

EXPLANATION OF SIGNIFICANT DIFFERENCES

**TORCH LAKE SUPERFUND SITE
OPERABLE UNITS 1, 2 and 3
HOUGHTON COUNTY, MICHIGAN
EPA SITE ID: MID980901946**

PREPARED BY:

**UNITED STATES ENVIRONMENTAL PROTECTION AGENCY
REGION 5**



October 2024

I. INTRODUCTION TO THE SITE AND STATEMENT OF PURPOSE

The Torch Lake Superfund Site (Site) (CERCLIS ID# MID980901946) is located on the Keweenaw Peninsula in Houghton County, Michigan.

The Site consists of three Operable Units (OUs):

- OU1 includes select surface tailings, drums, and slag piles on the western shore of Torch Lake. These areas include Lake Linden, Hubbell/Tamarack City, and Mason Sands.
- OU2 includes groundwater, surface waters, submerged tailings and sediments in Torch Lake, Portage Lake, the Portage Lake Canal, Keweenaw Waterway, North Entry to Lake Superior, Boston Pond, and Calumet Lake.
- OU3 includes select tailing and slag piles in Calumet Lake, Boston Pond, Michigan Smelter, Dollar Bay, and Grosse-Point (Point Mills).

A Site location map is included in the figures.

The U.S. Environmental Protection Agency (EPA) is issuing an Explanation of Significant Differences (ESD) for the Site to modify the scope of the remedy selected in the Record of Decision (ROD) for OU1 and OU3 issued on September 30, 1992 (1992 ROD). The changes to the scope of the remedy include:

- The inclusion of the Scales Creek area among the areas to be addressed by the 1992 ROD. Scales Creek was incorporated into the areas considered for remedial action during the remedial design phase. Construction activities were then conducted at Scales Creek consistent with the remedial actions completed at the other OU1 and OU3 locations.
- The addition of additional shoreline protection to the Lake Linden area.
- The clarification that in future Five Year Reviews (FYRs), the FYRs will include review of the “No Action” remedy selected in the 1994 ROD for OU2 and make a protectiveness determination for the “No Action” remedy.

The EPA is the lead agency for the Site and the Michigan Department of Environment, Great Lakes, and Energy (EGLE) is the support agency. Section 117(c) of the Comprehensive Environmental Response, Compensation, and Liability Act (CERCLA), 42 U.S.C. §9617(c) and Section 300.435(c)(2)(i) of the National Oil and Hazardous Substances Pollution Contingency Plan (NCP), 40 C.F.R. §300.435(c)(2)(i), establish procedures for explaining, documenting, and informing the public of significant changes to a remedy that occur after EPA signs a ROD. An ESD is required when the remedial action differs significantly from the remedy selected in the ROD but does not fundamentally alter the remedy with respect to scope, performance, or cost.

In accordance with Sections 300.435(c)(2) and 300.825(a)(2) of the NCP, 40 C.F.R. §300.435(c)(2) and 40 C.F.R. §300.825(a)(2), respectively, this ESD and supporting documentation will become part of the administrative record for this Site and will also be available for public review at the information repository that has been established for the Site.

The update to the administrative record for this ESD is included as Appendix A. The administrative record is available for public review at the following locations:

EPA Region 5 Records Center
77 W. Jackson Blvd.
Chicago, Illinois 60604

Portage Lake District Library
58 Huron Street
Houghton, Michigan

Lake Linden/Hubbell Public
Library
601 Calumet Street
Lake Linden, Michigan

II. SITE HISTORY, CONTAMINATION, AND SELECTED REMEDY

The Torch Lake area was the site of copper milling and smelting facilities, which operated for over 100 years. The first mill opened on Torch Lake in 1868. At the mills, copper was extracted through a series of technologies. First, copper was extracted by crushing or “stamping” the rock into smaller pieces, then by grinding the pieces of copper, and driving the pieces through successively smaller meshes. The copper and crushed rocks were separated by gravimetric sorting in a liquid medium. The copper was then sent to a smelter.

The crushed rock particles, called “tailings” or “stamp sands”, were discarded along with mill processing water, typically by pumping the tailings and mill processing water into lakes and streams. The lake was a repository for all the mining industry-related waste and served as a waterway for transportation to support the industry. The areas comprising the Site are the areas where mining wastes were placed. The Site was proposed for inclusion on the National Priorities List (NPL) in October 1984 and placed on the NPL in June 1986.

The 1992 ROD lists the following remedial action Objectives (RAOs) for OU1 and OU3:

- Reduce or minimize potential risks to human health associated with the inhalation of airborne contaminants from the tailings and/or slag located at the Site.
- Reduce or minimize potential risks to human health associated with direct contact with and/or the ingestion of the tailings and/or the slag located at the Site.
- Reduce or minimize the release of contaminants in tailings to the groundwater through leaching.
- Reduce or minimize the release of contaminants in tailings to the surface water and sediment by soil erosion and/or air deposition.

The components of the selected remedy from the 1992 ROD were:

- Deed restrictions to control the use of tailing piles so that tailings would not be left uncovered, and in a condition that is contrary to the intent of the ROD and RAOs, which could cause human and ecological exposures and/or increase the potential for run-off of contaminants into the lake.

- Removal of debris such as wood, empty drums, and other garbage in the tailing piles for off-site disposal in order to effectively implement soil covers with vegetation over the tailing piles.
- Soil cover placement with vegetation in the following areas:
 - OU1 tailings in Lake Linden, Hubbell/Tamarack City, and Mason.
 - OU3 tailings in Calumet Lake, Boston Pond, Michigan Smelter, Dollar Bay, and Grosse-Point (Point Mills).
 - OU1 slag pile/beach in Hubbell.

The 1994 ROD selected a “No Action” remedy for OU2. In selecting the No Action remedy, EPA took into consideration and relied upon the following:

- The reduction of stamp sands loading to surface water bodies expected as a result of the remedial action at OU1 and OU3;
- The ongoing natural sedimentation and detoxification that was occurring in other surface water bodies in the area;
- County and state-administered institutional programs and practices that would control potential future exposure to site-affected groundwater; and
- The long-term monitoring and the Five-Year Review process monitoring requirements for the remedy selected in the 1992 ROD for OU1 and OU3.

III. BASIS FOR THE DOCUMENT

When EPA determines that a remedial action, as implemented, differs from the originally selected remedy for a Superfund site, and also determines that the change does not fundamentally alter the originally selected remedy, the EPA will publish an ESD.

Inclusion of Scales Creek as an OU3 Site Location

The 1992 ROD identified areas containing exposed stamp sands that required capping, both to reduce human exposure to the stamp sands and loading into the nearby waterbodies.

Scales Creek is a tributary of the Trap Rock River, which feeds into Torch Lake. Scales Creek and the Trap Rock River are located to the north of Torch Lake. The Trap Rock River and its tributaries were considered for possible remedial action in advance of the 1992 ROD but were not included within the definition of the Site in the 1992 ROD.

In 1994, during the remedial design phase, despite not being listed as a site location in the 1992 ROD, EPA developed a remedial design for the Scales Creek area. During this time the Scales Creek area was under review and evaluation to determine whether the remedial action would be conducted.

In 1998, EPA finalized the remedial design treatment plan for the Scales Creek area. The remedial design of the remedy in the Scales Creek area included: (1) placement of six inches of

cover over the stamp sand, (2) debris removal, (3) seeding and mulching, (4) streambank protection and rock chute construction for erosion control, and (5) installation of a chain link fence for protection of the Scales Creek area. The total area to be covered and seeded was estimated at 19.2 acres, with 1,500 tons of riprap projected to be placed. These actions within the Scales Creek area were consistent with the remedial actions that were planned for the other Site locations.

In 2003, the first Five-Year Review for the Site documented that the Scales Creek area was still under review and continued evaluation was necessary before EPA could initiate the remedial action at the Scales Creek area.

Remedial action activities were conducted at the Scales Creek area during 2005 and EPA completed a *Construction Completion Report for the North Entry & Scales Creek Sites* that year, which is included as Appendix B. This report details the actions taken within the Scales Creek area, which included covering exposed stamp sands with soil and construction of a vegetative cap. The work completed was consistent with actions taken at the other Site locations and the remedial action objectives specified in the ROD. Pre- and post-construction imagery is part of the *Construction Completion* report.

Institutional controls (ICs) are required at the Scales Creek location. This is consistent with the 1992 ROD's intent to prohibit land uses that could leave tailings exposed. Operation & maintenance activities, which include cap inspection and, if necessary, cap repair, are ongoing.

Additional areas of Shoreline Protection in the Lake Linden Area

Lake Linden was one of the fourteen areas where remedial actions were conducted as part of the Torch Lake OU1 and OU3 ROD. Lake Linden is a peninsular area of approximately 110 acres located on the north end of Torch Lake. The selected remedy set forth in the ROD for OU1 and OU3 included a soil and vegetative cap over Site areas containing stamp sands. During the remedial design phase, EPA determined that shoreline protection was required in areas where wave action was found to cause increased erosion. Remedial action work at Lake Linden included removal of debris and adding six to eight inches of soil to the treatment area.

During the remedial design phase, EPA identified two sections of the Lake Linden site area that required shoreline protection. The two locations were located in the northern end of the Lake Linden peninsula and included (1) where the Traprock River enters Torch Lake, and (2) an approximately 900-foot length of the southern edge of the Lake Linden peninsula.

Since the implementation of the remedial action, EGLE and its contractors have conducted yearly Site inspections as part of the Site's operation and maintenance. These inspections include all of the areas where the remedial action activities took place. Items completed during the inspections include cap inspections and the notation of areas that may need further maintenance. EGLE has documented that the areas which adjoin each side of the southern shoreline protection area in Lake Linden have been subject to erosion. Appendix C of this ESD

includes imagery which documents the erosion at the Lake Linden site including Figures 1&2, which illustrate the changes in the shoreline between 2011 and 2020. Since the completion of remedial action, portions of the cap are eroding, exposing stamp sands. This erosion prevents parts of the Lake Linden area from meeting one of the RAOs; specifically, the objective to reduce the release of contaminants in tailings to the surface waters and sediments through erosion. One of the purposes of this ESD is to document EPA's determination that additional shoreline protection is required in the Lake Linden area.

Clarification of the 1994 ROD Remedy and inclusion in the FYR process

The 1994 ROD selected "No Action" as the remedy for OU2. In selecting the "No Action" remedy for OU2, EPA took into consideration the items identified in the above section including the state-and locally administered institutional practices, and deed restrictions required by the 1992 ROD. Thus, while the selected remedy is listed as "no action," EPA based that selection partly on institutional controls that were already in place or were expected to be implemented.

While Five-Year Reviews ordinarily are not conducted for OUs that have "no action" as the selected remedy, EPA's "Comprehensive Five-Year Review Guidance" (OSWER Directive 9355-7, July 17, 2001) provides, in Section 1.5.6, that if institutional controls are included in a "no action" or a "no further action" ROD, and protectiveness relies on the institutional control, then that ROD is not considered to be "no action" or "no further action" and EPA may need to include the OU in Five-Year Reviews. Consistent with this guidance, EPA intends to include OU2 in its Five-Year Reviews for the Site.

IV. DESCRIPTION OF SIGNIFICANT DIFFERENCES

Inclusion of Scales Creek in OU3 Locations

The Selected Remedy in the 1992 ROD includes capping exposed stamp sands and tailings at specified areas of the Site. This ESD documents EPA's modification of the geographic scope of the Selected Remedy in the 1992 ROD by adding the Scales Creek location to OU3.

EPA, in consultation with EGLE, has determined that this change to the remedy selected in the 1992 ROD is significant but does not fundamentally alter the overall remedy for the Site with respect to scope, performance, or cost. Actions to implement this modification to the geographic scope of the 1992 ROD have already been undertaken. The remedial activities taken at Scales Creek were consistent with and in the interest of achieving the overall objectives of the selected remedy, which include reducing human exposure to the stamp sands and reducing the amount of stamp sands loading into the nearby surface water bodies. Implementation of the cap was completed in a manner consistent with the remedy selected for and implemented at other locations.

Additional Areas of Shoreline Protection in the Lake Linden Area

During the remedial design phase, shoreline protection in the form of riprap and geotextile fabrics were included for capped areas where EPA expected shoreline erosion. This ESD documents EPA's modification to the geographic scope of the selected remedy by increasing the area in Lake Linden where shoreline protection is used. Figure 3 illustrates the areas where shoreline protection is to be added and is included as Appendix C. This change will include approximately 2,000 feet of additional shoreline protection.

EPA, in consultation with EGLE, has determined that this change to the remedy selected in the 1992 ROD is significant but does not fundamentally alter the overall remedy for the Site with respect to scope, performance, or cost. Implementing shoreline protection in areas where shoreline erosion was occurring or was expected to occur was considered during the remedial design phase. The cost of this change is estimated to be \$500,000, compared to the approximately \$12,000,000 total cost of remedial actions at the site. This change will improve the remedy's performance by limiting the amount of stamp sands entering Torch Lake, thereby meeting the RAO of minimizing or limiting the release of stamp sands into surface water and sediment by soil erosion and/or air deposition.

Clarification of the OU2 remedy and Five-Year Review Process

In selecting "No Action" as the remedy for OU2, EPA considered certain institutional controls that were already in place or to be implemented, such as local and state controls on well installation, and the deed restrictions required in the ROD for OU1 and OU3. EPA also considered that county and regional permitting programs and development review procedures would provide further assurances against future public exposure to stamp sand-affected groundwater.

The FYR process provides an opportunity to evaluate the remedy's implementation and performance, and thus determine whether the remedy remains protective of human health and the environment. In future FYRs for the Site, OU2 will be included in the review process to ensure OU2 is considered as EPA determines whether the remedies remain protective of human health and the environment.

V. SUPPORT AGENCY COMMENTS

EGLE supports the significant changes to the remedy selected in the 1992 ROD for OU1 and OU3, and the inclusion of the remedy selected in the 1994 ROD for OU2 at the Torch Lake Superfund Site in future Five-Year Reviews, as described herein. EGLE documented approval of this ESD in a September 20, 2024, letter to EPA. This letter has been added to the Administrative Record for the Site and is also available as Appendix D to this ESD.

VI. STATUTORY DETERMINATIONS

With the differences described in this ESD, EPA, in consultation with EGLE, has determined that the remedies for OU1, OU2, and OU3 of the Torch Lake Site continue to satisfy the requirements of Section 121 of CERCLA, 42 U.S.C. § 9621, which are to protect human health and the environment; comply with legally applicable or relevant and appropriate requirements (ARARs); be cost effective; utilize permanent solutions and alternate treatment technologies to the maximum extent practicable; and satisfy the preference for treatment as a principal element of the remedy. Since hazardous wastes will remain on-site at levels that do not allow for unlimited use and unrestricted exposure, the agencies will continue to conduct Five-Year Reviews of the remedy.

VII. PUBLIC PARTICIPATION REQUIREMENTS

EPA will make this ESD available to the public by placing it in the Administrative Record file and the Site information repository (see Section I, above, for locations). EPA will also ensure that a notice that briefly summarizes this ESD and the reasons for the significant changes are published in a newspaper of local circulation after the ESD is approved. By doing so, EPA will meet the public participation requirements of Section 300.435(c)(2)(i) of the NCP, 40 C.F.R. §300.435(c)(2)(i). An electronic copy of this ESD will also be available online at:

www.epa.gov/superfund/torch-lake

VIII. AUTHORIZING SIGNATURE

EPA has determined that the modification to the remedies for OU1, OU2, and OU3 of the Site documented in this ESD are significant but do not fundamentally alter the overall Site remediation with respect to scope, performance, or cost. EPA therefore approves the issuance of this ESD for the Torch Lake Site and the changes to the OU1, OU2, and OU3 remedies documented herein.

Approved by:

10/18/2024

X Douglas Ballotti

Douglas Ballotti, Director

Superfund & Emergency Management Division

Signed by: DOUGLAS BALLOTTI

APPENDIX A

**U.S. ENVIRONMENTAL PROTECTION AGENCY
REMEDIAL ACTION**

**ADMINISTRATIVE RECORD
FOR THE
TORCH LAKE SUPERFUND SITE
OPERABLE UNITS 1,2, and 3
HOUGHTON COUNTY, MICHIGAN**

**UPDATE
October 2024
SEMS ID:**

<u>NO.</u>	<u>SEMS ID</u>	<u>DATE</u>	<u>AUTHOR</u>	<u>RECIPIENT</u>	<u>DESCRIPTION</u>	<u>PAGES</u>
<u>1</u>	2005192	5/18/1994	EPA	NCRS	U.S. EPA LETTER RE: Remedial design for Operable Units I & III	2
<u>2</u>	2005191	8/4/1997	NCRS	NCRS	USDA LETTER RE: Recent decision made by EPA RPM	1
<u>3</u>	163717	11/2/1999	NCRS	EPA	Report – Construction Complete Report for Lake Linden Sands	21
<u>4</u>	346244	11/17/2005	NCRS	File	Report – Construction Complete Report: North Entry & Scales Creek Sites	24
<u>5</u>	<i>Pending</i>	<i>Pending</i>	EGL	EPA	Concurrence Letter – Regarding Torch Lake Site OU-3 Explanation of Significant Differences (ESD)	1
<u>6</u>	<i>Pending</i>	<i>Pending</i>	EPA	File	Explanation of Significant Differences (ESD)	

APPENDIX B



Construction Completion Report
 North Entry & Scales Creek Sites
 Torch Lake EPA Superfund Project
 Houghton County, Michigan

11/17/05

To: Bill Fude, Administrative Officer
 USDA-NRCS
 3001 Coolidge Road.
 Suite 250
 East Lansing, MI 48823-6321

Contract No. 50-5D21-4-176: for construction of North Entry and Scales Creek sites, Torch Lake EPA Superfund Project, Houghton County, Michigan.

Contractor: MJO Contracting, Inc
 54560 Hwy. M-203
 Hancock, MI 49930

Contract Amount:

Original Estimated Value of Contract	\$ 1,206,181.00
Revisions Due to Contract Modifications	\$ 54,621.24
Revisions Due to Variation Clause	\$ 0.00
Final Value of Contract	\$ 1,260,802.24

Location of Work: The North Entry and Scales Creek project areas are both located in Houghton County, Michigan. The work for Scales Creek will be done near the town of Lake Linden in Sections 5, 4, 8 and 9 of Township 56 North and Range 32 West. The work for North Entry will be done near the town of Freda in Sections 28 and 29 of Township 56 North and Range 34 West.

Description of Work: The work consisted of placing earthen cover over the stamp sand, debris removal, seeding and mulching, outlet protection, culvert installation, diversion and waterway construction for surface drainage and erosion control, access road construction and installation of a chain link fence for site protection. In addition, beachgrass was planted at the North Entry site and streambank protection was utilized at the Scales Creek site.

<u>Dates:</u>	Contract Date:	1/13/05
	Notice to Proceed:	5/16/05
	Work Started:	5/16/05
	Original Date for Completion:	10/11/05
	Revised Date for Completion:	10/21/05
	Work Completed:	10/21/05

Time allowed for completion: 149 calendar days

Liquidated Damages: Contract provided that \$1300.00 per calendar day would be assessed for each day of delay. No. of days charged 0.

Plans and Specifications

The following plans and specifications were used:

- North Entry construction drawings (16 sheets) signed by NRCS State Conservation Engineer Steve Davis on 10/01/04

- Scales Creek construction drawings (19 sheets) signed by NRCS State Conservation Engineer Steve Davis on 10/01/04

- Construction Specifications
 - 2 Clearing and Grubbing
 - 3 Structure Removal
 - 5 Pollution Control
 - 6 Seeding, Sprigging, and Mulching for Protective Cover
 - 8 Mobilization and Demobilization
 - 11 Removal of Water
 - 21 Excavation
 - 23 Earthfill
 - 27 Diversions and Waterways
 - 44 Corrugated Polyethylene Tubing
 - 51 Corrugated Metal Pipe
 - 61 Rock Riprap
 - 91 Chain Link Fence
 - 94 Contractor Quality Control
 - 95 Geotextile
 - 420 Cover Material
 - 467 Field Office
 - 523 Rock for Riprap
 - 548 Corrugated Polyethylene Tubing
 - 551 Coated Corrugated Steel Pipe
 - 552 Aluminum Corrugated Pipe
 - 592 Geotextile

Contractor Performance Rating

Factors Considered	Excellent	Above Average	Average	Satisfactory	Unsatisfactory
Success in meeting scheduled completion dates	X				
Quality of work performed	X				
Organizational ability and efficiency	X				
Cooperative attitude of contractor	X				
Cooperative attitude of superintendents and foremen	X				
Effectiveness of supervision (contractor's)		X			
Effective use of equipment and manpower	X				
Adherence to safety regulations		X			

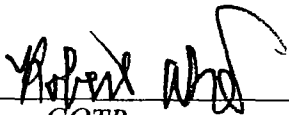
Overall adjective rating to be entered in appropriate space below and signed by the rating and reviewing officials.

Rating Official

Reviewing Official

Rating Excellent

Rating Excellent

Signature 
COTR

Signature 
Contracting Officer

Summary of Major Points of Contract

Give a brief summary of major points concerning the contract, such as weather conditions, labor problems, material shortages, etc.

- This project consisted of two separate sites covered under a single contract. Each site had its own set of drawings and bid schedule. This allowed final inspection and acceptance of individual sites to occur, and thereby relieve the Contractor of responsibility for these sites, prior to completing the Scales Creek site, which was completed last.
- Weather was predominantly dry from May through October 2005, providing good construction weather and site conditions. Heavy construction was completed by September 1, 2005; however, it was not until October 21, 2005 that actual work

was complete due to beachgrass planting at North Entry. Adverse weather days were encountered during this period and added to the performance time.

- Modification #1- The stamp sand gradation at the North Entry site consisted of approximately a well-sorted coarse sand material. Upon subsequent consideration of utilizing this material as a growing medium for beach grass, it was believed that the extreme coarseness and homogeneity of the stamp sand particles would provide minimal pore water holding capacity and, likewise, prove detrimental to beach grass growth and viability. Therefore, it was recommended that a one-foot lift of natural quartz sand be placed and then blended with the stamp sand to increase the water/nutrient holding capacity of the matrix. As a result, Bid item No. 16, Cover Material, Beachgrass, 1', and Bid item No. 17, Remobilization (lump sum) were added to the contract for the North Entry site. An additional 14 days of performance time was added to the contract to facilitate placement of the quartz sand for a total performance time of 149 days.
- Modification #2- Access to the North Entry site consisted of an unimproved road leading to and through the Stanton Township park. Original planned improvements to the site access route were minimal. In order to accommodate truck traffic, it was proposed to widen the road by clearing and grubbing trees to a width of 13 feet from road centerline. The widened road would then be smooth-graded. During the course of the above improvements, however, it was determined only a veneer of gravel surfacing was present and that soft material was present underlying the gravel. It was then decided that in order for the road to handle repetitive loaded truck traffic that placement and grading of 4" roadway gravel fill would be required. Also discovered during improvements was an existing 15" diameter culvert that needed to be lengthened to accommodate the widened road. Therefore, Bid item No. 18 (lump sum), Site Access Road Improvements, was added to the contract for the North Entry site. No additional performance time will be added to the contract.
- Modification #3- During the course of excavating a portion of a hillside to construct an access road through the Haltunen property down to Scales Creek, several springs and seeps were identified. If left unchecked, the seeps on the cut side of the access road back-slope had the potential to quickly washout the newly constructed access road. As a result, 8" diameter drain tile, fittings, drain stone and geotextile fabric were installed by MJO to convey the water under the roadway. Therefore, Bid item No. 18 (lump sum), Site Access Road Improvements, was added to the contract for the Scales Creek site. No additional performance time was added to the contract.
- Modification #4- In order to reconcile differences between estimated quantities and as-built quantities on actual quantity pay items an

- adjustment needed to be made to the contract. Therefore, differences were calculated for each actual quantity pay item for both North Entry and Scales Creek and then totaled for the entire contract which yielded an additional cost of \$1,354.94.
- NRCS staff used GPS surveying equipment for construction layout, and measurement of completed work.
- NRCS and MJO staff worked to develop a very cooperative and trusting relationship early on. This has resulted in a very good working relationship that has been quite beneficial to the success of the project. Also, MJO had been very cooperative and performed very well remediating the borrow sites.
- MJO had originally designated an individual as construction superintendent; however, this individual was hardly ever seen on-site and as a result provided little, if any, direction of day-to-day construction. This duty was delegated unofficially to an equipment operator, who as it turns out, performed wonderfully.

Construction Inspection

Principal Construction Inspection by:

Name	Duties	Representing
Rob Aho	COTR, Project Engineer/Manager	USDA NRCS
Dick Crane	Chief Inspector	USDA NRCS
Alan Pekkala	Inspector	USDA NRCS
Todd Larson	Inspector	USDA NRCS

Recommendations: Suggested improvements- plans, specifications, field staff, organization, construction materials, installation methods, etc.

- None noted.

North Entry & Scales Creek, Final Inspection

Date held: September 1, 2005

Attended by:

<u>Name</u>	<u>Title</u>	<u>Representing</u>
Steve Davis	State Conservation Engineer	USDA-NRCS
Fred Gasper	Asst. State Conservation Engineer	USDA-NRCS

Rob Aho	Project Engineer/Manager/COTR	USDA-NRCS
Richard Crane	Chief Inspector	USDA-NRCS
Alan Pekkala	Inspector	USDA-NRCS
Todd Larson	Inspector	USDA-NRCS
Bob Hocking	Superintendant	MJO Contracting, Inc.

Report Prepared:

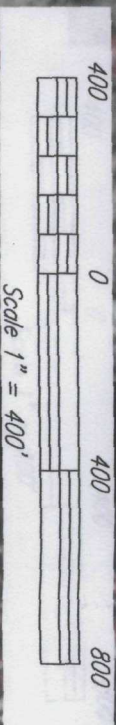
By: Rob Aho
Project Eng./Project Manager/COTR

Date: 11/17/05

Approval Recommended:

By: Bonnie R. Kellogg
Contracting Officer

Date: 11/24/05



Sheet 1 of 1

Drawing No.

File No.

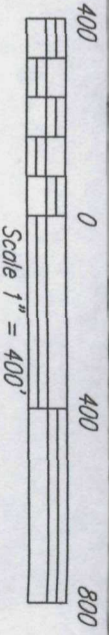
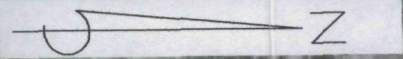


Scales Creek Area 1998 Pre-construction Imagery

Page 1 of 1

Michigan

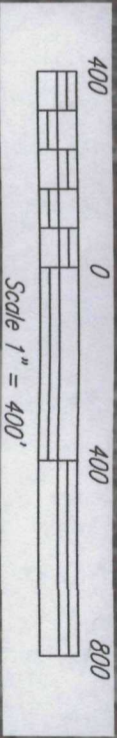
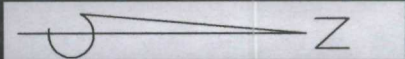
Designed	_____	Date	_____
Drawn	<i>RSA</i>	Date	<i>3/2007</i>
Checked	_____	Date	_____
Approved	_____	Date	_____



Scales Creek Area
2006 Post-Construction Imagery

Designed	_____	Date	_____
Drawn	<i>RSA</i>	Date	<i>3/2007</i>
Checked	_____		_____
Approved	_____		_____

File No. _____
 Drawing No. _____
 Sheet 1 of 1



File No.

Drawing No.

Sheet 1 of 1

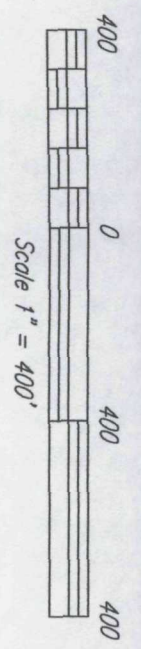
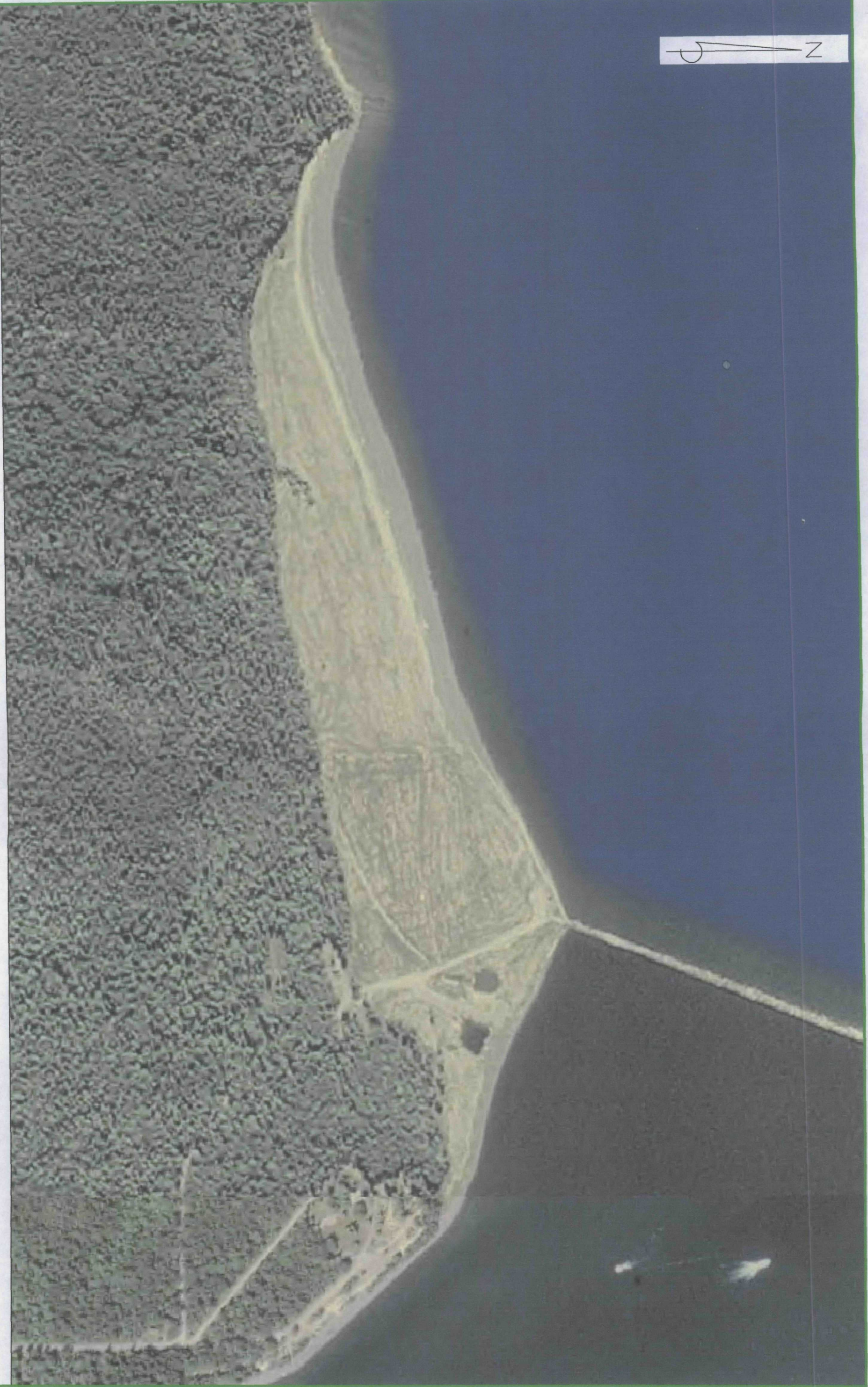
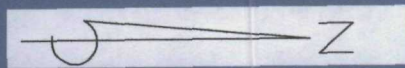


North Entry Area 1998 Pre-construction Imagery

Page 1 of 1

Michigan

Designed	_____	Date	_____
Drawn	<i>RSA</i>	Date	<i>3/2007</i>
Checked	_____		_____
Approved	_____		_____



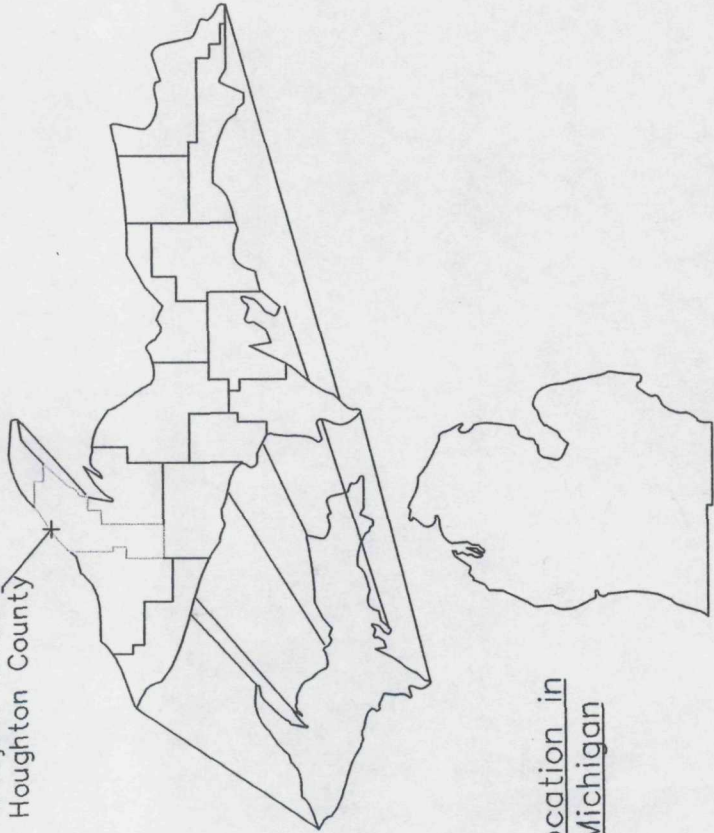
File No. _____
 Drawing No. _____
 Sheet 1 of 1



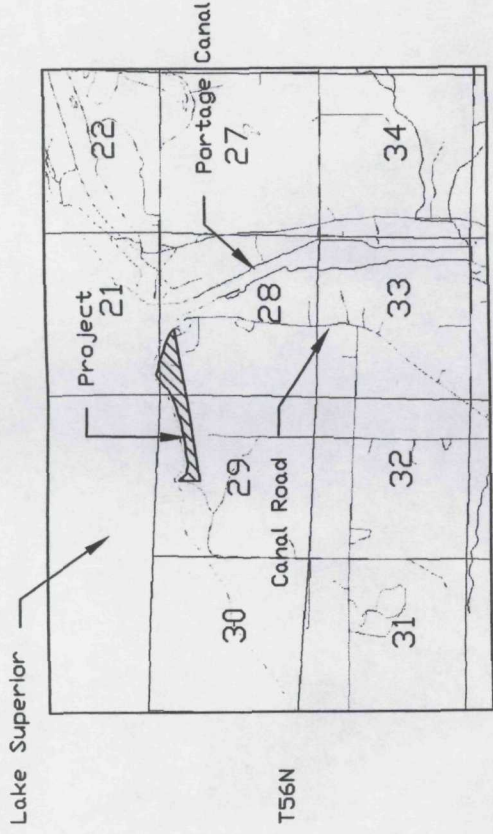
North Entry Area
 2006 Post-Construction Imagery

	Date
Designed _____	_____
Drawn <i>RSA</i> _____	<i>3/2007</i> _____
Checked _____	_____
Approved _____	_____

Project Location
Houghton County



Location in
Michigan



U.S. Department of Agriculture
Natural Resources Conservation Service
Detail Remedial Plans for

North Entry
Torch Lake EPA Superfund Site

In Cooperation With the

U.S. Environmental Protection Agency
MI Department of Environmental Quality
Houghton/Keweenaw Soil and Water
Conservation District

Table of Estimated Quantities

Item No.	Spec No.	Item	Unit	Estimated Quantity	As-Built Quantity
1		Structure Removal, Onsite Disposal	Lump Sum	1	1
2		Structure Removal, Offsite Disposal	Lump Sum	1	1
3		Pollution Control	Lump Sum	45.2	44.8
4		Seeding and Mulching	Lump Sum	2518	2884
5		Mobilization and Demobilization	Lump Sum	1	1
6		Access Road	Lump Sum	6338	7430
7		Regrading Areas	Lump Sum	309	348
8		Waterways	Lump Sum	3.5	4.0
9		Lined Channel/Outlet Protection, Riprap	Ton	45.2	44.9
10		Beach Grass Planting	Acres	142	140
11		Cover Material, 1.0'	Lump Sum	4827.0	4827.0
12		Culvert, 24"	Lump Sum	3	3
13		Chain Link Fence	Lump Sum	1	1
14		Gate	Lump Sum	3.3	3.3
15		Field Office	Lump Sum	1	1
16		Cover Material, Beachgrass, 1'	Lump Sum	1	1
17		Remobilization	Lump Sum	1	1
18		Site Access Road Improvements	Lump Sum	1	1

Location Map
(Not to Scale)

T56N, R34W, Sec 28 & 29
Stanton Twp.

AS-BUILT
DRAWINGS

Construction Specifications

Spec No.	Title
1	2-15-05
1	2-15-05
2	6-14-05
2	Cleaning and Grubbing
3	Structure Removal
5	Pollution Control
6	Seeding, Sprigging, and Mulching
8	Mobilization and Demobilization
21	Excavation
23	Earthfill
27	Diversions and Waterways
44	Corrugated Polyethylene Tubing
61	Rock Riprap
91	Chain Link Fence
94	Contractor Quality Control
95	Geotextile
420	Cover Material
467	Field Office

Material Specifications

Spec No.	Title
523	Rock for Riprap
548	Corrugated Polyethylene Tubing
592	Geotextile

Contractor: MJO Contracting, Inc.
Contract No. 150-SD21-4-176
Contract Value: Original \$1,206,181.00 Final \$1,260,802.24
Construction Completion Date: Oct. 21, 2005
CDTR: Rob Aho, Torch Lake Project Office
Inspectors: Richard Crane (Chief), Todd Larson,
Alan Pekkala, Torch Lake Project Office
CD: Bonnie Kilgore, East Lansing, MI
AS-BUILT Prepared By: Alan Pekkala

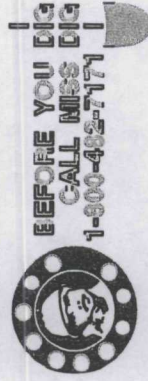
All work under the contract was installed in accordance with the AS-BUILT drawings and specifications, and the AS-BUILT drawings are true and correct record.

[Signature]
COTR Signature 1/26/06

Approved By	Date
State Cons. Engineer Natural Resources Conservation Service	

Engineering Job Class IV
Index of Sheets

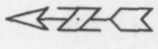
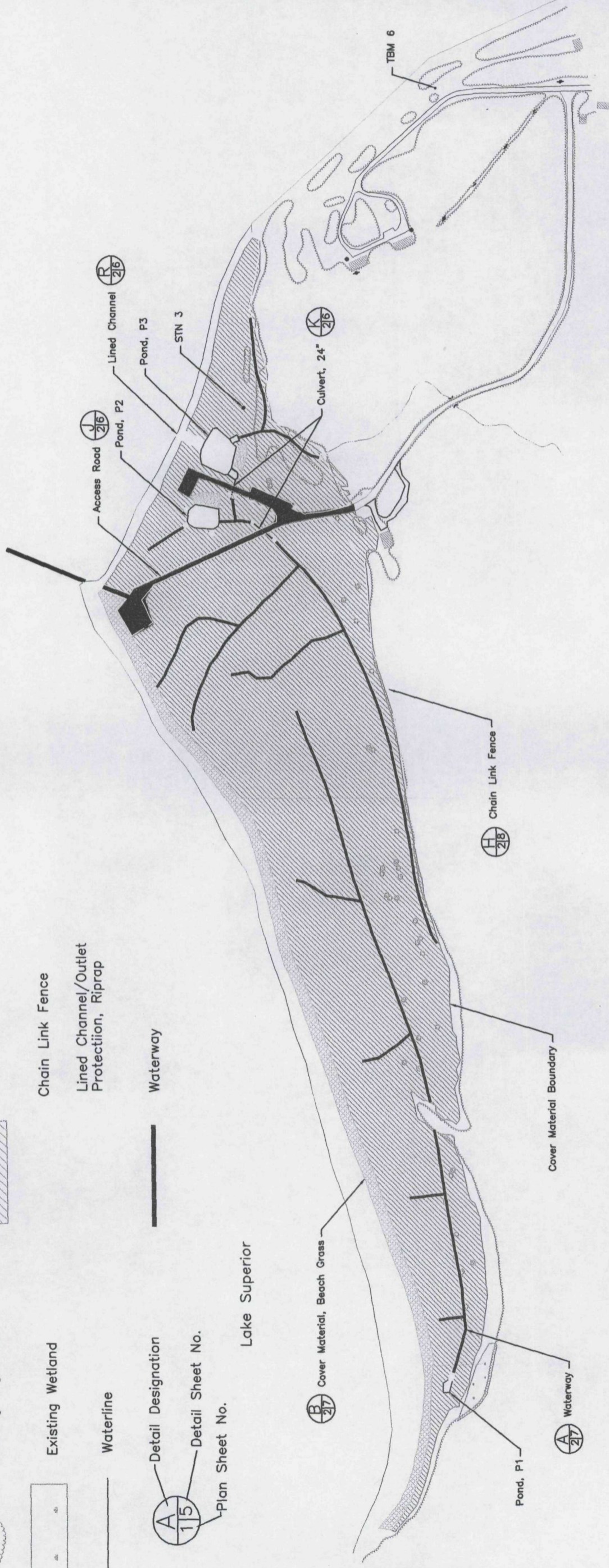
Sheet No.	Title	No. of Pages
1	Cover Sheet	
2	Overall Site Plan	5
3	Stamp Sand Regrading/Drainage Plan-West	6
4	Site Layout - West	6
5	Stamp Sand Regrading/Drainage Plan-East	11
6	Site Layout - East	5
7	Fence/Gate Layout	6
8	Culvert Details	11
9	Drainage and Beach Grass Details	6
10	Chain Link Fence And Gate Details	5
11	Profile and Sections 4+00.6+00	14
12	Sections 10+00.14+00	10
13	Sections 16+00.22+00	6
14	Sections 25+00.30+00	6
15	Sections 34+00.37+00.39+00	7
16	Sections 42+00.46+00.49+00	4



LEGEND

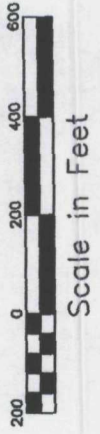
- Survey Control Point
- Existing Fence
- Existing Vegetation
- Existing Wetland
- Waterline
- Detail Designation
- Detail Sheet No.
- Plan Sheet No.
- Access Road
- Beach Grass Area
- Cover Material
- Chain Link Fence
- Lined Channel/Outlet Protection, Riprap
- Waterway

Lake Superior



Station	Northing	Easting	Elevation	Description
STN 3	895671.69	1594385.76	606.46	PK Nail in Canal Road
TBM 6	894968.23	1595544.63	625.07	Wooden Hub

Notes:
 1) A minimum of 1' of cover material was spread over regraded stamp sand subgrade.
 2) A minimum of 1' of sand cover material was spread over regraded beach grass stamp sand subgrade.



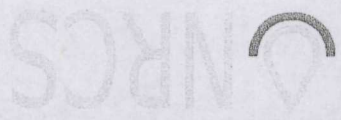
Station Coordinate Data
 1927 Michigan State Plane Coordinates (North Zone),
 NAD 27 NGVD 88; Linear Units-US Survey Feet

File No. C-0001-0003
 Project No. 2003 North
 Entry, August
 Drawing No.
 NE A4-Build.org

**North Entry Site
 Overall Site Plan**

Page 2 of 8

EPA SUPERFUND SITE



Designed	RSA	7/04
Drawn	AMP	8/04
Checked	FAG, BLH, RSY, RLC	9/04
Approved	Michigan	

Date: 7/04
 Designed: RSA
 Drawn: AMP
 Checked: FAG, BLH, RSY, RLC
 Approved: Michigan

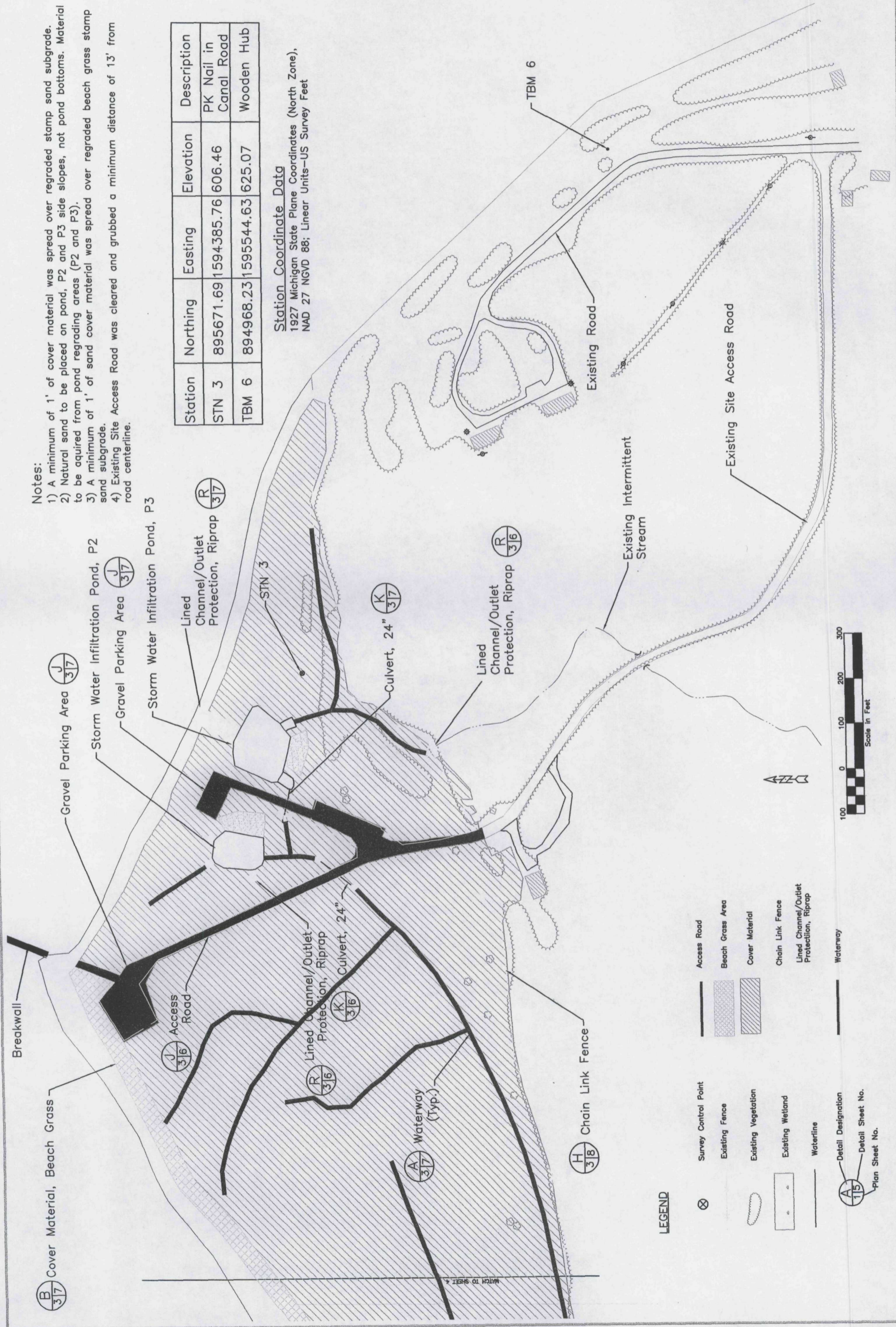
EPA SUPERFUND SITE
 North Entry - East
 Page 6 of 16

File No.: 2003-001
 Project No.: 2003-001
 Drawing No.: NE-AE-Building
 NE-AE-Building
 Sheet 3 of 8

- Notes:
- 1) A minimum of 1' of cover material was spread over regraded stamp sand subgrade.
 - 2) Natural sand to be placed on pond, P2 and P3 side slopes, not pond bottoms. Material to be acquired from pond regrading areas (P2 and P3).
 - 3) A minimum of 1' of sand cover material was spread over regraded beach grass stamp sand subgrade.
 - 4) Existing Site Access Road was cleared and grubbed a minimum distance of 13' from road centerline.

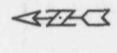
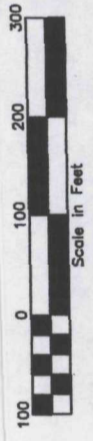
Station	Northing	Easting	Elevation	Description
STN 3	895671.69	1594385.76	606.46	PK Nail in Canal Road
TBM 6	894968.23	1595544.63	625.07	Wooden Hub

Station Coordinate Data
 1927 Michigan State Plane Coordinates (North Zone),
 NAD 27 NGVD 88; Linear Units-US Survey Feet



LEGEND

- ⊗ Survey Control Point
- ▭ Existing Fence
- Existing Vegetation
- ▭ Existing Wetland
- Waterline
- ⊙ Detail Designation
- ⊙ Detail Sheet No.
- ⊙ Plan Sheet No.
- Access Road
- ▨ Beach Grass Area
- ▨ Cover Material
- Chain Link Fence
- ▨ Lined Channel/Outlet Protection, Riprap
- Waterway



MATCH TO SHEET 4

LEGEND

	Survey Control Point		Access Road
	Existing Fence		Beach Grass Area
	Existing Vegetation		Cover Material
	Existing Wetland		Chain Link Fence
	Waterline		Lined Channel/Outlet Protection, Riprap
	Detail Designation		Waterway
	Detail Sheet No.		
	Plan Sheet No.		

- Notes:**
- 1) A minimum of 1' of cover material was spread over regraded stamp sand subgrade.
 - 2) Cover Material was placed on pond, P1 side slopes, not pond bottom.
 - 3) A minimum of 1' of sand cover material was spread over regraded beach grass stamp sand subgrade.

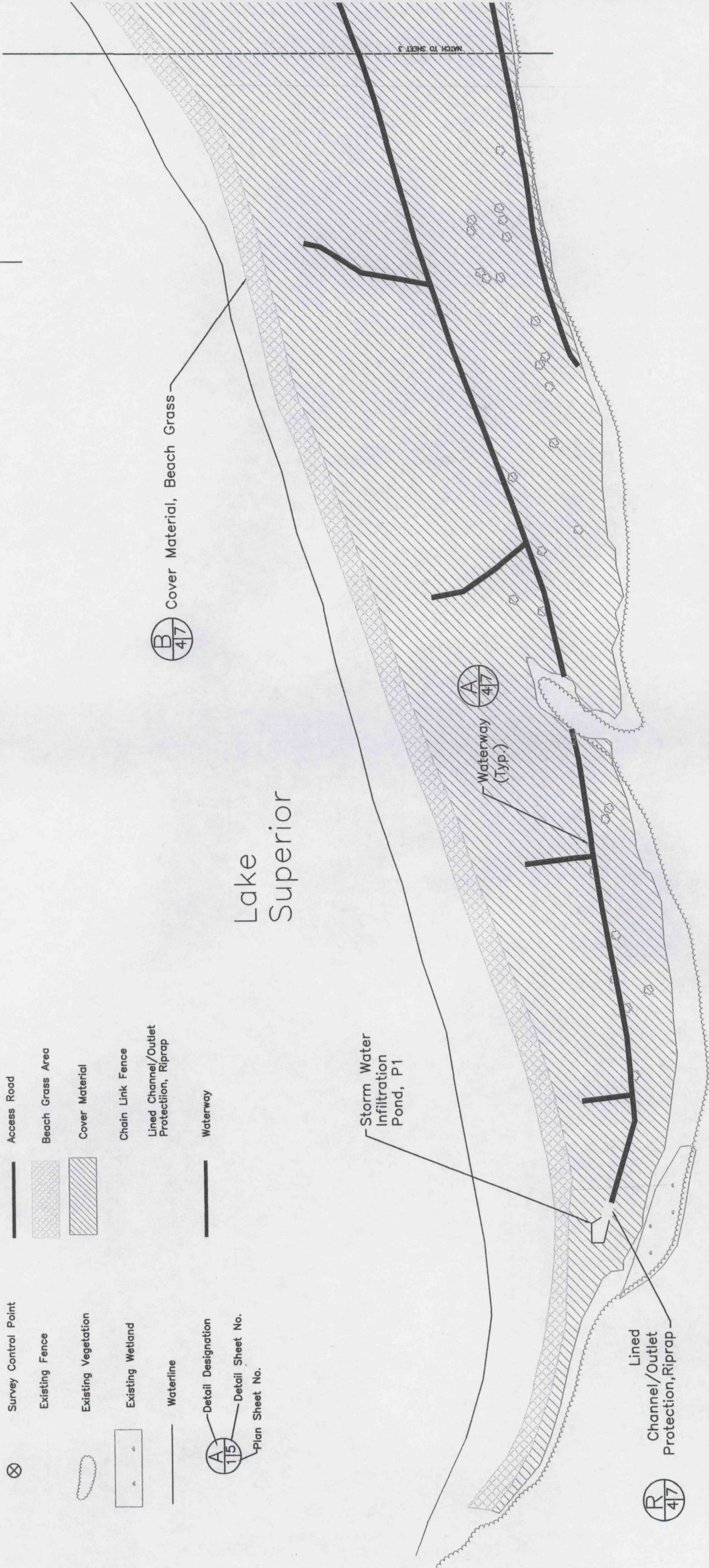
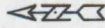
Cover Material, Beach Grass

Lake Superior

Storm Water Infiltration Pond, P1

Waterway (Typ.)

Lined Channel/Outlet Protection, Riprap



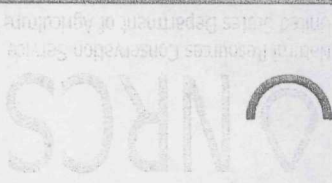
Date	7/04	Designed	RSA
	8/04	Drawn	AMP
	9/04	Checked	FAG, BLH, RSY
		Approved	

Michigan

**North Entry Site
Site Layout - West**

Page 3 of 8

EPA SUPERFUND SITE



File No. 10-30-0001
Project Name: North Entry, Asbuilt
Drawing No. NE-As-Building



File No. C-2004-1000
 Michigan Department of Natural Resources
 North Entry, Auburn
 Drawing No. NE A-011-04-01

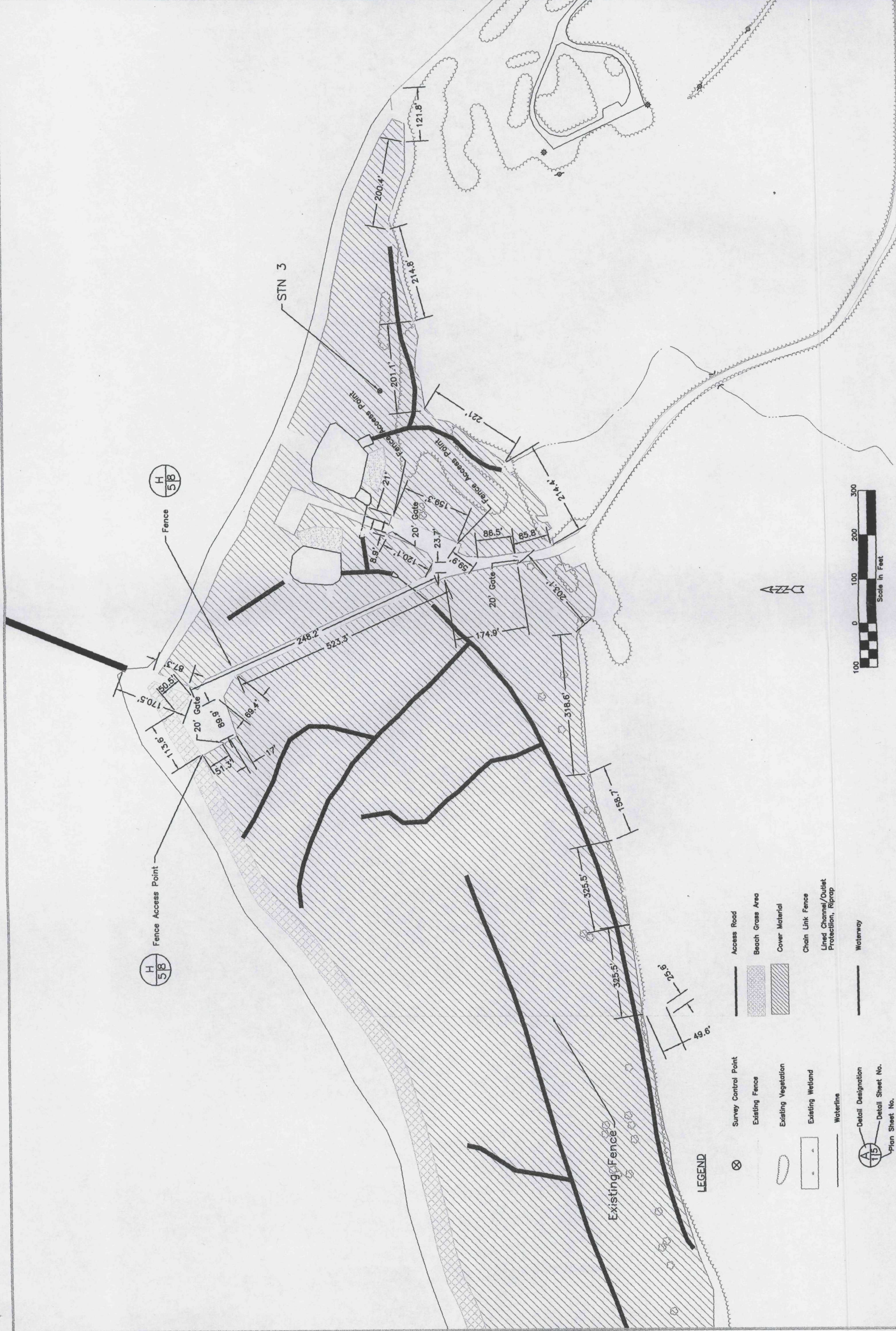
Sheet 5 of 8

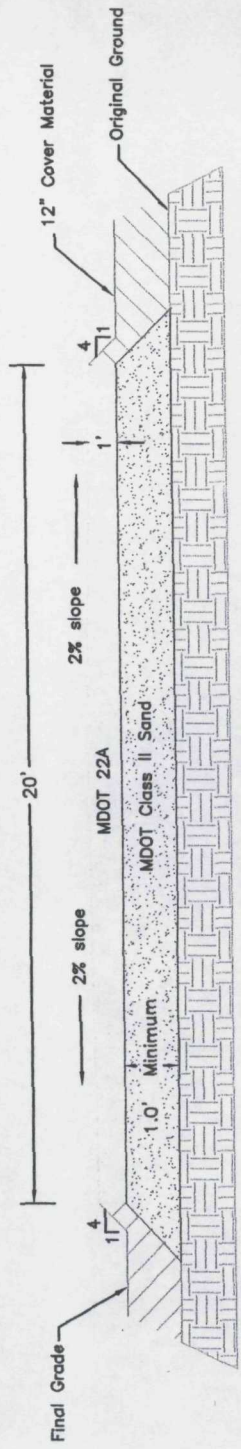
North Entry Site Fence/Gate Layout

EPA SUPERFUND SITE
 Page 7 of 16

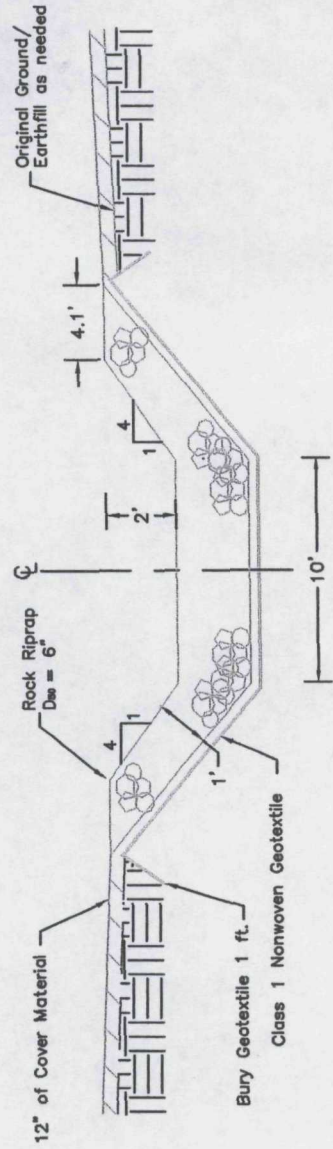
Designed	RSA	7/04
Drawn	A.M.P.	8/04
Checked	FAG, B.H., RSY, RLC	9/04
Approved		

Michigan

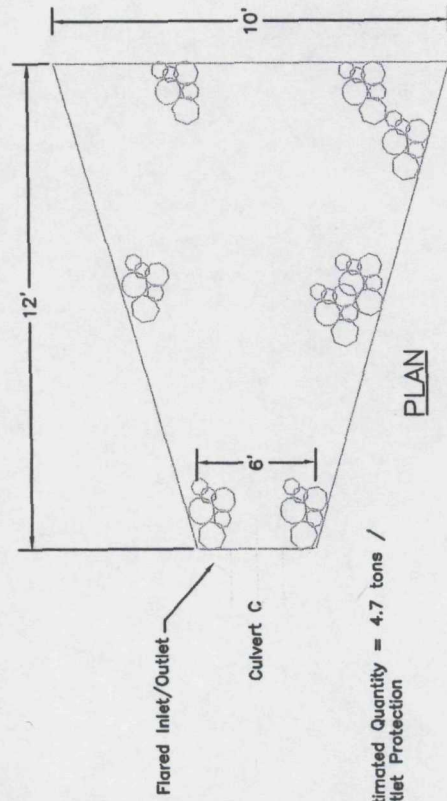




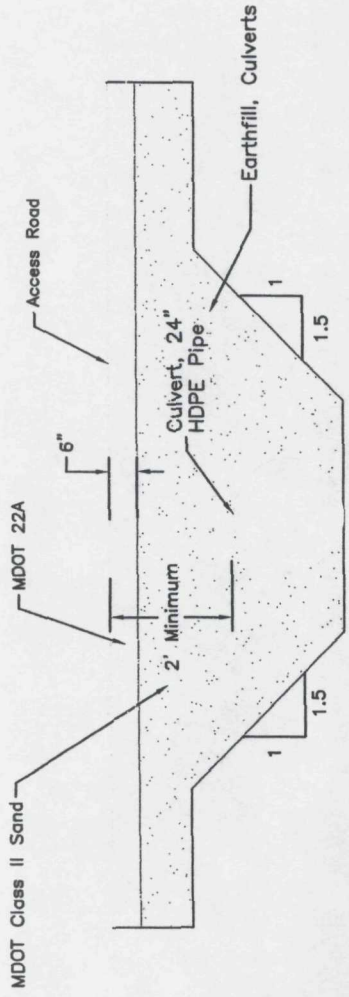
J
6/8
Typical Access Road/Parking Section
Not to Scale



R
4/8
Typical Lined Channel Detail
Not to Scale



K
6/8
Typical Culvert Inlet/Outlet Protection
Detail
Not to Scale



L
6/8
Typical Culvert Cross Section
Not to Scale

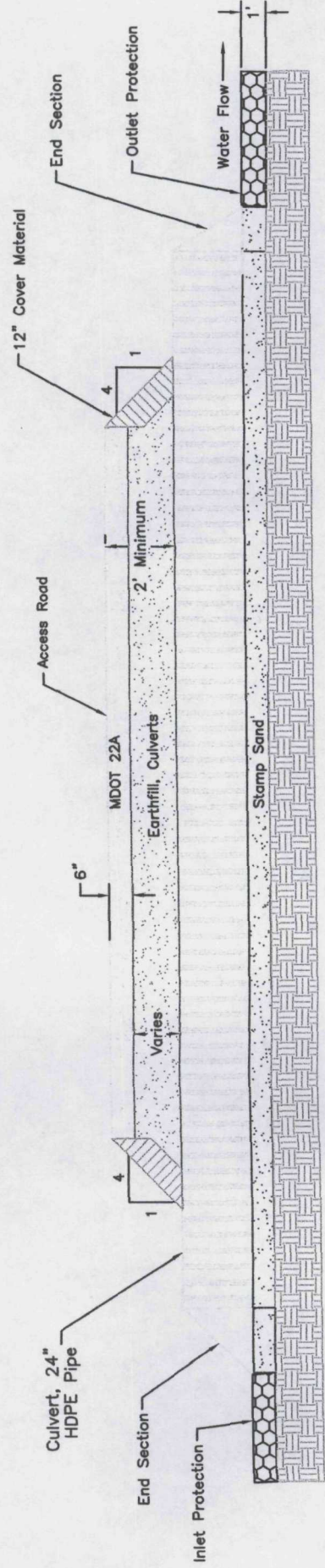
As Built

Notes:

- All joints were wrapped with a 2 foot wide strip of Class 1 Nonwoven Geotextile fabric.

As Built As Shown

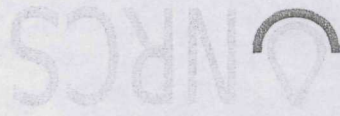
Number of Culverts	Diameter (Inches)	Length (Feet)	Number of end sections
2	24	80	4



Typical Culvert Profile
Not to Scale

North Entry Site
Asbuilt Culvert Details

EPA Superfund Site

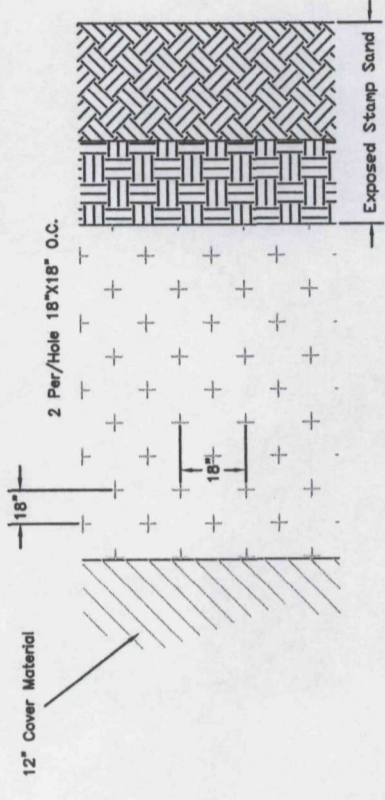
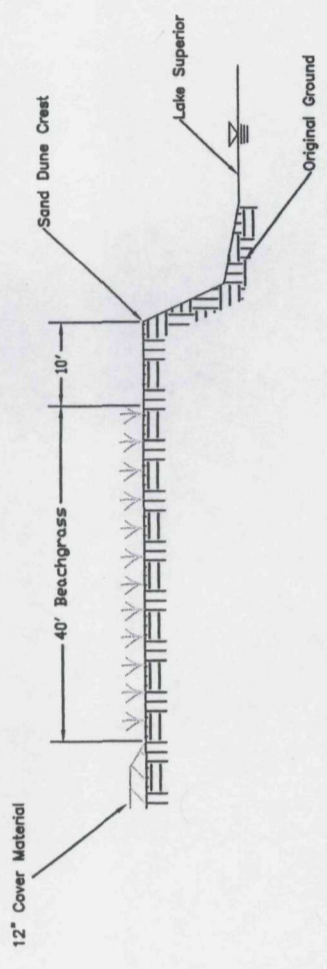


File No. DELINT
S. Service Center (MCS) Type
Asbuilt, 2000 North Entry
Drawing No.
Asbuilt Culvert Details

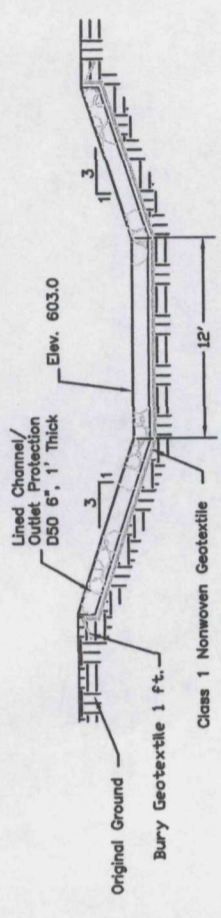
00/00/00 00:00
Sheet 8 of 16

Designed AMP, AOP, RSA, RLC 8/04
Drawn AOP 9/05
Checked FAG, LBH, RSY, RLC 9/04
Approved Michigan

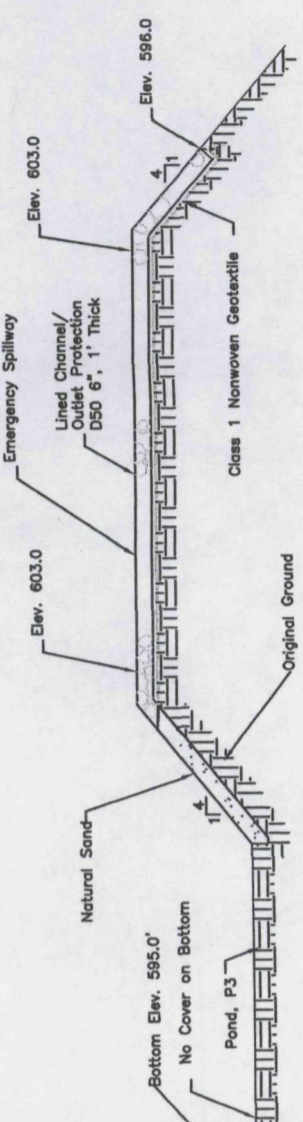
Date



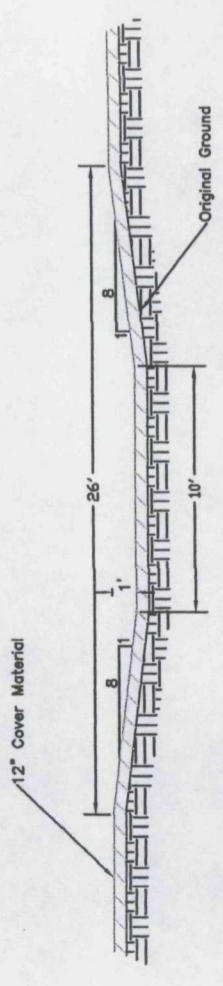
Typical Beachgrass Planting Detail
Not to Scale



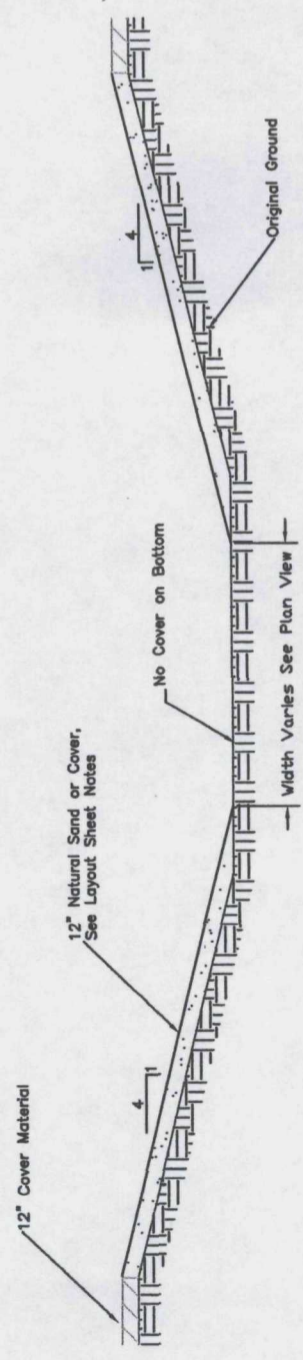
Emergency Spillway Cross-Section
Not to Scale



As Built As Shown



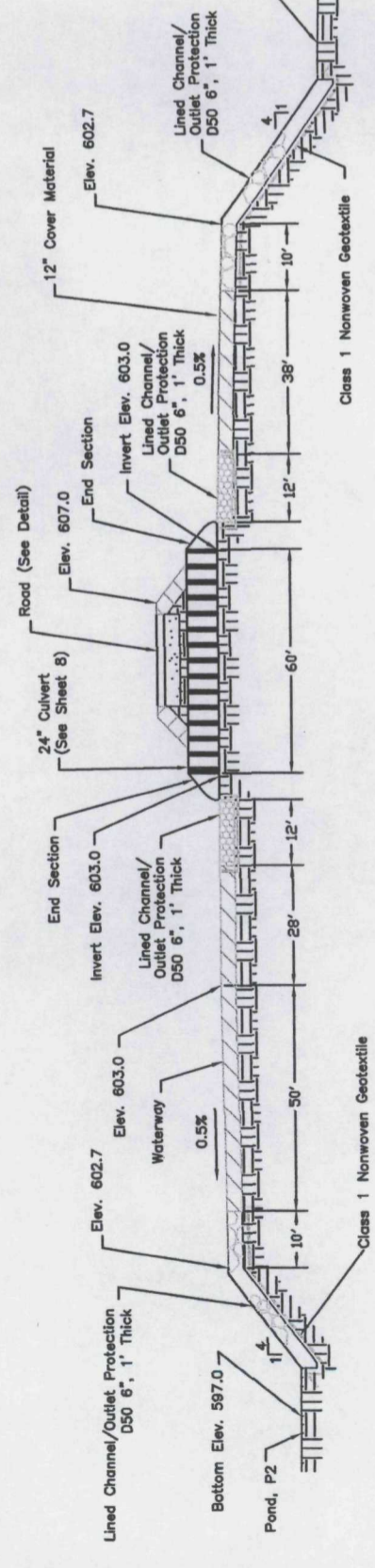
Typical Waterway Section
Not to Scale



Typical Pond Cross-Section
Not to Scale

As Built

Note: 10HIIV slopesides were constructed on the East side of P2 & on the South side of P3 for public access, see sheet 5



Profile
Not to Scale

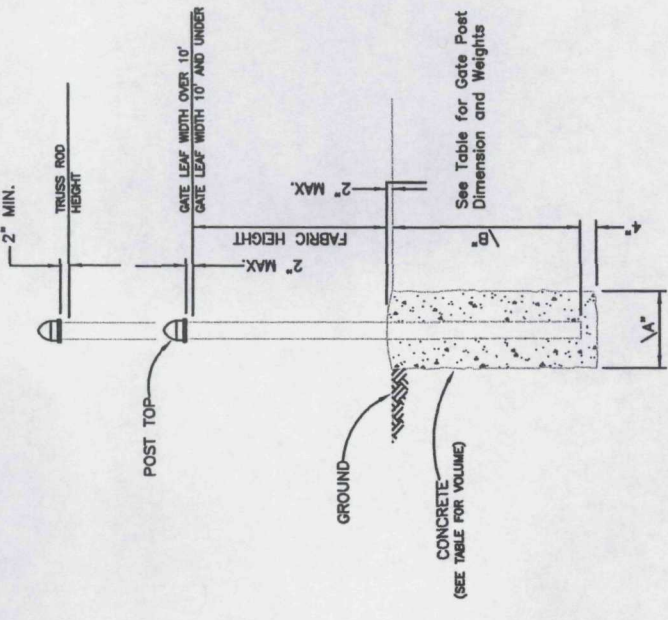
Date	8/04
Designed	AMP, AOP, RSA, RLC
Drawn	9/05
Checked	FAG, LBH, RSY
Approved	9/04

NRCS
National Resources Conservation Service
United States Department of Agriculture

File No. DELINT
SVC No. 2005-000000000
Project No. 2005 North Entry
As Built
Drawing No.
As Built DrainageDetail.dwg

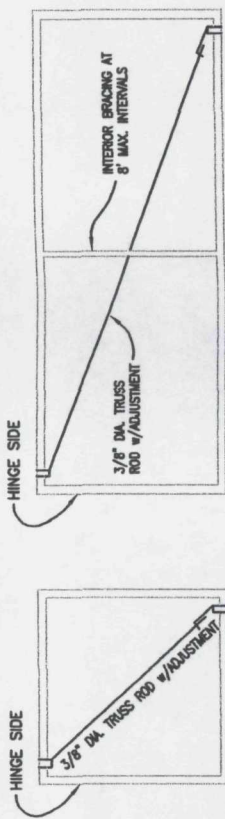
000000000000
Sheet 9 of 16

Gate Post & Concrete Base



DIMENSION	GATE WIDTH (ONE LEAF)	CYD. CONC.
A	6' AND LESS	0.13
B	OVER 6' THRU 10'	0.26
	OVER 10' THRU 15'	0.45
	OVER 15' THRU 18'	0.70

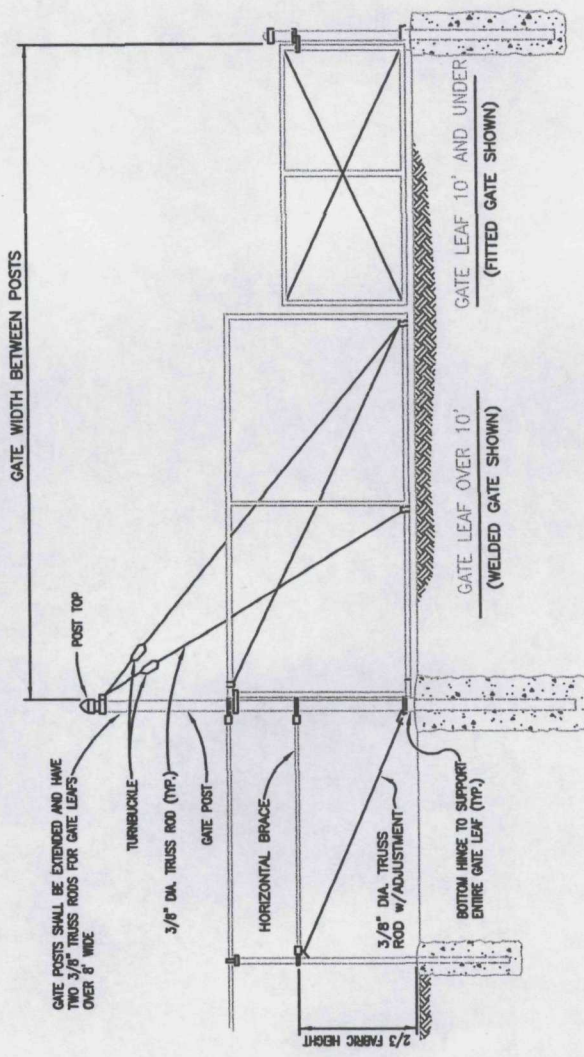
OVERALL POST HEIGHTS VARY WITH POST TOP DESIGN OF MANUFACTURER



8' WIDE OR LESS (CROSS TRUSS ROD REQUIRED FOR LEAF'S 5' AND UNDER)
 MORE THAN 8' WIDE

WELDED CONNECTIONS

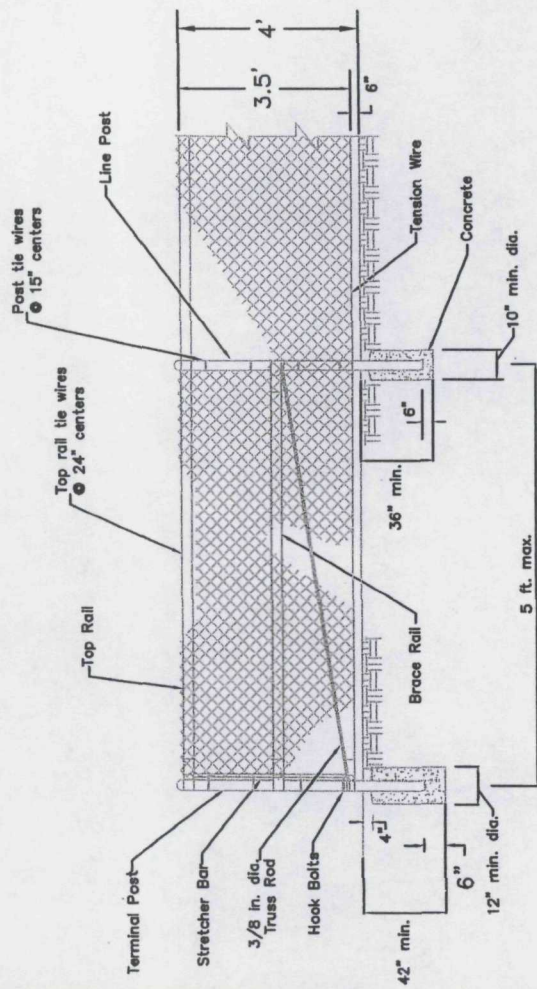
GATE FRAMES



TYPICAL GATE INSTALLATIONS

Gate Notes:

1. Gate hinges and fittings shall be heavy pattern and easily operated by one person. Bottom hinge shall be ball and socket, or equal, capable of supporting entire weight of gate leaf.
2. Gate shall have a self latching device with provisions for locking.
3. Gate keeper shall be provided for any leaf more than 5' wide to hold it in an open position.
4. Gate frame members shall comply with ASTM F900.
5. Gate posts shall comply with ASTM F900 for Gate Fabric height over 6 ft.



FENCE DETAILS

ITEM	SHAPE	SIZE AND WEIGHT REQUIREMENTS FOR FENCE POSTS AND RAILS	WEIGHT LBS./LIN. FT.
** TERMINAL POSTS	ROUND	2.875	5.79
** LINE POSTS	ROUND	2.375	3.65
** TOP & BRACE RAILS	ROUND	1.66	2.27

GATE FRAME MEMBERS SIZE AND WEIGHT	WEIGHT LBS./LIN. FT.
GATE FRAME OUTSIDE DIMENSIONS INCHES	1.66
GATE FRAME ROUND	1.83

GATE POST SIZE AND WEIGHT	WEIGHT LBS./LIN. FT.
GATE POST OUTSIDE DIMENSIONS INCHES	4.00
GATE POST ROUND	8.65

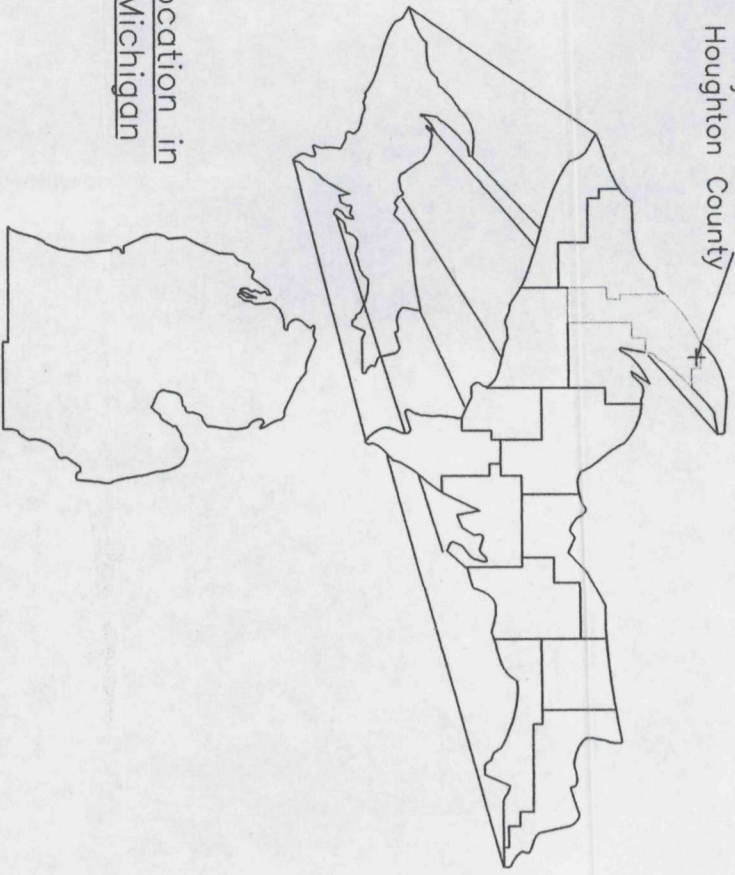
As Built

Notes

1. Material and workmanship not shown on this drawing shall conform to the manufacturer's recommendations.
2. All posts shall be installed vertically. Where posts are installed on an inclined surface, the angle of the post shall be adjusted so that the post will be vertical.
3. The fencing material shall be #9 gage fence fabric, standard 2 inch chain link diamond mesh.
4. The top surface of the concrete placed around the posts shall be sloped to provide positive drainage away from the post.
5. The tie wires shall be minimum 9-gage wire meeting ASTM 626.

As Built As Shown

Project Location
Houghton County

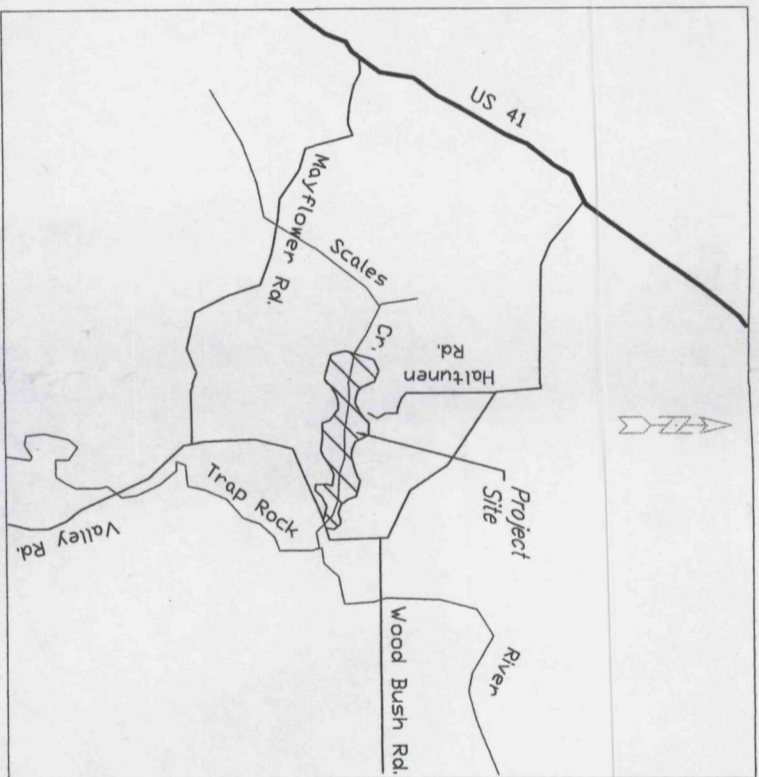


Location in
Michigan

Table of Estimated Quantities

Item No.	Spec No.	Item	Unit	Estimated Quantity	As-Built Quantity	Modification No./Date
1		Structure Removal, Onsite Disposal	Lump Sum	1	1	
2		Structure Removal, Offsite Disposal	Lump Sum	1	1	
3		Pollution Control	Lump Sum	1	1	
4		Seeding and Mulching	Acres	23.0	20.6	
5		Mobilization and Demobilization	Lump Sum	1	1	
6		Access Road	Ln. Ft.	4497	4702	
7		Regrading Areas	Lump Sum	1	1	
8		Waterways	Ln. Ft.	6639	4847	
9		Lined Channel/Outlet Protection, Riprap	Ton	995	1058	
10		Streambank Protection, Riprap	Ton	756	804	
11		Cover Material, 0.5'	Acres	20.3	18.9	
12		Culvert, Aluminum Box	Ln. Ft.	45	45	
13		Culvert, 24"	Ln. Ft.	420	440	
14		Chain Link Fence	Each	886.0	886.0	
15		Gate	Each	4	4	
16		Culvert, Aluminum Box, Riprap	Ton	294	312	
17		Field Office	Lump Sum	1	1	
18		Site Access Road Improvements	Lump Sum	1	1	

3/6-28-05



Location Map

T56N, R32W, Sec 8 & 9
Calumet Twp.

AS-BUILT DRAWINGS

Construction Specifications

Spec No.	Title	No. of Pages
2	Clearing and Grubbing	3
3	Structure Removal	3
5	Pollution Control	4
6	Seeding, Sprigging, and Mulching	3
8	Mobilization and Demobilization	3
11	Removal of Water	3
21	Excavation	4
23	Earthfill	7
27	Diversions and Waterways	3
44	Corrugated Polyethylene Tubing	4
51	Corrugated Metal Pipe	4
61	Rock Riprap	7
91	Chain Link Fence	6
94	Contractor Quality Control	4
95	Geotextile	4
420	Cover Material	5
467	Field Office	4

U.S. Department of Agriculture
Natural Resources Conservation Service
Detail Remedial Plans for

Scales Creek Torch Lake EPA Superfund Site

In Cooperation With the

U.S. Environmental Protection Agency
MI Department of Environmental Quality
Houghton/Keweenaw Soil and Water
Conservation District

Approved By	Date
State Cons. Engineer Natural Resources Conservation Service	

Engineering Job Class V
Index of Sheets

Sheet No.	Title
1	Cover Sheet
2	Overall Site Plan
3	Stamp Sand Regrading/Drainage Plan West
4	Site Layout West
5	Stamp Sand Regrading/Drainage Plan East
6	Site Layout East
7	Fence/Gate Layout
8	Aluminum Box Culvert
9	Lined Channel/Streambank Protection/Waterway Details
10	Access Road/Lined Channel/Culvert Details
11	Fence and Gate Details
12	Access Road Plan and Profile
13	Access Road Plan and Profile
14	Access Road Plan and Profile
15	Access Road Sections 11+00, 15+00, 19+00, 23+00
16	Access Road Sections 27+00, 31+00, 33+00
17	Access Road Sections 41+00, 49+00, 53+00, 55+00
18	Stamp Sand Cross Sections T1, T2, & T3
19	Stamp Sand Cross Sections T4, T5, & T6

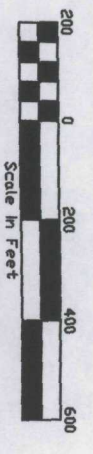
Contractor: MJD Contracting
Contract No.: 50-5D21-4-176
Contract Value (Scales Creek): Original-378,599.26, Final-375,326.34
Construction Completion Date: 9-23-05
COTR: Rob Aho, Torch Lake Project Office
Inspector: Dick Crane, Todd Larson, Alan Pekkala
Contracting Officer: Bonnie Kilgore, E. Lansing, MI
As-Built Prepared By: Todd Larson

All work under the contract was installed in accordance with the As-BUILT drawings and specifications, and the As-BUILT drawings are a true and correct record.

[Signature] 1/26/06
COTR Signature

Material Specifications

Spec No.	Title	No. of Pages
523	Rock for Riprap	3
548	Corrugated Polyethylene Tubing	1
552	Aluminum Corrugated Pipe	1
592	Geotextile	3



- Legend**
- Cover Area
 - Existing Wetland
 - Rock Riprap Protection
 - Seeded Area (No Cover)
 - Existing Vegetation
 - Existing Powerpole

- Site Access
- Access Road
- Waterway
- Culvert
- Fence
- Drain Tile
- Existing Trail
- Survey Stations

AS-BUILT

Traprock Valley Road

Road Bridge

Station	Northing	Eastng	Elevation	Description
TBM 10	911512.861	1656594.107	878.876	Wooden Hub
TBM 11	908709.353	1657893.472	743.470	Wooden Hub

Station Coordinate Data
 1927 Michigan State Plane Coordinates (North Zone),
 NAD 27 NGVD 88: Linear Units-US Survey Feet

File No.
 900-projects/2004 scales
 creek design/wood
 Overall Site Plan

Sheet 2 of 19

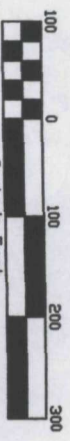
Scales Creek Site Overall Site Plan

Page 2 of 19

EPA SUPERFUND SITE

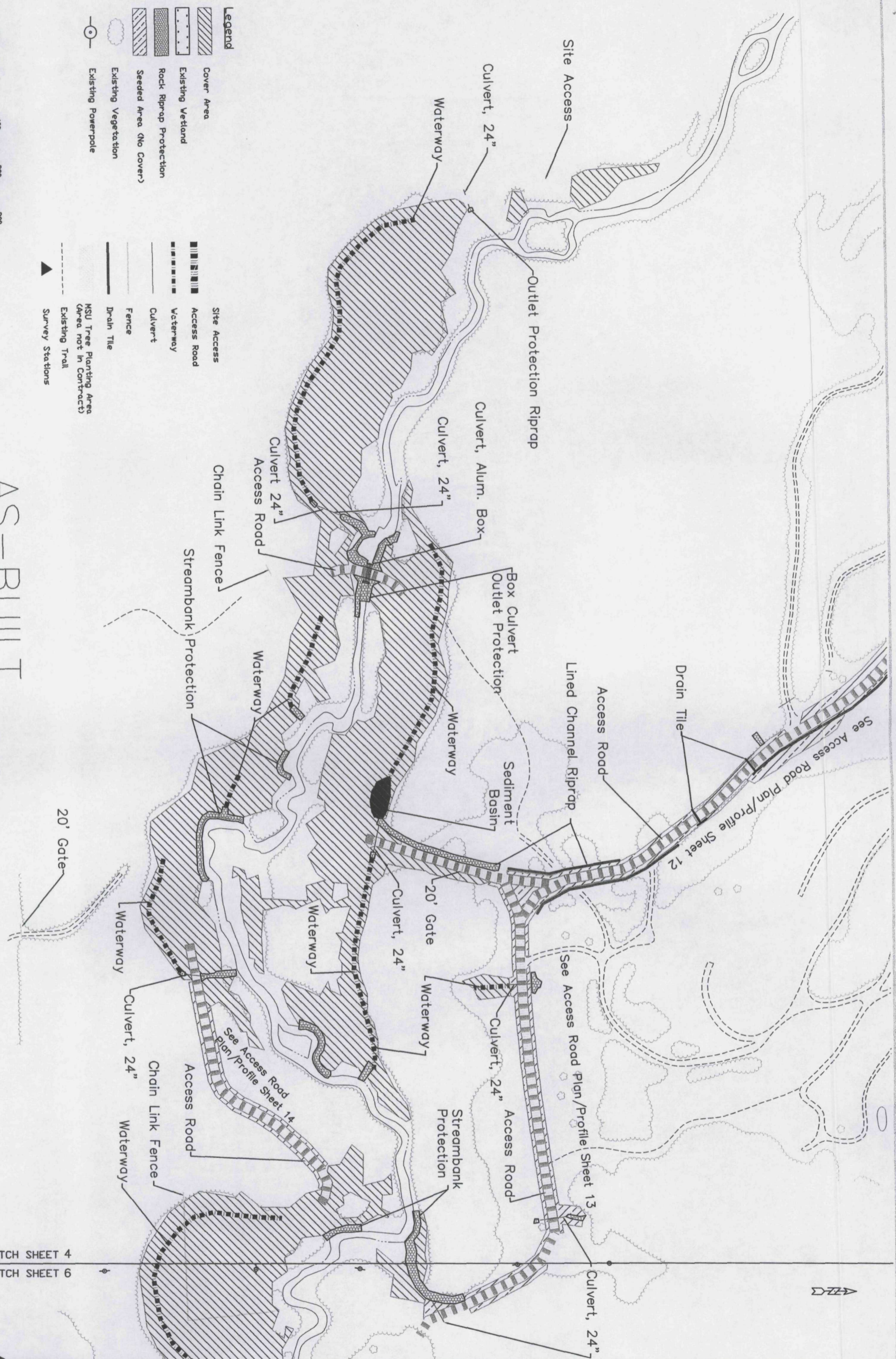
Michigan

Designed	Drawn	Checked	Approved	Date
RSA, RLC, AMP, TML, AOP	AMP	FAG, BLH, RSY, RLC		8/04
				8/04
				9/04

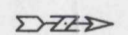


- Legend**
- Cover Area
 - Existing Wetland
 - Rock Riprap Protection
 - Seeded Area (No Cover)
 - Existing Vegetation
 - Existing Powerpole
 - Site Access
 - Access Road
 - Waterway
 - Culvert
 - Fence
 - Drain Tile
 - MSU Tree Planting Area (Area not in Contract)
 - Existing Trail
 - Survey Stations

AS-BUILT



MATCH SHEET 4
MATCH SHEET 6



File No. epa_projects\2004 scales creek cleanup\as-built\as-built.dwg
Drawing No. Site Layout West
Sheet 4 of 19

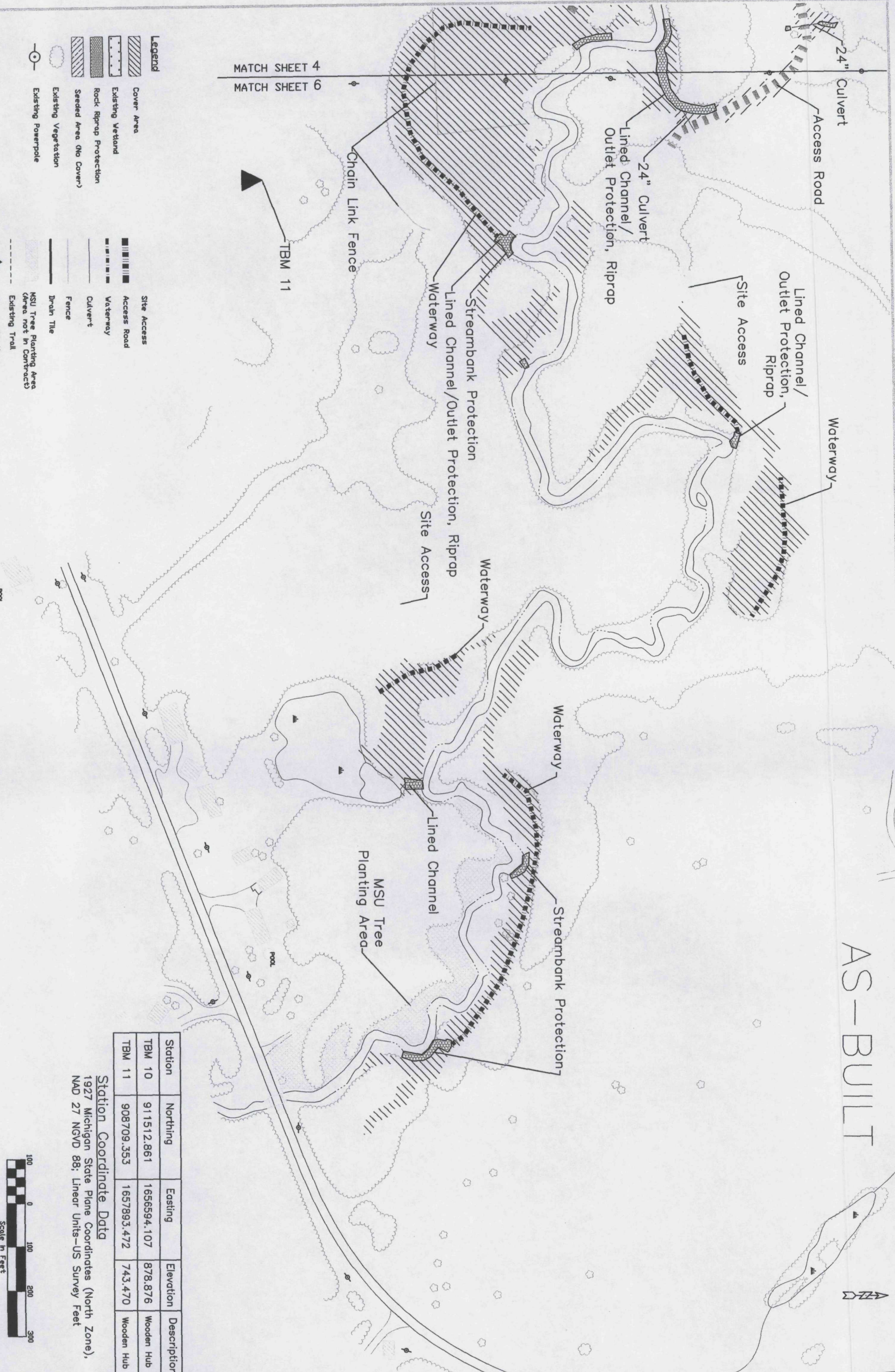
Scales Creek Site
Site Layout West
Page 4 of 19

EPA SUPERFUND SITE

Michigan

	Date
Designed <u>RSA, RLC, AMP, TML, AOP</u>	<u>8/04</u>
Drawn <u>AMP</u>	<u>8/04</u>
Checked <u>FAG, BLH, RSY, RLC</u>	<u>9/04</u>
Approved _____	_____

AS-BUILT

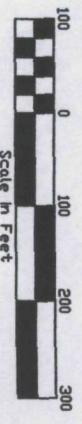


Legend

	Cover Area		Site Access
	Existing Wetland		Access Road
	Rock Riprap Protection		Waterway
	Seeded Area (No Cover)		Culvert
	Existing Vegetation		Fence
	Existing Powerpole		Drain Tile
			MSU Tree Planting Area (Area not in Contract)
			Existing Trail
			Survey Stations

Station Coordinate Data
 1927 Michigan State Plane Coordinates (North Zone),
 NAD 27 NGVD 88; Linear Units—US Survey Feet

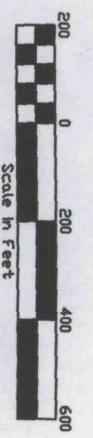
Station	Northing	Easting	Elevation	Description
TBM 10	911512.861	1656594.107	878.876	Wooden Hub
TBM 11	908709.353	1657893.472	743.470	Wooden Hub



Scales Creek Site Site Layout East

	Date
Designed <i>RSA, RLC, AMP, TML, AOP</i>	8/04
Drawn <i>AMP</i>	8/04
Checked <i>FAG, BLH, RSY, RLC</i>	9/04
Approved	

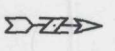
File No. *epa_mj\proj\2004_scales_creek\Drawings*
 Drawing No. *Site Layout East*
 Sheet **6** of **19**



- Legend**
- Existing Wetland
 - Rock Riprap Protection
 - Seeded Area (No Cover)
 - Existing Vegetation
 - Existing Powerpole
 - Site Access
 - Access Road
 - Divert
 - Fence
 - Drain Tile
 - Existing Trail
 - Survey Stations



AS-BUILT



File No. epa\proj\as\2004_scales
 Drawing No. epa\proj\as\2004_scales
 Drawing No. Creek_Download.dwg
 Fence Layout

Sheet 7 of 19

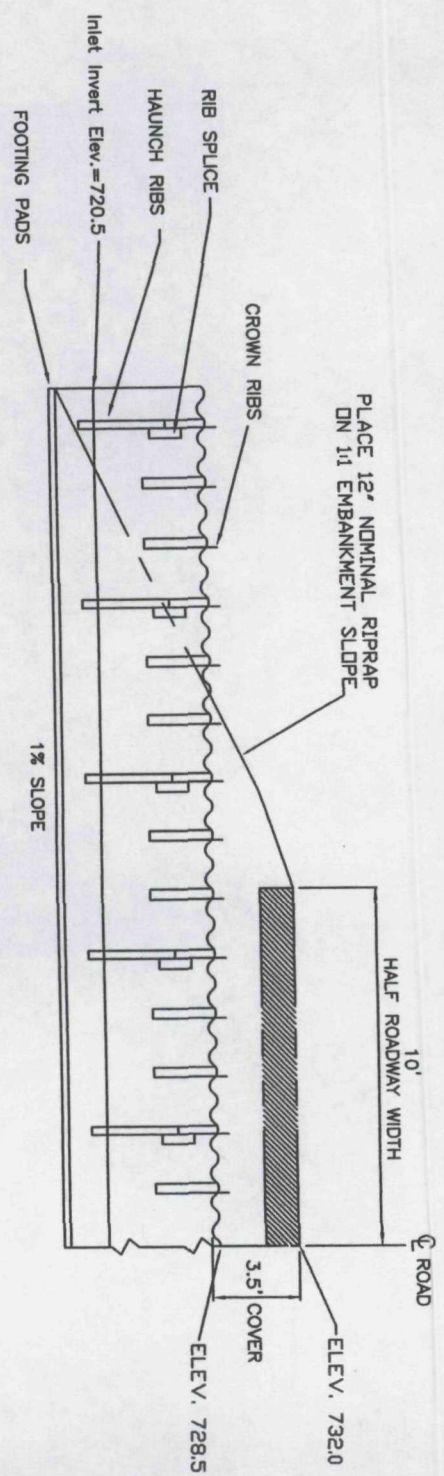
Scales Creek Site
 Fence/Gate Layout

Page 7 of 19

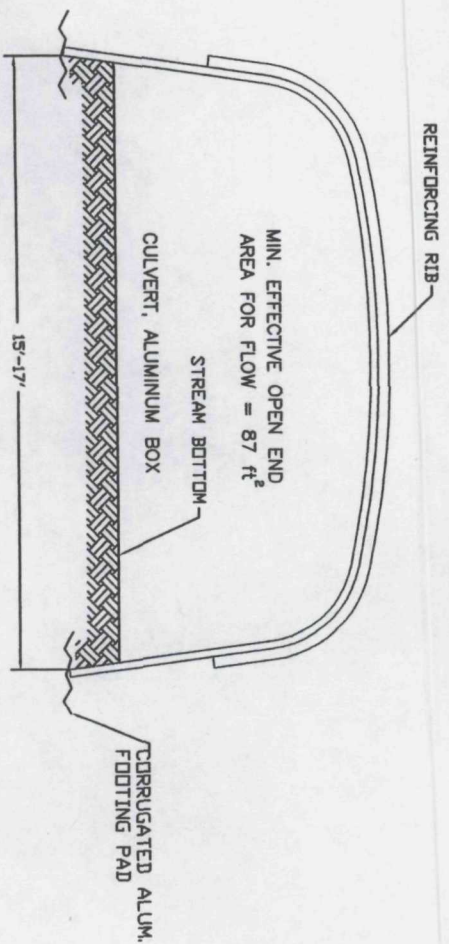
EPA SUPERFUND SITE

	Date
Designed <u>RSA, RLC, AMP, TML, AOP</u>	<u>7/04</u>
Drawn <u>AMP</u>	<u>8/04</u>
Checked <u>FAG, BLH, RSY, RLC</u>	<u>9/04</u>
Approved _____	

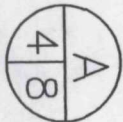
Michigan



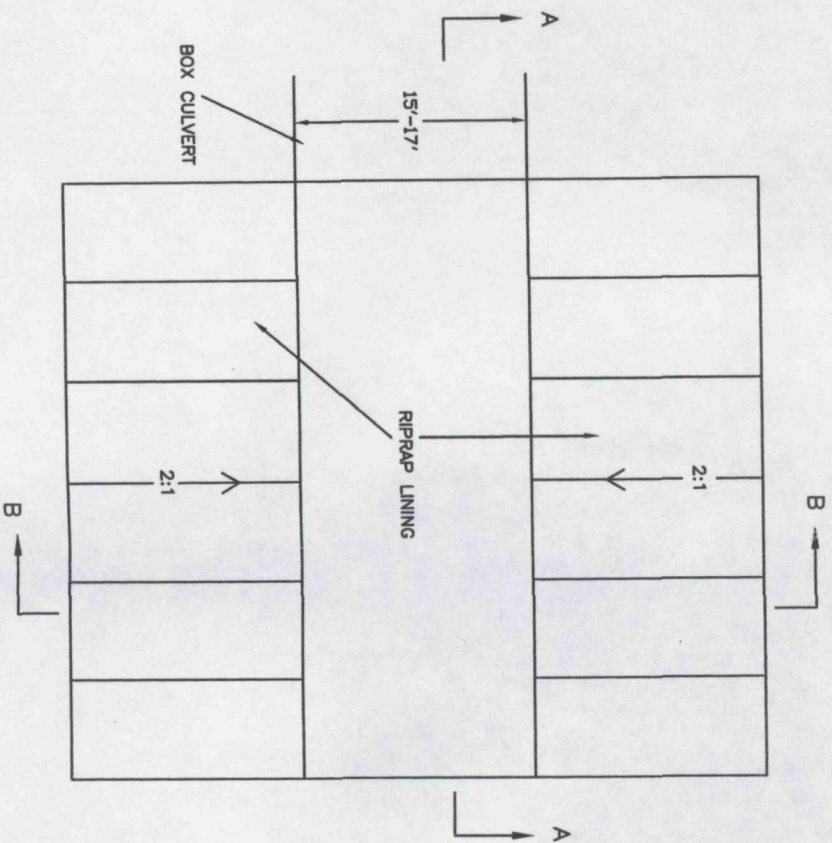
TYPICAL PROJECTING END



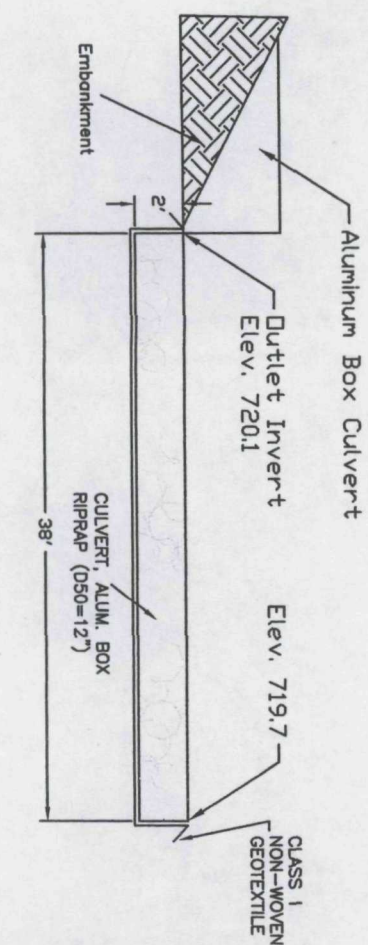
TYPICAL CROSS SECTION



ALUMINUM BOX CULVERT
Not to Scale

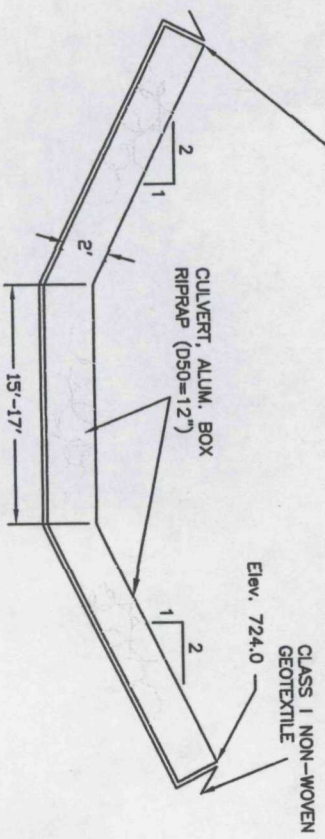


BOX CULVERT OUTLET PROTECTION
Not to Scale

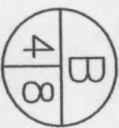


SECTION A-A
Not to Scale

THE END OF THE EXPANSION SHALL CONFORM TO THE EXISTING
DOWNSTREAM SECTION WITH BLENDING OF SLOPES.



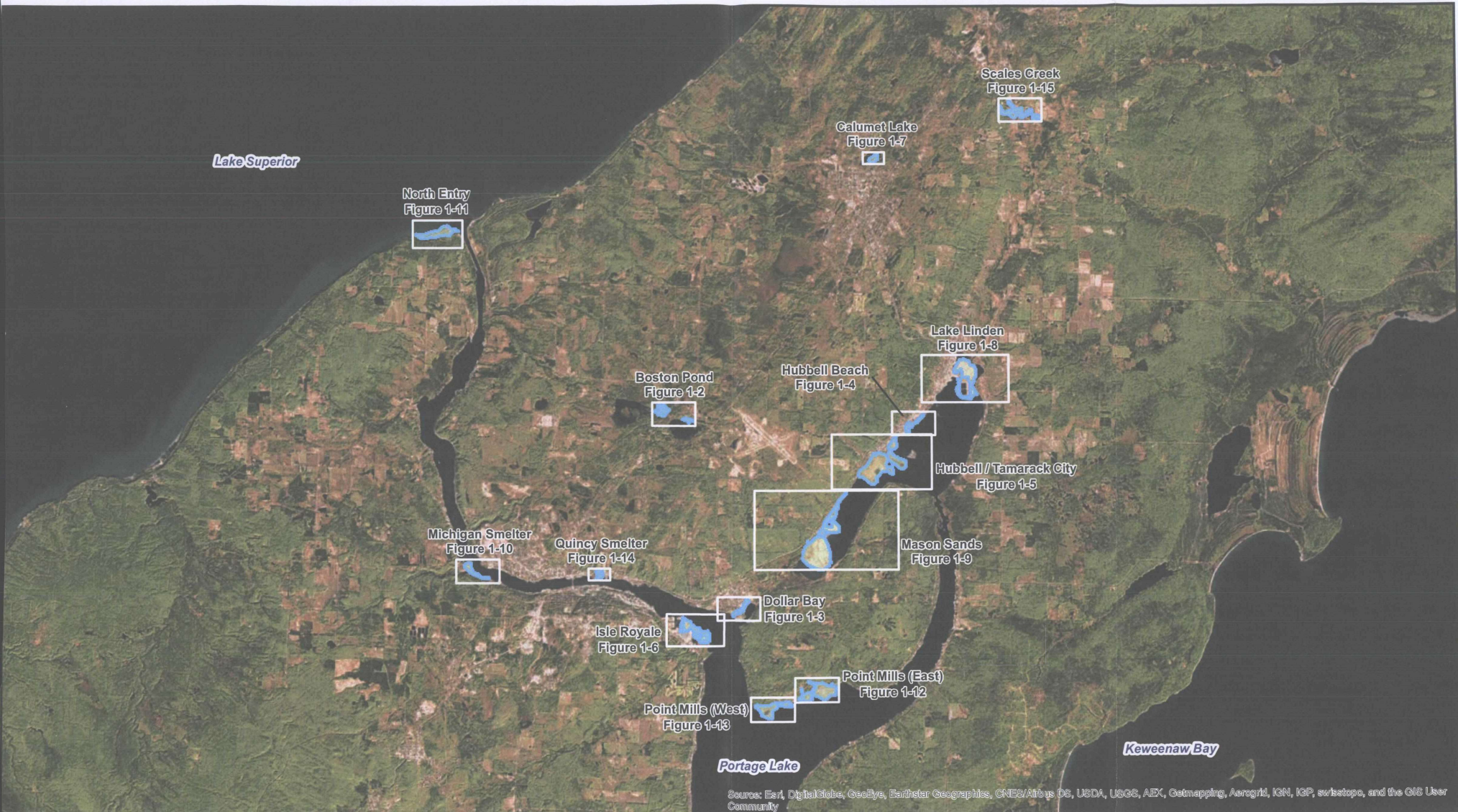
SECTION B-B
Not to Scale



AS-BUILT

APPENDIX C

FIGURES



Source: Esri, DigitalGlobe, GeoEye, Earthstar Geographics, CNES/Airbus DS, USDA, USGS, AEX, Getmapping, Aerogrid, IGN, IGP, swisstopo, and the GIS User Community



MAP AREA



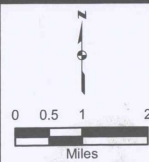
Sources: Esri, HERE, DeLorme, USGS, Intermap, etc.

Legend

Engineering Cover Limits

TORCH LAKE SUPERFUND SITE OVERVIEW

HOUGHTON COUNTY, MICHIGAN



Drawn:	NS	11/9/2016
Approved:	DB	11/9/2016
Scale:	AS SHOWN	
PROJECT NUMBER	60300096	
FIGURE NUMBER	1 - 1	

Figure 1:
Lake Linden Shoreline in 2011

Torch Lake Superfund Site
Houghton County, Michigan



Source: Google Earth 2011

Figure 2:
Lake Linden Shoreline in 2020

Torch Lake Superfund Site
Houghton County, Michigan




Source: Google Earth 2020

Torch Lake Superfund Site

Houghton County, Michigan



Figure 3:
Approximate Areas for Shoreline
Protection Work

 Shoreline Improvement
Areas



Photograph #: 1
Date: 2016
Photographer: EGLE
Location: Lake Linden –
Torch Lake



Photograph #: 2
Date: 2017
Photographer: EGLE
Location: Lake Linden –
Torch Lake



Photograph #: 3
Date: 2018
Photographer: EGLE
Location: Lake Linden –
Torch Lake



Photograph #: 4
Date: 2021
Photographer: EGLE
Location: Lake Linden –
Torch Lake



Photograph #: 5

Date: 2022

Photographer: EGLE

**Location: Lake Linden –
Torch Lake**

APPENDIX D



GRETCHEN WHITMER
GOVERNOR

STATE OF MICHIGAN
DEPARTMENT OF
ENVIRONMENT, GREAT LAKES, AND ENERGY
LANSING



PHILLIP D. ROOS
DIRECTOR

September 20, 2024

VIA EMAIL

Douglas E. Ballotti, Director
Superfund Division
United States Environmental Protection Agency
Region 5
77 West Jackson Boulevard (S-6J)
Chicago, Illinois 60604-3507

Dear Douglas E. Ballotti:

SUBJECT: Concurrence with the Draft Final Explanation of Significant Differences (ESD); Torch Lake Superfund Site; Houghton, Michigan

The Michigan Department of Environment, Great Lakes, and Energy (EGLE) has received a copy of the Draft Final ESD for the Torch Lake Superfund Site, Houghton, Michigan. The United States Environmental Protection Agency (U.S. EPA) has requested concurrence from the State of Michigan with the Draft Final ESD for this site.

EGLE concurs with the remedial action modification that is proposed in the Draft Final ESD for operable unit (OU) OU1 and OU3, and the inclusion, in future Five-Year Reviews, of the remedy selected in the 1994 Record of Decision to OU2 at the Torch Lake Superfund Site.

If you have any questions regarding this matter, please contact me at the number below or at NellerM@Michigan.gov; or EGLE, P.O. Box 30426, Lansing, Michigan 48909-7926.

Sincerely,

Mike Neller, Director
Remediation and Redevelopment Division
517-512-5859

cc: Glenn Lautenberg, U.S. EPA
Kalan Briggs, EGLE
Robert L. Franks, EGLE
Walelign Wagaw, EGLE