OhioEPA
State of Ohio Environmental Protection Agency

Northwest District Office

347 North Dunbridge Road
Bowling Green, OH 43402-9398

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Ted Strickland, Governor
Lee Fisher, Lieutenant Governor
Chris Korleski, Director

August 20, 2009

Mr. Douglas E. Roberts, President
Envirosafe Services of Ohio, Inc.
876 Otter Creek Road
Oregon, Ohio 43616-1200

Re: Hazardous Waste Permit Modification
Class 1 Acknowledgment – Envirosafe Services of Ohio, Inc.
U.S. EPA ID# OHD 045 243 706 / Ohio Permit #03-48-0092

Dear Mr. Roberts:

On June 8, 2009, Ohio EPA received a notification for a Class 1 hazardous waste permit modification from Envirosafe Services of Ohio, Inc. (ESOI) located at 876 Otter Creek Road, Oregon, Ohio. With this letter, Ohio EPA acknowledges the above referenced Class 1 modification submitted pursuant to OAC Rule 3745-50-51, and accordingly has updated the facility's Part B permit application and permit.

The following revisions to include the "Cell M Transducer Certification Report – May 2009" in Appendix D.5 of ESOI's permit application were assigned the permit information tracking system (PITS) ID number of OHD045243706-090608-1-1;

- Replace the Section D Table of Contents page D-viii (with the replacement page dated May 29, 2009, Modification No. 029)
- Replace the existing Appendix D.5 cover page (with the replacement page titled "Cell M Transducer Certification Report" dated May 29, 2009, Modification No. 029)
- Add pages D.5-1 through D.5-53 (titled "Cell M Transducer Certification Report – May 2009" dated May 29, 2009, Modification No. 029)

Enclosed is a copy of the revised permit application pages. This has been included to ensure that all involved parties have written confirmation of the changes. If you have any questions concerning this action, please contact Chris Maslo at the Ohio EPA, Northwest District Office, at (419)698-3130.

Sincerely,

John Pasquarette, Manager
Division of Hazardous Waste Management

*In accordance with OAC Rule 3745-50-51(D)(1)(a)(ii), ESOI shall send a notice within 90 days of replacement of the permit application pages to all persons on the Agency mailing list. An updated mailing list can be obtained by contacting Dave Sholtis at (614)644-2937, or by email at dave.sholtis@epa.state.oh.us.

/cs
Enclosure
pc: Jeremy Carroll, Manager, RISS, DHWM, CO
Mike Allen, Supervisor, ERAS, DHWM, CO (w/enclosure)
Tammy Heffelfinger, DHWM, CO (w/enclosure)
Cindy Lohrbach, DHWM, NWDO (w/enclosure)
Gary Deutschman, DHWM, NWDO (w/enclosure)
Mayor Marge Brown, City of Oregon
DHWM, NWDO - ESOI File: Permit, (w/enclosure)
DHWM, NWDO File: ESOI Permit Application (enclosure only)

ec: Michael Terpinski, Supervisor, DHWM, NWDO
Gary Deutschman, DHWM, NWDO
Chris Maslo, DHWM, NWDO
Mary Setnicar, U.S. EPA Region V
Jae Lee, U.S. EPA Region V

APPENDICES

APPENDIX D.5

CELL M TRANSDUCER CERTIFICATION REPORT

(Pages D.5-1 – D.5-53: Cell M Transducer Elevation Certification Report)

REPORT

CELL M TRANSDUCER CERTIFICATION REPORT

MAY 2009

PREPARED FOR:

ENVIROSAFE SERVICES OF OHIO INC.
876 OTTER CREEK RD
OREGON, OH 43616

TABLE OF CONTENTS

TABLES

APPENDICES

1.0 BACKGROUND

Envirosafe Services of Ohio, Inc. (ESOI) owns and operates a hazardous waste disposal facility along Otter Creek Road in Oregon, Ohio. Within this facility is an active waste unit identified as Cell M. Cell M is located on ESOI's property south of York Street. The facility has been utilized as a waste treatment, storage, and disposal facility since the 1950's. In October 1981, ESOI applied for a Hazardous Waste Facility Installation and Operation Part A Permit (Interim Status). A modified Part A permit was issued in November 1982 by the Ohio Hazardous Waste Facility Board (HWFB). A Hazardous Waste Facility Installation and Operation (Part B) Permit was issued in July 1991 by the HWFB. ESOI has continuously operated this facility since that time with the most recent renewal permit being issued December 29, 2005.

Cell M has a footprint of approximately 27 acres and contains 6 subcells (M-1 through M-6) with separate primary and secondary leachate collection sumps and removal systems. The primary system contains two leachate risers (primary and backup) while the secondary system is served by a single riser. In recent years, it became apparent that some of the HDPE risers showed signs of unacceptable deformation. In response to this condition, smaller diameter stainless steel inserts were placed inside a number of the risers to enhance the structural integrity of the risers to prevent or limit additional deformation. For each sump, an electrical submersible pump has been installed to remove leachate from that area. In most cases, the sump pump is operated via a transducer placed within the sump near the pump.

Within the last year, Ohio EPA has requested that ESOI provide a refined estimate of the location of the transducer relative to the bottom of the sump. This information is to be used to set the pump on/off levels as well as provide a definitive compliance point relative to the one foot of head requirement contained in the ESOI permit.

2.0 PURPOSE

The purpose of this project is to verify that the transducers that activate the sump pumps are placed as close to the cell floor as practical and certify the locations of the transducers relative to the cell floor. It also is to provide a method to ensure each transducer is returned or replaced to the certified location following any necessary maintenance. The results of this procedure are intended to minimize the potential for inaccurate transducer readings due to uncertainty in the transducer location.

This project details the verification and certification for twelve (12) leachate level transducers at the six (6) Cell M sub-cells. The Cell M sumps with Certified Transducer location are outlined in the following table.

Table 1 – Certified Transducers in Cell M

Sump/Sub-Cell ID	Primary System	Primary (Backup)	Secondary System
M-1	Certified	No Transducer Present	Certified
M-2	Certified	No Transducer Present	No Transducer Present
M-3	Certified	No Transducer Present	No Transducer Present
M-4	Certified	No Transducer Present	Certified
M-5	Certified	Certified	Certified
M-6	Certified	Certified	Certified

3.0 METHODOLOGY

To verify that each transducer was placed as close to the cell floor as practical, and to ensure repeatability, each transducer was placed inside a threaded reducer for protection. The reducer, approximately five (5) inches long, was attached to the end of a ½ or ¾ -inch galvanized steel rod. The galvanized steel rod, composed of threaded ten (10) foot sections, was inserted down the existing HDPE slope riser pipe until the galvanized rod appeared to

be at the bottom of the sump. This was verified through tactile feedback, reconciled with as-built information, and tested by monitoring the behavior of the pump. Once the installed length was verified as being at the bottom of the sump, the steel rod was cut flush with the bottom-inside edge of the HDPE slope riser pipe to ensure the transducer is placed at the bottom of the sump any time it is removed or replaced. Refer to Appendix C- Photo Log.

This process generally consisted of completing the following tasks:

- Verify that the installed length of rod is reasonably close to the predicted or anticipated length based on as-built data and existing survey information.
- Where applicable, verify the installed length of rod is reasonably close to the length of stainless steel insert as represented in the certification report for the stainless steel insert.
- Verify that with the transducer on the cell floor, operating the pump to the level where cavitation occurs causes the transducer to read a low, non-zero value corresponding to the pump inlet depth.

Additional details regarding this process are detailed in the following sections

3.1 As-Built Bottom of Sump and Cell M Limits Evaluation

Cell M as-built top of recompacted soil liner documents were reviewed to estimate the elevations of the bottom of the sump and the Cell M side slope grade break limit. The bottom of each sump corresponded to the lowest elevation noted on the drawing at the toe of slope. The side slope grade break limit depicted at the top of slope was determined from the same drawing. These data were used to calculate the angle of the side slope and estimate the slope length. Refer to Appendix A – Cell M as-built drawings.

Table 2 –As-Built Cell M Limit and Bottom of Sump Elevations (MSL)

Sump ID	Cell M Side Slope Limit	Primary Sump Bottom	Secondary Sump Bottom
M-1	592.60	544.70	541.40
M-2	592.80	544.80	N/A
M-3	593.50	541.00	N/A
M-4	594.00	541.40	537.70
M-5	593.20	544.90	540.80
M-6	595.80	543.87	539.60

3.2 Existing Slope Riser Pipe Invert Elevation Determination

An existing conditions survey was conducted in August 2008 to determine an elevation of the bottom inside edge at the upper end of each side slope riser pipe with a transducer. Results are outlined in Table 3.

Table 3 – Existing Riser Pipe Invert Elevation (MSL) Data

Sump ID	Primary System (ft.)	Primary (Backup) (ft.)	Secondary System (ft.)
M-1	596.17	N/A	596.53
M-2	596.79	N/A	N/A
M-3	597.50	N/A	N/A
M-4	597.61	N/A	597.65
M-5	598.80	598.65	598.01
M-6	601.54	601.50	601.77

3.3 Anticipated Slope Length

Based on the as-built documents and the existing conditions survey, a total side slope riser slope length was estimated and that was determined to be the anticipated length of rod to be installed. However, MSG also determined that it is unlikely that the length determined from the as-built records and the existing conditions survey will exactly match the length of rod installed for the transducer. This is based in part on the following factors:

- Interpolation is necessary on the as-built drawings to determine the points at the top and bottom of slope along the side slope riser alignment.
- Settlement in the sump and/or along the slope may have occurred since the cell was constructed.
- Expansion/contraction of the side slope riser may affect the invert location.
- The elbow at the bottom of the side slope riser pipe and the toe of slope may not be aligned.

Relatively small differences between calculated and actual elevations make significant differences in the observed installed distance. For these reasons, the anticipated length was used as a point of reference during installation and not an absolute value for the actual rod length to be installed for the transducer. The anticipated rod length is outlined in the following table for each sump.

Table 4 - Anticipated Rod Length

Sump ID	Primary System (ft.)	Primary (Backup) (ft.)	Secondary System (ft.)
M-1	187	N/A	200
M-2	196	N/A	N/A
M-3	185	N/A	N/A
M-4	181	N/A	188
M-5	173	173	188
M-6	182	182	197

As-built drawings note Horizontal to Vertical slopes as 3:1(M-3 through M-6) or 3.5:1(M-1 and M-2). These ratios were not used to calculate slope lengths as they are descriptive only; actual slope ratios vary and can only be directly measured from the as-built drawings.

3.4 Stainless Steel Inserts

Information from the Stainless Steel Insert project certification report from 2004 was also utilized to support this certification. The certified stainless steel insert length from the side slope riser invert (Section 3.2) to the bottom of the sump at each sump with a transducer is outlined in the following table. Similar to the anticipated length noted above, these data were another tool to compare to the lengths of the installed transducer rod for consistency and to help reconcile differences. Please refer to Appendix B – Stainless Steel Insert Report (text only)

Table 5 – Stainless Steel Insert Lengths

Sump ID	Primary System (ft.)	Primary (Backup) (ft.)	Secondary System (ft.)
M-5	172.00	172.92	186.92
M-6	183.83	184.50	N/A

Please note Subcells M-1 through M-4 do not contain stainless steel inserts in the same side slope riser as the transducer.

3.5 Transducer Rod Length Installed

Field activities occurred periodically from September 2008 through early December 2008. The extended duration allowed fine-tuning and further verification of transducer location. In some cases, steel rods were removed and length re-verified to ensure the bottom of the sump was reached. Reconciliation with backup information as noted in earlier sections of this report assisted in the final determination and was used in concert with the field effort. The following table identifies the final length of galvanized steel rod installed for each respective sump. The lengths were monitored by MSG personnel as installation progressed by simply marking each 10-foot length directly on the rod from the reducer (rod end) to the point of maximum depth. Another mark was made coincident with the bottom-inside edge at the end of the HDPE side slope riser pipe invert and then cut flush. The installed lengths of transducer rod were monitored for comparison with the backup information. The installed rod lengths are contained in the following table. Please refer to Appendix C – Photographs.

Table 6 – Transducer Rod Length Installed

Sump ID	Primary System (ft.)	Primary (Backup) (ft.)	Secondary System (ft.)
M-1	187.5	N/A	202.7
M-2	194.6	N/A	N/A
M-3	186.4	N/A	N/A
M-4	191.5	N/A	193.3
M-5	170.7	176.0	182.5
M-6	184.5	184.4	198.3

3.6 Confirmation of Transducer Location

For proper pump operation, liquid levels must remain at or above the level recommended by the pump manufacturer to prevent cavitation and keep the pump motor cool. Below this level, cavitation will occur if the pump is energized. Confirmation that the transducer is at or near the bottom of the sump was achieved by noting that cavitation occurred at a level where the transducer read a value between zero and minimum level for operation. The transducer readings are contained in the table below.

Table 7 - Minimum Transducer Reading

Sump ID	Primary Sump (transducer reading – inches)	Secondary Sump (transducer reading – inches)
M-1	11.3*	3.6
M-2	13.7	N/A
M-3	7.2	N/A
M-4	10.0	5.0
M-5	14.1*	5.8
M-6	14.3*	4.9

**M-1 backup pump turned on, reading collected at Primary transducer.*
**M-5 primary pump turned-on, reading collected at backup transducer.*
**M-6 backup pump turned-on, reading collected at Primary transducer.*

The purpose of this confirmation was to further understand the relative position of the transducer and the pump intake for the existing system and to assure the transducer is positioned below the pump intake. It must be noted that alternate pump configurations may result in different minimum transducer readings.

4.0 RECONCILIATION OF VARIANCES IN PREDICTED AND OBSERVED ROD LENGTH

Given the variables inherent in this process as outlined above, good agreement between the anticipated length, the stainless steel insert report and the length of installed transducer rod was observed. In addition to the variables noted in Section 3.3 in calculating the existing slope length, there are variables to consider for the installed rod length as well.

- It is extremely difficult to determine the precise location of the side slope riser elbow by pushing the transducer rod from the top of slope. As a result, even if it is assumed that no bending occurred, additional length of transducer rod could be installed because the bottom of the transducer rod may "slide" past the pipe elbow at the bottom of the slope along the horizontal section of the side slope riser. This could be up to three and one-half (3.5) feet in the primary riser pipe for subcells M-3 through M-6 and an additional five (5) feet in the primary riser pipe for subcells M-1 and M-2 without an increase in depth.
- Although significant deflection or bending of the galvanized steel transducer rod is not expected to have occurred due to the stiffness of the rod, some deflection or bending is unlikely to be avoided particularly at the bottom of the sump at the side slope riser elbow because of the narrow diameter of the rod relative to its length. This could account for up to twenty-five (25) additional feet (or more) of additional rod to be installed without an increase in depth.

In all cases the installed transducer in the primary and secondary system can reasonably be expected to be at or past the HDPE riser pipe elbow. If the transducer is at or past this location, it is at its lowest possible elevation and therefore certified as being at the bottom of the sump. Therefore, in cases where the installed length exceeded the anticipated length, it was considered conservative. The observed differences were on the order of a one to three percent overall along the entire side slope, except where the installed length was greater than the anticipated length.

5.0 SUMMARY

Based on the methodology outlined above, and accounting for pipe thickness and the nominal thickness of the geosynthetic components within the sump, each transducer has been certified to be at the bottom of the sump. Based on the methodology outlined above, the elevation of each transducer is shown in the following table. In making this determination, MSG utilized various documents and resources including certified as-built drawings for Cell M liner construction, the Stainless Steel Insert Report completed in 2004, ESOI personnel familiar with the daily operation of each leachate collection sump and the installed pump configuration, and MSG's own observations.

Table 8 - Resultant Transducer Elevation (MSL)

Sump ID	Primary Sump (ft.)	Secondary Sump (ft.)
M-1	544.90 +/- 0.15	541.55+/- 0.15
M-2	545.00+/- 0.15	N/A
M-3	541.15+/- 0.15	N/A
M-4	541.55+/- 0.15	537.85+/- 0.15
M-5	545.05+/- 0.15	540.95 +/- 0.15
M-6	544.02+/- 0.15	539.75+/- 0.15

The resultant transducer elevation and as-built top of sump defines the transducer reading at Highwater (twelve (12) – inches above sump perimeter).

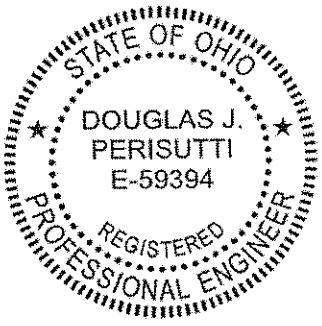
Table 9 - Resultant Highwater Readings

Sump ID	Primary Sump		Secondary Sump	
	As-Built Top of Sump (MSL)	Transducer Reading @ Highwater (inches)	As-Built Top of Sump (MSL)	Transducer Reading @ Highwater (inches)
M-1	547.50	43.2	544.20	43.8
M-2	547.30	39.6	N/A	N/A
M-3	542.90	33.0	N/A	N/A
M-4	543.30	33.0	540.20	39.6
M-5	547.08	36.4	543.80	46.2
M-6	546.15	37.6	542.80	48.6

6.0 CERTIFICATION

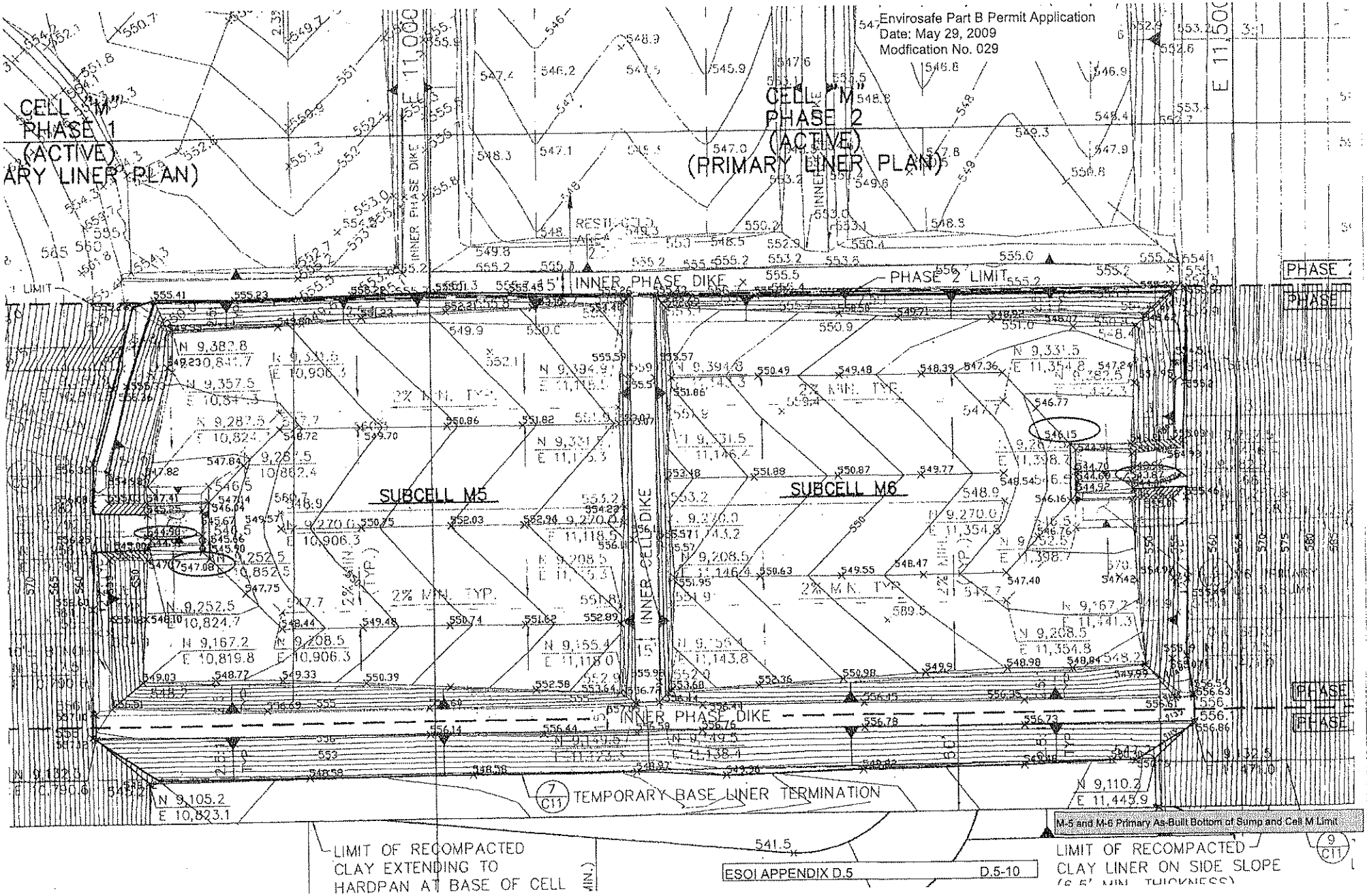
I certify under penalty of law that this document and all attachments were prepared under my direction or supervision in accordance with a system designed to assure that qualified personnel properly gather and evaluate the information submitted. Based on my inquiry of the person or persons who manage the system, or those persons directly responsible for gathering the information, the information submitted is, to the best of my knowledge and belief, true, accurate, and complete. I am aware that there are significant penalties for submitting false information, including the possibility of fine and imprisonment for knowing violations, (OAC 3745-50-42(D)).

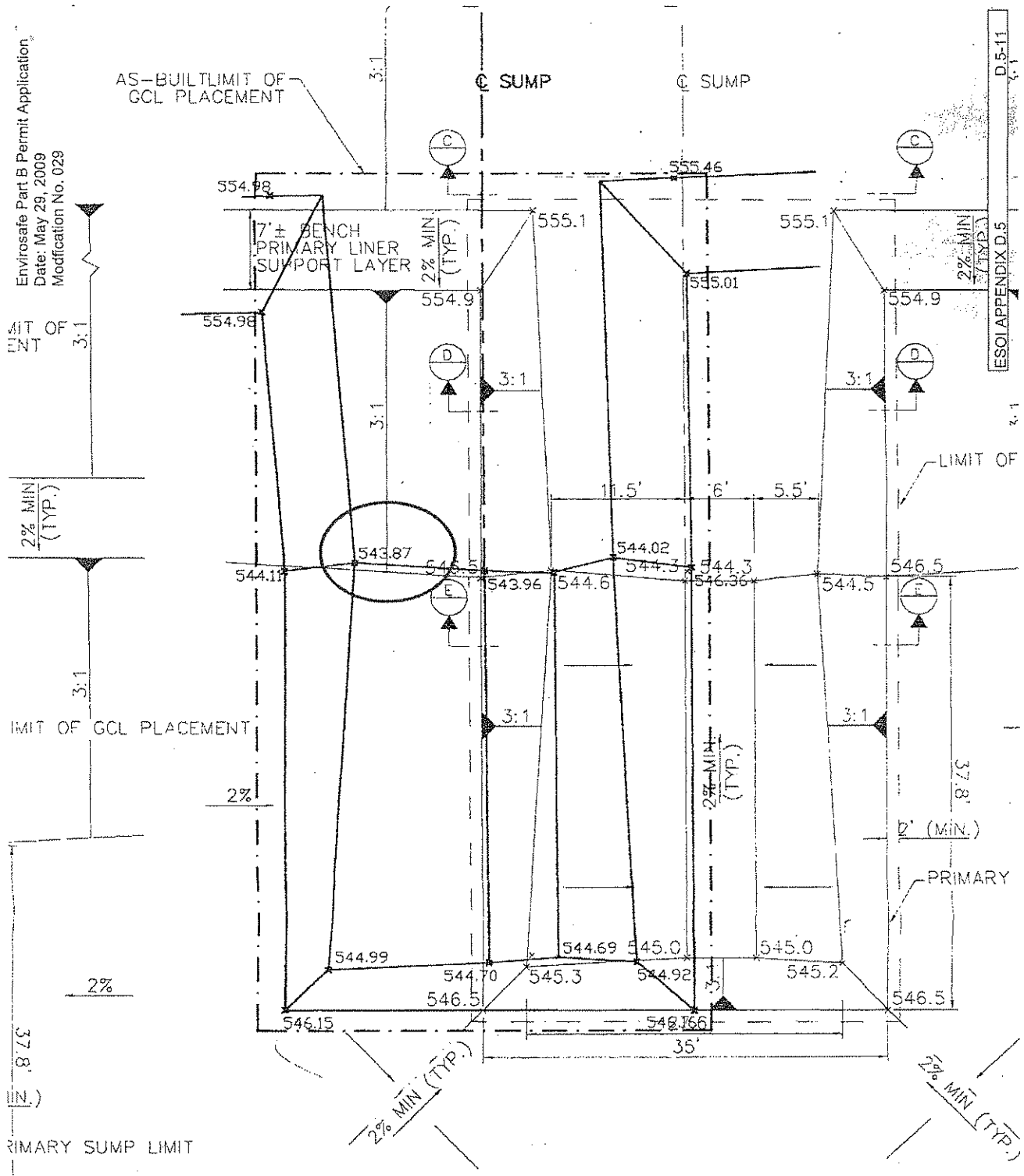
Douglas J. Perisutti, P.E.
State of Ohio Registered Engineer 59394



APPENDIX A

Cell M As-built Drawings


Envirosafe Part B Permit Application
Date: May 29, 2009
Modfication No. 029
CELL M
PHASE 1
(ACTIVE)
ARY LINER PLAN)
CELL M
PHASE 2
(ACTIVE)
(PRIMARY LINER PLAN)
INNER PHASE DIKE
PHASE 2 LIMIT
SUBCELL M5
SUBCELL M6
INNER CELL DIKE
2% MIN. TYP.
7 C11 TEMPORARY BASE LINER TERMINATION
M-5 and M-6 Primary As-Built Bottom of Sump and Cell M Limit
LIMIT OF RECOMPACTED CLAY EXTENDING TO HARDPAN AT BASE OF CELL
LIMIT OF RECOMPACTED CLAY LINER ON SIDE SLOPE
9 C11
ESOI APPENDIX D.5
D.5-10



AS-BUILT PRIMARY L.C.S. M6 SUMP DETAIL

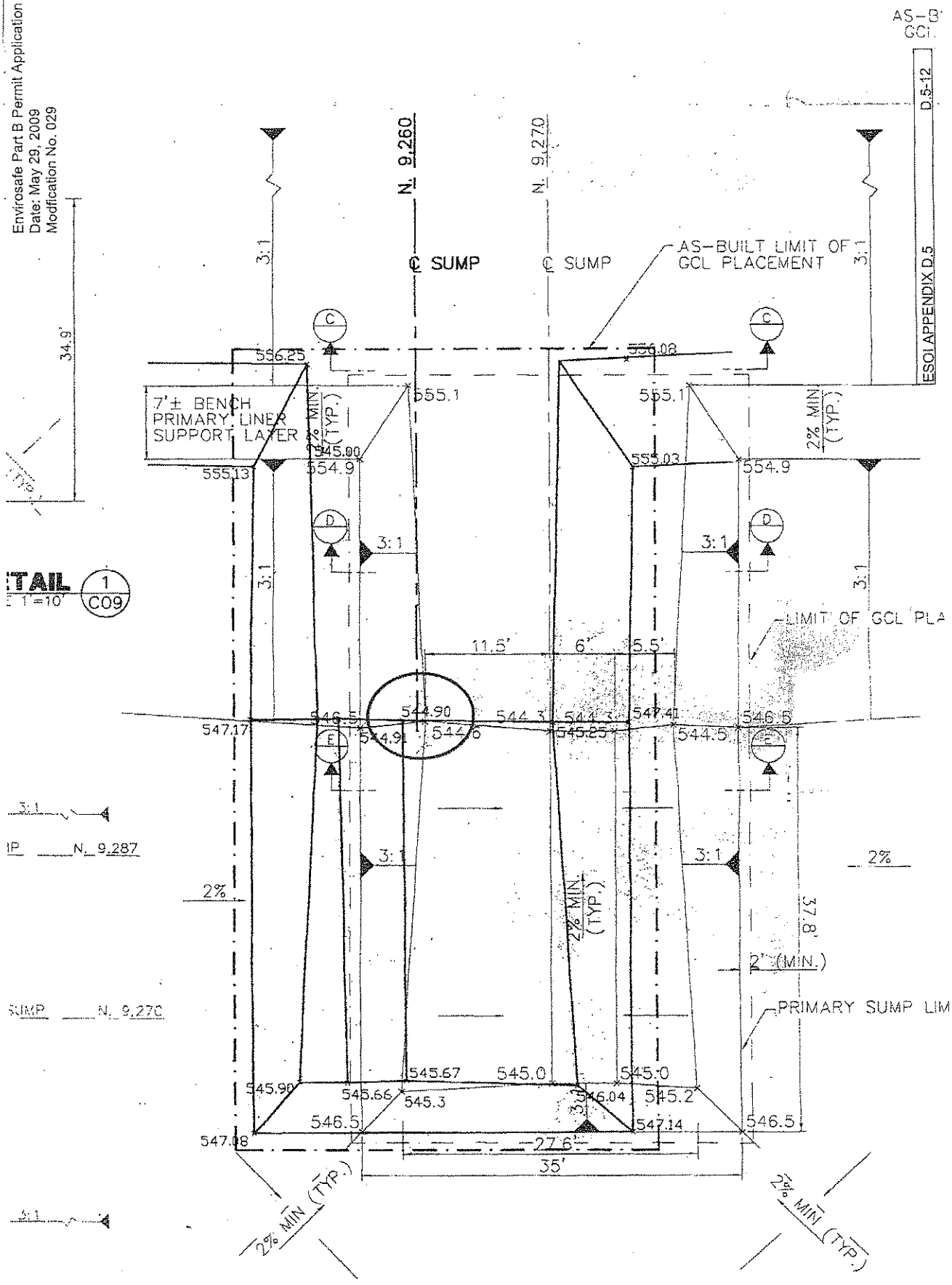
SCALE 1"=10'

2 / C07

MEC inc.
MIDWEST ENVIRONMENTAL CONSULTANTS, INC.
(419) 891-1800
TOLEDO, OHIO

DESIGNED:	DATE	DRAWN:	PROJECT NO:
MEC	2/97	MCM	F20E6K
REVIEWED:	DATE	APPROVED:	DATE
CADD DIR:			

Envirosafe Part B Permit Application
Date: May 29, 2009
Modification No. 029

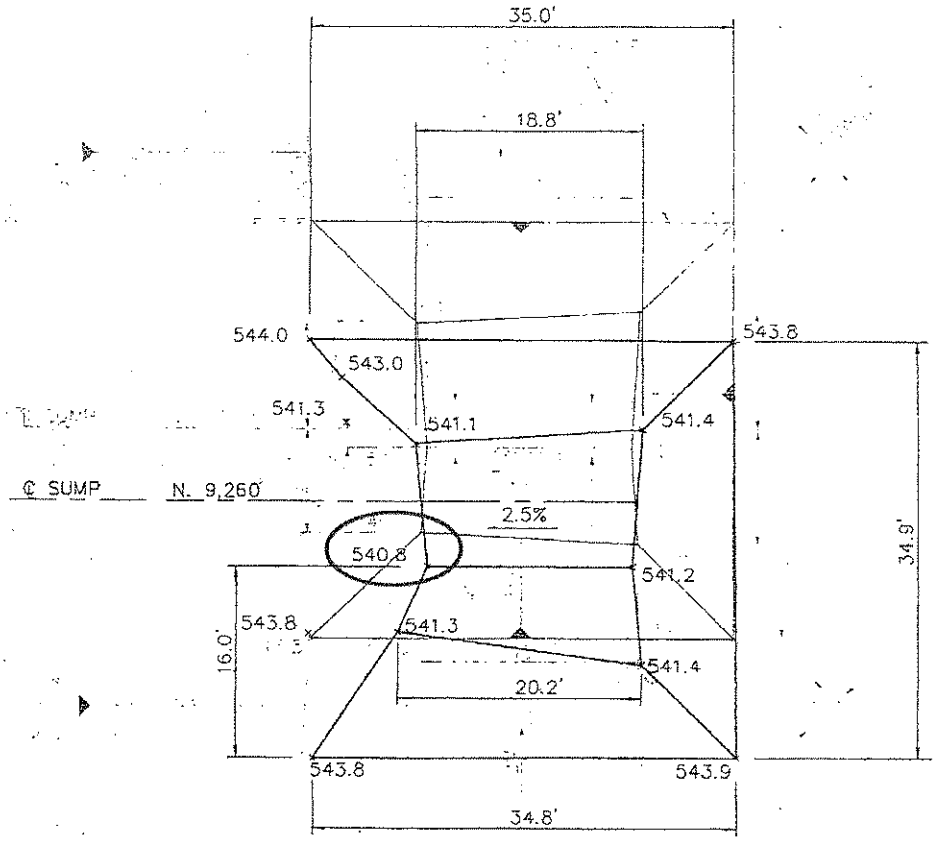


AS-BUILT PRIMARY L.C.S. M5 SUMP DETAIL

SCALE 1"=10'

TAIL 1 C09 1"=10'

2 C07



AS-BUILT SECONDARY L.C.S. SUMP M5 DETAIL

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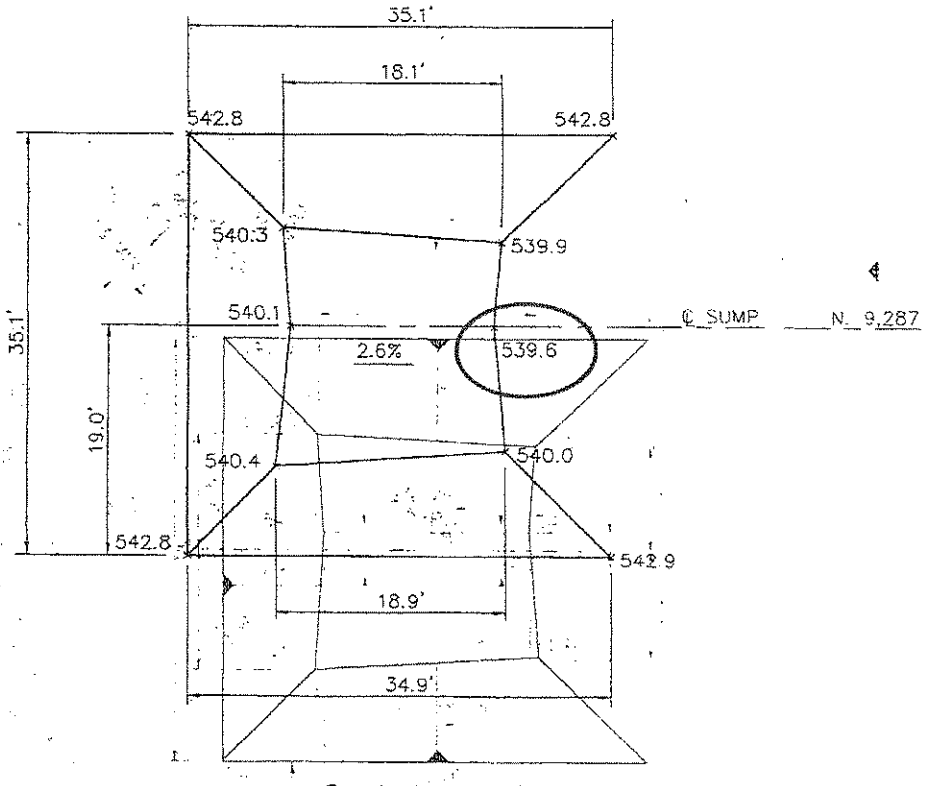

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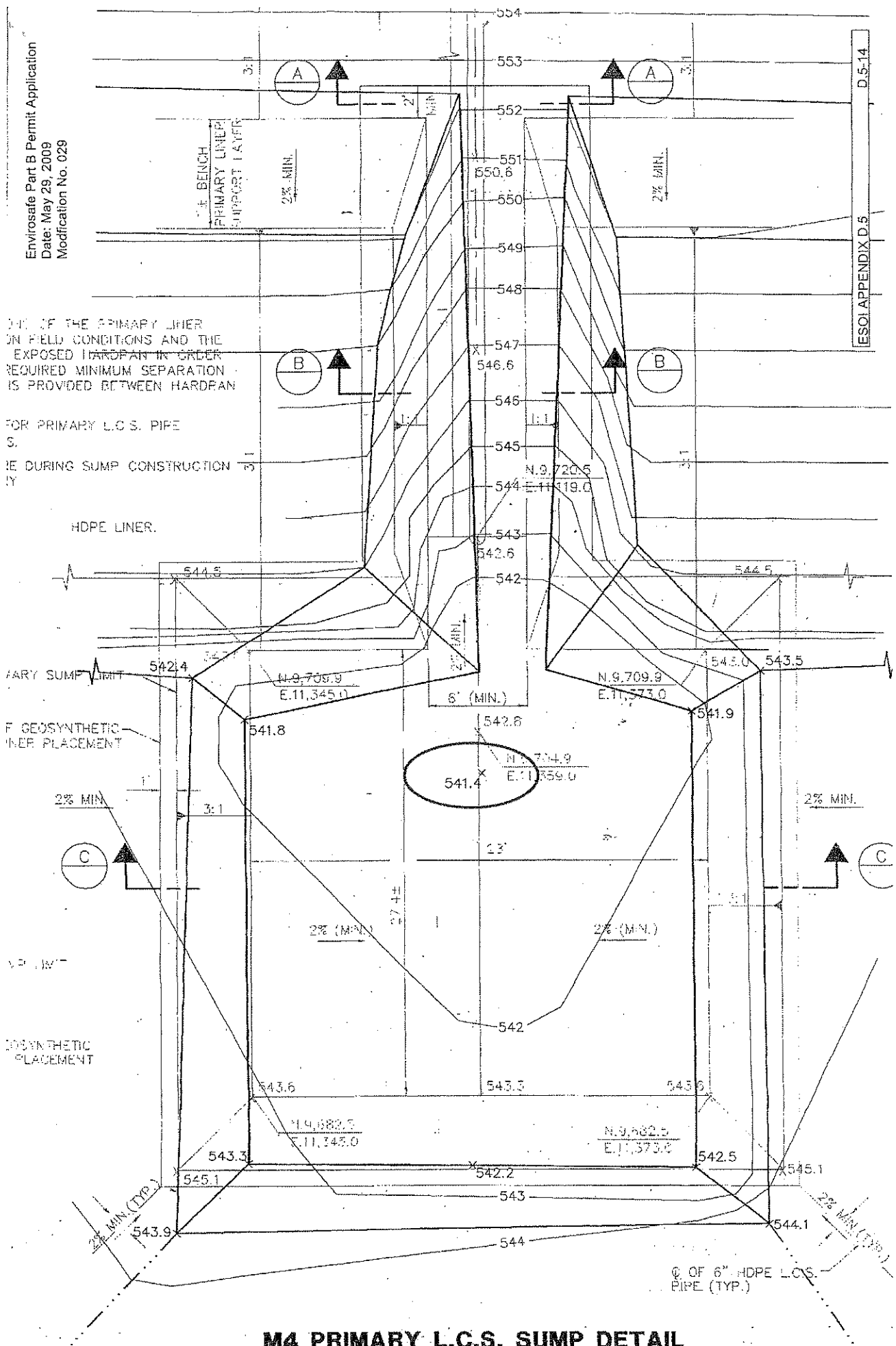
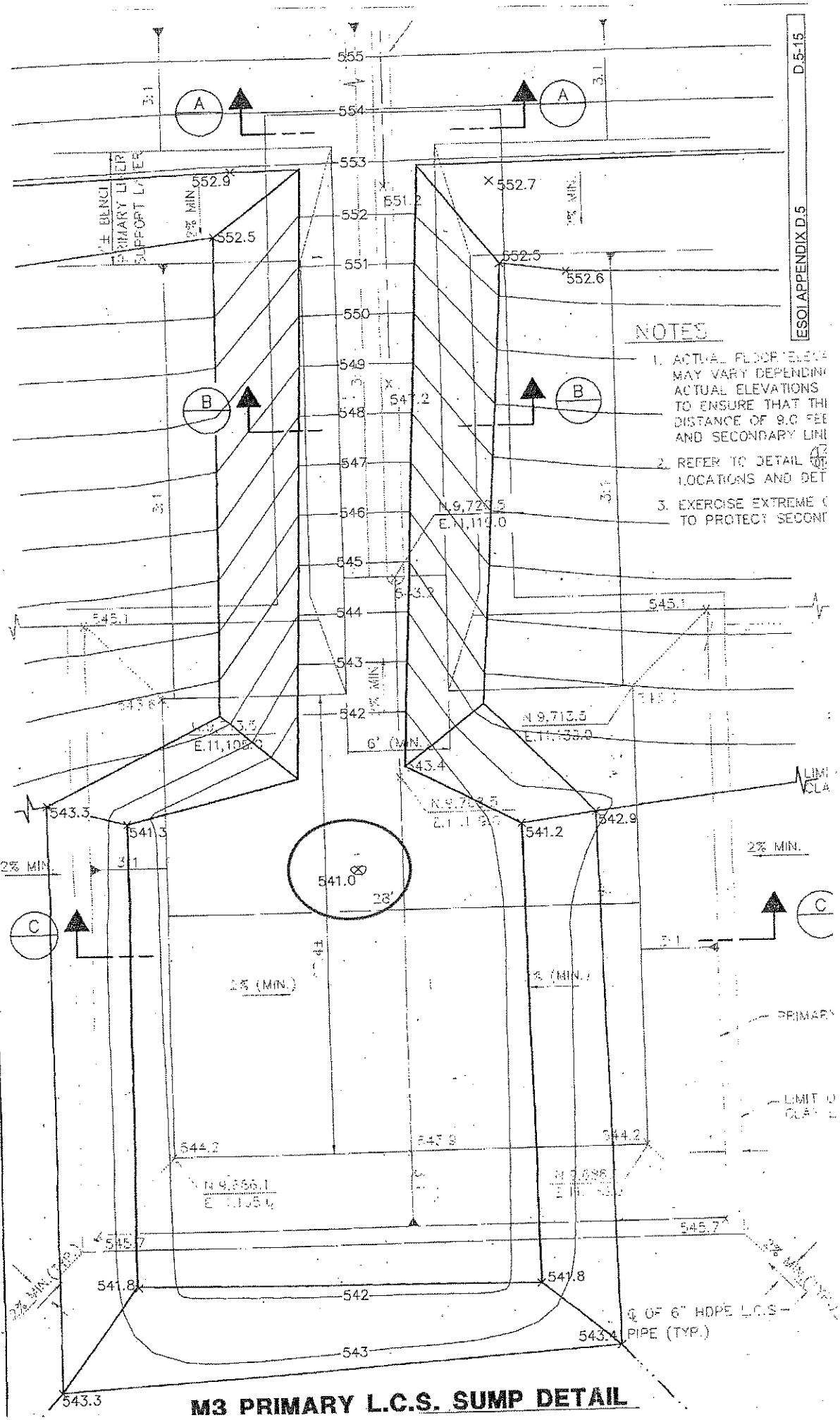


M4 PRIMARY L.C.S. SUMP DETAIL



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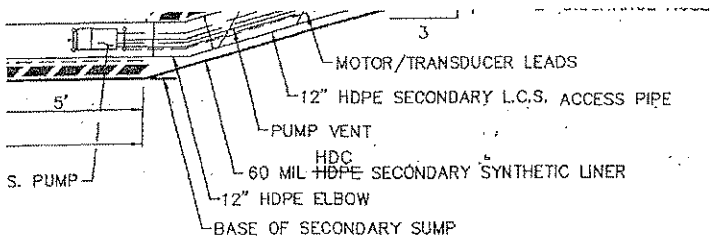


TAIL

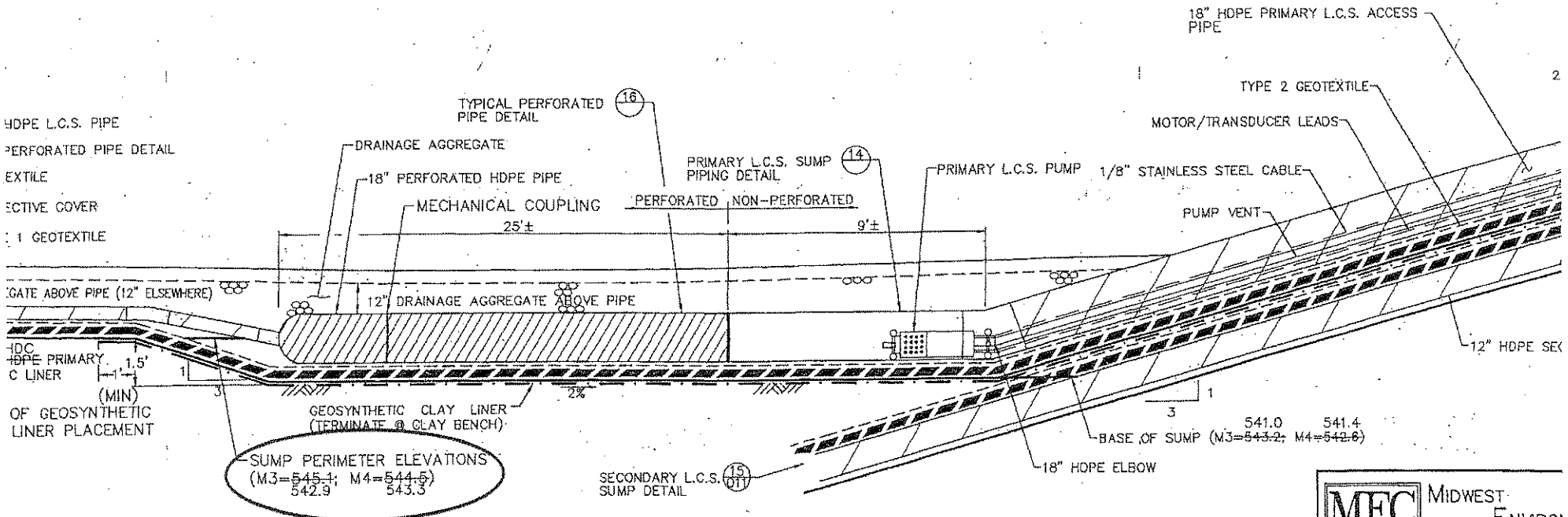
CENTERS OFFSET 1"

80 MIL HDPE PRIMARY SYNTHETIC LINER

TYPICAL PERFORATED PIPE DETAIL

DETAIL 16 (007,009,011)
N.T.S.

Envirosafe Part B Permit Application
Date: May 29, 2009
Modfication No. 029



PRIMARY L.C.S. SUMP DETAIL

DETAIL 19 (017)
N.T.S.

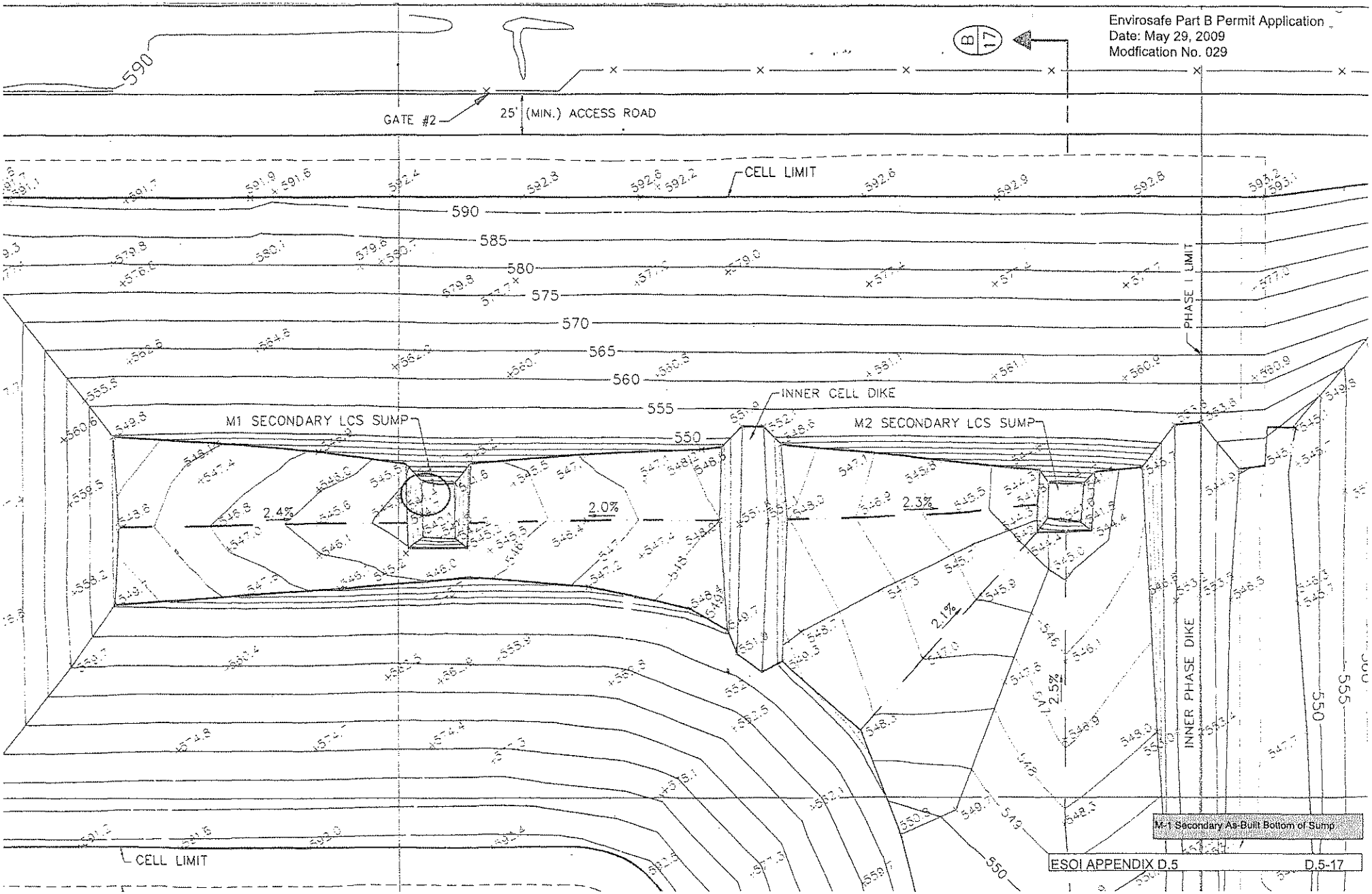
PUMP CONTROL ELEVATIONS BY TRANSDUCER

SUBCELL	PUMP ON	PUMP OFF	HIGH WATER	CYCLE VOLUME
M3	543.3 545.5	542.1 544.3	543.9 546.1	3,000 GAL.
M4	543.8 544.9	542.6 543.7	544.4 545.5	3,000 GAL.

MEC inc. MIDWEST ENVIRO

M-3 and M-4 As-Built Top of Sump Elevations

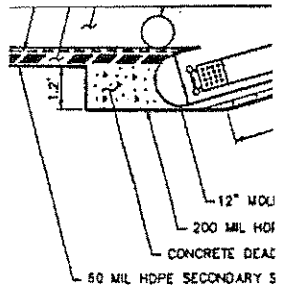
DESIGNED:	DATE	DRAWN:
JSB	9/93	BMC
REVIEWED:	DATE	APPROVED:
JKA	9/93	JKA


B 17
590
GATE #2
25' (MIN.) ACCESS ROAD
CELL LIMIT
590
585
580
575
570
565
560
555
550
PHASE I LIMIT
INNER CELL DIKE
M1 SECONDARY LCS SUMP
M2 SECONDARY LCS SUMP
2.4%
2.0%
2.3%
2.1%
2.5%
INNER PHASE DIKE
CELL LIMIT
M-1 Secondary As-Built Bottom of Sump

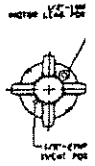
PUMP CONTROL ELEVATIONS BY TRANSDUCER

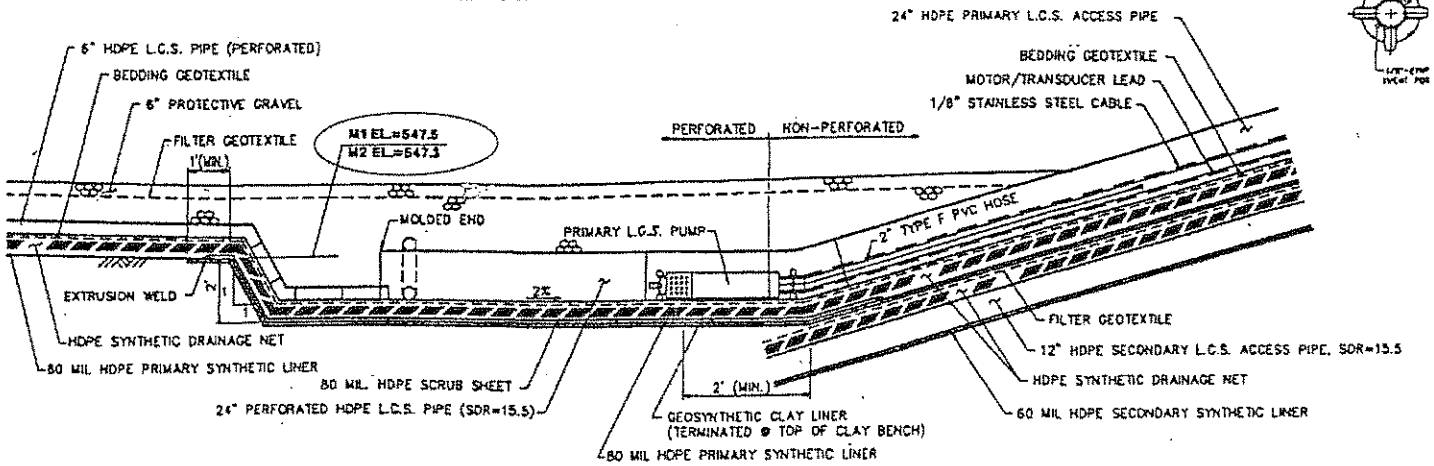
SUBCELL	PUMP ON	PUMP OFF	HIGH WATER	CYCLE VOLUME
M1	547.9	546.2	548.5	823 gal.
M2	547.7	546.3	548.3	823 gal.
M3**	548.1	546.1	548.6	823 gal.
M4**	549.6	548.1	550.1	823 gal.
M5**	551.6	550.1	552.1	823 gal.
M6**	551.1	549.6	551.6	823 gal.
M7**	551.6	550.1	552.1	823 gal.
M8**	551.6	550.1	552.1	823 gal.

** ELEVATIONS FOR MANHOLE M3 THROUGH M8 ARE APPROXIMATE AND WILL BE DETERMINED BY A SOIL BORING TO HARDPAN CONDUCTED AT THE LOCATION OF EACH SUMP.



TYPI

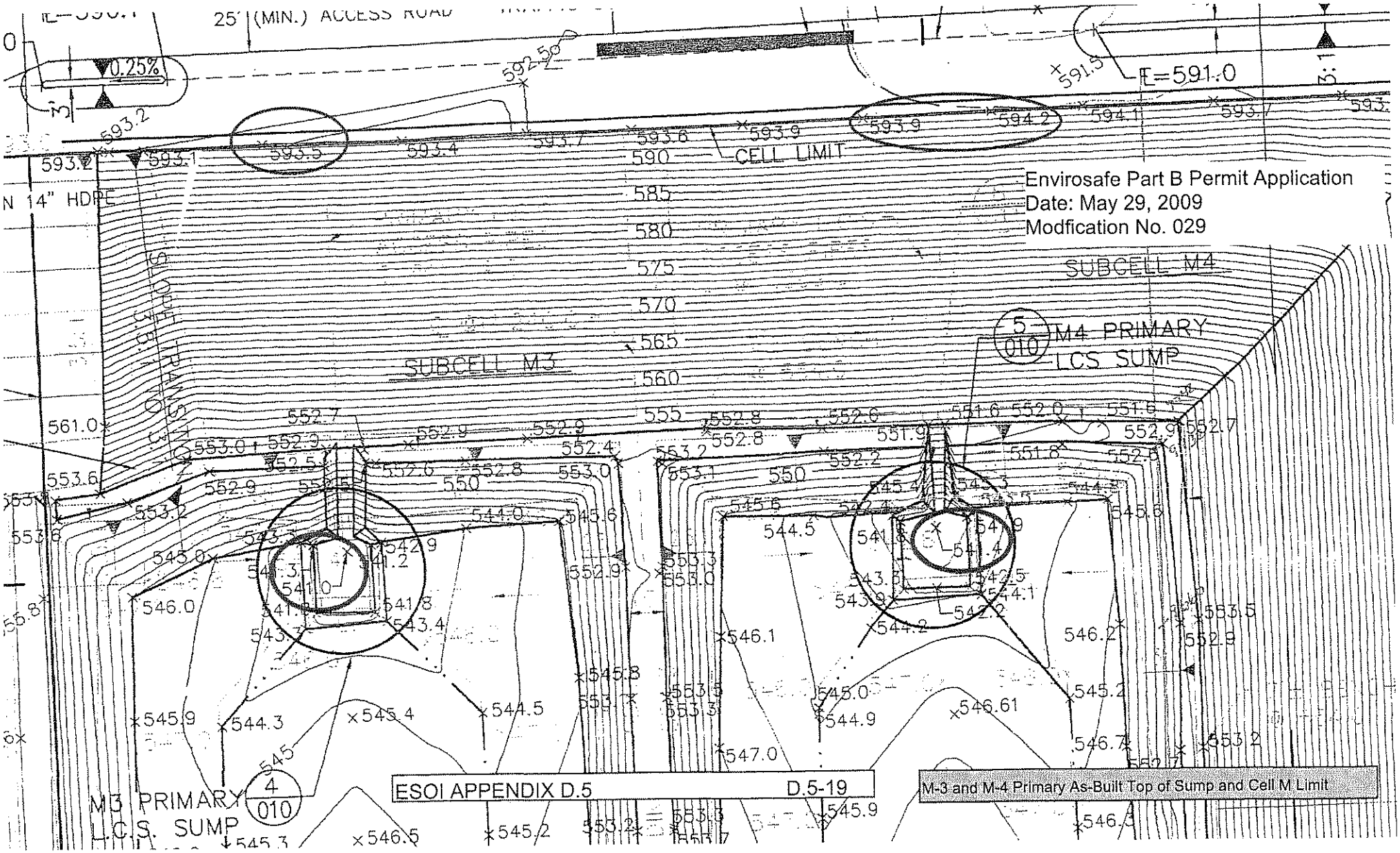


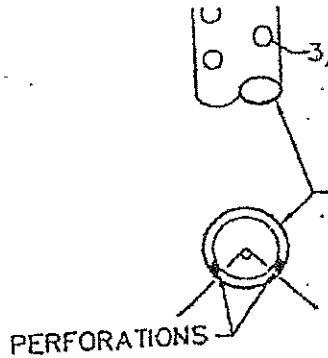


SHEET ISSUED TO C

TYPICAL PRIMARY L.C.S. SUMP PROFILE

N.T.S.

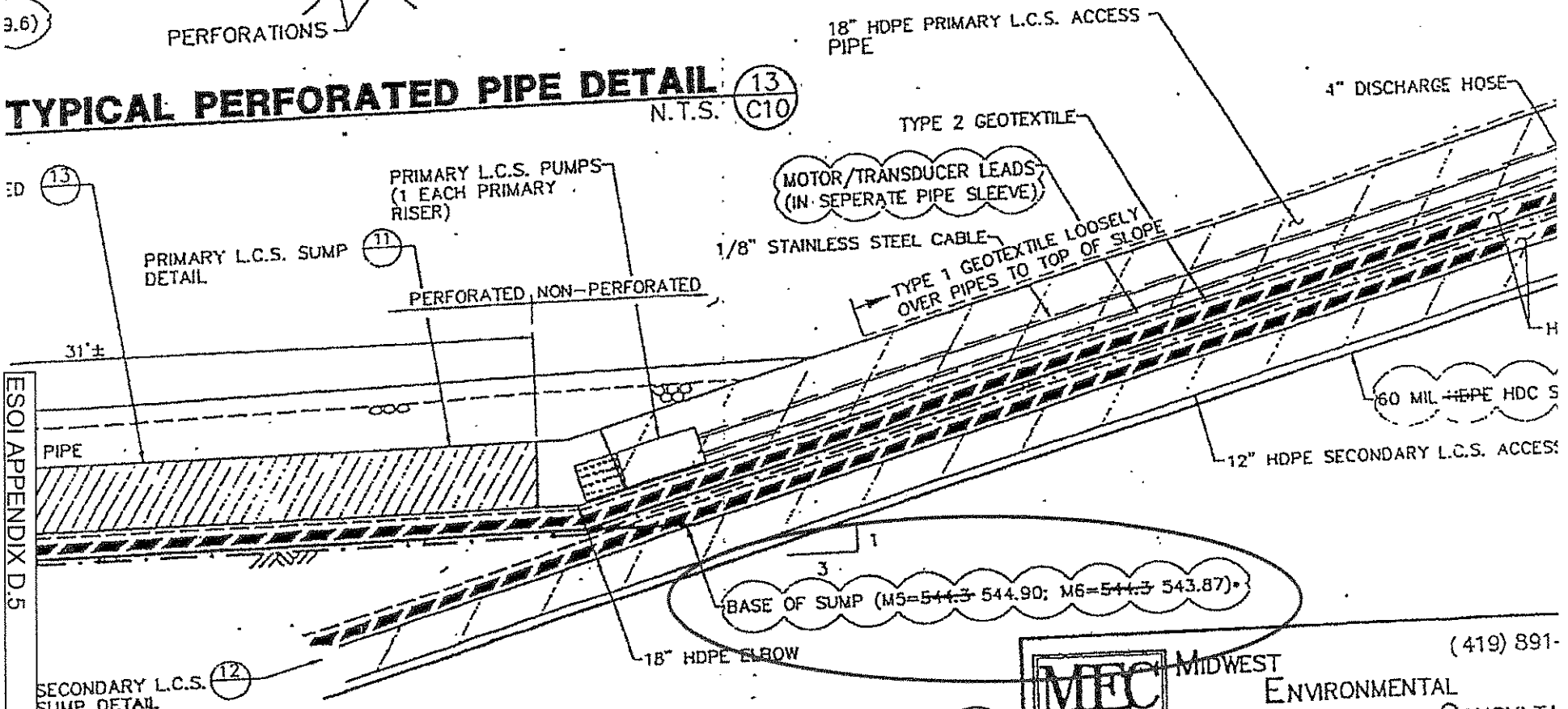

25' (MIN.) ACCESS ROAD
0.25%
E=591.0
CELL LIMIT
SUBCELL M3
SUBCELL M4
M4 PRIMARY LCS SUMP
M3 PRIMARY L.C.S. SUMP
ESOI APPENDIX D.5
D.5-19
M-3 and M-4 Primary As-Built Top of Sump and Cell M Limit



9.6)

TYPICAL PERFORATED PIPE DETAIL (13/C10)

N.T.S.



ETAIL (14/C07)

N.T.S.

PUMP CONTROL ELEVATIONS BY TRANSDUCER *

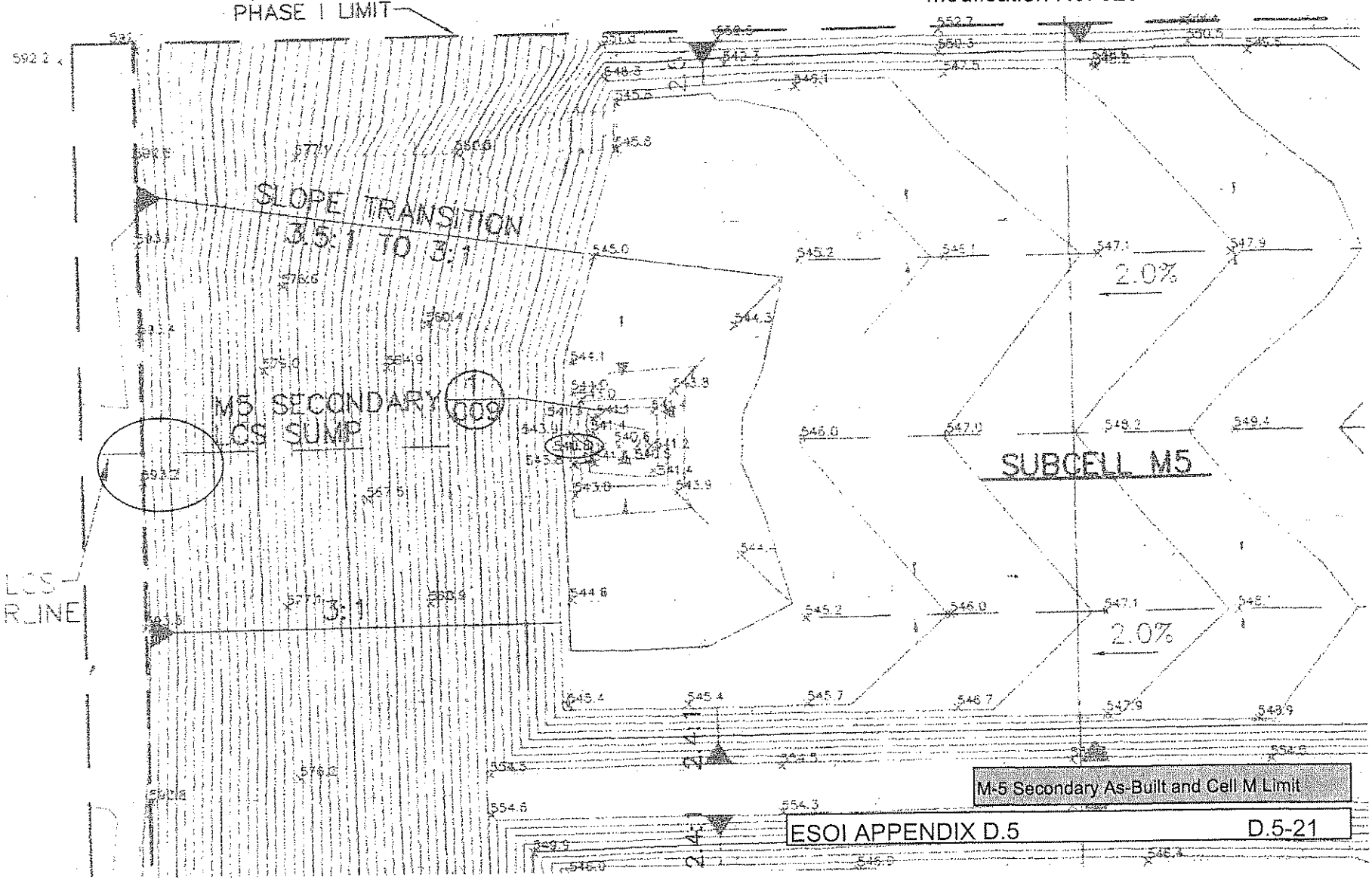
SUBCELL	PUMP ON	PUMP OFF	HIGH WATER	CYCLE VOLUME
M5	~~547.0~~ 547.58	~~545.0~~ 545.60	~~547.5~~ 548.08	6,600 GAL.
M6	~~547.0~~ 546.65	~~545.0~~ 544.57	~~547.5~~ 547.15	6,400 GAL.

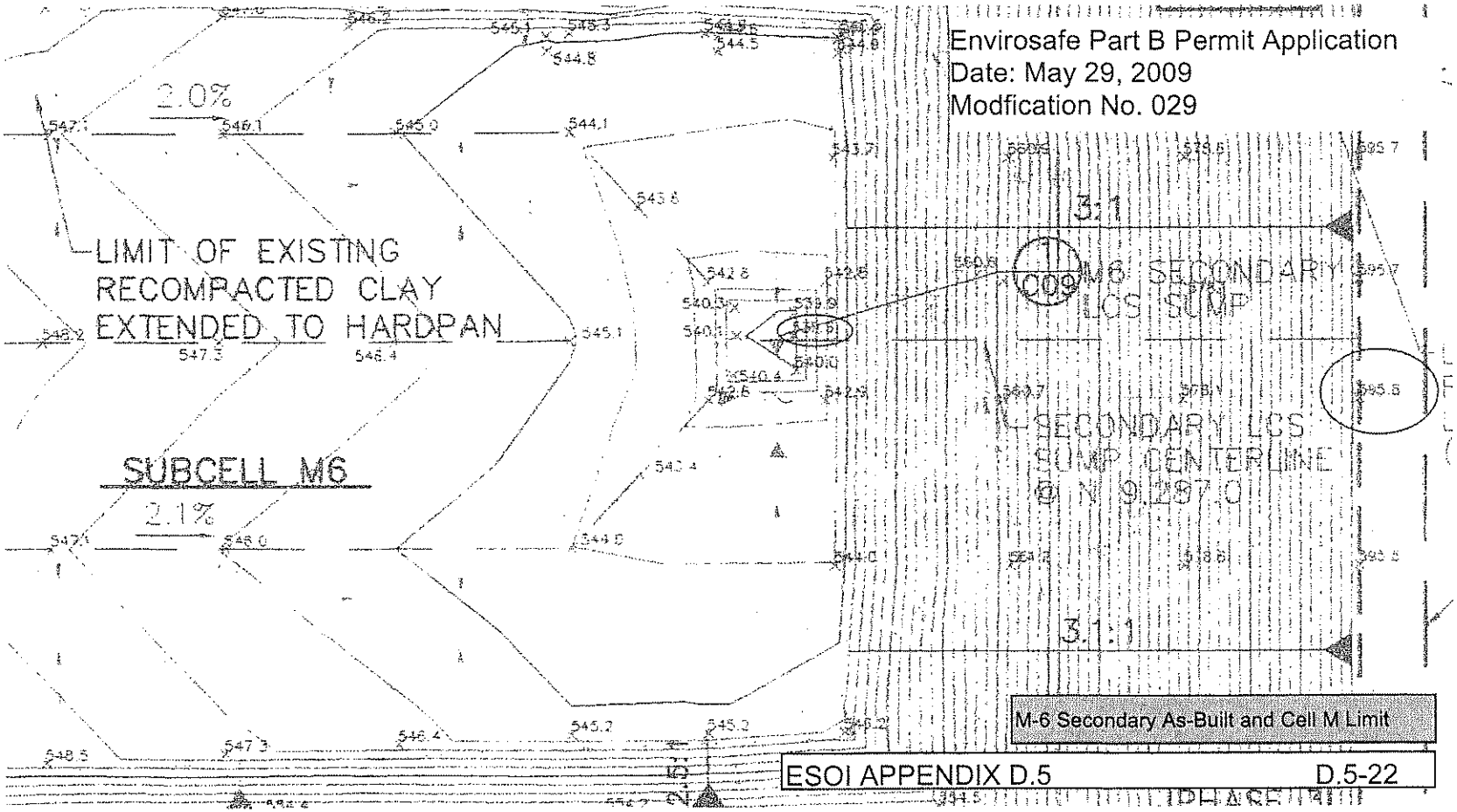
* NOTE: AS-BUILT CONDITIONS.

MIDWEST ENVIRONMENTAL CONSULTA
(419) 891-
TOLEDO, OHIO

DESIGNED:	DATE	DRAWN:		PROJECT NO:
GWT	2/97	MCM		F2
REVIEWED:	DATE	APPROVED:	DATE	CADD DIR.:
JKA	2/97	JKA	3/97	F2E

M-5 and M-6 Primary As-Built Bottom of Sump


PHASE I LIMIT
SLOPE TRANSITION
3.5:1 TO 3:1
M5 SECONDARY LCS SUMP
SUBCELL M5
2.0%
2.0%
3:1
LCS
RLINE
M-5 Secondary As-Built and Cell M Limit



M-6 Secondary As-Built and Cell M Limit

APPENDIX B

Stainless Steel Insert Report (Text only)

REPORT

ENVIROSAFE SERVICES OF OHIO, INC.
CELL M LEACHATE REMOVAL SYSTEM
STAINLESS STEEL INSERT REPORT

PREPARED BY: Susan M. Sholl
SUSAN M. SHOLL, P.E.
ENGINEER

REVIEWED & APPROVED BY: Karen C. Dolliver
KAREN C. DOLLIVER, P.E.
PROJECT MANAGER

The Mannik & Smith Group, Inc.

Civil Engineering, Surveying and Environmental Consulting
Toledo ◇ Monroe ◇ Dearborn ◇ Detroit

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TABLES

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1.0 INTRODUCTION

This report is to document the installation of stainless steel inserts and pumps in the high density polyethylene (HDPE) primary, primary backup, and secondary leachate removal system riser pipes in Cell M at Envirosafe Services of Ohio, Inc. (ESOI). Stainless steel inserts were placed in the following riser pipes:

M1 – Primary Backup
M2 – Primary Backup
M3 – Primary Backup
M4 – Primary Backup
M5 – Secondary
M5 - Primary
M5 – Primary Backup
M6 – Primary
M6 – Primary Backup

This report also ensures that the design for the installation of the riser pipe inserts has been satisfied or exceeded. The contents include a general summary of the work completed, observations, and information on the materials used.

As-built drawings for all of the riser pipes in which an insert was placed is contained in Appendix A of this report. The daily field reports prepared by The Mannik & Smith Group (MSG) are included in Appendix B. These reports document the daily description of work being observed; information on equipment and personnel; weather conditions; visitors; and names of MSG personnel. Appendix C contains the pump specifications and pump verification calculations. Appendix D contains welding certifications and Appendix E contains photographs of the inserts being installed.

2.0 PROJECT BACKGROUND

Envirosafe Services of Ohio, Inc. (ESOI) owns and operates a hazardous waste disposal facility in Oregon, Ohio. Within this facility is an active waste unit denoted as the Cell M landfill. Cell M is located on ESOI's property south of York Street. The Cell M landfill is being developed in three phases. Each phase is divided into subcells; subcells M1 and M2 are located in Phase 1, subcells M3 and M4 are in Phase 2 and subcells M5 and M6 are located in Phase 3.

3.0 GENERAL OVERVIEW

To ensure continued access to the Cell M riser pipes, ESOI has instituted corrective actions and an inspection program. Corrective actions consisted of installing stainless steel inserts, or sleeves, into the HDPE riser pipes.

Table 1.0 below summarizes the dates the stainless steel sleeves were installed. Appendix E contains photographs taken during the installation of the sleeves.

TABLE 1.0
STAINLESS STEEL INSERTS

Riser Location	Insert Description	Length of Insert	Screen Length	Date(s) of Installation
M1-Primary Backup	6 in – Schedule 10S	194' 1"	35" of slots spaced 1" apart	8/9/04, 8/10/04
M2-Primary Backup	6 in – Schedule 10S	199' 7.5"	35" of slots spaced 1" apart	8/9/04
M3-Primary Backup	6 in – Schedule 10S	184' 5"	35" of slots spaced 1" apart	8/6/04
M4-Primary Backup	6 in – Schedule 10S	184' 8.5"	35" of slots spaced 1" apart	8/5/04
M5-Secondary	4 in – Schedule 10S	186' 11"	35" of slots spaced 1" apart	8/10/04
M5- Primary	8 in – Schedule 10S	172'	10 rows of drilled holes. Rows spaced 1" apart	9/2/04, 9/3/04 9/9/04 (added 5 more rows of drilled holes)
M5-Primary Backup	8 in – Schedule 10S	172' 11"	10 rows of drilled holes. Rows spaced 1" apart	8/30/04, 8/31/04, 9/7/04 (added 5 more rows of drilled holes)
M6-Primary	6 in – Schedule 10S	183' 10"	10 rows of drilled holes. Rows spaced 1" apart	8/19/04, 8/20/04
M6-Primary Backup	8 in – Schedule 10S	184' 6"	3 rows of drilled holes. Rows spaced 1" apart	8/17/04, 8/18/04

4.0 DESCRIPTION OF STAINLESS STEEL SLEEVE INSTALLATION

4.1 Primary Backup Riser Insert

Six-inch diameter schedule 10S stainless steel pipes were installed in four of the existing HDPE primary backup leachate removal system sideslope risers (M1, M2, M3, and M4) and 8-inch diameter schedule 10S stainless steel pipes were installed in the remaining two of the existing HDPE primary backup leachate removal system sideslope risers (M5 and M6) in August 2004. These pipes formed a "sleeve" for providing access to the leachate sump.

GEM Industrial (GEM) installed the stainless steel sleeves after Helliarc welding the pipes together and lowering the sleeves into the HDPE riser pipes after each weld was completed. A mixture of Solarflux and isopropyl alcohol was applied to the ends of the pipe being welded to prevent burrs from forming on the inside of the pipe while welding. GEM performed some of the welding at their facility. Two 20-foot sections were welded together in order to deliver 40-foot sections to ESOI. In addition, the end caps were welded on by GEM at their facility. This method was performed for all of the primary

backup risers except for M5 and M6. All of the welding was performed by GEM at ESOI for the M5 and M6 primary backup risers.

Table 1.0 summarizes the length of stainless steel insert in each riser pipe. After each of the stainless steel inserts were installed to the bottom of the HDPE riser pipe, the stainless steel pipes were cut to be flush with the top of the HDPE riser pipe. Before the first sections of the stainless steel pipe were installed, GEM welded end caps on the downslope end of the pipes. The 6-inch stainless steel pipes had 1-inch diameter holes drilled in the end cap to allow liquid to enter the bottom of the sleeve. The 8-inch stainless steel pipes had five ¾-inch holes drilled in the end cap. The lower portions of the stainless steel pipes were also slotted or drilled to allow liquid to enter the sleeve. Table 1.0 summarizes the screen lengths for each of the pipes installed.

At the point each of the stainless steel pipes would no longer advance into the HDPE riser pipes, a video camera was inserted in the stainless steel pipe to determine if the pipe was located at the base of the HDPE riser. In all cases, the video camera showed liquid to be present at the bottom of the pipes, indicating that the pipes were at the base of the HDPE risers. The pipes were then cut to be flush with the top of the HDPE riser pipe.

After the pump was installed in the M5 primary backup riser pipe, it was determined that liquid flow was impeded from entering the stainless steel pipe. Therefore, on September 7, 2004, the stainless steel pipe was removed and an additional five rows of holes were drilled into the bottom of the stainless steel pipe. The stainless steel pipe was then reinserted into the HDPE riser pipe. Following the drilling of the additional holes, liquid flowed into the stainless steel sleeve as fast as the pump could remove it.

4.2 Primary Riser Insert

During leachate system maintenance on the pump in primary riser M6, it was noted that the pump could not be removed from the riser. Investigation of M6 using a video camera indicated the primary riser pipe had deformed and would no longer permit passage of the pump.

To allow access to the M6 riser pipe, a 6-inch diameter schedule 10S stainless steel pipe was installed in the primary leachate removal system sideslope riser M6 in August 2004. Additionally, an 8-inch diameter schedule 10S stainless steel pipe was installed in the primary leachate removal system sideslope riser M5 in September 2004. These pipes formed a "sleeve" for providing access to the primary leachate sump. GEM installed the stainless steel pipes after Helliarc welding the approximate 20-foot sections together and lowering the sleeves into the HDPE riser pipes after each weld was completed. A mixture of Solarflux and isopropyl alcohol was applied to the ends of the pipe being welded to prevent burrs from forming during welding on the inside of the pipe. GEM performed some of the welding for the M6 riser at their facility. Two 20-foot sections were welded together in order to deliver 40-foot sections to ESOI.

Before the first section of the stainless steel pipe was installed, GEM welded end caps on the downslope end of the pipes. Seven 3/4-inch holes and one 1 1/8-inch hole were drilled in the end cap of M6 and five 5/8 inch holes were drilled in the end cap of M5 to allow liquid to enter the bottom of the sleeves. Ten rows of holes were also drilled in the bottom portion of the 6-inch diameter stainless steel pipe (M6) and five rows were

initially drilled in the lower portion of the 8-inch diameter stainless steel pipe (M5) to allow liquid to enter the sleeve.

After the pump was installed in the M5 primary riser pipe, it was determined that liquid was impeded from entering the stainless steel pipe. Therefore, on September 9, 2004, the stainless steel pipe was removed and an additional five rows of holes were drilled into the bottom of the stainless steel pipe. The stainless steel pipe was then reinserted into the HDPE riser pipe. Following the drilling of the additional holes, there was no longer evidence of liquid flow impedance.

At approximately 160-feet in M6, the stainless steel pipe insert encountered the deformation. On August 19, 2004, GEM and ESOI personnel attempted to advance the pipe with the use of a crane and front-end loader by rotating the pipe past the deformation. Due to time constraints and poor weather, the attempt was ended. On August 20, 2004, ESOI personnel succeeded with the insertion of the stainless steel pipe past the deformation. A video camera was inserted in the stainless steel pipe to determine if the pipe was located at the bottom. The video camera showed liquid to be present at the bottom of the pipe, indicating that the pipe was at the base of the HDPE riser. The stainless steel pipe was then cut by ESOI personnel to be flush with the top of the HDPE riser pipe.

No problems were noted with the insertion of the M5 primary stainless steel riser. At the point the stainless steel pipe would no longer advance into the HDPE primary riser pipe, a video camera was inserted in the stainless steel pipe to determine if the pipe was located at the bottom. The video camera showed liquid to be present at the bottom of the pipe, indicating that the pipe was at the bottom. The stainless steel pipe was then cut off to be flush with the top of the HDPE primary riser pipe.

Table 1.0 summarizes the lengths of the M5 and M6 stainless steel inserts in the primary riser pipes.

4.3 Secondary Riser Insert

A four-inch diameter schedule 10S stainless steel pipe was installed in the existing HDPE secondary leachate removal system sideslope riser M5 on August 10, 2004. This pipe formed a "sleeve" for providing access to the secondary leachate sump. Prior to bringing the stainless steel sections to the facility, GEM welded two 20-foot sections together to form 40-foot long pipe sections. GEM installed the stainless steel pipes after Helliarc welding the approximate 40-foot sections together and lowering the sleeves into the HDPE riser pipes after each weld was completed. A mixture of Solarflux and isopropyl alcohol was applied to the ends of the pipe being welded to prevent burrs from forming on the inside of the pipe during welding. Table 1.0 summarizes the length of the stainless steel insert in the riser pipe. Before the first section of the 4-inch stainless steel pipe was installed, GEM welded an end cap on the downslope end of it. A 1-inch diameter hole was drilled in the end cap to allow liquid to enter the bottom of the sleeve. The lower 35 inches of the 4-inch diameter stainless steel pipe was also slotted to allow liquid to enter the sleeve.

At the point the stainless steel pipe would no longer advance into the HDPE secondary riser pipe, a video camera was inserted in the stainless steel pipe to determine if the pipe was located at the bottom. The video camera showed liquid to be present at the bottom of

the pipe, indicating that the pipe was at the bottom. The pipe was then cut off to be flush with the top of the HDPE secondary riser pipe.

4.4 Pump Installation

Upon completion of the stainless steel pipe insertions, transducers and new submersible pumps were installed in the stainless steel riser pipes by ESOI personnel. A new pump was not used in the M6 primary backup riser. The original pump for M6 was placed in the stainless steel riser after removing the HDPE protective casing. Table 2.0 summarizes each of the pumps installed in the riser inserts. All of the new pumps have been evaluated for conformance with design liquid removal capacity. The pumps selected can adequately remove the expected liquid volume to be collected in the sumps for these subcells. See Appendix C for pump verification calculations, pump specifications and technical data.

TABLE 2.0
PUMP INFORMATION

Riser Location	Pump Type
M1-Primary Backup	Grundfos 10010008 16S07-8
M2-Primary Backup	Grundfos 10010008 16S07-8
M3-Primary Backup	Grundfos 10010008 16S07-8
M4-Primary Backup	Grundfos 10010008 16S07-8
M5-Secondary	Grundfos 96080245 15 SQ10C-250
M5–Primary	Grundfos 300S 150-4AA
M5-Primary Backup	Grundfos 300S 150-4AA
M6-Primary	Grundfos 300S 150-4AA
M6-Primary Backup	Grundfos 385 S200-2

5.0 CONCLUSION

5.1 Primary Backup Riser Insert

The primary backup leachate removal system risers for Subcells M1, M2, M3, M4, M5, and M6 of Cell M at ESOI have been retrofitted with stainless steel inserts. Six-inch diameter schedule 10S stainless steel pipes were installed in four of the existing HDPE primary backup leachate removal system sideslope risers (M1, M2, M3, and M4) and 8-inch diameter schedule 10S stainless steel pipes were installed in two of the existing HDPE primary backup leachate removal system sideslope risers (M5 and M6) during August 2004. Pumps were installed in each of the stainless steel pipes. The replacement pumps, if different from the original pumps, have been evaluated for conformance with design liquid removal capacity. The pumps selected can adequately remove the expected liquid volume to be collected in the primary sumps for these subcells.

5.2 Primary Riser Insert

The primary leachate removal system riser for Subcell M6 of Cell M at ESOI has been retrofitted with a stainless steel insert. A 6-inch diameter stainless steel pipe was installed in Subcell M6. A pump was installed in the stainless steel pipe and has been evaluated for conformance with design liquid removal capacity. The pump selected for installation into Subcell M6 can adequately remove the expected liquid volume to be collected in the primary sump for this subcell.

The primary leachate removal system riser for Subcell M5 of Cell M at ESOI has been retrofitted with a stainless steel insert. An 8-inch diameter stainless steel pipe was installed in Subcell M5. A pump was installed in the stainless steel pipe and has been evaluated for conformance with design liquid removal capacity. The pump selected for installation into Subcell M5 can adequately remove the expected liquid volume to be collected in the primary sump for this subcell.

5.3 Secondary Riser Insert

The secondary leachate removal system riser for Subcell M5 of Cell M at ESOI has been retrofitted with a stainless steel insert. A 4-inch diameter stainless steel pipe was installed in Subcell M5. A pump was installed in the stainless steel pipe and has been evaluated for conformance with design liquid removal capacity. The pump selected for installation into Subcell M5 can adequately remove the expected liquid volume to be collected in the secondary sump for this subcell.

6.0 CERTIFICATION

This certification has been prepared in accordance with Envirosafe Services of Ohio, Inc.'s - State of Ohio, Hazardous Waste Facility Installation and Operation Permit condition K.1.j for the repair of the Cell M - Leachate Removal System riser pipe and pump.

I certify that the replacement leachate removal system pumps in the following subcells have been installed as a preventative measure.

M1 – Primary Backup
M2 – Primary Backup
M3 – Primary Backup
M4 – Primary Backup
M5 – Secondary
M5 - Primary
M5 – Primary Backup
M6 – Primary
M6 – Primary Backup

MSG has analyzed all of the leachate removal system pumps and determined that all of the pumps can sufficiently remove leachate. Based upon my inquiry of the persons involved with the performance of said installation and my review of cell construction documentation, to the best of my knowledge, the installed pump meets the original design intent for the pumps installed in the leachate removal systems.

I certify under penalty of law that this document and all attachments were prepared under my direction or supervision in accordance with a system designed to assure that qualified personnel properly gather and evaluate the information submitted. Based on my inquiry of the person or persons who manage the system, or those persons directly responsible for gathering the information, the information submitted is, to the best of my knowledge and belief, true, accurate, and complete. I am aware that there are significant penalties for submitting false information, including the possibility of fine and imprisonment for knowing violations, (OAC Rule 3745-50-42(D)).

Karen C. Dolliver

The Mannik & Smith Group
Karen C. Dolliver, P.E.

November 3, 2004
Date

APPENDIX C

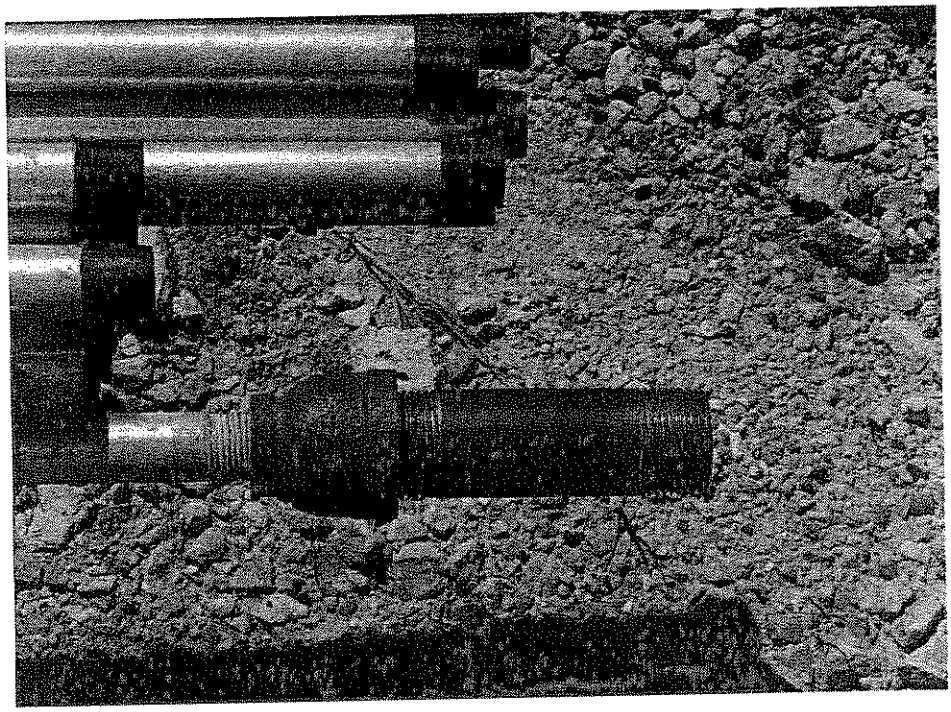
PHOTOGRAPHS

Envirosafe Services of Ohio (ESOI) Cell M Transducer Certification (2009)

Threaded-galvanized steel rods (typical).

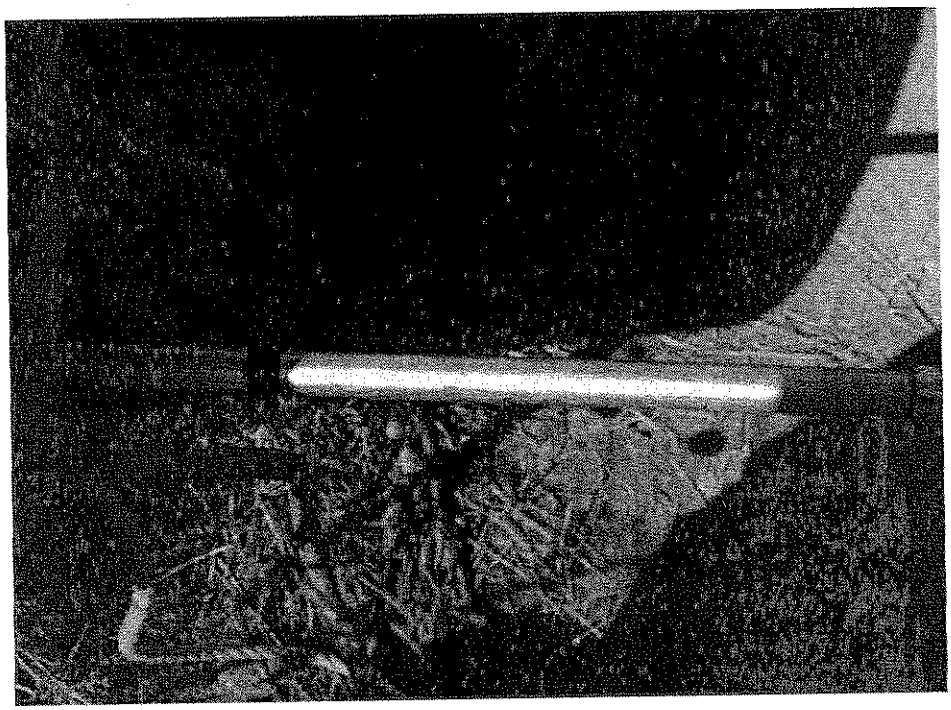
1

Envirosafe Services of Ohio (ESOI) Cell M Transducer Certification (2009)



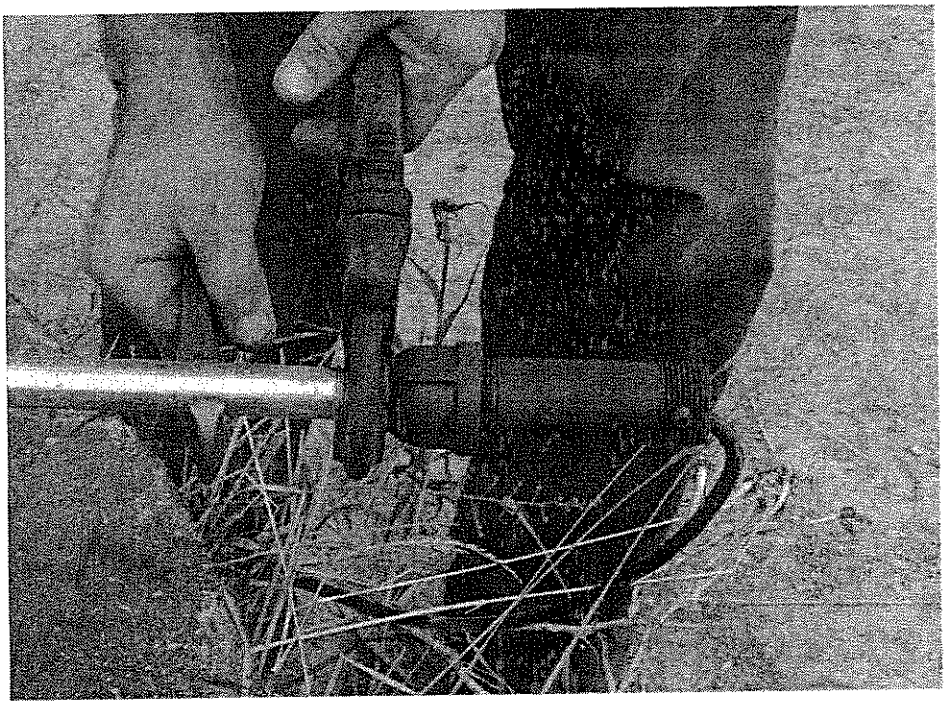
Typical protective steel pipe attached to reducer at end of galvanized steel rod.

Envirosafe Services of Ohio (ESOI) Cell M Transducer Certification (2009)



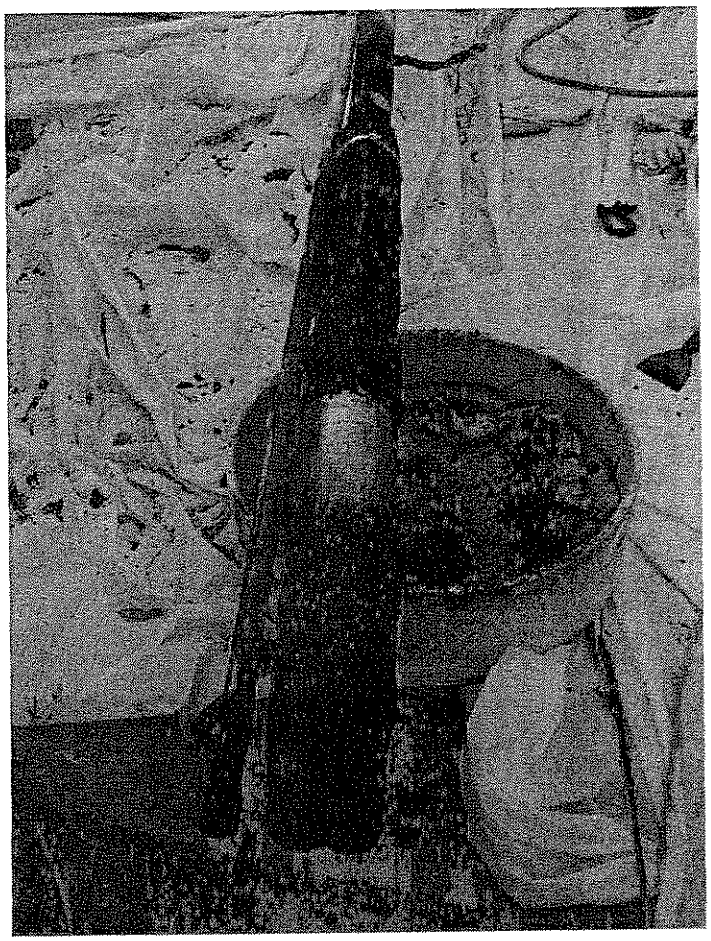
Galvanized steel rod (typical) during insertion.

Envirosafe Services of Ohio (ESOI) Cell M Transducer Certification (2009)



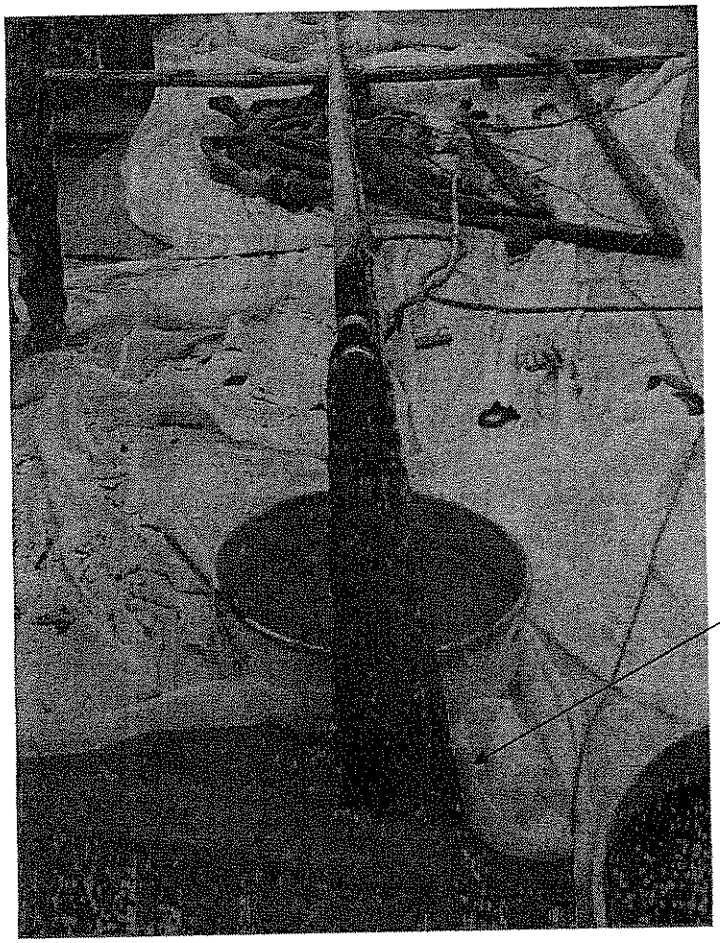
Galvanized steel rod with reducer. Attachment at end of steel rod protects transducer.

Envirosafe Services of Ohio (ESOI) Cell M Transducer Certification (2009)



Pump with galvanized steel rod attached.

Envirosafe Services of Ohio (ESOI) Cell M Transducer Certification (2009)



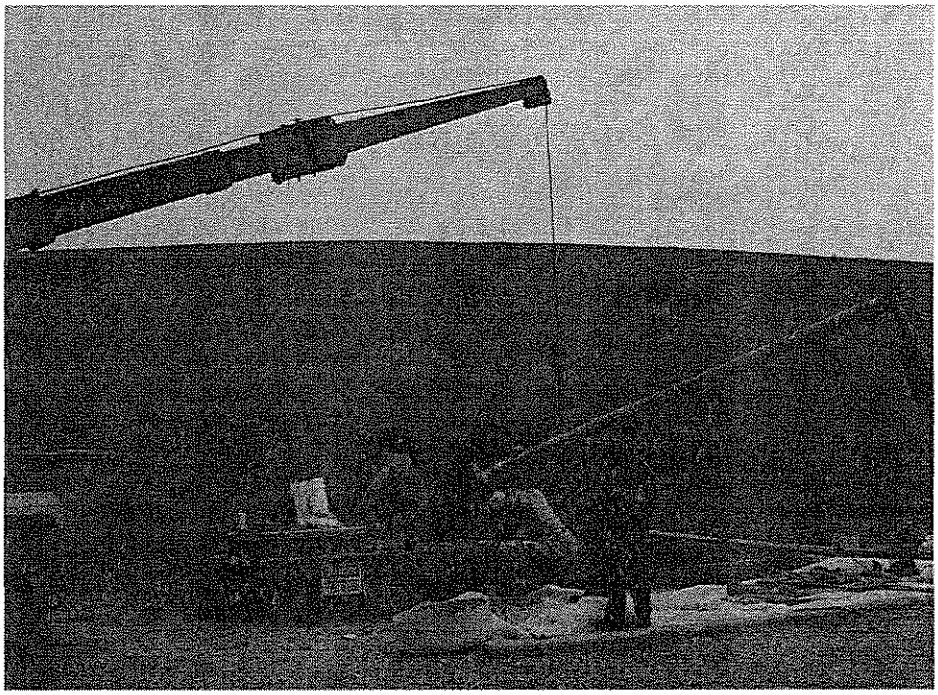
Pump to be replaced.

Envirosafe Services of Ohio (ESOI) Cell M Transducer Certification (2009)

Attaching steel rod to motor housing with stainless steel clamp.

7

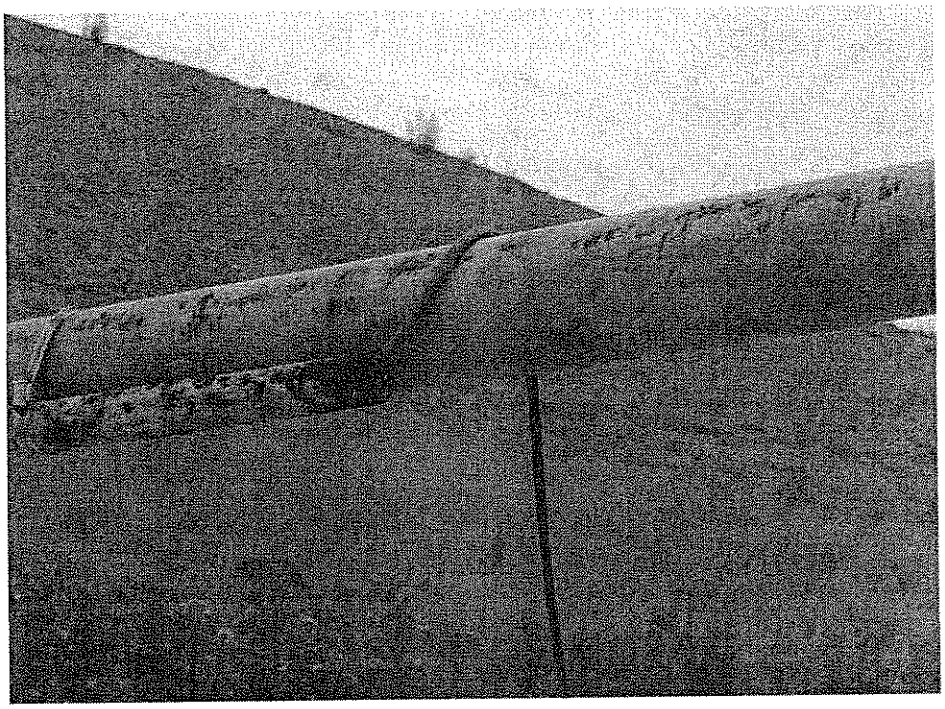
Envirosafe Services of Ohio (ESOI) Cell M Transducer Certification (2009)



Installation of pump and transducer at M-5

8

Envirosafe Services of Ohio (ESOI) Cell M Transducer Certification (2009)



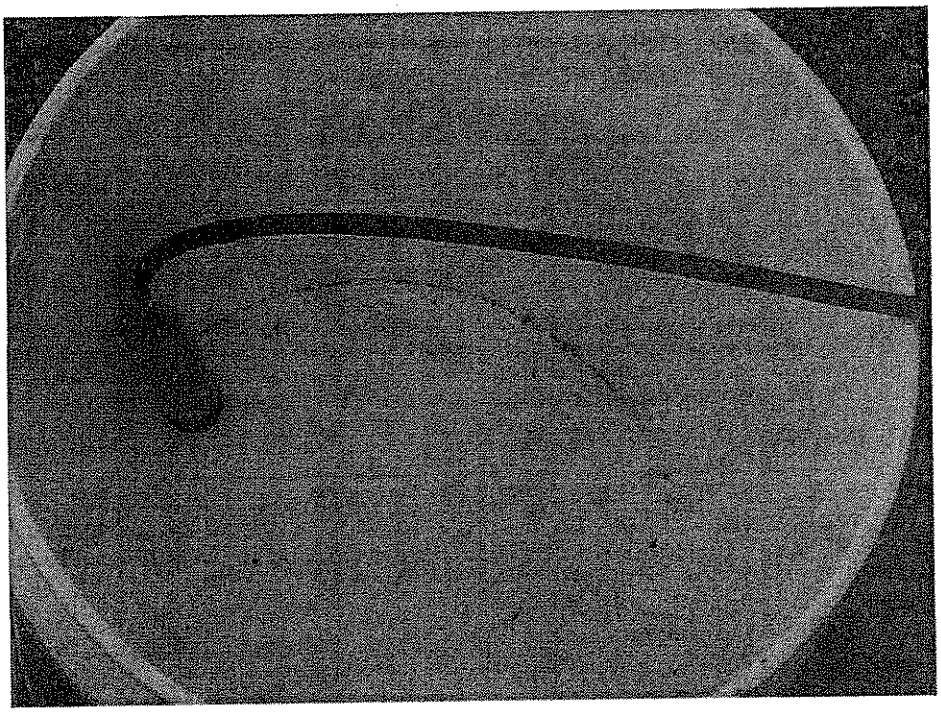
Upper end of steel rod attached to discharge pipe.

9

Envirosafe Services of Ohio (ESOI) Cell M Transducer Certification (2009)

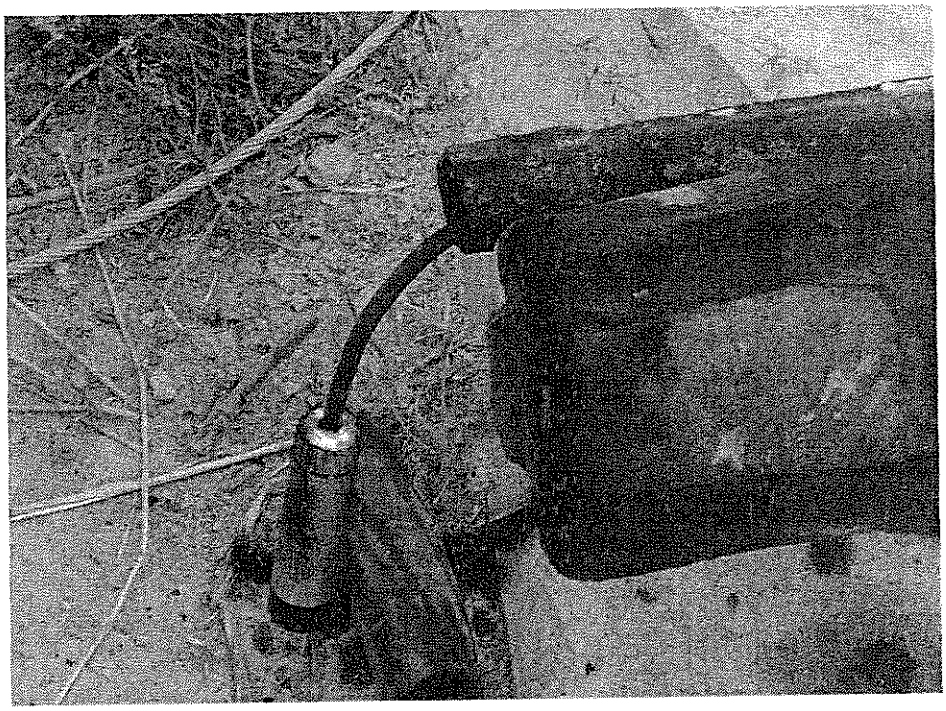
Installation

Envirosafe Services of Ohio (ESOI) Cell M Transducer Certification (2009)



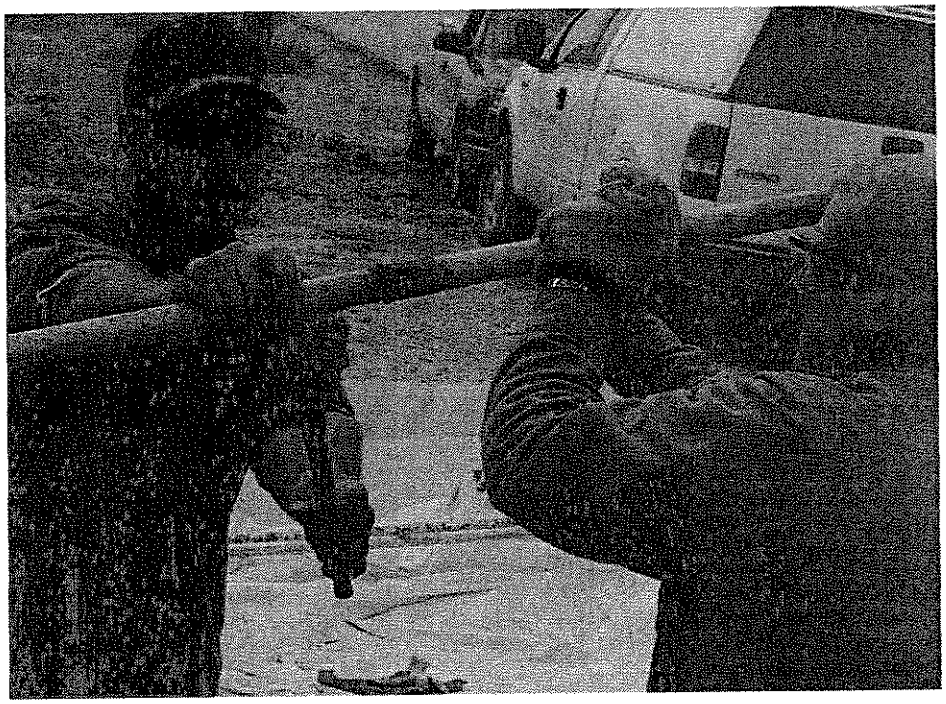
Confirming calibration of transducer prior to installation.

Envirosafe Services of Ohio (ESOI) Cell M Transducer Certification (2009)



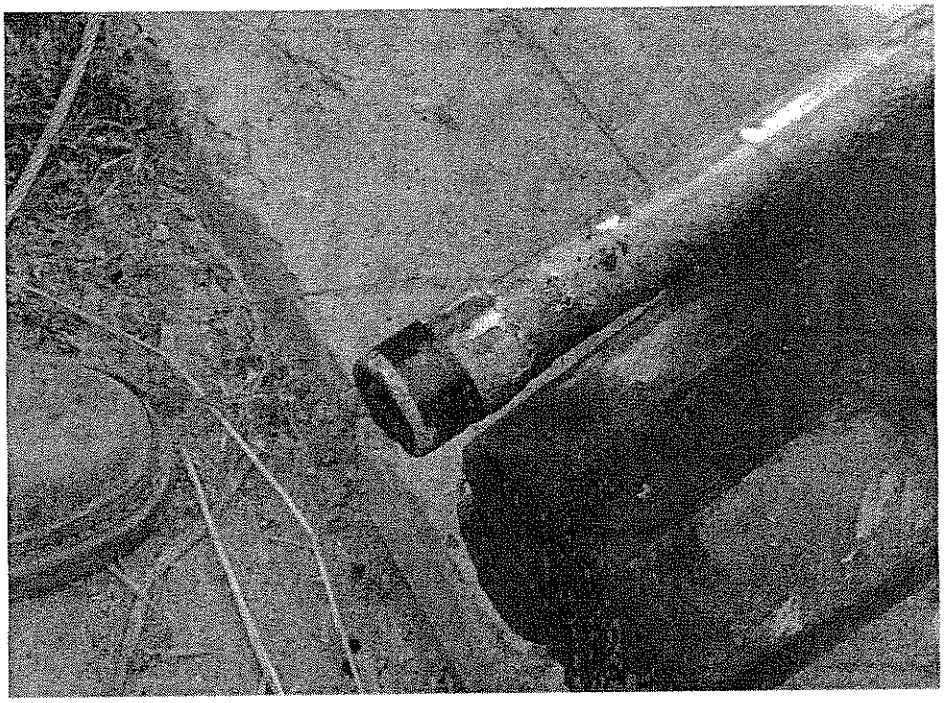
Transducer prior to insertion in steel rod.

Envirosafe Services of Ohio (ESOI) Cell M Transducer Certification (2009)



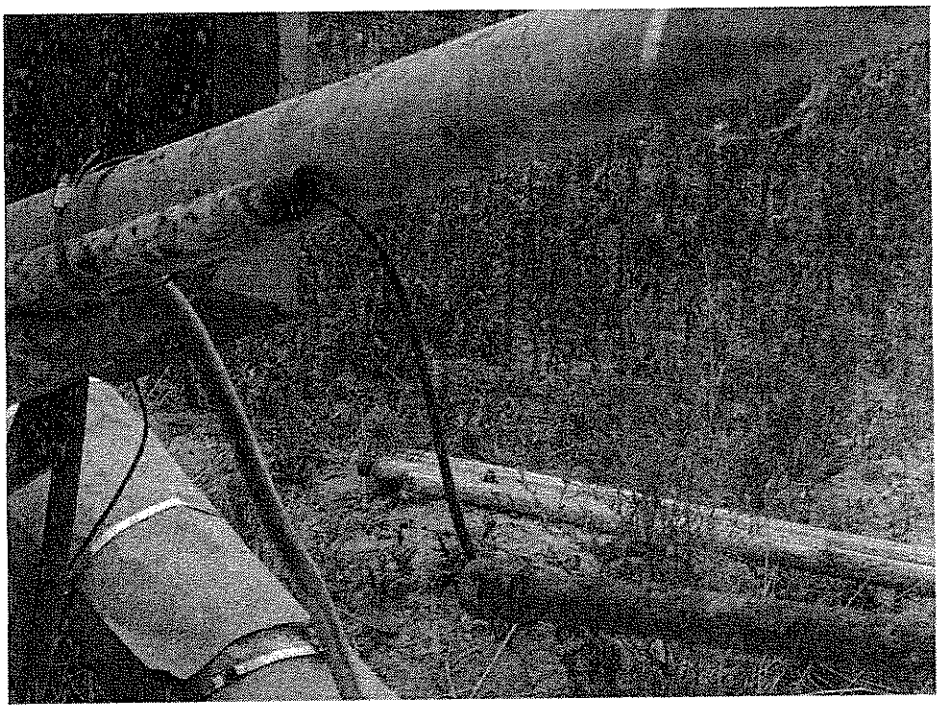
Rod assembly.

Envirosafe Services of Ohio (ESOI) Cell M Transducer Certification (2009)



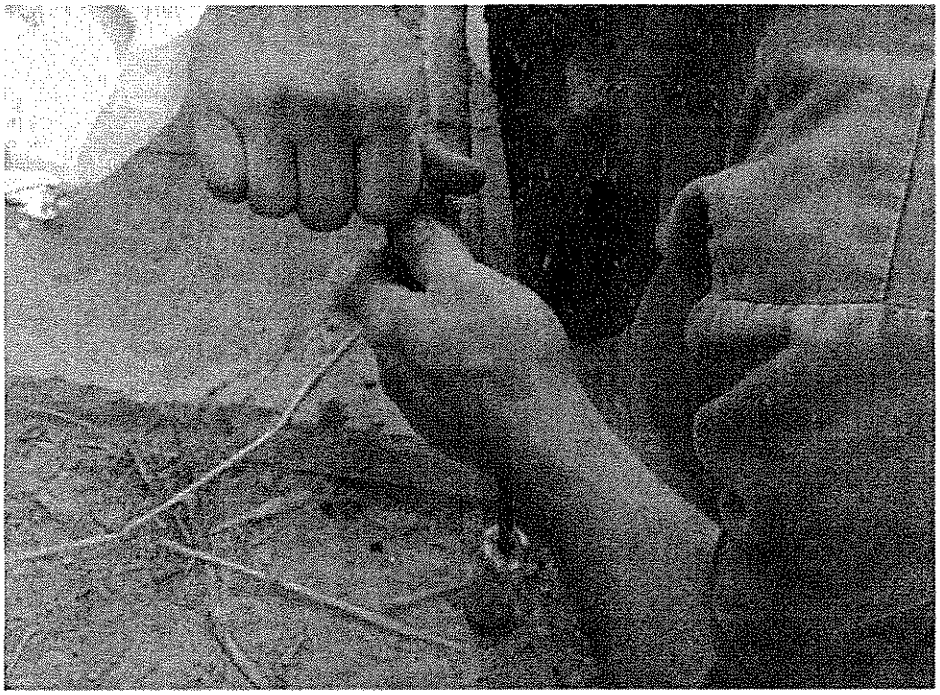
Galvanized steel rod attached to end of pump motor casing.
Transducer positioned inside rod end for protection.

Envirosafe Services of Ohio (ESOI) Cell M Transducer Certification (2009)



Steel rod with inserted transducer wire.

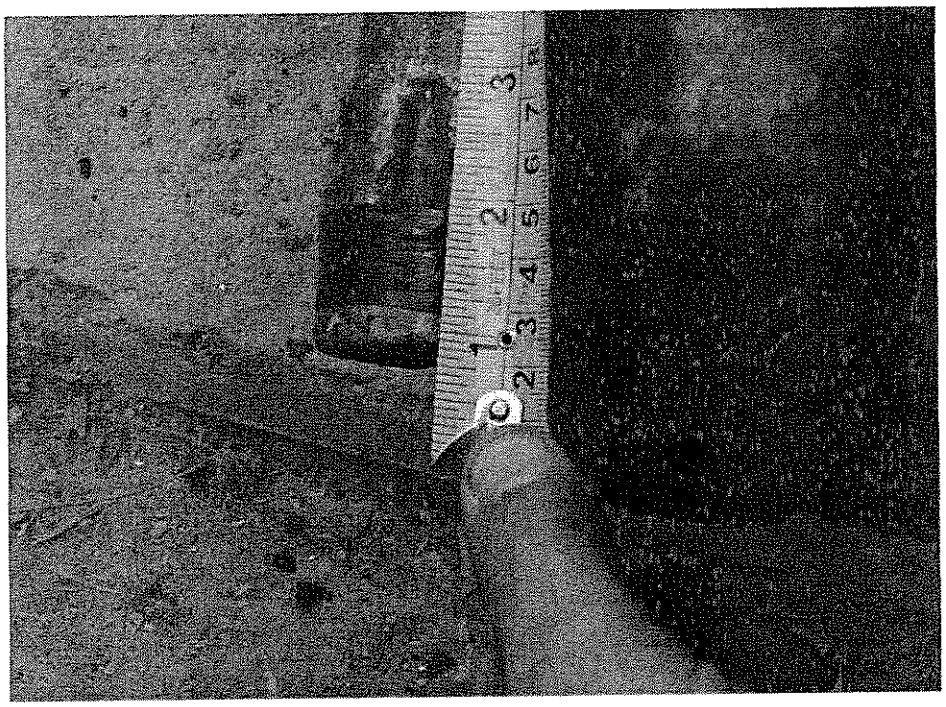
Envirosafe Services of Ohio (ESOI) Cell M Transducer Certification (2009)



Installation of transducer in steel rod.

16

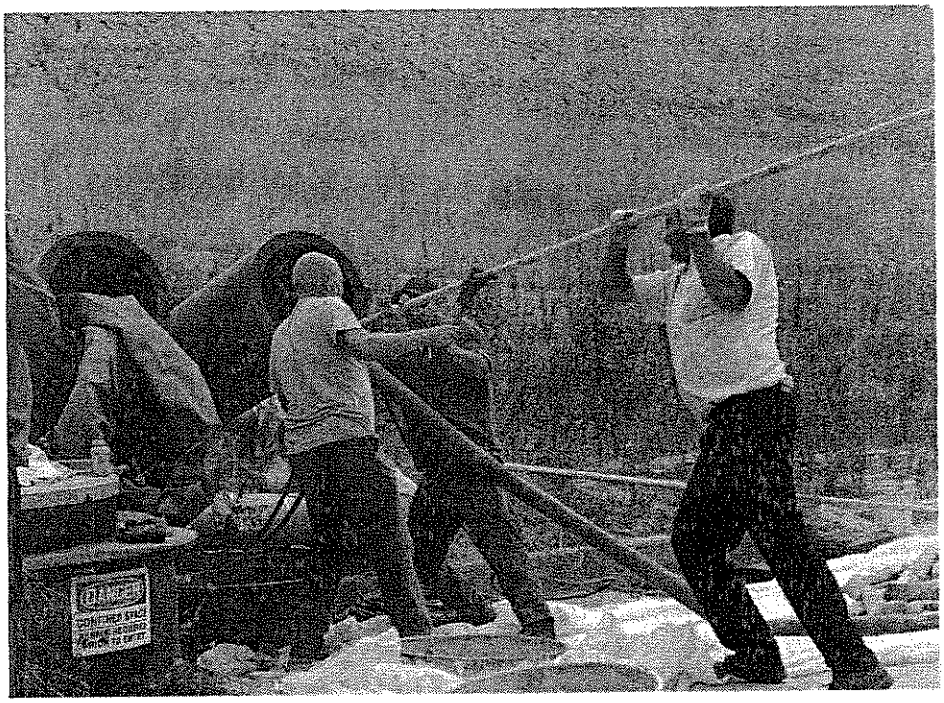
Envirosafe Services of Ohio (ESOI) Cell M Transducer Certification (2009)



Measurement confirmation of position of end of rod (transducer) relative to end of pump motor housing where attached to pump (typical-M5 & M6).

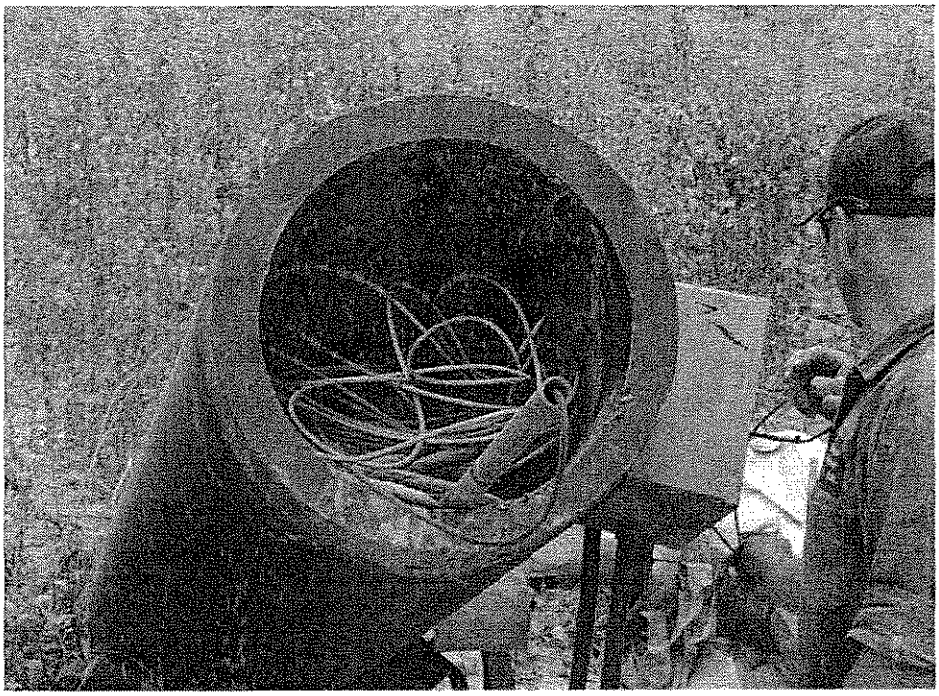
17

Envirosafe Services of Ohio (ESOI) Cell M Transducer Certification (2009)



Installation at M-5

Envirosafe Services of Ohio (ESOI) Cell M Transducer Certification (2009)



Galvanized steel rod in slope riser pipe following installation.

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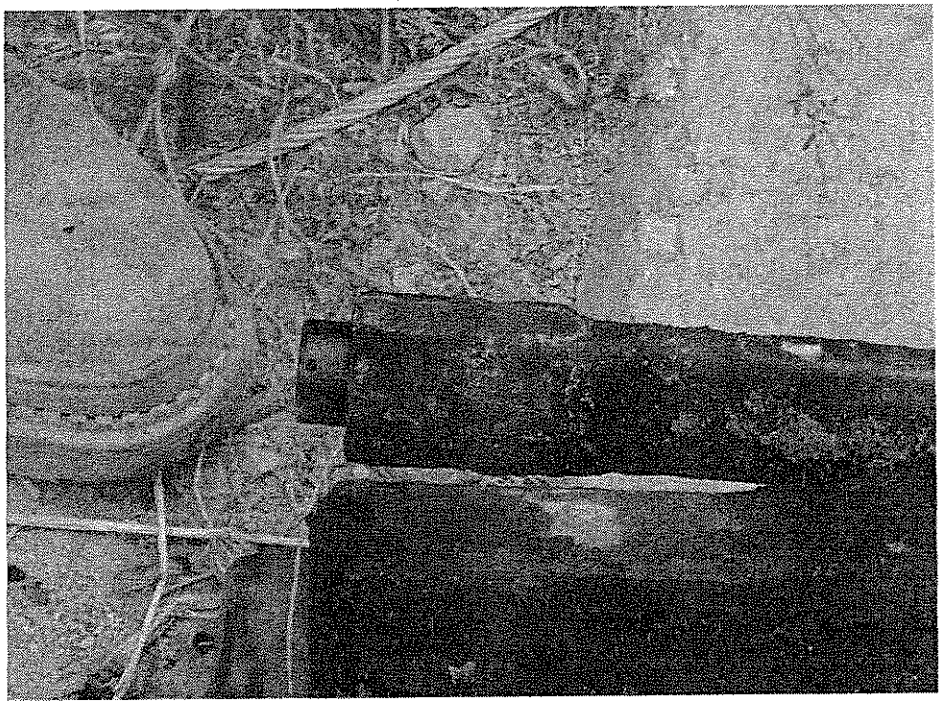
Envirosafe Services of Ohio (ESOI) Cell M Transducer Certification (2009)



Transducer installed in protective pipe.