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 replying refer to:
Public Notice Number: NAN-2006-623-ESP
Issue Date: **November 28, 2007**
Expiration Date: **December 31, 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), Section 404 of the Clean Water Act (33 U.S.C. 1344).

APPLICANT: Dana Gumb
Director, Staten Island Bluebelt
New York City Department of Environmental Protection
59-17 Junction Blvd., 12th floor
Corona, New York 11368

ACTIVITY: Divert stream via box culvert, enhance wetlands

WATERWAY: Mill Creek, Arthur Kill

LOCATION: Pleasant Plains, Borough of Staten Island, Richmond County, New York

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.

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 York State, the applicant's certification and accompanying information is available from the Consistency Coordinator, New York State Department of State, Division of Coastal Resources and Waterfront Revitalization, Coastal Zone Management Program, 41 State Street, Albany, New York 12231, Telephone (518) 474-6000. Comments regarding the applicant's certification, and copies of any letters to this office commenting upon this proposal, 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 York State Department of Environmental Conservation 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) 790-8522 and ask for Craig Spitz.

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

For Richard L. Tomer
Chief, Regulatory Branch

Enclosures

WORK DESCRIPTION

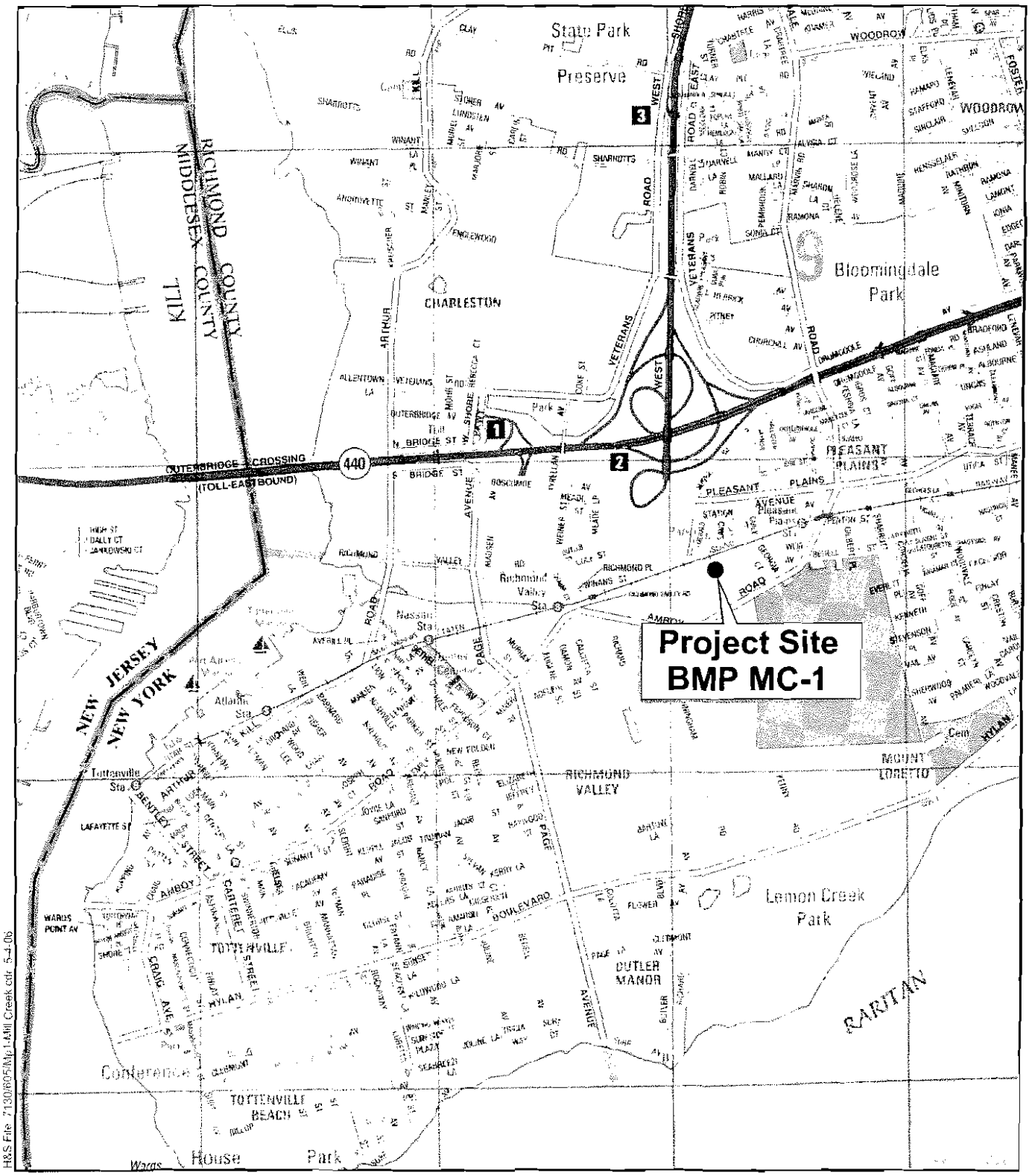
The applicant, the New York City Department of Environmental Protection, has requested Department of the Army authorization to divert, via box culvert, an existing stream and perform best management practices (BMPs) in Mill Creek, a tributary to the Arthur Kill at Pleasant Plains, Borough of Staten Island, Richmond County, New York.

The work would involve the redirection of approximately 800 linear feet of northwest to southeast flowing perennial stream through a new a 5-foot wide by 3-foot high box culvert which would direct the stream in a north to south direction underneath an existing railroad right-of-way into a new 10-foot wide by 15-foot long hexagonal chamber system approximately 5-feet southeast of the railroad right-of-way and then into a new headwall.

An approximate 0.1 acre forebay, consisting of concrete –embedded stone, would be constructed at the inlet side of this BMP. Approximately 60 linear feet of 3-foot wide reno mattress would be installed in front of the forebay (See Sheets 7 and 10 of 32), followed by approximately 140 linear feet of 6-foot wide reno mattress to serve as a stream corridor leading to another reno mattress, this one measuring approximately 3-feet wide by 25-feet long, and an approximate 1,075 square foot (0.02 acre) micropool consisting of concrete-embedded stone, 35-foot long curved weir and approximate 27-foot long wingwall. To be installed from the wingwall, and underneath the new access road, would be a 5-foot long by 3-foot wide box culvert leading to an approximate 17-foot long wingwall and 597 square foot (0.01 acre) outlet stilling basin consisting of concrete-embedded stone (See Sheets 7, 13, and 29 of 32). Approximately 3,049 square feet (0.01 acres) of 12-foot wide permanent accessway would be constructed in the wetlands from an existing railroad embankment (See Sheets 7 and 9 of 32). Approximate 340 cubic yards of material would be removed from two existing streams with disposal upland so as not to reenter any waterway or wetlands. Stone check dams would be constructed, as needed, within these streams. Water flow out of this BMP would occur through two (2) intermediate outflow pipes, one measuring 25-feet long by 12-inches in diameter and the other, 32-feet long by 24-inches in diameter (See Sheets 7, 12 and 14 of 32).

The project components including the planting details are summarized in the attachments.

The stated purpose of this project is to reduce flooding conditions and uncontrolled runoff that the applicant states is degrading the surface water quality of Mill Creek.



H&S File 7130/605/Mp1-Mill Creek cdr 5-4-06

New York City Department of

US Army Corps of Engineers
New York District

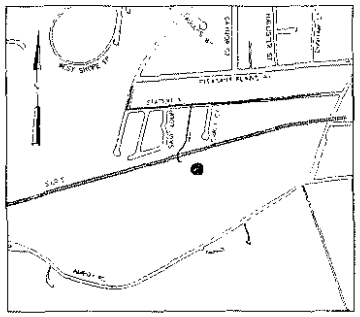
HAZEN AND SAWYER
Environmental Engineers & Scientists

Corps #: 2006-623-ESP
Project Name: NYCDEP BMP MC-1
Sheet 1 of 32

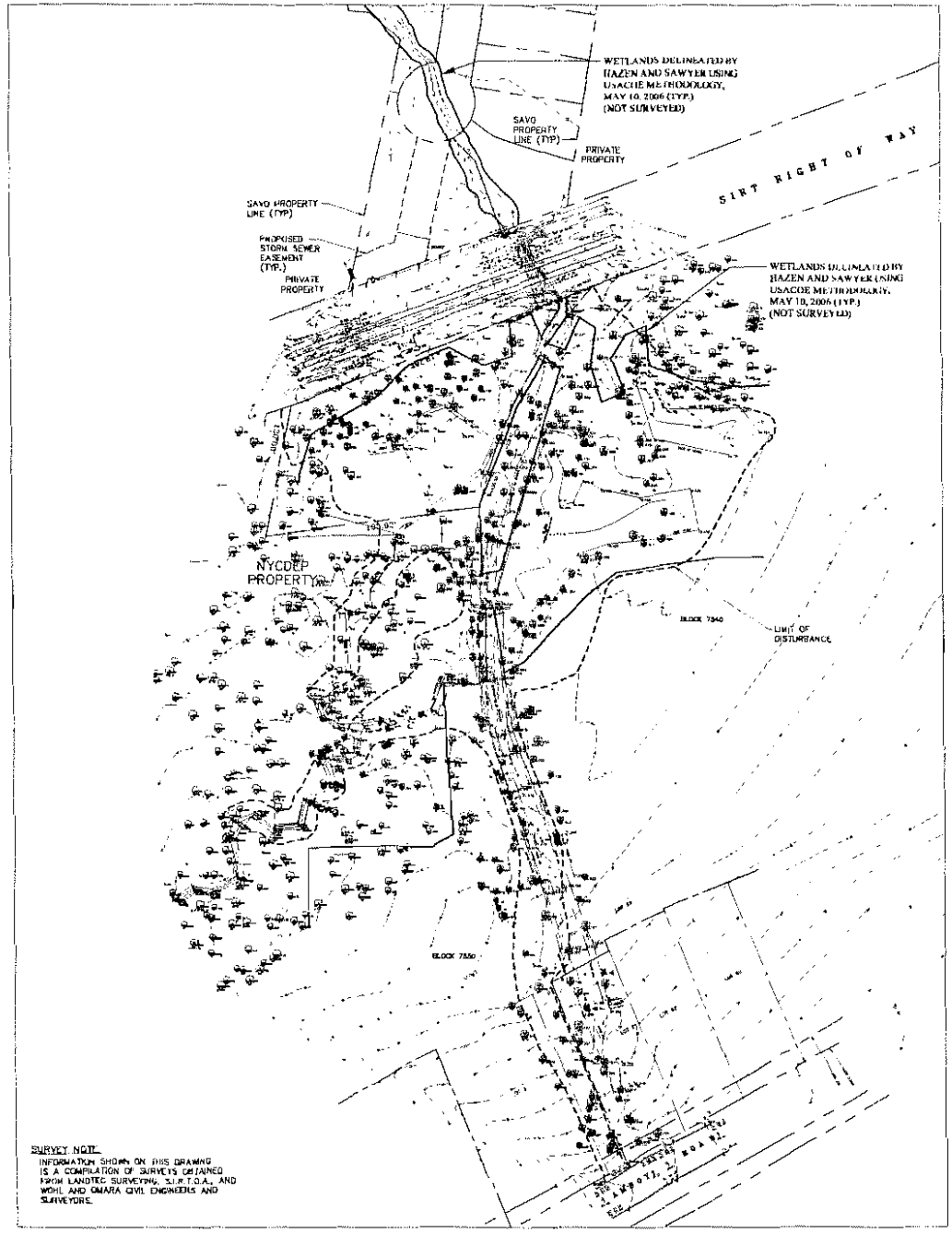
NYCDEP Bluebelt
Mill Creek Watershed BMP MC-1
te Location Map

Figure 1

PLOT DATE 11/15/06 11:20am FILE= H:\6000-9999\6300\MC\BMP-1EO(W)(C)(C) by: FORZANO REF FILE = NONE



SITE LOCATION MAP



SURVEY NOTE:
INFORMATION SHOWN ON THIS DRAWING IS A COMPILATION OF SURVEYS OBTAINED FROM LANDTEC SURVEYING, S.I.R.T.O.A., AND WOHL AND OMARA CIVIL ENGINEERS AND SURVEYORS.

160 80 0 160'

1"=160'-0"

HAZEN AND SAWYER
Environmental Engineers & Scientists

US Army Corps of Engineers
New York District

Corps #: 2006-623-ESP
Project Name: NYCDEP BMP MC-1
Sheet 2 of 32

MILL CREEK DRAINAGE AREA

BMP MC-1: STATION AVENUE
EXISTING SITE PLAN (COMPOSITE)
~~SHEET 1 OF 1~~

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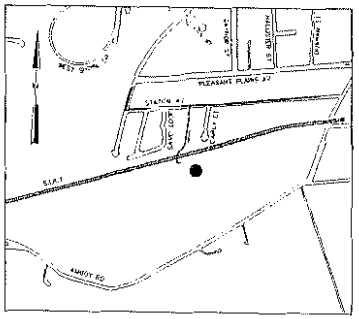
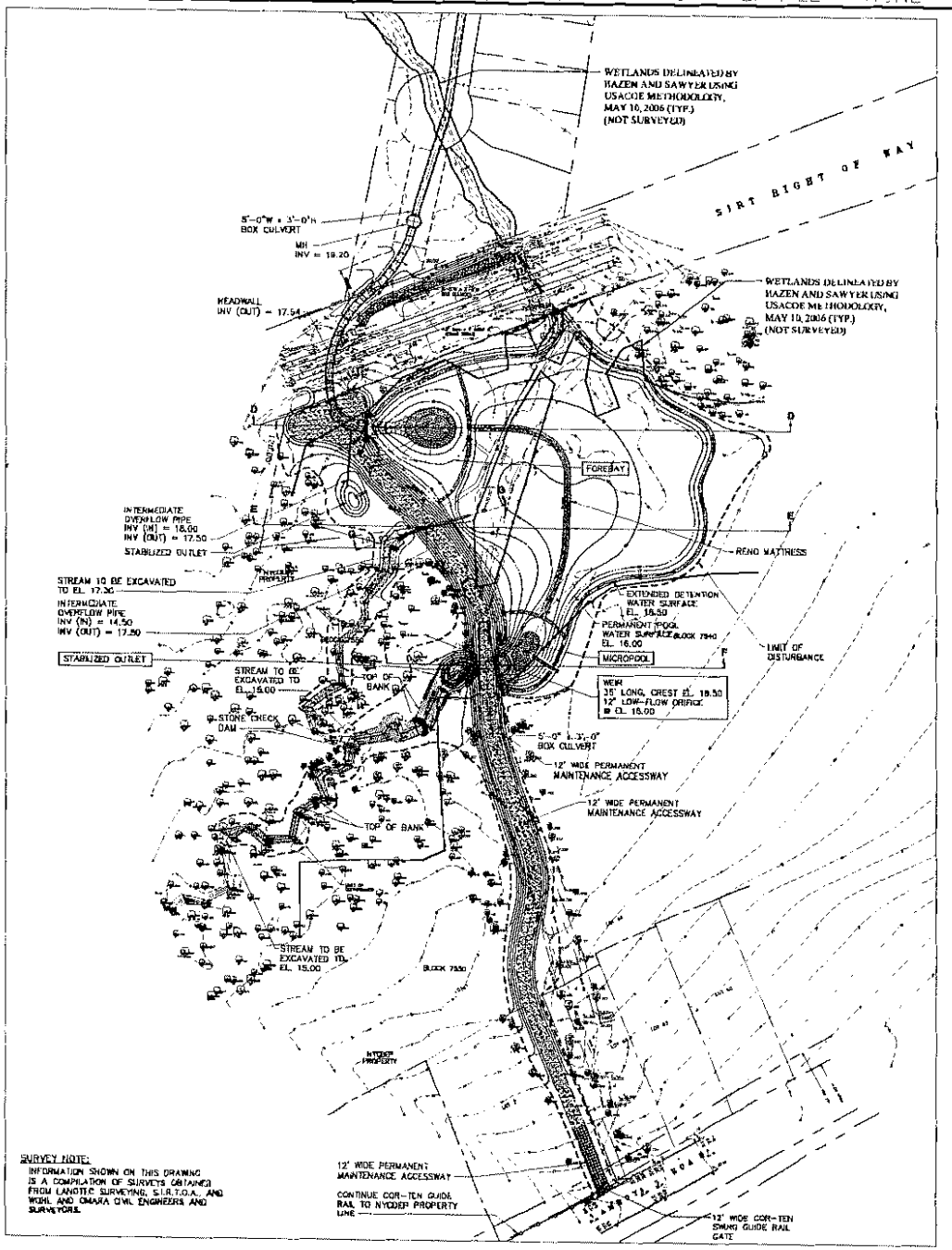


SITE LOCATION MAP

N.T.S.



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160 80 0 160'

1"=160'-0"

US Army Corps of Engineers New York District

Corps #: 2006-623-ESP
Project Name: NYCDEP BMP MC-1
Sheet 3 of 32

HAZEN AND SAWYER
Environmental Engineers & Scientists

MILL CREEK DRAINAGE AREA

BMP MC-1: STATION AVENUE
FINAL SITE PLAN (COMPOSITE)

~~SHEET 1 OF 1~~

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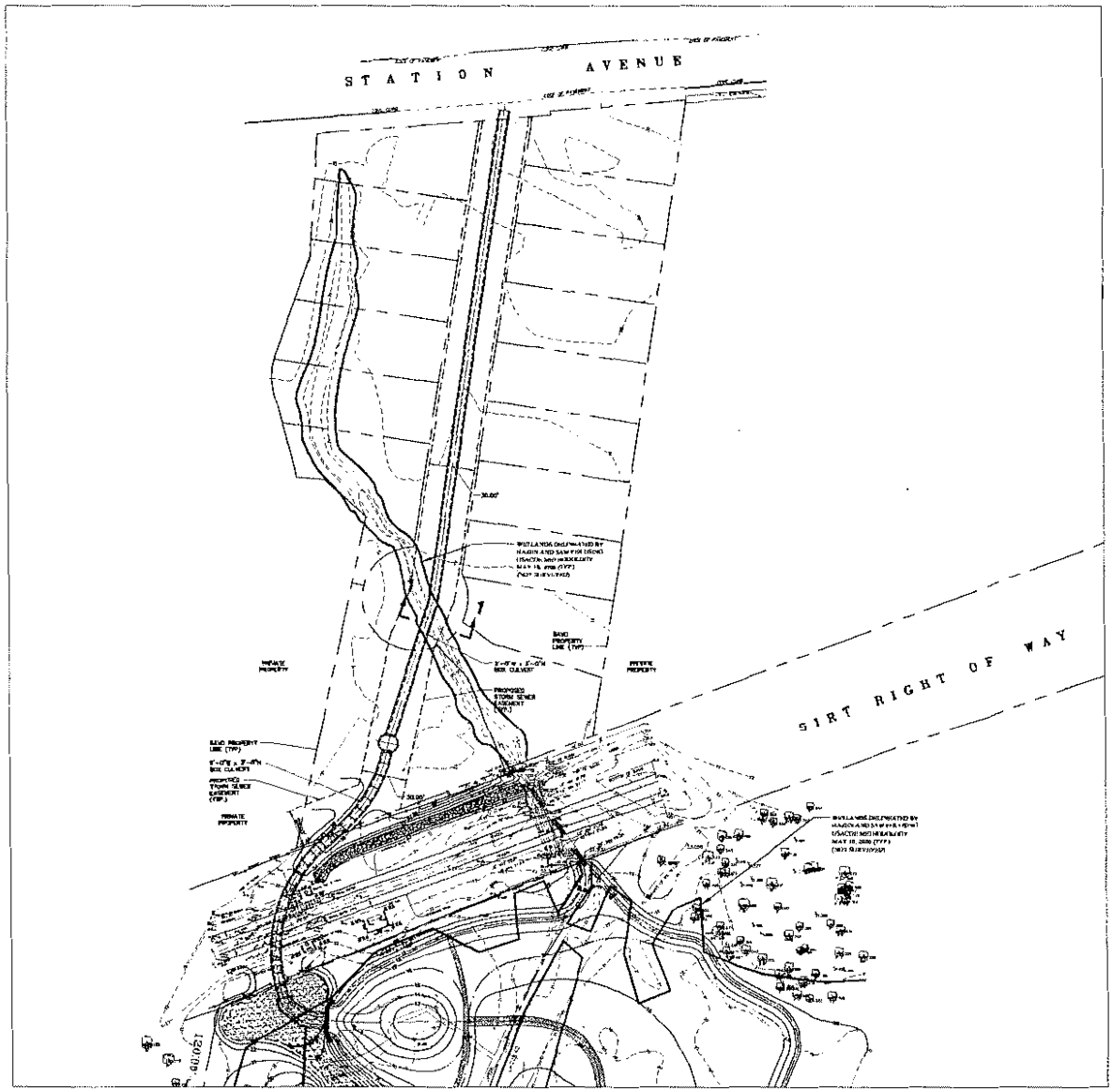
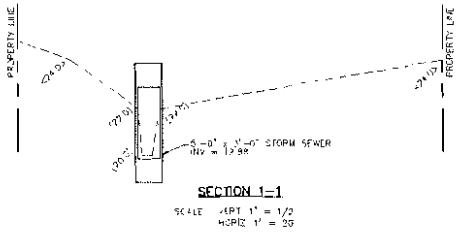




US Army Corps of Engineers New York District

Corps #: 2006-623-ESP

Project Name: NYCDEP BMP MC-1

Sheet 4 of 32

HAZEN AND SAWYER
Environmental Engineers & Scientists

1"=120'-0"

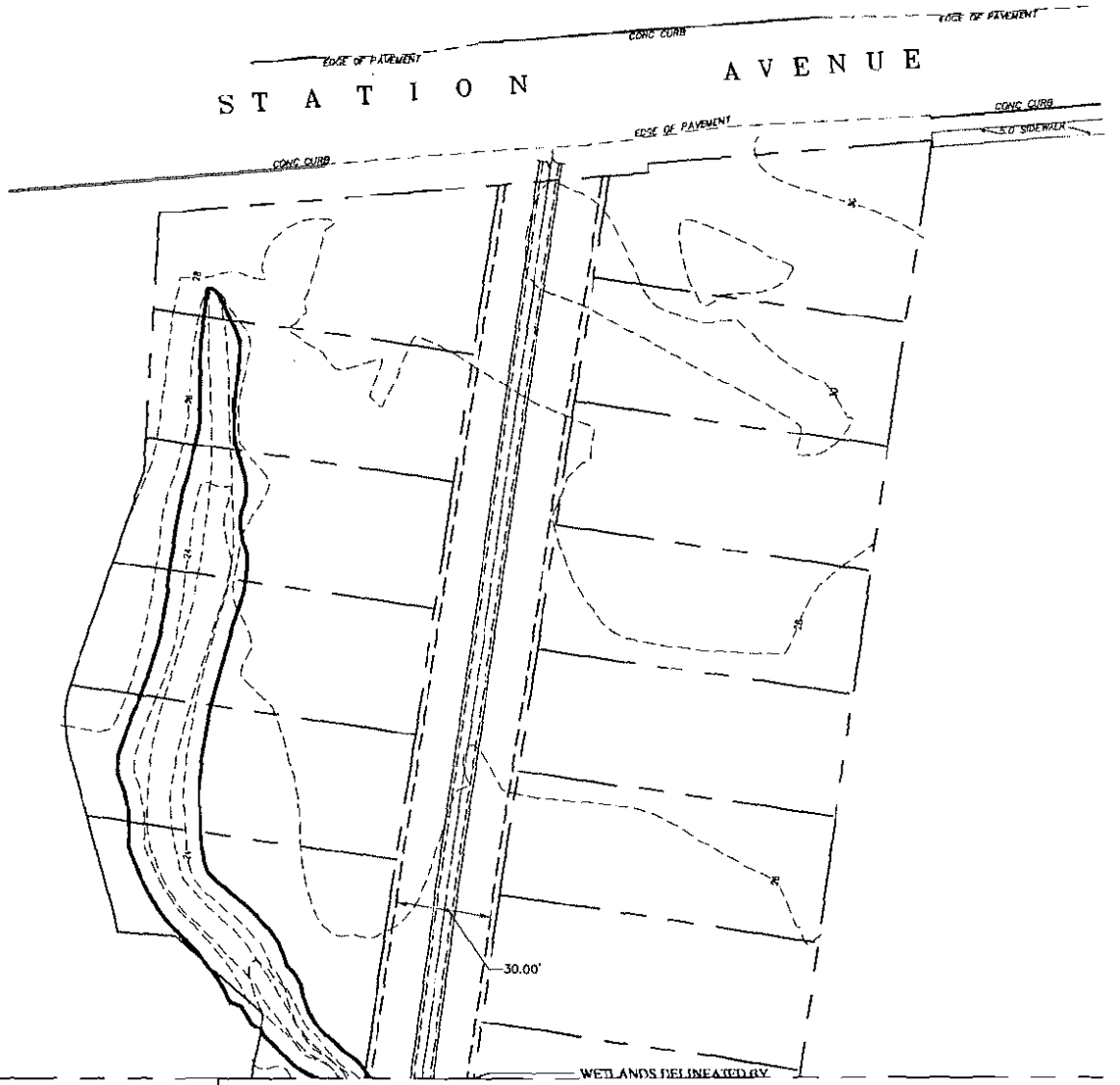
120 60 0 120'

MILL CREEK DRAINAGE AREA

BMP MC-1: STATION AVENUE
FINAL SITE PLAN & STATION AVE.
(COMPOSITE) · SAVO-1(W)

~~SHEET 1 OF 1~~

PLOT DATE 12/08/06 1:19pm FILE= H:\6000-9999\6300\MC\BMP-1F1-1(W)(S)-1 by JFORZANO XREF FILE = NONE



MATCH LINE – SEE SHEET 2

MATCH LINE – SEE SHEET 3

US Army Corps of Engineers New York District

Corps #: 2006-623 - ESP

Project Name: NYCDEP BMP MC-1

Sheet 3 of 32

HAZEN AND SAWYE

Environmental Engineers & Scientists

1"=30'-0"

30 15 0 30'

MILL CREEK DRAINAGE AREA

BMP MC-1: STATION AVENUE

FINAL SITE PLAN & STATION AVE.

SAVO-1(W)

~~SHEET 1 OF 3~~

PLOT DATE 12/08/06 1:18pm FILE= H:\6000-9999\6300\MC\BMP-1F1-1(W)(S)-2 by JFORZANO XREF FILE = NONE

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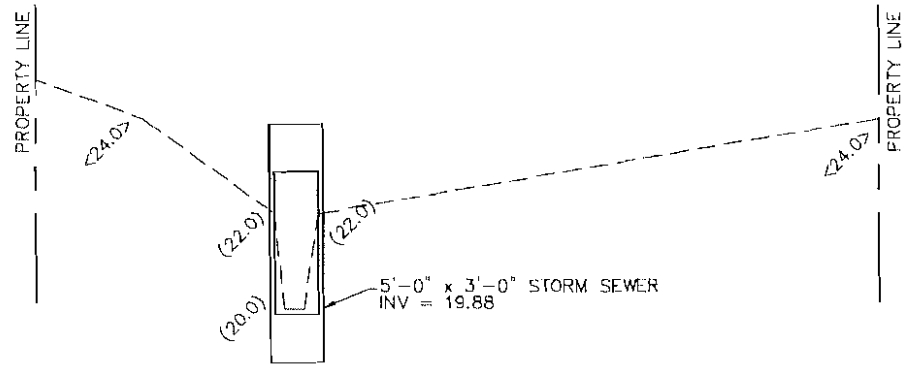
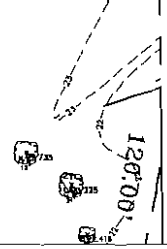


SECTION 1-1

SCALE: VERT. 1" = 1/2'
HORIZ. 1" = 20'

MATCH LINE - SEE SHEET 3



US Army Corps of Engineers New York District

Corps #: 2006-623-ESP
Project Name: NYCDEP BMP MC-1
Sheet 6 of 32

HAZEN AND SAWYE
Environmental Engineers & Scientists

1"=30'-0"

30 15 0 30'

MILL CREEK DRAINAGE AREA

BMP MC-1: STATION AVENUE
FINAL SITE PLAN & STATION AVE.
SAVO-1(W)
~~SHEET 2 OF 3~~

2006-632-ESP NYCDEP BMP MC-1

MATCH LINE – SEE INSET

WETLANDS DELINEATED BY HAZEN AND SAWYER USING USACOE METHODOLOGY, MAY 10, 2006 (TYP.) (NOT SURVEYED)

SAVD PROPERTY LINE (TYP)

5'-0"W x 3'-0"H BOX CULVERT

PROPOSED STORM SEWER EASEMENT (TYP.)

MATCH LINE

PROPERTY LINE

5'-0" x 3'-0" STORM SEWER INV = 19.98

SECTION 1-1

SCALE: VERT 1" = 1/2" HORIZ 1" = 20'

3'-0"W x 3'-0"H BOX CULVERT

SAVD PROPERTY LINE (TYP)

PROPOSED STORM SEWER EASEMENT (TYP.)

MH INV = 19.20

NYCDOC CONSTRUCTION OPERATIONS

NYCDEP CONSTRUCTION OPERATIONS

PRIVATE PROPERTY

FOREBAY NATURAL FIELD STONE (d_{50} = 12"), EMBEDDED IN CONCRETE TO EL 14.00

HEADWALL INV (OUT) = 17.54

5'-0"W x 3'-0"H BOX CULVERT

3' WIDE x 1' DEEP STONE SWALE

WETLANDS DELINEATED BY HAZEN AND SAWYER USING USACOE METHODOLOGY, MAY 10, 2006 (TYP.) (NOT SURVEYED)

3'-WIDE RENO MATTRESS

6'-WIDE RENO MATTRESS SEE DWG. D-3

NATURAL FIELD STONE (d_{50} = 12"-18"), AS SHOWN

12" D.I.P. W/ CONC PIPE COLLAR AT OUTLET INV (IN) = 18.00 INV (OUT) = 17.50

NYCDEP PROPERTY

OUTLET STILLING BASIN

STREAM TO BE EXCAVATED UNTIL NEW CHANNEL INVERT MEETS EXISTING ELEVATION OF 17.30. SIDE SLOPES SHALL BE NO STEEPER THAN 4:1.

23"W x 14"H R.C.P REVERSE-FLOW PIPE W/ CONC. PIPE COLLAR AT EACH END INV (IN) = 14.50 INV (OUT) = 17.50

OUTLET STILLING BASIN W/ NATURAL FIELD STONE (d_{50} = 12"), EMBEDDED IN CONCRETE FROM EL 14.50 TO EL 16.00

STREAM TO BE EXCAVATED UNTIL NEW CHANNEL INVERT MEETS EXISTING ELEVATION OF 15.00. SIDE SLOPES SHALL BE NO STEEPER THAN 4:1.

STONE CHECK DAM TOP OF STONE EL 16.00 (TYP.)

BLOCK 7550

NATURAL FIELD STONE (d_{50} = 12"-18"), AS SHOWN (TYP. BOTH SIDES)

TOP OF BANK

EXTENDED DETENTION WATER SURFACE EL. 18.50

PERMANENT POOL WATER SURFACE EL. 18.00

3'-WIDE RENO MATTRESS SEE DWG. D-3

BLOCK 7540

LIMIT OF DISTURBANCE

NATURAL FIELD STONE (d_{50} = 12"), EMBEDDED IN CONCRETE @ EL. 12.00

35' LONG WEIR CREST EL. 18.5 12" LOW-FLOW ORIFICE @ EL. 18.00

NATURAL FIELD STONE (d_{50} = 12"), EMBEDDED IN CONCRETE @ EL. 15.75

NATURAL FIELD STONE (d_{50} = 12"-18"), AS SHOWN (TYP. BOTH SIDES)

5'-0" x 3'-0" BOX CULVERT INV (IN) = 15.75 INV (OUT) = 15.50

12' WIDE PERMANENT MAINTENANCE ACCESSWAY W/ GRAVEL SEE DWG. D-4

MATCH LINE – SEE DWG. C-8(W)

2006-623-ESP NYCDEP BMP MC-1 SHEET 7 of 32

NO.	DATE	ISSUED FOR	BY

DESIGNED E.R. | DRAWN J.A.P. | CHECKED E.R. | SECT.CHIEF D.A.S. | PROJ.ENGR. R.M. | SCALE 1"=20'-0" | CAD FILE (X:\DOC\MC-1\MP-REV.DWG) | P.E.

HAZEN AND SAWYER
Environmental Engineers & Scientists
HAZEN AND SAWYER, P.C. • 498 SEVENTH AVENUE • NEW YORK, NEW YORK 10018

APPROVED FOR THE CITY OF NEW YORK
PROJECT MANAGER P.E.

DEP

CITY OF NEW YORK
DEPARTMENT OF ENVIRONMENTAL PROTECTION
BUREAU OF WATER AND SEWER OPERATIONS
STORM WATER AND SANITARY DRAINAGE MANAGEMENT PLAN FOR SOUTH RICHMOND
STATEN ISLAND, NEW YORK

STORM WATER AND SANITARY DRAINAGE PLAN
MILL CREEK DRAINAGE AREA
BMP MC-1 STATION AVE
FINAL SITE PLAN
SHEET 1

DATE OCTOBER 2006 | SHEET [redacted] | PRC NO. [redacted]

CAPITAL PROJECT SE-775/776 SER-200146

2006-632-ESP NYCDEP BMP MC-1 SHEET 7 of 32

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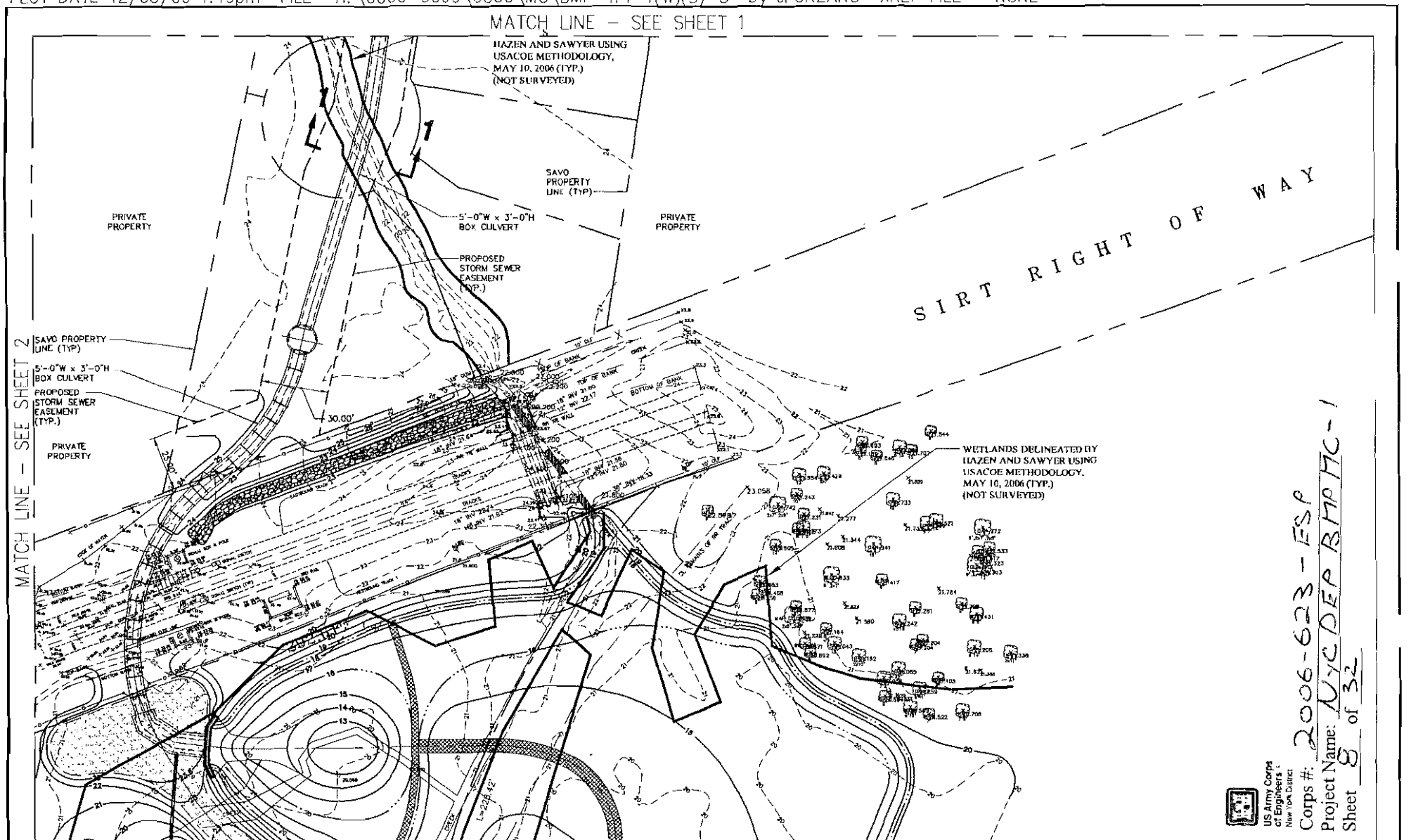


HAZEN AND SAWYE
Environmental Engineers & Scientists

1"=30'-0"

30 15 0 30'

MILL CREEK DRAINAGE AREA

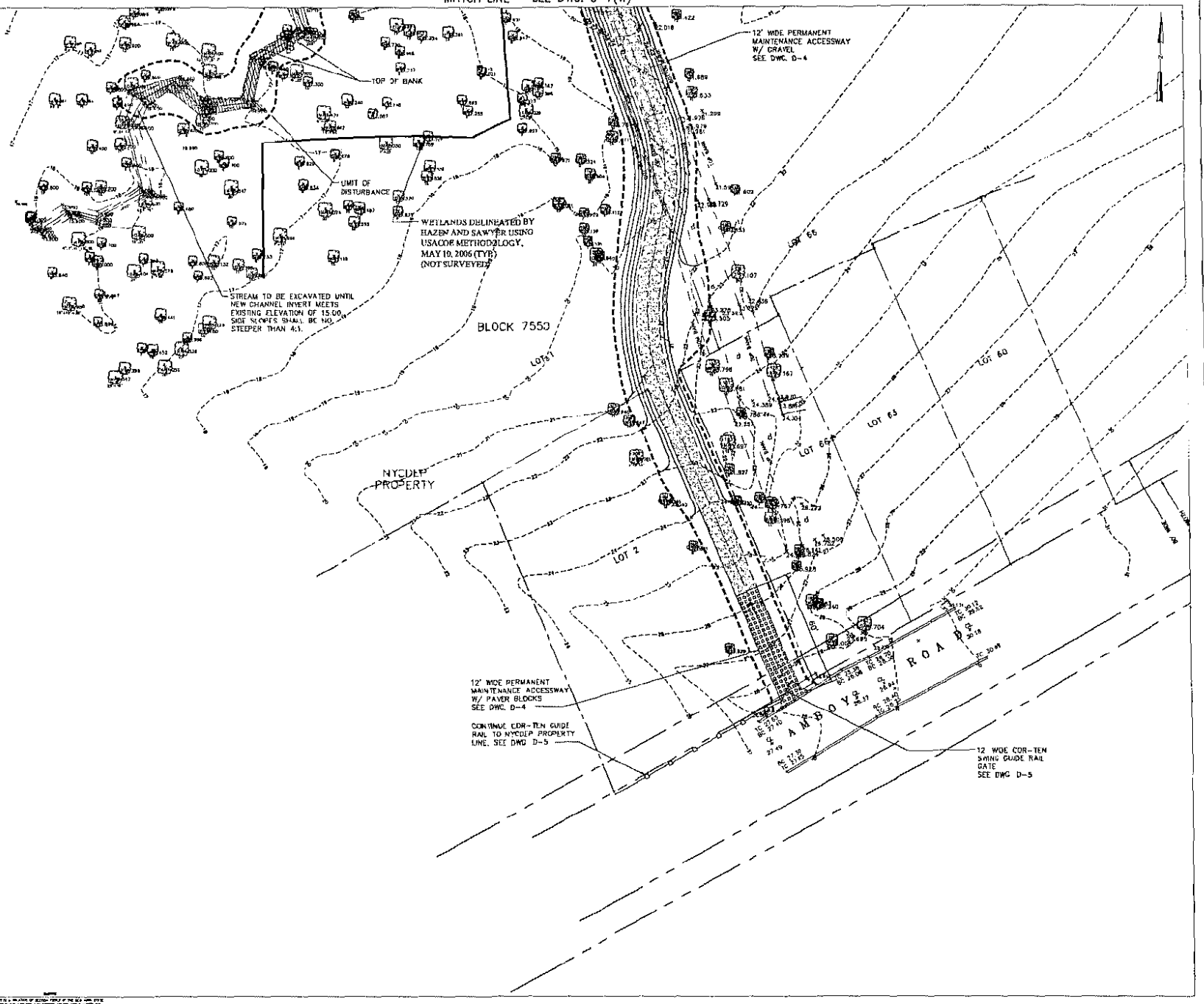
BMP MC-1: STATION AVENUE

FINAL SITE PLAN & STATION AVE.

SAVO-1(W)

~~SHEET 3 OF 3~~

MATCH LINE - SEE DWG. C-7(W)



US Army Corps of Engineers New York District

Corps #: 2006-623-FSP

Project Name: NYCDEP BMP MC-1

Sheet 9 of 32

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1"=20'-0"

NO	DATE	ISSUED FOR	BY

DESIGNED E.N.
DRAWN J.S.J.
CHECKED E.N.
REC'D BY R.E.S.
PROJECT S.N.
SCALE 1"=20'-0"
CAD REF LA-D01(C) BMP-MC(B)

HAZEN AND SAWYER
Environmental Engineers & Scientists
HAZEN AND SAWYER P.C. - 498 SEVENTH AVENUE - NEW YORK, NEW YORK 10018

APPROVED FOR THE CITY OF NEW YORK
PROJECT MANAGER P.E.

CITY OF NEW YORK
DEPARTMENT OF ENVIRONMENTAL PROTECTION
BUREAU OF WATER AND SEWER OPERATIONS
CAPITAL PROJECT SE-1 AND SE-100
STORM WATER AND SANITARY DRAINAGE MANAGEMENT PLAN FOR SOUTH RICHMOND
STATEN ISLAND, NEW YORK

STORM WATER AND SANITARY DRAINAGE PLAN
MILL CREEK DRAINAGE AREA
BMP MC-1 STATION AVE
FINAL SITE PLAN
SHEET 2

DATE OCTOBER 2006
SHEET 9 OF 32
DWG NO. D-2

CAPITAL PROJECT SE-775/776 SER-200146

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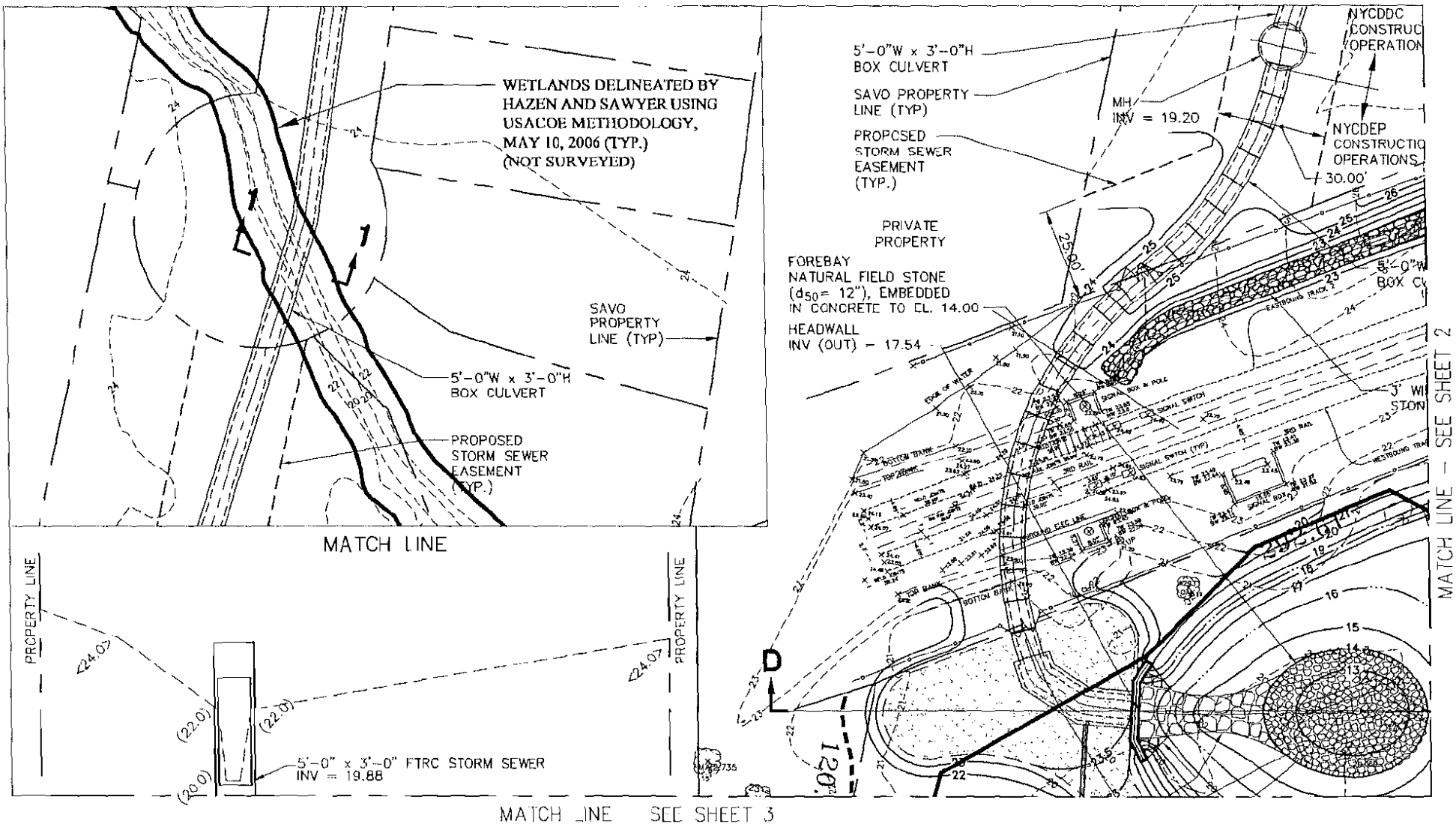


US Army Corps of Engineers
New York District

Corps #: 2006-623-ESP
Project Name: NYCDEP BMP MC-1
Sheet 10 of 32

HAZEN AND SAWYE
Environmental Engineers & Scientists

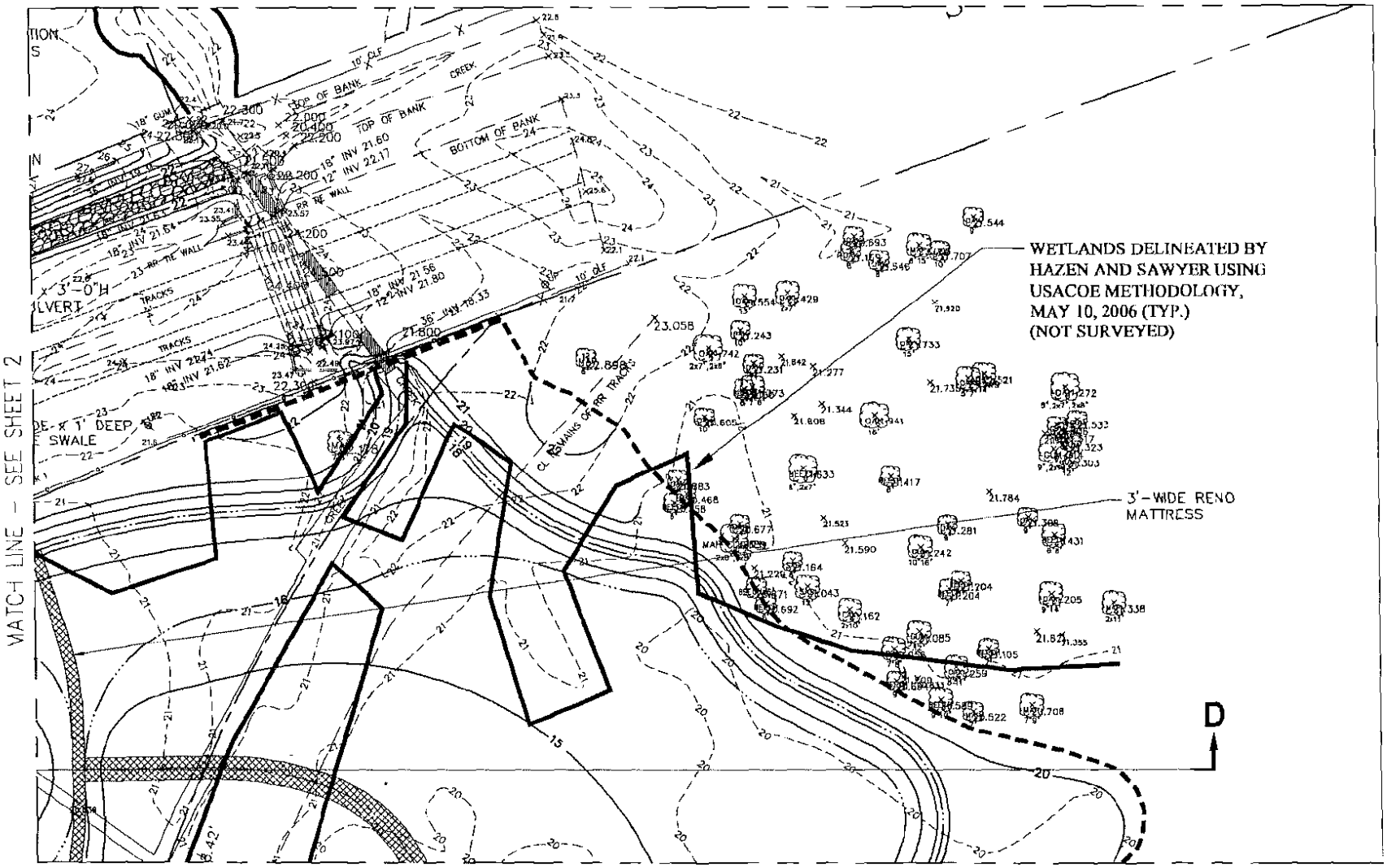
1"=40' 0" 40 20 0 40'

MILL CREEK DRAINAGE AREA

BMP MC-1: STATION AVENUE
FINAL SITE PLAN
~~SHEET 4 OF 12~~

PLOT DATE 11/15/06 1:19pm FILE= H:\6000-9999\6300\MC\BMP-1F(W)(S)-2 by JFORZANO XREFs=6300\MC\ACCE X-REFS\BMP-1F_X,

SEE INSET



US Army Corps of Engineers
New York District

Corps #: 2006-623-FSP
Project Name: NYCDEP BMP MC-1
Sheet 11 of 32

HAZEN AND SAWYER
Environmental Engineers & Scientists

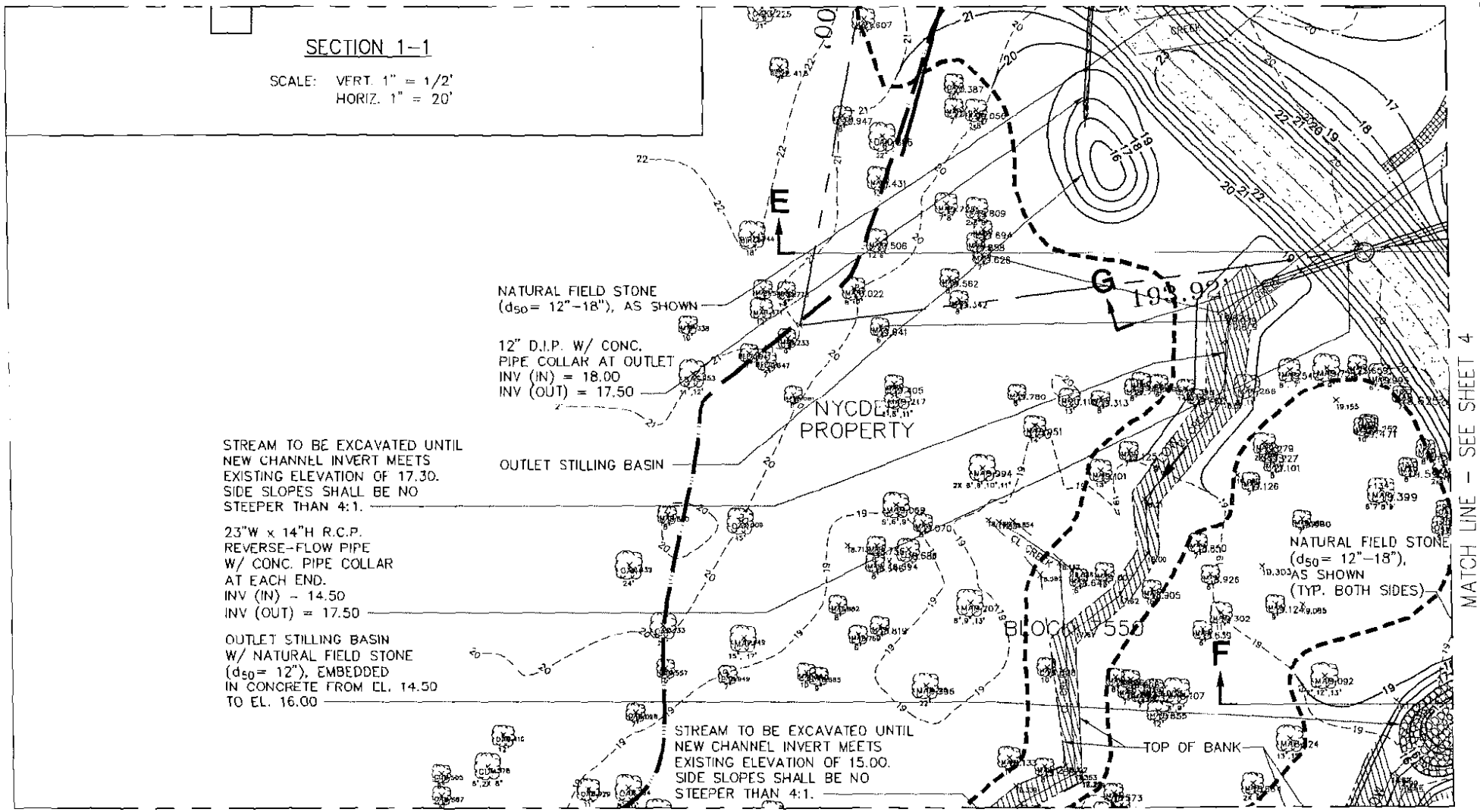
1"=40'-0"

MILL CREEK DRAINAGE AREA

BMP MC-1: STATION AVENUE
FINAL SITE PLAN
~~SHEET 2 OF 12~~

PLOT DATE 11/15/06 1:19pm FILE= H:\6000-9999\6300\MC\BMP-1F1(W)(S)-3 by JFORZANO XREFs=6300\MC\ACOE X-REFS\BMP-1F_X.

MATCH LINE – SEE SHEET 1



MATCH LINE – SEE SHEET 5

US Army Corps of Engineers
New York District

Corps #: 2006-623-ESP
Project Name: NYCDEP BMP-MC-1
Sheet 12 of 32

HAZEN AND SAWYE
Environmental Engineers & Scientists

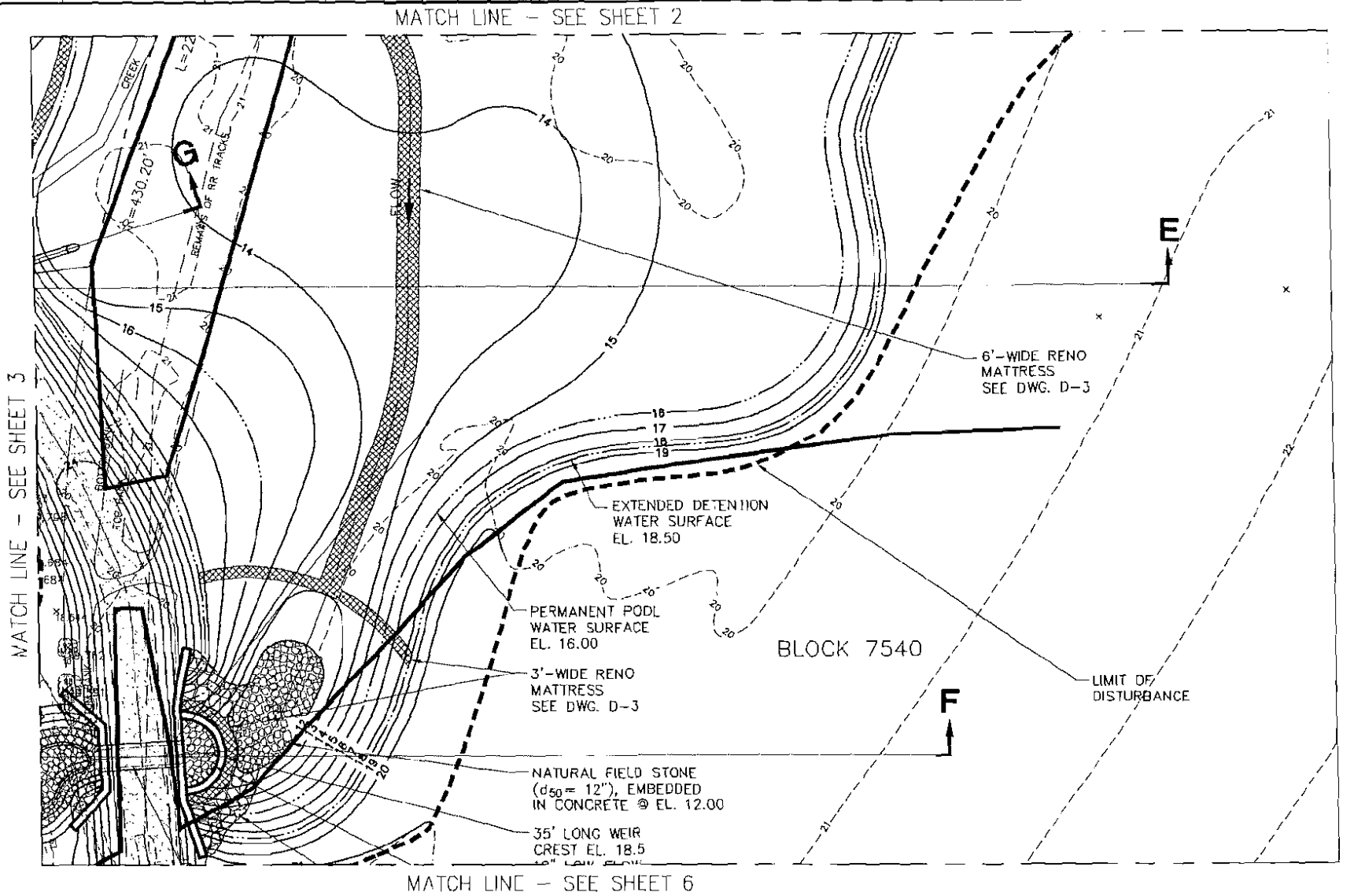
1"=40'-0"

40 20 0 40'

MILL CREEK DRAINAGE AREA

BMP MC-1: STATION AVENUE
FINAL SITE PLAN
SHEET 3 OF 12

PLOT DATE 11/15/06 1:21pm FILE= H:\6000-9999\6300\MC\BMP-1F1(W)(S)-4 by JFORZANO XREFs=6300\MC\ACOE X-REFS\BMP-1F_X,



US Army Corps of Engineers
New York District

Corps #: 2006-623-ESP
Project Name: NYCDEP BMP MC-1
Sheet 13 of 32

HAZEN AND SAWYER
Environmental Engineers & Scientists

1"=40'-0"

MILL CREEK DRAINAGE AREA

BMP MC-1: STATION AVENUE
FINAL SITE PLAN
~~SHEET 4 OF 12~~

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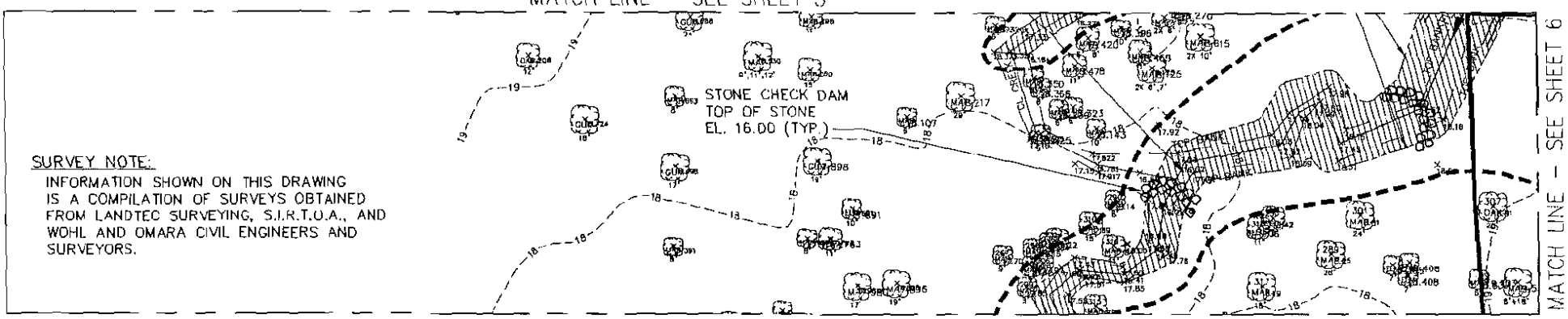
MATCH LINE - SEE SHEET 3



SURVEY NOTE:
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MATCH LINE - SEE SHEET 7 & DWG. C-8(W)

MATCH LINE - SEE SHEET 6

US Army Corps of Engineers
New York District

Corps #: 2006-623-ESP
Project Name: NYCDEP BMP MC-1
Sheet 14 of 32

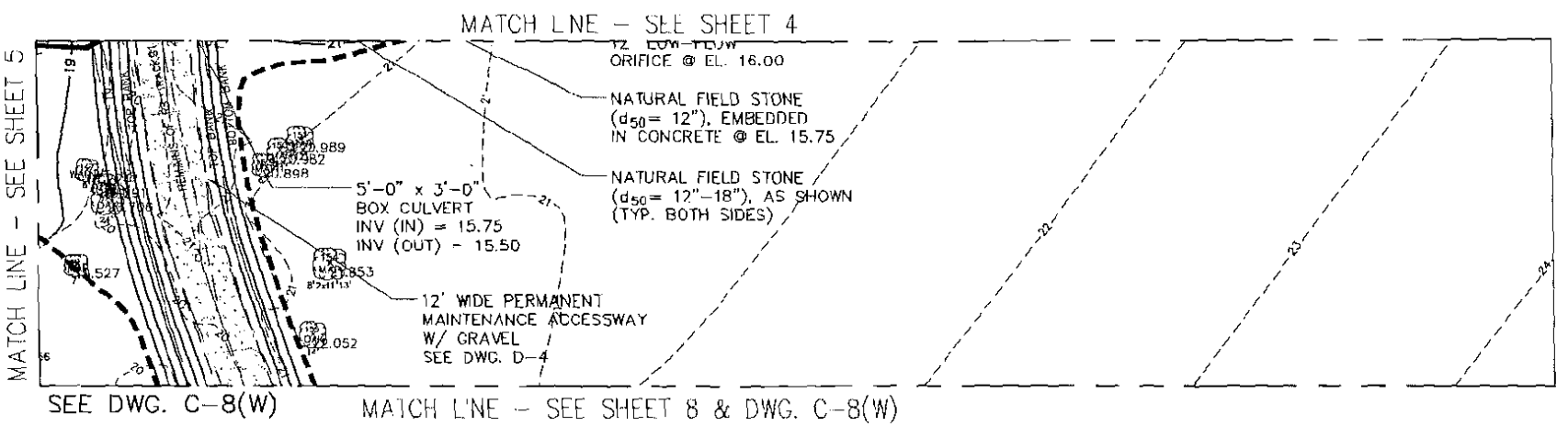
HAZEN AND SAWYE
Environmental Engineers & Scientists

1"=40'-0"

40 20 0 40'

MILL CREEK DRAINAGE AREA

BMP MC-1: STATION AVENUE
FINAL SITE PLAN
~~SHEET 5 OF 12~~



US Army Corps of Engineers
New York District

Corps #: 2006-623-ESP
Project Name: NYCDEP BMP MC-1
Sheet 15 of 32

HAZEN AND SAWYER
Environmental Engineers & Scientists

1"=40'-0"

40 20 0 40'

MILL CREEK DRAINAGE AREA

BMP MC–1: STATION AVENUE
FINAL SITE PLAN
~~SHEET 6 OF 12~~

PLOT DATE 11/15/06 1:26pm FILE= H:\6000-9999\6300\MC\BMP-1F2(W)(S)-7 by JFORZANO XREFs=6300\MC\ACOE X-REFS\BMP-1F_X,

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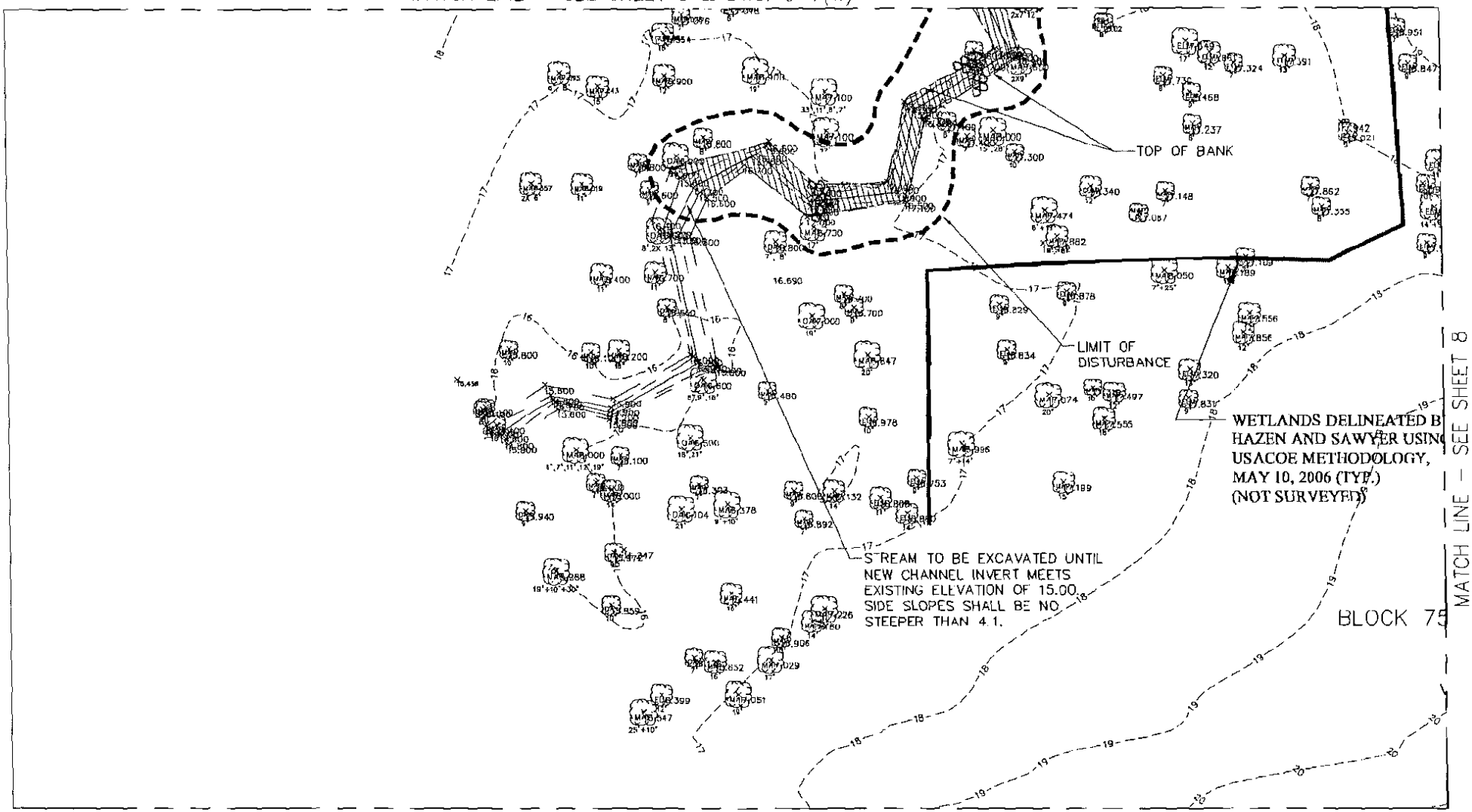
MATCH LINE –



MATCH LINE – SEE SHEET 8

MATCH LINE – SEE SHEET 9

US Army Corps of Engineers
New York District

Corps #: 2006-623-ESP
Project Name: NYCDEP BMP MC-1
Sheet 16 of 32

HAZEN AND SAWYER
Environmental Engineers & Scientists

1"=40'-0" 40 20 0 40'

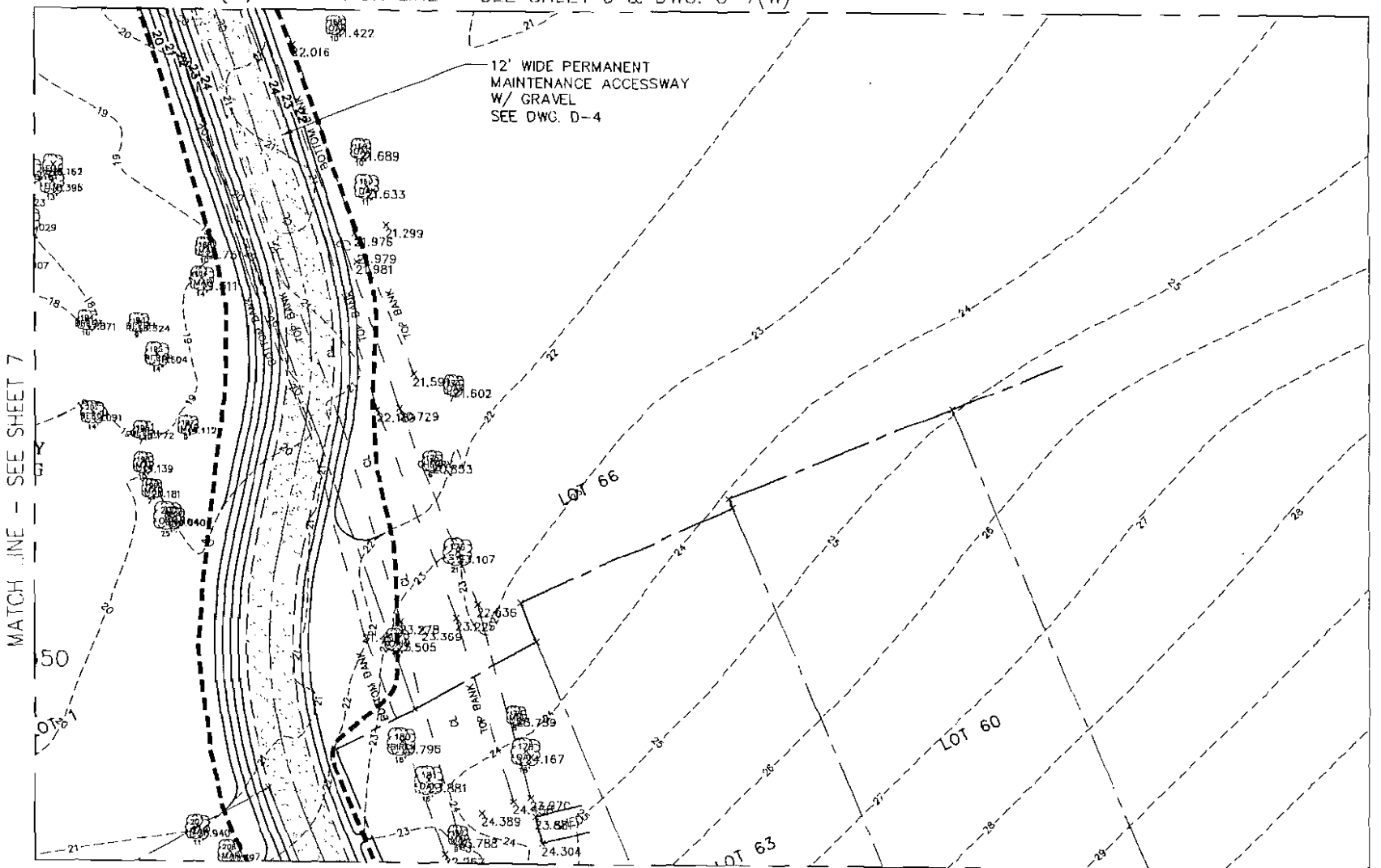
MILL CREEK DRAINAGE AREA

BMP MC-1: STATION AVENUE
FINAL SITE PLAN
~~SHEET 7 OF 12~~

PLOT DATE 11/15/06 1:26pm FILE= H:\6000-9999\6300\MC\BMP-1F2(W)(S)-8 by JFORZANO XREFs=6300\MC\ACOE X-REFS\BMP-1F_X,

SEE DWG. C-16(W)

MATCH LINE - SEE SHEET 6 & DWG. C-7(W)



US Army Corps of Engineers
New York District

HAZEN AND SAWYER
Environmental Engineers & Scientists

Corps #: 2006-623-ESP
Project Name: NYCDEP BMP MC-1
Sheet 17 of 32

1"=40'-0"

40 20 0 40'

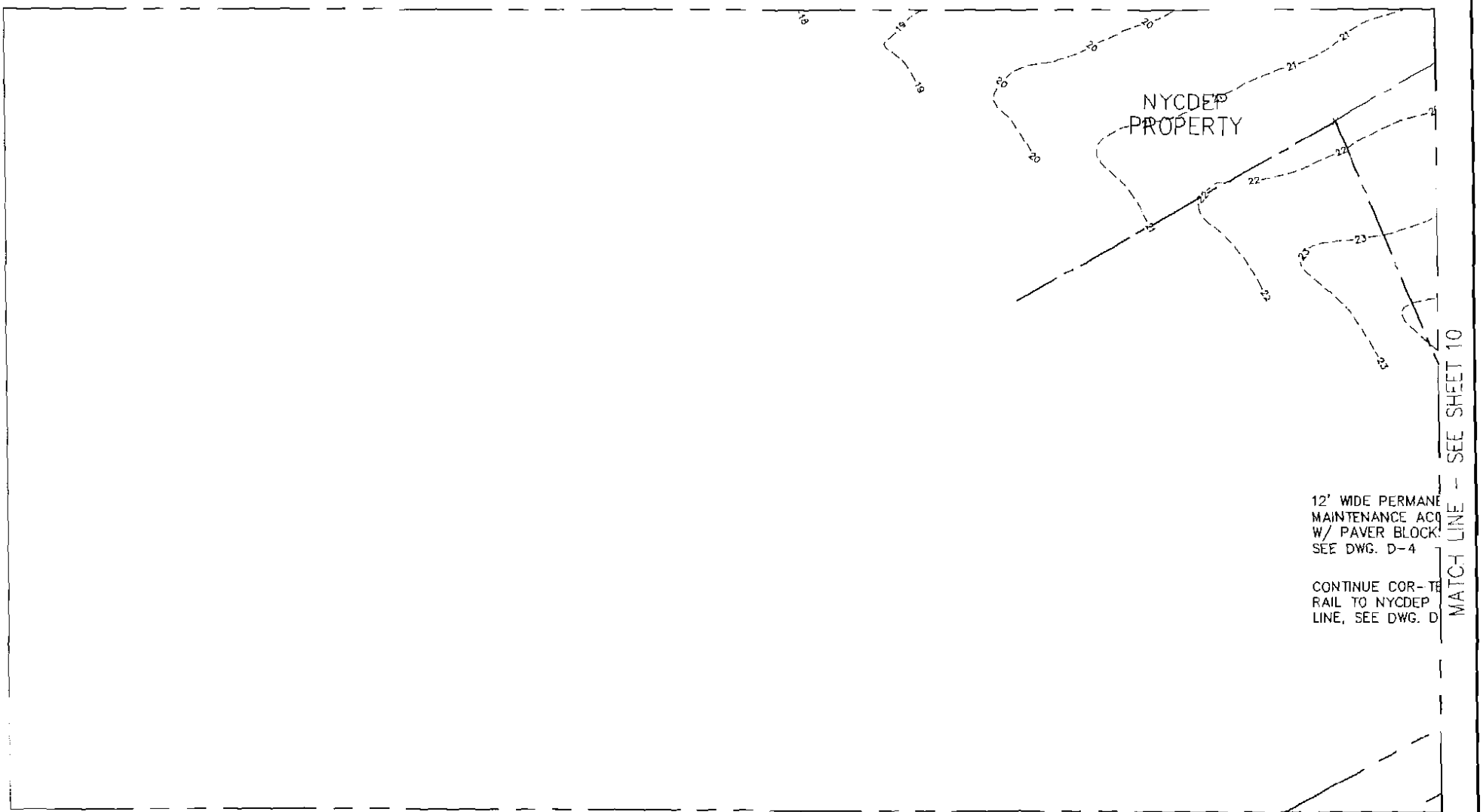
MILL CREEK DRAINAGE AREA

BMP MC-1: STATION AVENUE
FINAL SITE PLAN

~~SHEET 8 OF 12~~

PLOT DATE 11/15/06 1:27pm FILE= H:\6000-9999\6300\MC\BMP-1F2(W)(S)-9 by JFORZANO XREFs=6300\MC\ACOE X-REFS\BMP 1F_X,

MATCH LINE - SEE SHEET 7



MATCH LINE - SEE SHEET 11

US Army Corps of Engineers
New York District

Corps #: 2006-623-ESP
Project Name: NYCDEP BMP MC-1
Sheet 18 of 32

HAZEN AND SAWYE
Environmental Engineers & Scientists

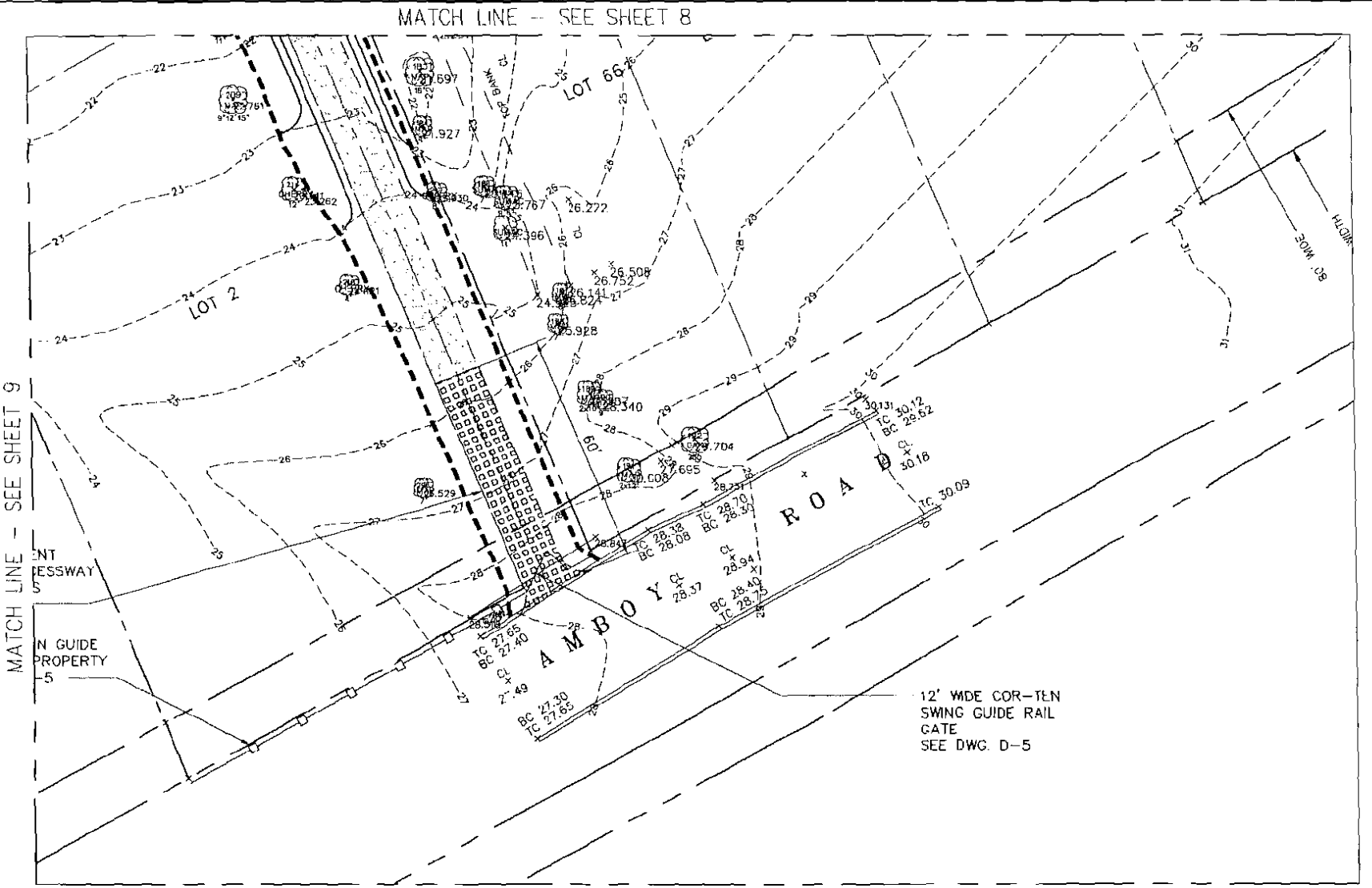
1"=40'-0"

40 20 0 40'

MILL CREEK DRAINAGE AREA

BMP MC-1: STATION AVENUE
FINAL SITE PLAN
~~SHEET 9 OF 12~~

PLOT DATE 11/15/06 1:28pm FILE= H:\6000-9999\6300\MC\BMP-1F2(W)(S)-10 by JFORZANO XREFs=6300\MC\ACOE X-REFS\BMP-1F_X,



US Army Corps of Engineers
New York District

Corps #: 2006-623-ESP
Project Name: NYCDEP BMP MC-1
Sheet 19 of 32

HAZEN AND SAWYER
Environmental Engineers & Scientists

1"=40'-0'

MILL CREEK DRAINAGE AREA

BMP MC-1: STATION AVENUE
FINAL SITE PLAN
~~SHEET 10 OF 12~~

PLOT DATE 11/15/06 1:28pm FILE= H:\6000-9999\6300\MC\BMP-1F2(W)(S)-11 by JFORZANO XREFs=6300\MC\ACOE X-REFS\BMP-1F_X,

MATCH LINE - SEE SHEET 9

MATCH LINE - SEE SHEET 12

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New York District

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Project Name: NYCDEP BMP MC-1
Sheet 20 of 32

HAZEN AND SAWYE
Environmental Engineers & Scientists

1"=40'-0"

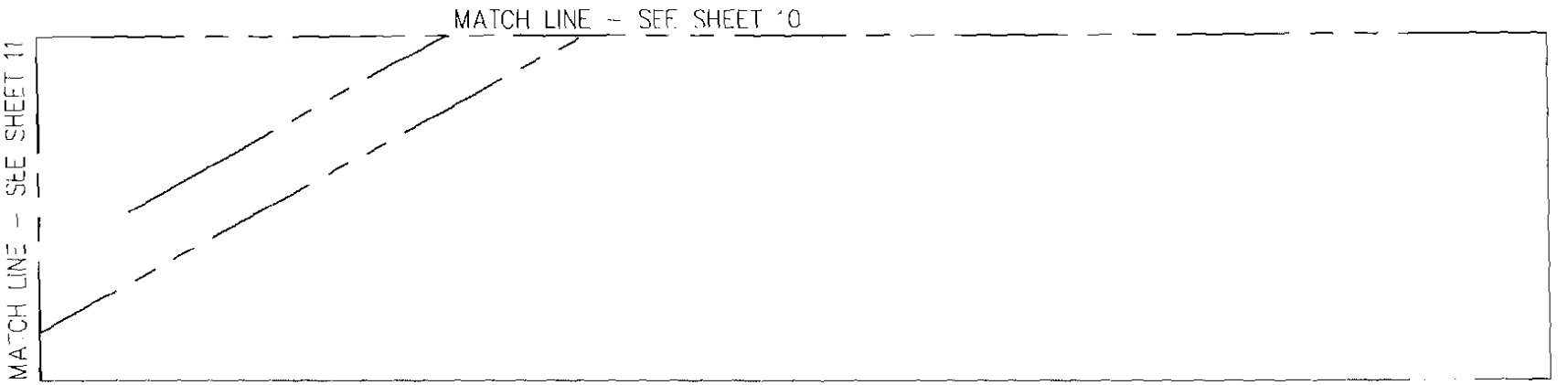
40 20 0 40'

MILL CREEK DRAINAGE AREA

BMP MC-1: STATION AVENUE
FINAL SITE PLAN

~~SHEET 11 OF 12~~

PLOT DATE 11/15/06 1:29pm FILE= H:\6000-9999\6300\MC\BMP-1F2(W)(S)-12 by JFORZANO XREFs=6300\MC\ACOE X-REFS\BMP-1F_X,



US Army Corps of Engineers
New York District

Corps #: 2006-623-ESP
Project Name: NYCDEP BMP MC-1
Sheet 21 of 32

HAZEN AND SAWYER
Environmental Engineers & Scientists

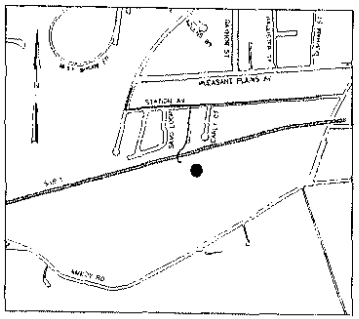
1"=40'-0"

40 20 0 40

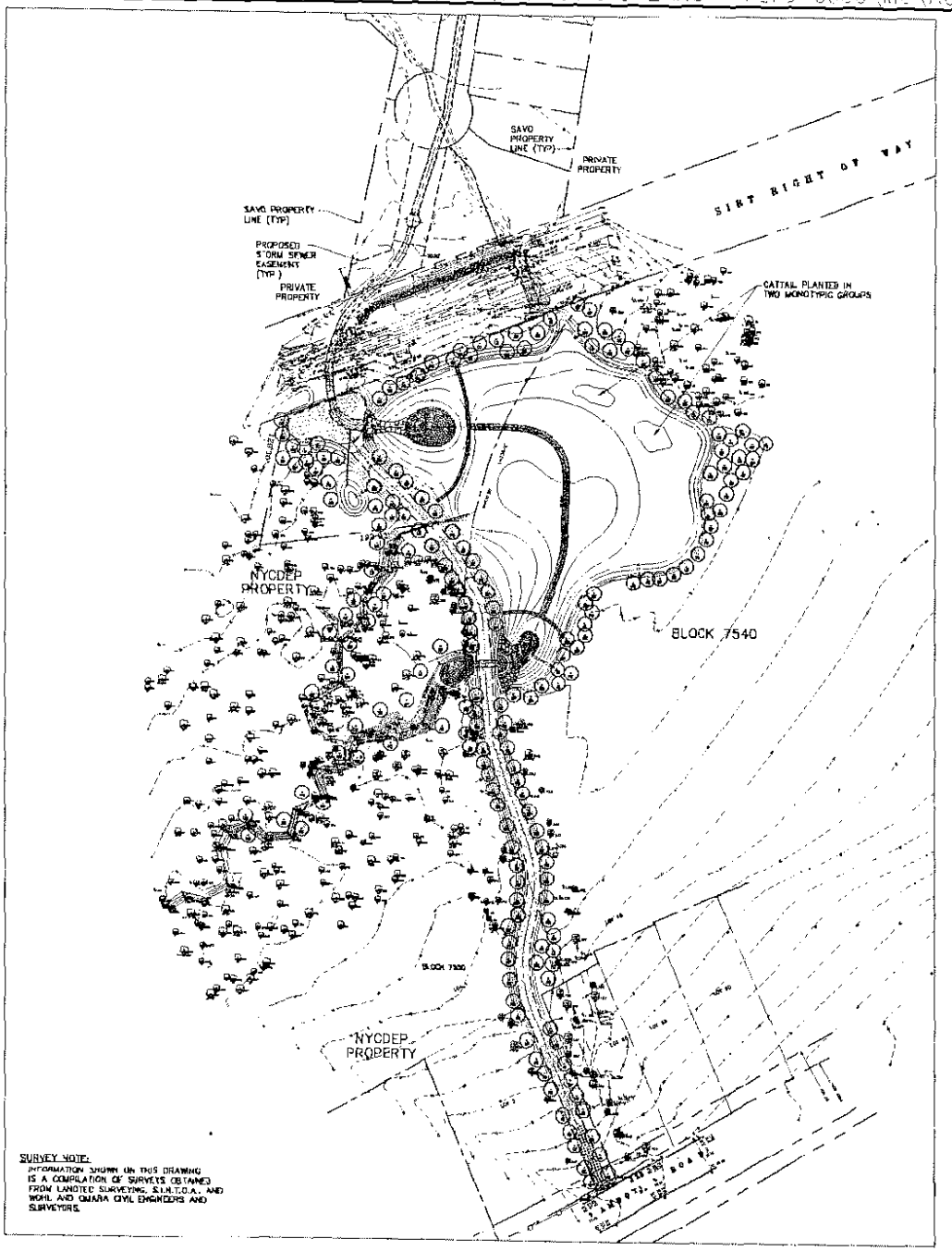
MILL CREEK DRAINAGE AREA

BMP MC-1: STATION AVENUE
FINAL SITE PLAN
~~SHEET 12 OF 12~~

PLOT DATE 11/15/06 3:04pm FILE= H:\6000-9999\6300\MC\BMP-ILO-T(W)(S)(C) by JFORZANO XREFs=6300\MC\ACOE X-REFS\BMP-ILT x.



SITE LOCATION MAP
N.T.S.



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1'=160'-0"

160 80 0 160'

US Army Corps of Engineers New York District

Corps #: 2006-623-ESP
Project Name: NYCDEP BMP MC-1
Sheet 22 of 32

HAZEN AND SAWYER
Environmental Engineers & Scientists

MILL CREEK DRAINAGE AREA

BMP MC-1: STATION AVENUE
LANDSCAPING PLAN-TREES (COMPOSITE)
~~SHEET 1 OF 1~~

MATCH LINE – SEE SHEET 1

	VERNONIA NOVEBORACENSIS	NEW YORK IRONWEED	1,200	2 3/4"	PLUG	MIX 1.5' ON CENTER WITH OTHER PLANTS
	EUPATORIUM MACULATUM	SPOTTED JOE PYE WEED	1,200	2 3/4"	PLUG	MIX 1.5' ON CENTER WITH OTHER PLANTS
	EUPATORIUM PURPUREUM	PURPLE JOE PYE WEED	1,200	2 3/4"	PLUG	MIX 1.5' ON CENTER WITH OTHER PLANTS
	CAREX PENNSYVANICA	PENNSYLVANIA SEDGE	1,000	2 3/4"	PLUG	PLANT IN LARGE GROUPS 1.5' ON CENTER
	PARTENOCISSUS QUINQUEFOLIA	VIRGINIA CREEPER	1,200	2 3/4"	PLUG	MIX 1.5' ON CENTER WITH OTHER PLANTS
	ASTER NOVAE-BELGA	NEW YORK ASTER	1,200	2 3/4"	PLUG	MIX 1.5' ON CENTER WITH OTHER PLANTS
	ELYMUS CANADNESIS	CANADA WILD RYE	1,200	2 3/4"	PLUG	MIX 1.5' ON CENTER WITH OTHER PLANTS
SHRUBS						
	CORNUS AMOMUM	SILKY DOGWOOD	30	3' – 4'	CONTAINER	FIELD PLACED IN MIXED GROUPS
	VIBURNUM DENTATUM	SOUTHERN ARROWOOD	34	3' – 4'	CONTAINER	FIELD PLACED IN MIXED GROUPS
	LINDERA BENZOIN	SPICEBUSH	32	3' – 4'	CONTAINER	FIELD PLACED IN MIXED GROUPS
	VIBURNUM PRUNIFOLIUM	BLACKHAW	28	3' – 4'	CONTAINER	FIELD PLACED IN MIXED GROUPS
	SAMBUCUS CANADENSIS	ELDERBERRY	36	3' – 4'	CONTAINER	FIELD PLACED IN MIXED GROUPS
	ARONIA MELANOCARPA	BLACK CHOKEBERRY	38	3' – 4'	CONTAINER	FIELD PLACED IN MIXED GROUPS
	RUBUS ALLEGHENIENSIS	NORTHERN BLACKBERRY	42	3' – 4'	CONTAINER	FIELD PLACED IN MIXED GROUPS
	RHODODENDRON VISCOSUM	SWAMP AZELEA	34	3' – 4'	CONTAINER	FIELD PLACED IN MIXED GROUPS
TREES						
	ACER RUBRUM	RED MAPLE	14	5' – 6'	CONTAINER/B&B	
	ACER SACCHARIUM	SILVER MAPLE	12	5' – 6'	CONTAINER/B&B	
	NYSSA SYLVATICA	SOUR GUM	16	5' – 6'	CONTAINER/B&B	
	QUERCUS BICOLOR	SWAMP WHITE OAK	16	5' – 6'	CONTAINER/B&B	
	QUERCUS PALUSTRIS	PIN OAK	16	5' – 6'	CONTAINER/B&B	
	LIQUIDAMBER STRACIFLUA	SWLET GUM	14	5' – 6'	CONTAINER/B&B	
	PLATANUS OCCIDENTALUS	AMERICAN SYCAMORE	14	5' – 6'	CONTAINER/B&B	
	CARPINUS CAROLINIANA	IRONWOOD	15	5' – 6'	CONTAINER/B&B	
	BETULA POPULIFOLIA	GRAY BIRCH	14	5' – 6'	CONTAINER/B&B	
	POPULUS DELTOIDES	COTTONWOOD	14	5' – 6'	CONTAINER/B&B	
	SALIX NIGRA	BLACK WILLOW	14	5' – 6'	CONTAINER/B&B	
STREAMBANK – ZONE F						
SEED						
	FACW WETLAND MEADOW MIX	SEE LIST IN SPECIFICATIONS	2 LBS	SEED	PLS	SPREAD SEED BEFORE PLANT INSTALLATION
LIVE STAKES						
	CORNUS AMOMUM	SILKY DOGWOOD	420	18-24" LONG	DORMANT CUTTING	INSTALL IN MARCH/APRIL ONLY
	SALIX DISCOLOR	PUSSY WILLOW	420	18-24" LONG	DORMANT CUTTING	INSTALL IN MARCH/APRIL ONLY
SHRUBS						
	CORNUS AMOMUM	SILKY DOGWOOD	14	3' – 4'	CONTAINER	FIELD PLACED IN MIXED GROUPS
	VIBURNUM DENTATUM	SOUTHERN ARROWOOD	10	3' – 4'	CONTAINER	FIELD PLACED IN MIXED GROUPS
	LINDERA BENZOIN	SPICEBUSH	12	3' – 4'	CONTAINER	FIELD PLACED IN MIXED GROUPS
	VIBURNUM PRUNIFOLIUM	BLACKHAW	18	3' – 4'	CONTAINER	FIELD PLACED IN MIXED GROUPS
	SAMBUCUS CANADENSIS	ELDERBERRY	14	3' – 4'	CONTAINER	FIELD PLACED IN MIXED GROUPS

MATCH LINE – SEE SHEET 3

HAZEN AND
Environmental Engineers & Scientists

US Army Corps of Engineers
New York District
Corps #: 2006-623-FSP
Project Name: NYCDEP BMP MC-1
Sheet 23 of 32

MILL CREEK DRAINAGE AREA

BMP MC-1: STATION AVENUE LANDSCAPING PLANT SCHEDULE

~~SHEET 2 OF 3~~

MATCH LINE – SEE SHEET 2

	RHODODENDRON VISCOSUM	SWAMP AZELEA	16	3' – 4'	CONTAINER	FIELD PLACED IN MIXED GROUPS
TREES						
	ACER RUBRUM	RED MAPLE	8	5' – 6'	CONTAINER/B&B	FIELD PLACE IN ZONE F
	ACER SACCHARIUM	SILVER MAPLE	10	5' – 6'	CONTAINER/B&B	FIELD PLACE IN ZONE F
	NYSSA SYLVATICA	SOUR GUM	8	5' – 6'	CONTAINER/B&B	FIELD PLACE IN ZONE F
	QUERCUS BICOLOR	SWAMP WHITE OAK	12	5' – 6'	CONTAINER/B&B	FIELD PLACE IN ZONE F

NOTES:

1. ACCEPT ONLY STRAIGHT NATIVE SPECIES; NO VARIETIES OR CULTIVARS.
2. MIX HERBACEOUS SPECIES IN A RANDOM PATTERN.
3. INSTALL SHRUBS IN RANDOM CLUSTERS OF 3 TO 5 SHRUBS EACH.
4. PLANT VIRGINIA CREEPER IN THE UPPERMOST AREAS.
5. PLANTS SHALL BE PLANTED WITHIN THE ZONES NOTED ABOVE WITH THE FOLLOWING CONSIDERATIONS:
6. SHRUB CLUSTERS SHALL BE COMPRISED OF A RANDOM SELECTION OF THE SPECIFIED SHRUB SPECIES, RANGING IN SIZE FROM 6–10 INDIVIDUALS. WITHIN THE REMAINING AREAS, THE FORBS SHALL BE PLANTED IN MONOTYPIC CLUSTERS OF 15–30 INDIVIDUALS WITH AN IRREGULAR SPACING OF 0.5'–1.5'. REFER TO PLANS FOR LAYOUT OF SHRUBS IN EXTENDED DETENTION ZONES.
7. INSTALL EROSION CONTROL MAT – OVER ALL AREAS THAT HAVE BEEN REGRADED AND/OR DISTURBED.
8. PLANTS NOTED AS RARE OR EXTIRPATED ARE PLANTS THAT WERE AT ONE TIME NATIVE TO STATEN ISLAND AND THE REGION, BUT ARE CURRENTLY RARE OR NON-EXISTENT. CONTRACTOR SHOULD CONTACT GROWERS EARLY INTO THE CONSTRUCTION, AS THE PLANTS MAY BE DIFFICULT TO LOCATE OR MAY NEED TO BE GROWN FOR THE PROJECT.

ABBREVIATIONS:

B & B = BALLED AND BURLAPPED
B&B/C = SHRUBS SHALL BE EITHER BALLED & BURLAPPED OR CONTAINER GROWN.
* = RARE OR EXTIRPATED PLANT, SEE NOTE 4.
C – CONTAINER GROWN – SIZE AS NOTED
QT – QUART CONTAINER GROWN

US Army Corps of Engineers
New York District

Corps #: 2006-623-ESP
Project Name: NYCDEP BMP MC-1
Sheet 24 of 32

HAZEN AND
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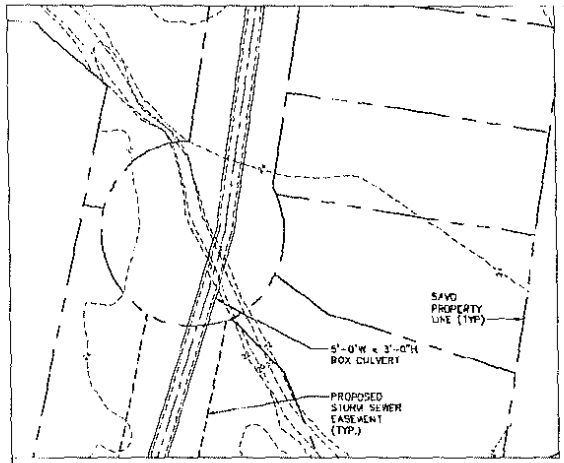
MILL CREEK DRAINAGE AREA

BMP MC-1: STATION AVENUE LANDSCAPING PLANT SCHEDULE

~~SHEET 3 OF 3~~

MATCH LINE – SEE INSET



MATCH LINE – SEE DWG. C-17(W)

US Army Corps of Engineers New York District

Corps #: 2006-623-ESP

Project Name: NYCDEP BMP MC-1

Sheet 25 of 32

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NO.	DATE	ISSUED FOR	BY

DESIGNED E.R. | DRAWN J.K.F. | CHECKED E.R. | SUPT. CHIEF R.D.S. | PROJ. ENGR. D.M.

SCALE 1"=20'-0"

CAD FILE \\300\MC1 (BMP-01-T01)

HAZEN AND SAWYER
Environmental Engineers & Scientists
HAZEN AND SAWYER, P.C. • 498 SEVENTH AVENUE • NEW YORK, NEW YORK 10018

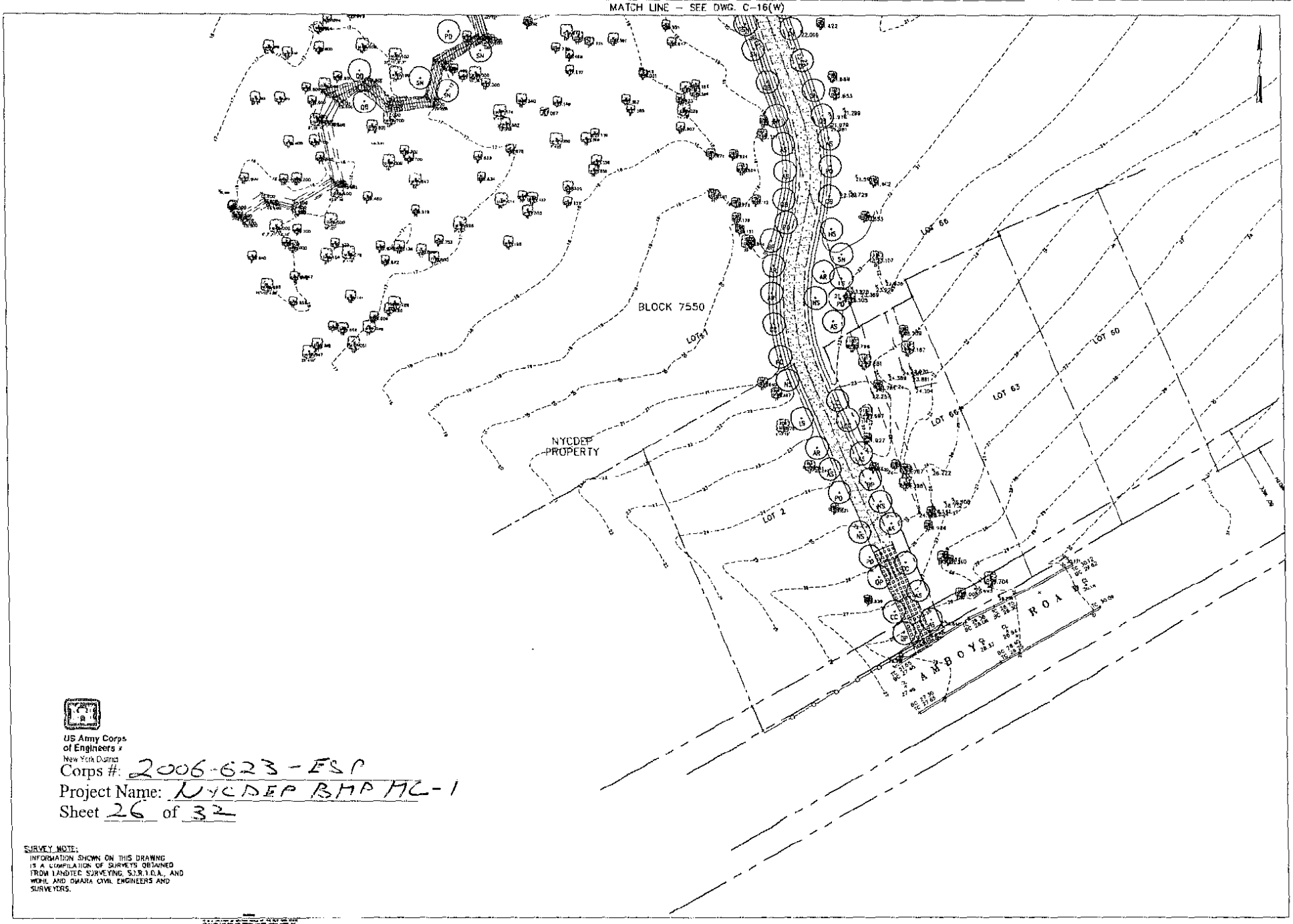
APPROVED FOR THE CITY OF NEW YORK
P.E.
PROJECT MANAGER

CITY OF NEW YORK
DEPARTMENT OF ENVIRONMENTAL PROTECTION
BUREAU OF WATER AND SEWER OPERATIONS
CAPITAL PROJECT SE-1 AND SE-100
STORM WATER AND SANITARY DRAINAGE MANAGEMENT PLAN FOR SOUTH RICHMOND
STATEN ISLAND, NEW YORK

STORM WATER AND SANITARY DRAINAGE PLAN
MILL CREEK DRAINAGE AREA
BMP MC-1 STATION AVE
LANDSCAPING PLAN - TREES
SHEET 1

DATE OCTOBER 2006
SHEET 25 OF 32
DWG NO. [redacted]

CAPITAL PROJECT SE-775/776 SER-290146



US Army Corps of Engineers
New York District

Corps #: 2006-623-ESP
Project Name: NYCDEP BMP MC-1
Sheet 26 of 32

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NO.	DATE	ISSUED FOR	BY

DESIGNED C.A.
DRAWN A.A.F.
CHECKED S.B.
SECT. CHIEF A.D.S.
PROJECT M.

SCALE 1"=20'-0"

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Environmental Engineers & Scientists
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PROJECT MANAGER P.E.

DEP

CITY OF NEW YORK
DEPARTMENT OF ENVIRONMENTAL PROTECTION
BUREAU OF WATER AND SEWER OPERATIONS
CAPITAL PROJECT 66-1 AND 66-100
STORM WATER AND SANITARY DRAINAGE MANAGEMENT PLAN FOR SOUTH RICHMOND
STATEN ISLAND, NEW YORK

STORM WATER AND SANITARY DRAINAGE PLAN
MILL CREEK DRAINAGE AREA
BMP MC-1 STATION AVE
LANDSCAPING PLAN - TREES
SHEET 2

DATE OCTOBER 2006
SHEET [illegible] OF [illegible]
DWG NO. [illegible]

PLANT SCHEDULES: MC-1

SHRUB CLUSTERS, FERNS, FORBS, GRASSES & AQUATIC PLANTS

ZONE	BOTANICAL NAME	COMMON NAME	QTY	SIZE	FORM	SPACING/REMARKS
DEEP AQUATIC - ZONE A						
	NYMPHEA ODORATA	FRAGRANT WHITE WATER LILY	800	2 3/4"	PLUG/RHIZOME	2.0' ON CENTER
	NUPHAR LUTEA	SPATTERDOCK	800	2 3/4"	PLUG/RHIZOME	2.0' ON CENTER
SHALLOW MARSH WETLAND - ZONE B						
ELEVATION 15.0 - 15.5						
	TYPHA LATIFOLIA	BROAD LEAVED CATTAIL	1200	2 3/4"	PLUG	1.5' ON CENTER IN TWO GROUPS
	SAGITTARIA LATIFOLIA	DUCK POTATO	750	2 3/4"	PLUG	1.5' ON CENTER
WETLAND EDGE - ZONE C						
ELEVATION 15.5 - 16.0						
SEED						
	OBLIGATE WETLAND MIX	SEE LIST IN SPECIFICATIONS	2 LBS	SEED	PLS	SPREAD SEED BEFORE PLANT INSTALLATION
PLANTS						
	LEERSIA ORYZOIDES	RICE CUTGRASS	150	2 3/4"	PLUG	MIX 1.0' ON CENTER WITH OTHER PLANTS
	SPARGANIUM EURYCARPUM	GIANT BUR-REED	150	2 3/4"	PLUG	MIX 1.0' ON CENTER WITH OTHER PLANTS
	SCRIPUS TABEMAEMONTANA	SOFT STEM BULRUSH	150	2 3/4"	PLUG	MIX 1.0' ON CENTER WITH OTHER PLANTS
	SRIPUS CYPERINUS	WOOLGRASS	150	2 3/4"	PLUG	MIX 1.0' ON CENTER WITH OTHER PLANTS
	PELTANDRA VIRGINICUS	ARROW ARUM	500	2 3/4"	PLUG	MIX 1.0' ON CENTER WITH OTHER PLANTS
	PONTADERIA CORDATA	PICKERAL WEED	150	2 3/4"	PLUG	MIX 1.0' ON CENTER WITH OTHER PLANTS
	CAREX STRICTA	TUSSOCK SEDGE	100	2 3/4"	PLUG	MIX 1.0' ON CENTER WITH OTHER PLANTS
	IRIS VERSICOLOR	BLUE FLAG IRIS	100	2 3/4"	PLUG	MIX 1.0' ON CENTER WITH OTHER PLANTS
EXTENDED DETENTION - ZONE D						
ELEVATION 16.0 - 18.5						
SEED						
	FACW WETLAND MEADOW MIX	SEE LIST IN SPECIFICATIONS	3 LBS	SEED	PLS	SPREAD SEED BEFORE PLANT INSTALLATION
PLANTS						
	ASCLEPIUS INCARNATA	SWAMP MILKWEED	800	2 3/4"	PLUG	MIX 1.5' ON CENTER WITH OTHER PLANTS
	JUNCUS EFFUSUS	SOFT RUSH	1,200	2 3/4"	PLUG	MIX 1.5' ON CENTER WITH OTHER PLANTS
	PANICUM VIRGATUM	SWITCHGRASS	400	2 3/4"	PLUG	MIX 1.5' ON CENTER WITH OTHER PLANTS
	HIBISCUS MOESCHUTOS	ROSE-MALLOW	300	2 3/4"	PLUG	MIX 1.5' ON CENTER WITH OTHER PLANTS
	EUPATORIUM PERFOLIATUM	BONESET	800	2 3/4"	PLUG	MIX 1.5' ON CENTER WITH OTHER PLANTS
	LOBELIA CARDINALIS	CARDINAL FLOWER	300	2 3/4"	PLUG	MIX 1.5' ON CENTER WITH OTHER PLANTS
	OSMUNDA CINNAMOMEA	CINNAMON FERN	200	2 3/4"	PLUG	MIX 1.5' ON CENTER WITH OTHER PLANTS
SUCCESSIONAL WETLAND/FLOODPLAIN FOREST - ZONE E						
ELEVATION > 18.5						
SEED						
	FACW WETLAND MEADOW MIX	SEE LIST IN SPECIFICATIONS	4 LBS	SEED	PLS	SPREAD SEED BEFORE PLANT INSTALLATION
PLANTS						
	ASCLEPIUS SYRIACA	COMMON MILKWEED	1,200	2 3/4"	PLUG	MIX 1.5' ON CENTER WITH OTHER PLANTS
	HELIANTHUS ANGUSTIFOLIUS	SWAMP SUNFLOWER	1,200	2 3/4"	PLUG	MIX 1.5' ON CENTER WITH OTHER PLANTS

MATCH LINE - SEE SHEET 2

US Army Corps of Engineers New York District

Corps #: 2006-623-ESP
Project Name: NYCDEP BMP MC-1
Sheet 27 of 32

HAZEN AND
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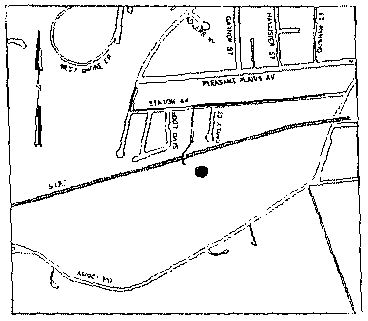
MILL CREEK DRAINAGE AREA

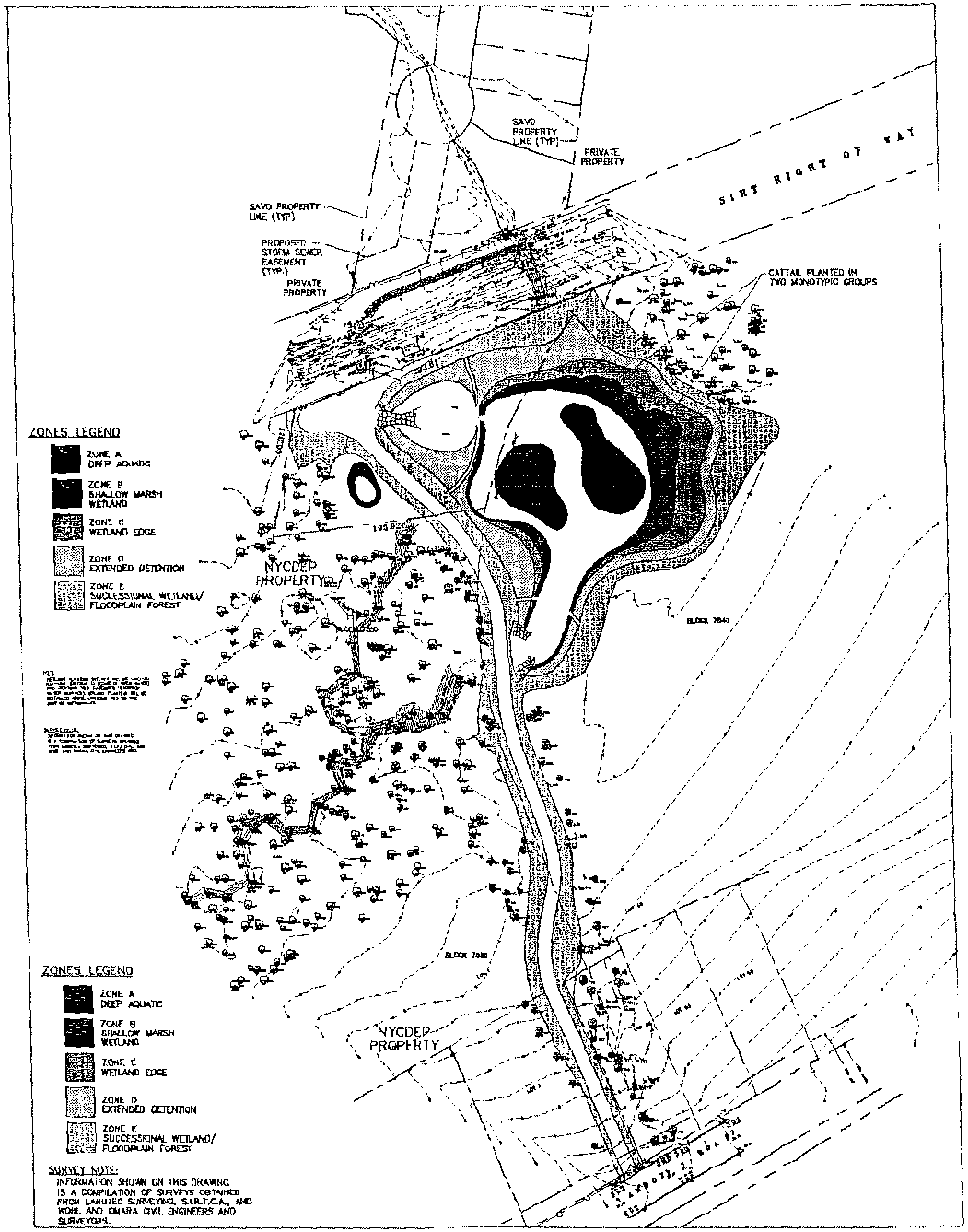
BMP MC-1: STATION AVENUE LANDSCAPING PLANT SCHEDULE

~~SHEET 1 OF 3~~

PLOT DATE 11/15/06 3:07pm FILE= H:\6000-9999\6300\MC\BMP 1LO-Z(W)(S)(C) by JFORZANO XREFs=6300\MC\ACOE X-REFS\BMP-11Z X.



SITE LOCATION MAP
N.T.S.



1"=160'-0"

160 80 0 160'

HAZEN AND SAWYER
Environmental Engineers & Scientists

MILL CREEK DRAINAGE AREA

BMP MC-1: STATION AVENUE
LANDSCAPING PLAN-ZONES/SHRUBS (COMPOSIT

~~SHEET 1 OF 1~~

U.S. Army Corps of Engineers New York District
Corps #: 2006-623-ESP
Project Name: NYCDEP BMP MC-1
Sheet 29 of 32

2006-632-ESP NYCDEP BMP MC-1 SHEET 29 OF 32

NO	DATE	ISSUED FOR	BY

DESIGNED E.R.
DRAWN J.R.
CHECKED E.R.
SECT. CHIEF R.R.S.
PROJ. ENGR. S.M.

SCALE 1"=20'-0"

CAD FILE LANDSCAPE BMP-MC-1

HAZEN AND SAWYER
Environmental Engineers & Scientists
HAZEN AND SAWYER, P.C. - 498 SEVENTH AVENUE - NEW YORK, NEW YORK 10018

APPROVED FOR THE CITY OF NEW YORK
PROJECT MANAGER

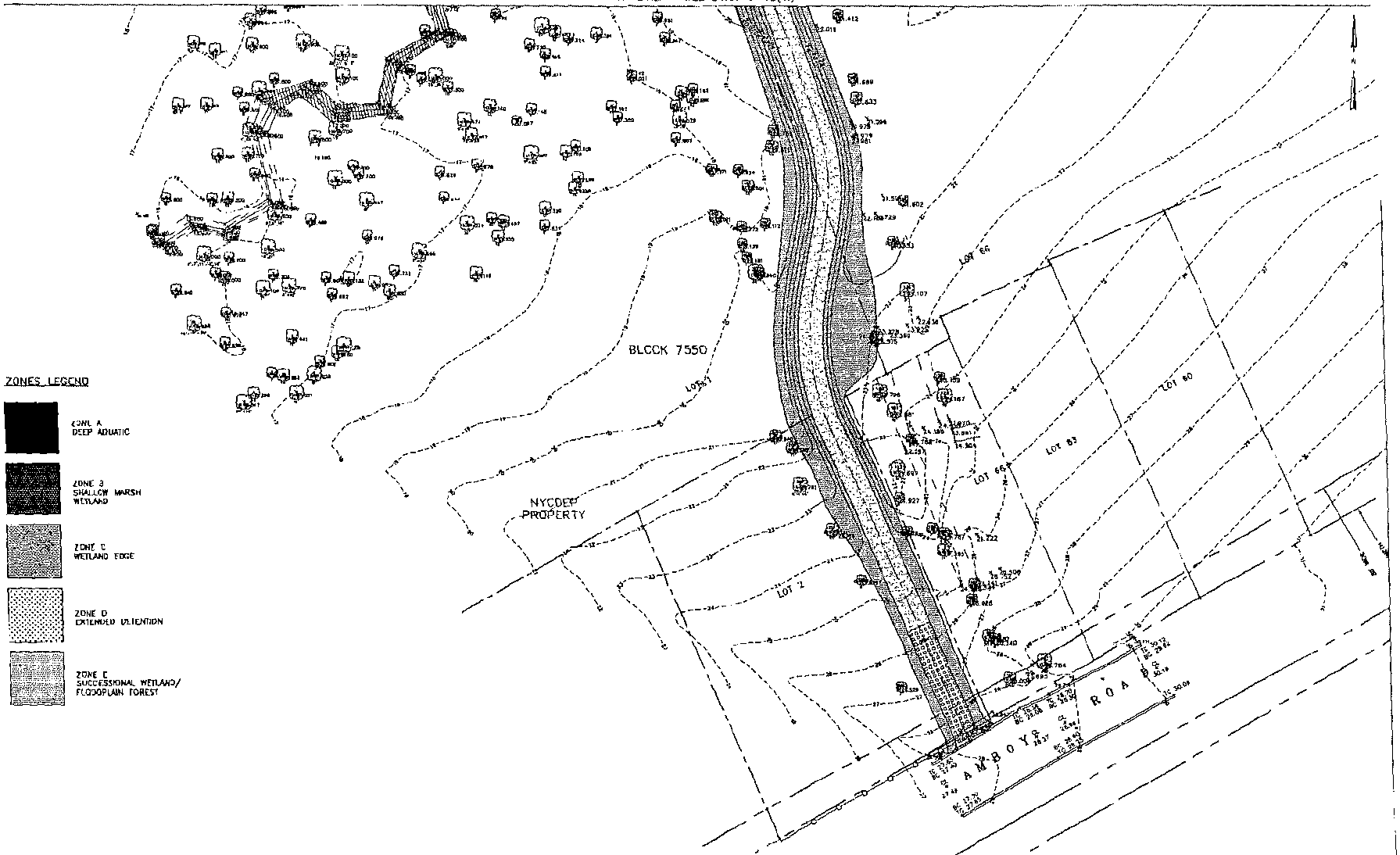
DEP

CITY OF NEW YORK
DEPARTMENT OF ENVIRONMENTAL PROTECTION
BUREAU OF WATER AND SEWER OPERATIONS
CAPITAL PROJECT NE-1 AND NE-100
STORM WATER AND SANITARY DRAINAGE MANAGEMENT PLAN FOR SOUTH RICHMOND
STATEN ISLAND, NEW YORK

STORM WATER AND SANITARY DRAINAGE PLAN
MILL CREEK DRAINAGE AREA
BMP MC-1 STATION AVE
LANDSCAPING PLAN - SHRUBS/ZONES
SHEET 1

DATE OCTOBER 2005
SHEET 29 OF 32
DWG. NO.

MATCH LINE - SEE DWG. C-18(W)



ZONES LEGEND

- ZONE A DEEP AQUATIC
- ZONE B SHALLOW MARSH WETLAND
- ZONE C WETLAND EDGE
- ZONE D EXTENDED DETENTION
- ZONE E SUCCESSIONAL WETLAND/ FLOODPLAIN FOREST

NOTE:
WETLAND PLANTING SHELVES WILL BE CREATED BETWEEN CONTOUR 15 (EDGE OF OPEN WATER) AND CONTOUR 18.5 (EXTENDED DETENTION WATER SURFACE). UPLAND PLANTING WILL BE INSTALLED ABOVE CONTOUR 18.5 TO THE LIMIT OF DISTURBANCE.

SURVEY NOTE:
INFORMATION SHOWN ON THIS DRAWING IS A COMPILATION OF SURVEYS OBTAINED FROM LANDTEC SURVEYING, S.S.R.T.D.A., AND WOHL AND OMARA CIVIL ENGINEERS AND SURVEYORS.

US Army Corps of Engineers
New York District

Corps #: 2006-623-ESP
Project Name: NYCDEP BMP MC-1
Sheet 30 of 32

NO	DATE	ISSUED FOR	BY

DESIGNED F.R.
DRAWN J.A.T.
CHECKED S.A.
SECT. CHIEF A.B.L.
PROJ. ENGR. S.M.
SCALE 1"=20'-0"
CAD NO. 1600W1-W1
BMP-12-1181

HAZEN AND SAWYER
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HAZEN AND SAWYER, P.C. • 498 SEVENTH AVENUE • NEW YORK, NEW YORK 10018

APPROVED FOR THE CITY OF NEW YORK
PROJECT MANAGER

CITY OF NEW YORK
DEPARTMENT OF ENVIRONMENTAL PROTECTION
BUREAU OF WATER AND SEWER OPERATIONS
CAPITAL PROJECT WC-1 AND WC-101
STORM WATER AND SANITARY DRAINAGE MANAGEMENT PLAN FOR SOUTH RICHMOND
STATEN ISLAND, NEW YORK

STORM WATER AND SANITARY DRAINAGE PLAN
MILL CREEK DRAINAGE AREA
BMP MC-1 STATION AVE.
LANDSCAPING PLAN - SHRUBS/ZONES
SHEET 2

DATE OCTOBER 2006

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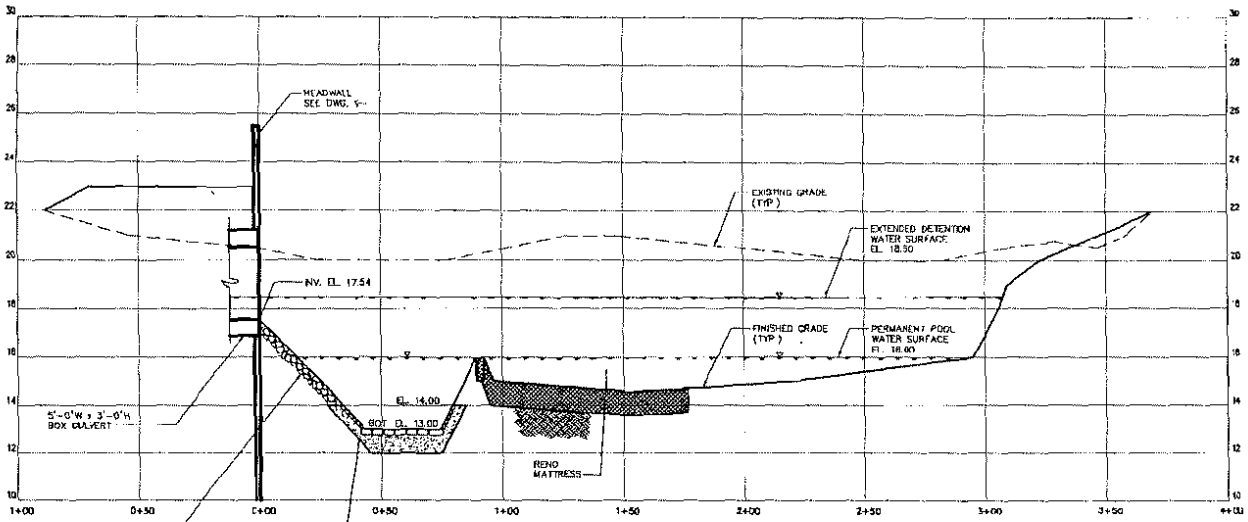
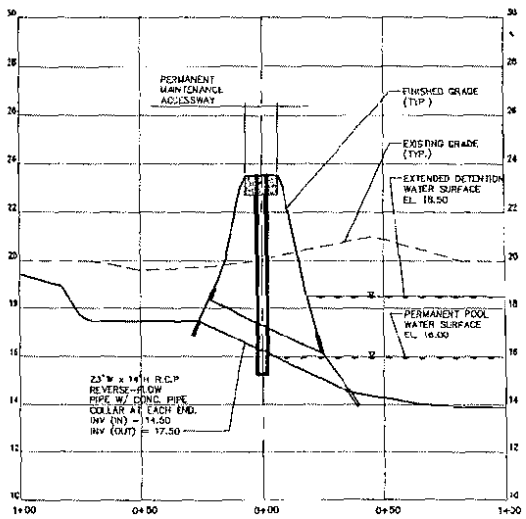


CROSS SECTION D-D

HORIZ. 1"=20'
VERT. 1"=2'



CROSS SECTION G-G

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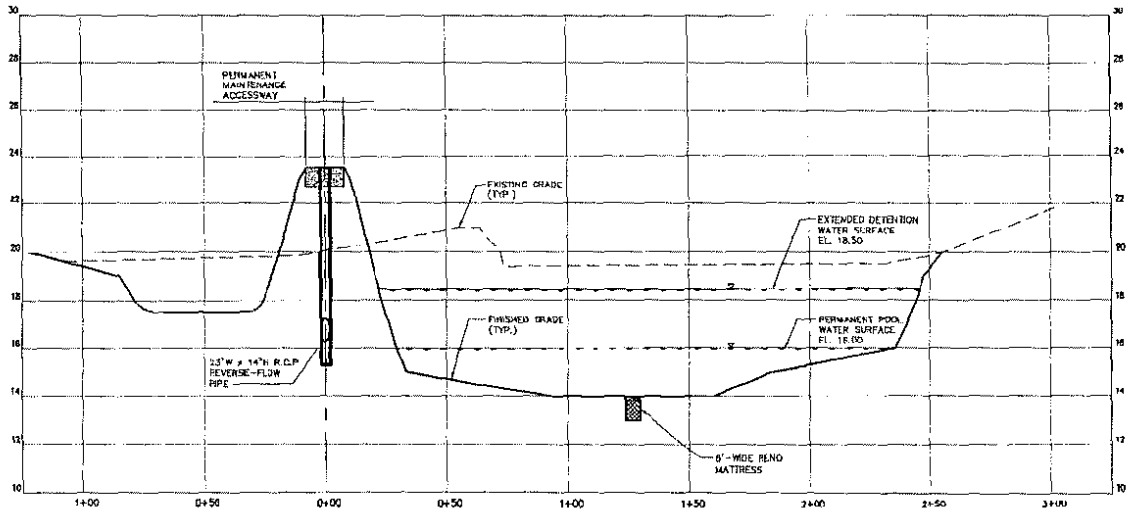
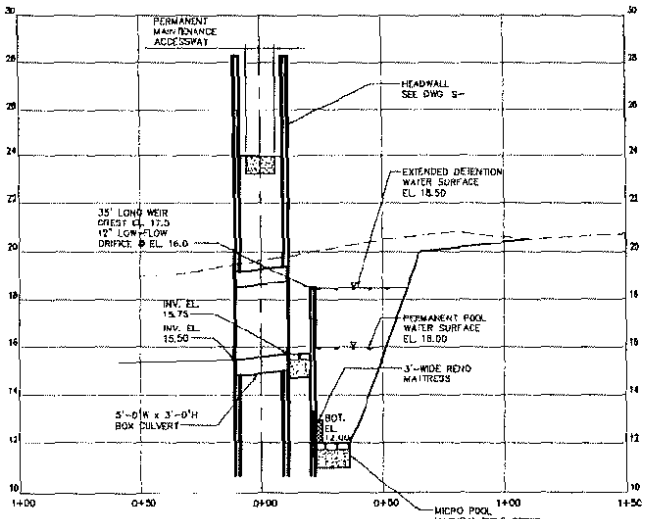
VERT. 1"=2'



CROSS SECTION E-E

HORIZ. 1"=20'
VERT. 1"=2'



CROSS SECTION F-F

HORIZ. 1"=20'
VERT. 1"=2'

2006-632-ESP
NYCDEP
BMP MC-1
SHEET 31 OF 32

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1"=8'-0"

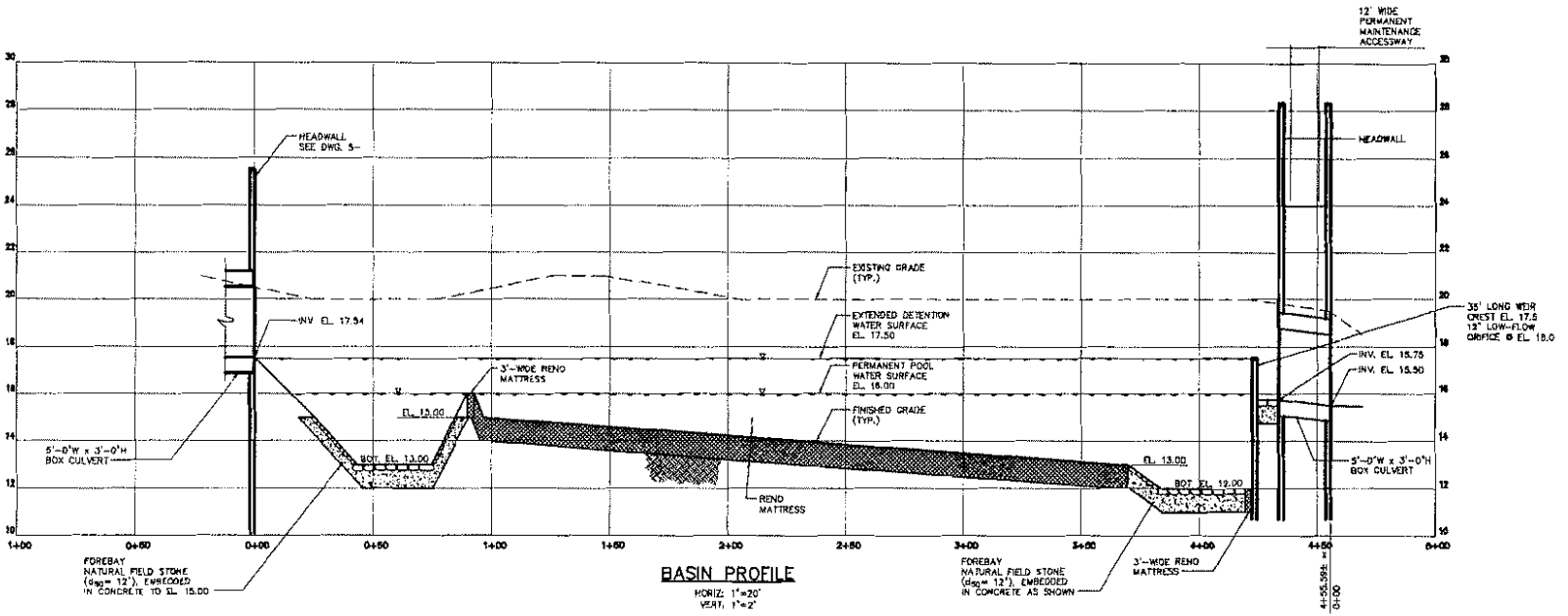
1"=80'-0"

MILL CREEK DRAINAGE AREA

BMP MC-1: STATION AVENUE
BMP CROSS SECTIONS

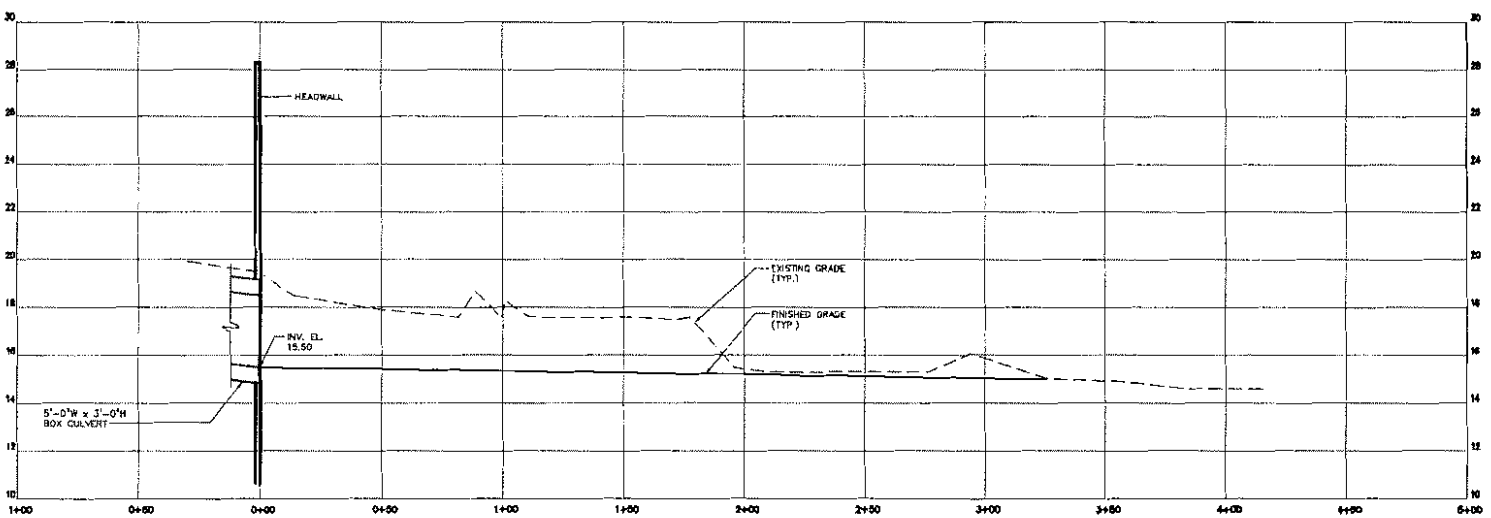
~~SHEET 1 OF 1~~

PLOT DATE 05/12/06 2:06pm FILE= H:\6000-9999\6300\MC\BMP-1P1(W)(S)-1 by JFORZANO XREF FILE = NONE



BASIN PROFILE

HORIZ: 1"=20'
VERT: 1"=2'



STREAM PROFILE

HORIZ: 1"=20'
VERT: 1"=2'

US Army Corps of Engineers New York District

Corps #: 2006-623-FSP

Project Name: NYCDEP BMP MC-1

Sheet 32 of 32

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1"=8'-0" 8 4 0 8'

1"=80'-0" 80 40 0 80'

MILL CREEK DRAINAGE AREA

BMP MC-1: STATION AVENUE BASIN AND STREAM PROFILES

~~SHEET 1 OF 1~~