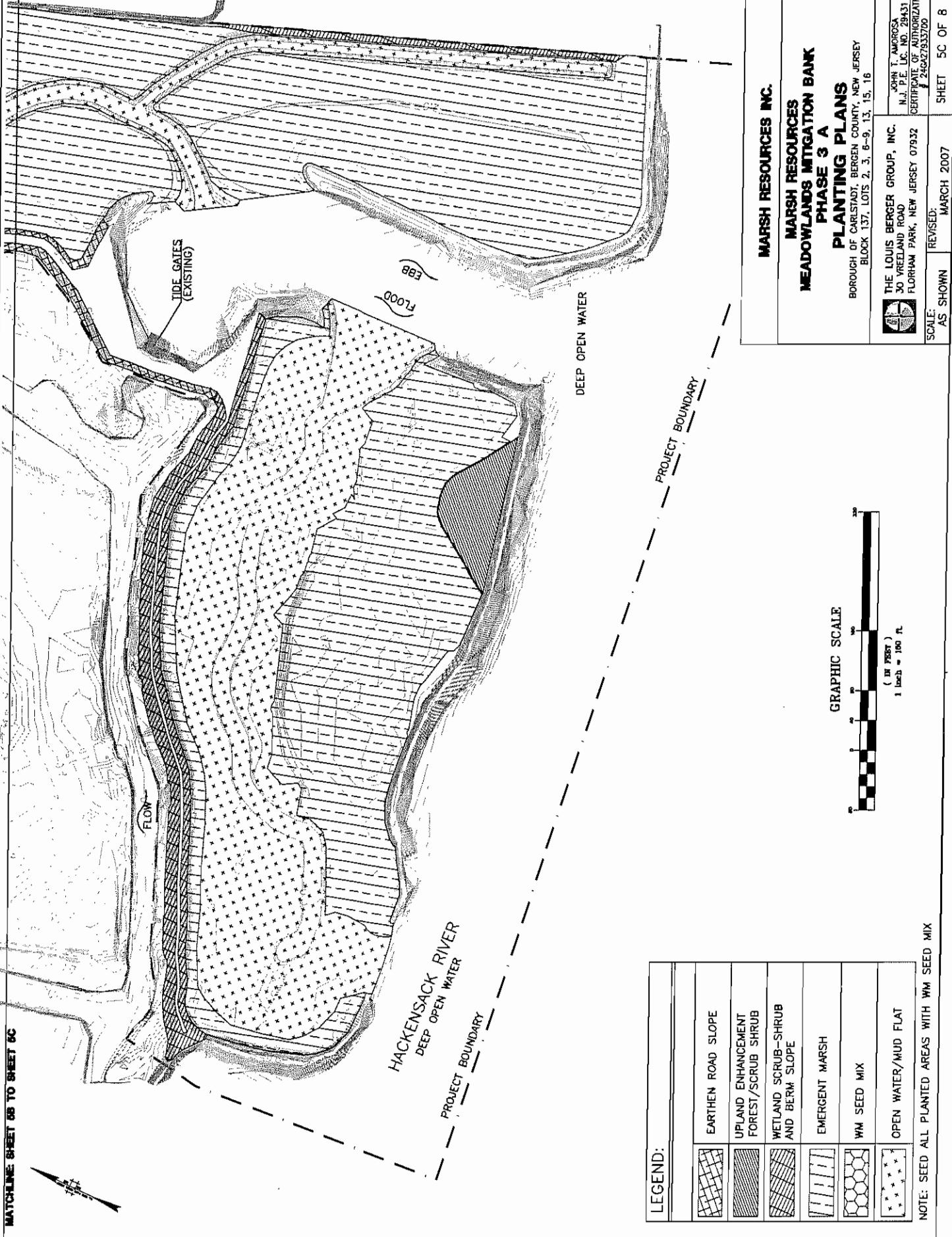
BOROUGH OF CARLESTADT, BERGEN COUNTY, NEW JERSEY
BLOCK 137, LOTS 2, 3, 6-9, 13, 15, 16

THE LOUIS BERGER GROUP, INC.
30 VREELAND ROAD
FLORHAM PARK, NEW JERSEY 07932
CERTIFICATE OF AUTHORIZATION
246-27833700

SCALE: AS SHOWN REVISED:
AS SHOWN MARCH 2007 SHEET 5B OF B



GRAPHIC SCALE



Planting Zone	Area (ac.)	Planted Species	Height (in.)	Spacing (ft.)	Root	Units
Earthen Road Slopes	0.6	<i>Baccharis halimifolia</i>	groundsel tree		Tublings/Container No. 2	125
		<i>Cinnamomum camphora</i>	silky dogwood		Tublings/Container No. 2	50
		<i>Iva frutescens</i>	marsh elder	24 IN - 30 IN Minimum	Tublings/Container No. 2	125
		<i>Myrica pensylvanica</i>	bayberry		Tublings/Container No. 3	180
		<i>Iva frutescens</i>	marsh elder		Tublings/Container No. 2	30
	0.25	<i>Baccharis halimifolia</i>	groundsel tree		Tublings/Container No. 2	30
		<i>Carinus americanus</i>	silky dogwood		Tublings/Container No. 2	20
		<i>Liquidambar styraciflua</i>	sweetgum		Tublings/Container No. 2	10
		<i>Myrica pensylvanica</i>	bayberry	24 IN - 30 IN Minimum	Tublings/Container No. 2	30
		<i>Quercus palustris</i>	pin oak		Tublings/Container No. 2	20
Upland Enhancement Forest/Scrub-Shrub	0.25	<i>Acer rubrum</i>	red maple		Tublings/Container No. 2	10
		<i>Populus deltoides</i>	cottonwood		Tublings/Container No. 2	30
		<i>Iva frutescens</i>	marsh elder		Tublings/Container No. 2	20
		<i>Baccharis halimifolia</i>	groundsel tree	24 IN - 30 IN Minimum	Tublings/Container No. 2	20
		<i>Myrica pensylvanica</i>	bayberry		Tublings/Container No. 2	200
	0.7	<i>Agronis alba</i>	cordgrass		Tublings/Container No. 2	200
		<i>Andropogon gerardii</i>	big bluestem		Tublings/Container No. 2	200
		<i>Hordeum jubatum</i>	foxtail barley	N / A	45 lbs of PLS / Ac.	150
		<i>Lolium multiflorum</i>	ryegrass			40,800
		<i>Panicum virgatum</i>	switchgrass			10,900
Wetland Scrub-Shrub and Berm Slope	0.7	<i>Spartina alterniflora</i>	smooth cordgrass	12 IN Minimum	3 FT. O.C.	2 IN. x 2 IN. Minimum Peat Plug
		<i>Distichlis spicata</i>	spike grass			2 FT. O.C.
		<i>Spartina cynosuroides</i>	tall cordgrass	6 IN Minimum		
		<i>Spartina patens</i>	salt meadow hay			
Emergent Marsh	11.5					

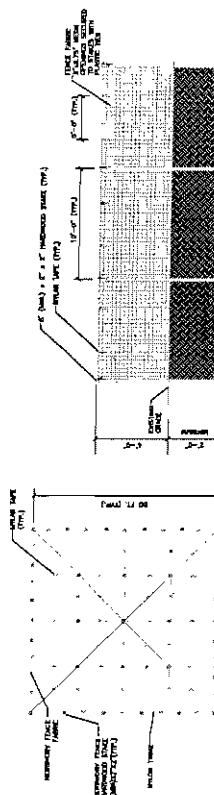
MARSH RESOURCES INC.

**MARSH RESOURCES
MEADOWLANDS MITIGATION BANK
PHASE 3 A**

PLANTING NOTES AND DETAILS



CROSS SECTION



15 of 18

TREE AND SHRUB PLANTINGS: EARTHEN ROAD SLOPES, UPLAND ENHANCEMENT FOREST/SCRUB-SHRUB, SCRUB-SHRUB WETLAND, AND BERM

- ALL TREES AND SHRUBS SHALL BE INSTALLED AT THE SPACING AND QUANTITIES SHOWN ON THE PLANTING TABLE. THE PLANTING PERIOD FOR TREES AND SHRUBS IS FROM APRIL 1 TO JUNE 15.
- THE UPLAND ENHANCEMENT AREAS WILL BE PLANTED AT A DENSITY OF 860 TREES PER ACRE AND 80 SHRUBS PER ACRE. TREES AND SHRUBS WILL BE PLANTED IN 8-FOOT CENTERS. SPECIES SHALL BE INTERMAXED AS DIRECTED BY THE WETLAND SPECIALIST.
- TREES AND SHRUBS SHALL BE PLANTED ALONG THE EARTHEN ROAD SLOPES ON 8-FOOT CENTERS. PLANT SPECIES SHALL BE INTERMAXED AS DIRECTED BY THE WETLAND SPECIALIST.
- SHRUBS SHALL BE PLANTED WITHIN THE SCRUB-SHRUB WETLAND AND ALONG THE BERM SLOPES ON 8-FOOT CENTERS. PLANT SPECIES SHALL BE INTERMAXED AS DIRECTED BY THE WETLAND SPECIALIST.
- ALL TREES AND SHRUBS WILL CONFORM TO THE MATERIAL SPECIFICATION REQUIREMENTS OF THE AMERICAN STANDARD FOR NURSERY STOCK (1984 EDITION). THE MYRTICA PENNSTAVANICA WILL CONFORM TO TYPE 3 STOCK; 2-3 FOOT TALL, MINIMUM OF 3 CANES. THE BACCHARIS HALIMIFOLIA AND NA FRUTESCENS WILL CONFORM TO TYPE 4 STOCK; 2-3 FOOT TALL, MINIMUM OF 2 CANES.
- TO AVOID SALT SHOCK TO THE NA AND BACCHARIS, THIS STOCK WILL BE ACCUMULATED TO THE SALINITY CONCENTRATION OF TWENTY (20) PARTS SALT PER THOUSAND. ACCUMULATED WILL BE DEFINED AS GROWING AT THE PRESCRIBED SALINITY CONCENTRATION FOR A MINIMUM PERIOD OF FOUR WEEKS DURING THE GROWING SEASON PRIOR TO THE SHIPMENT OF THE STOCK TO THE PLANTING SITE.
- PLANTING WILL ONLY OCCUR IF THE SOLUBLE SALT LEVEL OF THE SOIL MEASURES LESS THAN 1.0 MHMOS/CM, AS MEASURED BY SOIL TESTING CONDUCTED AT A STATE OR COMMERCIAL SOIL TESTING LABORATORY.
- THE PLANTING OF THE MYRTICA PENNSTAVANICA WILL ONLY OCCUR IF THE SOLUBLE SALT LEVEL OF THE SOIL MEASURES LESS THAN 1.0 MHMOS / CM, AS MEASURED BY SOIL TESTING CONDUCTED AT A STATE OR COMMERCIAL AGRICULTURAL SOIL TESTING LABORATORY.
- THE PH OF THE PLANTING SUBSTRATE SHALL BE DETERMINED PRIOR TO PLANTING OF THE BACCHARIS HALIMIFOLIA. SHALL ONLY OCCUR IF PH LEVELS ARE 7.0 OR ABOVE, AS MEASURED BY SOIL TESTING AT A STATE OR COMMERCIAL AGRICULTURAL SOIL TESTING LABORATORY. IF SOIL CONDITIONS ARE DEEMED UNSUITABLE FOR BACCHARIS HALIMIFOLIA, THIS SPECIES MAY BE OMITTED AND REPLACED WITH MYRTICA PENNSTAVANICA AS DIRECTED BY THE WETLAND SPECIALIST.
- PLANT PITS WILL BE DUG APPROXIMATELY FOUR INCHES ("") WIDER THAN THE STOCK SIZE. PRIOR TO PLACEMENT OF THE PLANT IN THE PLANTING HOLE, A 20-GRAM FERTILIZER AGRIFORM TABLET (20-10-5 ANALYSIS) WILL BE PLACED IN THE BOTTOM OF THE PLANTING HOLE. THE BACCHARIS AND NA SHRUBS WILL BE PLANTED ONE INCH (1") HIGHER THAN GROWN IN THE NURSERY AND BACKFILL SOIL PLACED AROUND THE ROOTMASS TO FORM A RAISED MOUND AROUND THE PLANT WITH A MINIMUM DEPTH OF ONE INCH (1") DEEPER THAN GROWN IN THE NURSERY WITH A LEVEL SOIL PROFILE. BACKFILL MATERIALS WILL BE THE SAME AS EXCAVATED FOR THE PLANTING PITS.

EMERGENT MARSH PLANTINGS:

- EMERGENT MARSH PLUGS SHALL BE PLANTED AT THE SPACING AND QUANTITIES SHOWN ON THE PLANTING PLUGS. PLUGS SHALL BE PLANTED ON 3-FOOT CENTERS. LOW MARSH (1.5 TO 3.2 FT. PLANTS PER ACRE, HIGH MARSH (3.2 TO 3.9 FT. NGD28) PLUGS WILL BE PLANTED ON 2-FOOT CENTERS. A DENSITY OF 10,890 PLANTS PER ACRE. HIGH MARSH SPECIES SHALL BE INTERMAXED AS DIRECTED BY THE WETLAND SPECIALIST. THE PRIMARY PLANTING WINDOW IS FROM APRIL 15 TO JUNE 30. THE PLANTING WINDOW IN THE HIGH MARSH MAY BE EXTENDED AS DIRECTED BY THE WETLAND SPECIALIST.
- PEAT POT MATERIALS WILL BE HEALTHY AND VIGOROUS WITH WELL-DEVELOPED LEAF, STEM, AND ROOT SYSTEMS. NEW ROOT SYSTEMS OF CLEARED PLANTS SHALL BE WHITE. THE MINIMUM STEM HEIGHT OF THE STOCK WILL BE TWELVE INCHES (12") FOR SPARTINA ALTERNIFLORA AND SIX INCHES (6") FOR SPARTINA PATENS, SPARTINA CYNOSUROIDES, AND DISTICHUS SPICATA.
- THE PLUGS WILL HAVE BEEN GROWN IN 2 INCH X 2 INCH SIDED PEAT POTS (OR LARGER SIZE) LONG ENOUGH AND UNDER PROPER CONDITIONS FOR THE ROOT SYSTEM TO BE SUFFICIENTLY WELL-DEVELOPED THROUGH THE SIDES AND BOTTOM OF THE POT.
- TO AVOID SALT SHOCK TO THE STOCK, ALL STOCK WILL BE ACCUMULATED TO THE SALINITY CONCENTRATION OF TWENTY (20) PARTS SALT PER THOUSAND. ACCUMULATED WILL BE DEFINED AS GROWING AT THE PRESCRIBED SALINITY CONCENTRATION FOR A MINIMUM PERIOD OF TWO WEEKS PRIOR TO THE SHIPMENT OF THE STOCK TO THE PLANTING SITE.
- THE PEAT POTS WILL BE PLANTED IN THE SOIL AT LEAST ONE INCH (1") BELOW THE SOIL SURFACE. THE MAXIMUM PLANTING DEPTH SHALL BE TWO INCHES (2"), IN ORDER TO PLACE THE PLANTS AT THE APPROPRIATE DEPTH AND POSITION IN THE SOIL. THE SOIL SURFACE SHALL BE OPENED WITH A TIE SPADE, HOLLOW, OR OTHER APPROPRIATE HAND TOOL.
- PRIOR TO PLACEMENT OF THE PLANT IN THE PLANTING HOLE, SIX MONTH CONTROLLED RELEASE GRANULAR 1B-6-12 FERTILIZER SHALL BE PLACED IN THE BOTTOM OF THE PLANTING HOLE. THE PLANTS WILL THEN BE PLACED AT THE APPROPRIATE DEPTH WITH THE ROOT SYSTEM ORIENTED DOWNWARD. WHILE THE PLANT IS IN THIS POSITION, THE SOIL PROFILE OR SECTION WILL BE FULLY AND FIRMLY CLOSED. ONCE THE SOIL IS CLOSED, PRESSURE SHALL BE APPLIED IN SEVERAL POSITIONS IMMEDIATELY ADJACENT TO THE PLANTING TO ENSURE GOOD SOIL AND PLANT CONTACT AND TO REMOVE ANY AIR POCKETS AND Voids. IF A SOIL DEPRESSION IS FORMED ABOVE OR IMMEDIATELY ADJACENT TO THE PLANTING LOCATION, ENOUGH SOIL WILL BE SLoughed FROM THE SURROUNDING AREA AND FIRMLY TAMPED INTO THE DEPRESSION TO LEAVE THE PLANTING AREA AT THE SAME ELEVATION AS THE SURROUNDING SOIL OR SLIGHTLY HIGHER.
- BROADCAST, DROP-SEEDING, OR HYDROSEEDING TECHNIQUES MAY BE EMPLOYED.
- FERTILIZER SHALL NOT BE APPLIED TO THE SEDED AREAS.
- B. LIMESTONE MAY BE APPLIED IF DIRECTED BY THE WETLAND SPECIALIST.

WARM-GRASS SEEDING: EARTHEN ROAD SLOPES, UPLAND ENHANCEMENT FOREST/SCRUB-SHRUB, BERM, AND WET MEADOW.

- SEEDING SHALL OCCUR BETWEEN MARCH 15 AND JUNE 1.
- NO AREA SHALL BE SEDED UNTIL IT HAS BEEN CLEARED OF PHRAGMITES WRACK AND OTHER DEBRIS, AND APPROVED BY THE WETLAND SPECIALIST.
- THE WARM GRASS SEEDING MIXTURE IS AS FOLLOWS, IN POUNDS PURE LIVE SEED PER ACRE:

AGROSTIS ALBA (REDTOP) - THREE POUNDS (3 LBS.); ANDROPOGON GERARDII (BIG BLUESTEM) - FIVE POUNDS (5 LBS.); HORDEUM JUBATUM (FOXTAIL BARLEY) - EIGHT POUNDS (8 LBS.); PANICUM VIRGATUM (SWITCHGRASS) - FIVE POUNDS (5 LBS.); LOUUM MULTIFLORUM (ANNUAL RYE) - TWENTY FOUR POUNDS (24 LBS.);

4. WARM GRASS SEEDING WILL OCCUR ONLY IF THE SOLUBLE SALT LEVEL OF THE SOIL MEASURES LESS THAN 1.0 MHMOS / CM.

5. NO EARLIER THAN ONE (1) WEEK PRIOR TO THE SEEDING, THE SEDED AREA WILL BE DISKED TO A MINIMUM DEPTH OF SIX (6) INCHES AND FIRMED TO FORM A GOOD SEED BED. IF DIRECTED BY THE SITE REPRESENTATIVE, DISKING MAY BE OMITTED IN FAVOR OF A SHALLOW HARROW OPERATION. PRIOR TO THE PLACEMENT OF THE SEED, FOLLOWING SEED PLACEMENT, THE SEDED AREA WILL BE DRAGGED WITH A CHAIN OR TINE HARROW AND THEN ROLLED AND FIRMED TO ENSURE GOOD SOIL TO SEED CONTACT.

6. FERTILIZER SHALL NOT BE APPLIED TO THE SEDED AREAS.

7. BROADCAST, DROP-SEEDING, OR HYDROSEEDING TECHNIQUES MAY BE EMPLOYED.

B. LIMESTONE MAY BE APPLIED IF DIRECTED BY THE WETLAND SPECIALIST.

MARSH RESOURCES INC.

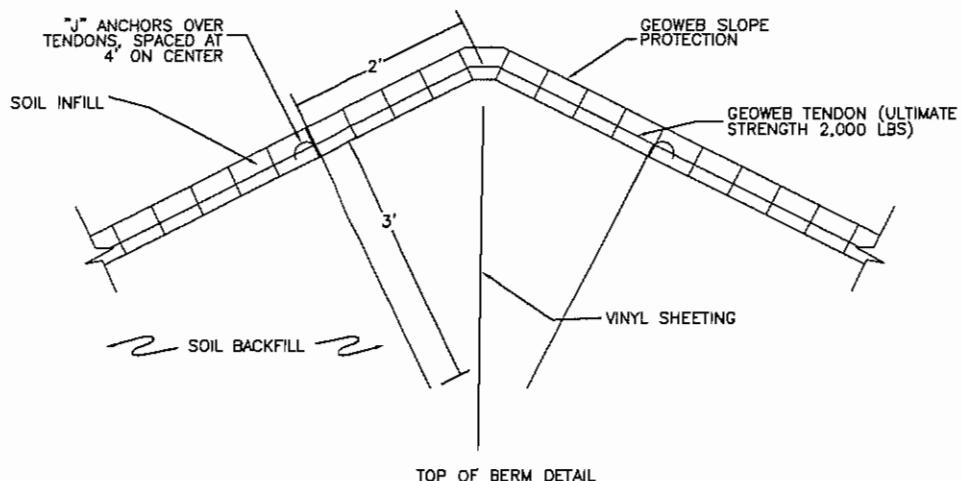
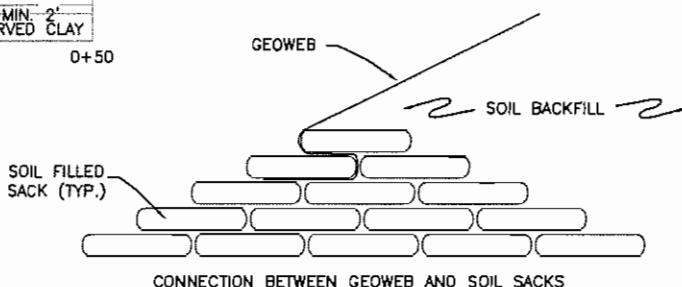
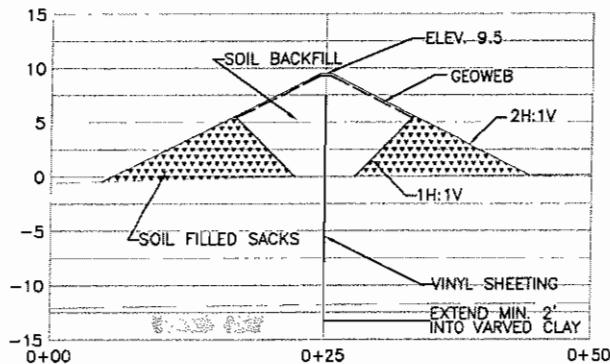
MARSHLANDS MITIGATION BANK PHASE 3 A PLANTING NOTES AND DETAILS

BOROUGH OF CARLSTADT, BERGEN COUNTY, NEW JERSEY
BLOCK 137, LOTS 2, 3, 6-9, 13, 15, 16



THE LOUIS BERGER GROUP, INC.
30 WRELAND ROAD
FLORHAM PARK, NEW JERSEY 07932

SCALE: AS SHOWN
REVISED:
MARCH 2007
SHEET 6B OF 8



CONSTRUCTION SEQUENCE:

- PLACE A MINIMUM 6-INCHES THICK LAYER OF SAND/SILTY SAND OVER THE BERM FOOTPRINT, PLUS 10 FEET BEYOND THE FOOTPRINT. SAND MAY BE AVAILABLE AT OR NEAR SAMPLING LOCATIONS G8 AND G9 (SEE GEDTECHNICAL REPORT).
- INSTALL VINYL SHEETING AS SHOWN ON THE DRAWING. L = MINIMUM 24 FEET. THE VINYL SHEETING SHALL BE SHOREGUARD 425 AS MANUFACTURED BY CRANE MATERIALS INTERNATIONAL, OR APPROVED EQUIVALENT. VINYL SHEETING SHALL BE INSTALLED PER MANUFACTURERS SPECIFICATIONS. TOP OF THE VINYL SHEETING SHALL BE AT ELEVATION +7.5 FEET.
- PLACE SOIL FILLED SACKS IN LAYER AS SHOWN ON THE DRAWING. SUBJECT TO SEASON AND AVAILABILITY OF CONSTRUCTION EQUIPMENT, SELECT VINYL SACKS 1,000 LB TO 2,000 LB IN FILLED WEIGHT. SACKS SHALL BE MADE OF MATERIAL ABLE TO WITHSTAND MECHANICAL TRANSPORT AND INSTALLATION, BUT ALSO CAPABLE OF DRAINING WATER DURING AND AFTER TRANSPORT AND INSTALLATION. USE SACKS MADE OF MIRAFI X-SERIES GEOTEXTILE, OR APPROVED EQUIVALENT.
- PLACE SOIL SACKS ON BOTH SIDES OF THE BERM SIMULTANEOUSLY TO ELEVATION +5.5.
- SCREED EXCAVATED MATERIAL TO REDUCE ITS WATER CONTENT AND PLACE IT BEHIND THE FILLED SACK BERM SKIRT.
- BRING THE BERM TO CREST ELEVATION +9.5 FEET BY ADDING EXCAVATED AND SCREED MATERIAL (AN ADDITIONAL 2 FEET IS ALLOWED FOR SETTLEMENT).
- PLACE A LAYER OF GEOWEB CELLULAR CONFINEMENT SYSTEM OVER THE SOIL BERM. THE CENTERLINE OF THE GEOWEB SHALL BE THE AXIS OF THE VINYL SHEETING AND SHALL HANG OVER THE SLOPE. THE BOTTOM OF THE GEOWEB SHALL BE PLACED UNDER THE TOP LAYER OF SOIL FILLED SACKS AS SHOWN ON THE DRAWINGS. GEOWEB SECTIONS SHALL BE ANCHORED TO THE BERM USING POLYMETRIC TENDONS OF HIGH STRENGTH POLYESTER AND POLYPYPOYLENE. TENDONS SHALL BE ANCHORED TO THE BERM USING 1/2 INCH DIAMETER "J" ANCHORS, 3 FEET IN LENGTH AND INSERTED AT 4 FEET OC.
- INFILL GEOWEB CELLS WITH TOP SOIL FOR LANDSCAPING. PLACE TOPSOIL ONLY IN A BALANCED MANNER ON BOTH SIDES OF THE BERM SLOPES FROM CREST TO TOE. ASYMMETRIC SOIL INFILL IS NOT ALLOWED.

MARSH RESOURCES INC.	
MARSH RESOURCES MEADOWLANDS MITIGATION BANK PHASE 3 A CONSTRUCTED BERM	
BOROUGH OF CARLISLAPE, BERGEN COUNTY, NEW JERSEY BLOCK 137, LOTS 2, 3, 8-9, 13, 15, 16	
THE LOUIS BERGER GROUP, INC. 30 WOODLAND ROAD FLORHAM PARK, NEW JERSEY 07932 CERTIFIED BY: # 24542033729	
SCALE: AS SHOWN	REVISED: JANUARY 2007
	SHEET 9 OF 9

