Appendix E:
Geotechnical Evaluation for Dredge Spoils Area #1 at Harbor Point Redevelopment CM#2 Project, City of Utica, New York,
CME
May 2015

Geotechnical Evaluation Report
for
Dredge Spoils Area #1
at
Harbor Point Redevelopment CM#2 Project
City of Utica, New York

Prepared For:

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CME Report No.: 26959E-03-0515
May 2015

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DSA#1 Geological Cross Sections Plan, and cross-sections A-A', B-B' and D-D' (4 of 4)

Geotechnical Evaluation Report
for
Dredge Spoils Area #1
at
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City of Utica, New York

1.0 INTRODUCTION

Elan Planning Design & Landscape Architecture, PLLC (Elan or Client) is providing project management and other lead consultant services, to the City of Utica and the Utica Harbor Point Local Development Corporation in support of the remediation and redevelopment of the Utica Harbor Area in the City of Utica, Oneida County, New York. As part of the Draft GEIS Preparation, Elan engaged CME Associates, Inc. (CME) for planning-level geotechnical engineering investigation and testing.

CME conducted a field program of subsurface exploration-test borings and collected disturbed and undisturbed samples. Laboratory testing of selected samples was also accomplished. CME presented the data collected and the results of the field and lab program in a previously issued report titled "*Subsurface Exploration and Laboratory Test Report – CME Report No.: 26959B-01-1214*." That report presents the geotechnical field and lab program results and includes the Test Borings Logs, Boring Location Sketch, and Laboratory Test Summary.

In addition, CME prepared a Geotechnical Evaluation and Interpretive Report – CME Report No. 26959B-02-0515 (CME Report No. B-02) which presented planning-level geotechnical evaluations and recommendations for development of the site.

CME has prepared this report to present a geotechnical evaluation and recommendations specific to a proposed Mass Fill of Dredge Spoils Area#1 (DSA-1) pursuant to issuance of Change Order No. 1 to CME's contract for geotechnical services with Client.

This report is not intended to address any of the myriad of hazardous materials problems or conditions associated with the site's inactive hazardous waste disposal and NYS Superfund Programs. However, this report does present information necessary for the reader to develop a planning-level understanding of the affect these waste materials has had on the now existing subsurface conditions and the planned future development of this site.

2.0 PROPOSED IMPORTED FILL MATERIALS

It is CME's understanding that it is planned to reclaim the DSA-1 land mass, since DSA-1 currently exists as two bodies of water. The reclaimed area can then be made available to Developers for future mixed-use redevelopment. Based on a topographic map received November 18, 2014, DSA-1 will require up to about 6 feet of fill and not more than 2 feet of cut to achieve the planned grading shown thereon.

According to Client, a substantial amount of earth fill may become available from the nearby (Town of Marcy) Nanocenter Site Development Project. Based on Test Pit Logs TP1 through TP-24 and Laboratory Analyses conducted by CME for the Marcy Nanocenter Site, (CME Project No. 26875), soils above Shale Bedrock and below Topsoil are chiefly mixtures of Sand, Gravel and Silt with minor to nil Clay and Cobble proportion. These soils typically exhibit fines with a Plasticity Index varying from non-plastic to about 14. It was requested that CME provide recommendations in regard to utilizing these materials as well as other imported fill materials at the DSA-1 site.

3.0 SITE HISTORY

The site history given here is compiled from public records as referenced herein. "The Site was initially developed as a dredge spoil disposal area sometime after 1915. The natural soils on the Site were excavated and used to construct berms to contain dredged materials. Once the excavated area was filled with dredge spoil material to a height near the top of the initial berms, the height of the berms was increased using dredged material. The site is separated into an upper and lower basin by an interior berm that separates the cells."

"The material that was disposed of at the Site was dredged out of Utica Harbor, located to the west of the Site. The contamination in the harbor came in part from a large manufactured gas plant which was located on the present day Niagara Mohawk Harbor Point property. The plant operated between 1845 and the early 1950's, during which time the gas manufacturing processes produced a dense, oily liquid known as coal tar. The coal tar made its way into Utica Harbor through various avenues including escaping collection and contaminating surface soils, infiltrating or discharge into sewer lines which lead to surface waters, including the harbor." [Site Management Plan, NYSDEC Site #6-33-021, OU3, DSA-1, August 2010]

Vegetation, including trees, grew within the spoil area. The vegetation was partially or completely buried during successive depositions of dredged materials. Based on the attached aerial photography, the site was mostly wooded in 2008.

In the summer of 2009, environmental remediation consisted of removal of all surface vegetation and "approximately 9905 cubic yards of contaminated soils. Following removals, "approximately 67,163 cubic yards of soils with contamination levels below the ROD (Record of Decision) clean-up objectives were used to regrade the site for continued future use as a DSA. Berms were reconstructed to approximately 16 feet high with 2 foot horizontal to one foot vertical side slopes. The bottom of the excavation within bermed areas varies from approximately 402 to 406 feet amsl (USGS NGVD)." [Site Management Plan, NYSDEC Site #6-33-021, OU3, DSA-1, August 2010]

Residual petroleum and coal tar-related compound contamination remains in the dredge spoils. Please refer to the referenced Site Management Plan for details which will affect development and construction of buildings and infrastructure within the DSA-1 footprint. Please refer to the attached Site Location Map for the outline of DSA-1.

4.0 SUBSURFACE CONDITIONS

No subsurface explorations were advanced within DSA-1 by CME. Approximately nine acres of the DSA-1 area is currently underwater (ponded). The soils present from the bottom of the ponds to natural, unexcavated soil consists of highly variable spoils, fill materials and dredgings, which have been placed during or after the remedial excavation in 2009.

Natural unexcavated material is likely to be present below about elevation 400. Based on explorations by others and the attached Geologic Cross Sections from public records, much of the DSA-1 man-placed deposits are underlain by Clay with trace amounts of Organic Matter. The Clay varies from zero (0) to less than about 20 feet in thickness. The clay grades to a mucky mixture of Clay, Organic Silt, Peat and Sand, referred to as Organic Silty Clay, which is underlain by Lower Glacial Lakebed Deposits, Glacial Till and Utica Shale Bedrock. Please refer to the Geotechnical Evaluation and Interpretive Report, CME Report No. B-02, for more about the subsurface conditions below the Harbor Point Site.

5.0 GEOTECHNICAL EVALUATION

5.1 Unclassified Uncontrolled Fill

Over 67000 cubic yards of unclassified on-site borrow was used to regrade the DSA-1 area following Hazmat removals in 2009. Aerial photography subsequent to 2009 shows other unclassified materials being deposited into the large DSA-1 pond in an uncontrolled manner.

5.2 Soft Natural Deposits subject to Consolidation

The subsurface soil profile below Unclassified Uncontrolled Fills exhibits soils which are subject to long term consolidation under new loads, such as those created by placement of Fill needed to reclaim the land mass within the ponds. One Dimensional Consolidation Tests of undisturbed Organic Silty Clay sampled outside of DSA-1, show that the Clay exhibits vertical effective stress history ranging from Normally Consolidated to Pre-consolidated to 2.3 tsf. As an illustrative example, consider the placement of a uniform thickness of six feet of homogeneous New Fill over a uniform thickness of ten feet of homogenous Organic Silty Clay. This ideal situation would result in settlement ranging from (0) nil up to (4) four inches. This testing also indicates that it would take 3 to 6 months after fill placement to consolidate the clay layer.

In reality, the subsoils are not homogeneous and vary in thickness and previous vertical stress history. Therefore, new Fill placed in the DSA-1 footprint could exhibit differential settlements of about one foot or more within about one year, after placement.

5.3 Development Considerations

Based on CME's understanding of the proposed redevelopment for DSA-1 (see attached Master Plan), it would be beneficial to establish the proposed grades as soon as possible, so that compression and consolidation of the underlying materials can commence. CME recommends that pipe settlement gages (see NYSDOT GCP-15, Revision #4) be installed within the new fill, and baseline elevation data be collected. A monthly monitoring (reading) of elevation of each pipe settlement gage should then be made until two successive monthly readings indicate that rate of settlement has decreased to 0.0208 feet per month or less. Once the settlement rate has substantially decreased, then infrastructure utility and road construction may commence.

In road and sidewalk areas, it would be beneficial to install a surcharge of granular fill meeting NYSDOT §304-2.02 requirements, to pre-consolidate the subsoils prior to constructing final surface improvements.

For proposed Building Pads, the placement of a temporary surcharge may mitigate post-construction settlements, but the actual benefit to any specific building project cannot be predicted at this time due to so many unknowns.

Because the DSA-1 area already contains a significant quantity of unclassified uncontrolled fill, the extra expense for the installation of a variable thickness of high quality controlled fill is probably not warranted. According to the Building Code of NYS[1], unprepared and uncontrolled fill (among other materials such as organic Silt, Organic Clay, peat and mud) shall not be assumed to have any presumptive load-bearing capacity. However, CME considers it is warranted to prohibit deposition of unsuitable soil materials within New Fill and to place the New Fills using quality controlled, workmanlike procedures and practices which will provide a firm, stable ground surface which is trafficable and durable.

The installation of new fill will require dewatering of the DSA-1 ponds, then some regrading of the bottom to promote drainage to sump pits, continuous dewatering from sump pits, discing and aeration of the bottom, followed by compaction, sealing and proofrolling of the surface prior to depositing new fill.

CME recommends that all new fill material and installation conform to part 6.0 of this Report.

Select borrow material which may be available from the Marcy Nanocenter site (as indicated by the Test Results presented in Report Section 2.0) should fall within these recommended specifications for Satisfactory Fill Material.

6.0 FILL AND BACKFILL

6.1 Fill Material

Only Satisfactory Fill shall be used to fill DSA-1. Satisfactory Fill shall fall within Unified Soil Classifications GW, GP, GM, GC, SW, SP, SM, or SC by exhibiting at least 50% retained on the No. 200 mesh sieve and which has been approved for use after review of all required prequalification test submittals.

The minimum requirements for a prequalification submittal shall include the following test results which are not more than 60 days old:

- ✓ Sieve Analysis – ASTM D422
- ✓ Moisture Density Relationship Modified Effort – ASTM D1557
- ✓ Plasticity Index – ASTM D4318
- ✓ Unified Soil Classification ASTM D2488
- ✓ Organic Content ASTM D2974

[1] Building Code of New York State – 2010 – Section 1804

Satisfactory Fill material may consist of sand and gravel, approved recycled product or crushed rock product which is capable of being compacted to the required density at the proper moisture content and which is 99% free of deleterious materials, trash, roots, debris, frozen material and organic or other foreign matter. Satisfactory Fill material shall contain no particles over 6 inches in maximum dimension.

Satisfactory Fill material shall be accepted on the basis of gradation, classification, plasticity index, organic content and a well-defined Moisture-Density Relationship Curve.

6.2 Fill Installation Methodology

All filling and backfilling shall be accomplished in a workmanlike manner according to good industry practice. All fill and backfill shall be installed in a quality controlled manner with prequalified materials, with quality assurance tests and inspections conducted at regular intervals according to the BCNYS Chapters 17 and 18, and consistent with the following methodology.

1. The area to receive fill shall be properly dewatered and prepared, then probed, inspected and approved by a qualified geotechnical engineer prior to placement of fill.

2. Fill material shall be placed on the approved subgrade in a manner to minimize segregation. The fill shall be placed in nearly horizontal lifts commencing at the lowest fill area elevation and proceeding with each lift upward and outward from the lower lift.

3. The moisture content of the material shall be adjusted prior to application of compaction such that it is within 3% of the Optimum Moisture Content.

4. The compacted lift thickness and minimum in-place field density shall conform to the requirements of Table 1.

Table 1: Compaction and Lift Thickness Recommendations

Average Minimum In-Place Density*	Range of Compacted Lift Thickness (inches)	Fill Area Description
92%	up to 12	Mass Fill areas.
92%	up to 8	Confined areas such as utility trenches.

*As determined using ASTM D1557, Modified Proctor. Average Minimum applies to the 3-test running average with no single test less than 90%.

5. The earthwork contractor shall utilize compaction equipment which is effective for the classification of the fill material. This includes sheeps foot rollers, rubber tire rollers, steel drum rollers, vibratory compactors and an operating weight suitable for subgrade conditions.

6. When the test results indicate that insufficient compaction has been obtained in any layer, the Contractor shall take action to modify or alter the moisture content of the soil, to provide additional compaction, try different equipment or otherwise to increase the in-place soil density. If the Contractor cannot obtain satisfactory compaction due to material properties, the Contractor shall remove the unsatisfactory material and replace with new material.

7. Materials which are frozen or which are contaminated with mud, debris, organics or other deleterious materials shall be removed and replaced with uncontaminated specified material.

8. No fill shall be placed over an area or lift of fill that has not been tested and achieved satisfactory results or a lift which is yielding excessively.

7.0 CLOSING COMMENTS AND LIMITATIONS

This report has been prepared based on a limited planning level investigation and is not intended or represented to be satisfactory for design of any structures or future improvements. Each future project must have a geotechnical investigation and engineering evaluation tailored to the specifics of the project and of sufficient scope to meet the requirements of the Building Code prevailing at the time of the project. Also, CME's review of over two dozen explorations logs conducted on the Harbor Point site leads us to the conclusion that the site subsurface conditions are complex and varied. Thus, specific project sites within the proposed redevelopment may exhibit conditions which are less favorable or more favorable than those disclosed here.

CME endeavored to conduct the services identified herein in a manner consistent with the level of care and skill ordinarily exercised by members of the geotechnical engineering profession currently practicing in the same locality and under similar conditions as this project.

CME is pleased to have been selected to provide these services and looks forward to continuing as the Utica Harbor Point Redevelopment unfolds.

Please feel free to contact the undersigned engineers with any questions or if you wish to discuss any aspect of this report and its application to the planning process.

Marcus A. Rotundo, P.E.
Geotechnical Engineer

Reviewed By: Christopher R. Paolini, P.E.
Geotechnical Engineer

MAR/jll

Geotechnical Engine

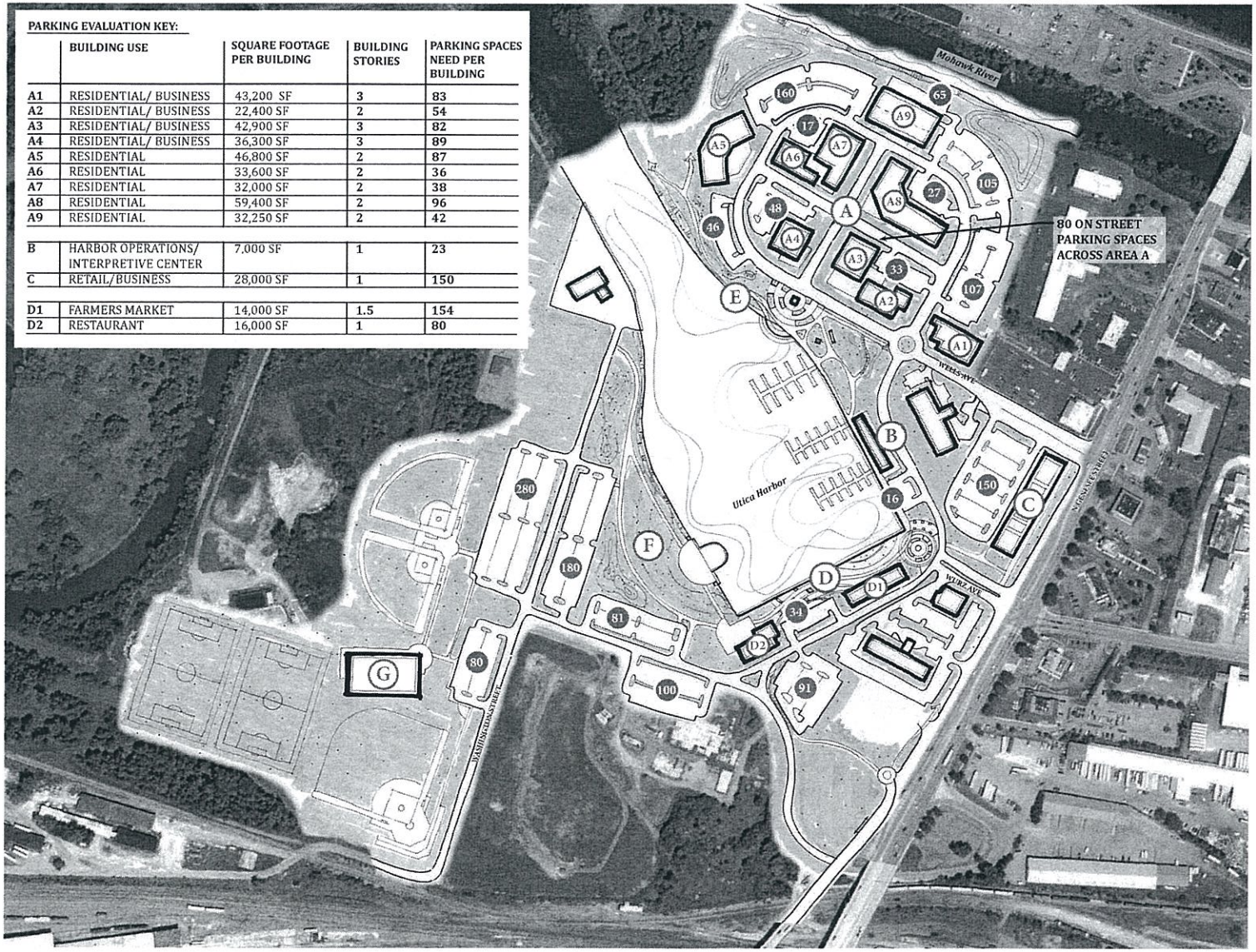
Attachment Listing:
Site Location Map – 2/2010 (1 of 1)
Master Plan Parking Evaluation – January 8, 2015 (1 of 1)
Google Images, 2011, 2009, and 2008 (3 of 3)
DSA#1 Geological Cross Sections Plan, and cross-sections A-A', B-B' and D-D' (4 of 4)

1 inch = 500 feet

MALCOLM PIRNIE	Harbor Point Site, Utica (C), Oneida County Site No. 6-33-021, OU3, DSA-1	SITE LOCATION MAP	MALCOLM PIRNIE, INC. AUGUST 2010 FIGURE 1-1

PARKING EVALUATION KEY:

	BUILDING USE	SQUARE FOOTAGE PER BUILDING	BUILDING STORIES	PARKING SPACES NEED PER BUILDING
A1	RESIDENTIAL/ BUSINESS	43,200 SF	3	83
A2	RESIDENTIAL/ BUSINESS	22,400 SF	2	54
A3	RESIDENTIAL/ BUSINESS	42,900 SF	3	82
A4	RESIDENTIAL/ BUSINESS	36,300 SF	3	89
A5	RESIDENTIAL	46,800 SF	2	87
A6	RESIDENTIAL	33,600 SF	2	36
A7	RESIDENTIAL	32,000 SF	2	38
A8	RESIDENTIAL	59,400 SF	2	96
A9	RESIDENTIAL	32,250 SF	2	42
B	HARBOR OPERATIONS/ INTERPRETIVE CENTER	7,000 SF	1	23
C	RETAIL/BUSINESS	28,000 SF	1	150
D1	FARMERS MARKET	14,000 SF	1.5	154
D2	RESTAURANT	16,000 SF	1	80



CITY OF UTICA, NY
HARBOR POINT REDEVELOPMENT
MASTER PLAN PARKING EVALUATION
January 8, 2015

ELAN · the paige group · O'BRIEN & GERE · The Williams group · HARRIS BEACH PLLC

Harbor Lock Road, Utica, NY

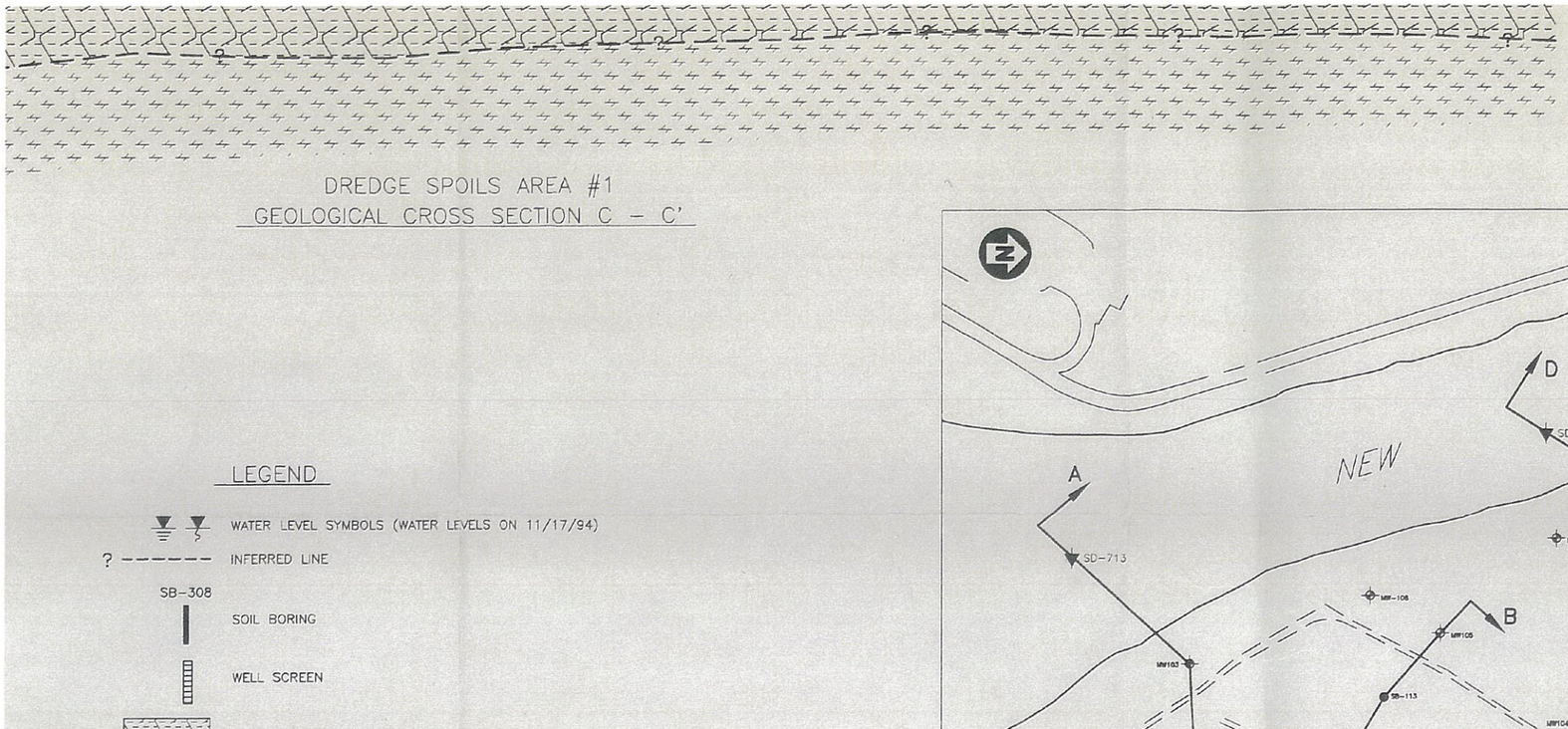
7/21/2011

Harbor Lock Road, Utica, NY

5/3/2009

Harbor Lock Road, Utica, NY

3/31/2008



DREDGE SPOILS AREA #1
GEOLOGICAL CROSS SECTION C – C'

LEGEND

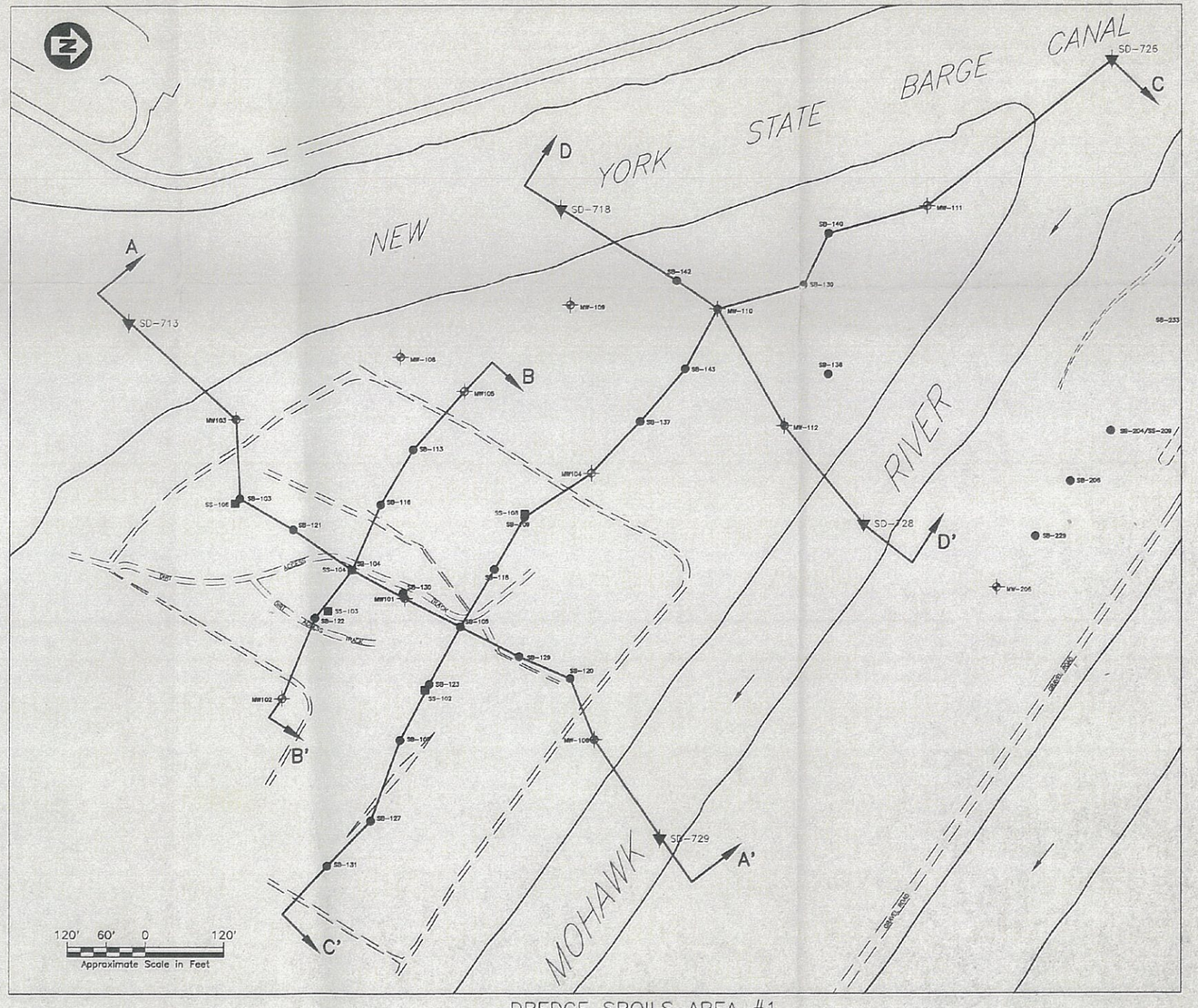
- WATER LEVEL SYMBOLS (WATER LEVELS ON 11/17/94)
- ? ------- INFERRED LINE
- SB-308 — SOIL BORING
- WELL SCREEN
- DREDGE MATERIAL — SILT, CLAYEY SILT, SILTY SAND, SANDY SILT, SAND
- RECENT RIVER DEPOSITS (SILT, SAND)
- UPPER FLUVIAL — SILT AND SAND, TRACE CLAY, ORGANICS, PEAT
- UPPER FLUVIAL — MOTTLED CLAY, TRACE ORGANICS
- UPPER FLUVIAL — CLAYEY SILT – MEDIUM SAND, TRACE WOOD DEBRIS
- LOWER FLUVIAL — FINE/MEDIUM SAND, FINE GRAVEL, LITTLE SILT
- GLACIAL LACUSTRINE — LIGHT GREY, PINK-HUED SILT & FINE SAND, TRACE CLAY, DENSE, THIXOTROPIC

VERTICAL SCALE
10' 5' 0 10'
Approximate Scale in Feet

HORIZONTAL SCALE
80' 40' 0 80'
Approximate Scale in Feet

NOTE:

GEOLOGICAL CROSS SECTIONS ARE INTERPRETATIONS OF SUBSURFACE CONDITIONS BASED ON AVAILABLE SITE DATA, LOCAL GEOLOGY FROM THE AREA, AND REGIONAL GEOLOGY. DASHED LINES AND QUESTION MARKS HAVE BEEN USED TO IDENTIFY AREAS WHERE THE INTERPRETATIONS WERE MORE SPECULATIVE AND BASED PARTIALLY ON PROJECTIONS OF DATA FROM KNOWN AREAS.



DREDGE SPOILS AREA #1
GEOLOGICAL CROSS SECTIONs
SCALE: 1"=100'

Job No. 725617320000
Designed MSR
Drawn JHG
Checked
Reviewed
Approved
Reg. No. –
Date

NOT FOR BIDDING OR CONSTRUCTION

PARSONS ENGINEERING SCIENCE, INC.
LIVERPOOL, N.Y.
(315) 451-9560

NIAGARA MOHAWK POWER CORP.
SYRACUSE, NEW YORK

NIAGARA MOHAWK

REMEDIAL INVESTIGATION REPORT FOR THE EXPANDED (OFF-SITE) RI AT THE DREDGE SPOILS AREAS, CITY OF UTICA, NEW YORK

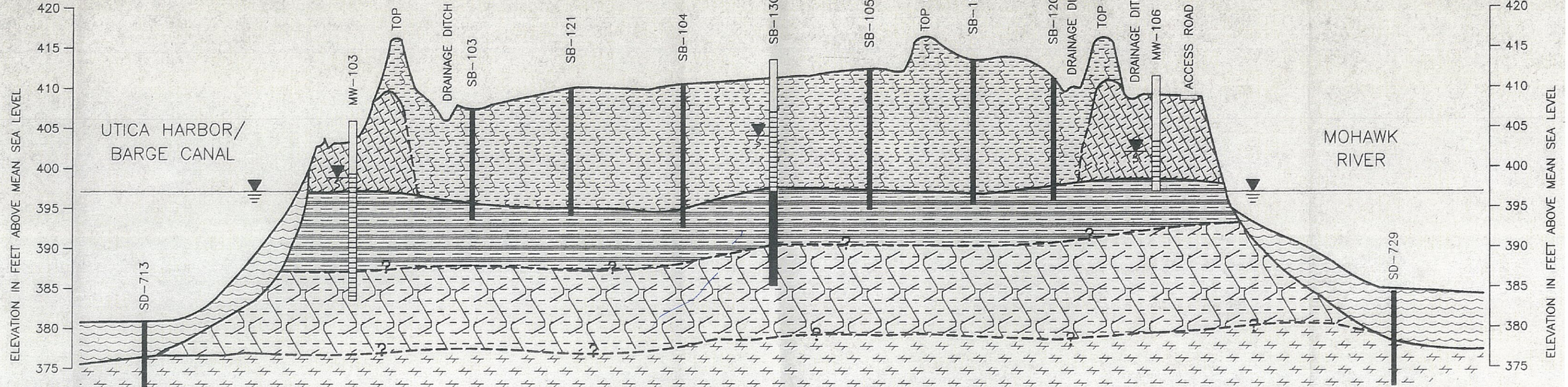
DREDGE SPOILS AREA #1
GEOLOGICAL CROSS SECTIONS

DRAWING NO. PLATE 3.2

REV. –

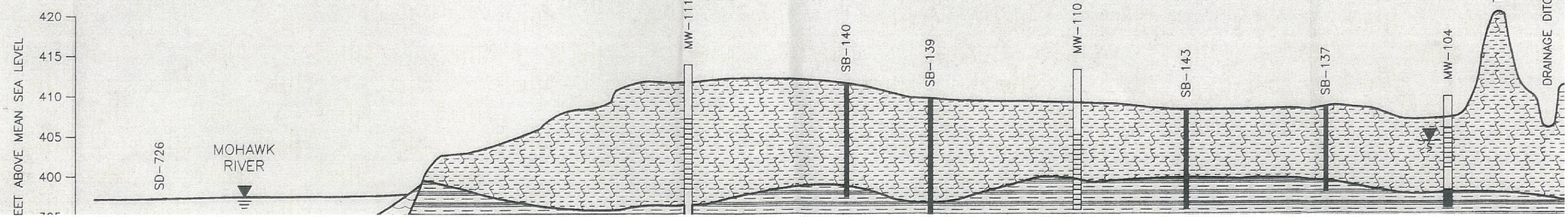
A
SOUTHWEST

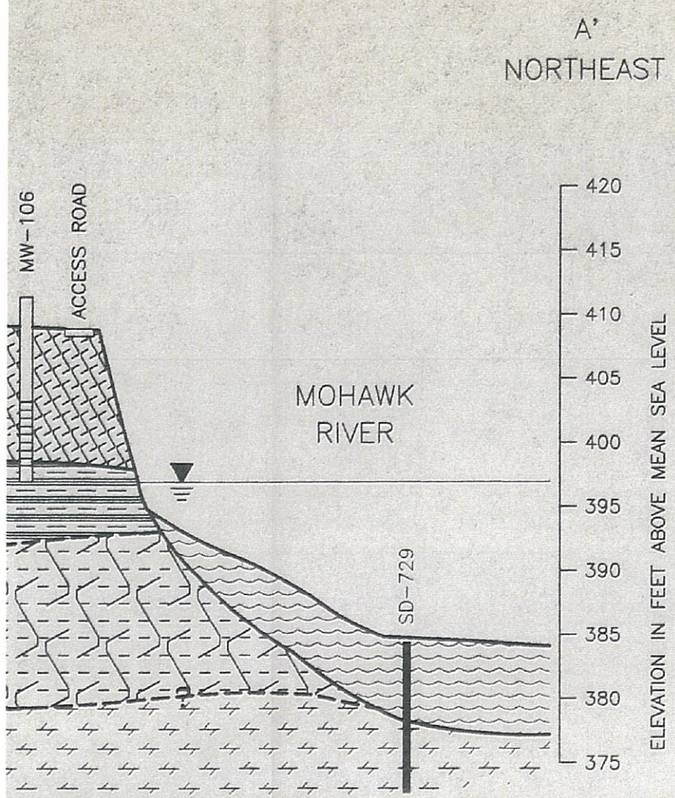
A'
NORTHEAST

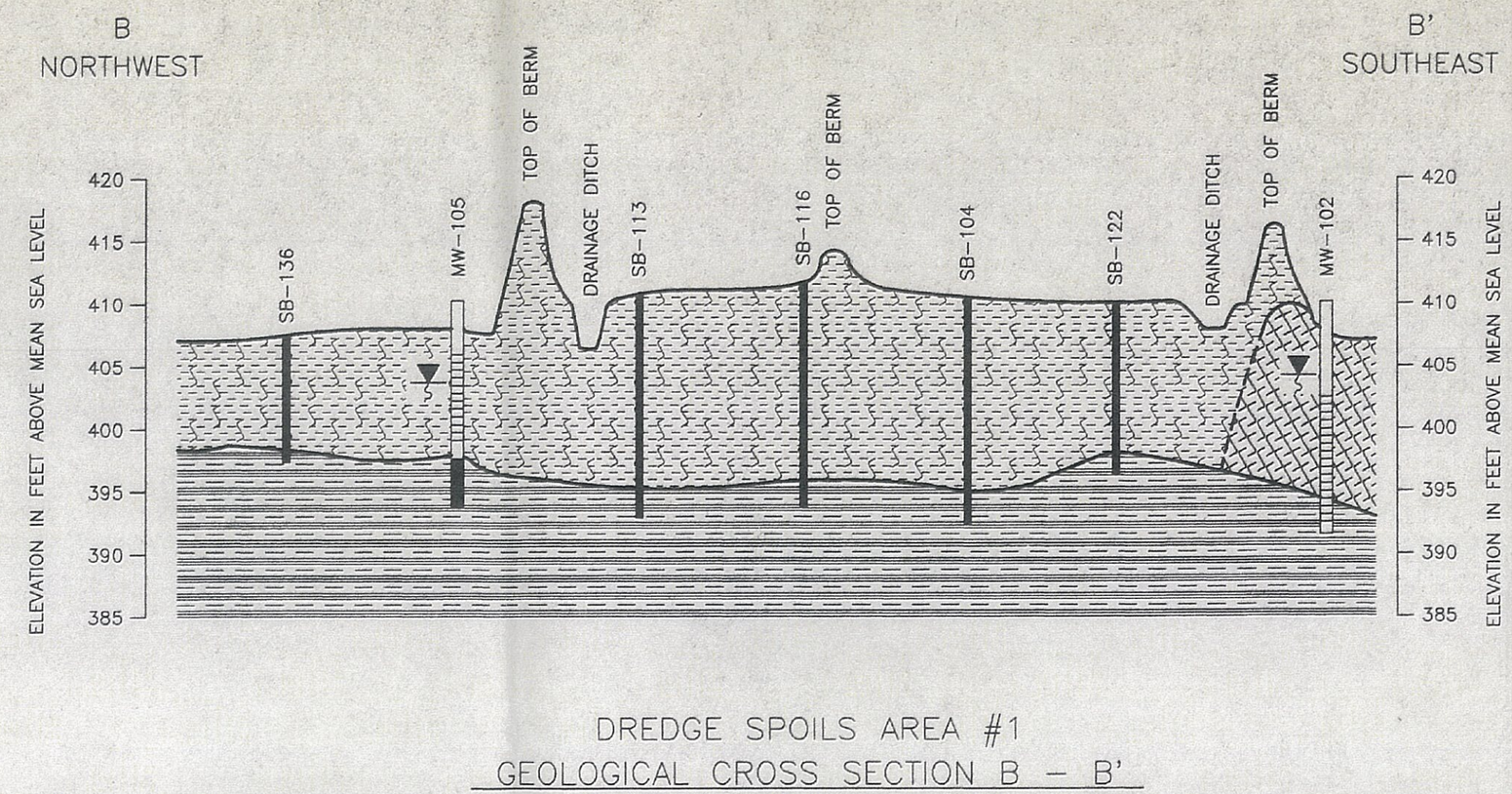


DREDGE SPOILS AREA #1
GEOLOGICAL CROSS SECTION A – A'

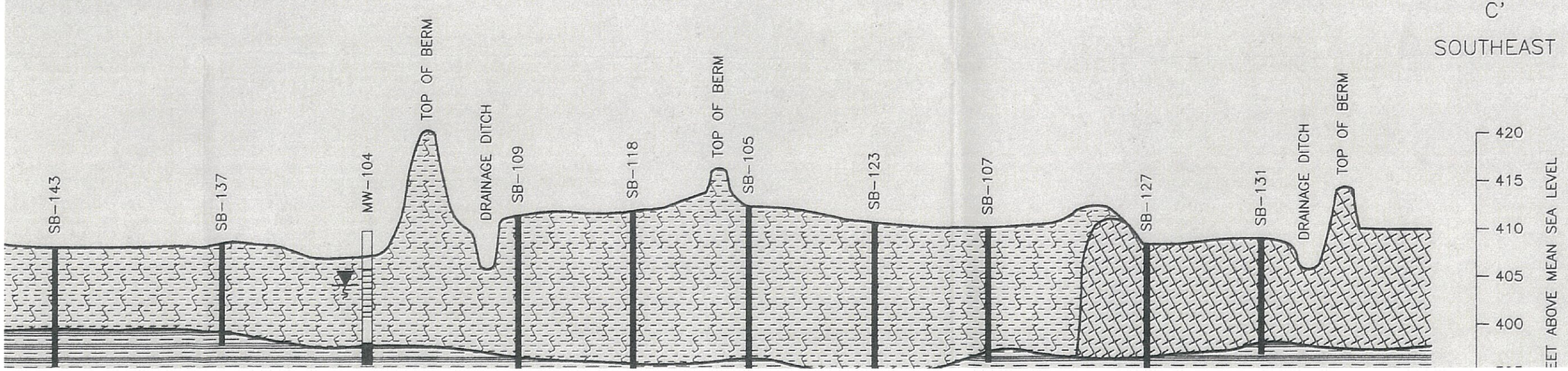
C
NORTHWEST

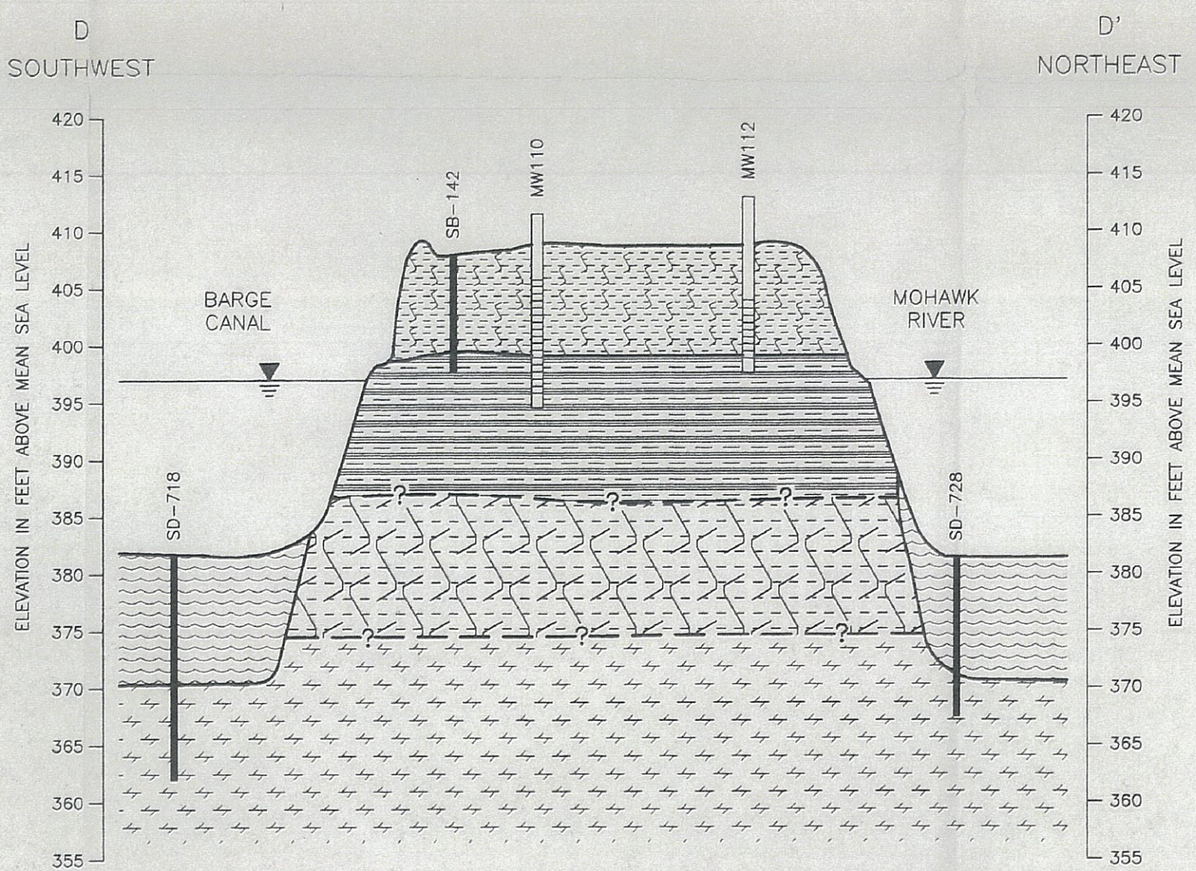






DREDGE SPOILS AREA #1
GEOLOGICAL CROSS SECTION B – B'





DREDGE SPOILS AREA #1

GEOLOGICAL CROSS SECTION D -D'

LEGEND

- WATER LEVEL SYMBOLS (WATER LEVELS ON 11/17/94)
- INFERRED LINE
- SB-308 — SOIL BORING
- WELL SCREEN
- DREDGE MATERIAL — SILT, CLAYEY SILT, SILTY SAND, SANDY SILT, SAND
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