ARCADIS

Appendix H

Restrictive Covenants

ARCADIS

Plant 2 AOI 2-15
Building 225 UST Farm

111

Paula Johnson
INGHAM COUNTY
REGISTER OF DEEDS

RECORDED L-3055 P-805
111 26.00 2003-072280

2003-072280
Page: 1 of 5
08/11/2003 03:06P

RESTRICTIVE COVENANT

The below listed owner/operator has implemented a corrective action plan requiring institutional controls in the form of a restrictive covenant. The corrective action plan was developed as a result of a release from a Leaking Underground Storage Tank(s) (LUST) and was prepared pursuant to the provisions in Section 21310a(2) of Part 213. Regulated substances were discovered during the investigation and/or removal of Underground Storage Tanks (USTs). The corrective action plan cited above will be maintained on file at the STD District Office located at

10650 Bennett Drive, Morrice, MI 48857-9792 (Shiawassee District Office)

This restrictive covenant is filed with the County Register of Deeds and covers the land identified in the following as the GM Lansing Plant #2 Building 225 Tank Farm Area, and more fully described in Attachment A, attached. The restrictive covenant defines the areas addressed by the corrective action plan and the scope of any land use or resources limitations. The survey defining the areas addressed by the corrective action plan is attached. Land and resource use limitations include the following:

1. Activities and/or uses which are likely to involve the removal and/or disturbance of the existing pavement within the area addressed by this Restrictive Covenant and/or the disturbance of the impacted soils located beneath the pavement without prior development of a Soil Management Plan[a] and Health and Safety Plan[b]. Promptly following the completion of invasive activities, the pavement must be repaired or replaced with comparable pavement to prevent access and/or exposure to the underlying soil.

2. Periodic maintenance of existing pavement and low permeability surfaces to prevent infiltration of precipitation and release of volatile organic compounds to ambient air from underlying soils;

3. Construction of buildings within the area addressed by this Restrictive Covenant without the installation of a passive venting system and vapor barrier and/or the performance of indoor air monitoring which adequately demonstrates that volatile organic compounds are not migrating into the building unless the completion of a Tier 2 exposure assessment in accordance with United States Environmental Protection Agency (USEPA) and Michigan Department of Environmental Quality guidelines identifies acceptable risk or impacted soils are removed from the site prior to building construction;

4. Installation of private water supply wells, including but not limited to drinking water and industrial supply wells, within the area addressed by this Restrictive Covenant;

5. Residential development, unless site soils are remediated to levels protective of potential residential exposures, as defined by the Michigan Department of Environmental Quality; and,

6. Soil removal and disturbance activities that would involve relocation of existing soils located at depths greater than 7.5 feet below ground surface to a new location with depths less than 7.5 feet without installation of an engineered vapor barrier.

[a] **Soil Management Plan**: The soil management plan should be prepared by a Qualified Consultant or Certified Professional and must describe soil excavation, handling, storage, transport, and disposal procedures. Additionally, the soil management plan must include a description of the engineering controls and air monitoring procedures necessary at the site to ensure that receptors in the vicinity of the site are not impacted by fugitive dust, particulates, or exposures to impacted soils via dermal contact, ingestion, and inhalation.

[b] **Health and Safety Plan**: The Health and Safety Plan must be prepared by a Certified Industrial Hygienist or other qualified professional familiar with worker health and safety procedures and requirements. The level of personal protection and engineering controls, dust mitigation procedures, and perimeter monitoring necessary to prevent worker and off-site receptor exposures to dusts generated during excavation or soil disturbance activities must be specified. The Health and Safety Plan must also detail the type of personal protective clothing, respiratory protection, environmental monitoring, and/or equipment necessary to minimize potential exposures to constituents in soil via direct dermal contact, ingestion, and inhalation.

The restrictive covenant is being filed by the below listed legal titleholder:

Owner/Operator implementing the corrective action plan: General Motors Corporation

Release Date(s): May 17, 1985

County where deed is registered: Ingham

Common description of land, township/city, County: 2801 West Saginaw Street, City of Lansing, Lansing Township, Ingham County, Michigan. The subject property is a portion of tax parcel 3321-01-18-227-001.

Now Therefore (Legal Titleholder Name and Address) General Motors Corporation, 920 Townsend Street Lansing, Michigan 48921,
(hereinafter referred to as the "titleholder"), hereby imposes restriction on the property and covenants and agrees that:

1. The Titleholder shall restrict activities on the property that may interfere with corrective action, operation and maintenance, monitoring, or other measures necessary to assure the effectiveness and integrity of the corrective action.

2. The Titleholder shall restrict activities that may result in exposure to regulated substances above levels established in the corrective action plan.

3. The Titleholder shall prevent a conveyance of title, an easement, or any other interest in the property from being consummated without adequate and complete provision for compliance with the corrective action plan and prevention of exposure to regulated substances described in item 2 above.

4. The Titleholder shall grant to the Department of Environmental Quality (Department) and its designated representatives the right to enter the property at reasonable times for the purpose of determining and monitoring compliance with the corrective action plan, including but not limited to the right to take samples, inspect the operation of the corrective action measures, and inspect records.

5. Soil shall not be removed from the property described herein, unless it is characterized to determine if it can be relocated without posing a threat to the public health, safety, welfare or environment in the new location.

6. The state may enforce the restrictions set forth in the covenant by legal action in a court of appropriate jurisdiction.

The restrictions and other requirements described in this Restrictive Covenant shall run with the land and be binding to the titleholder's successors, assigns, and lessees or their authorized agents, employees or persons acting under their direction or control. The restrictions shall apply until the Department determines that regulated substances no longer present an unacceptable risk to the public health, safety or welfare or to the environment. A copy of this Restrictive Covenant shall be provided to all heirs, successors, assigns, and transferees.

This Restrictive Covenant shall not be amended, modified or terminated except by a written instrument executed by and between the Titleholder at the time of the proposed amendment, modification, or termination, and the Department. Within five (5) days of executing an amendment, modification or termination of the Restrictive Covenant, the Titleholder shall record such amendment, modification or termination with the County Register of Deeds, previously named, and within five (5) days thereafter, the Titleholder shall provide a true copy of the recorded amendment, modification or termination to the Department.

If any provision of this Restrictive Covenant is also the subject of any laws or regulations established by any federal, state or local government, the stricter of the two standards shall prevail.

The undersigned person, if executing this Restrictive Covenant on behalf of the Titleholder, represents and certifies that they are duly authorized and have been fully empowered to execute and deliver this Restrictive Covenant.

I hereby attest to the accuracy of the statements in this document and all attachments. I further certify that the language on this form has not been modified in any way.

Legal Titleholder or Authorized Representative's Signature

JOHN K. BLANCHARD
DIRECTOR
WORLDWIDE REAL ESTATE

Print Legal Titleholder or Authorized Representative's Name

July 28 2003
Date

EXECUTION RECOMMENDED
WORLDWIDE REAL ESTATE
BY

IN WITNESS WHEREOF, the said Titleholder of the above described property has caused the Restrictive Covenant to be executed on the 28 day of July (month), 2003 (year)

Signed in the presence of:

Witness

Kathleen M. Manga

Print Witness' Name*

Witness

David G Spencer

Print Witness' Name*

* The notary shall not also serve as a witness.

The foregoing instrument was acknowledged before me this 28th day of July (month), 2003 (year)

by John K. Blanchard Director Worldwide Real Estate on behalf of

Sharon E. Boon, Notary Public

Wayne County, Michigan
(Insert County) (Insert State)

My Commission Expires: 12/17/2006

SHARON E. BOON
NOTARY PUBLIC WAYNE CO., MI
MY COMMISSION EXPIRES Dec 17, 2006

Drafted by:

Blasland Bouck + Lee, Inc.
Company Name

Amy L. Hoekzema
Print Name of Drafter

455 E. Eisenhower Pkwy Ann Arbor MI
Company Address

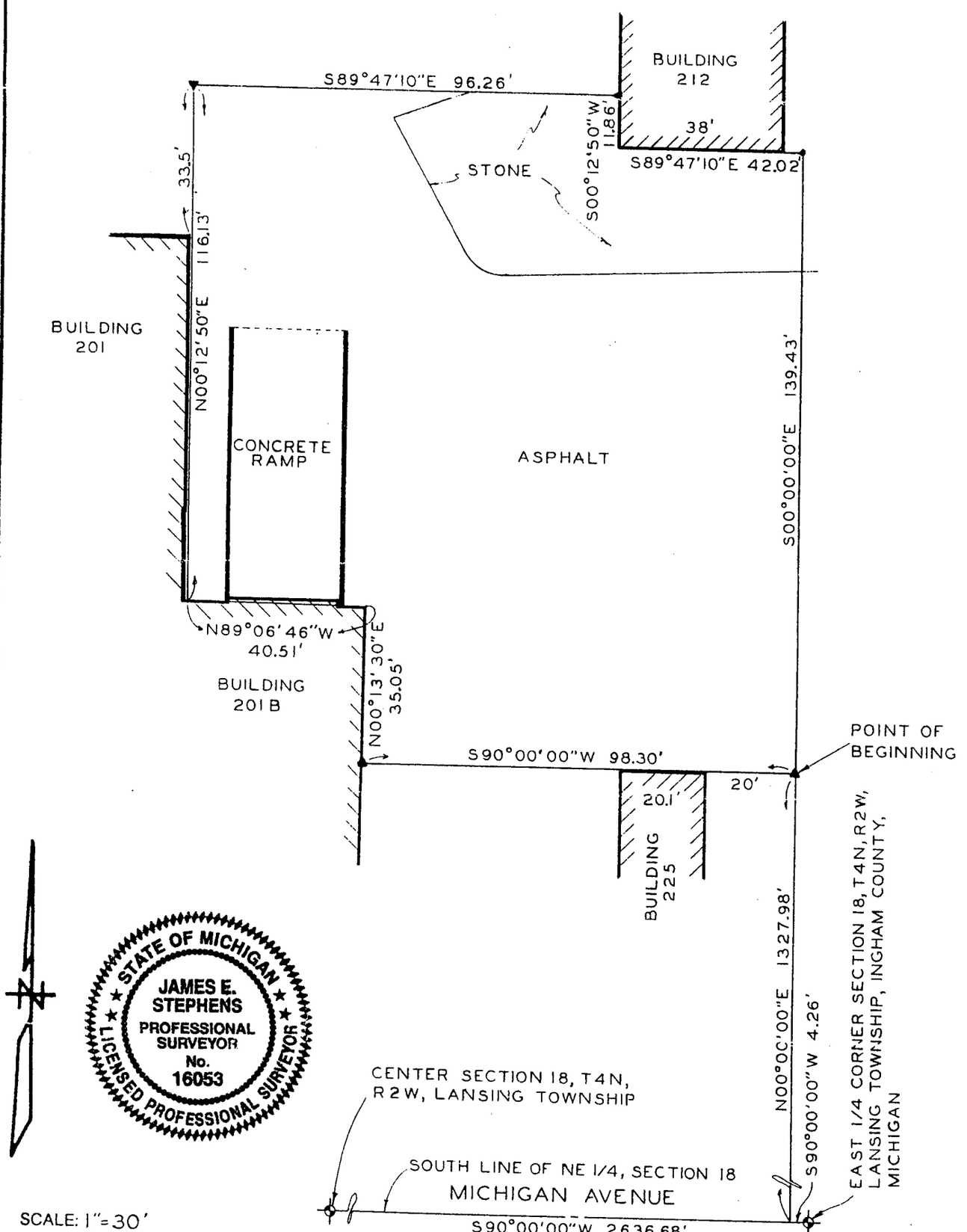
2003-072280
Page: 3 of 5
08/11/2003 03:06P

CERTIFICATE OF SURVEY

FOR General Motors Corporation
920 Townsend
Lansing, Michigan 48921

SURVEY OF PROPERTY LEGALLY DESCRIBED AS:

That part of the Northeast 1/4 of Section 18, T4N, R2W, Lansing Township, Ingham County, Michigan, commencing at the East 1/4 corner of Section 18; thence running along the South line of said Northeast 1/4 S90°00'00"W 4.26 feet; thence N00°00'00"E 1327.98 feet to the point of beginning; thence S90°00'00"W 98.30 feet; thence N00°13'30"E 35.05 feet; thence N89°06'46"W 40.51 feet; thence N00°12'50"E 116.13 feet; thence S89°47'10"E 96.26 feet; thence S00°12'50"W 11.86 feet; thence S89°47'10"E 42.02 feet; thence S00°00'00"E 139.43 feet to the point of beginning.



STATE OF MICHIGAN
JAMES E. STEPHENS
PROFESSIONAL SURVEYOR
No. 16053
LICENSED PROFESSIONAL SURVEYOR

SCALE: 1"=30'

THE UNDERSIGNED LICENSED PROFESSIONAL LAND SURVEYOR HEREBY CERTIFIES THAT A SURVEY WAS MADE UNDER HIS SUPERVISION OF THE PROPERTY SHOWN ON ANNEXED PLAT, AND THAT THE SKETCH INDICATES THE DIMENSIONS AND ENCROACHMENTS OF SAID PROPERTY.

LEGEND

- ● – IRON STAKE
- ▲ – CONCRETE NAIL
- O – MONUMENT
- X – X FENCE LINE
- ℄ – CENTER LINE
- R – RADIUS
- D – DEEDED DIMENSION
- M – MEASURED DIMENSION
- P – PLATTED

STEPHENS-KYES & ASSOCIATES, INC.
1401 EAST LANSING DRIVE, SUITE 112
EAST LANSING, MICHIGAN 48823 – PHONE (517) 351-2574

BY James E. Stephens

LICENSED PROFESSIONAL LAND SURVEYOR NO. 16053

DATE Oct. 2, 2000 DRAWING NO. L-20623

ARCADIS

Plant 2 AOI 2-16
Building 250 UST Farm

(5)

111

Paula Johnson
INGHAM COUNTY
REGISTER OF DEEDS RECORDED L-3055 P-804
111 26.00 2003-072279

2003-072279
Page: 1 of 5
08/11/2003 03:06P

RESTRICTIVE COVENANT

The below listed owner/operator has implemented a corrective action plan requiring institutional controls in the form of a restrictive covenant. The corrective action plan was developed as a result of a release from a Leaking Underground Storage Tank(s) (LUST) and was prepared pursuant to the provisions in Section 21310a(2) of Part 213. Regulated substances were discovered during the investigation and/or removal of Underground Storage Tanks (USTs). The corrective action plan cited above will be maintained on file at the STD District Office located at

10650 Bennett Drive, Morrice, MI 48857-9792 (Shiawassee District Office)

This restrictive covenant is filed with the County Register of Deeds and covers the land identified in the following as GM Lansing Plant #2 Building 250 Tank Farm Area, and more fully described in Attachment A, attached. The restrictive covenant defines the areas addressed by the corrective action plan and the scope of any land use or resources limitations. The survey defining the areas addressed by the corrective action plan is attached. Land and resource use limitations include the following:

1. Periodic maintenance of existing pavement and low permeability surfaces to prevent infiltration of precipitation. If excavation activities conducted within the area addressed by this Restrictive Covenant, the low permeability surface must be replaced where removed;

2. Installation of private water supply wells, including but not limited to drinking water and industrial supply wells, within the area addressed by this Restrictive Covenant; and

3. Residential development, unless site soils are remediated to levels protective of potential residential exposures, as defined by the Michigan Department of Environmental Quality.

The restrictive covenant is being filed by the below listed legal titleholder:

Owner/Operator implementing the corrective action plan: General Motors Corporation

Release Date(s): October 6, 1990

County where deed is registered: Ingham

Common description of land, township/city, County: 2801 West Saginaw Street, City of Lansing, Lansing Township, Ingham County, Michigan. The subject property is a portion of tax parcel 3321-01-18-227-001.

11 Amy Hodkinson

Now Therefore (Legal Titleholder Name and Address) General Motors Corporation, 920 Townsend Street Lansing, Michigan 48921,
(hereinafter referred to as the "titleholder"), hereby imposes restriction on the property and covenants and agrees that:

1. The Titleholder shall restrict activities on the property that may interfere with corrective action, operation and maintenance, monitoring, or other measures necessary to assure the effectiveness and integrity of the corrective action.

2. The Titleholder shall restrict activities that may result in exposure to regulated substances above levels established in the corrective action plan.

3. The Titleholder shall prevent a conveyance of title, an easement, or any other interest in the property from being consummated without adequate and complete provision for compliance with the corrective action plan and prevention of exposure to regulated substances described in item 2 above.

4. The Titleholder shall grant to the Department of Environmental Quality (Department) and its designated representatives the right to enter the property at reasonable times for the purpose of determining and monitoring compliance with the corrective action plan, including but not limited to the right to take samples, inspect the operation of the corrective action measures, and inspect records.

5. Soil shall not be removed from the property described herein, unless it is characterized to determine if it can be relocated without posing a threat to the public health, safety, welfare or environment in the new location.

6. The state may enforce the restrictions set forth in the covenant by legal action in a court of appropriate jurisdiction.

The restrictions and other requirements described in this Restrictive Covenant shall run with the land and be binding to the titleholder's successors, assigns, and lessees or their authorized agents, employees or persons acting under their direction or control. The restrictions shall apply until the Department determines that regulated substances no longer present an unacceptable risk to the public health, safety or welfare or to the environment. A copy of this Restrictive Covenant shall be provided to all heirs, successors, assigns, and transferees.

This Restrictive Covenant shall not be amended, modified or terminated except by a written instrument executed by and between the Titleholder at the time of the proposed amendment, modification, or termination, and the Department. Within five (5) days of executing an amendment, modification or termination of the Restrictive Covenant, the Titleholder shall record such amendment, modification or termination with the County Register of Deeds, previously named, and within five (5) days thereafter, the Titleholder shall provide a true copy of the recorded amendment, modification or termination to the Department.

If any provision of this Restrictive Covenant is also the subject of any laws or regulations established by any federal, state or local government, the stricter of the two standards shall prevail.

The undersigned person, if executing this Restrictive Covenant on behalf of the Titleholder, represents and certifies that they are duly authorized and have been fully empowered to execute and deliver this Restrictive Covenant.



I hereby attest to the accuracy of the statements in this document and all attachments. I further certify that the language on this form has not been modified in any way.

Legal Titleholder or Authorized Representative's Signature — Date: July 28, 2003

JOHN K. BLANCHARD
DIRECTOR
WORK[illegible] OF REAL E[illegible]

Print Legal Titleholder or Authorized Representative's Name

EXECUTION RECOMMENDED
WAYNE COUNTY REAL ESTATE

IN WITNESS WHEREOF, the said Titleholder of the above described property has caused the Restrictive Covenant to be executed on the 28 day of July (month), 2003 (year)

Signed in the presence of:

Witness — Kathleen M. Manga

Kathleen M. Manga

Print Witness' Name*

Witness

David G Spencer

Print Witness' Name*

* The notary shall not also serve as a witness.

The foregoing instrument was acknowledged before me this 28th day of July (month), 2003 (year)

by John K. Blanchard, Director Wayne County Real Estate Management 08/08/03

Sharon E. Boon, Notary Public

Wayne County (Insert County), Michigan (Insert State)

My Commission Expires: 12/17/2006

SHARON E. BOON
NOTARY PUBLIC WAYNE CO., MI
MY COMMISSION EXPIRES Dec 17, 2006

Drafted by:

Bluestand, Brucker + Lee, Inc.
Company Name

Amy L. Hoeksema
Print Name of Drafter

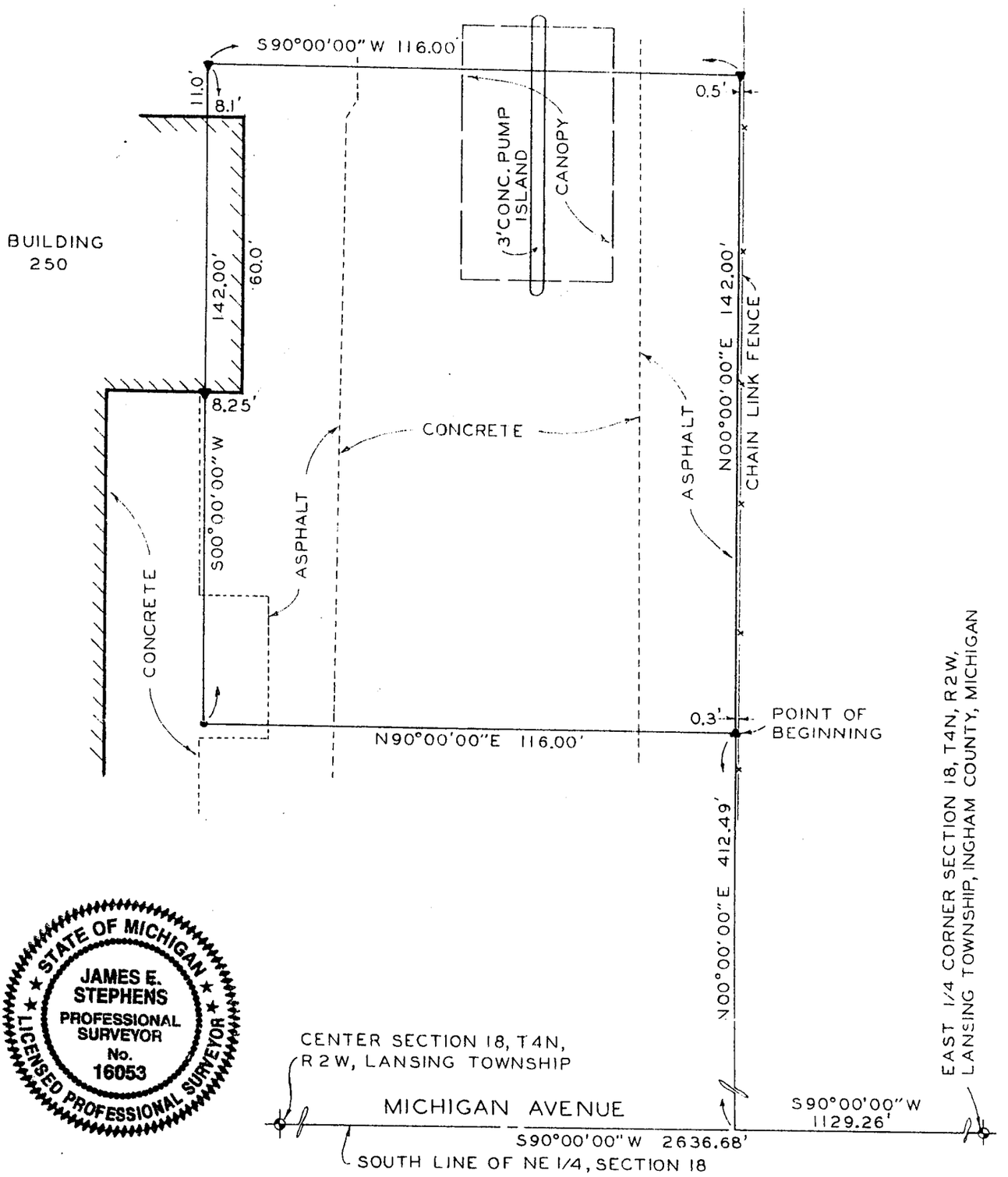
455 E. Eisenhower Pkwy, Ann Arbor, MI
Company Address

CERTIFICATE OF SURVEY

FOR General Motors Corporation
920 Townsend
Lansing, Michigan 48921

SURVEY OF PROPERTY LEGALLY DESCRIBED AS:

That part of the Northeast 1/4 of Section 18, T4N, R2W, Lansing Township, Ingham County, Michigan, commencing at the East 1/4 corner of Section 18; thence running along the South line of said Northeast 1/4 S90°00'00"W 1129.26 feet; thence N00°00'00"E 412.49 feet to the point of beginning; thence continuing N00°00'00"E 142.00 feet; thence S90°00'00"W 116.00 feet; thence S00°00'00"W 142.00 feet; thence N90°00'00"E 116.00 feet to the point of beginning.



STATE OF MICHIGAN
JAMES E. STEPHENS
PROFESSIONAL SURVEYOR
No. 16053
LICENSED PROFESSIONAL SURVEYOR

SCALE: 1"= 30'

THE UNDERSIGNED LICENSED PROFESSIONAL LAND SURVEYOR HEREBY CERTIFIES THAT A SURVEY WAS MADE UNDER HIS SUPERVISION OF THE PROPERTY SHOWN ON ANNEXED PLAT, AND THAT THE SKETCH INDICATES THE DIMENSIONS AND ENCROACHMENTS OF SAID PROPERTY.

LEGEND

- • – IRON STAKE
- ▲ – CONCRETE NAIL
- O – MONUMENT
- X – X FENCE LINE
- ℄ – CENTER LINE
- R – RADIUS
- D – DEEDED DIMENSION
- M – MEASURED DIMENSION
- P – PLATTED

STEPHENS-KYES & ASSOCIATES, INC.
1401 EAST LANSING DRIVE, SUITE 112
EAST LANSING, MICHIGAN 48823 – PHONE (517) 351-2574

BY James E. Stephens

LICENSED PROFESSIONAL LAND SURVEYOR NO. 16053

DATE Oct. 3, 2000 DRAWING NO. L-20622

ARCADIS

Plant 3 AOI 3-9
Building 301 UST Farm

(5)

111

Paula Johnson
INGHAM COUNTY
REGISTER OF DEEDS RECORDED L-3055 P-803
111 26.00 2003-072278

2003-072278
Page: 1 of 5
08/11/2003 03:06P

RESTRICTIVE COVENANT

The below listed owner/operator has implemented a corrective action plan requiring institutional controls in the form of a restrictive covenant. The corrective action plan was developed as a result of a release from a Leaking Underground Storage Tank(s) (LUST) and was prepared pursuant to the provisions in Section 21310a(2) of Part 213. Regulated substances were discovered during the investigation and/or removal of Underground Storage Tanks (USTs). The corrective action plan cited above will be maintained on file at the STD District Office located at

10650 Bennett Drive, Morrice, MI 48857-9792 (Shiawassee District Office)

This restrictive covenant is filed with the County Register of Deeds and covers the land identified in the following as GM Lansing Plant #3 Tank Farm Area, and more fully described in Attachment A, attached. The restrictive covenant defines the areas addressed by the corrective action plan and the scope of any land use or resources limitations. The survey defining the areas addressed by the corrective action plan is attached. Land and resource use limitations include the following:

1. Activities and/or uses which are likely to involve the removal and/or disturbance of the existing pavement within the area addressed by the Restrictive Covenant and/or the disturbance of the impacted soils located beneath the pavement without prior development of a Soil Management Plan[a]. Promptly following the completion of invasive activities, the pavement must be repaired or replaced with comparable pavement to prevent access and/or exposure to the underlying soil.

2. Periodic maintenance of existing pavement and low permeability surfaces to prevent infiltration of precipitation through underlying soils and leaching of constituents in underlying soils to groundwater;

3. Construction of buildings within the area addressed by this Restrictive Covenant without the installation of a passive venting system and vapor barrier and/or the performance of indoor air monitoring which adequately demonstrates that volatile organic compounds are not migrating into the building, unless impacted soils are removed from the site prior to building construction or unless completion of a Tier 2 exposure assessment in accordance with the United States Environmental Protection Agency (USEPA) and Michigan Department of Environmental Quality guidelines identifies acceptable risk;

4. Installation of private water supply wells, including but not limited to drinking water and industrial supply wells, within the area addressed by this Restrictive Covenant; and

5. Residential development, unless site soils are remediated to levels protective of potential residential exposures, as defined by the Michigan Department of Environmental Quality.

[a] **Soil Management Plan**: The soil management plan should be prepared by a Qualified Consultant or Certified Professional and must describe soil excavation, handling, storage, transport, and disposal procedures. Additionally, the soil management plan must include a description of the engineering controls and air monitoring procedures

// Amy Hoeksema

necessary at the site to ensure that receptors in the vicinity of the site are not impacted by fugitive dust, particulates, or exposures to impacted soils via dermal contact, ingestion, and inhalation.

The restrictive covenant is being filed by the below listed legal titleholder:

Owner/Operator implementing the corrective action plan: General Motors Corporation

Release Date(s): May 17, 1985

County where deed is registered: Ingham

Common description of land, township/city, County: 2800 West Saginaw Street, City of Lansing, Lansing Township, Ingham County, Michigan. The subject property is a portion of tax parcel 3321-01-07-426-001.

Now Therefore (Legal Titleholder Name and Address) General Motors Corporation, 920 Townsend Street, Lansing, Michigan 48921,
(hereinafter referred to as the "titleholder"), hereby imposes restriction on the property and covenants and agrees that:

1. The Titleholder shall restrict activities on the property that may interfere with corrective action, operation and maintenance, monitoring, or other measures necessary to assure the effectiveness and integrity of the corrective action.

2. The Titleholder shall restrict activities that may result in exposure to regulated substances above levels established in the corrective action plan.

3. The Titleholder shall prevent a conveyance of title, an easement, or any other interest in the property from being consummated without adequate and complete provision for compliance with the corrective action plan and prevention of exposure to regulated substances described in item 2 above.

4. The Titleholder shall grant to the Department of Environmental Quality (Department) and its designated representatives the right to enter the property at reasonable times for the purpose of determining and monitoring compliance with the corrective action plan, including but not limited to the right to take samples, inspect the operation of the corrective action measures, and inspect records.

5. Soil shall not be removed from the property described herein, unless it is characterized to determine if it can be relocated without posing a threat to the public health, safety, welfare or environment in the new location.

6. The state may enforce the restrictions set forth in the covenant by legal action in a court of appropriate jurisdiction.

The restrictions and other requirements described in this Restrictive Covenant shall run with the land and be binding to the titleholder's successors, assigns, and lessees or their authorized agents, employees or persons acting under their direction or control. The restrictions shall apply until the Department determines that regulated substances no longer present an unacceptable risk to the public health, safety or welfare or to the environment. A copy of this Restrictive Covenant shall be provided to all heirs, successors, assigns, and transferees.

This Restrictive Covenant shall not be amended, modified or terminated except by a written instrument executed by and between the Titleholder at the time of the proposed amendment, modification, or termination, and the Department. Within five (5) days of executing an amendment, modification or termination of the Restrictive Covenant, the Titleholder shall record such amendment, modification or termination with the County Register of Deeds, previously named, and within five (5) days thereafter, the Titleholder shall provide a true copy of the recorded amendment, modification or termination to the Department.

If any provision of this Restrictive Covenant is also the subject of any laws or regulations established by any federal, state or local government, the stricter of the two standards shall prevail.

The undersigned person, if executing this Restrictive Covenant on behalf of the Titleholder, represents and certifies that they are duly authorized and have been fully empowered to execute and deliver this Restrictive Covenant.



I hereby attest to the accuracy of the statements in this document and all attachments. I further certify that the language on this form has not been modified in any way.

Legal Titleholder or Authorized Representative's Signature

JOHN K. BLANCHARD
DIRECTOR
WORLDWIDE REAL ESTATE

Print Legal Titleholder or Authorized Representative's Name

July 28, 2003
Date

EXECUTION RECOMMENDED
WORLDWIDE REAL ESTATE
BY

IN WITNESS WHEREOF, the said Titleholder of the above described property has caused the Restrictive Covenant to be executed on the 28 day of July (month), 2003 (year)

Signed in the presence of:

Witness

Kathleen M. Manga

Print Witness' Name*

Witness

DAVID G. SPENCER
Print Witness' Name*

* The notary shall not also serve as a witness.

The foregoing instrument was acknowledged before me this 28th day of July (month), 2003 (year)

by John K. Blanchard, Director, Worldwide Real Estate authorized 08/08/03

Sharon E. Boon, Notary Public

Wayne County, Michigan
(Insert County) (Insert State)

My Commission Expires: 12/17/2006

SHARON E. BOON
NOTARY PUBLIC WAYNE CO., MI
MY COMMISSION EXPIRES Dec 17, 2006

Drafted by:

Blanchard, Boucke & Lee Inc.
Company Name

Amy L. Hoeksema
Print Name of Drafter

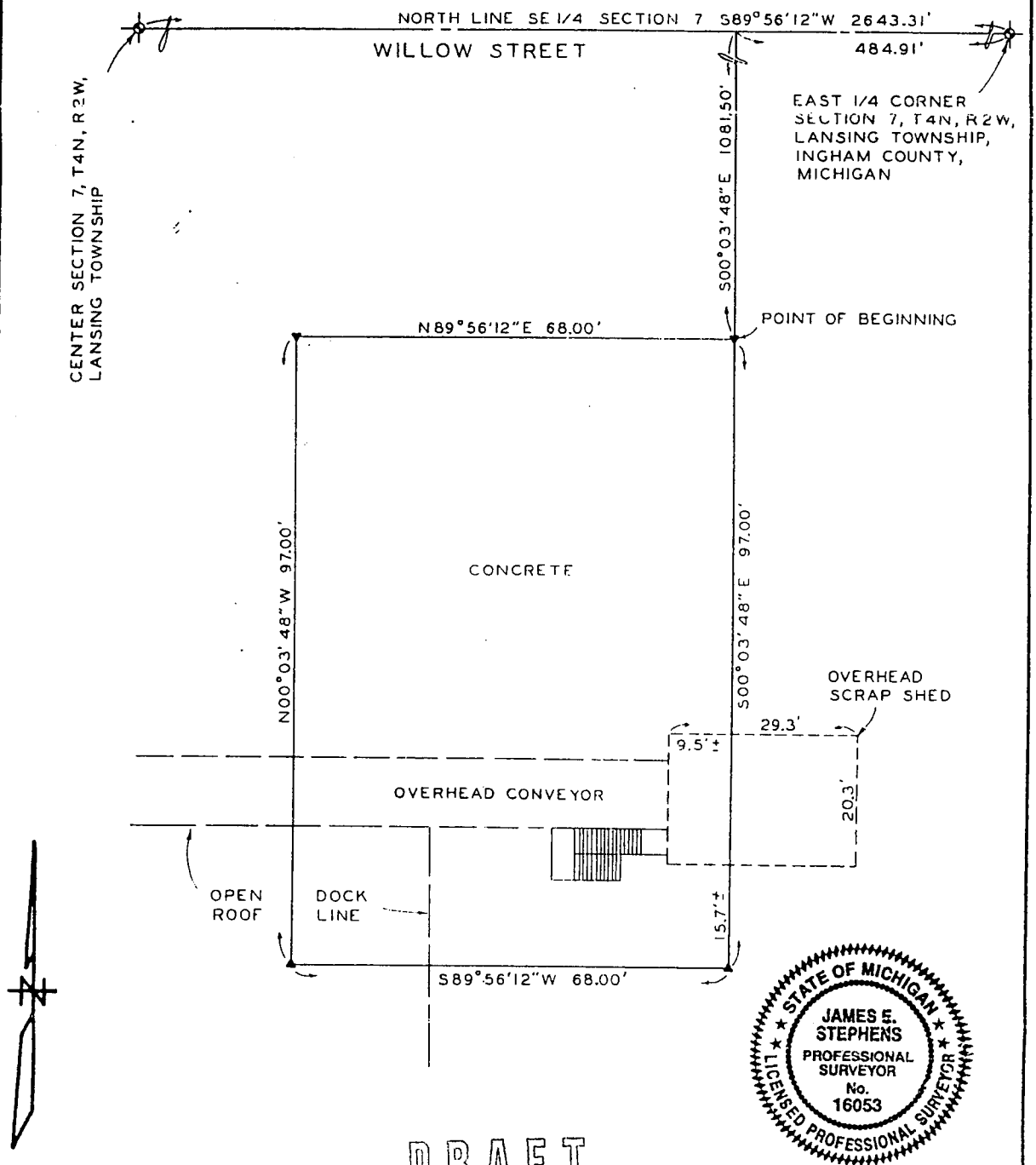
455 E. Eisenhower Pkwy. Ann Arbor, MI
Company Address

CERTIFICATE OF SURVEY

FOR General Motors
920 Townsend
Lansing, Michigan 48921

SURVEY OF PROPERTY LEGALLY DESCRIBED AS

That part of the Southeast 1/4 of Section 7, T4N, R2W, Lansing Township, Ingham County, Michigan, commencing at the East 1/4 corner of Section 7; thence running along the North line of said Southeast 1/4 S89°56'12"W 484.91 feet; thence S00°03'48"E 1081.50 feet to the point of beginning; thence continuing S00°03'48"E 97.00 feet; thence S89°56'12"W 68.00 feet; thence N00°03'48"W 97.00 feet; thence N89°56'12"E 68.00 feet to the point of beginning.



DRAFT

SCALE: 1"=20'

THE UNDERSIGNED LICENSED PROFESSIONAL LAND SURVEYOR HEREBY CERTIFIES THAT A SURVEY WAS MADE UNDER HIS SUPERVISION OF THE PROPERTY SHOWN ON ANNEXED PLAT, AND THAT THE SKETCH INDICATES THE DIMENSIONS AND ENCROACHMENTS OF SAID PROPERTY.

LEGEND

- ● – IRON STAKE
- O – MONUMENT
- X – X FENCE LINE
- ℄ – CENTER LINE
- R – RADIUS
- D – DEEDED DIMENSION
- M – MEASURED DIMENSION
- P – PLATTED
- ▲ – CONCRETE NAIL

STEPHENS-KYES & ASSOCIATES, INC.
1401 EAST LANSING DRIVE, SUITE 172
EAST LANSING, MICHIGAN 48823 – PHONE (517) 351-2574

BY James E. Stephens

LICENSED PROFESSIONAL LAND SURVEYOR NO. 16053

DATE Oct. 6, 2000 DRAWING NO. L-20624

ARCADIS

Plant 6 AOI 6-16
Tanks 5 and 6

RESTRICTIVE COVENANT

General Motors Corporation of 920 Townsend, Lansing, Michigan 48921 (hereinafter "Owner") has implemented a corrective action plan requiring institutional controls in the form of a Restrictive Covenant. The corrective action plan was developed as a result of releases from leaking underground storage tanks and was prepared pursuant to the provisions in Section 21310a(2) of NREPA. Regulated substances were discovered during the investigation and/or removal of underground storage tanks.

This Restrictive Covenant is being filed with the Ingham County Register of Deeds and covers lands commonly known as General Motors Corporation, Body Plant, Lansing, Michigan and more fully described in Exhibit A attached (the "Property"). The Restrictive Covenant defines the areas addressed by the corrective action plan and the scope of any land use or resources limitations. A drawing defining those portions of the Property addressed by the corrective action plan and this Restrictive Covenant ("Impacted Areas") is attached as Exhibit B. Land and resource use limitations include the following:

The following preventative maintenance, monitoring and other activities shall be performed:

a. Maintenance of current low permeable surfaces that cover Impacted Areas or provision of the installation of alternative low permeability surfaces if replacement of existing surfaces becomes necessary.

b. Development of procedures for performing intrusive work in Impacted Areas to ensure the health and safety of workers, and the protection of the public and the environment.

Now therefore Owner hereby imposes restriction on the Property and Impacted Areas and covenants and agrees that:

1. The Owner shall restrict activities on the Property that may interfere with correction action, operation and maintenance, monitoring, or other measures necessary to assure the effectiveness and integrity of the corrective action.

2. The Owner shall restrict activities that may result in exposure to regulated substances above levels established in the corrective action plan.

3. The Owner shall prevent a conveyance of title, an easement, or any other interest in the Property from being consummated without adequate and complete provision for compliance with the corrective action plan and prevention of exposure to regulated substances described in Item 2 above.

4. The Owner shall grant to the Department of Environmental Quality ("Department") and its designated representatives the right to enter the Property at reasonable times for the purposes of determining and monitoring compliance with the corrective action plan, including but not limited to the right to take samples, inspect the operation of the corrective action measures, and inspect records.

5. Soil shall not be removed from the Impacted Areas unless it is characterized to determine it can be relocated without posing a threat to the public health, safety, welfare or environment in the new location.

6. The state may enforce the restrictions set forth in the covenant by legal action in a court of appropriate jurisdiction.

The restrictions and other requirements described in this Restrictive Covenant shall run with the land and be binding on the Owner's successors, assigns, and lessees or their authorized agents, employees, or persons acting under their direction or control. The restrictions shall apply until the Department determines that regulated substances no longer present an unacceptable risk to the public health, safety, or welfare, or to the environment. A copy of this Restrictive Covenant shall be provided to all heirs, successors, assigns, and transferees.

This Restrictive Covenant shall not be amended, modified, or terminated except by a written instrument executed by and between the Owner at the time of the proposed amendment, modification, or termination, and the Department. Within five (5) days of executing an amendment, modification, or termination of the Restrictive Covenant, the Owner shall record such amendment, modification, or termination with the Ingham County Register of Deeds, and within five (5) days after receipt by Owner of the recorded document, Owner shall provide a true copy of the recorded amendment, modification, or termination to the Department.

If any provision of this Restrictive Covenant is also the subject of any laws or regulations established by any federal, state, or local government, the stricter of the two standards shall prevail.

The undersigned person executing this Restrictive Covenant on behalf of the Owner represents and certifies that they are duly authorized and have been fully empowered to execute and deliver this Restrictive Covenant.

We hereby attest to the accuracy of the statements in this document and all attachments.

In witness whereof, the said Owner of the described Property has caused this Restrictive Covenant to be executed on this ___ day of _____, 1996.

Witnesses:

_____

_____

Owners:

General Motors Corporation

By: _____

Its: _____

State of Michigan)
)
County of)

The foregoing instrument was acknowledged before me this ___ day of October 1996 by _____ _____, _____ of General Motors Corporation, a _____ corporation, on behalf of the corporation.

_____

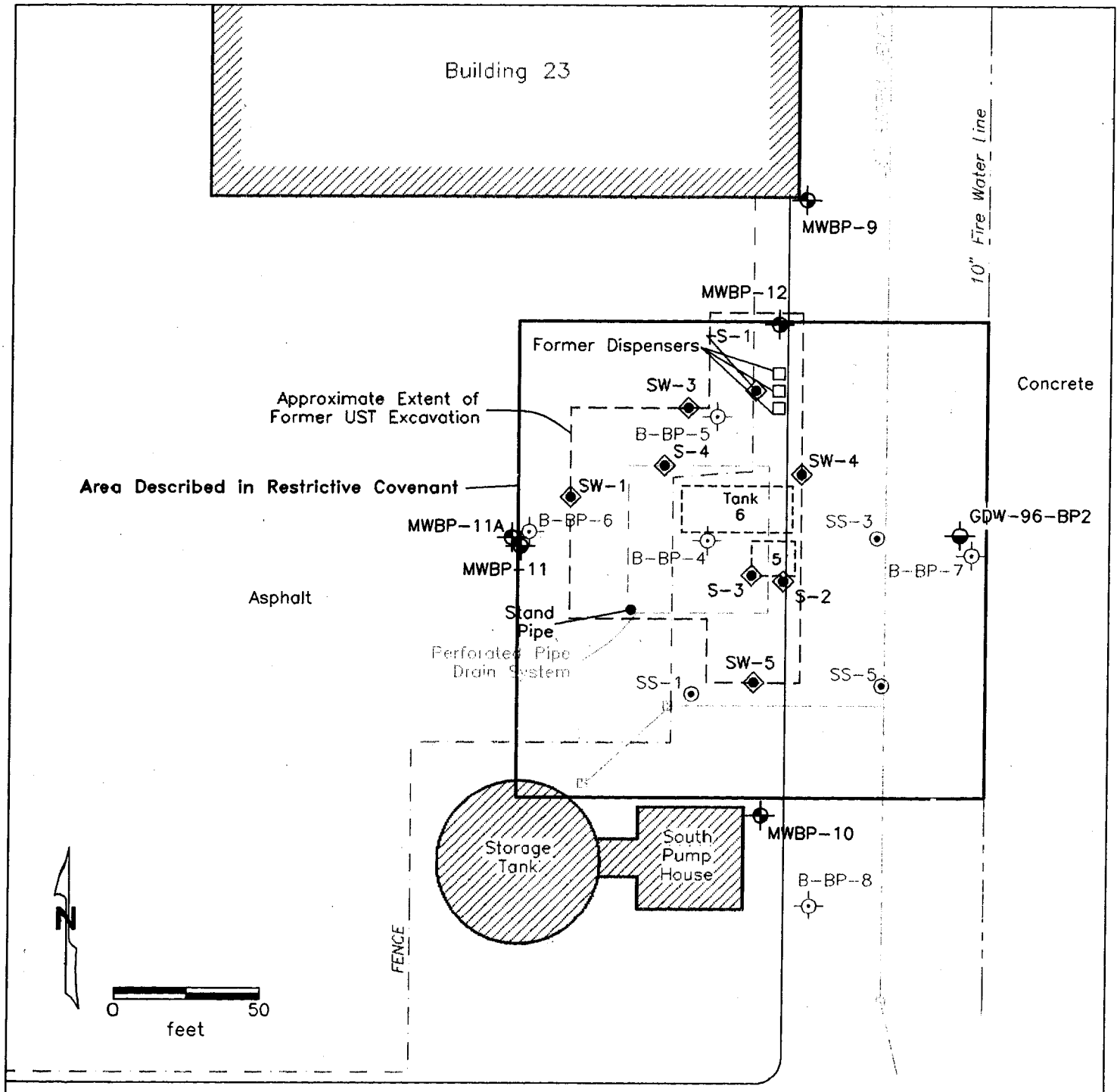
Notary Public, _____ County, MI
My Commission expires: _____

Prepared by:

Return to:

J:\X0\4696039D.003

Exhibit B



- Soil Sample Location
- Soil Boring Location
- Monitoring Well Location
- Temporary Well Location
- Hand Auger Boring Location
- Catch Basin Location

Area Described in Restrictive Covenant

Body Plant USTs 5 & 6,
General Motors Corporation
Lansing Automotive Division

City of Lansing,
Ingham County, Michigan

Environmental Science & Engineering, Inc.

DVL 08/18/95 4696-039-0003
Revised JCF 09/25/96 GMLB5ARC
Adapted from URS Consultants, Inc. drawing 35349, 8/2/94.

ARCADIS

Plant 6 AOI 6-17
Tanks 1 Through 4

RESTRICTIVE COVENANT

General Motors Corporation of 920 Townsend, Lansing, Michigan 48921 (hereinafter "Owner") has implemented a corrective action plan requiring institutional controls in the form of a Restrictive Covenant. The corrective action plan was developed as a result of releases from leaking underground storage tanks and was prepared pursuant to the provisions in Section 21310a(2) of NREPA. Regulated substances were discovered during the investigation and/or removal of underground storage tanks.

This Restrictive Covenant is being filed with the Ingham County Register of Deeds and covers lands commonly known as General Motors Corporation, Body Plant, Lansing, Michigan and more fully described in Exhibit A attached (the "Property"). The Restrictive Covenant defines the areas addressed by the corrective action plan and the scope of any land use or resources limitations. A drawing defining those portions of the Property addressed by the corrective action plan and this Restrictive Covenant ("Impacted Areas") is attached as Exhibit B. Land and resource use limitations include the following:

The following preventative maintenance, monitoring and other activities shall be performed:

a. Maintenance of current low permeable surfaces that cover Impacted Areas or provision of the installation of alternative low permeability surfaces if replacement of existing surfaces becomes necessary.

b. Development of procedures for performing intrusive work in Impacted Areas to ensure the health and safety of workers, and the protection of the public and the environment.

Now therefore Owner hereby imposes restriction on the Property and Impacted Areas and covenants and agrees that:

1. The Owner shall restrict activities on the Property that may interfere with correction action, operation and maintenance, monitoring, or other measures necessary to assure the effectiveness and integrity of the corrective action.

2. The Owner shall restrict activities that may result in exposure to regulated substances above levels established in the corrective action plan.

3. The Owner shall prevent a conveyance of title, an easement, or any other interest in the Property from being consummated without adequate and complete provision for compliance with the corrective action plan and prevention of exposure to regulated substances described in Item 2 above.

4. The Owner shall grant to the Department of Environmental Quality ("Department") and its designated representatives the right to enter the Property at reasonable times for the purposes of determining and monitoring compliance with the corrective action plan, including but not limited to the right to take samples, inspect the operation of the corrective action measures, and inspect records.

5. Soil shall not be removed from the Impacted Areas unless it is characterized to determine it can be relocated without posing a threat to the public health, safety, welfare or environment in the new location.

6. The state may enforce the restrictions set forth in the covenant by legal action in a court of appropriate jurisdiction.

RESTRICTIVE COVENANT
- Continued -

The restrictions and other requirements described in this Restrictive Covenant shall run with the land and be binding on the Owner's successors, assigns, and lessees or their authorized agents, employees, or persons acting under their direction or control. The restrictions shall apply until the Department determines that regulated substances no longer present an unacceptable risk to the public health, safety, or welfare, or to the environment. A copy of this Restrictive Covenant shall be provided to all heirs, successors, assigns, and transferees.

This Restrictive Covenant shall not be amended, modified, or terminated except by a written instrument executed by and between the Owner at the time of the proposed amendment, modification, or termination, and the Department. Within five (5) days of executing an amendment, modification, or termination of the Restrictive Covenant, the Owner shall record such amendment, modification, or termination with the Ingham County Register of Deeds, and within five (5) days after receipt by Owner of the recorded document, Owner shall provide a true copy of the recorded amendment, modification, or termination to the Department.

If any provision of this Restrictive Covenant is also the subject of any laws or regulations established by any federal, state, or local government, the stricter of the two standards shall prevail.

The undersigned person executing this Restrictive Covenant on behalf of the Owner represents and certifies that they are duly authorized and have been fully empowered to execute and deliver this Restrictive Covenant.

We hereby attest to the accuracy of the statements in this document and all attachments.

In witness whereof, the said Owner of the described Property has caused this Restrictive Covenant to be executed on this _____ day of _____, 1996.

Witnesses:

_____

_____

Owners:

General Motors Corporation

By: _____

Its: _____

State of Michigan)
)
County of)

The foregoing instrument was acknowledged before me this _____ day of October 1996 by _____, _____ of General Motors Corporation, a _____corporation, on behalf of the corporation.

_____

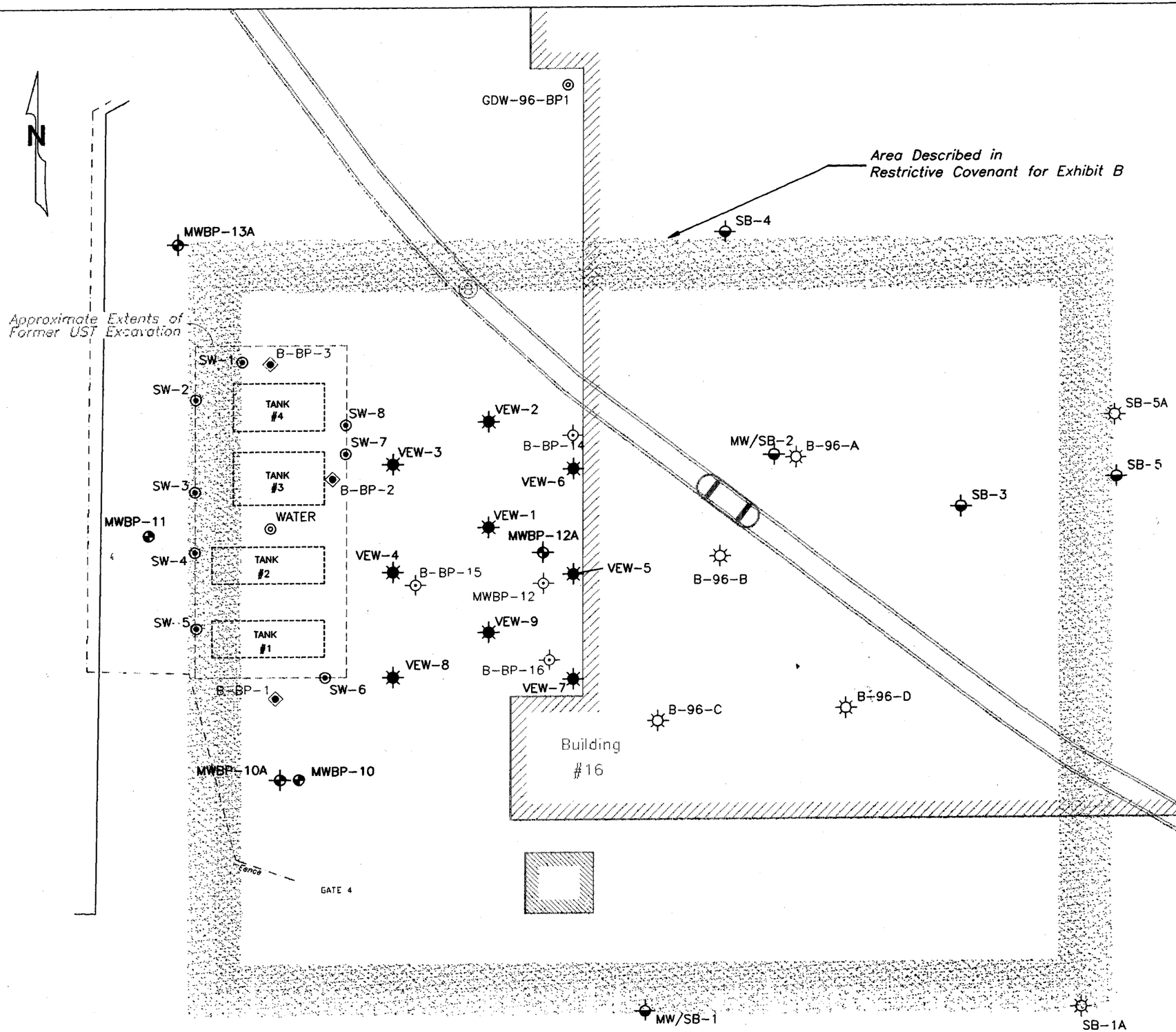
Notary Public, _____ County, MI
My Commission expires:

Prepared by:

Return to:

Area Descibed in Restrictive Covenant

Body Plant, USTs 1–4
General Motors Corporation–
Lansing Facility
City of Lansing,
Ingham County, Michigan



- Soil Boring Location (ESE–1996)
- Vapor Extraction Well Location (ESE–1995)
- Soil Boring Location (ABB)
- Soil Boring Location (URS)
- Soil Boring Location (SME–1995)
- Monitoring Well Location (ABB)
- Monitoring Well Location (URS)
- Soil Sample Location (ABB–1991)
- Groundwater Sampling Location

Approximate Scale

0 20 40
feet

Note: The Location and Scale of Features Inside of Building #16 are Approximate.

Environmental Science & Engineering, Inc.

JCF 09/25/95 4696-039-0003
Revised JCF 10/31/96 GMLBPEB

Adapted from URS Consultants drawing, 8/2/94 and SME drawing, 1/30/96.

ARCADIS

Plant 6 AOI 6-91
Dock 9 Hydraulic Oil Release

309

Paula Johnson
INGHAM COUNTY
REGISTER OF DEEDS
KURT CUNNINGHAM

RECORDED L-2888 P-557
309 19.00 2001-012375

2001-012375
Page: 1 of 6
03/23/2001 09:05A

NOTICE OF APPROVED ENVIRONMENTAL REMEDIATION

MDEQ Reference No.: NAER-ERD-01-003

This Notice of Approved Environmental Remediation (Notice) describes the environmental cleanup category and the land use restrictions approved by the Michigan Department of Environmental Quality (MDEQ) for the General Motors Corporation (GM) property located in the City of Lansing, County of Ingham, (the "Property").

Property Tax ID Number of Property: 3301-17-101-023

This Notice was filed by GM and recorded with the Ingham County Register of Deeds to protect public health, safety or welfare, or the environment.

On February 23, 2001 * (Date changed per MDEQ request) ~~2, 1996~~ the MDEQ approved GM's Remedial Action Plan (RAP) to address environmental conditions at the Property that are regulated under Part 201 of the Natural Resources and Environmental Protection Act (NREPA), 1994 PA 451, as amended, MCL 324.20101 et seq.

Refer to Attachment A for the legal description of the Property and a survey of the area subject to Industrial land use restrictions.

The RAP is based on the Industrial land use criteria specified in Section 20120a(1)(d) of Part 201 of the NREPA. Therefore, use of the Property described in Attachment A is restricted to Industrial land use or use that is consistent with the assumptions and basis for the cleanup criteria established under Section 20120a(1)(d) of Part 201 of NREPA. Cleanup criteria and associated land use descriptions are located in the Government Documents section of the State of Michigan Library.

Refer to Attachment B for a description of the Industrial land use category.

As used herein, the term "owner" shall mean at any given time the then current titleholder of the Property.

The owner acknowledges that:

1. The owner or person transferring the interest of the Property shall provide a copy of this Notice to all future owners, heirs, successors, lessees, assigns or transferees.

2. All restrictions contained in this Notice shall be binding upon all future owners, successors, lessees or assigns and their authorized agents, employees, or persons acting under their direction and control.

3. All restrictions contained in this Notice shall run with the Property until the MDEQ or its successor approves modifications or rescission of this Notice.

= Kurt Cunningham 2663 Eaton Rapids Rd. 48911

The owner also acknowledges that:

1. Surface and subsurface soils on the Property contained within the restricted area described in Attachment A shall be managed following the requirements of Section 20120c of Part 201 of NREPA and other applicable state and federal laws.

2. The pavement over the restricted area, which acts as a cover and exposure barrier, must be maintained to prevent the migration of hydraulic oil, fumes or mist to the surface soil, and to prevent uncontrolled exposure to hazardous substances in the soil.

3. The restricted area described in Attachment A will be delineated in underground drawings and reviewed prior to conducting subsurface work to protect subsurface workers from exposure to hazardous substances in the soil.

The undersigned person executing this Notice is the Owner, or has the express written permission of the Owner, and represents and certifies that he or she is duly authorized and has been empowered to execute and deliver this Notice.

IN WITNESS WHEREOF, the said Owner of the above-described Property has caused this Notice to be executed on this 30 day of DECEMBER, 2000.

Conrad P. Schwartz

Conrad P. Schwartz
General Motors Corporation
MC 482-B38-C96
200 Renaissance Center
Detroit, Michigan 48265

2001-012375
Page: 2 of 6
03/23/2001 09:05A

Signed in the presence of:

Witness Susan K Zuk (Signature)

Susan K Zuk (Print or type name)

Witness Kathleen M. Manga (Signature)

KATHLEEN M. MANGA (Print or type name)

STATE OF MICHIGAN
COUNTY OF WAYNE

The foregoing instrument was acknowledged before me this 30th day of December, 2000 by Conrad P. Schwartz of General Motors Corporation, a Delaware corporation, on behalf of the corporation.

Notary Public Sharon E. Boon (Signature)

SHARON E. BOON
Notary Public, Wayne County, MI
My Commission Expires 12/17/2002
(Print or type name)

Commissioned in Wayne County, Michigan

My Commission Expires: 12/17/2002

Prepared by KURT D. BLIZZARD (Type name)

ST. ENVIRONMENTAL PROJECT ENGINEER (Title)

920 TOWNSEND ST.
M.S. 489-070-035
LANSING, MI 48921
(Address)

ATTACHMENT A

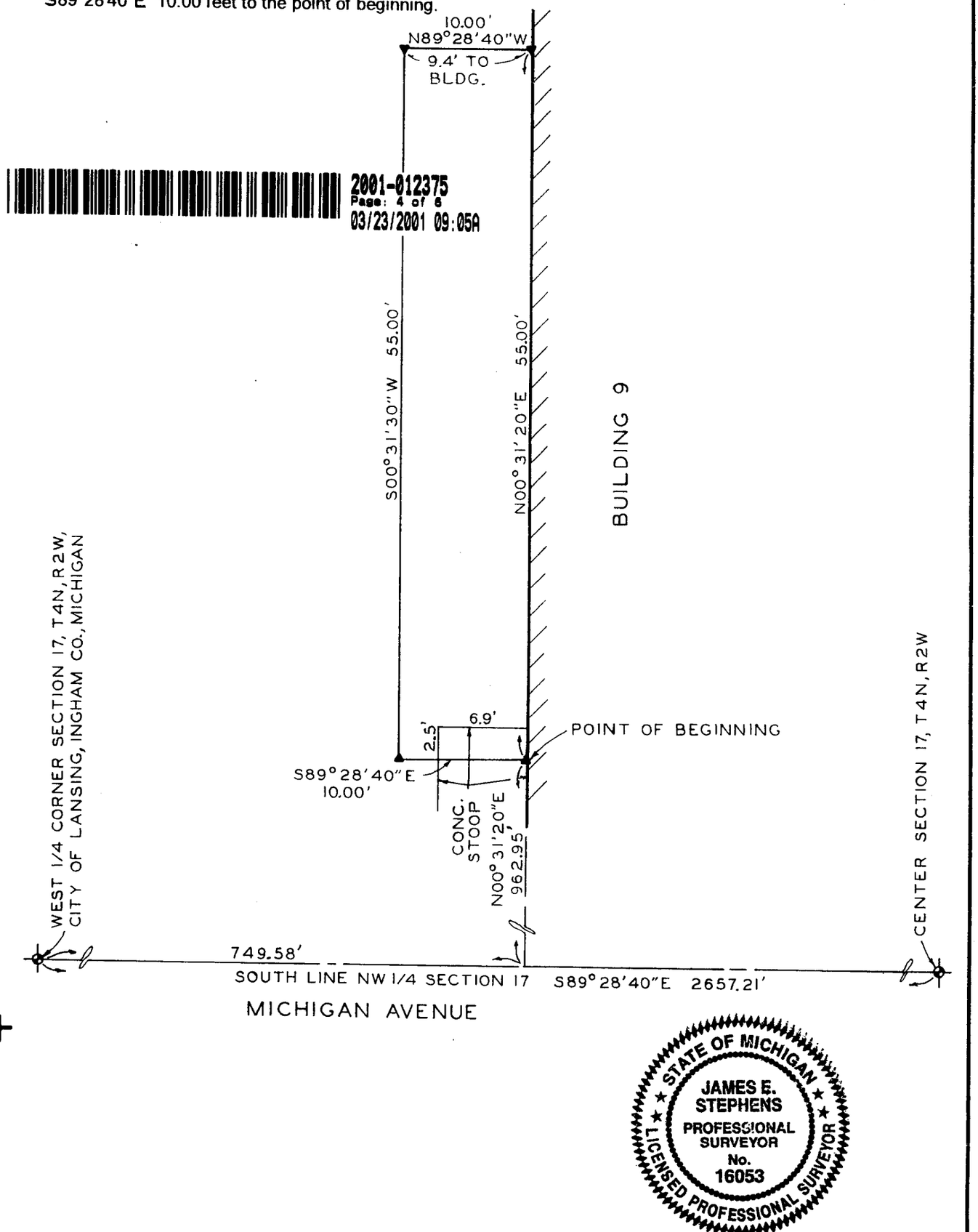
2001-012375
Page: 3 of 6
03/23/2001 09:05A

CERTIFICATE OF SURVEY

FOR General Motors Corporation
920 Townsend
Lansing, Michigan 48921

SURVEY OF PROPERTY LEGALLY DESCRIBED AS:

That part of the Northwest 1/4 of Section 17, T4N, R2W, City of Lansing, Ingham County, Michigan, commencing at the West 1/4 corner of Section 17; thence running along the South line of said Northwest 1/4 S89°28'40"E 749.58 feet; thence perpendicular to said South line N00°31'20"E 962.95 feet to the point of beginning; thence continuing N00°31'20"E 55.00 feet; thence N89°28'40"W 10.00 feet; thence S00°31'20"W 55.00 feet; thence S89°28'40"E 10.00 feet to the point of beginning.



STATE OF MICHIGAN
JAMES E. STEPHENS
PROFESSIONAL SURVEYOR
No. 16053
LICENSED PROFESSIONAL SURVEYOR

SCALE: 1" = 10'

THE UNDERSIGNED LICENSED PROFESSIONAL LAND SURVEYOR HEREBY CERTIFIES THAT A SURVEY WAS MADE UNDER HIS SUPERVISION OF THE PROPERTY SHOWN ON ANNEXED PLAT, AND THAT THE SKETCH INDICATES THE DIMENSIONS AND ENCROACHMENTS OF SAID PROPERTY.

LEGEND

- ● – IRON STAKE
- ▲ – CONCRETE NAIL
- O – MONUMENT
- X – X FENCE LINE
- ℄ – CENTER LINE
- R – RADIUS
- D – DEEDED DIMENSION
- M – MEASURED DIMENSION
- P – PLATTED

STEPHENS-KYES & ASSOCIATES, INC.
1401 EAST LANSING DRIVE, SUITE 112
EAST LANSING, MICHIGAN 48823 – PHONE (517) 351-2574

BY James E. Stephens

LICENSED PROFESSIONAL LAND SURVEYOR NO. 16053

DATE Aug. 4, 2000 DRAWING NO. L-20582

ATTACHMENT B

2001-012375
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03/23/2001 09:05A

Industrial Land Use Category. Industrial land use must be defined in the following two ways:

1. The primary activity at the property is and will continue to be industrial in nature (e.g., manufacturing, utilities, industrial research and development, petroleum bulk storage) and access is and will continue to be reliably restricted consistent with its use (e.g., by fences, security personnel, or both). Inactive or abandoned properties can be included in this category if the use was and/or will be industrial, as described above and access is controlled as necessary to assure unacceptable exposures do not occur. The industrial category does not include farms, gasoline service stations, or other commercial establishments where children may commonly be present.

2. The current zoning of the property is industrial, the zoning is anticipated to be industrial (see below), or the RAP includes documentation that the current industrial use is a legal non-conforming use. This may include different zoning designations, depending on the community, such as "light industrial" or "heavy industrial." Documentation of zoning must be provided in the form of a map or current property record card that shows the zoning status of the facility and all adjacent properties. If the RAP is based on anticipated zoning changes, discussion of this issue must indicate haw and when the zoning changes are to be accomplished. The RAP must identify (preferably on a map) the nearest current residential land uses and nearest parcels which are zoned for residential use. Any nonconforming land uses in the vicinity of the facility must be identified in the RAP (e.g., residential use on a parcel zoned "transitional industrial").

2001-012375
Page: 6 of 6
03/23/2001 09:05A

ARCADIS

Appendix I

Miscellaneous Items

TABEL I-1
GM LANSING PLANT 2
MISC. ITEMS

CURRENT CONDITIONS REPORT
GENERAL MOTORS CORPORATION
LANSING, MICHIGAN

ID #	Title	Description/Components	Location Building # Column/Bay	AOI Source	Reference Drawing ID [(A)]	AOI Depth Below Grade (Feet)	Materials Handled	Approximate Date AOI Ceased Operations
2-18	Oil Interceptors	Located on edge of Building 250. Collects oil from housekeeping trenches before discharge to the storm sewer.	Building 250 Whole Building	Drawing Review	37 and 38	<5	Used Oil	Currently Operating
2-19	Flammable Spill Sump	Located on edge of Building 250	Building 250 North Side of Building	Drawing Review	37	<5	Flammable Liquids	Currently Operating
2-20	Paint Shop Spray Booth	Painting Operations	Building 206 D16-17	Drawing Review	OFF-1	<5	Paint	Prior to 3/2006
2-21	Sub-Basement with Sump	Flooded with inches of sludge…	Building 206 C14-15	Drawing Review	206.1025-AO1	<10	Paint Sludge	3/2006
2-22	Paint Shop Sump	Connected to a 2" process waste line which leads to industrial wastewater pre-treatment facility	Building 206 B14	Drawing Review	206.7018-A01	<10	Paint Shop :Liquid Wastes	3/2006
2-24	Body Shop Area Trenches and Sumps	CMM Trenches and Sumps (2)--Type B	Building 206 D5	Drawing Review	BS-400-BCAB-02	<10	Body Shop Area Liquid Wastes	3/2006
		Trenches and Sumps--Type B	Building 206B E6 and E8	Drawing Review	241.1011-A02			
		2 Sumps--Type B	Building 206 B6-7	Drawing Review	PA-500-GCAB-07			
		2 Sumps--Type B	Building 206 B6 and C7	Drawing Review	206.8000-A03			
		3 Type C Sumps	Buildings 206, 206C and 241 A3-5 and D2	Drawing Review	BS-400-GCAB-02			
2-25	Paint Shop Conveyor Transfer Pit	7 feet deep	Building 206 B5-7	Drawing Review	PA-500-GCAB-06	7	Paint Sludges	3/2006
2-26	Quench Oil Operations	Quench Oil Pits	Building 206C B8 and C8	Drawing Review	23	<10	Quench Oil	Prior to 3/2006
		Quench Oil Tank	Building 206 B4	Drawing Review	MF.804			
		Tank, Unknown	Building 206 A4	Drawing Review	206.4001-A01			
		Water Quench Pit	Building 206 B3-4	Drawing Review	206.4001-A01			
		Quench Oil Settling Tanks	Building 206 C3-4	Drawing Review	206.4001-A01			
		Type B sumps	Building 206 C4-5	Drawing Review	PA-500-GCAB-07			
2-27	Paint Shop Sumps and Trenches	Three Sumps are 3'x3'x3' each	Buildings 206 and 237 B1-3	Drawing Review	PA-500-GCAB-05	3	Paint Shop Liquid Wastes	3/2006
2-28	Body Wash System Drain Deck, Sumps and Trenching	Three Type B sumps and associated trenches.	Buildings 206, 206C, 237 and 241 A1, B1, D1 and E1	Drawing Review	BS-400-BCAB-01	<5	Body Wash System Liquids	3/2006
2-29	Compound Tank	Drawing Compound	Building 207 B11	Drawing Review	207.4001-A02	<15	Drawing Compound	Prior to 3/2006
2-30	Oil Storage AST and Oil Separator	10" oily waste line runs to separator. Water discharged to 12" sanitary sewer line. Salvage line flows via 6" pipe to oil storage tank.	Building 207 A10-11	Drawing Review	207.8000-A01	<15	Used Oil	Prior to 3/2006
2-31	Press Pit Operations	Two 3'x3' oil containment sumps under hydraulic presses	Building 207 A4-7	Drawing Review	207.4020-A01, 207.4022-A01	<15	Used Hydraulic Oil	Prior to 3/2006
		Press pit sumps		Drawing Review	207.4000-A01			
2-32	Oil Containment Sumps and Trench	2 oil containment sumps, 3'x3'	Building 207 B7-8	Drawing Review	207.4019-A01	3	Used Oil	Prior to 3/2006
2-33	Oily Waste Sumps	2 oily waste line manhole sumps	Building 207 A5	Drawing Review	207.4000-A01	<10	Oily Waste	Prior to 3/2006
2-34	Press Pits	2 Press Pits	Building 207 B5-6	Drawing Review	207.8004-A01	<15	Used Hydraulic Oil	Prior to 3/2006
2-35	Tramp Oil Trenches and Sumps	6" deep trenches	Building 207 B1-4	Drawing Review	207.4011-A01	<4	Used Tramp Oil	Prior to 3/2006
		3' deep sumps		Drawing Review	207.4011-A01			
2-36	Oil Separator and Sump	10" oily waste line runs to separator.	North Side of Building 231	Drawing Review	MF.804	<10	Used Oil	Prior to 3/2006

TABEL I-1
GM LANSING PLANT 2
MISC. ITEMS

CURRENT CONDITIONS REPORT
GENERAL MOTORS CORPORATION
LANSING, MICHIGAN

ID #	Title	Description/Components	Location Building # Column/Bay	AOI Source	Reference Drawing ID [(A)]	AOI Depth Below Grade (Feet)	Materials Handled	Approximate Date AOI Ceased Operations
2-37	Press Pits	Concrete press pits.	Building 242 C2-5	Drawing Review	242.4003-A1	<15	Used Hydraulic Oil	Prior to 3/2006
		One sump associated with presses.	Building 242 B2	Drawing Review	242.4003-A1			
2-38	Scrap Steel Operations Pits	Scrap Steel Pits, 8' Deep	Building 242 A3-5	Drawing Review	242.4019-A2	<15	Scrap Steel and Oily Waste	Prior to 3/2006
		Scrap Pit oily waste sump	Building 242 B2	Drawing Review	242.4019-A2			
2-39	Fuel Oil Pump House and Tank Farm	Eight oil storage tanks, 10.5' in diameter. Trenching associated with tanks. Three truck unloading stations associated with tanks	Building 223	Drawing Review	223.7002-AO1	<15	Fuel Oil	Prior to 1983
2-40	Exhaust Manifold Area Sumps and Trenching	Seven sumps. Three are 2'x2'x2'. Four are 1'x1'x1'	Building 238 A1-8	Drawing Review	238.1004-A1-A4	<2	Exhaust Manifold Area Liquid Wastes	Prior to 3/2006
		6" wide and 15" deep	Building 238 A1-2	Drawing Review	238.1004-A1			
2-41	COE Drive Pit and Sumps	COE Drive Pit	Buildings 202 and 238 A6-11	Drawing Review	202.4001.A01	<5	Used Oil and Waste Grease	Prior to 3/2006
		2 Type B Sumps		Drawing Review	202.4001-AO1			
2-42	Fluid Fill Operations	Gasoline and Fluid Fill Area--includes a used oil discharge pump with a fire containment pit, a waste gas discharge pump with a separation tank, a gas fill pit, and three sumps.	Building 202 C4-10	Drawing Review	201.7000-AO1, TR-600-GCAB-13	<10	Gasoline, Used Gasoline, and Used Oil	3/2006
2-43	Gas Tank Leak Test Drain Deck	10'x10' gas tank leak test drain deck with Type B sump and trenching	Building 202 D12	Drawing Review	202.7003-AO2	<5	Used Gasoline	Prior to 3/2006
2-44	C.O.E. Pits	One Type B sumps & trenching associated with pits	Building 201 C5	Drawing Review	202.4001-AO1	<5	Used Oil and Waste Grease	Prior to 3/2006
2-45	C.O.E. Pits	One Type B sumps & trenching associated with pits	Building 201 B1 and C1	Drawing Review	202.4001-AO1	<5	Used Oil and Waste Grease	Prior to 3/2006
2-46	Soluble Oil Sump	N/A	Building 201 C11	Drawing Review	25	<5	Used Soluble Oil	Prior to 3/2006
2-47	Building 204 Basement Sumps and Trenching	Sumps and trenching	Building 204 Whole Building	Drawing Review	204.1501-AO2	<20	Oily Water	3/2006
2-48	Paint Spray Booth and Sumps	Sumps connected to waste treatment line.	Building 205 C10-12	Drawing Review	205B.1009-AO4	<10	Paint and Waste Paint	3/2006
2-49	Trenches and Hammer Pits	Associated with Press Operations	Building 207 A2-11	Drawing Review	207.0000-A01	<10	Unknown	Prior to 3/2006
2-50	Toe-in Sump	Type B Sump	Building 203 C2	Drawing Review	203.1005-AO1	<15	Used Oil and Waste Grease	3/2006
2-51	Sumps	Type B Roll Test Sump	Building 203 C4	Drawing Review	203.1005-AO1	<10	Used Oil and Waste Grease	3/2006
		Type B Sump, Final Line Sump	Building 203 C5	Drawing Review	203.1005-AO1			
2-53	E-Coat System Drain Deck	4 Type B sumps and trenching (1' wide)	Building 206 C1-7	Drawing Review	PA-500-GCAB-06, 206.1014-A02	<5	E-Coat System Liquid Wastes	3/2006
2-54	2 Slag Pits	Adjacent to ajax furnaces	Building 208A B3 and B7	Drawing Review	208A.9004-ACL	<5	Slag	3/2006
2-55	PCB Storage Deck	10'x12' with one 1' deep sump in the center	Building 208A D1	Drawing Review	208A.9004-ACL	1	PCBs	3/2006
2-56	Pits	2 Pits, 6' by 10'	Building 204 B4	Drawing Review	4383 Sheet 3	<10	Unknown	Prior to 3/2006
2-57	Tunnel	N/A	Building 204 F-G/4-8	Drawing Review	4383 Sheet 3	<15	Process Waste	3/2006
2-58	Storm, Sanitary, and Process ("Oily Waste") Sewers	Throughout Facility	Throughout Facility	Drawing Review	Taken from electronic drawing	<30	Storm Water, Sanitary Waste Water, Process Waste Water	3/2006
2-59	Press Pits	8' 4" deep, 21' by 35' and 67' by 25'	Building 201 D3, E3, F3, D-F/21-22, and K-M/21-22	Drawing Review	4383 Sheet 3	9	Used Hydraulic Oil	Prior to 3/2006
2-60	Take-Up Pit and Sumps	Take-up Pit, 9' wide, 7' deep, 2 Sumps on either end are 2.5 wide, 2' deep	Buildings 203, 205 and 209 D and C	Drawing Review	209.1003-AO1, 209.1093-A01	9	Used Hydraulic Oil	3/2006

TABEL I-1
GM LANSING PLANT 2
MISC. ITEMS

CURRENT CONDITIONS REPORT
GENERAL MOTORS CORPORATION
LANSING, MICHIGAN

ID #	Title	Description/Components	Location Building # Column/Bay	AOI Source	Reference Drawing ID [(A)]	AOI Depth Below Grade (Feet)	Materials Handled	Approximate Date AOI Ceased Operations
2-61	Paint Room and Stripping Tank	N/A	Building 226 D	Drawing Review	201.105-AO1	<10	Paint and Waste Solvents	3/2006
2-62	Body Area Sumps	9 Sumps	Buildings 206, 206C and 241 A3-5 and D2	Drawing Review	BS-400-GCAB-02	<5	Liquid Wastes	Prior to 3/2006
2-63	Process Waste Sump	1 Sump, 3 by 3 by 5	Building 205B B12	Drawing Review	PR-600.0K.002-ME	5	Process Waste	Prior to 3/2006
2-64	Paint Repair Area Sump	1 sump, 3 by 3 by 6.5	Building 205B B3	Drawing Review	205B.7006-AO1	7	Paint Repair Area Liquid Wastes	Prior to 3/2006
2-65	Phosphate Storage Tank Pit	11' deep with epoxy waterproof coating.	Buildings 206 and 237 B1-3 and C1	Drawing Review	206.1014-A01	11	Phosphates	3/2006
2-66	Current Flammable Waste Storage Building	Building Transferred from AOI 2-5 to 2-66	Outside NE corner of 242	Drawing Review	N/A	0	Flammable Wastes	Currently Operating
2-67	New Product AST Farm	Stores new oil	East of 201B	Drawing Review	N/A	0	Gasoline, Diesel, and Oil	3/2006

ROSEMARY ST.

ROSEMARY ST.

ROSEMARY ST.

WEST MICHIGAN AVE.

WEST MICHIGAN AVE.

IONIA ST.

SAGINAW STREET

ID 2-18

ID 2-19

ID 2-61

ID 2-62

ID 2-53

ID 2-24

ID 2-28

ID 2-27 & 2-65

AOI 2-20

AOI 2-21

ID 2-22

ID 2-25

ID 2-26

ID 2-29

ID 2-30

ID 2-60

ID 2-51

ID 2-64

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ID 2-54 & 2-55

ID 2-56

ID 2-42

ID 2-37

ID 2-46

ID 2-59

ID 2-59

ID 2-44

ID 2-40

ID 2-45

ID 2-66

ID 2-67

ID 2-39

COOLING TOWER

251

250

252

240

236

241

206

B

C

237

205B

205

209

203

222

204D

207

235

204

202

238

201

201B

208A

208

242

239

229

LEGEND:

ID 2-18 AREA OF INTEREST (AOI)

229 BUILDING NUMBER

APPROXIMATE PROPERTY BOUNDARY

BUILDING LINE

COLUMN LINE

RAILROAD

NOTE:

BASE MAP SUPPLIED BY GM, FROM A FIGURE TITLED "LANSING CAR ASSEMBLY BODY PLANT MASTER UNDERGROUND UTILITY DRAWING", FILE NO. PLT6MASTER-UNDERGROUND-UTILITIES.DWG.

0 200'

GRAPHIC SCALE

GENERAL MOTORS CORPORATION
LANSING, MICHIGAN
PLANTS 2, 3, AND 6
CURRENT CONDITIONS REPORT

PLANT 2 MISCELLANEOUS ITEMS

ARCADIS

FIGURE
I-1

CITY:BRIGHTON DIV/GROUP:85 DB:ADF LD:(Opt) PIC:(Opt) PM:(Reqd) TM:(Opt) LYR:(Opt)ON=*;OFF=*REF*
J:\2008\B0064479\000\003\DWG\64479B04.dwg LAYOUT: I-1SAVED: 7/24/2008 2:43 PM BY: FOX, AARON
---PLOTSTYLETABLE: PLTFULL.CTB PLOTTED: 7/24/2008 2:43 PM BY: FOX, AARON

XREFS:
64430X01
64479X03
64479X02
Plt. 2 Master-Utility-UG

IMAGES:

PROJECTNAME: ---

TABLE I-2
GM LANSING PLANT 3
MISC. ITEMS

CURRENT CONDITIONS REPORT
GENERAL MOTORS CORPORATION
LANSING, MICHIGAN

ID #	Title	Description/Components	Location Building # Column/Bay	AOI Source	Reference Drawing ID [(A)]	AOI Depth Below Grade (Feet)	Materials Handled	Approximate Date AOI Ceased Operations
3-12	Sump for Rod Operations	Sump (1'x1'x1')	Building 302A D14	Drawing Review	302A.449-A2	1	Rod Operations Liquid Wastes	Prior to 2006
3-13	Henry Filter Pits and Trenching	Coolant Trench and Sump, 1' 2" wide sluice trench	Building 302A C14	Drawing Review	302A.449-A1A	<15	Used Hydraulic Oil	Prior to 2006
		Coolant Trenching	Building 302A E14 and F14	Drawing Review	302A.446-A4			
		Henry Filter Pits and Trenching	Building 302A A-R/12-15	Drawing Review	Multiple Drawings			
3-14	Oiler Deck with Trench and Sump	2'x2'x3' sump connected to 27'x1' trench	Building 302A B12	Drawing Review	302A.442-A1	3	Used Oil	Prior to 2006
3-15	Oil Sump for Crank Shaft Operations	N/A	Building 302A K12	Drawing Review	302A.438-A3	<15	Used Oil	Prior to 2006
3-16	Former Sumps	Two 2'x2'x2' sumps	Building 302A D-E/12-13	Drawing Review	302A.410-A4	2	Unknown Liquid Wastes	Prior to 2006
3-17	Broach Machine Filter Pit	9' by 20' by 9' pit	Building 302A A13	Drawing Review	302A.401-A3	9	Used Oil	Prior to 2006
3-18	Drum Storage	One empty storage area, one full storage area. Full area has 5 storage racks and one biocide storage rack	Building 302 N8-9	Drawing Review	302.1-9	0	Empty and Full Drums (Unknown Contents)	11/2006
3-19	Rack Wash Booth, Trenching and Sump	Pumps discharge to oily waste line	Building 302 C4	Drawing Review	302.0184-A1; 302-1-8	3	Rack Wash Booth Liquid Wastes	11/2006
3-20	Chip Conveyor	2' deep conveyor	Building 302 G7	Drawing Review	302.431-A1; 302-1-11	2	Used Oil, Metal Chips	Prior to 11/2006
3-21	Coolant Clarifier, Collecting Tank Trenches and Pits, and Drain Deck and Sumps	4,200-gallon coolant collection tank; 1,900-gallon coolant collecting tank; drain-trench system; filtration system pit and flotation clarifier system pit	Building 302 H-N/6-9	Drawing Review	302.424-A7; 302-1-10	<15	Used Coolant	Prior to 11/2006
		Drain Deck with Sumps, Six sumps, 1' diameter and 3' deep. Four 16" deep trenches.	Building 302 J-K/9	Drawing Review	302.445-A1			
		Sumps for Belco Washer, 2 sumps	Building 302 H-J/7	Drawing Review	302.431-A1			
		2 ' diameter and 3' deep sumps	Building 302 M-N/7-8	Drawing Review	302.444-A1A; 302-1-9; 302-1-10			
		Pit and associated 4'x4'x4' sump	Building 302 K9-10	Drawing Review	302.4166-A1-A2			
3-22	Former Trainwell Sumps	2' diameter sumps and associated trenching	Building 302 A1	Drawing Review	302.0121-A1; 302-1-4	<5	Used Grease and Oil	Prior to 2006
3-23	Tramp Oil Decks with 2 Sumps	2 sumps	Building 302 M11	Drawing Review	302.4201-A7, 302.4206-A1; 302-1-14	<5	Tramp Oil	Prior to 11/2006
3-24	Former Knuckle Area Drain Deck Trenching and Sump	1' deep trench ending in a 3.5' deep sump	Building 302 B-D/3	Drawing Review	302.4203-A1,A2; 302-1-4	5	Used Oil	Prior to 2006
3-25	Cooling and Quench Water Pits	Ten pits, 63'x15'x8'	Building 302 K5-7	Drawing Review	302.4200-A1	8	Coolant Quench Water	Prior to 2006

TABLE I-2
GM LANSING PLANT 3
MISC. ITEMS

CURRENT CONDITIONS REPORT
GENERAL MOTORS CORPORATION
LANSING, MICHIGAN

ID #	Title	Description/Components	Location Building # Column/Bay	AOI Source	Reference Drawing ID [(A)]	AOI Depth Below Grade (Feet)	Materials Handled	Approximate Date AOI Ceased Operations
3-26	Repair Area Parts Washer	N/A	Building 302 E2	Drawing Review	302.090-A2; 302-1-3	<5	Solvents	11/2006
3-27	Filter Pit and Sump	55'x10.5'x19' Pit with associated sump	Building 302 E-F/5-7	Drawing Review	302.4188-A1; 302-1-7	<25	Unknown Liquid Wastes	Prior to 2006
3-28	Washer Trenching and Sump	6" wide trench with a 9' 4" x 4' 10" sump pit	Building 302 A10 and B10	Drawing Review	302.066-A4; 302-1-16	<5	Washer Area Liquid Wastes	Prior to 11/2006
		Drain Deck Trenching and Sump for Double Polishers	Building 302 A11 and B11	Drawing Review	302.066-A4; 302-1-16			
3-29	Former Trainwell Trench and Sumps	9" wide trench connected to 3' 4" wide and 1.5' deep sump	Building 302 A-B/9-12	Drawing Review	302.066-A1,A2; 302-1-16	2	Used Grease and Oil	Prior to 2006
3-30	Paint Booth	Spray paint booth and paint storage cabinets	Building 301 J13	Drawing Review	301.136-A1; 301-1-0-D	0	Waste Paint	Prior to 11/2006
3-31	Truck Repair Wash Booth Sump	3' deep sump with 2' diameter cover	Building 301 B5	Drawing Review	301.143-A3; 301-1-0-D	3	Truck Repair Area Wash Booth Liquid Wastes	Prior to 11/2006
3-32	Oil Interceptor Grease Trap for Truck Dock	500-gallon oil interceptor and grease trap	Building 301 A13	Drawing Review	301.153-A12; 301-1-0-D	<10	Used Oil and Grease	11/2006
3-33	Die Wash Booth and Sump	N/A	Building 305 D10	Drawing Review	305-1-30	<5	Die Wash Booth Area Liquid Wastes	11/2006
3-34	Steam Clean Booth Sump Pit	N/A	Building 305 B9	Drawing Review	305-1-23	<5	Steam Clean Booth Area Liquid Waste	Prior to 2006
3-35	IMF Washer Sumps and Trenches	10" deep trenching with associated 3'x3'x4' deep sump	Building 301 D8-9	Drawing Review	301-1-0-D	5	Unknown	Prior to 2006
3-36	2 sumps	N/A	Building 301 F14	Drawing Review	301-1-0-D	<5	Unknown	Prior to 2006
3-37	Bumper Oil Booth Drainage Trench and Sump	31' long and 3' wide trench with associated 1.5' diameter dry sump	Building 301 E4	Drawing Review	301.4112-A1; 301-1-0-D	2	Used Oil	Prior to 2006
3-38	IMF Washer Sumps and Trenches	92' x 15' area with associated 4' deep sump	Building 301 H10-12	Drawing Review	301.4119-A1; 301-1-0-D	4	Unknown	Prior to 2006
3-39	IMF Drain Deck Gon Washer Trench and Sump	6" wide trench, approximately 13' long	East of A14 Building 301 A14	Drawing Review	301.4118-A1; 301-1-0-D	<10	Unknown	Prior to 2006

TABLE I-2
GM LANSING PLANT 3
MISC. ITEMS

CURRENT CONDITIONS REPORT
GENERAL MOTORS CORPORATION
LANSING, MICHIGAN

ID #	Title	Description/Components	Location Building # Column/Bay	AOI Source	Reference Drawing ID [A]	AOI Depth Below Grade (Feet)	Materials Handled	Approximate Date AOI Ceased Operations
3-40	Press Pit Operations	Crescent Extruding Fixture Sump - 1' 8" diameter sump, 3' deep	Building 301 C15	Drawing Review	301.4126-A1	<25	Used Hydraulic Oil	11/2006
		Oil Settling Tank	Building 301 D8-9	Drawing Review	301.4132-A1			
		Press Pit Sump	Building 301 F14	Drawing Review				
		Press pit and associated sump	Building 301 B14	Drawing Review	301.492-A1			
		One press pit and associated 2' deep sump	Building 301 A15-16	Drawing Review	301.456-A25			
		2 Press Pits	Building 301 A9-13	Drawing Review	301.457-A1; 301-1-0-D			
		Clearing Presses Sump (1'x1'x1')	Building 301 A6	Drawing Review	301.4131-A1			
		Press Pits Oil Trenches (3' deep)	Building 301 A1-5	Drawing Review	301.4141-A53,A58			
		Press Pit and Trenches	Building 301 B9-12	Drawing Review	301.4141-A30			
		Bumper Line Press Pits	Building 301 A10-13	Drawing Review	301.4102-A2,A1, 301.4137-A3			
		Danly Press Pits and Trap Oil Gondola	Building 301 A11-13	Drawing Review	301.4115-A2, 301.758-A1			
		Press Pits Oil Trenches	Building 301 A-B/9-12	Drawing Review	301.4141-A21			
		Press Pit Trench and Sump (2'x2'x2')	Building 301 B8	Drawing Review	301.4142-A2			
3-41	Oil Sump in Truck Dock	N/A	Building 304 F20	Drawing Review	304.184-A1	<10	Used Oil	Prior to 2006
3-42	Bin Cleaning Drain Deck Sumps	Two sumps	Building 304 B16	Drawing Review	304.159-A1	<5	Bin Cleaning Area Liquid Wastes	Prior to 2006
3-43	Heil Compactor, Hydraulic Oil Containment and Sump	N/A	Building 304 A21	Drawing Review	305.111-A2	<5	Used Hydraulic Oil	Prior to 11/2006
3-44	Steam Cleaning Booth Sump	3' deep sump; 8" drain pipe connects sump to an oil collection pit	Building 305 B9	Drawing Review	305.709-A1, 305.414-A1	3	Steam Cleansing Area Liquid Wastes	11/2006
3-45	Housekeeping Sump	3'x 3'x3' sump	Building 305 A21	Drawing Review	305.425-A1	3	Unknown	Prior to 2006
3-46	Carden Washer Sump and Trenches	1.5'x3'x2'4" sump	Building 305 A3	Drawing Review	305.014-A2	3	Carden Washer Area Liquid Wastes	Prior to 2006
3-47	RWC Welder Pit and Sump	2'x2'x2' sump	Building 305 C18	Drawing Review	305.025-A1	2	RWC Welder Area Liquid Wastes	Prior to 11/2006
3-48	Blanking Line and Shear Equipment Sump and Trenches	2'x2'x1.5' deep sump; trenching between 2 and 4 inch deep	Building 305 A1	Drawing Review	305.027-A1	2	Used Hydraulic Oil	Prior to 2006

TABLE I-2
GM LANSING PLANT 3
MISC. ITEMS

CURRENT CONDITIONS REPORT
GENERAL MOTORS CORPORATION
LANSING, MICHIGAN

ID #	Title	Description/Components	Location Building # Column/Bay	AOI Source	Reference Drawing ID [(A)]	AOI Depth Below Grade (Feet)	Materials Handled	Approximate Date AOI Ceased Operations
3-49	Cooling Water Tower Chemical Feed Area	Containers that store sodium hypochlorite, spectrus NX 114, Continuum AEC 231, Corr shield MD400, Inhibitor A28101; Trenching and sumps associated with operations.	Building 305 A1 and B1	Site Walkthrough	N/A	<10	Cooling Water Chemicals	11/2006
3-50	Copper Buffing Operations	Dry dust collectors and wash and rinse tanks	Building 301 F4-6	Drawing Review	301.0121-A1A; 301-1-0-D	<10	Copper Buffing Agents	Prior to 11/2006

TABLE I-2
GM LANSING PLANT 3
MISC. ITEMS

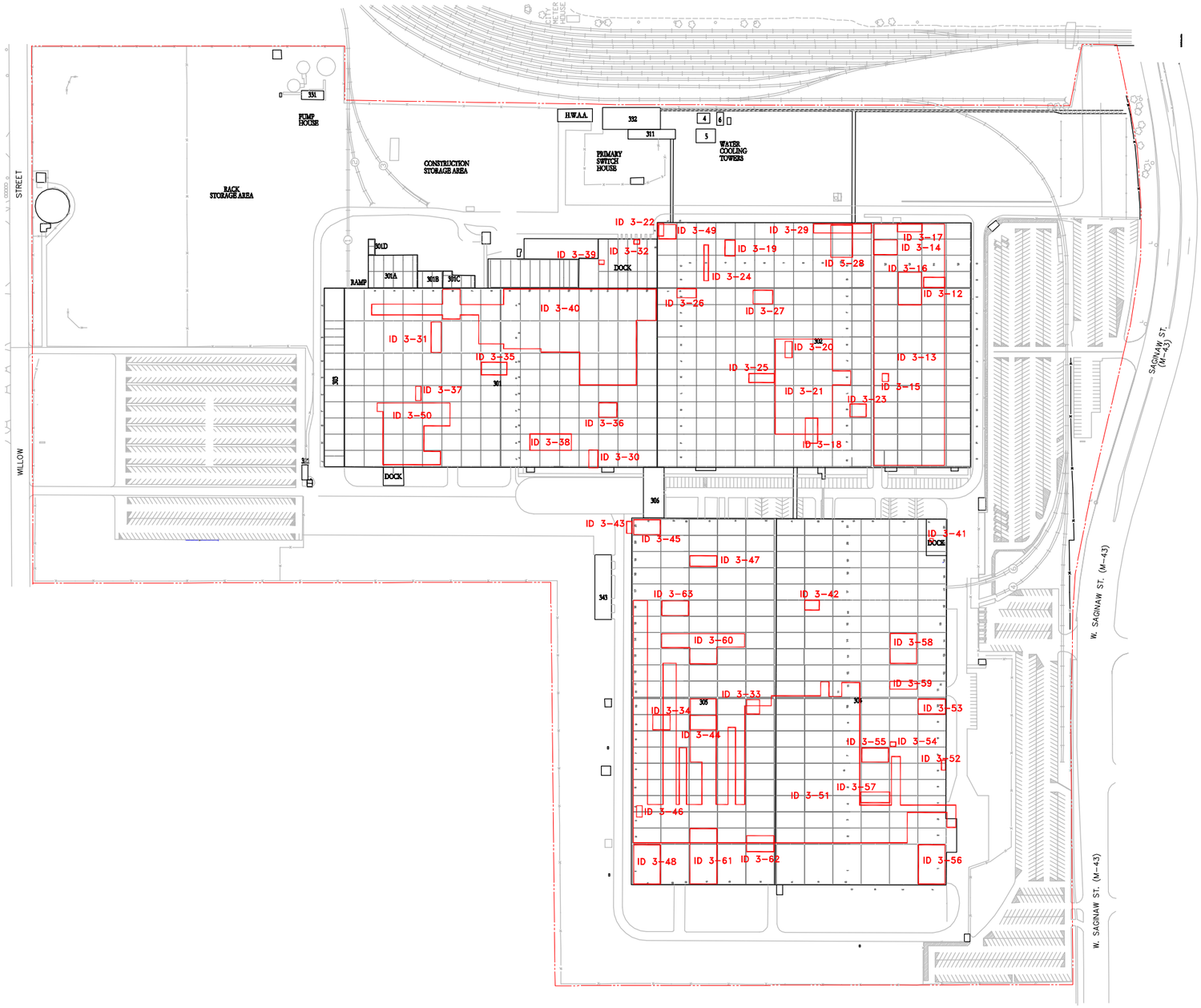
CURRENT CONDITIONS REPORT
GENERAL MOTORS CORPORATION
LANSING, MICHIGAN

ID #	Title	Description/Components	Location Building # Column/Bay	AOI Source	Reference Drawing ID [(A)]	AOI Depth Below Grade (Feet)	Materials Handled	Approximate Date AOI Ceased Operations
3-51	Basement of 304 and 305 Press Pit Operations	Danly Press Utility Trench	Building 304 B1-3	Drawing Review	304.434-A2	<25	Used Hydraulic Oil	11/2006
		Press Pits Sump (12" deep)	Building 304 B6 and C6	Drawing Review	304.165-A1			
		Four Danly Surge Tanks (16" diameter)	Building 304 C5-9	Drawing Review	304.158-A3, 304.001-A25-26			
		Scrap Pit	Building 304 F4	Drawing Review	304.479-A1			
		Blanker Pits and Sumps (Eight 2'x2'x2' deep sumps; Six 1'x1'x1' deep sumps)	Building 304 A-E/2-3	Drawing Review	304.043-A5			
		Auxiliary Waste Sump	Building 304 B8	Drawing Review	304.712-A2			
		Oil Spill Trench Under 240 Press Line	Building 304 B4-8	Drawing Review	304.484-A1			
		Press Pit, Trenching and Sump	Building 304 E2 and E3	Drawing Review	304.466-A2			
		Panel Die Tag Out Line Oil Trench and Sump	Building 304 E4-7	Drawing Review	304.454-A7			
		Press Pits, Sumps and Trenches	Building 304 D-E/2-3	Drawing Review	304.410-A1, 304.402-A1, 304.403-A1, 304.405-A1, 304.411-A1, 304.412-A1, 304.414-A1, 304.426-A1			
		E Press Line Sumps and Trenches	Building 305 E4-10	Drawing Review	305.088-A2-3			
		Press Pit and Sump	Building 305 A8-10	Drawing Review	305.721-A3			
		Press Pit	Building 305 A6-8	Drawing Review	305.721-A3			
		Hood Press Line Oil Trench and Sumps	Building 305 A-B/9-13	Drawing Review	305.413-A1-3			
		Danly Press Pit, Trenching and Sump	Building 305 A2 and A3	Drawing Review	305.415-A16			
		Shock Tower Press Sumps and Trenching	Building 305 A4-6	Drawing Review	305.418-A2			
		Fender Press Line Trench and Sumps	Building 305 D3-9	Drawing Review	305.419-A12			
		Clearing Toggle Press Sump	Building 305 A16	Drawing Review	305.421-A1			
		Try Out Press and Sump and Trench	Building 305 A13-15	Drawing Review	305.426-A1			
		Syncromatic Press Line Sumps and Trenches	Building 305 A6-12	Drawing Review	305.428-A4-6			
		Bumper Reinforcement Press Line Sumps and Trenches	Building 305 C-D/3-8	Drawing Review	305.407-A6-9			
		Rersion Presses Sumps and Trenches	Building 305 A-B/1-3	Drawing Review	305.410-A12 ,14, 21			

TABLE I-2
GM LANSING PLANT 3
MISC. ITEMS

CURRENT CONDITIONS REPORT
GENERAL MOTORS CORPORATION
LANSING, MICHIGAN

ID #	Title	Description/Components	Location Building # Column/Bay	AOI Source	Reference Drawing ID [(A)]	AOI Depth Below Grade (Feet)	Materials Handled	Approximate Date AOI Ceased Operations
3-52	Battery Charging Area	Batteries and Chargers	Building 304 F6 and F7	Drawing Review	304 Die Room	0	Batteries	11/2006
3-53	Oilers Crib	Oilers Crib - Consists of one recycle oil tank, an oil reclaim filter unit surrounded by a trench area, and associated sump	Building 304 F10	Drawing Review	304-1-36, 304.0156-A1	<5	Used Oil	11/2006
3-54	Sump	Sump pit with sump pump, unknown use	Building 304 E8	Drawing Review	304-1-29, 304.719-A1	<5	Unknown	Prior to 2006
3-55	Die Cleaning Booth	Sump/Sump Pit	Building 304 D7	Drawing Review	304.054-A1, 304.0114-A1, 304.719-A1	<5	Die Cleaning Area Liquid Wastes	11/2006
3-56	Foundation for Niagra Press	Niagra Press Sump	Building 304 F1	Drawing Review	304.435-A1	<10	Used Hydraulic Oil	Prior to 2006
3-57	Die Room Hydraulic Spotting Press Sump	Press Pit Sump	Building 304 D4-5	Drawing Review	304.090-A3	10	Used Hydraulic Oil	Prior to 2006
3-58	LADD Washer	Trench and Sump	Building 304 E13 and E14	Drawing Review	304.448-A1	<5	LADD Washer Area Liquid Wastes	11/2006
3-59	Broach Pit Sump	3' deep sump	Building 304 E11	Drawing Review	304.470-A1	3	Used Oil and Metals Chips	11/2006
3-60	Press Operations	Trenching and Sumps	Building 305 B-D/14 and C13	Drawing Review	305.114-A5-9, 11	<10	Used Hydraulic Oil	Prior to 11/2006
		Press Drainage Trench	Building 305 C13	Drawing Review	305.030-A4			
3-61	Automatic Feed Line	Automatic Feed Line Press Sumps and Trenches	Building 305 C1 and C2	Drawing Review	305.020-A1	<10	Unknown	11/2006
3-62	Press Feed Line	Press Feed Line Sump (3' Deep)	Building 305 E1 and E2	Drawing Review	305.405-A2	<5	Used Hydraulic Oil	11/2006
3-63	Hemming Press Operations	Hemming Press Sumps and Trenches	Building 305 B16	Drawing Review	305.017-A2	<10	Used Hydraulic Oil	11/2006



LEGEND:

- ID 3-1 — AREA OF INTEREST (AOI)
- 301 — BUILDING NUMBER
- APPROXIMATE PROPERTY BOUNDARY
- BUILDING LINE
- COLUMN LINE
- RAILROAD

NOTE:

BASE MAP INFORMATION BASED ON INFORMATION PROVIDED BY URS CONSULTANTS, INC. FROM MAPS ENTITLED "ANALYTES DETECTED IN GROUNDWATER – 4/94 (ug/L)", DATED APRIL, 1994, AND "SOIL BORING LOCATIONS, GM LAD PLANT NO. 3, BLDG. NO. 301C" (UNDATED); BY EDI ENGINEERING & SCIENCE FROM MAPS ENTITLED "TOTAL CHROMIUM CONCENTRATION HORIZ. EXTENT OF CHROMIUM IMPACT" DATED APRIL, 1990, "BORING AND CROSS–SECTION LOCATION MAP", DATED JUNE, 1989, "SOIL BORING LOCATIONS INSIDE OF THE PLANT", DATED JUNE, 1989, "LOCATION OF FRENCH DRAIN", DATED JUNE, 1989, AND "SOIL SAMPLING LOCATIONS", DATED JUNE, 1989, AND BY ENVIRONMENTAL SERVICES DIVISION FROM FIGURE ENTITLED "STORAGE TANK #12" DATED JUNE, 1990.

0 300'
GRAPHIC SCALE

GENERAL MOTORS CORPORATION
LANSING, MICHIGAN
PLANTS 2, 3, AND 6
CURRENT CONDITIONS REPORT

PLANT 3 MISCELLANEOUS ITEMS

ARCADIS

FIGURE
I-2

CITY:BRIGHTON DIV/GROUP:85 DB:ADF LD:(Opt) PIC:(Opt) PM:(Reqd) TM:(Opt) LYR:(Opt)ON=*;OFF=*REF*
J:\2008\B0064480\0000\0300\dwg\64480B07.DWG LAYOUT: I-2SAVED: 7/24/2008 2:48 PM BY: FOX, AARON
XREFS: IMAGES: PROJECTNAME: ---PLOTSTYLETABLE: PLTFULL.CTB PLOTTED: 7/24/2008 2:48 PM BY: FOX, AARON
64480X03
64480X02
Plt. 3 UnderGround-All

TABLE I-3
GM LANSING PLANT 6
MISC. ITEMS

CURRENT CONDITIONS REPORT
GENERAL MOTORS CORPORATION
LANSING, MICHIGAN

ID #	Title	Description/Components	Location Building # Column/Bay	AOI Source	Reference Drawing ID [A]	AOI Depth Below Grade (Feet)	Materials Handled	Approximate Date AOI Ceased Operations
6-22	New Transfer Can Pit	16'x16'x2'	Building 17 FF7	Drawing Review	5894 sheet 3	2	Used Grease and Oil	2005
6-23	New Weld Pit	20'x20'x4'	Building 16 OO103	Drawing Review	5894 sheet 3	4	Metals	2005
6-24	Existing Drive Unit Pit	7' deep	Building 16 NN106	Drawing Review	5894 sheet 3	7	Used Grease and Oil	2005
6-25	Solder Grind Booth	Sanitary and storm line run underneath	Building 16 SS-XX/101	Drawing Review	5894 sheet 3	<15	Metals	2005
6-26	New Weld Pit	20'x20'x4'	Building 16 AAA103	Drawing Review	5894 sheet 3	4	Metals	2005
6-27	New Advancing Conveyor Pit	N/A	Building 16 XX-ZZ/101	Drawing Review	5894 sheet 3	<5	Used Grease and Oil	2005
6-28	New Drive Unit Pit	4' deep	Building 16 WWW101	Drawing Review	5894 sheet 3	4	Used Grease and Oil	2005
6-29	Existing Drive Unit Pit	7' deep	Building 16 YY103	Drawing Review	5894 sheet 3	7	Used Grease and Oil	2005
6-35	Filter Pit with Sump	15'x40'x11'; associated with former painting operations	Building 16 WX114 and WX115	Drawing Review	5363 20	11	Paint Operations Filter Cake	2005
6-36	Sump Pit	N/A	Building 23 F17	Drawing Review	3736 sheet 2	<5	Unknown	2005
6-37	Trench	N/A	Building 23 A-B/10-13	Drawing Review	3736 sheet 2	<5	Unknown	2005
6-38	Trench	N/A	Building 23 B-F/17-18	Drawing Review	3736 sheet 11	<5	Unknown	2005
6-39	Trench	N/A	Building 23 G-H/15-19	Drawing Review	3736 sheet 11	<5	Unknown	2005
6-45	Paint Sludge Trenches	N/A	Building 16 ZZ11	Drawing Review	Unknown	<5	Paint Sludge	2005
6-50	Weld Pit	18'x20'x4'	Building 16 E-F/101/103	Drawing Review	5894-2	4	Metals	2005
6-51	Weld Pit	18'x20'x4'	Building 3X D106	Drawing Review	5894-2	4	Metals	2005
6-52	Drive Unit Pit	12'x8'x7'	Building 3X C104	Drawing Review	9410A-3	7	Used Grease and Oil	2005
6-53	Solder Grind Pit	N/A	Building 3X G107	Drawing Review	9410A-3	<10	Metals	2005
6-54	Solder Grind Pit	N/A	Building 3X E108	Drawing Review	Unknown	<10	Metals	2005
6-55	Torch Solder Pit	35'x20'x2.5'	Building 3X E-G/101-103	Drawing Review	Unknown	2.5	Metals	2005
6-56	Drive Unit Pit	8'x12'x7'	Building 3X N103	Drawing Review	9410A-C1	7	Used Grease and Oil	2005
6-57	Tunnel	9' deep	Building 3X A101-105	Drawing Review	9410B-M-1	9	Process Waste	2005
6-58	Pit	7' deep	Building 10 U36 and V36	Drawing Review	Unknown	7	Unknown	2005
6-61	Process Pit	N/A	Building 3X B-C/8-10	Drawing Review	Unknown	<10	Unknown	2005
6-62	Sump	N/A	Building 20 W23	Drawing Review	Unknown	<5	Unknown	1993
6-64	Sump	N/A	Building 20 WWW21	Drawing Review	Unknown	<5	Unknown	1993

TABLE I-3
GM LANSING PLANT 6
MISC. ITEMS

CURRENT CONDITIONS REPORT
GENERAL MOTORS CORPORATION
LANSING, MICHIGAN

ID #	Title	Description/Components	Location Building # Column/Bay	AOI Source	Reference Drawing ID [(A)]	AOI Depth Below Grade (Feet)	Materials Handled	Approximate Date AOI Ceased Operations
6-65	Sump	N/A	Building 20 UU18	Drawing Review	Unknown	<5	Unknown	1993
6-67	Sump	N/A	Building 14 EE23	Drawing Review	Unknown	<5	Unknown	2005
6-69	Weld Pit	N/A	Building 17 HH9-10	Drawing Review	Unknown	<10	Metals	2005
6-70	Sump	N/A	Building 16 GG102	Drawing Review	Unknown	<5	Unknown	2005
6-71	Sump	N/A	Building 16 GG110	Drawing Review	Unknown	<5	Unknown	2005
6-72	Sump	N/A	Building 16 PP110	Drawing Review	Unknown	<5	Unknown	2005
6-73	Sump	Associated with former painting operations.	Building 16 BBB117	Drawing Review	Unknown	<5	Paint and Thinner	2005
6-74	Sump	Associated with former painting operations.	Building 16 CCC117	Drawing Review	Unknown	<5	Paint and Thinner	2005
6-75	Sump	Associated with the repairing and loading of trucks that were formerly used to haul automobile bodies from the	Building 23 F17	Drawing Review	Unknown	<5	Used Automotive Fluids	2005
6-76	Washer Sump	N/A	Building 4 AA8	Drawing Review	Unknown	<5	Wash Water	2005
6-77	Washer Sump	N/A	Building 4 R11	Drawing Review	Unknown	<5	Wash Water	2005
6-79	Gasoline AST	Stored gasoline with Secondary Containment	West of Building 15	Drawing Review	Unknown	0	Gasoline	2005
6-80	Sump	N/A	West of Building 15	Drawing Review	Unknown	<5	Unknown	2005

CITY:BRIGHTON DIV/GROUP:85 DB:ADF LD:(Opt) PIC:(Opt) PM:(Reqd) TM:(Opt) LYR:(Opt)ON=*;OFF=*REF*
J:\2008\B0064481\10000\00300\DWG\64481B08.dwg LAYOUT: I-3SAVED: 7/24/2008 2:51 PM BY: FOX, AARON
XREFS: IMAGES: PROJECTNAME: ---- PLOTSTYLETABLE: PLTFULL.CTB PLOTTED: 7/24/2008 2:51 PM BY: FOX, AARON
64481X02
64481X03
64481X05


WOODBRIDGE STREET
WORDEN AVENUE
WORDEN AVENUE
WORDEN AVENUE

ARCADIS

Appendix J

Boring Logs

GM Lansing Plant 2
Boring Log Master List

Location Name	Have Boring Log
B-1	Yes
B1-B	Yes
B1-E	Yes
B1-I	Yes
B1-N	Yes
B-2	Yes
B2501	Yes
B25010	Yes
B25011	Yes
B25012	Yes
B25013	Yes
B25014	Yes
B25015	Yes
B25016	Yes
B25017	Yes
B25018	Yes
B2502	Yes
B2503	Yes
B2504	Yes
B2505	Yes
B2506	Yes
B2507	Yes
B2508	Yes
B2509	Yes
B2-B	Yes
B2-E	Yes
B2-H	Yes
B2-L	Yes
B-3	Yes
B3-B	Yes
B3-F	Yes
B3-H	Yes
B3-J	Yes
B-4	Yes
B4-B	Yes
B4-D	Yes
B4-H	Yes
B4-J	Yes
B-5	Yes
B5-A	Yes
B5-E	Yes
B5-K	Yes
B5-M	Yes
B-6	Yes
B6-B	Yes
B6-H	Yes
B6-K	Yes
B6-M	Yes
B-7	No

GM Lansing Plant 2
Boring Log Master List

Location Name	Have Boring Log
B-96-1	No
B-96-3	No
MW-1	Yes
MW-2	Yes
MW-3	Yes
MW-8	No
N SUMP	NA - Sump
OW-1	Yes
OW-2	Yes
OW-3	Yes
OW-4	Yes
OW-5	Yes
S SUMP	NA - Sump Sample
S250E	NA - Excavation Side-Wall Sample
S250N	NA - Excavation Side-Wall Sample
S250S	NA - Excavation Side-Wall Sample
S250W	NA - Excavation Side-Wall Sample
TP-1	NA - Test Pit
TP-2	NA - Test Pit
TP-3	NA - Test Pit
TP-4	NA - Test Pit
TP-5	NA - Test Pit
TP-6	NA - Test Pit
VEW-1	Yes
W-250	NA - Excavation Water Sample

LOG OF TEST BORING

F-203 (R 01-87)

BORING NO. B1/OW1
SHEET NO. 1 OF 2

PROJECT NAME BOC REATTA
LOCATION LANSING, MI
CONTRACTOR T&T DRILLING CO
DRILLING METHOD HSA 4.25"

PROJECT NO. 1650.06
INSTALLATION 5/29/90
SURFACE ELEV. 863.4
BOREHOLE DIA. 8 IN.

SAMPLING NOTES						VISUAL CLASSIFICATION AND GENERAL OBSERVATIONS	GENERAL WELL CONSTRUCT.
INTERVAL		RECOVERY		HNU(ppm)			
NO.	TYPE	N	IN		DEPTH		
A	SS	21	22	0		Black and brown, sandy FILL, (cinders?), little clay, pieces of wood, moist (FILL)	
B	SS	16	8	0		Brown, sandy CLAY, plastic (CL)	
C	SS	10	24	0	5	Brown and gray mottled silty, sandy CLAY, slightly plastic, (CL)	
D	SS	14	22	0		Grading to same with little fine gravel and less mottling at 10 feet to trace fine gravel at 12.5 feet. More plastic, moist at 12.5 feet with less sand.	
E	SS	21	24	0	10		
F	SS	16	24	0		Same as above (SAA). Brown CLAY (CL)	
G	SS	21	20	0	15	Moisture in tip of split barrel at 15 feet SAA with trace fine gravel at 17 feet, moist.	
H	SS	15	22	0		SAA with wet clayey SILT (ML-CL) at 18 to 18.5 feet. Then back into clay.	
I	SS	23	24	7.2	20	Silty, sandy CLAY at 22.5 feet (not saturated) (CL)	

GENERAL NOTES

DATE STARTED 29 MAY 90
DATE COMPLETED 29 MAY 90
RIG MOBILE B-57
CREW CHIEF GARY T
LOGGED JAV CHECKED

WATER LEVEL OBSERVATIONS

WHILE DRILLING ▽ 23.0
AT COMPLETION ▼
AFTER DRILLING
CAVE-IN: DATE/TIME DEPTH
WATER: DATE/TIME DEPTH

LOG OF TEST BORING

F-203 (R 01-87)

BORING NO. B1/OW1
SHEET NO. 2 OF 2

PROJECT NAME BOC REATTA
LOCATION LANSING, MI
CONTRACTOR T&T DRILLING CO
DRILLING METHOD HSA 4.25"

PROJECT NO. 1650.06
INSTALLATION 5/29/90
SURFACE ELEV.
BOREHOLE DIA. 8 IN.

SAMPLING NOTES						VISUAL CLASSIFICATION AND GENERAL OBSERVATIONS	GENERAL WELL CONSTRUCT.
INTERVAL		RECOVERY		HNU(ppm)	DEPTH		
NO.	TYPE	N	IN				
J	SS	9	15	0		Brown medium SAND, saturated 23 to 24.8 feet(SP)	
					25	2 inches clay in tip of barrel	
K	SS	16	22	0		Brown medium SAND, saturated, 25.5 to 27 feet (SP)	
L	SS	6	18	0		Silty clay in tip 27 to 27.5 feet	
					30	Return to brown medium SAND at 28 feet (SP) Grading to silty sand at 30 feet, saturated	
M	SS	12	10	0		Brown medium SAND, saturated (SP) Drilling resistance increased at 36.5 feet	
					35		
N	SS	30	24	0		Stiff brown silty CLAY with trace fine gravel, moist, not saturated, plasticity varies (CL)	
					40	T.D.= 40 feet **NOTES:** Hole filled from bottom up through augers with bentonite slurry. New boring redrilled approximately five feet to the south to a depth of 35 feet to set well. Well seal and neat cement grout placed with tremie pipe through the augers from bottom up. PID readings from the split barrel sampler. All PID jar samples read 0 above background.	
					45		

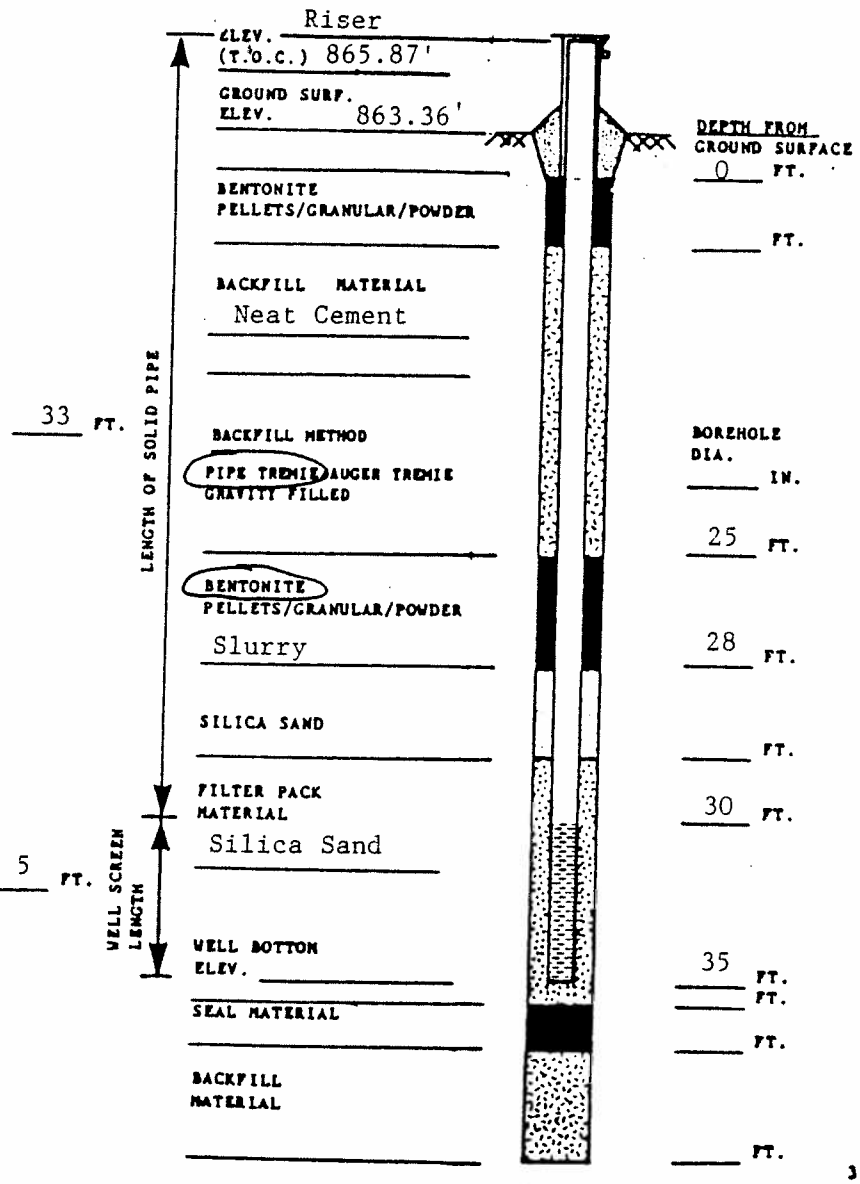
RMT INC

Well Diagram
F-17 (R 11-85)

PROJECT NAME: BOC - Reatta NO. 1650.06

WELL NO. OW - 1

DATE INSTALLED 5-29-90



1) CASING DETAILS

A) TYPE OF PIPE:

PVC, STAINLESS, TEFLON, (OTHER) Galvanized

PIPE SCHEDULE

B) TYPE OF PIPE JOINTS;

(COUPLINGS), THREADED (W/TAPE?), OTHER

C) WAS SOLVENT USED? YES OR (NO)

D) TYPE OF WELL SCREEN:

PVC (STAINLESS) TEFLON, OTHER

E) WELL SCREEN SLOT SIZE .010 - inch

F) PIPE DIA: ID IN. 2 OD IN.

G) INSTALLED PROTECTOR PIPE W/LOCK? (YES) OR NO

PROTECTOR PIPE DIA. 4 IN. Stick Up

2) WELL DEVELOPMENT

A) METHOD

BAILING, PUMPING, SURGING (COMPRESSED AIR)

OTHER

(NOTE ADDITIONAL COMMENTS BELOW)

B) TIME SPENT FOR DEVELOPMENT? 30 Min.

C) APPROXIMATE WATER VOLUME: REMOVED 30 Gal.

ADDED

D) WATER CLARITY BEFORE DEVELOPMENT?

CLEAR, TURBID (OPAQUE)

E) WATER CLARITY AFTER DEVELOPMENT?

CLEAR, SLIGHTLY TURBID, (TURBID), OPAQUE

F) ODOR? YES OR (NO)

3) WATER LEVEL SUMMARY

A) DEPTH FROM TOP OF CASING AFTER DEVELOPMENT?

22.85 FT. OR DRY on 6-4-90

B) OTHER MEASUREMENTS (T.O.C.):

DATE/TIME FT.

DATE/TIME FT.

DATE/TIME FT.

ADDITIONAL COMMENTS: Well placed in separate borehole approximately five feet to south of initial borehole.

LOG OF TEST BORING

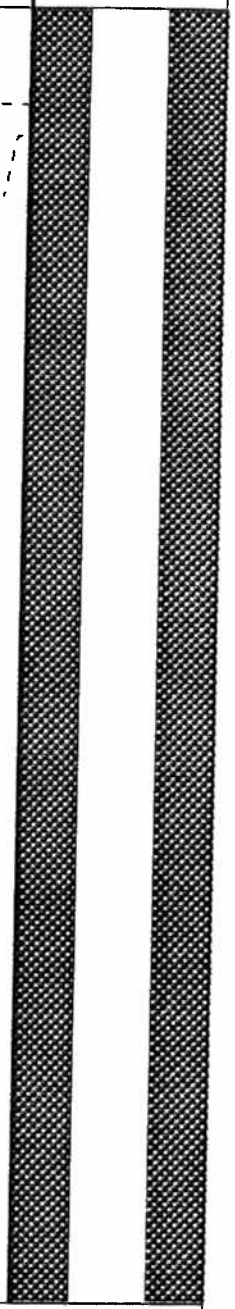
F-203 (R 01-87)

BORING NO. B2/OW2
SHEET NO. 1 OF 2

PROJECT NAME BOC REATTA
LOCATION LANSING, MI
CONTRACTOR T&T DRILLING CO
DRILLING METHOD HSA 4.25"

PROJECT NO. 1650.06
INSTALLATION 5/30/90
SURFACE ELEV. 862.6
BOREHOLE DIA. 8 IN.

SAMPLING NOTES						VISUAL CLASSIFICATION AND GENERAL OBSERVATIONS	GENERAL WELL CONSTRUCT.
INTERVAL NO.	TYPE	RECOVERY N	IN	HNU(ppm)	DEPTH		
						18 inches Concrete	
A	SS	10	22	0		Black and brown sandy FILL, (cinders?), to 2 feet.	
						Brown and gray silty, sandy CLAY, moist, plastic (CL)	
B	SS	13	24	0	5		
C	SS	12	24	0		Same as above (SAA), less moist and plastic at 6.5 feet (CL)	
D	SS	8	24	0	10	SAA, trace fine gravel (CL)	
E	SS	7	22	0			
						Gray, silty CLAY, moist, poor, ribbon (CL)	
F	SS	23	7	0	15	SAA, trace fine gravel	
G	SS	12	24	0			
						SAA with less silt	
H	SS	10	22	0			



GENERAL NOTES

DATE STARTED 30 MAY 90
DATE COMPLETED 30 MAY 90
RIG MOBILE B-57
CREW CHIEF GARY T
LOGGED JAV CHECKED

WATER LEVEL OBSERVATIONS

WHILE DRILLING ▽ 21.0
AT COMPLETION ▼
AFTER DRILLING
CAVE-IN: DATE/TIME DEPTH
WATER: DATE/TIME DEPTH

LOG OF TEST BORING

F-203 (R 01-87)

PROJECT NAME BOC REATTA
LOCATION LANSING, MI
CONTRACTOR T&T DRILLING CO
DRILLING METHOD HSA 4.25"

BORING NO. B2/OW2
SHEET NO. 2 OF 2
PROJECT NO. 1650.06
INSTALLATION 5/30/90
SURFACE ELEV.
BOREHOLE DIA. 8 IN.

SAMPLING NOTES						VISUAL CLASSIFICATION AND GENERAL OBSERVATIONS	GENERAL WELL CONSTRUCT.
INTERVAL NO.	TYPE	RECOVERY N	IN	HNU(ppm)	DEPTH		
I	SS	9	4	0		Brown medium SAND, saturated (SP)	
						SAA	
J	SS	8	22	0	25	Sandy, clayey SILT (ML-CL) Grading to SILT by 29 feet, saturated (ML)	
K	SS	6	22	0			
					30		
L	SS	23	24	0		Soft sandy SILT, saturated (ML)	
						Stiff SILT, moist, not saturated, slight clay content (ML)	
					35	T.D.=35 feet with split barrel T.D.=34 feet with auger **NOTE:** Seal and cement grout placed through augers from bottom up with tremie pipe	
					40		

RMT

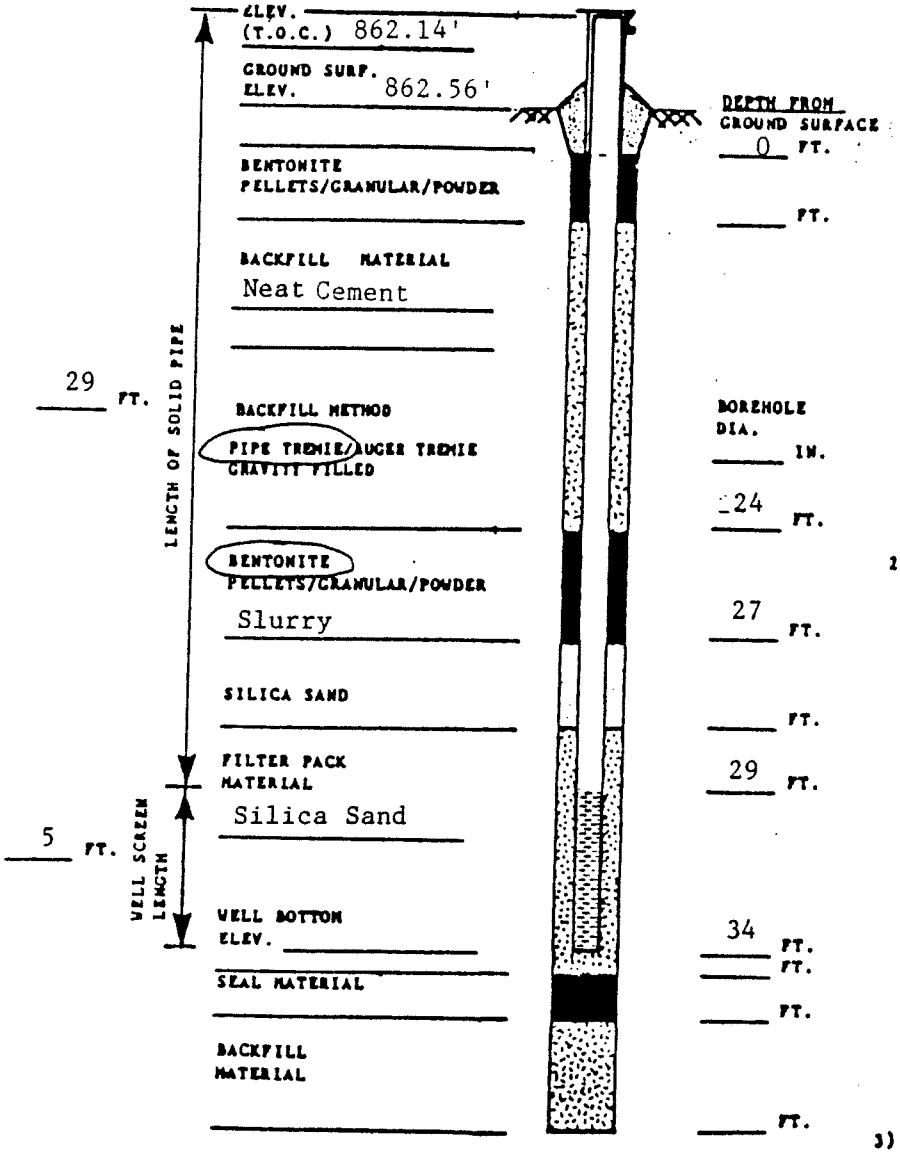
Well Diagram
F-17 (8 11-85)

PROJECT NAME: BOC - Reatta NO. 1650.06

WELL NO. OW - 2

DATE INSTALLED 5-30-90

Flush Mount



1) CASING DETAILS

A) TYPE OF PIPE:

PVC, STAINLESS, TEFLON, (OTHER) Galvanized

PIPE SCHEDULE

B) TYPE OF PIPE JOINTS;

(COUPLINGS), THREADED (W/TAPE?), OTHER

C) WAS SOLVENT USED? YES OR (NO)

D) TYPE OF WELL SCREEN:

PVC, (STAINLESS), TEFLON, OTHER

E) WELL SCREEN SLOT SIZE .010 - inch

F) PIPE DIA: ID IN. 2 OD IN.

G) INSTALLED PROTECTOR PIPE W/LOCK? (YES) OR NO

PROTECTOR PIPE DIA. 8 IN. Flush Mount

2) WELL DEVELOPMENT

A) METHOD

(BAILING), PUMPING, SURGING, COMPRESSED AIR

OTHER

(NOTE ADDITIONAL COMMENTS BELOW)

B) TIME SPENT FOR DEVELOPMENT? 35 Min.

C) APPROXIMATE WATER VOLUME: REMOVED 9 Gal.

ADDED

D) WATER CLARITY BEFORE DEVELOPMENT?

CLEAR, TURBID, (OPAQUE)

E) WATER CLARITY AFTER DEVELOPMENT?

(CLEAR to SLIGHTLY TURBID), TURBID, OPAQUE

F) ODOR? YES OR (NO)

3) WATER LEVEL SUMMARY

A) DEPTH FROM TOP OF CASING AFTER DEVELOPMENT?

32 FT. OR DRY and rising

B) OTHER MEASUREMENTS (T.O.C.):

DATE/TIME F

DATE/TIME F

DATE/TIME F

ADDITIONAL COMMENTS:

LOG OF TEST BORING

F-203 (R 01-87)

PROJECT NAME: BOC REATTA
LOCATION: LANSING, MI
CONTRACTOR: T&T DRILLING CO
DRILLING METHOD: HSA 4.25"

BORING NO.: B3/OW3
SHEET NO.: 1 OF 2
PROJECT NO.: 1650.06
INSTALLATION: 5/31/90
SURFACE ELEV.: 865.7
BOREHOLE DIA.: 8 IN.

SAMPLING NOTES						VISUAL CLASSIFICATION AND GENERAL OBSERVATIONS	GENERAL WELL CONSTRUCT.
INTERVAL		RECOVERY		HNU(ppm)			
NO.	TYPE	N	IN		DEPTH		
A	SS	9	22	0		Dark brown sandy, organic topsoil with roots to 2.2 feet.	
B	SS	14	10	0		Silty, red, brown and gray mottled CLAY at 2.2 feet (CL)	
C	SS	19	22	0	5	Same as above (SAA), CLAY (CL)	
D	SS	21	24	0		SAA, CLAY, plastic, fair ribbon, trace fine gravel (CL)	
E	SS	18	24	0	10	SAA with trace fine gravel to coarse gravel	
F	SS	7	24	0	▽	1-2 inches medium to light tan SAND at approx. 12 feet, then gray clayey SILT, moist (ML) Grades to soft saturated silty CLAY at 13.5 feet (CL)	
G	SS	10	24	0	15	Little coarse sand in tip at 15 feet	
H	SS	9	24	0		Gray CLAY, plastic, good ribbon, moist, (not saturated), 15.5 to 17.5 feet (CL) Grading to silty CLAY by 20 feet (CL)	

GENERAL NOTES

DATE STARTED: 31 MAY 90
DATE COMPLETED: 31 MAY 90
RIG: MOBILE B-57
CREW CHIEF: GARY T
LOGGED: JAV CHECKED:

WATER LEVEL OBSERVATIONS

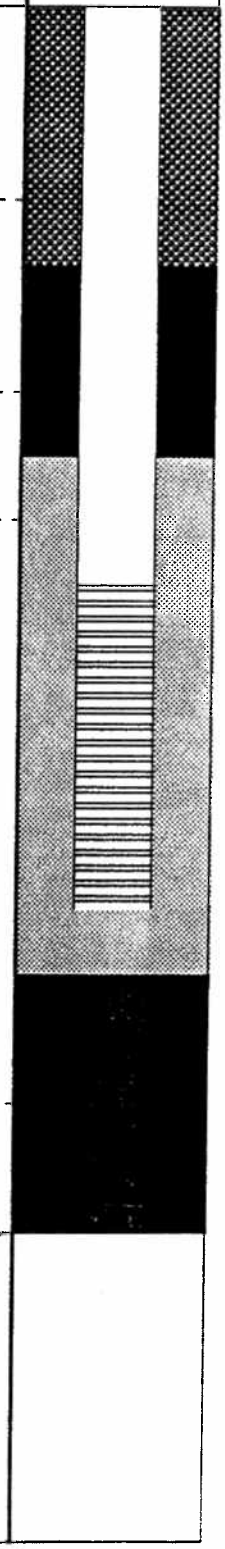
WHILE DRILLING ▽: 13.5 and 29.0
AT COMPLETION ▼:
AFTER DRILLING
CAVE-IN: DATE/TIME: DEPTH:
WATER: DATE/TIME: DEPTH:

LOG OF TEST BORING

F-203 (R 01-87)

BORING NO. B3/OW3
SHEET NO. 2 OF 2
PROJECT NAME BOC REATTA
PROJECT NO. 1650.06
LOCATION LANSING, MI
INSTALLATION 5/31/90
CONTRACTOR T&T DRILLING CO
SURFACE ELEV.
DRILLING METHOD HSA 4.25"
BOREHOLE DIA. 8 IN.

SAMPLING NOTES						VISUAL CLASSIFICATION AND GENERAL OBSERVATIONS	GENERAL WELL CONSTRUCT.
INTERVAL NO.	TYPE	RECOVERY N	IN	HNU(ppm)	DEPTH		
I	SS	32	2	0		SAA (poor recovery - cobble?), questionable representation of sample	
J	SS	12	24	0		Moist, very plastic CLAY 23 - 25 feet (CL)	
					25		
K	SS	11	22	0		Medium brown SAND with trace fine gravel at 27.5 feet, moist, not saturated (SP)	
L	SS	7	24	0		Sandy, clayey SILT, 28 - 29 feet (ML-CL) Sandy saturated SILT 29 - 29.5 feet (ML) Return to ML-CL with less moisture at 29.5 feet Drilled like soft silt	
					30		
M	SS	8	24	0		Moist to saturated SILT with variable clay content (ML) Silty clay at 35 feet in tip	
					35	Drilled to similar resistance of previous boring B-1 and B-2 till at 37 feet	
N	SS	18	24	0		Clayey SILT to silty CLAY to 38.7 feet, moist (ML-CL)	
						Clay SILT, dense, dry, trace fine gravel at 38.7 to 39 feet (ML-CL)	
					40	**NOTE:** TD with split barrel to 39 feet TD with auger to 37 feet Seal and grout placed through augers from bottom up with tremie pipe	



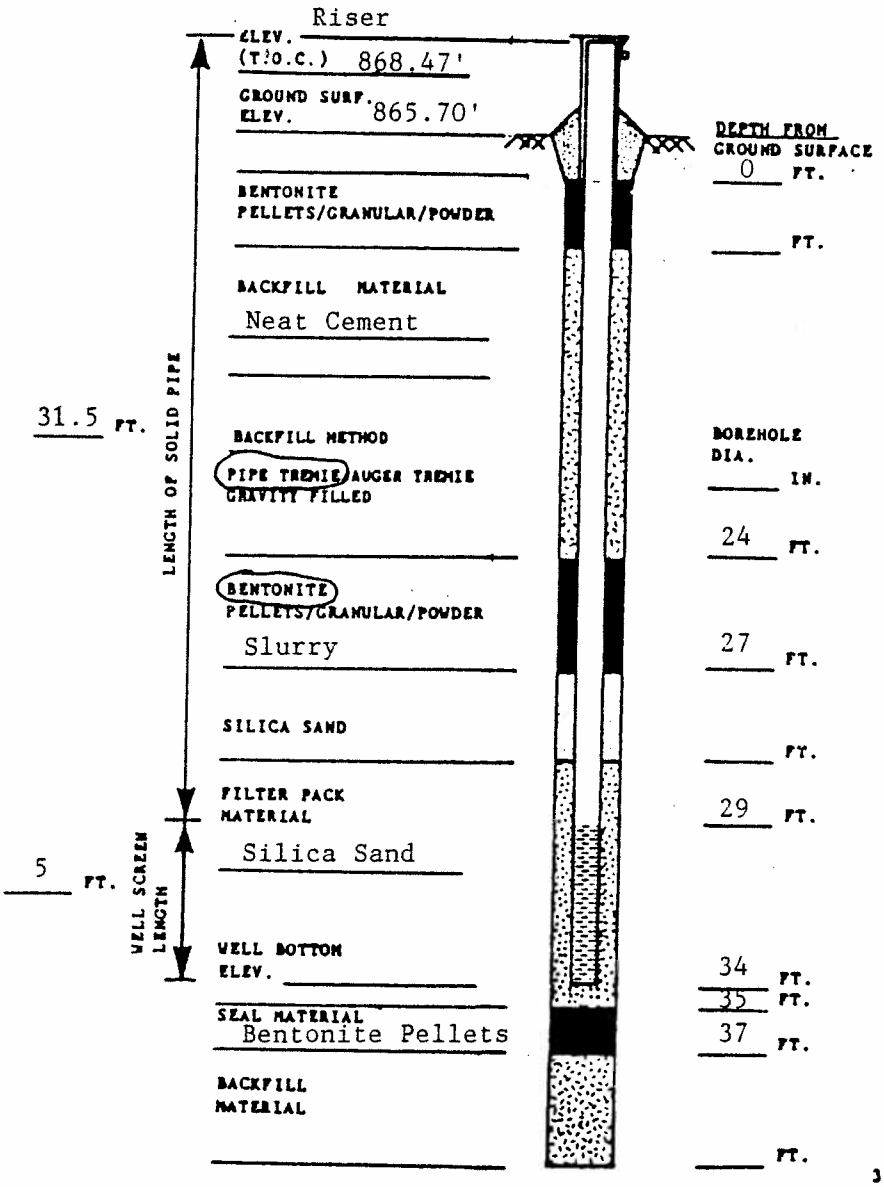
RMT

Well Diagram
F-17 (8 11-85)

PROJECT NAME: BOC - Reatta NO. 1650.06

WELL NO. OW - 3

DATE INSTALLED 5-31-90



1) CASING DETAILS

A) TYPE OF PIPE:

PVC, STAINLESS, TEFLON, (OTHER) Galvanized

PIPE SCHEDULE

B) TYPE OF PIPE JOINTS;

(COUPLINGS), THREADED (W/TAPE?), OTHER

C) WAS SOLVENT USED? YES OR (NO)

D) TYPE OF WELL SCREEN:

PVC, (STAINLESS), TEFLON, OTHER

E) WELL SCREEN SLOT SIZE .010 - inch

F) PIPE DIA: ID IN. 2 OD IN.

G) INSTALLED PROTECTOR PIPE W/LOCK? (YES) OR NO

PROTECTOR PIPE DIA. 4 IN. Stick Up

2) WELL DEVELOPMENT

A) METHOD

(BAILING), PUMPING, SURGING (COMPRESSED AIR)

OTHER

(NOTE ADDITIONAL COMMENTS BELOW)

B) TIME SPENT FOR DEVELOPMENT? 45 Min.

C) APPROXIMATE WATER VOLUME: REMOVED 15 Gal.

ADDED

D) WATER CLARITY BEFORE DEVELOPMENT?

CLEAR, TURBID, (OPAQUE)

E) WATER CLARITY AFTER DEVELOPMENT?

(CLEAR), SLIGHTLY TURBID, TURBID, OPAQUE

F) ODOR? YES OR (NO)

3) WATER LEVEL SUMMARY

A) DEPTH FROM TOP OF CASING AFTER DEVELOPMENT?

37 FT. OR DRY and rising

B) OTHER MEASUREMENTS (T.O.C.):

DATE/TIME FT

DATE/TIME FT

DATE/TIME FT

ADDITIONAL COMMENTS:

LOG OF TEST BORING

F-203 (R 01-87)

BORING NO. B4
SHEET NO. 1 OF 2
PROJECT NAME BOC REATTA
PROJECT NO. 1650.06
LOCATION LANSING, MI
INSTALLATION 5/31/90
CONTRACTOR T&T DRILLING CO
SURFACE ELEV. 862.3
DRILLING METHOD HSA 4.25"
BOREHOLE DIA. 8 IN.

SAMPLING NOTES						VISUAL CLASSIFICATION AND GENERAL OBSERVATIONS
INTERVAL NO.	TYPE	RECOVERY N	IN	HNU(ppm)	DEPTH	
A	SS	6	22	0		Brown and black sandy FILL with cinders, little fine gravel (FILL)
B	SS	4	16	1.4		
					5	Same as above (SAA)
C	SS	9	24	.1	▽	Refusal (concrete?) at 5 feet bgs, relocated south five feet and redrill (FILL)
						Brown SAND, saturated at 6 feet (possible backfill for storm line?), (SW)
D	SS	16	24	.1		SAA w/1-2mm clayey sand lenses (SW)
					10	
E	SS	6	24	0		Gray silty CLAY, trace fine gravel, moist, 10.5 - 12.5 feet (CL)
						Grading to stiff clayey SILT with less moisture, trace fine gravel (ML)
F	SS	14	24	0		
					15	
G	SS	12	24	0		SAA, clayey SILT, trace fine gravel (ML)
H	SS	8	24	0		SAA

GENERAL NOTES

DATE STARTED 31 MAY 90
DATE COMPLETED 31 MAY 90
RIG MOBILE B-57
CREW CHIEF GARY T
LOGGED JAV CHECKED

WATER LEVEL OBSERVATIONS

WHILE DRILLING ▽ 6.0 and 26.5
AT COMPLETION ▼
AFTER DRILLING
CAVE-IN: DATE/TIME DEPTH
WATER: DATE/TIME DEPTH

LOG OF TEST BORING

F-203 (R 01-87)

BORING NO. B4
SHEET NO. 2 OF 2
PROJECT NAME BOC REATTA
PROJECT NO. 1650.06
LOCATION LANSING, MI
INSTALLATION 5/31/90
CONTRACTOR T&T DRILLING CO
SURFACE ELEV.
DRILLING METHOD HSA 4.25"
BOREHOLE DIA. 8 IN.

SAMPLING NOTES						VISUAL CLASSIFICATION AND GENERAL OBSERVATIONS	GENERAL WELL CONSTRUCT.
INTERVAL NO.	TYPE	RECOVERY N	IN	HNU(ppm)	DEPTH		
I	SS	15	24	0		CLAY 20.5 - 21.5 feet then one inch sand lense followed by silty CLAY with sand lense (1 inch) at 22.3 feet (CL)	
J	SS	9	24	0		SAA with sandy, silty lense at 24 feet (CL)	
					25	Grading to clayey silt by 25 feet (ML)	
K	SS	9	24	0		Fine sandy SILT, saturated (ML)	
L	SS	5	24	.1		SAA	
					30		
M	SS	13	24	.1		SAA	
						Clayey SILT, moist, not saturated, stiff, trace fine gravel (ML)	
					35	T.D. = 35 feet Backfill hole with slurry grout from bottom up through augers with tremie pipe	
					40		

LOG OF TEST BORING

F-203 (R 01-87)

BORING NO. B5/OW4
SHEET NO. 1 OF 2
PROJECT NAME BOC REATTA
PROJECT NO. 1650.06
LOCATION LANSING, MI
INSTALLATION 6/1/90
CONTRACTOR T&T DRILLING CO
SURFACE ELEV. 868.6
DRILLING METHOD HSA 4.25"
BOREHOLE DIA. 8 IN.

SAMPLING NOTES						VISUAL CLASSIFICATION AND GENERAL OBSERVATIONS	GENERAL WELL CONSTRUCT.
INTERVAL NO.	TYPE	RECOVERY N	IN	HNU(ppm)	DEPTH		
						Railroad ballast FILL to 2 feet (FILL) (no split spoon)	
A	SS	5	22	2.4		Brown and black sandy FILL and cinders to 4 feet	
					5	Gray and brown mottled CLAY to 5 feet, trace fine gravel (CL)	
B	SS	8	22	2.2		Same as above (SAA) (CL)	
C	SS	4	17	3.4			
					10	SAA with 2-inch clayey silty saturated SAND lens at 9 feet (SM-SC)	
D	SS	8	22	3.0		SAA (CL)	
E	SS	12	22	2.0		Sandy, clayey SILT, moist with saturated zones where higher percent of sand occurs (ML)	
					15		
F	SS	15	12	2.1		SAA, saturated (ML)	
G	SS	8	18	1.5			
					20	SAA, moist, but not draining (ML) Grades to silty CLAY with trace fine gravel, moist, plastic, good ribbon (CL)	
H	SS	13	12	.6			

GENERAL NOTES

DATE STARTED 1 JUN 90
DATE COMPLETED 1 JUN 90
RIG MOBILE B-57
CREW CHIEF GARY T
LOGGED JAV CHECKED

WATER LEVEL OBSERVATIONS

WHILE DRILLING ▽ 9.0 and approx. 31.
AT COMPLETION ▼
AFTER DRILLING
CAVE-IN: DATE/TIME DEPTH
WATER: DATE/TIME DEPTH

LOG OF TEST BORING

F-203 (R 01-87)

BORING NO. B5/OW4
SHEET NO. 2 OF 2

PROJECT NAME BOC REATTA
PROJECT NO. 1650.06
LOCATION LANSING, MI
INSTALLATION 6/1/90
CONTRACTOR T&T DRILLING CO
SURFACE ELEV.
DRILLING METHOD HSA 4.25"
BOREHOLE DIA. 8 IN.

SAMPLING NOTES						VISUAL CLASSIFICATION AND GENERAL OBSERVATIONS	GENERAL WELL CONSTRUCT.
INTERVAL		RECOVERY		HNU(ppm)	DEPTH		
NO.	TYPE	N	IN				
I	SS	18	18	2.1		SAA only stiffer, less moist (CL)	
J	SS	20	18	3	25	SAA to 27.2 feet (CL)	
K	SS	33	20	2.5		Brown medium SAND (dry in tip) (SP)	
						CLAY (CL)	
					30	Brown, medium SAND, dry (SP)	
L	SS	6	24	2		Gray, fine sandy SILT, saturated, soft, loose, percent sand varies (ML)	
					35		
M	SS	41	24	2.8			
						Clayey SILT to silty CLAY at 39.7 feet. (ML-CL)	
					40	Cobble in first split spoon, resampled	
						T.D. = 40 feet with split spoon T.D. = 39 feet with augers **NOTE:** Seal and grout placed through augers from bottom up with tremie pipe	
					45		

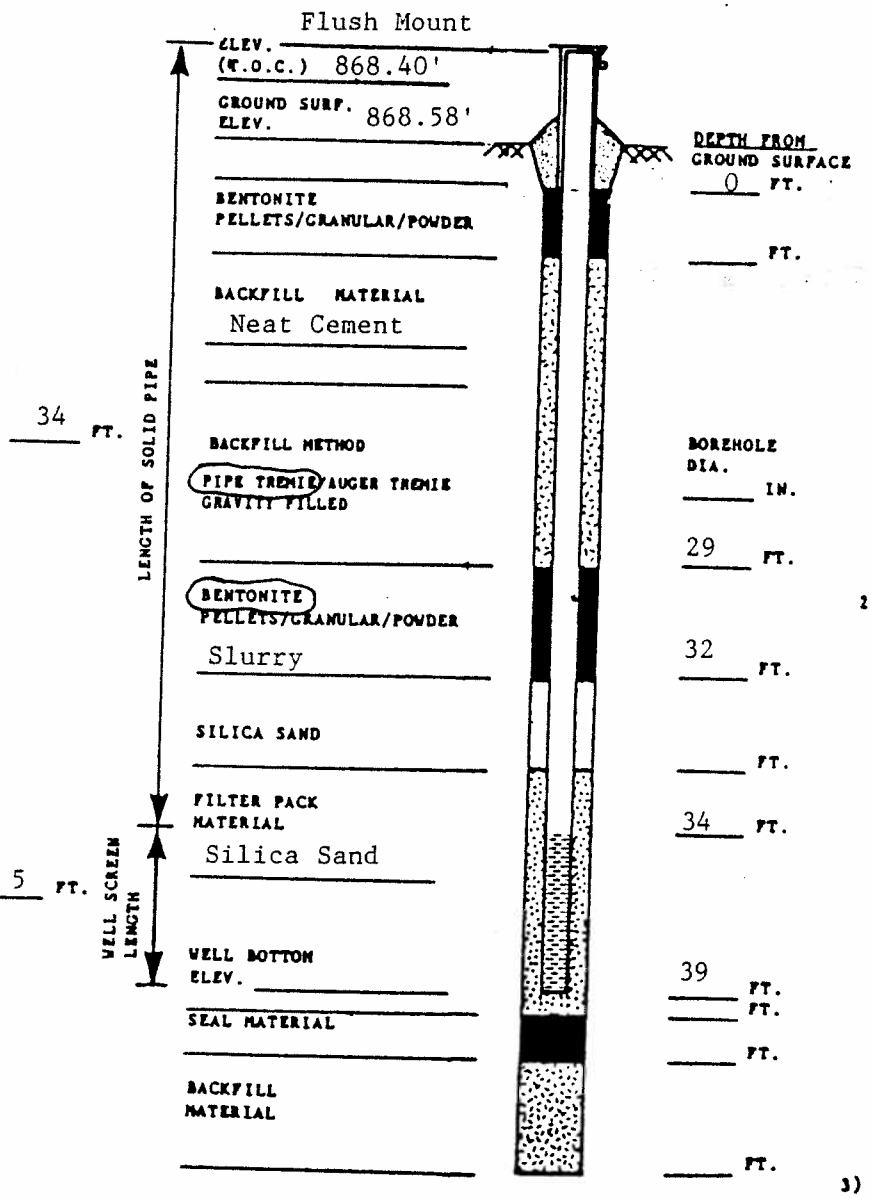
RMT

Well Diagram
F-17 (8 11-85)

PROJECT NAME: BOC - Reatta NO. 1650.06

WELL NO. OW - 4

DATE INSTALLED 6-1-90



1) CASING DETAILS

A) TYPE OF PIPE:

PVC, STAINLESS, TEFLON, (OTHER) Galvanized

PIPE SCHEDULE

B) TYPE OF PIPE JOINTS;

(COUPLINGS), THREADED (W/TAPE?), OTHER

C) WAS SOLVENT USED? YES OR (NO)

D) TYPE OF WELL SCREEN:

PVC, (STAINLESS), TEFLON, OTHER

E) WELL SCREEN SLOT SIZE .010 - inch

F) PIPE DIA: ID IN. 2 OD IN.

G) INSTALLED PROTECTOR PIPE W/LOCK? (YES) OR NO

PROTECTOR PIPE DIA. 8 IN. Flush Mount

2) WELL DEVELOPMENT

A) METHOD

(BAILING), PUMPING, SURGING, COMPRESSED AIR

OTHER

(NOTE ADDITIONAL COMMENTS BELOW)

B) TIME SPENT FOR DEVELOPMENT? 125 Min.

C) APPROXIMATE WATER VOLUME: REMOVED 4.5 Gal.

ADDED

D) WATER CLARITY BEFORE DEVELOPMENT?

CLEAR, TURBID, (OPAQUE)

E) WATER CLARITY AFTER DEVELOPMENT?

(CLEAR), SLIGHTLY TURBID, TURBID, OPAQUE

F) ODOR? YES OR (NO)

3) WATER LEVEL SUMMARY

A) DEPTH FROM TOP OF CASING AFTER DEVELOPMENT?

39 FT. OR DRY and rising

B) OTHER MEASUREMENTS (T.O.C.):

DATE/TIME FT.

DATE/TIME FT.

DATE/TIME FT.

ADDITIONAL COMMENTS:

LOG OF TEST BORING

F-203 (R 01-87)

BORING NO. B6
SHEET NO. 1 OF 2

PROJECT NAME BOC REATTA
PROJECT NO. 1650.06
LOCATION LANSING, MI
INSTALLATION 6/1/90
CONTRACTOR T&T DRILLING CO
SURFACE ELEV. 866.1
DRILLING METHOD HSA 4.25"
BOREHOLE DIA. 8 IN.

SAMPLING NOTES						VISUAL CLASSIFICATION AND GENERAL OBSERVATIONS
INTERVAL NO.	TYPE	RECOVERY N	IN	HNU(ppm)	DEPTH	
						Concrete to 8 inches
A	SS	15	16	3.6		Light brown, sandy FILL to 2.1 feet, then dark brown sandy fill with cinders (FILL)
						Brown clayey SAND, wet 2 inch lens at 4 feet
B	SS	7	2	4*	▽	
					5	
C	SS	10	22	3.6		Brown and gray mottled silty CLAY, moist (CL) Grading to dry clayey SILT by 6.5 feet (ML)
D	SS	38	9	3.8		
						Same as above (SAA), still mottled (ML)
					10	
E	SS	30	19	.4		
						SAA, no mottling, moist, brown piece woven plastic in sample (ML)
F	SS	16	11	1.2		
						Brown-gray clayey SILT to silty CLAY, moist, trace fine gravel, (ML-CL)
					15	
G	SS	15	24	2		
						SAA, more plastic cloth (ML-CL)
H	SS	13	24	.6		SAA (ML-CL)

GENERAL NOTES

DATE STARTED 1 JUN 90
DATE COMPLETED 4 JUN 90
RIG MOBILE B-57
CREW CHIEF GARY T
LOGGED JAV CHECKED

WATER LEVEL OBSERVATIONS

WHILE DRILLING ▽ 4.0 and 25.0
AT COMPLETION ▼
AFTER DRILLING
CAVE-IN: DATE/TIME DEPTH
WATER: DATE/TIME DEPTH

LOG OF TEST BORING

F-203 (R 01-87)

BORING NO. B6
SHEET NO. 2 OF 2
PROJECT NAME BOC REATTA
PROJECT NO. 1650.06
LOCATION LANSING, MI
INSTALLATION 6/1/90
CONTRACTOR T&T DRILLING CO
SURFACE ELEV.
DRILLING METHOD HSA 4.25"
BOREHOLE DIA. 8 IN.

SAMPLING NOTES						VISUAL CLASSIFICATION AND GENERAL OBSERVATIONS	GENERAL WELL CONSTRUCT.
INTERVAL NO.	TYPE	RECOVERY N	IN	HNU(ppm)	DEPTH		
I	SS	25	24	.2		Medium SAND, saturated at 20.5 feet to 20.8 feet then back into moist clayey SILT (ML)	
J	SS	25	24	.2		Gray CLAY, moist, good ribbon (CL)	
K	SS	20	22	.3	25	Sandy silt in tip at 25 feet, saturated with little clay to 26.5 feet, saturated, loose	
L	SS	19	21	.5		Sandy gravel, saturated, at 26.5 feet (3 inches) Back into clayey SILT with trace fine gravel, moist (ML)	
M	SS	36	24	1.7	30	Stiff clayey SILT to silty CLAY from 30 to 35 feet, (drill resistance) with trace fine gravel, moist, not saturated, stiff at 33 feet, less stiff at 35 feet (ML-CL)	
					35	T.D. = 35 feet **NOTE:** Slurry grout hole from bottom up with bentonite gel through the augers with tremie pipe. Hole plug in top seven feet. *Indicates insufficient sample for jar PID reading. Reading from split spoon utilized.	
					40		

URS CONSULTANTS, Inc.

TEST BORING LOG
BORING NO. OW-5

PROJECT:	GM-Lansing, Plant #2, Area 2
CLIENT:	GM-LAD
BORING CONTRACTOR:	Geo-Tek Inc.
SHEET NO.	1 OF 1
JOB NO. :	E1-93-110
GROUND ELEVATION	862
DATE STARTED:	10/5/93
DATE FINISHED:	10/6/93
DRILLER:	Peter Buell
GEOLOGIST:	Michael Kovacs (EM)
REVIEWED BY:	David Frazier (URS)

GROUND WATER:

DATE	TIME	LEV	TYPE
10/6/93		30'	static

	CAS.	SAMP.	CORE	TUBE
TYPE	HSA	SS		
DIA.	4-1/4"	2"		
WT.				
FALL				

* POCKET PENETROMETER READING

DEPTH FT	STRATA	SAMPLE NO.	SAMPLE TYPE	BLOWS PER 6"	RECOVERY RQD %	DESCRIPTION COLOR	CONSISTENCY HARDNESS	MATERIAL DESCRIPTION	CLASS USCS	REMARKS
1								Concrete		soil very wet,
		S-1	SS	3	3	brown/		SAND		standing water
				3	7	dk grey		SANDY CLAY, trace Gravel	Fill	noted approx. 2'
										from hole
5										Hnu(1-3')=ND
		S-2	SS	2	2	dk grey		CLAY, trace Gravel	CL	
				2	2					Hnu(3-5')=ND
10										
		S-3	SS	2	3	grey		SILTY CLAY, trace Gravel	CL	moist
				4	6					Hnu(10-12')=ND
15										
		S-4	SS	6	8	grey		CLAY, trace Gravel	CL	dry, reddish
				9	8					staining @ 16'
										Hnu(15-17')=ND
20										
		S-5	SS	5	8	grey		same as S-4	CL	moist
				9	12					Hnu(20-22')=ND
25										
		S-6	SS	6	9	grey		SANDY SILT	ML	moist
				6	7					Hnu(25-27')=ND
30										
		S-7	SS			grey/		CLAYEY SILT, trace fine Sand	ML	very wet
						brown				Hnu(30-32')=ND
35										
		S-8	SS	11	13	grey/		. . . grade: some Sand	ML	very wet
				13	16	brown				Hnu(35-37')=ND
40										
		S-9	SS	8	15	grey/				very wet
42				15	19	brown		SILT, trace Sand	ML	Hnu(40-42')=ND

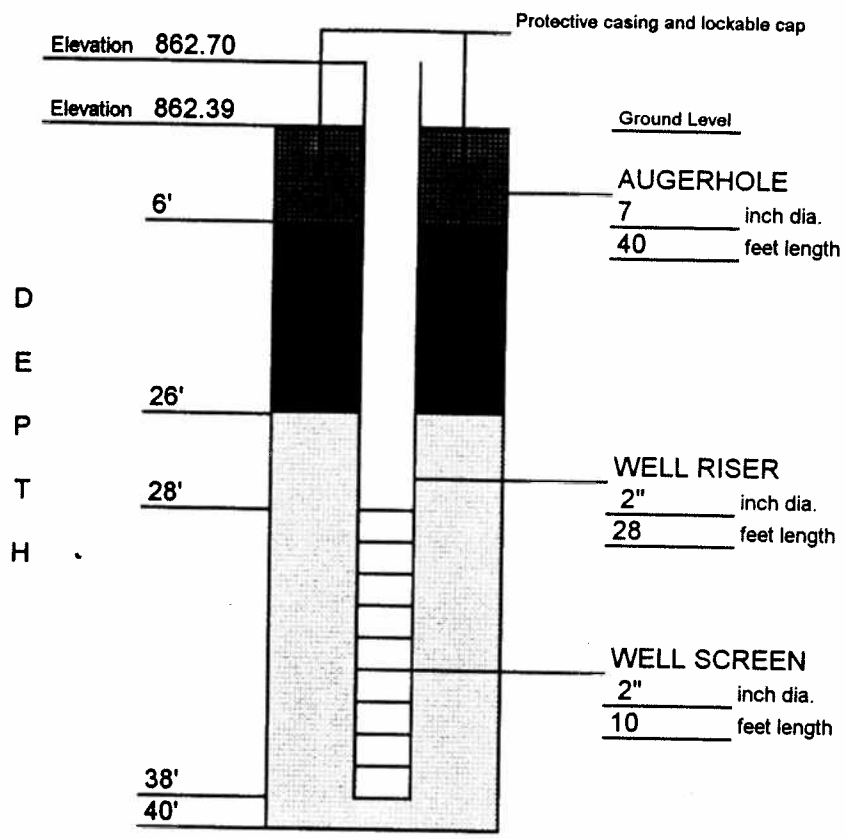
COMMENTS ND = non detect

PROJECT NO. E1-93-110

DRILLING SUMMARY
Geologist: Mike Kovacs
Drilling Company: Geo-Tek Inc.
Driller: Peter Buell
Date: 10/5/93

GEOLOGIC LOG

depth(ft.)	lithology
1-5'	SAND FILL
5-22'	SILTY CLAY AND CLAY
22-42'	SANDY AND CLAYEY SILT



WELL DESIGN

CASING MATERIAL	*SCREEN MATERIAL*	*SEAL MATERIAL*
Surface: Cast Iron	Type: Slotted PVC	Seal #1 Type: Bentonite Chips Setting: 26-28'
Monitor: 2" PVC	Slot Size: .010	Seal #2 Type: Cement Grout Setting: 0-26'

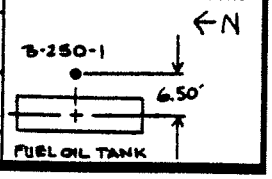
FILTER MATERIAL	*ROCK DRILLING*	*LEGEND*
Type: Global Filter Pack m/c Sand	Drilled Interval: none	Cement Grout
Setting: 26-40'	Core Diameter: None	Bentonite Seal
	Reamed Diameter: N/A	Silica Sandpack

Client: GM-LAD	Project: Plant #2, Area 2	Project No.: E1-93-110
URS Consultants Inc.	**Monitoring Well Constuction Details**	**Well Number:** OW-5

BORING LOG / MONITORING WELL DIAGRAM

ABB ENVIRONMENTAL SERVICES, INC.

PROJECT NO.: 5698-20	PROJECT NAME: GM BOC BUILDING 260		BORING/WELL DESIGNATION: SB-260-1	BORING/WELL LOCATION:
DRILLING CONTRACTOR: E. T. S.	DRILLING METHOD: HOLLOW STEM AUGER		BOREHOLE SIZE: 10 IN.	BOREHOLE DEPTH: 50 FT.
DATE STARTED: 8/2/90	DATE COMPLETED: 8/2/90	GROUND ELEV.: NA FT.	MEASURING POINT ELEV: NA FT.	WELL DEPTH: N/A FT.
RIG: D-120	DRILLER: G. PARKER	HELPER: A. GRAY	LOGGED BY: C. KIELTY	



DEPTH (FT.)	DESCRIPTION	SAMPLE NO.	SAMPLE TYPE	BLOW COUNTS(N)	P.I. METER (ppm)	COMMENTS	WELL DATA
0	ASPHALT - with gravel fill					- BORING HOLE FILLED TO SURFACE WITH DRY BENTONITE AND SOIL CUTTINGS	
	SAND (fill) - brown, medium grained, moist, loose, trace fine gravel	3-5'	SS/LAB	3-4-5-4	BG		
5							
	SANDY CLAY - brown-gray, fine sand, moist, firm, plastic, some silt, some fine gravel	8-10'	SS/LAB	5-7-8-10	BG		
10							
	SAND - brown, fine-medium grained, wet, trace clay, trace fine gravel	13-15'	SS/LAB	6-8-9-11	BG		
15							
	SILTY CLAY - gray, moist, plastic, firm, trace fine gravel	18-20'	SS	5-7-10-11	NA		
20							
		23-25'	SS	3-6-7-11	NA		
25							
		28-30'	SS	6-7-10-14	NA		
30							
		33-35'	SS	15-15-15-80	NA		
35	SAND - light brown, fine-medium						

NOTES: NA - NOT AVAILABLE
N/A - NOT APPLICABLE
SS - SPLIT-SPOON
LAB - LABORATORY SAMPLE
BG - BACKGROUND
* - DUPLICATE LAB SAMPLE ALSO TAKEN AT THIS INTERVAL

PROJECT NO.: 5698-20	PROJECT NAME: GM BOC BUILDING 250	BORING/WELL NUMBER: SB-250-1	BOREHOLE DEPTH: 50 FT.

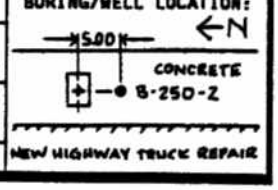
DEPTH (FT.)	DESCRIPTION	SAMPLE NO.	SAMPLE TYPE	BLOW COUNTS(N)	P.I. METER (ppm)	COMMENTS	WELL DATA
35	SAND - light brown, fine-medium grained, dry, very dense						
		38-40'	SS	5-9-9-12	NA		
40	SILTY CLAY - gray, moist, plastic, firm, trace fine gravel						
		43-45'	SS	4-6-8-9	NA		
45	SAND - light brown-gray, fine grained, dry, very firm						
		48-50'	SS	6-13-30-35	NA		
50	END OF BORING AT 50 FEET						

NOTES: NA - NOT AVAILABLE
N/A - NOT APPLICABLE
SS - SPLIT SPOON SAMPLE
LAB - LABORATORY SAMPLE

BORING LOG / MONITORING WELL DIAGRAM

ABB ENVIRONMENTAL SERVICES, INC.

PROJECT NO.: 5698-20	PROJECT NAME: GM BOC BUILDING 250		BORING/WELL DESIGNATION: SB-250-2	BORING/WELL LOCATION:
DRILLING CONTRACTOR: E. T. S.		DRILLING METHOD: HOLLOW STEM AUGER	BOREHOLE SIZE: 10 IN.	BOREHOLE DEPTH: 15 FT.
DATE STARTED: 8/2/90	DATE COMPLETED: 8/2/90	GROUND ELEV.: NA FT.	MEASURING POINT ELEV: NA FT.	WELL DEPTH: N/A FT.
RIG: D-120	DRILLER: G. PARKER	HELPER: A. GRAY	LOGGED BY: C. KIELTY	



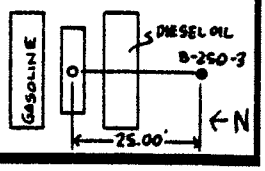
DEPTH (FT.)	DESCRIPTION	SAMPLE NO.	SAMPLE TYPE	BLOW COUNTS(N)	P.I. METER (ppm)	COMMENTS	WELL DATA
0	CONCRETE					- BORING HOLE FILLED TO SURFACE WITH DRY BENTONITE AND SOIL CUTTINGS	
	FILL SAND						
2.5	SAND - brown, medium grained, moist, loose, trace fine gravel	3-5'	SS/LAB *	1-4-7-7	BG		
5							
7.5	SANDY CLAY - brown, moist, firm, plastic, some fine gravel	8-10'	SS/LAB	3-6-8-9	BG		
10							
12.5	SILTY CLAY - gray-brown, moist, very stiff, plastic, trace fine gravel, trace fine sand	13-15'	SS/LAB	7-17-19-24	BG		
15	END OF BORING AT 15 FEET						
17.5							

NOTES: NA - NOT AVAILABLE
N/A - NOT APPLICABLE
SS - SPLIT-SPOON
LAB - LABORATORY SAMPLE
BG - BACKGROUND
* - DUPLICATE LAB SAMPLE ALSO TAKEN AT THIS INTERVAL

BORING LOG / MONITORING WELL DIAGRAM

ABB ENVIRONMENTAL SERVICES, INC.

PROJECT NO.: 5698-20	PROJECT NAME: GM BOC BUILDING 250		BORING/WELL DESIGNATION: SB-250-3	BORING/WELL LOCATION:
DRILLING CONTRACTOR: E. T. S.	DRILLING METHOD: HOLLOW STEM AUGER	BOREHOLE SIZE: 10 IN.	BOREHOLE DEPTH: 15 FT.	
DATE STARTED: 8/2/90	DATE COMPLETED: 8/2/90	GROUND ELEV.: NA FT.	MEASURING POINT ELEV: NA FT.	WELL DEPTH: N/A FT.
RIG: D-120	DRILLER: G. PARKER	HELPER: A. GRAY	LOGGED BY: C. KIELTY	



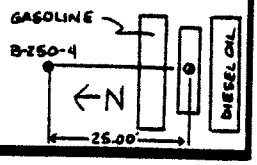
DEPTH (FT.)	DESCRIPTION	SAMPLE NO.	SAMPLE TYPE	BLOW COUNTS(N)	P.I. METER	COMMENTS	WELL DATA
0					(ppm)		
	ASPHALT - with gravel fill					- BORING HOLE FILLED TO SURFACE WITH DRY BENTONITE AND SOIL CUTTINGS	
	FILL SAND						
2.5							
	SAND - brown, medium grained, moist, loose, trace fine gravel	3-5'	SS	5-5-5-5	BG		
5							
			GRAB LAB		BG	- SAMPLE GRABBED FROM AUGER CUTTINGS	
7.5							
	SANDY CLAY - brown, moist, firm, plastic, trace fine gravel, trace silt	8-10'	SS/LAB	7-5-7-9	2		
10							
12.5							
	SILTY CLAY - gray-brown, moist, firm plastic, some fine gravel	13-15'	SS/LAB	4-5-8-16	1		
15							
	END OF BORING AT 15 FEET						
17.5							

NOTES: NA - NOT AVAILABLE
N/A - NOT APPLICABLE
SS - SPLIT-SPOON
LAB - LABORATORY SAMPLE
BG - BACKGROUND

BORING LOG / MONITORING WELL DIAGRAM

ABB ENVIRONMENTAL SERVICES, INC.

PROJECT NO.: 5698-20	PROJECT NAME: GM BOC BUILDING 250		BORING/WELL DESIGNATION: SB-250-4	BORING/WELL LOCATION:
DRILLING CONTRACTOR: E. T. S.		DRILLING METHOD: HOLLOW STEM AUGER	BOREHOLE SIZE: 10 IN.	BOREHOLE DEPTH: 15 FT.
DATE STARTED: 8/2/90	DATE COMPLETED: 8/2/90	GROUND ELEV.: NA FT.	MEASURING POINT ELEV: NA FT.	WELL DEPTH: N/A FT.
RIG: D-120	DRILLER: G. PARKER	HELPER: A. GRAY	LOGGED BY: C. KIELTY	



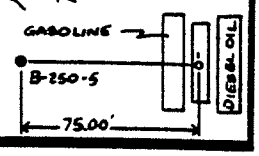
DEPTH (FT.)	DESCRIPTION	SAMPLE NO.	SAMPLE TYPE	BLOW COUNTS(N)	P.I. METER (ppm)	COMMENTS	WELL DATA
0	ASPHALT - with gravel fill					- BORING HOLE FILLED TO SURFACE WITH DRY BENTONITE AND SOIL CUTTINGS	
	FILL SAND						
2.5	SANDY CLAY - gray-brown, moist, stiff, plastic, some silt, some fine gravel	3-5'	SS/LAB	3-6-9-12	BG		
5							
7.5	SANDY CLAY - brown, moist, stiff, plastic, some silt, some fine gravel	8-10'	SS/LAB	5-8-11-13	2		
10							
12.5	SILTY CLAY - gray-brown, moist, firm plastic, some fine gravel	13-15'	SS/LAB	4-5-8-11	BG		
15	END OF BORING AT 15 FEET						
17.5							

NOTES: NA - NOT AVAILABLE
N/A - NOT APPLICABLE
SS - SPLIT-SPOON
LAB - LABORATORY SAMPLE
BG - BACKGROUND

BORING LOG / MONITORING WELL DIAGRAM

ABB ENVIRONMENTAL SERVICES, INC.

PROJECT NO.: 5698-20	PROJECT NAME: GM BOC BUILDING 250		BORING/WELL DESIGNATION: SB-250-5	BORING/WELL LOCATION:
DRILLING CONTRACTOR: E. T. S.	DRILLING METHOD: HOLLOW STEM AUGER		BOREHOLE SIZE: 10 IN.	BOREHOLE DEPTH: 15 FT.
DATE STARTED: 8/2/90	DATE COMPLETED: 8/2/90	GROUND ELEV.: NA FT.	MEASURING POINT ELEV: NA FT.	WELL DEPTH: N/A FT.
RIG: D-120	DRILLER: G. PARKER	HELPER: A. GRAY	LOGGED BY: C. KIELTY	



DEPTH (FT.)	DESCRIPTION	SAMPLE NO.	SAMPLE TYPE	BLOW COUNTS(N)	P.I. METER (ppm)	COMMENTS	WELL DATA
0	ASPHALT - with gravel fill					- BORING HOLE FILLED TO SURFACE WITH DRY BENTONITE AND SOIL CUTTINGS	
	FILL SAND						
2.5	SANDY CLAY - gray-brown, dry-moist, firm, plastic, some fine sand, some fine gravel	3-5'	SS/LAB	1-2-5-8	BG		
5							
7.5		8-10'	SS/LAB	5-8-11-13	BG		
10							
12.5	SILT - gray, wet, trace clay	13-15'	SS/LAB	5-10-13-12	BG		
15	END OF BORING AT 15 FEET						
17.5							

NOTES: NA - NOT AVAILABLE
N/A - NOT APPLICABLE
SS - SPLIT-SPOON
LAB - LABORATORY SAMPLE
BG - BACKGROUND

BORING LOG / MONITORING WELL DIAGRAM

ABB ENVIRONMENTAL SERVICES, INC.

PROJECT NO.: 5698-21	PROJECT NAME: GM BOC BUILDING 250		BORING/WELL DESIGNATION: B-250-6	BORING/WELL LOCATION: SEE FIGURE 2-1
DRILLING CONTRACTOR: E. T. S.	DRILLING METHOD: HOLLOW STEM AUGER		BOREHOLE SIZE: 8 IN. / BOREHOLE DEPTH: 15 FT.	
DATE STARTED: 04/17/91	DATE COMPLETED: 04/17/91	GROUND ELEV.: 875.65 FT.	MEASURING POINT ELEV: NA FT. / WELL DEPTH: N/A FT.	
RIG: D-50	DRILLER: J. CHRIS	HELPER: A. GRAY	LOGGED BY: C. KIELTY	

DEPTH (FT.)	DESCRIPTION	SAMPLE NO.	SAMPLE TYPE	BLOW COUNTS(N)	P.I. METER (ppm)	COMMENTS	WELL DATA
0	ASPHALT					BORING HOLE FILLED TO SURFACE WITH DRY BENTONITE	
	CLAY - brown, plastic, moist, stiff, some sand, some fine gravel, trace silt	1-2.5'	SS	3-4-6	BG		
2.5	CLAY - brown, plastic, very stiff-stiff, moist, some silt and sand, with gray silt seem layers	3-5'	SS	5-7-11-15	BG		
5		5.5-7.5'	SS	4-5-7-11	BG		
7.5		8-10'	SS/LAB	3-6-8-10	80-90	ODOR PRESENT	
10	CLAY - brown, plastic, stiff, moist, some silt, sand and fine gravel, thin silt and sand layers	10.5-12.5	SS	4-6-5-7	50-60		
12.5	SILTY CLAY - gray, very plastic, stiff moist, some sand and fine gravel	13-15'	SS	3-5-6-7	BG		
15	END OF BORING AT 15 FEET						

NOTES: NA - NOT AVAILABLE
N/A - NOT APPLICABLE
SS - SPLIT-SPOON
LAB - LABORATORY SAMPLE
BG - BACKGROUND

BORING LOG / MONITORING WELL DIAGRAM

ABB ENVIRONMENTAL SERVICES, INC.

PROJECT NO.: 5698-21	PROJECT NAME: GM BOC BUILDING 250	BORING/WELL DESIGNATION: B-250-7	BORING/WELL LOCATION:
DRILLING CONTRACTOR: E. T. S.	DRILLING METHOD: HOLLOW STEM AUGER	BOREHOLE SIZE: 8 IN.	BOREHOLE DEPTH: 15 FT.
DATE STARTED: 04/17/91	DATE COMPLETED: 04/17/91	GROUND ELEV.: 876.05 FT.	MEASURING POINT ELEV: NA FT.
WELL DEPTH: N/A FT.			
RIG: D-50	DRILLER: J. CHRIS	HELPER: A. GRAY	LOGGED BY: C. KIELTY

SEE FIGURE 2-1

DEPTH (FT.)	DESCRIPTION	SAMPLE NO.	SAMPLE TYPE	BLOW COUNTS(N)	P.I. METER	COMMENTS	WELL DATA
0					(ppm)		
	ASPHALT						
	SANDY CLAY - brown, plastic, stiff, moist-dry, some fine gravel	.5-2.5'	SS	3-5-5-7	BG	BORING HOLE FILLED TO SURFACE WITH DRY BENTONITE	
2.5							
		3-5'	SS	4-4-4-10	BG		
5							
	SANDY CLAY - light brown, slightly plastic, very stiff, moist, some silt, with light gray silt and sand layers	5.5-7.5'	SS	6-7-9-13	2		
7.5							
		8-10'	SS/LAB	6-8-10-12	80-90	ODOR PRESENT	
10							
	SANDY CLAY - light brown, slightly plastic, very stiff, moist, some silt, with vertical gray streak in sample	10.5-12.5	SS	3-5-8-13	80-100		
12.5							
	SILTY CLAY - gray, plastic, very stiff dry-moist, some sand and fine gravel	13-15'	SS	3-6-11-20	1-2		
15							
	END OF BORING AT 15 FEET						

NOTES: NA - NOT AVAILABLE
N/A - NOT APPLICABLE
SS - SPLIT-SPOON
LAB - LABORATORY SAMPLE
BG - BACKGROUND

BORING LOG / MONITORING WELL DIAGRAM

ABB ENVIRONMENTAL SERVICES, INC.

PROJECT NO.: 5698-21	PROJECT NAME: GM BOC BUILDING 250		BORING/WELL DESIGNATION: B-250-8	BORING/WELL LOCATION: SEE FIGURE 2-1
DRILLING CONTRACTOR: E. T. S.	DRILLING METHOD: HOLLOW STEM AUGER		BOREHOLE SIZE: 8 IN. / BOREHOLE DEPTH: 15 FT.	
DATE STARTED: 04/18/91	DATE COMPLETED: 04/18/91	GROUND ELEV.: 876.27 FT.	MEASURING POINT ELEV: NA FT. / WELL DEPTH: N/A FT.	
RIG: D-50	DRILLER: J. CHRIS	HELPER: A. GRAY	LOGGED BY: C. KIELTY	

DEPTH (FT.)	DESCRIPTION	SAMPLE NO.	SAMPLE TYPE	BLOW COUNTS(N)	P.I. METER (ppm)	COMMENTS	WELL DATA
0	ASPHALT						
	CLAYEY SAND - brown, medium grained, loose, some fine gravel	.5-2.5'	SS	5-5-4-3	BG	BORING HOLE FILLED TO SURFACE WITH DRY BENTONITE	
2.5	SANDY CLAY - brown, fine-medium grained, slightly plastic soft, moist, some fine gravel, some gray silt and fine sand layers, trace silt	3-5'	SS	2-2-2-4	BG		
5		5.5-7.5'	SS	2-3-5-11	BG		
7.5	SANDY CLAY - brown, plastic, stiff, dry-moist, trace-some fine gravel, some gray silt and fine sand layers	8-10'	SS	3-6-9-12	10-20	SLIGHT ODOR PRESENT	
10		10.5-12.5	SS/LAB	3-5-8-12	15-25		
12.5		13-15'	SS	3-6-9-10	1-2		
15	END OF BORING AT 15 FEET						

NOTES: NA - NOT AVAILABLE
N/A - NOT APPLICABLE
SS - SPLIT-SPOON
LAB - LABORATORY SAMPLE
BG - BACKGROUND

BORING LOG / MONITORING WELL DIAGRAM

ABB ENVIRONMENTAL SERVICES, INC.

PROJECT NO.: 5698-21	PROJECT NAME: GM BOC BUILDING 250		BORING/WELL DESIGNATION: B-250-9	BORING/WELL LOCATION: SEE FIGURE 2-1
DRILLING CONTRACTOR: E. T. S.	DRILLING METHOD: HOLLOW STEM AUGER		BOREHOLE SIZE: 8 IN. / BOREHOLE DEPTH: 15 FT.	
DATE STARTED: 04/18/91	DATE COMPLETED: 04/18/91	GROUND ELEV.: 876.06 FT. / MEASURING POINT ELEV: NA FT.	WELL DEPTH: N/A FT.	
RIG: D-50	DRILLER: J. CHRIS	HELPER: A. GRAY	LOGGED BY: C. KIELTY	

DEPTH (FT.)	DESCRIPTION	SAMPLE NO.	SAMPLE TYPE	BLOW COUNTS(N)	P.I. METER (ppm)	COMMENTS	WELL DATA
0	ASPHALT						
	SILTY SAND - dark brown, medium grained, moist, trace clay, some fine gravel	.5-2.5'	SS	5-6-4-4	BG	BORING HOLE FILLED TO SURFACE WITH DRY BENTONITE	
2.5	SANDY CLAY - brown, fine-medium grained, slightly plastic stiff, moist, some fine gravel, trace silt	3-5'	SS	3-3-6-8	BG		
5	SANDY CLAY - brown-gray, slightly plastic, very stiff, dry-moist, some gray silt, trace fine gravel, with fine silt layers	5.5-7.5'	SS	6-11-11-15	BG		
7.5		8-10'	SS/LAB	4-8-8-11	30-40	SLIGHT ODOR PRESENT	
10	SANDY CLAY -brown, plastic, stiff, moist, some silt and fine gravel	10.5-12.5	SS	3-6-8-12	30-35	SLIGHT ODOR PRESENT	
12.5	SILTY CLAY - gray-brown, very plastic, very stiff, moist, trace gravel, with sand layer at the base of sampler	13-15'	SS	4-9-17-25	1-2		
15	END OF BORING AT 15 FEET						

NOTES: NA - NOT AVAILABLE
N/A - NOT APPLICABLE
SS - SPLIT-SPOON
LAB - LABORATORY SAMPLE
BG - BACKGROUND

BORING LOG / MONITORING WELL DIAGRAM

ABB ENVIRONMENTAL SERVICES, INC.

PROJECT NO.: 5698-21	PROJECT NAME: GM BOC BUILDING 250		BORING/WELL DESIGNATION: B-250-10	BORING/WELL LOCATION: SEE FIGURE 2-1
DRILLING CONTRACTOR: E. T. S.	DRILLING METHOD: HOLLOW STEM AUGER	BOREHOLE SIZE: 8 IN.	BOREHOLE DEPTH: 15 FT.	
DATE STARTED: 04/18/91	DATE COMPLETED: 04/18/91	GROUND ELEV.: 875.94 FT.	MEASURING POINT ELEV: NA FT.	WELL DEPTH: N/A FT.
RIG: D-50	DRILLER: J. CHRIS	HELPER: A. GRAY	LOGGED BY: C. KIELTY	

DEPTH (FT.)	DESCRIPTION	SAMPLE NO.	SAMPLE TYPE	BLOW COUNTS(N)	P.I. METER	COMMENTS	WELL DATA
0					(ppm)		
	ASPHALT						
	SANDY CLAY - brown, plastic, very stiff, moist, some fine gravel	.5-2.5'	SS	7-8-8-13	BG	BORING HOLE FILLED TO SURFACE WITH DRY BENTONITE AND SOIL CUTTINGS	
2.5							
	CLAYEY SAND - brown, fine-medium grained, loose, some fine gravel, trace silt	3-5'	SS	4-4-6-11	BG		
5							
	SANDY CLAY - brown, slightly plastic, very stiff, moist-dry, trace silt, some fine gravel, gray vertical streaks of sand and silt possible fractures in clay	5.5-7.5'	SS	6-9-10-12	BG		
7.5							
		8-10'	SS/LAB	6-9-11-11	BG		
10							
	SANDY CLAY - brown, plastic, stiff, moist, some fine gravel, with gray silt and fine sand layers, trace silt	10.5-12.5	SS	7-7-7-9	BG		
12.5							
		13-15'	SS	7-8-11-8	BG		
	SILTY CLAY - gray, plastic, stiff, moist, some fine sand, trace fine gravel						
15	END OF BORING AT 15 FEET						

NOTES: NA - NOT AVAILABLE
N/A - NOT APPLICABLE
SS - SPLIT-SPOON
LAB - LABORATORY SAMPLE
BG - BACKGROUND

BORING LOG / MONITORING WELL DIAGRAM

ABB ENVIRONMENTAL SERVICES, INC.

PROJECT NO.: 5698-21	PROJECT NAME: GM BOC BUILDING 250		BORING/WELL DESIGNATION: B-250-11	BORING/WELL LOCATION: SEE FIGURE 2-1
DRILLING CONTRACTOR: E. T. S.	DRILLING METHOD: HOLLOW STEM AUGER		BOREHOLE SIZE: 8 IN. / BOREHOLE DEPTH: 15 FT.	
DATE STARTED: 04/18/91	DATE COMPLETED: 04/18/91	GROUND ELEV.: 876.30 FT. / MEASURING POINT ELEV: NA FT.	WELL DEPTH: N/A FT.	
RIG: D-50	DRILLER: J. CHRIS	HELPER: A. GRAY	LOGGED BY: C. KIELTY	

DEPTH (FT.)	DESCRIPTION	SAMPLE NO.	SAMPLE TYPE	BLOW COUNTS(N)	P.I. METER (ppm)	COMMENTS	WELL DATA
0	ASPHALT					BORING HOLE FILLED TO SURFACE WITH DRY BENTONITE AND SOIL CUTTINGS	
	SAND FILL						
	SANDY CLAY - brown, plastic, stiff, moist, trace silt and fine gravel	.5-2.5'	SS	3-4-5-7	BG		
2.5							
	CLAYEY SAND - brown, firm, moist, trace silt and fine gravel	3-5'	SS	3-4-7-10	BG		
5							
	SANDY CLAY - brown, plastic, stiff, moist, some silt, trace fine gravel	5.5-7.5'	SS	4-6-8-10	BG		
7.5							
		8-10'	SS/LAB	5-5-6-8	BG		
10							
		10.5-12.5	SS	6-6-6-8	BG		
12.5	SILTY CLAY - gray, very plastic, stiff, moist, some fine sand, trace fine gravel						
		13-15'	SS	6-6-4-6	BG		
15	END OF BORING AT 15 FEET						

NOTES: NA - NOT AVAILABLE
N/A - NOT APPLICABLE
SS - SPLIT-SPOON
LAB - LABORATORY SAMPLE
BG - BACKGROUND

BORING LOG / MONITORING WELL DIAGRAM

ABB ENVIRONMENTAL SERVICES, INC.

PROJECT NO.: 5698-21	PROJECT NAME: GM BOC BUILDING 250		BORING/WELL DESIGNATION: B-250-12	BORING/WELL LOCATION: SEE FIGURE 2-1
DRILLING CONTRACTOR: E. T. S.	DRILLING METHOD: HOLLOW STEM AUGER	BOREHOLE SIZE: 8 IN.	BOREHOLE DEPTH: 16 FT.	
DATE STARTED: 04/19/91	DATE COMPLETED: 04/19/91	GROUND ELEV.: 876.57 FT.	MEASURING POINT ELEV: NA FT.	WELL DEPTH: N/A FT.
RIG: D-50	DRILLER: J. CHRIS	HELPER: A. GRAY	LOGGED BY: C. KIELTY	

DEPTH (FT.)	DESCRIPTION	SAMPLE NO.	SAMPLE TYPE	BLOW COUNTS(N)	P.I. METER (ppm)	COMMENTS	WELL DATA
0	CONCRETE					BORING HOLE FILLED TO SURFACE WITH DRY BENTONITE AND SOIL CUTTINGS	
	SAND FILL - brown						
	CLAYEY SAND - dark brown, loose, moist, some silt and fine gravel	.5-2.5'	SS	3-3-4-5	BG		
2.5							
5		4-6'	SS/LAB	3-3-3-5	BG		
7.5							
	SANDY CLAY - brown, plastic, very stiff, moist, trace mottled gray silt and gravel	9-11'	SS	6-9-12-14	BG		
10							
12.5							
	SANDY CLAY - brown, plastic, very stiff, dry-moist, some silt, trace gravel	14-16'	SS/LAB	9-3-27-32	BG		
15							
	END OF BORING 16 FEET						

NOTES: NA - NOT AVAILABLE
N/A - NOT APPLICABLE
SS - SPLIT-SPOON
LAB - LABORATORY SAMPLE
BG - BACKGROUND

BORING LOG / MONITORING WELL DIAGRAM

ABB ENVIRONMENTAL SERVICES, INC.

PROJECT NO.: 5698-21	PROJECT NAME: GM BOC BUILDING 250		BORING/WELL DESIGNATION: B-250-13	BORING/WELL LOCATION: SEE FIGURE 2-1
DRILLING CONTRACTOR: E. T. S.		DRILLING METHOD: HOLLOW STEM AUGER	BOREHOLE SIZE: 8 IN.	BOREHOLE DEPTH: 16 FT.
DATE STARTED: 04/19/91	DATE COMPLETED: 04/19/91	GROUND ELEV.: 876.67 FT.	MEASURING POINT ELEV: NA FT.	WELL DEPTH: N/A FT.
RIG: D-50	DRILLER: J. CHRIS	HELPER: A. GRAY	LOGGED BY: C. KIELTY	

DEPTH (FT.)	DESCRIPTION	SAMPLE NO.	SAMPLE TYPE	BLOW COUNTS(N)	P.I. METER	COMMENTS	WELL DATA
0	CONCRETE				(ppm)		
	SAND FILL - brown, medium-coarse grained, loose, moist, trace fine gravel	.5-2.5'	SS	3-3-3-3	BG	BORING HOLE FILLED TO SURFACE WITH DRY BENTONITE AND SOIL CUTTINGS	
2.5							
	CLAYEY SAND - dark brown, loose, moist, some silt and fine gravel	4-6'	SS/LAB	3-3-3-5	BG		
5							
7.5							
	SANDY CLAY - brown, plastic, very stiff, moist, some mottled gray silt and gravel	9-11'	SS	4-8-12-16	BG		
10							
12.5							
	SANDY CLAY - brown, plastic, very stiff, moist, trace gray mottled silt and fine gravel	14-16'	SS/LAB	5-7-11-14	BG		
15	SILTY CLAY - gray, plastic, very stiff, moist, some fine sand, trace fine gravel						
	END OF BORING AT 16 FEET						

NOTES: NA - NOT AVAILABLE
N/A - NOT APPLICABLE
SS - SPLIT-SPOON
LAB - LABORATORY SAMPLE
BG - BACKGROUND

BORING LOG / MONITORING WELL DIAGRAM

ABB ENVIRONMENTAL SERVICES, INC.

PROJECT NO.: 5698-21	PROJECT NAME: GM BOC BUILDING 250		BORING/WELL DESIGNATION: MW-250-14	BORING/WELL LOCATION: SEE FIGURE 2-2
DRILLING CONTRACTOR: E. T. S.	DRILLING METHOD: HOLLOW STEM AUGER	BOREHOLE SIZE: 8 IN.	BOREHOLE DEPTH: 21 FT.	
DATE STARTED: 04/19/91	DATE COMPLETED: 04/19/91	GROUND ELEV.: 875.27 FT.	MEASURING POINT ELEV: NA FT.	WELL DEPTH: 18 FT.
RIG: D-50	DRILLER: J. CHRIS	HELPER: A. GRAY	LOGGED BY: C. KIELTY	

DEPTH (FT.)	DESCRIPTION	SAMPLE NO.	SAMPLE TYPE	BLOW COUNTS(N)	P.I. METER (ppm)	COMMENTS	WELL DATA
0	ASPHALT					FLUSH MOUNT STEEL PROTECTIVE COVERS SET IN CONCRETE	
	SANDY CLAY - dark brown, slightly plastic, stiff, dry-moist, some fine gravel	.5-2.5'	SS	4-4-6-7	BG		
2.5						DRY BENTONITE	
5	SANDY CLAY - brown, slightly plastic, very stiff, dry-moist, trace-some silt, trace fine gravel	5-7'	SS	10-12-14-18	BG	2-INCH, SCHEDULE-40, FLUSH THREADED, PVC WELL CASING	
7.5						HOLE PLUG	
10	SILTY CLAY - light brown, slightly plastic, dense, dry, trace fine sand and fine gravel	10-12'	SS	24-28-16-21	BG		
12.5						SAND FILTER PACK	
15	SAND - brown, fine-medium grained, wet, some fine gravel	15-17'	SS	10-21-23-31	BG	2-INCH, 0.010-SLOT, PVC WELL SCREEN	
17.5							

NOTES: NA - NOT AVAILABLE
N/A - NOT APPLICABLE
SS - SPLIT-SPOON
LAB - LABORATORY SAMPLE
BG - BACKGROUND

BORING LOG / MONITORING WELL DIAGRAM (CONT'D)

ABB ENVIRONMENTAL SERVICES, INC.

PROJECT NO.: 5698-21	PROJECT NAME: GM BOC BUILDING 250	BORING/WELL NUMBER: MW-250-14	BOREHOLE DEPTH: 20 FT.

DEPTH (FT.)	DESCRIPTION	SAMPLE NO.	SAMPLE TYPE	BLOW COUNTS(N)	P.I. METER	COMMENTS	WELL DATA
17.5							
	SILTY CLAY - gray, very plastic, stiff, moist, some fine-medium grained sand	18-20'	SS	7-8-5-7	BG	NATIVE CLAY	
20	END OF BORING AT 20 FEET						

NOTES: NA - NOT AVAILABLE
N/A - NOT APPLICABLE
SS - SPLIT-SPOON
BG - BACKGROUND

BORING LOG / MONITORING WELL DIAGRAM

ABB ENVIRONMENTAL SERVICES, INC.

PROJECT NO.: 5698-21	PROJECT NAME: GM BOC BUILDING 250		BORING/WELL DESIGNATION: B-250-15	BORING/WELL LOCATION: SEE FIGURE 2-2
DRILLING CONTRACTOR: E. T. S.	DRILLING METHOD: HOLLOW STEM AUGER		BOREHOLE SIZE: 8 IN. / BOREHOLE DEPTH: 21 FT.	
DATE STARTED: 04/18/91	DATE COMPLETED: 04/18/91	GROUND ELEV.: 875.15 FT.	MEASURING POINT ELEV: NA FT. / WELL DEPTH: N/A FT.	
RIG: D-50	DRILLER: J. CHRIS	HELPER: A. GRAY	LOGGED BY: C. KIELTY	

DEPTH (FT.)	DESCRIPTION	SAMPLE NO.	SAMPLE TYPE	BLOW COUNTS(N)	P.I. METER (ppm)	COMMENTS	WELL DATA
0	ASPHALT					BORING HOLE FILLED TO SURFACE WITH DRY BENTONITE AND SOIL CUTTINGS	
	CLAYEY SAND - brown-dark brown, fine-medium grained, loose, moist, some fine gravel	.5-2.5'	SS	3-5-5-4	BG		
2.5							
5	SANDY CLAY - brown, plastic, stiff, moist, some fine gravel; trace silt	5-7'	SS	3-5-6-9	BG		
7.5							
10	CLAY/SILTY CLAY - brown-brown gray, plastic very stiff, dry-moist, trace fine gravel	10-12'	SS	6-9-10-13	BG		
12.5							
	INTERBEDDED CLAY AND SAND - brown, wet, with fine to medium sand layers						
15							
	SANDY CLAY - gray, very plastic, stiff most, some silt	15-17'	SS/LAB	4-6-4-7	BG		
17.5							

NOTES: NA - NOT AVAILABLE
N/A - NOT APPLICABLE
SS - SPLIT-SPOON
LAB - LABORATORY SAMPLE
BG - BACKGROUND

PROJECT NO.: 5698-21	PROJECT NAME: GM BOC BUILDING 250	BORING/WELL NUMBER: B-250-15	BOREHOLE DEPTH: 21 FT.

DEPTH (FT.)	DESCRIPTION	SAMPLE NO.	SAMPLE TYPE	BLOW COUNTS(N)	P.I. METER	COMMENTS	WELL DATA
17.5	SANDY CLAY - gray, very plastic, stiff, moist, some silt	17-19'	SS	4-6-4-7	BG		
20		19-21'	SS	6-3-6-9	BG		
	END OF BORING AT 21 FEET.						
22.5							

NOTES: NA - NOT AVAILABLE
N/A - NOT APPLICABLE
SS - SPLIT-SPOON
BG - BACKGROUND

BORING LOG / MONITORING WELL DIAGRAM

ABB ENVIRONMENTAL SERVICES, INC.

PROJECT NO.: 5698-21	PROJECT NAME: GM BOC BUILDING 250	BORING/WELL DESIGNATION: B-250-16	BORING/WELL LOCATION:
DRILLING CONTRACTOR: E. T. S.	DRILLING METHOD: HOLLOW STEM AUGER	BOREHOLE SIZE: 8 IN.	BOREHOLE DEPTH: 15 FT.
DATE STARTED: 04/17/91	DATE COMPLETED: 04/17/91	GROUND ELEV.: 875.58 FT.	MEASURING POINT ELEV: NA FT.
RIG: D-50	DRILLER: J. CHRIS	HELPER: A. GRAY	LOGGED BY: C. KIELTY

SEE FIGURE 2-1

DEPTH (FT.)	DESCRIPTION	SAMPLE NO.	SAMPLE TYPE	BLOW COUNTS(N)	P.I. METER (ppm)	COMMENTS	WELL DATA
0	ASPHALT						
	SANDY CLAY - brown, plastic, stiff, moist-dry, some fine gravel, trace silt	.5-2.5'	SS	2-4-6-8	BG	BORING HOLE FILLED TO SURFACE WITH DRY BENTONITE AND SOIL CUTTINGS	
2.5							
	SANDY CLAY - brown, plastic, very stiff, dry, some fine gravel, some silt and sand layers	3-5'	SS	4-7-9-11	BG		
5							
		5.5-7.5'	SS	3-5-7-8	BG		
7.5							
		8-10'	SS/LAB	5-5-8-9	BG		
10							
	CLAY - brown, plastic, firm, moist, some silt, sand and fine gravel, thin silt and sand layers	10.5-12.5	SS	2-3-5-8	BG		
12.5							
	SILTY CLAY - gray, very plastic, moist, trace-some sand, some fine gravel	13-15'	SS	3-5-5-7	BG		
15							
	END OF BORING AT 15 FEET						

NOTES: NA - NOT AVAILABLE
N/A - NOT APPLICABLE
SS - SPLIT-SPOON
LAB - LABORATORY SAMPLE
BG - BACKGROUND

BORING LOG / MONITORING WELL DIAGRAM

ABB ENVIRONMENTAL SERVICES, INC.

PROJECT NO.: 5698-21	PROJECT NAME: GM BOC BUILDING 250		BORING/WELL DESIGNATION: B-250-17	BORING/WELL LOCATION: SEE FIGURE 2-1
DRILLING CONTRACTOR: E. T. S.	DRILLING METHOD: HOLLOW STEM AUGER		BOREHOLE SIZE: 8 IN. / BOREHOLE DEPTH: 15 FT.	
DATE STARTED: 04/18/91	DATE COMPLETED: 04/18/91	GROUND ELEV.: 875.65 FT.	MEASURING POINT ELEV: NA FT. / WELL DEPTH: N/A FT.	
RIG: D-50	DRILLER: J. CHRIS	HELPER: A. GRAY	LOGGED BY: C. KIELTY	

DEPTH (FT.)	DESCRIPTION	SAMPLE NO.	SAMPLE TYPE	BLOW COUNTS(N)	P.I. METER (ppm)	COMMENTS	WELL DATA
0	ASPHALT						
	SAND FILL					BORING HOLE FILLED TO SURFACE WITH DRY BENTONITE AND SOIL CUTTINGS	
	SANDY CLAY - brown, plastic, stiff, moist, trace silt, some fine gravel	.5-2.5'	SS	5-4-5-7	BG		
2.5		3-5'	SS	4-5-7-10	BG		
5	SANDY CLAY - brown, slightly plastic, very stiff, dry-moist, trace silt, some fine gravel, with gray silt and sand layers	5.5-7.5'	SS	5-8-9-16	BG		
7.5	SANDY CLAY - brown, plastic, moist, stiff, trace-some silt, trace fine gravel	8-10'	SS/LAB	4-6-8-12	BG		
10		10.5-12.5	SS	3-7-7-12	BG		
12.5		13-15'	SS	4-7-7-18	BG		
15	END OF BORING AT 15 FEET						

NOTES: NA - NOT AVAILABLE
N/A - NOT APPLICABLE
SS - SPLIT-SPOON
LAB - LABORATORY SAMPLE
BG - BACKGROUND

BORING LOG / MONITORING WELL DIAGRAM

ABB ENVIRONMENTAL SERVICES, INC.

PROJECT NO.: 5698-21	PROJECT NAME: GM BOC BUILDING 250		BORING/WELL DESIGNATION: B-250-18	BORING/WELL LOCATION:
DRILLING CONTRACTOR: E. T. S.	DRILLING METHOD: HOLLOW STEM AUGER	BOREHOLE SIZE: 8 IN.	BOREHOLE DEPTH: 15 FT.	SEE FIGURE 2-1
DATE STARTED: 04/18/91	DATE COMPLETED: 04/18/91	GROUND ELEV.: 875.79 FT.	MEASURING POINT ELEV: NA FT.	WELL DEPTH: N/A FT.
RIG: D-50	DRILLER: J. CHRIS	HELPER: A. GRAY	LOGGED BY: C. KIELTY	

DEPTH (FT.)	DESCRIPTION	SAMPLE NO.	SAMPLE TYPE	BLOW COUNTS(N)	P.I. METER (ppm)	COMMENTS	WELL DATA
0	ASPHALT						
	CLAYEY SAND - dark brown, fine-medium grained, firm, some silt and fine gravel	.5-2.5'	SS	6-6-6-6	BG	BORING HOLE FILLED TO SURFACE WITH DRY BENTONITE AND SOIL CUTTINGS	
2.5	SILTY SAND - gray-brown, fine grained, moist						
	SANDY CLAY - brown, plastic, stiff, moist, trace-some silt, some fine gravel	3-5'	SS	3-5-6-7	BG		
5		5.5-7.5'	SS	2-6-6-9	BG		
7.5	SANDY CLAY - brown, plastic, moist, very stiff, trace fine gravel, with some gray silt and sand layers	8-10'	SS/LAB	3-7-11-14	BG		
10		10.5-12.5	SS	10-12-12-14	BG		
12.5	SANDY CLAY - brown, very plastic, very stiff, moist-wet, wet sand lenses, some fine gravel	13-15'	SS	3-12-12-14	BG		
15	END OF BORING AT 15 FEET						

NOTES: NA - NOT AVAILABLE
N/A - NOT APPLICABLE
SS - SPLIT-SPOON
LAB - LABORATORY SAMPLE
BG - BACKGROUND

URS CONSULTANTS, Inc.

TEST BORING LOG

BORING NO. MW-1

PROJECT:	GM Lansing - Building #250
CLIENT:	Lansing Automotive Division
BORING CONTRACTOR:	Geo-Tek Inc.
SHEET NO.	1 OF 1
JOB NO. :	E1-93-110
GROUND ELEVATION:	876.43
DATE STARTED:	10/4/93
DATE FINISHED:	10/4/93
DRILLER:	Peter Buel
GEOLOGIST:	Michael Kovacs (EM)
REVIEWED BY:	David Frazier (URS)

GROUND WATER:

DATE	TIME	LEV	TYPE
10/21		f0.84	Below top of riser
11/3		11.08	Below top of riser

	CAS.	SAMP	CORE	TUBE
TYPE		SS		
DIA.		2"		
WT.		140#		
FALL		30"		

* POCKET PENETROMETER READING

DEPTH FT	STRATA	SAMPLE NO.	SAMPLE TYPE	BLOWS PER 6"		RECOVERY RQD %	DESCRIPTION COLOR	CONSISTENCY HARDNESS	MATERIAL DESCRIPTION	CLASS USCS	REMARKS
									10" Concrete		
		S-1	SS	3	7		Brown	medium dense	Sand Fill	Fill	HNu = ND
				7	13						
5											
		S-2	SS	8	10		Brown/ light grey	very stiff	SILTY CLAY, some Gravel	CL	mottled HNu = ND
				12	13						
10											
		S-3	SS	4	5		Brown	stiff	... trace Gravel	CL	moist HNu = ND
				7	9						
15											
		S-4	SS								HNu = ND
20											
		S-5	SS	6	9		Grey	stiff			
				13	22				SAND, well sorted	SP	HNu = ND
25									End of Boring 22.0'		
30											
35											
38											

COMMENTS HNu readings from head space analysis. ND = non-detect.

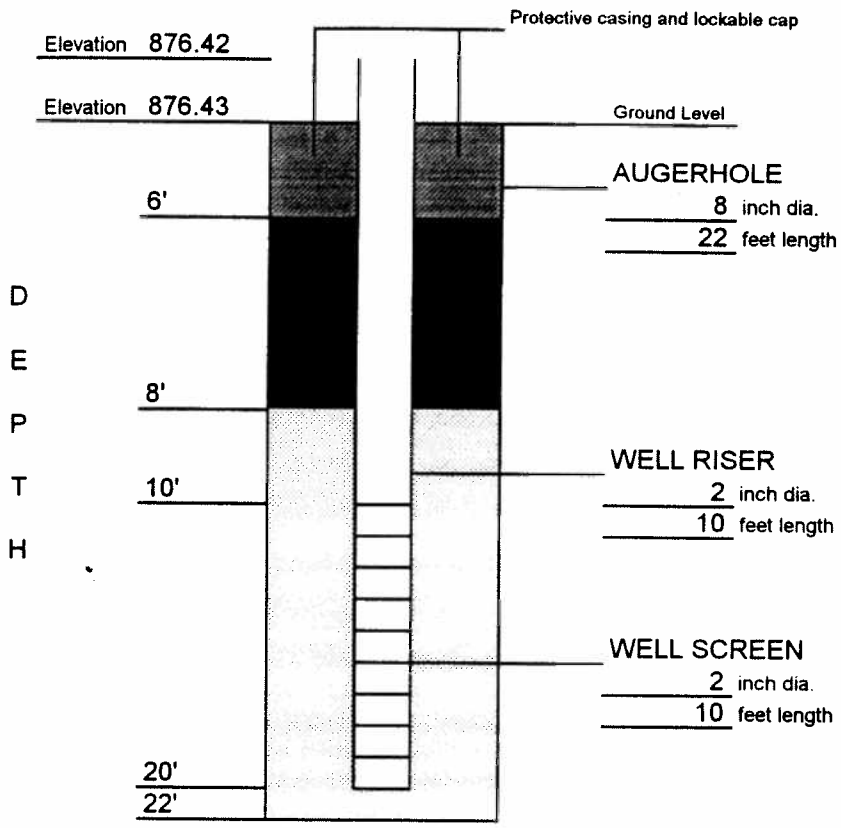
PROJECT NO. E1-93-110

BORING NO. MW-1

DRILLING SUMMARY
Geologist: Mike Kovacs
Drilling Company: Geo-Tek Inc.
Driller: Peter Buel
Date: 10/4/93

GEOLOGIC LOG

depth(ft.)	lithology
0-5'	Sand Fill
5-21'	Silty Clay
21-22'	Sand



WELL DESIGN

CASING MATERIAL	*SCREEN MATERIAL*	*SEAL MATERIAL*
Surface: Cast Iron	Type: Machine Slot PVC	Seal #1 Type: Bentonite Chips Setting: 6-8'
Monitor: Sch. 40 PVC	Slot Size: .010	Seal #2 Type: Cement Grout Setting: 0-6'

FILTER MATERIAL	*ROCK CORING*	*LEGEND*
Type: Global Filter Pack m/c Sand	Cored Interval: None	Cement/Bentonite Grout
Setting: 8-20'	Core Diameter: None	Bentonite Seal
	Reamed Diameter: None	Silica Sandpack

Client: Lansing Automotive	Project: GM/LAD - SAP1	Project No.: 35349
URS Consultants Inc.	**Monitoring Well Constuction Details**	**Well Number:** MW-1

URS CONSULTANTS, Inc.

TEST BORING LOG

BORING NO. MW-2

PROJECT:	GM Lansing - Building #250
CLIENT:	Lansing Automotive Division
BORING CONTRACTOR:	Geo-Tek Inc.
SHEET NO.	1 OF 1
JOB NO. :	E1-93-110
GROUND ELEVATION:	876.63
DATE STARTED:	10/5/93
DATE FINISHED:	10/5/93
DRILLER:	Peter Buel
GEOLOGIST:	Michael Kovacs (EM)
REVIEWED BY:	David Frazier (URS)

GROUND WATER:

DATE	TIME	LEV	TYPE
10/21		11.55	Below top of riser
11/3		12.00	Below top of riser
11/17		12.90	Below top of ris

	CAS.	SAMP	CORE	TUBE
TYPE		SS		
DIA.		2"		
WT.		140#		
FALL		30"		

* POCKET PENETROMETER READING

DEPTH FT	STRATA	SAMPLE NO.	SAMPLE TYPE	BLOWS PER 6"		RECOVERY RQD %	DESCRIPTION COLOR	CONSISTENCY HARDNESS	MATERIAL DESCRIPTION	CLASS USCS	REMARKS
									Asphalt		
		S-1	SS	2	3		Dark grey/ brown	stiff	SILTY CLAY, some Gravel	Fill	Hnu=ND
				4	4						
5											
		S-2	SS	3	7			very stiff	CLAY, some Gravel	CL	mottled Hnu = ND
				9	13						
10							Brown				
		S-3	SS	3	5						
				6	8			medium stiff	same as above		Hnu = ND
15											
		S-4	SS	2	3		Grey	medium stiff	SILTY CLAY, some Gravel	CL	Hnu = ND
				4	7						
20											
		S-5	SS	7	20						reddish tinge
				24	18		Grey	dense	SAND, some Gravel	SW	HNu = ND
									End of Boring 22.0'		
25											
30											
35											
38											

COMMENTS HNu readings from head space analysis. ND = non-detect.

PROJECT NO. E1-93-110

BORING NO. MW-2

DRILLING SUMMARY

Geologist: Mike Kovacs

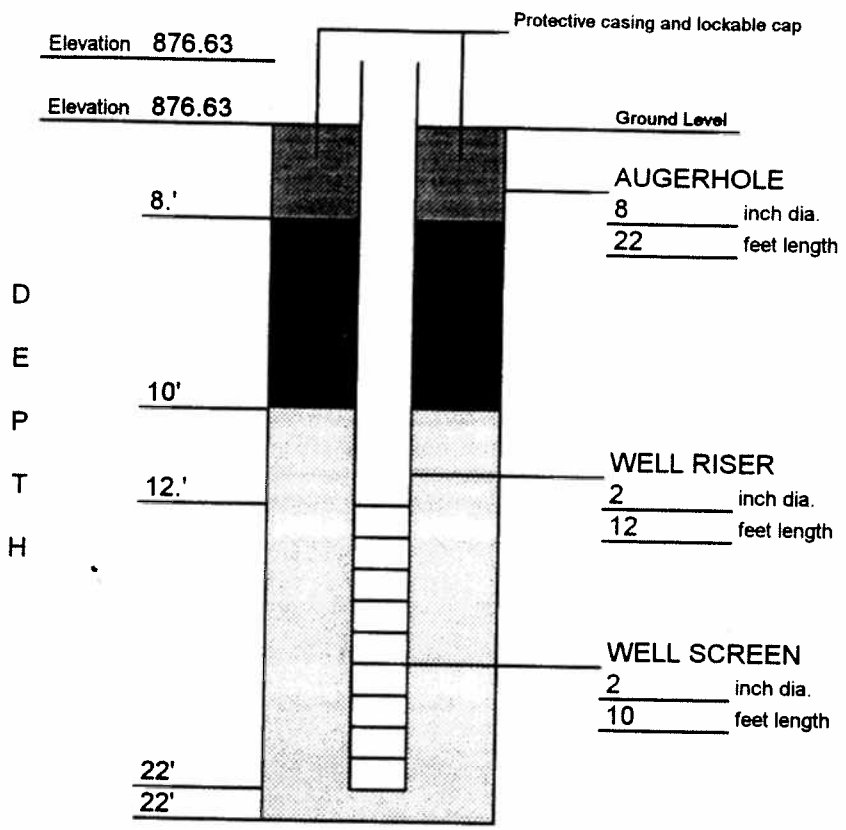
Drilling Company: Geo Tek, Inc.

Driller: Peter Buell

Date: 10/5/93

GEOLOGIC LOG

depth(ft.)	lithology
0-5'	Sand Fill
5-15'	Gravely Clay
15-21'	Silty Clay
21-22'	Gravely Sand



WELL DESIGN

CASING MATERIAL

Surface: Cast Iron

Monitor: Sch. 40 PVC

SCREEN MATERIAL

Type: Machine Slot PVC

Slot Size: .010

SEAL MATERIAL

Seal #1 Type: Bentonite Chips
Setting: 8-10'

Seal #2 Type: Cement Grout
Setting: 0-8'

FILTER MATERIAL

Type: Global Filter Pack m/c Sand

Setting: 10-22'

ROCK CORING

Cored Interval: None

Core Diameter: None

Reamed Diameter: None

LEGEND

Cement/Bentonite Grout

Bentonite Seal

Silica Sandpack

Client: GM-LAD	Project: SAP 1	Project No.: 35349
URS Consultants Inc.	**Monitoring Well Constuction Details**	**Well Number: MW-2**

URS CONSULTANTS, Inc.

TEST BORING LOG

BORING NO. MW-3

PROJECT:	GM Lansing - Building #250
CLIENT:	Lansing Automotive Division
BORING CONTRACTOR:	Geo-Tek Inc.
SHEET NO.	1 OF 1
JOB NO. :	E1-93-110
GROUND ELEVATION:	877.04
DATE STARTED:	10/4/93
DATE FINISHED:	10/4/93
DRILLER:	Peter Buel
GEOLOGIST:	Michael Kovacs (EM)
REVIEWED BY:	David Frazier (URS)

GROUND WATER:

DATE	TIME	LEV	TYPE
10/21		11.12	Below top of riser
11/3		11.47	Below top of riser
11/17		12.30	Below top of ris

	CAS.	SAMP	CORE	TUBE
TYPE		SS		
DIA.		2"		
WT.		140#		
FALL		30"		

* POCKET PENETROMETER READING

DEPTH FT	STRATA	SAMPLE NO.	SAMPLE TYPE	BLOWS PER 6"	RECOVERY RQD %	DESCRIPTION COLOR	CONSISTENCY HARDNESS	MATERIAL DESCRIPTION	CLASS USCS	REMARKS
								Asphalt		
		S-1	SS	6 6		Brown	stiff	SANDY SILT, some Gravel	Fill	HNu = 8ppm
				10 10						
5										
		S-2	SS	2 3		Grey	medium stiff	CLAY, some Gravel	Fill	HNu = 40ppm drilled through concrete at 6'
				2						
10										
		S-3	SS	7 11		Brown	very stiff	SANDY CLAY, some concrete fragments	Fill	HNu = ND
				13 15						
15										
		S-4	SS	3 10		Grey	very stiff	interbedded SILTY CLAY and SAND	CL	HNu = 3.5 ppm
				19 21						
20										
		S-5	SS	4 8		Grey	very stiff	SILTY CLAY, some Sand, trace Gravel	CL	
				16 16				SAND, well sorted	SP	HNu = ND
								End of Boring 22.0'		
25										
30										
35										
38										

COMMENTS HNu readings from head space analysis. ND = non-detect.

PROJECT NO. E1-93-110

BORING NO. MW-3

DRILLING SUMMARY

Geologist: Mike Kovacs

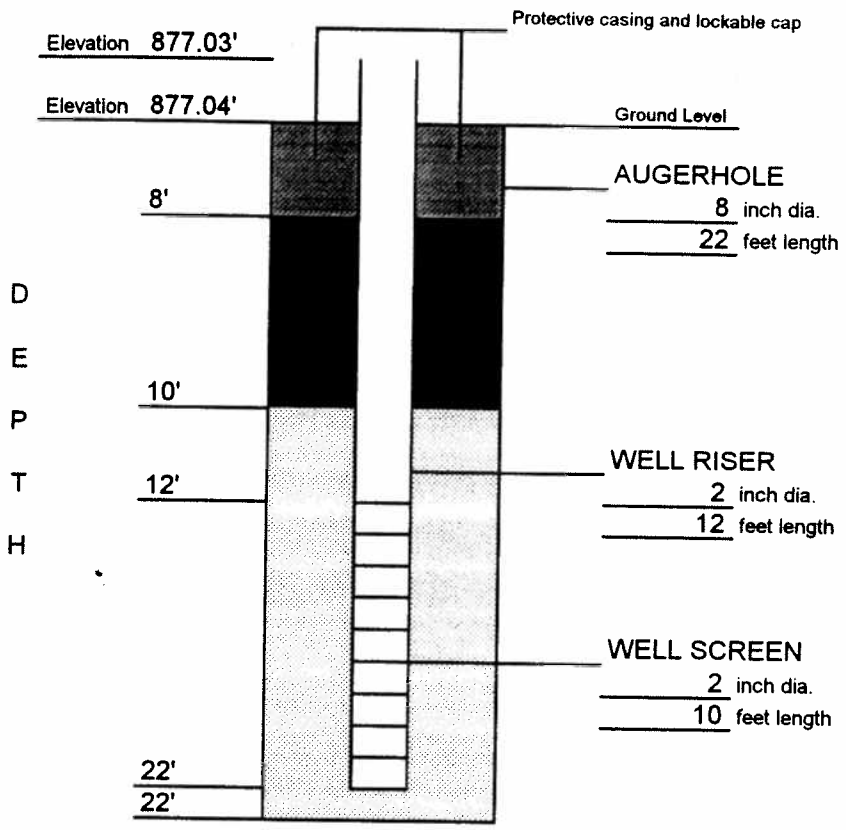
Drilling Company: Geo-Tek Inc.

Driller: Peter Buel

Date: 10/4/93

GEOLOGIC LOG

depth(ft.)	lithology
0-12'	Sand/Clay Fill
12-21'	Silty Clay
21-22'	Sand



WELL DESIGN

CASING MATERIAL

Surface: Cast Iron

Monitor: Sch. 40 PVC

SCREEN MATERIAL

Type: Machine Slot PVC

Slot Size: .010

SEAL MATERIAL

Seal #1 Type: Bentonite Chips
Setting: 8-10'

Seal #2 Type: Cement Grout
Setting: 0-8'

FILTER MATERIAL

Type: Global Filter Pack m/c Sand

Setting: 10-22'

ROCK CORING

Cored Interval: None

Core Diameter: None

Reamed Diameter: None

LEGEND

Cement/Bentonite Grout

Bentonite Seal

Silica Sandpack

Client: Lansing Automotive	Project: GM/LAD - SAP1	Project No.: 35349
URS Consultants Inc.	**Monitoring Well Constuction Details**	**Well Number:** MW-3

Log of Well VEW-1

Plant #2 Building #225

Lansing, Michigan

Project Number: 4694-197

Client: *General Motors Coporation*	
Drilling Company: *ESE*	
Drilling Rig: *Hurricane*	**Drilling Method:** *Hollow Stem Auger*
Soil Sampling Device: *Split Spoon*	**Borehole Diameter (in.):** *8*
Date Started: *1/17/95* **Date Completed:** *1/17/95*	**Total Depth Drilled (ft.):** *12*
Apparent Depth to Saturation While Drilling (ft. bgl): *7*	**Ground Elevation (ft.):**

Completion Information

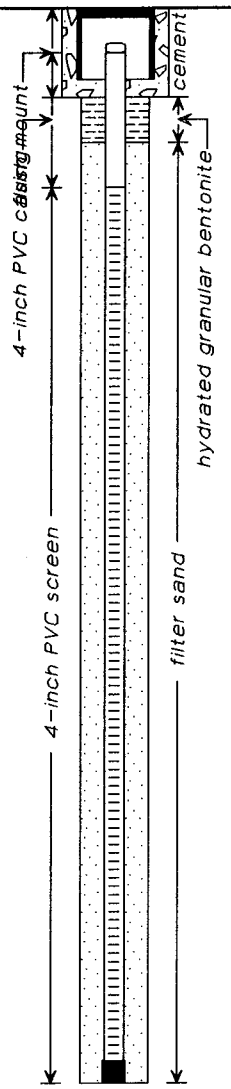
Screened Interval (ft. bgl): *2-12*	**Filter Pack Interval (ft. bgl):** *1.5-12*
Screen Length (ft.): *10*	**Filter Pack Type:** *Filter Sand*
Bottom Cap Length (ft.): *0.25*	**Upper Seal Interval (ft. bgl):** *0-1*
Screen Type: *PVC*	**Upper Seal Type:** *Cement*
Screen Slot Size/Dia. (in.): *0.010/4*	**Lower Seal Interval (ft. bgl):**
Total Casing (ft.): *1.5*	**Lower Seal Type:**
Casing Type/Dia. (in.): *PVC/4*	**Grout Interval (ft. bgl):** *1-1.5*
Top of Casing Elevation (ft.):	**Grout Type:** *Hydrated Granular Bentonite*
Survey Datum:	**Protective Casing Type:** *Flush Mount*

Explanation & Comments

Plant #2 Building #225

Log of Well VEW-1

Depth (feet bgl)	Soil/Rock Description	USCS Classification	Lithologic Log	Well Construction	Comments	Elevation (ft.)
0	**Asphalt**					
	Sand with some gravel, moist, gray, 10YR5/1	SM				
2						
4						
	Clay gray, 10YR5/1, moist, plastic, plastic	CL				
6						
	Sand gray, medium grained, wet, some clay, some gravel	SP				
8	Saturated					
	Clay trace sand, wet, soft, plastic	CL				
10						
12	End of Boring					
14						
16						



Log of Well SB-1/VOW-1

Plant #2 Building #225
Lansing, Michigan
Project Number: 4694-197

Client: *General Motors Coporation*	
Drilling Company: *ESE*	
Drilling Rig: *Hurricane*	**Drilling Method:** *Hollow Stem Auger*
Soil Sampling Device: *Split Spoon*	**Borehole Diameter (in.):** *8*
Date Started: *1/16/95* **Date Completed:** *1/16/95*	**Total Depth Drilled (ft.):** *12*
Apparent Depth to Saturation While Drilling (ft. bgl): *8*	**Ground Elevation (ft.):**

Completion Information

Screened Interval (ft. bgl): *7-12*	**Filter Pack Interval (ft. bgl):** *6-12*
Screen Length (ft.): *5*	**Filter Pack Type:** *Filter Sand*
Bottom Cap Length (ft.): *0.25*	**Upper Seal Interval (ft. bgl):** *0-1*
Screen Type: *PVC*	**Upper Seal Type:** *Cement*
Screen Slot Size/Dia. (in.): *0.010/2*	**Lower Seal Interval (ft. bgl):**
Total Casing (ft.): *6.5*	**Lower Seal Type:**
Casing Type/Dia. (in.): *PVC/2*	**Grout Interval (ft. bgl):** *1-6*
Top of Casing Elevation (ft.):	**Grout Type:** *Hydrated Granular Bentonite*
Survey Datum:	**Protective Casing Type:** *Flush Mount*

Explanation & Comments

Plant #2 Building #225

Log of Well SB-1/VOW-1

Depth (feet bgl)	Blow Counts	Sample Recovery (%)	PID or FID (ppm) Values	PID or FID (ppm) Profile	Soil/Rock Description and Comments	USCS Classification	Lithologic Log	Well Construction	Elevation (ft.)
0					**Asphalt**			flush mount, cement	
2	5 5 4 6 3	80%	98		**Sand** with some gravel, moist, gray, 10YR5/1	SM		4-inch PVC casing	
4	3 6 6 8	60%	101		**Clay** gray, 10YR5/1, moist, plastic	CL		hydrated granular bentonite	
6	4 8 10 10	60%	35		**Sand** gray, medium grained, wet, some clay, some gravel Saturated	SP		filter sand	
8	10 10 7 5	70%	0		**Clay** trace sand, wet, soft, plastic	CL		4-inch PVC screen	
10	5 5 5 5	70%	0						
12					End of Boring				
14									
16									

Environmental Science & Engineering, Inc.

Log of Well VOW-2

Plant #2 Building #225
Lansing, Michigan
Project Number: 4694-197

Client: *General Motors Coporation*	
Drilling Company: *ESE*	
Drilling Rig: *Hurricane*	Drilling Method: *Hollow Stem Auger*
Soil Sampling Device: *Split Spoon*	Borehole Diameter (in.): *8*
Date Started: *1/16/95* Date Completed: *1/16/95*	Total Depth Drilled (ft.): *12*
Apparent Depth to Saturation While Drilling (ft. bgl): *8*	Ground Elevation (ft.):

Completion Information

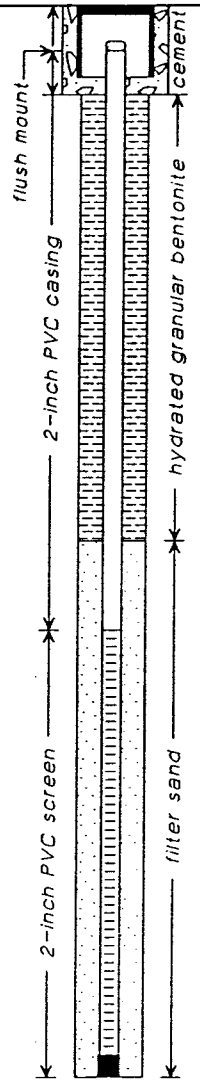
Screened Interval (ft. bgl): *7-12*	Filter Pack Interval (ft. bgl): *6-12*
Screen Length (ft.): *5*	Filter Pack Type: *Filter Sand*
Bottom Cap Length (ft.): *0.25*	Upper Seal Interval (ft. bgl): *0-1*
Screen Type: *PVC*	Upper Seal Type: *Cement*
Screen Slot Size/Dia. (in.): *0.010/2*	Lower Seal Interval (ft. bgl):
Total Casing (ft.): *6.5*	Lower Seal Type:
Casing Type/Dia. (in.): *PVC/2*	Grout Interval (ft. bgl): *1-6*
Top of Casing Elevation (ft.):	Grout Type: *Hydrated Granular Bentonite*
Survey Datum:	Protective Casing Type: *Flush Mount*

Explanation & Comments

Plant #2 Building #225

Log of Well VOW-2

Depth (feet bgl)	Soil/Rock Description	USCS Classification	Lithologic Log	Well Construction	Comments	Elevation (ft.)
0	**Asphalt**					
	Sand with some gravel, moist, gray, 10YR5/1	SM				
2						
4						
	Clay gray, 10YR5/1, moist, plastic, plastic	CL				
6						
	Sand gray, medium grained, wet, some clay, some gravel	SP				
8	Saturated					
	Clay trace sand, wet, soft, plastic	CL				
10						
12	End of Boring					
14						
16						



GM Lansing Plant 3
Boring Log Master List

Location Name	Have Boring Log
9	Yes
10	Yes
11	Yes
12	Yes
13	Yes
14	Yes
15	Yes
16	Yes
17	Yes
18	Yes
19	Yes
20	Yes
21	Yes
22	Yes
23	Yes
24	Yes
25	Yes
26	Yes
27	Yes
28	Yes
29	Yes
30	Yes
31	Yes
32	Yes
33	Yes
34	Yes
35	Yes
36	Yes
37	Yes
39	Yes
40	Yes
41	Yes
42	Yes
43	Yes
45	Yes
46	Yes
48	Yes
49	Yes
50	Yes
51	Yes
52	Yes
53	Yes
54	Yes
55	Yes
56	Yes
57	Yes
58	Yes
59	Yes
60	Yes

GM Lansing Plant 3
Boring Log Master List

Location Name	Have Boring Log
61	Yes
62	Yes
63	Yes
64	Yes
65	Yes
66	Yes
68	Yes
69	Yes
70	Yes
71	Yes
72	Yes
73	No
74	Yes
B-96-P3	No
CH-10-G	No
CH-13	No
CH-14	No
CH-15	Yes
CH-1-G	No
CH-2-B	No
CH-2-G	No
CH-3-B	No
CH-3-G	No
CH-5	No
CH-6	No
CH-7	No
CH-8-B	Yes
CH-8-G	Yes
CH-9-B	No
CH-9-G	No
Composite Waste Sample	NA
CS-1	No
CS-2	No
CS-3	No
CS-4	No
CS-5	No
CS-6	No
CS-7	No
CS-8	No
CS-9	No
French Drain	NA
G1	No
G10	No
G11	No
G12	No
G2	No
G3	No
G4	No
G5	No

GM Lansing Plant 3
Boring Log Master List

Location Name	Have Boring Log
G6	No
G7	No
G8	No
G9	No
H1	No
H2	No
H3	No
H4	No
H5	No
H6	No
H7	No
I1	No
I10	No
I11	No
I2	No
I3	No
I4	No
I5	No
I6	No
I7	No
I8	No
I9	No
MW-02-01	Yes
MW-02-02	Yes
MW-02-03	Yes
MW-02-04	Yes
MW-04-01	Yes
MW-04-02	Yes
MW-04-03	Yes
MW-04-04	Yes
MW-19	Yes
MW-21	Yes
MW-22	Yes
MW-23	Yes
MW-24	Yes
MW-88-1	Yes
MW-91-1	Yes
MW-91-2	Yes
MW-91-3	Yes
MW-91-4	Yes
MW-91-5	Yes
MW-91-6	Yes
MW-93-1	Yes
MW-93-2	Yes
MW-93-3	Yes
QAQC-Equipment Blank	NA
QAQC-Field Blank	NA
QAQC-Rinse Blank	NA
QAQC-Trip Blank	NA

GM Lansing Plant 3
Boring Log Master List

Location Name	Have Boring Log
SB#1	Yes
SB#2	Yes
SB#3	Yes
SB#4	Yes
SB#5	Yes
SB#6	Yes
SB#7	Yes
SB#8	Yes
SB1	Yes
SB10	Yes
SB11	Yes
SB12	Yes
SB13	Yes
SB14	Yes
SB15	Yes
SB16	Yes
SB17	Yes
SB18	Yes
SB19	No
SB2	Yes
SB20	Yes
SB21	No
SB22	No
SB23	No
SB24	No
SB25	Yes
SB26	Yes
SB27	Yes
SB3	Yes
SB4	Yes
SB5	Yes
SB6	Yes
SB7	Yes
SB8	Yes
SB9	Yes
SS1	No
SS10	No
SS11	No
SS12	No
SS13	No
SS14	No
SS15	No
SS19	No
SS2	No
SS20	No
SS21	No
SS3	No
SS4	No
SS5	No

GM Lansing Plant 3
Boring Log Master List

Location Name	Have Boring Log
SS6	No
SS7	No
SS8	No
SS9	No
TW-11	No
TW-12	No
TW-18	No
TW-23	Yes
TW-30	Yes
TW-32	Yes
TW-42	Yes
TW-50	Yes
TW-9	Yes
VEW1	Yes

EDI Engineering & Science

Page:_____ of_____
Well/Boring No. #9
Client: BOC Lansing
Project No.: 20682

Well/Boring Log Sheet

County	Township	Fraction NE NE SW	Section	T	R

Contractor Stearns Drlg.
Address: Dutton, Mich

Equipment: 45 Acker

Supervisor: C. Cotton

Drilling Method(s) **Depth**
Auger / Split Spoon 25'

Grouting/Seal

Depth	To	Material/Method
1.0 - 25.0		Cement / Bentonite Grout
0.0 - 1.0		Cement Core

Development N.A.

Screen
Manufacturer: N.A.
Material:
Model:
Slot/Gauze: Dia.:
Length:
Depth Set: To:

Casing

Dia.	Type	Depth Set
	N.A.	To
		To

Date
Started: 7/13/88 Finished: 7/13/88

Elevation
Casing:
Ground:
Ref. Pt.:

Water Level 22.5' Ft. Below Ground
Measure On: 7/13/88 - 4:00p.m.

Location
Outside, NE of Bldg. 301 in storage area

Remarks (include here, other data available)

Blow Counts 18" / 12" / 6"
Remarks Sample Interval

Thickness	Depth to Base	LITHOLOGIC DESCRIPTION	Sample Interval	6"	12"	18"
1.0	0-1.0	Cement (cored)	1-2.5	2	3	4
0.5	1.0-1.5	Medium to coarse SAND, dark brown, small gravel	3.5-5	2	4	6
2.3	1.5-3.8	Very sandy CLAY dark brown, with lenses of gray silt and light brown sand,	6-7.5	7	5	6
		occasional small gravel	8.5-10	4	4	6
5.2	3.8-9.0	Medium to coarse SAND, reddish brown, wet	11-12.5	7	6	6
5.8	9.0-14.8	Very sandy CLAY to sandy CLAY, dark brown to gray with brown sand lenses,	13.5-15	5	7	8
		occasional medium gravel	16-17.5	17	38	66
6.2	14.8-21	Medium to coarse SAND, brown, small gravel, compact brown clay lenses	18.5-20	25	31	21
1.4	21-22.4	Sandy CLAY, dark brown, occasional gravel	21-22.5	7	11	28
2.6	22.4-25	Very fine SAND and SILT, reddish brown, "flaky layers", occasional small gravel	23.5-25	14	23	29

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Page:____ of____
Well/Boring No. #10
Client: BOC Lansing
Project No.: 20682

Well/Boring Log Sheet

County	Township	Fraction NE NE SW	Section	T	R

Contractor Stearns Drlg.
Address: Dutton, Mich

Equipment: 45 Acker

Supervisor: C. Cotton

Drilling Method(s) **Depth**
Auger / Split Spoon 25'

Grouting/Seal

Depth To	Material/Method
0.2 - 25.0	Cement / Bentonite Grout
0 - 0.2	Top Soil

Development N.A.

Screen
Manufacturer: None
Material:
Model:
Slot/Gauze: Dia.:
Length:
Depth Set: To:

Casing

Dia.	Type	Depth Set
	None	To
		To

Date
Started: 7/7/88 Finished: 7/7/88

Elevation
Casing:
Ground:
Ref. Pt.:

Water Level Ft. Below
Measure On: No water encountered

Location
Outside NW corner building 301

Remarks (include here, other data available)

Thickness	Depth to Base	LITHOLOGIC DESCRIPTION	Sample Interval	Blow Counts 6"	12"	18"
0.3	0-0.3	Topsoil	1-2.5	8	11	9
3.2	0.3-3.5	Fine SAND, brown with dry clay lenses, small gravel	3.5-5	4	7	8
1.0	3.5-4.5	CLAY, gray, some sand and gravel, moist	6-7.5	10	8	12
9.3	4.5-13.8	Clayey SAND to sand, reddish to light brown, with clay and silt layers, small pebbles	8.5-10	7	10	10
2.2	13.8-16	Stiff CLAY, brown, some fine sand, occasional gravel, moist	11-12.5	6	10	14
3.0	16-19	Very sandy CLAY, fine to medium sand, light brown, moist	13.5-15	5	6	8
2.5	19-21.5	Silty CLAY, gray, moist, soft	16-17.5	3	3	4
3.5	21.5-25	Fine to medium SAND, light brown to blonde, soft, dry	18.5-20	2	3	4
			21-22.5	9	11	14
			23.5-25	14	18	22

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Page:____ of____
Well/Boring No. #11
Client: BOC Lansing
Project No.: 20682

Well/Boring Log Sheet

County	Township	Fraction NE NE SW	Section	T	R

Contractor Stearns Drlg.
Address: Dutton, Mich

Equipment: 45 Acker

Supervisor: C. Cotton

Drilling Method(s) **Depth**
Auger / Split Spoon 25'

Grouting/Seal

Depth	To	Material/Method
0.8 - 25.0		Cement / Bentonite Grout
0-0.8		Cement Core

Development N.A.

Screen
Manufacturer: None
Material:
Model:
Slot/Gauze: Dia.:
Length:
Depth Set: To:

Casing

Dia.	Type	Depth Set
	N.A.	To
		To

Date
Started: 7/7/88 Finished: 7/8/88

Elevation
Casing:
Ground:
Ref. Pt.:

Water Level 10.5' Ft. Below ground
Measure On: 7/8/88

Location
Outside west side of building 301

Remarks (include here, other data available) Background boring water sample collected out of bore hole

Thickness	Depth to Base	LITHOLOGIC DESCRIPTION	Sample Interval	Blow Counts 6"	Blow Counts 12"	Blow Counts 18"
0.8	0-0.8	Cement (cored)	1-2.5	3	4	7
0.7	0.8-1.5	Medium brown SAND	3.5-5	7	4	3
3.0	1.5-4.5	CLAY and medium SAND, dark brown, moist	6-7.5	3	4	3
1.5	4.5-6	Silty, medium SAND, gray, moist, sticky	8.5-10	2	3	6
0.5	6-6.5	Medium to coarse SAND, brown gravelly, moist	11-12.5	4	5	7
2.5	6.5-9	CLAY and SAND, gray and brown, some small gravel	13.5-15	6	8	11
2.2	9.0-11.2	CLAY, blue-gray, very stiff, some organic matter	16-17.5	5	8	18
5.3	11.2-16.5	Medium-fine sandy CLAY stiff, brown with gray silt lenses, moist	18.5-20	3	4	6
2	16.5-18.5	Medium-coarse SAND, brown, with some silt, clay and small gravel, damp to moist	21-22.5	6	8	9
6.5	18.5-25	Sandy CLAY gray, stiff, moist, occasional gravel	23.5-25	6	8	10

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Well/Boring No. # 12
Client: BOC Lansing
Project No.: 20682

Well/Boring Log Sheet

County	Township	Fraction NE NE SW	Section	T	R

Contractor Stearns Drlg.
Address: Dutton, Mich

Equipment: 45 Acker

Supervisor: C. Cotton

Drilling Method(s) **Depth**
Auger / Split Spoon 25'

Grouting/Seal

Depth	To	Material/Method
0.8 - 25.0		Cement / Bentonite Grout
0 - 0.8		Cement Core

Development N.A.

Screen
Manufacturer: N.A.
Material:
Model:
Slot/Gauze: Dia.:
Length:
Depth Set: To:

Casing

Dia.	Type	Depth Set
	N.A.	To
		To

Date
Started: 7/13/88 Finished: 7/13/88

Elevation
Casing:
Ground:
Ref. Pt.:

Water Level 8.3' Ft. Below surface
Measure On: At EOB
7/13/88

Location
Outside west side of building 301

Remarks (include here, other data available) Background boring

Thick-ness	Depth to Base	LITHOLOGIC DESCRIPTION	Sample Interval	Blow Counts 6"	12"	18"
0.8	0-0.8	Cement (cored)	1-2.5	3	4	7
0.7	0.8-1.5	Fine silty SAND, reddish brown	3.5-5	5	9	9
3.5	1.5-5	Sandy CLAY, reddish brown, mixed with small gravel, stiff, sand layers, wet	6-7.5	10	10	10
6	5.0-11.0	Medium SAND, with silt and clay, brown, occasional gravel, wet	8.5-10	15	21	21
5.5	11-16.5	Very sandy CLAY, gray, occasional gravel	11-12.5	9	10	15
2.9	16.5-19.4	Slightly, sandy CLAY, gray, occasional gravel, occasional medium gray and brown	13.5-15	4	5	8
		sand lenses	16-17.5	3	3	5
5.6	19.4-25	Fine to medium SAND, brown, reddish brown, dry	18.5-20	3	7	14
			21-22.5	12	15	17
			23.5-25	8	11	14

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Well/Boring No. #13
Client: BOC Lansing
Project No.: 20682

Well/Boring Log Sheet

County	Township	Fraction NE NE SW	Section	T	R

Contractor Stearns Drlg.
Address: Dutton, Mich

Equipment: 45 Acker

Supervisor: M. Jones

Drilling Method(s) **Depth**
Auger / Split Spoon 50'

Grouting/Seal

Depth	To	Material/Method
0-50'		Cement / Bentonite Grout

Development N.A.

Screen
Manufacturer: N.A.
Material:
Model:
Slot/Gauze: Dia.:
Length:
Depth Set: To:

Casing

Dia.	Type	Depth Set
	N.A.	To
		To

Date
Started: 7/26/88 Finished: 7/26/88

Elevation
Casing: N.A.
Ground:
Ref. Pt.:

Water Level none Ft. Below
Measure On:

Location

Remarks (include here, other data available) No water sample at sand layer ±11-13' due to no water in annulus after 40 minute standby, also no cave-in.

Thickness	Depth to Base	LITHOLOGIC DESCRIPTION	Sample Interval	Blow Counts 6"	12"	18"
1	0-1	Cement (core)	1-2.5	7	18	18
3	1-4	Very fine to fine clayey SAND, some silt and gravel, tan to brown	3.5-5	4	3	3
2.5	4-6.5	Very fine to fine SAND, some silt and clay, occasional gravel, gray to dark brown	6-7.5	7	4	4
0.2	6.5-6.7	Very silty CLAY grayish brown, soft	8.5-10	7	10	9
4.5	6.7-11.2	Very fine to fine silty SAND, light to grayish brown, some gravel, silt lenses, damp to wet	11-12.5	7	10	15
1.8	11.2-13	Fine SAND, light brown, occasional gravel, damp to wet	13.5-15	7	8	10
0.7	13-13.7	SILT, light brown, with some fine sand, dry	16-17.5	6	5	10
7.8	13.7-21.5	Very sandy CLAY, dark gray, some gravel, dry	18.5-20	5	8	10
8.2	21.5-29.7	Very fine to fine SAND, with clay and silt, brown to gray, dry	21-22.5	7	10	13
3.3	29.7-33	Sandy CLAY, gray	23.5-25	7	7	9
10	33-43	SILT with some very fine sand, light gray	28.5-30	20	13	8
0.5	43-43.5	Fine SAND, white to very light brown, occasional fine gravel	33.5-35	8	13	15
0.5	43.5-44	Sandy CLAY, gray, with gravel	38.5-40	16	24	33
4	44-48	Sandy SILT, with some clay and gravel, gray	43.5-45	9	19	20
2	48-50	Silty, very fine SAND, brown to dark gray	48.5-50	16	20	29

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Well/Boring No. #14
Client: BOC Lansing
Project No.: 20682

Well/Boring Log Sheet

County	Township	Fraction NE NE SW	Section	T	R

Contractor Stearns Drlg.
Address: Dutton, Mich

Equipment: Dietrich D-25

Supervisor: C. Cotton

Drilling Method(s) **Depth**
Auger/Split Spoon 17.5'

Grouting/Seal

Depth	To	Material/Method
0-17.5		Cement / Bentonite Grout

Development N.A.

Screen
Manufacturer: N.A.
Material:
Model:
Slot/Gauze: Dia.:
Length:
Depth Set: To:

Casing

Dia.	Type	Depth Set
	N.A.	To
		To

Date
Started: 7/26/88 Finished: 7/26/88

Elevation
Casing: N.A.
Ground:
Ref. Pt.:

Water Level Ft. Below
Measure On:

Location

Remarks (include here, other data available)

Thickness	Depth to Base	LITHOLOGIC DESCRIPTION	Sample Interval	Blow Counts 6"	12"	18"
1	0-1	Cement (core)	1-2.5	7	15	15
2.5	1-3.5	Medium SAND, dark brown, some clay, medium gravel	3.5-5	2	4	8
2.5	3.5-6	Very sandy CLAY, gray silt lenses, some gravel	6-7.5	5	11	12
2.8	6-8.8	Silty sandy CLAY, light brown, stiff, medium, occasional gravel	8.5-10	23	36	35
2.7	8.8-11.5	Medium SAND, brown, some clay, occasional small gravel	11-12.5	7	12	17
6	11.5-17.5	Sandy CLAY, dark brown, stiff, occasional small gravel, strong ammonia odor - EOB	13.5-15	6	8	12
			16-17.5	8	22	13

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Well/Boring No. #15
Client: BOC Lansing
Project No.: 20682

Well/Boring Log Sheet

County	Township	Fraction NE NE SW	Section	T	R

Contractor Stearns Drlg.
Address: Dutton, Mich

Equipment: Dietrich D - 25

Supervisor: C. Cotton

Drilling Method(s) **Depth**
Auger / Split Spoon 25'

Grouting/Seal

Depth	To	Material/Method
0.5 - 25		Cement / Bentonite Grout
0 - 0.5		Cement Plug

Development

Screen
Manufacturer: N.A.
Material:
Model:
Slot/Gauze: Dia.:
Length:
Depth Set: To:

Casing

Dia.	Type	Depth Set
	N.A.	To
		To

Date
Started: Finished:

Elevation
Casing:
Ground:
Ref. Pt.:

Water Level N.A. Ft. Below
Measure On:

Location
Inside building 301 - near old nickel plating line

Remarks (include here, other data available) Dry hole

Thickness	Depth to Base	LITHOLOGIC DESCRIPTION	Sample Interval	Blow Counts 6"	12"	18"
1.0	0-1.0	Cement (cored)	1-2.5	10	14	16
0.8	1-1.8	Medium-coarse SAND, brown, some gravel	3.5-5	5	5	6
4.2	1.8-6.0	SAND mixed with some clay, dark brown, small-medium gravel, very black organic	6-7.5	6	7	11
		layer at 2.3 - 2.5'	8.5-10	20	18	21
8.0	6.0-14.0	Sandy CLAY, light brown to brown, occasional small gravel	11-12.5	9	15	16
7.2	14-21.2	Silty, sandy CLAY, gray, occasional small gravel	13.5-15	6	11	10
1.2	21.2-22.4	Medium to fine SAND, brown, moist	16-17.5	5	6	8
2.6	22.4-25	Fine SAND, blonde, dry, silty brown sand lenses	18.5-20	4	4	5
			21-22.5	5	6	16
			23.5-25	19	20	25

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Well/Boring No. # 16
Client: BOC Lansing
Project No.: 20682

Well/Boring Log Sheet

County	Township	Fraction NE NE SW	Section	T	R

Contractor Stearns Drlg.
Address: Dutton, Mich

Equipment: Dietrich D - 25

Supervisor: D. Greene

Drilling Method(s) **Depth**
Auger / Split Spoon 25'

Grouting/Seal

Depth	To	Material/Method
1	-25'	Cement / Bentonite Grout
0	- 1	Cement Plug

Development

Screen
Manufacturer: N.A.
Material:
Model:
Slot/Gauze: Dia.:
Length:
Depth Set: To:

Casing

Dia.	Type	Depth Set
	N.A.	To
		To

Date
Started: 8/12/88 Finished: 8/12/88

Elevation
Casing:
Ground:
Ref. Pt.:

Water Level N.A. Ft. Below
Measure On:

Location

Remarks (include here, other data available)

Thick-ness	Depth to Base	LITHOLOGIC DESCRIPTION	Sample Interval	Blow Counts 6"	12"	18"
1.0	0-1.0	Concrete (cored)	1-2.5	11	6	10
12.5	1-13.5	Sandy CLAY, sand lenses 6.5', 9.0', 9.5', 12.5', dry to 11', then wet, (brown)	3.5-5	4	7	7
1.0	13.5-14.5	SAND and GRAVEL, wet	6-7.5	6	8	11
8.0	14.5-22.5	Silty, sandy, CLAY, gray, wet	8.5-10	9	11	15
2.5	22.5-25	Fine SAND, blonde	11-12.5	13	20	34
			13.5-15	13	16	23
			16-17.5	17	17	17
			18.5-20	6	8	10
			21-22.5	6	10	18
			23.5-25	19	29	30

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Well/Boring No. #17
Client: BOC Lansing
Project No.: 20682

Well/Boring Log Sheet

County	Township	Fraction NE NE SW	Section	T	R

Contractor Stearns Drlg.
Address: Dutton, Mich

Equipment: Dietrich D - 25

Supervisor: C. Cotton

Drilling Method(s) **Depth**
Auger / Split Spoon 25'

Grouting/Seal

Depth	To	Material/Method
1	-25'	Cement / Bentonite Grout
0 - 1.0'		Cement Core

Development

Screen
Manufacturer: N.A.
Material:
Model:
Slot/Gauze: Dia.:
Length:
Depth Set: To:

Casing

Dia.	Type	Depth Set
	N.A.	To
		To

Date
Started: 7/28/88 Finished: 7/28/88

Elevation
Casing:
Ground:
Ref. Pt.:

Water Level N.A. Ft. Below
Measure On:

Location

Remarks (include here, other data available) At E.O.B. - augers were pulled. Some water seeping into hole at approximately 10' - very slowly. Was not enough to collect sample.

Thickness	Depth to Base	LITHOLOGIC DESCRIPTION	Sample Interval	Blow Counts 6"	Blow Counts 12"	Blow Counts 18"
1.0	0-1.0	Cement (core)	1-2.5	3	3	4
10	1-11.0	Medium to coarse SAND, light brown to brown, occasional small to medium gravel, moist	3.5-5	2	2	3
5.5	11-16.5	Silty, sandy CLAY, gray, occasional gravel	6-7.5	1	1	1
3.3	16.5-19.8	Fine to medium clayey SAND, blonde to brown, occasional gravel, soft dry	8.5-10	6	9	7
2.7	19.8-22.5	Clayey SAND, brown to dark brown streaks, occasional gravel, moist at 21', sand	11-12.5	6	8	9
		lenses from 22.3 - 22.5	13.5-15	5	6	8
2.5	22.5-25	Coarse SAND, brown, some pea gravel, dry	16-17.5	4	6	7
			18.5-20	13	22	24
		Organic - sewerish odor	21-22.5	10	5	5
			23.5-25	13	17	20

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Well/Boring No. #18
Client: BOC Lansing
Project No.: 20682

Well/Boring Log Sheet

County	Township	Fraction NE NE SW	Section	T	R

Contractor Stearns Drlg.
Address: Dutton, Mich

Equipment: 45 Acker

Supervisor: C. Cotton

Drilling Method(s) **Depth**
Auger / Split Spoon 25'

Grouting/Seal

Depth	To	Material/Method
0.7	25	Cement / Bentonite Grout
0.1	0.7	Cement Core
0	0.1	Black Top Core

Development

Screen
Manufacturer: N.A.
Material:
Model:
Slot/Gauze: Dia.:
Length:
Depth Set: To:

Casing
Dia. Type Depth Set
N.A. To
To

Date
Started: 7/11/88 Finished: 7/11/88

Elevation
Casing:
Ground:
Ref. Pt.:

Water Level 20.5' Ft. Below surface
Measure On: 7/11/88 At E.O.B.

Location
Outside, north of bldg. 301 in access road

Remarks (include here, other data available)

Thickness	Depth to Base	LITHOLOGIC DESCRIPTION	Sample Interval	Blow Counts 6"	12"	18"	Remarks
0.1	0-0.1	Asphalt (core)	1-2.5	3	5	4	
0.6	0.1-0.7	Cement core	3.5-5	7	7	4	
2.8	0.7-3.5	GRAVEL and SAND fill	6-7.5	5	5	7	
4	3.5-7.5	Very sandy CLAY, brown, occasional medium-large gravel	8.5-10	7	18	16	
2	7.5-9.5	Medium SAND, brown, occasional gravel with clay lenses, damp	11-12.5	6	10	10	
1.7	9.5-11.2	Sandy CLAY, occasional gravel, brown ,wet	13.5-15	4	4	6	
3.8	11.2-15	Medium to coarse silty SAND with occasional gravel, slightly clayey, wet, gray, soft	16-17.5	4	6	7	
4.2	15-19.2	Silty CLAY, gray, stiff, occasional medium gravel	18.5-20	3	8	10	
2.3	19.2-21.5	Medium SAND, reddish brown, occasional gravel	21-22.5	5	7	7	
3.5	21.5-25	Layered CLAY, SILT, and SAND, gray, occasional gravel, wet	23.5-25	5	7	7	

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Well/Boring No. #19
Client: BOC Lansing
Project No.: 20682

Well/Boring Log Sheet

County	Township	Fraction NE NE SW	Section	T	R

Contractor Stearns Drlg.
Address: Dutton, Mich

Equipment: Dietrich D - 25

Supervisor: C. Cotton

Drilling Method(s) **Depth**
Auger / Split Spoon 25'

Grouting/Seal

Depth	To	Material/Method
0	25	Cement / Bentonite Grout

Development N.A.

Screen
Manufacturer: N.A.
Material:
Model:
Slot/Gauze: Dia.:
Length:
Depth Set: To:

Casing

Dia.	Type	Depth Set
	N.A.	To
		To

Date
Started: 7/27/88 Finished: 7/27/88

Elevation
Casing:
Ground:
Ref. Pt.:

Water Level +22 Ft. Below surface
Measure On:

Location
Inside, NE corner near bldg. 301

Remarks (include here, other data available)
Had cave in at 22 - moist clayey sand.

Thickness	Depth to Base	LITHOLOGIC DESCRIPTION	Sample Interval	6"	12"	18"
				Blow Counts		
				Remarks		
0.8	0-0.8	Cement (core)	1-2.5	5	9	10
5.6	0.8-6.4	Medium to fine clayey SAND, brown to gray, occasional small gravel, dry	3.5-5	3	3	4
2.8	6.4-9.2	Silty CLAY, with some sand and gravel, brown to black streaks	6-7.5	2	6	8
2.3	9.2-11.5	Medium SAND, with some clay, occasional gravel, brown, moist	8.5-10	5	8	9
8.2	11.5-19.7	Sandy CLAY, brown to gray, slightly silty, occasional small gravel, stiff,	11-12.5	7	10	10
		brown sand lenses	13.5-15	3	6	7
4	19.7-23.7	Clayey medium SAND, light to dark brown, dry	16-17.5	3	6	7
0.8	23.7-24.5	Sandy CLAY, medium, brown, moist	18.5-20	4	5	9
0.5	24.5-25	Fine SAND, white blonde, dry	21-22.5	21	28	10
			23.5-25	5	18	42

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Well/Boring No. #20
Client: BOC Lansing
Project No.: 20682

Well/Boring Log Sheet

County	Township	Fraction NE NE SW	Section	T	R

Contractor Stearns Drlg.
Address: Dutton, Mich

Equipment: 45 Acker

Supervisor: C. Cotton

Drilling Method(s) **Depth**
Auger / Split Spoon 25'

Grouting/Seal

Depth	To	Material/Method
0.8	25	Cement / Bentonite Grout
0.2	0.8	Cement Plug
0.0	0.2	Wood Blocks

Development N.A.

Screen
Manufacturer: N.A.
Material:
Model:
Slot/Gauze: Dia.:
Length:
Depth Set: To:

Casing

Dia.	Type	Depth Set
	N.A.	To
		To

Date
Started: 7/8/88 Finished: 7/8/88

Elevation
Casing:
Ground:
Ref. Pt.:

Water Level Ft. Below
Measure On: No water encountered

Location
Inside, NE corner near bldg. 301

Remarks (include here, other data available)
PH test on soils
ph = 6

Thickness	Depth to Base	LITHOLOGIC DESCRIPTION	Sample Interval	Blow Counts 6"	12"	18"
0.2	0-0.2	Wood block floor (core)	1-2.5	5	6	9
0.8	0.2-1.0	Cement (core)	3.5-5	5	7	10
5.5	1.0-6.5	Medium to fine SAND with some clay to 4', brown, occasional gravel, soft	6-7.5	12	10	14
2.0	6.5-8.5	Sandy CLAY, (fine sand) brown, occasional gravel	8.5-10	12	10	6
5.5	8.5-14	Medium SAND, brown, occasional gravel, loose, damp with silty sand lenses	11-12.5	7	15	8
3	14-17	Very silty CLAY, gray, occasional gravel, stiff, smooth	13.5-15	7	7	10
8	17-25	Fine to medium SAND, light brown, dry, after 22.0' clay lenses	16-17.5	3	7	8
			18.5-20	4	10	19
			21-22.5	13	13	15
			23.5-25	10	15	16

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Well/Boring No. #21
Client: BOC Lansing
Project No.: 20682

Well/Boring Log Sheet

County	Township	Fraction NE NE SW	Section	T	R

Contractor Stearns Drlg.
Address: Dutton, Mich

Equipment: Dietrich D - 25

Supervisor: C. Cotton

Drilling Method(s) **Depth**
Auger / Split Spoon 25'

Grouting/Seal

Depth	To	Material/Method
1.0	25	Cement / Bentonite Grout
0.2	1	Cement (core)
0	0.2	Wood block (core)

Development N.A.

Screen
Manufacturer: N.A.
Material:
Model:
Slot/Gauze: Dia.:
Length:
Depth Set: To:

Casing

Dia.	Type	Depth Set
	N.A.	To
		To

Date
Started: 7/22/88 Finished: 7/22/88

Elevation
Casing:
Ground:
Ref. Pt.:

Water Level Ft. Below
Measure On: No water encountered

Location
Inside, NE corner near bldg. 301

Remarks (include here, other data available)

Thickness	Depth to Base	LITHOLOGIC DESCRIPTION	Sample Interval	Blow Counts 6"	12"	18"
1	0-1.0	3" wood floor, 9" cement (core)	1-2.5	4	5	6
3	1-4	CLAY, black, stiff	3.5-5	4	6	9
4.5	4-8.5	CLAY, dark greenish gray, discolored, occasional small gravel	6-7.5	5	11	14
1.3	8.5-9.8	Clayey SAND, greenish brown, occasional medium gravel	8.5-10	6	13	10
14.2	9.8-24	Silty, sandy CLAY, greenish gray to brown, occasional small gravel, stiff, soft	11-12.5	14	17	17
1	24-25	Fine to medium SAND, reddish brown to blonde, soft	13.5-15	13	14	16
			16-17.5	6	9	11
			18.5-20	8	11	13
			21-22.5	5	6	8
			23.5-25	10	27	38

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Well/Boring No. #22
Client: BOC Lansing
Project No.: 20682

Well/Boring Log Sheet

County	Township	Fraction NE NE SW	Section	T	R

Contractor Stearns Drlg.
Address: Dutton, Mich

Equipment: Dietrich D - 25

Supervisor: C. Cotton

Drilling Method(s) **Depth**
Auger / Split Spoon 25'

Grouting/Seal

Depth	To	Material/Method
0	25	Cement / Bentonite Grout

Development N.A.

Screen
Manufacturer: N.A.
Material:
Model:
Slot/Gauze: Dia.:
Length:
Depth Set: To:

Casing

Dia.	Type	Depth Set
	N.A.	To
		To

Date
Started: 7/21/88 Finished: 7/21/88

Elevation
Casing:
Ground:
Ref. Pt.:

Water Level Ft. Below
Measure On: No water encountered

Location
Inside E side of bldg. 301

Remarks (include here, other data available)
ph testing of soils

Thickness	Depth to Base	LITHOLOGIC DESCRIPTION	Sample Interval	Blow Counts 6"	Blow Counts 12"	Blow Counts 18"
0.2	0-0.2	Wood block floor (core)	1-2.5	4	4	6
0.8	0.2-1	Cement (core)	3.5-5	4	4	6
5	1-6	Sandy CLAY, dark brown to black streaks, some small to medium gravel	6-7.5	7	10	20
3	6-9	Silty fine to medium SAND, light gray to white lenses, small gravel, odor	8.5-10	10	12	12
14	9-23	Silty, sandy CLAY, brown-gray, occasional small gravel, soft	11-12.5	6	11	11
2	23-25	Fine to medium SAND, dark brown, slightly silty, occasional small gravel, dry	13.5-15	4	6	8
			16-17.5	5	9	11
			18.5-20	5	8	11
			21-22.5	5	6	6
			23.5-25	13	21	24

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Well/Boring No. #23
Client: BOC Lansing
Project No.: 20682

Well/Boring Log Sheet

County	Township	Fraction NE NE SW	Section	T	R

Contractor Stearns Drlg.
Address: Dutton, Mich

Equipment: 45 Acker

Supervisor: C. Cotton

Drilling Method(s) **Depth**
Auger / Split Spoon 25'

Grouting/Seal

Depth	To	Material/Method
1 - 25'		Cement / Bentonite Grout
0 - 1		Cement Core

Development N.A.

Screen
Manufacturer: N.A.
Material:
Model:
Slot/Gauze: Dia.:
Length:
Depth Set: To:

Casing

Dia.	Type	Depth Set
	N.A.	To
		To

Date
Started: 7/14/88 Finished: 7/15/88

Elevation
Casing:
Ground:
Ref. Pt.:

Water Level Ft. Below
Measure On:

Location
Outside E. wall of Bldg. 301 B

Remarks (include here, other data available) Because of large rock, augers were being pushed out of plumb. New hole cored 1 1/2' NE of first hole. Water sample collected at 15'

Thickness	Depth to Base	LITHOLOGIC DESCRIPTION	Sample Interval	Blow Counts 6"	12"	18"
1	0-1.0	Cement (cored)	1-2.5	4	9	10
0.5	1-1.5	Medium to coarse SAND and GRAVEL, brown	3.5-5	17	34	*
13.5	1.5-15	Medium to coarse SAND, brown, with interbeds of sandy clay, occasional small	6-7.5	6	4	6
		gravel, moist to wet	8.5-10	5	6	8
6.2	15-21.2	Very sandy CLAY, gray, occasional gravel	11-12.5	5	6	14
3.8	21.2-25	Medium SAND, reddish brown, mixed with medium to large gravel with gray clay	13.5-15	3	3	5
		lenses, wet to moist	16-17.5	6	6	8
			18.5-20	4	9	27
			21-22.5	38	38	25
			23.5-25	5	5	4

* Drove a rock

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Well/Boring No. #24
Client: BOC Lansing
Project No.: 20682

Well/Boring Log Sheet

County	Township	Fraction NE NE SW	Section	T	R

Contractor Stearns Drlg.
Address: Dutton, Mich

Equipment: 45 Acker

Supervisor: C. Cotton

Drilling Method(s) **Depth**
Auger / Split Spoon 25'

Grouting/Seal

Depth	To	Material/Method
0.6 - 25		Cement / Bentonite Grout
0 - 0.6		Cement Core

Development N.A.

Screen
Manufacturer: N.A.
Material:
Model:
Slot/Gauze: Dia.:
Length:
Depth Set: To:

Casing

Dia.	Type	Depth Set
	N.A.	To
		To

Date
Started: 7/12/88 Finished: 7/12/88

Elevation
Casing:
Ground:
Ref. Pt.:

Water Level Ft. Below
Measure On: No water encountered

Location
Outside Copper & Nickel Recovery Areas

Remarks (include here, other data available)

Thickness	Depth to Base	LITHOLOGIC DESCRIPTION	Sample Interval	Blow Counts 6"	12"	18"
0.6	0-0.6	Cement (cored)	1-2.5	2	4	7
0.4	0.6-1	Medium - coarse SAND and GRAVEL, reddish brown	3.5-5	8	12	17
3.5	1.0-4.5	Sandy CLAY, brown, fine blonde sand lenses, occasional gravel	6-7.5	6	7	8
3	4.5-7.5	Medium - coarse SAND, brown, sandy clay lenses, occasional medium gravel	8.5-10	5	8	8
11.3	7.5-18.8	Silty CLAY, gray, slightly sandy, occasional gravel	11-12.5	4	5	8
2.2	18.8-21	Fine SAND, brown, soft, gray silt lenses, very compact, dry	13.5-15	4	5	9
4	21-25	Fine silty CLAY, gray, sticky, moist, occasional gravel, soft sand lenses	16-17.5	4	5	6
			18.5-20	11	28	31
			21-22.5	25	18	9
			23.5-25	4	3	3

EDI Engineering & Science

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Well/Boring No. #25
Client: BOC Lansing
Project No.: 20682

Well/Boring Log Sheet

County	Township	Fraction NE NE SW	Section	T	R

Contractor Stearns Drlg.
Address: Dutton, Mich

Equipment: 45 Acker

Supervisor: C. Cotton

Drilling Method(s) **Depth**
Auger / Split Spoon 25'

Grouting/Seal

Depth	To	Material/Method
1	25	Cement / Bentonite Grout
0.2	1	Cement Core
0	0.2	Asphalt - broken up

Development N.A.

Screen
Manufacturer: N.A.
Material:
Model:
Slot/Gauze: Dia.:
Length:
Depth Set: To:

Casing

Dia.	Type	Depth Set
	N.A.	To
		To

Date
Started: 7/12/88 Finished: 7/12/88

Elevation
Casing:
Ground:
Ref. Pt.:

Water Level Ft. Below
Measure On: No water encountered

Location Outside NE corner - outside Copper Recovery Area

Remarks (include here, other data available)

Thick-ness	Depth to Base	LITHOLOGIC DESCRIPTION	Sample Interval	Blow Counts 6"	12"	18"
0.2	0-0.2	Asphalt (cored)	1-2.5	2	4	6
0.8	0.2-1	Cement (cored)	3.5-5	9	17	10
0.4	1-1.4	Coarse SAND, dark brown, small gravel	6-7.5	10	7	7
3.6	1.4-5	Sandy CLAY, gray/brown, small gravel, moist	8.5-10	5	7	8
8.8	5-13.8	Medium to coarse SAND, brown to dark brown, occasional small to medium gravel,	11-12.5	4	5	7
		damp, clay lenses	13.5-15	5	7	10
1.2	13.8-15	Sandy CLAY, gray, small to medium gravel, stiff	16-17.5	25	40	49
1.8	15-16.8	Medium to coarse SAND, black to reddish brown, stiff	18.5-20	10	6	6
4.4	16.8-21.2	Very silty fine to medium SAND, gray, occasional medium gravel, moist, clay lenses	21-22.5	4	5	7
2.3	21.2-23.5	Silty CLAY, gray, moist, stiff	23.5-25	6	11	18
1.5	23.5-25	Silty fine SAND, gray to reddish brown, soft, fine, dry				

EDI Engineering & Science

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Well/Boring No. #26
Client: BOC Lansing
Project No.: 20682

Well/Boring Log Sheet

County	Township	Fraction NE NE SW	Section	T	R

Contractor Stearns Drlg.
Address: Dutton, Mich

Equipment: 45 Acker

Supervisor: C. Cotton

Drilling Method(s) **Depth**
Auger / Split Spoon 25'

Grouting/Seal

Depth	To	Material/Method
1	25	Cement / Bentonite Grout
0.2	1	Cement Core
0	0.2	Wood Block Core

Development N.A.

Screen
Manufacturer: N.A.
Material:
Model:
Slot/Gauze: Dia.:
Length:
Depth Set: To:

Casing

Dia.	Type	Depth Set
	N.A.	To
		To

Date
Started: 7/14/88 Finished: 7/14/88

Elevation
Casing:
Ground:
Ref. Pt.:

Water Level Ft. Below
Measure On: No meassurable water encountered

Location
Inside E. wall of Bldg. 301

Remarks (include here, other data available)

Thickness	Depth to Base	LITHOLOGIC DESCRIPTION	Sample Interval	Blow Counts 6"	12"	18"	Remarks
1	0-1	Core (wood and cement)	1-2.5	4	5	7	
5	1-6	Clayey medium to coarse SAND, discolored yellow/brown, some gravel	3.5-5	5	3	7	
15.8	6-21.8	Silty CLAY, yellowish brown to gray, occasional gravel, occasional sand lenses,	6-7.5	5	6	7	
		moist clay at 13 - 15	8.5-10	7	10	13	
3.2	21.8-25	Sandy CLAY, gray, occasional small gravel, damp	11-12.5	6	5	8	
			13.5-15	3	3	4	
			16-17.5	3	4	8	
			18.5-20	4	5	7	
			21-22.5	3	4	13	
			23.5-25	12	13	9	

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Well/Boring No. #27
Client: BOC Lansing
Project No.: 20682

Well/Boring Log Sheet

County	Township	Fraction NE NE SW	Section	T	R

Contractor Stearns Drlg.
Address: Dutton, Mich

Equipment: Dietrich D - 25

Supervisor: C. Cotton

Drilling Method(s) **Depth**
Auger / Split Spoon 25'

Grouting/Seal

Depth	To	Material/Method
0.8 - 25		Cement / Bentonite Grout
0 - 0.8		Cement Core

Development N.A.

Screen
Manufacturer: N.A.
Material:
Model:
Slot/Gauze: Dia.:
Length:
Depth Set: To:

Casing

Dia.	Type	Depth Set
	N.A.	To
		To

Date
Started: 7/21/88 Finished: 7/21/88

Elevation
Casing:
Ground:
Ref. Pt.:

Water Level Ft. Below
Measure On:

Location
Inside E. wall of Bldg. 301

Remarks (include here, other data available) North of steam booth

Thickness	Depth to Base	LITHOLOGIC DESCRIPTION	Sample Interval	Blow Counts 6"	Blow Counts 12"	Blow Counts 18"
0.8	0-0.8	Cement (core)	1-2.5	5	6	10
4.2	0.8-5	Medium SAND, brown, clay lenses, occasional medium gravel	3.5-5	5	7	13
4	5-9	Very sandy CLAY, light brown, occasional small to medium gravel	6-7.5	6	8	11
4.8	9-13.8	Silty SAND, light brown, occasional gravel, sandy clay lenses, very moist	8.5-10	6	7	14
8	13.8-21.8	Sandy, silty CLAY, gray, occasional small gravel, dry except 17 - 17.2 - very	11-12.5	8	12	16
		coarse wet sand	13.5-15	4	6	7
3.2	21.8-25	Very fine silty SAND, light brown, silt lenses, stiff	16-17.5	5	9	8
			18.5-20	5	8	10
			21-22.5	6	15	21
			23.5-25	30	55	69

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Well/Boring No. #28
Client: BOC Lansing
Project No.: 20682

Well/Boring Log Sheet

County	Township	Fraction NE NE SW	Section	T	R

Contractor Stearns Drlg.
Address: Dutton, Mich

Equipment: Acker 45

Supervisor: M. Jones

Drilling Method(s) **Depth**
Auger / Split Spoon 50'

Grouting/Seal

Depth	To	Material/Method
0	50	Cement / Bentonite Grout

Development N.A.

Screen
Manufacturer: N.A.
Material:
Model:
Slot/Gauze: Dia.:
Length:
Depth Set: To:

Casing

Dia.	Type	Depth Set
	N.A.	To
		To

Date
Started: 7/25/88 Finished: 7/25/88

Elevation
Casing:
Ground:
Ref. Pt.:

Water Level Ft. Below
Measure On:

Location

Remarks (include here, other data available) Dry Hole

Thickness	Depth to Base	LITHOLOGIC DESCRIPTION	Sample Interval	Blow Counts 6"	Blow Counts 12"	Blow Counts 18"
1	0-1	Core (Asphalt and Cement)	1-2.5	4	8	10
5	1-6	Fine SAND, yellowish brown, some silt and very fine sand	3.5-5	7	11	12
1	6-7	Very silty CLAY, yellowish brown, with some fine sand	6-7.5	4	5	8
4	7-11	Very sandy SILT, yellowish brown, with some clay, occasional gravel	8.5-10	12	13	14
9.5	11-20.5	Very silty, sandy CLAY, yellowish brown to gray, occasional gravel, soft	11-12.5	4	5	8
3.3	20.5-23.8	Very fine SAND, brown, with yellow sand seams, occasional gravel, very hard, dry	13.5-15	2	5	7
10.2	23.8-34	Very sandy CLAY, gray, with silt and gravel	16-17.5	3	5	5
9	34-43	SILT, gray, with some fine sand	18.5-20	2	4	4
7	43-50	Very fine SAND, very light brown to blonde, some silt, occasional gravel	21-22.5	27	55	57
			23.5-25	12	12	10
			28.5-30	8	11	13
			33.5-35	11	16	22
			38.5-40	13	16	21
			43.5-45	14	16	18
			48.5-50	18	21	26

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Well/Boring No. #29
Client: BOC Lansing
Project No.: 20682

Well/Boring Log Sheet

County	Township	Fraction NE NE SW	Section	T	R

Contractor Stearns Drlg.
Address: Dutton, Mich

Equipment: Dietrich D - 25

Supervisor: C. Cotton

Drilling Method(s) **Depth**
Auger / Split Spoon 25'

Grouting/Seal

Depth	To	Material/Method
1 - 25		Cement / Bentonite Grout
0 - 1		Cement Core

Development N.A.

Screen
Manufacturer: N.A.
Material:
Model:
Slot/Gauze: Dia.:
Length:
Depth Set: To:

Casing

Dia.	Type	Depth Set
	N.A.	To
		To

Date
Started: 7/20/88 Finished: 7/20/88

Elevation
Casing:
Ground:
Ref. Pt.:

Water Level Ft. Below
Measure On: No measurable water encountered

Location Center Bldg. 301

Remarks (include here, other data available)

Thickness	Depth to Base	LITHOLOGIC DESCRIPTION	Sample Interval	Blow Counts 6"	12"	18"
1	0-1	Cement (core)	1-2.5	4	4	6
5	1-6	Medium to coarse SAND, dirty black to brown, some gravel, oil odor	3.5-5	3	3	5
2.5	6-8.5	Sandy CLAY, brown, some gravel, moist	6-7.5	6	6	22
2.5	8.5-11	Medium SAND, light brown, brown clay lenses, occasional gravel	8.5-10	13	16	20
10.2	11-21.2	Silty CLAY, gray/brown, stiff, occasional gravel	11-12.5	7	11	16
3.8	21.2-25	Silty medium to fine SAND, gray and brown streaks, clay lenses, very moist at 24'	13.5-15	4	8	10
			16-17.5	7	9	13
			18.5-20	6	8	10
			21-22.5	23	16	11
			23.5-25	4	3	7
		Waited 20 minutes, no water in hole				

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Well/Boring No. #30
Client: BOC Lansing
Project No.: 20682

Well/Boring Log Sheet

County	Township	Fraction NE NE SW	Section	T	R

Contractor Stearns Drlg.
Address: Dutton, Mich

Equipment: Dietrich D - 25

Supervisor: C. Cotton

Drilling Method(s) **Depth**
Auger / Split Spoon 25'

Grouting/Seal

Depth	To	Material/Method
0.8 - 25		Cement / Bentonite Grout
0 - 0.8		Cement Plug

Development N.A.

Screen
Manufacturer: N.A.
Material:
Model:
Slot/Gauze: Dia.:
Length:
Depth Set: To:

Casing

Dia.	Type	Depth Set
	N.A.	To
		To

Date
Started: 7/25/88 Finished: 7/25/88

Elevation
Casing:
Ground:
Ref. Pt.:

Water Level 16.1 Ft. Belowsurface
Measure On:

Location Inside NE 1/4 of Bldg. 301

Remarks (include here, other data available)
Caved in at 16.3'

Thick-ness	Depth to Base	LITHOLOGIC DESCRIPTION	Sample Interval	Blow Counts 6"	12"	18"
0.8	0-0.8	Cement Plug	1-2.5	5	6	8
5.7	0.8-6.5	Fine to medium SAND, brown	3.5-5	7	6	8
0.7	6.5-7.2	Sandy CLAY, brown, moist	6-7.5	8	17	8
3.8	7.2-11	Medium SAND, dark brown/gray, lenses of gray/black clay, moist	8.5-10	2	2	3
10.2	11-21.2	Silty, sandy CLAY, brown/gray, occasional small gravel, with sand lenses, moist, stiff	11-12.5	5	12	12
2.3	21.2-23.5	Silty fine SAND, brown/gray, very compact	13.5-15	4	6	8
1.4	23.5-24.9	Very sandy CLAY, gray, very moist	16-17.5	5	9	12
0.1	24.9-25	Fine SAND, blonde, dry	18.5-20	4	9	11
			21-22.5	9	28	26
			23.5-25	12	6	10

EDI Engineering & Science

Page:_____ of_____
Well/Boring No. #31
Client: BOC Lansing
Project No.: 20682

Well/Boring Log Sheet

County	Township	Fraction NE NE SW	Section	T	R

Contractor Stearns Drlg.
Address: Dutton, Mich

Equipment: Dietrich D - 25

Supervisor: D. Greene

Drilling Method(s) **Depth**
Auger / Split Spoon 25'

Grouting/Seal

Depth	To	Material/Method
1 - 25		Cement / Bentonite Grout

Development N.A.

Screen
Manufacturer: N.A.
Material:
Model:
Slot/Gauze: Dia.:
Length:
Depth Set: To:

Casing

Dia.	Type	Depth Set
	N.A.	To
		To

Date
Started: 8/12/88 Finished: 8/12//88

Elevation
Casing:
Ground:
Ref. Pt.:

Water Level Ft. Below
Measure On: No measurable water

Location

Remarks (include here, other data available)

Thickness	Depth to Base	LITHOLOGIC DESCRIPTION	Sample Interval	Blow Counts 6"	12"	18"
1	0-1	Cement (core)	1-2.5	7	9	8
7	1-8.5	Medium SAND, reddish brown, dry	3.5-5	4	4	5
4	8.5-12.5	Sandy CLAY, brown	6-7.5	1	1	1
10	12.5-22.5	Silty CLAY grading to a sandy CLAY, (moist from 21.7-22), brown to gray,	8.5-10	2	2	5
		dry, occasional gravel	11-12.5	10	10	12
2.5	22.5-25	Fine SAND, blonde, dry	13.5-15	7	8	9
			16-17.5	4	6	7
			18.5-20	3	5	6
			21-22.5	24	29	35
			23.5-25	18	23	30

EDI Engineering & Science

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Well/Boring No. #32
Client: BOC Lansing
Project No.: 20682

Well/Boring Log Sheet

County	Township	Fraction NE NE SW	Section	T	R

Contractor Stearns Drlg.
Address: Dutton, Mich

Equipment: Dietrich D - 25

Supervisor: C. Cotton

Drilling Method(s) **Depth**
Auger / Split Spoon 10.5'

Grouting/Seal

Depth	To	Material/Method
1 - 10.5		Cement / Bentonite Grout
0 - 1		Cement (core)

Development N.A.

Screen
Manufacturer: N.A.
Material:
Model:
Slot/Gauze: Dia.:
Length:
Depth Set: To:

Casing

Dia.	Type	Depth Set
	N.A.	To
		To

Date
Started: 7/22/88 Finished: 7/22/88

Elevation
Casing:
Ground:
Ref. Pt.:

Water Level Ft. Below
Measure On:

Location South side of acid copper plating line

Remarks (include here, other data available)

Thickness	Depth to Base	LITHOLOGIC DESCRIPTION	Sample Interval	Blow Counts 6"	Blow Counts 12"	Blow Counts 18"
1	0-1	Wood, cement (core)	1-2.5	2	1	2
5	1-6	Coarse SAND, dark brown to black, greasy/oily, moist	3.5-5	1	1	1
4.5	6-10.5	Very coarse SAND, black/gray, some small gravel, very wet, oily odor	6-7.5	2	2	5
			8.5-10	2	1	2
		At 10.5', the lead auger was thrown off by object (pit, wall, rebar???), attempted				
		to collect split spoon, bent spoon, (100 blows = 1")				
		Grouted hole				

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Well/Boring No. #33
Client: BOC Lansing
Project No.: 20682

Well/Boring Log Sheet

County	Township	Fraction NE NE SW	Section	T	R

Contractor Stearns Drlg.
Address: Dutton, Mich

Equipment: Dietrich D - 25

Supervisor: C. Cotton

Drilling Method(s) **Depth**
Auger / Split Spoon 25'

Grouting/Seal

Depth	To	Material/Method
0.8	25	Cement / Bentonite Grout
0	0.8	Cement (core)

Development N.A.

Screen
Manufacturer: N.A.
Material:
Model:
Slot/Gauze: Dia.:
Length:
Depth Set: To:

Casing

Dia.	Type	Depth Set
	N.A.	To
		To

Date
Started: 7/20/88 Finished: 7/20/88

Elevation
Casing:
Ground:
Ref. Pt.:

Water Level Ft. Below
Measure On: No water encountered

Location Bldg. 301 W. side of old acid copper plater

Remarks (include here, other data available)

Blow Counts 18"
Remarks 12"
6"
Sample Interval

Thickness	Depth to Base	LITHOLOGIC DESCRIPTION	Sample Interval	6"	12"	18"
0.8	0-0.8	Cement, wood (core)	1-2.5	6	10	14
6	0.8-6.8	Medium SAND, light brown, brown clay lenses	3.5-5	6	12	12
12.7	6.8-19.5	Sandy to very sandy CLAY, gray/brown, occasional small gravel, stiff	6-7.5	14	18	21
5.5	19.5-25	Fine to medium SAND, light brown/brown, streaks of gray silt, occasional gravel,	8.5-10	9	16	23
		dry, soft	11-12.5	6	7	9
			13.5-15	5	6	10
			16-17.5	5	8	12
			18.5-20	4	7	10
			21-22.5	5	10	18
			23.5-25	20	25	29

EDI Engineering & Science

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Well/Boring No. #34
Client: BOC Lansing
Project No.: 20682

Well/Boring Log Sheet

County	Township	Fraction NE NE SW	Section	T	R

Contractor Stearns Drlg.
Address: Dutton, Mich

Equipment: 45 Acker

Supervisor: C. Cotton

Drilling Method(s) **Depth**
Auger / Split Spoon 25'

Grouting/Seal

Depth	To	Material/Method
1	25	Cement / Bentonite Grout
0.2	1	Cement (core)
0	0.3	Wood Block

Development N.A.

Screen
Manufacturer: N.A.
Material:
Model:
Slot/Gauze: Dia.:
Length:
Depth Set: To:

Casing

Dia.	Type	Depth Set
	N.A.	To
		To

Date
Started: Finished:

Elevation
Casing:
Ground:
Ref. Pt.:

Water Level Ft. Below
Measure On: No water encountered

Location Inside Bldg. 301, on N. side of old acid copper plating area

Remarks (include here, other data available)

Thickness	Depth to Base	LITHOLOGIC DESCRIPTION	Sample Interval / Blow Counts 6"	12"	18"
1	0-1	Wood, cement (cored)	1-2.5	5	8	14
0.8	1-1.8	Medium SAND, dark brown, slightly oily odor, moist	3.5-5	6	8	12
9.7	1.8-11.5	Sandy CLAY, brittle, occasional gravel, occasional light brown dry sand lenses	6-7.5	9	12	16
10.3	11.5-21.8	Silty CLAY, gray, moist, soft	8.5-10	7	6	9
3.2	21.8-25	Fine SAND, blonde, soft	11-12.5	4	4	6
			13.5-15	4	5	7
			16-17.5	5	7	9
			18.5-20	3	6	9
			21-22.5	9	18	23
			23.5-25	10	10	10

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Well/Boring No. #35
Client: BOC Lansing
Project No.: 20682

Well/Boring Log Sheet

County	Township	Fraction NE NE SW	Section	T	R

Contractor Stearns Drlg.
Address: Dutton, Mich

Equipment: Dietrich D - 25

Supervisor: C. Cotton

Drilling Method(s) **Depth**
Auger / Split Spoon 25'

Grouting/Seal

Depth	To	Material/Method
1 - 25		Cement / Bentonite Grout
0.2 - 1		Cement (core)
0 - 0.2		Wood Block Floor

Development N.A.

Screen
Manufacturer: N.A.
Material:
Model:
Slot/Gauze: Dia.:
Length:
Depth Set: To:

Casing

Dia.	Type	Depth Set
	N.A.	To
		To

Date
Started: 7/19/88 Finished: 7/19/88

Elevation
Casing:
Ground:
Ref. Pt.:

Water Level Ft. Below
Measure On: No water encountered

Location Inside NW corner of Bldg. 301

Remarks (include here, other data available)

Thick-ness	Depth to Base	LITHOLOGIC DESCRIPTION	Sample Interval	Blow Counts 6"	Blow Counts 12"	Blow Counts 18"
1	0-1	Wood, cement core	1-2.5	4	3	4
10	1-11	Fine to medium SAND (fill), light brown, dry	3.5-5	2	-	-
1.5	11-12.5	Sandy CLAY, brown, some gravel, moist	6-7.5	1	1	2
1	12.5-13.5	SAND and GRAVEL, (small to medium gravel), some clay, moist	8.5-10	1	1	2
10.5	13.5-24	Sandy CLAY to CLAY, gray, occasional gravel, very stiff (soft 22-24), moist	11-12.5	3	5	15
1	24-25	Fine to medium SAND, brown, dry	13.5-15	8	8	10
			16-17.5	4	10	7
			18.5-20	6	9	12
			21-22.5	6	6	5
			23.5-25	10	19	31

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Well/Boring No. #36
Client: BOC Lansing
Project No.: 20682

Well/Boring Log Sheet

County	Township	Fraction NE NE SW	Section	T	R

Contractor Stearns Drlg.
Address: Dutton, Mich

Equipment: Dietrich D - 25

Supervisor: C. Cotton

Drilling Method(s) **Depth**
Auger / Split Spoon 25'

Grouting/Seal

Depth	To	Material/Method
1 - 25		Cement / Bentonite Grout
0.2 - 1		Cement (core)
0 - 0.2		Wood Block Floor

Development N.A.

Screen
Manufacturer: N.A.
Material:
Model:
Slot/Gauze: Dia.:
Length:
Depth Set: To:

Casing

Dia.	Type	Depth Set
	N.A.	To
		To

Date
Started: Finished:

Elevation
Casing:
Ground:
Ref. Pt.:

Water Level Ft. Below
Measure On: No measurable amount of water encountered

Location NW 1/4 of center of Bldg. 301

Remarks (include here, other data available)

Thickness	Depth to Base	LITHOLOGIC DESCRIPTION	Sample Interval	Blow Counts 6"	12"	18"
1	0-1.0	Cement, wood (core)	1-2.5	5	6	8
9	1-10	Very sandy CLAY, reddish brown, slightly stiff, occasional gravel	3.5-5	7	10	19
4.2	10-14.2	Medium SAND, brown, slightly clayey, compact	6-7.5	6	15	15
4.8	14.2-19	CLAY, gray, slightly sandy, occasional gravel, stiff	8.5-10	11	13	15
0.8	19-19.8	Fine to medium silty SAND, gray, very moist	11-12.5	10	15	23
1.2	19.8-21	Sandy CLAY, gray, occasional wet sand seam	13.5-15	10	12	14
4	21-25	Fine SAND, light brown, occasional dry gray silt lense, dry	16-17.5	6	9	10
			18.5-20	4	3	5
			21-22.5	25	45	60
			23.5-25	30	38	37

EDI Engineering & Science

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Well/Boring No. #37
Client: BOC Lansing
Project No.: 20682

Well/Boring Log Sheet

County	Township	Fraction NE NE SW	Section	T	R

Contractor Stearns Drlg.
Address: Dutton, Mich

Equipment: Dietrich D - 25

Supervisor: C. Cotton

Drilling Method(s) **Depth**
Auger / Split Spoon 25'

Grouting/Seal

Depth	To	Material/Method
0.8	25	Cement / Bentonite Grout
0	0.8	Cement Core

Development N.A.

Screen
Manufacturer: N.A.
Material:
Model:
Slot/Gauze: Dia.:
Length:
Depth Set: To:

Casing

Dia.	Type	Depth Set
	N.A.	To
		To

Date
Started: 7/28/88 Finished: 7/28/88

Elevation
Casing:
Ground:
Ref. Pt.:

Water Level Ft. Below
Measure On:

Location Inside Bldg. 301, SW of old Nickel Plating Area

Remarks (include here, other data available)
Very moist layers of sand from 11-16, however dry hole at end of boring

Thickness	Depth to Base	LITHOLOGIC DESCRIPTION	Sample Interval	Blow Counts 6"	12"	18"
0.8	0-0.8	Cement (core)	1-2.5	5	7	9
0.7	0.8-1.5	Medium SAND, brown, small to medium gravel	3.5-5	6	8	12
9.5	1.5-11	Very sandy CLAY, dark brown with black and white streaks, small to large gravel	6-7.5	8	10	14
5.1	11-16.1	Medium to fine SAND, brown, occasional gravel, occasional sandy clay lenses, moist	8.5-10	24	27	14
5.1	16.1-21.2	Slightly silty, CLAY, gray, occasional gravel	11-12.5	26	22	11
3.8	21.2-25	Very silty, fine SAND, light to dark brown, occasional gravel, dry	13.5-15	8	11	13
			16-17.5	6	8	9
			18.5-20	4	6	8
			21-22.5	21	27	38
			23.5-25	14	17	10

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Well/Boring No. #39
Client: BOC Lansing
Project No.: 20682

Well/Boring Log Sheet

County	Township	Fraction NE NE SW	Section	T	R

Contractor Stearns Drlg.
Address: Dutton, Mich

Equipment: Dietrich D - 25

Supervisor: D. Greene

Drilling Method(s) **Depth**
Auger / Split Spoon 25'

Grouting/Seal

Depth	To	Material/Method
1 - 25		Cement / Bentonite Grout
0 - 1		Cement Core

Development N.A.

Screen
Manufacturer: N.A.
Material:
Model:
Slot/Gauze: Dia.:
Length:
Depth Set: To:

Casing

Dia.	Type	Depth Set
	N.A.	To
		To

Date
Started: 8/11/88 Finished: 8/11/88

Elevation
Casing:
Ground:
Ref. Pt.:

Water Level Ft. Below
Measure On:

Location

Remarks (include here, other data available)

Thickness	Depth to Base	LITHOLOGIC DESCRIPTION	Sample Interval	Blow Counts 6"	12"	18"	Remarks
1	0-1	Cement (core)	1-2.5	6	6	7	
1	1-2	Medium SAND, brown, dry	3.5-5	3	4	7	
12.5	2-14.5	Silty, sandy CLAY, brown, occasional gravel after 10', wet lense from 14-14.5	6-7.5	10	11	14	
7.5	14.5-22	Silty, CLAY, gray	8.5-10	7	12	11	
3	22-25	Silty SAND and silty CLAY interbeds, brown	11-12.5	21	23	21	
			13.5-15	10	12	14	
			16-17.5	6	6	11	
			18.5-20	9	8	10	
			21-22.5	4	20	28	
			23.5-25	12	25	12	

EDI Engineering & Science

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Well/Boring No. #40
Client: BOC Lansing
Project No.: 20682

Well/Boring Log Sheet

County	Township	Fraction NE NE SW	Section	T	R

Contractor Stearns Drlg.
Address: Dutton, Mich

Equipment: Dietrich D - 25

Supervisor: C. Cotton

Drilling Method(s) **Depth**
Auger / Split Spoon 25'

Grouting/Seal

Depth	To	Material/Method
1 - 25		Cement / Bentonite Grout
0 - 1		Cement Core

Development N.A.

Screen
Manufacturer: N.A.
Material:
Model:
Slot/Gauze: Dia.:
Length:
Depth Set: To:

Casing

Dia.	Type	Depth Set
	N.A.	To
		To

Date
Started: 7/27/88 Finished: 7/27/88

Elevation
Casing:
Ground:
Ref. Pt.:

Water Level Ft. Below
Measure On: No measurable water

Location Inside E 1/4 wall of Bldg. 301
E of old Acid Copper Plating area

Remarks (include here, other data available)

Blow Counts 18"
Remarks 12"
6"
Sample Interval

Thickness	Depth to Base	LITHOLOGIC DESCRIPTION	Sample Interval	18"	12"	6"
1	0-1	Cement (core)	1-2.5	2	2	3
2.5	1-3.5	Medium SAND, fill, brown	3.5-5	2	1	2
8.3	3.5-11.8	Medium to coarse SAND, dark to light brown, occasional small gravel, slightly clayey	6-7.5	12	14	14
8	11.8-19.8	Silty CLAY, gray, some sand, small gravel, stiff to very stiff (soft from 17.5-19.8)	8.5-10	9	9	10
1.2	19.8-21	Silty, clayey, medium to fine SAND, reddish brown, occasional gravel	11-12.5	3	6	7
4	21-25	Fine SAND, light brown to blonde, soft, dry	13.5-15	3	5	6
			16-17.5	5	6	8
			18.5-20	3	4	8
			21-22.5	18	23	29
			23.5-25	14	17	21

EDI Engineering & Science

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Well/Boring No. #41
Client: BOC Lansing
Project No.: 20682

Well/Boring Log Sheet

County	Township	Fraction NE NE SW	Section	T	R

Contractor Stearns Drlg.
Address: Dutton, Mich

Equipment: 45 Acker

Supervisor: C. Cotton

Drilling Method(s) **Depth**
Auger / Split Spoon 50.0'

Grouting/Seal

Depth	To	Material/Method
1.0-50.0		Cement / Bentonite Grout
0-1.0		Cement Plug

Development N/A

Screen
Manufacturer: N/A
Material:
Model:
Slot/Gauze: Dia.:
Length:
Depth Set: To:

Casing

Dia.	Type	Depth Set
	N/A	To
		To

Date
Started: 9/16/88 Finished: 9/16/88

Elevation
Casing:
Ground:
Ref. Pt.:

Water Level N/A Ft. Below
Measure On:

Location
East of South line, Bldg. 301 C

Remarks (include here, other data available)

Thickness	Depth to Base	LITHOLOGIC DESCRIPTION	Sample Interval	Blow Counts 6"	12"	18"
1.0	0.0-1.0	Cement (core)	1.0-2.5	4	9	10
2.9	1.0-3.9	Medium to coarse SAND, brown, mixed with small to medium gravel	3.5-5.0	5	8	10
2.5	3.9-6.4	Sandy CLAY, brown, occasional gravel	6.0-7.5	8	7	9
0.5	6.4-6.9	Medium to fine SAND, brown, moist	8.5-10.0	8	9	12
1.7	6.9-8.6	Sandy CLAY, brown, occasional small gravel, moist	11.0-12.5	4	6	3
2.6	8.6-11.2	Medium to fine SAND, brown, occasional small gravel, wet	13.5-15.0	5	9	13
1.8	11.2-13.0	Sandy CLAY, brown to gray, occasional gravel, moist	16.0-17.5	14	25	37
3.3	13.0-16.3	Silty to slightly sandy CLAY, gray, occasional gravel, stiff	18.5-20.0	16	37	58
3.3	16.3-19.6	Fine SAND, light brown, soft, dry	21.0-22.5	25	37	41
2.2	19.6-21.8	Very fine, silty SAND, brown	23.5-25.0	7	7	7
0.5	21.8-22.3	Medium SAND, brown, mixed with small to medium gravel, loose	28.5-30.0	16	22	29
0.7	22.3-23.0	Silty SAND, brown, occasional gravel	33.5-35.0	16	29	31
1.9	23.0-24.9	Very sandy CLAY, brown, occasional small gravel, moist	38.5-40.0	16	23	33
1.1	24.9-26.0	Sandy to slightly silty CLAY, gray, occasional small gravel	43.5-45.0	24	31	32
7.0	26.0-33.0	Fine SAND, light brown to light gray, occasional small gravel, dry, loose	48.5-50.0	21	26	26
10.8	33.0-43.8	Very fine SAND, very silty, gray, occasional layer of fine brown sand				
6.2	43.8-50.0	Medium SAND, brown to gray, mixed with small to medium gravel, moist				

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Well/Boring No. #42
Client: BOC Lansing
Project No.: 20682

Well/Boring Log Sheet

County	Township	Fraction NE NE SW	Section	T	R

Contractor Stearns Drlg.
Address: Dutton, Mich

Equipment: 45 Acker

Supervisor: C. Cotton

Drilling Method(s) **Depth**
Auger / Split Spoon 50.0'

Grouting/Seal

Depth	To	Material/Method
1.0-50.0		Cement / Bentonite Grout
0.0-1.0		Cement Core

Development N/A

Screen
Manufacturer: N/A
Material:
Model:
Slot/Gauze: Dia.:
Length:
Depth Set: To:

Casing

Dia.	Type	Depth Set
	N/A	To
		To

Date
Started: 9/15/88 Finished: 9/15/88

Elevation
Casing:
Ground:
Ref. Pt.:

Water Level N/A Ft. Below
Measure On:

Location East of Bldg 301 - A

Remarks (include here, other data available)
Water sample taken at 10' pH = 7.2

Thickness	Depth to Base	LITHOLOGIC DESCRIPTION	Sample Interval	6"	12"	18"
				Blow Counts		
				Remarks		
1.0	0.0-1.0	Cement (core)	1.0-2.5	6	10	10
2.8	1.0-3.8	Coarse SAND, brown, mixed with medium gravel, moist	3.5-5.0	6	6	5
1.7	3.8-5.5	Slightly sandy CLAY, light brown, lenses of gray silt, moist	6.0-7.5	1	1	2
4.0	5.5-9.5	Coarse SAND, brown, wet	8.5-10.0	4	5	5
1.7	9.5-11.2	Sandy CLAY, brown, moist	11.0-12.5	3	4	5
5.7	11.2-16.9	Very sandy CLAY, gray, occasional small to medium gravel, moist	13.5-15.0	3	4	6
3.1	16.9-20.0	Medium to fine SAND, red/brown, moist	16.0-17.5	9	10	9
2.4	20.0-22.4	Sandy CLAY, brown/red, mixed with small to medium gravel, stiff	18.5-20.0	10	17	28
5.6	22.4-28.0	Very sandy CLAY, gray, occasional small gravel, moist	21.0-22.5	40	43	54
0.7	28.8-28.7	Sandy CLAY, red brown, some medium gravel	23.5-25.0	5	5	6
0.8	28.7-29.5	Fine silty SAND, light gray, dry, loose	28.5-30.0	16	15	18
2.5	29.5-32.0	Silty CLAY, some fine sand, gray, moist	33.5-35.0	25	37	50
12.4	32.0-44.4	Very fine silty SAND, light gray, dry	38.5-40.0	50	37	50
1.6	44.4-46.0	Very silty CLAY, gray to brown, stiff	43.5-45.0	40	60	83
4.0	46.0-50.0	Medium silty SAND, gray, occasional gravel, slight clay binder, moist	48.5-50.0	33	33	30

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Well/Boring No. #43
Client: BOC Lansing
Project No.: 20682

Well/Boring Log Sheet

County	Township	Fraction NE NE SW	Section	T	R

Contractor Stearns Drlg.
Address: Dutton, Mich

Equipment: 45 Acker

Supervisor: C. Cotton

Drilling Method(s) **Depth**
Auger / Split Spoon 0.0-50.0

Grouting/Seal

Depth	To	Material/Method
0.0-50.0		Cement / Bentonite Grout

Development N/A

Screen
Manufacturer: N/A
Material:
Model:
Slot/Gauze: Dia.:
Length:
Depth Set: To:

Casing

Dia.	Type	Depth Set
	N/A	To
		To

Date
Started: 9/14/88 Finished: 9/14/88

Elevation
Casing:
Ground:
Ref. Pt.:

Water Level None Ft. Below
Measure On:

Location East of NE (or Bldg. 301)

Remarks (include here, other data available)

Thick-ness	Depth to Base	LITHOLOGIC DESCRIPTION	Sample Interval	Blow Counts 6"	Blow Counts 12"	Blow Counts 18"	Remarks
0.4	0.0-0.4	Topsoil, medium to fine SAND, dark brown, clay binder, organic	1.0-2.5	5	7	8	
4.2	0.4-4.6	Very sandy CLAY, dark brown with red/brown streaks, occasional small gravel	3.5-5.0	7	7	9	
1.4	4.6-6.0	Sandy CLAY, light brown with red streaks, dry	6.0-7.5	7	10	12	
2.0	6.0-8.0	Sandy CLAY, medium brown, mixed with small gravel	8.5-10.0	6	7	8	
1.2	8.0-9.2	Medium to fine SAND, brown, clay binder, occasional small gravel, moist	11.0-12.5	5	5	6	
0.3	9.2-9.5	Coarse SAND, black, small bits of coal (?), wet	13.5-15.0	4	4	6	
0.5	9.5-10.0	Medium to fine SAND, light brown	16.0-17.5	6	7	9	
4.3	10.0-14.3	Very sandy CLAY, brown, some small gravel, moist	18.5-20.0	12	20	27	
2.0	14.3-16.3	Slightly sandy, silty CLAY, gray, occasional small to medium gravel	21.0-22.5	6	7	8	
2.4	16.3-18.7	Medium to fine SAND, brown, clay binder, occasional small gravel	23.5-25.0	14	14	17	
2.3	18.7-21.0	Medium to fine SAND, light brown, loose, dry	28.5-30.0	18	30	43	
2.0	21.0-23.0	Very sandy CLAY, brown, small to medium gravel, moist	33.5-35.0	22	24	39	
0.8	23.0-23.8	Fine SAND, light brown, loose, dry	38.5-40.0	20	33	37	
2.2	23.8-26.0	Medium to coarse SAND, brown, small pebbly gravel, moist	43.5-45.0	17	20	23	
3.0	26.0-29.0	Medium to fine SAND, brown, occasional small gravel	48.5-50.0	17	23	26	
13.0	29.0-42.0	Fine SAND, light gray, dry, loose, moist at 34', dry at 39.5'					
8.0	42.0-50.0	Medium to coarse SAND, dark brown/gray, slight clay binder, occasional small to medium gravel, moist					

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Well/Boring No. #45
Client: BOC Lansing
Project No.: 20682

Well/Boring Log Sheet

County	Township	Fraction NE NE SW	Section	T	R

Contractor Stearns Drlg.
Address: Dutton, Mich

Equipment: Dietrich D - 25

Supervisor: C. Cotton

Drilling Method(s) **Depth**
Auger / Split Spoon 25'

Grouting/Seal

Depth	To	Material/Method
1 - 25		Cement / Bentonite Grout
0 - 1		Wood, Cement Core

Development N.A.

Screen
Manufacturer: N.A.
Material:
Model:
Slot/Gauze: Dia.:
Length:
Depth Set: To:

Casing

Dia.	Type	Depth Set
	N.A.	To
		To

Date
Started: 8/10/88 Finished: 8/10/88

Elevation
Casing:
Ground:
Ref. Pt.:

Water Level Ft. Below
Measure On:

Location Inside N wall, Bldg. 301

Remarks (include here, other data available)

Thickness	Depth to Base	LITHOLOGIC DESCRIPTION	Sample Interval	Blow Counts 6"	12"	18"	Remarks
1	0-1	Wood, cement (core)	1-2.5	3	3	4	
2.8	1-3.8	Medium SAND, fill, brown, (fill-potentially)	3.5-5	5	6	10	
6.2	3.8-10	Very sandy CLAY, brown, occasional gravel	6-7.5	9	12	15	
3.8	10-13.8	Medium to fine SAND, occasional fine gravel, moist,very sandy clay lenses	8.5-10	8	14	22	
7.8	13.8-21.6	Alternating sandy CLAY to silty CLAY, light brown/gray, occasional small to	11-12.5	9	10	12	
		medium gravel	13.5-15	5	8	12	
3.1	21.6-24.7	Silty, fine SAND, occasional gravel, dry, very compact	16-17.5	5	9	12	
0.3	24.7-25	Sandy CLAY, dark brown to black, mixed with small gravel	18.5-20	6	8	12	
			21-22.5	16	42	55	
			23.5-25	25	35	31	

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Well/Boring No. #46
Client: BOC Lansing
Project No.: 20682

Well/Boring Log Sheet

County	Township	Fraction NE NE SW	Section	T	R

Contractor Stearns Drlg.
Address: Dutton, Mich

Equipment: CME - 55

Supervisor: C. Cotton

Drilling Method(s) **Depth**
Auger / Split Spoon 50'

Grouting/Seal

Depth	To	Material/Method
0	50	Cement / Bentonite Grout

Development N.A.

Screen
Manufacturer: N.A.
Material:
Model:
Slot/Gauze: Dia.:
Length:
Depth Set: To:

Casing

Dia.	Type	Depth Set
	N.A.	To
		To

Date
Started: 8/12/88 Finished: 8/12/88

Elevation
Casing:
Ground:
Ref. Pt.:

Water Level Ft. Below
Measure On:

Location N. of Bldg. 301, Approx. 200' north of B #9

Remarks (include here, other data available)

Thickness	Depth to Base	LITHOLOGIC DESCRIPTION	Sample Interval	Blow Counts 6"	Blow Counts 12"	Blow Counts 18"
3.8	0-3.8	CLAY and medium SAND	1-2.5	7	5	4
3.2	3.8-7	Medium SAND, brown, slightly clayey, small gravel	3.5-5	4	5	5
10.5	7-17.5	Alternating sandy CLAY and silty CLAY, gray to brown, occasional small gravel,	6-7.5	6	9	8
		silt and coarse sand, interbeds, moist	8.5-10	5	7	9
3.9	17.5-21.4	Medium to fine SAND, reddish brown, some small gravel, hard and dry to 18.5,	11-12.5	4	5	6
		becoming moist and soft	13.5-15	4	9	16
0.6	21.4-22	Very silty SAND, gray, slightly clayey, occasional medium gravel, very moist	16-17.5	26	29	30
7	22-29	Fine SAND, tan to brown, dry, loose to stiff	18.5-20	4	5	6
10	29-39	Very coarse SAND, mixed with small to medium gravel, loose, dry	21-22.5	4	14	22
4	39-43	Fine SAND, light gray, slightly silty, loose, dry	23.5-25	14	22	28
5	43-48	Medium to fine SAND and GRAVEL, dark brown, moist, some silty clay	28.5-30	20	25	25
2	48-50	Sandy CLAY, some silt, small to large gravel, stiff	33.5-35	15	22	25
			38.5-40	14	19	25
			43.5-45	51	37	37
			48.5-50	20	22	23

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Well/Boring No. #48
Client: BOC Lansing
Project No.: 20682

Well/Boring Log Sheet

County	Township	Fraction NE NE SW	Section	T	R

Contractor Stearns Drlg.
Address: Dutton, Mich

Equipment: Dietrich D - 25

Supervisor: D. Greene

Drilling Method(s) **Depth**
Auger / Split Spoon 25'

Grouting/Seal

Depth	To	Material/Method
1 - 25		Cement Bentonite Grout
0 - 1		Cement (core)

Development N.A.

Screen
Manufacturer: N.A.
Material:
Model:
Slot/Gauze: Dia.:
Length:
Depth Set: To:

Casing

Dia.	Type	Depth Set
	N.A.	To
		To

Date
Started: 8/11/88 Finished: 8/11/88

Elevation
Casing:
Ground:
Ref. Pt.:

Water Level Ft. Below
Measure On:

Location

Remarks (include here, other data available)

Thickness	Depth to Base	LITHOLOGIC DESCRIPTION	Sample Interval	Blow Counts 6"	12"	18"
1	0-1	Cement (core)	1-2.5	10	10	13
0.5	1-1.5	Coarse SAND, brown	3.5-5	5	9	12
9.7	1.5-11.2	Sandy CLAY, brown, occasional silty gravel, with occasional coarse sand lense	6-7.5	16	16	16
13.8	11.2-25	Silty CLAY, brown to gray, occasional coarse sand lense	8.5-10	5	7	7
			11-12.5	7	7	8
			13.5-15	5	7	9
			16-17.5	5	7	10
			18.5-20	4	6	10
			21-22.5	4	8	10
			23.5-25	9	8	6

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Well/Boring No. #49
Client: BOC Lansing
Project No.: 20682

Well/Boring Log Sheet

County	Township	Fraction NE NE SW	Section	T	R

Contractor Stearns Drlg.
Address: Dutton, Mich

Equipment: CME - 55

Supervisor: C. Cotton

Drilling Method(s) **Depth**
Auger / Split Spoon 50'

Grouting/Seal

Depth	To	Material/Method
0	50	Cement / Bentonite Grout

Development N.A.

Screen
Manufacturer: N.A.
Material:
Model:
Slot/Gauze: Dia.:
Length:
Depth Set: To:

Casing

Dia.	Type	Depth Set
	N.A.	To
		To

Date
Started: 8/11/88 Finished: 8/11/88

Elevation
Casing:
Ground:
Ref. Pt.:

Water Level Ft. Below
Measure On:

Location Outside, N of Bldg. 301

Remarks (include here, other data available)
At 37.5', - Hit rock - moved rig over and drilled down to 37.5 to recontinue sampling

Blow Counts 18" / 12" / 6"
Remarks

Thickness	Depth to Base	LITHOLOGIC DESCRIPTION	Sample Interval	18"	12"	6"
4	0-4	SAND, brown to black, slightly clayey, some small to medium gravel	1-2.5	7	5	3
2.1	4-6.1	Slightly sandy CLAY, brown, occasional small to medium gravel, gray silt lenses	3.5-5	8	12	15
6.1	6.1-12.2	Fine to medium SAND, brown, loose, damp, minor clay lenses	6-7.5	8	9	10
2.1	12.2-14.3	Sandy, silty CLAY, brown/gray, very moist	8.5-10	5	4	6
9.2	14.3-23.5	Medium to fine SAND, reddish-light brown, occasional very small gravel, minor	11-12.5	4	5	7
		moist silty sand lenses	13.5-15	3	6	7
1.3	23.5-24.8	GRAVEL, brown, small to large, mixed with coarse sand	16-17.5	5	10	18
10.2	24.8-35	Fine SAND, blonde to light gray, silty, occasional gravel, loose, dry	18.5-20	18	27	40
2	35-37	Sandy GRAVEL, medium sand	21-22.5	5	6	8
7.4	37-44.4	Silty fine SAND, gray, small gravel	23.5-25	20	22	20
5	44.4-44.9	Slightly silty GRAVEL, medium gravel	28.5-30	12	20	30
5.1	44.9-50	Silty fine SAND, gray, slightly silty/clayey, loose	33.5-35	19	25	38
			38.5-40	57	83	100
			43.5-45	15	17	25
			48.5-50	18	34	45

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Well/Boring No. #50
Client: BOC Lansing
Project No.: 20682

Well/Boring Log Sheet

County	Township	Fraction NE NE SW	Section	T	R

Contractor Stearns Drlg.
Address: Dutton, Mich

Equipment: Dietrich D - 25

Supervisor: C. Cotton

Drilling Method(s) **Depth**
Auger / Split Spoon 25'

Grouting/Seal

Depth	To	Material/Method
0.8	25	Cement Bentonite Grout
0	0.8	Wood, Cement Core

Development N.A.

Screen
Manufacturer: N.A.
Material:
Model:
Slot/Gauze: Dia.:
Length:
Depth Set: To:

Casing

Dia.	Type	Depth Set
	N.A.	To
		To

Date
Started: 8/10/88 Finished: 8/10/88

Elevation
Casing:
Ground:
Ref. Pt.:

Water Level 13.6 Ft. Belowsurface
Measure On:

Location Inside, NW corner of Bldg. 301

Remarks (include here, other data available)

Blow Counts 18" / 12" / 6"
Remarks
Sample Interval

Thick-ness	Depth to Base	LITHOLOGIC DESCRIPTION	Sample Interval	18"	12"	6"
0.8	0-0.8	Wood, cement (core)	1-2.5	8	10	15
0.7	0.8-1.5	Medium SAND, fill, brown	3.5-5	4	2	3
2	1.5-3.5	Clayey SAND, gray/brown, occasional gravel	6-7.5	4	5	8
2.7	3.5-6.2	Medium to coarse SAND, dark brown, mixed with small to medium gravel, very loose	8.5-10	12	12	13
5.3	6.2-11.5	Very sandy CLAY, light brown, some very small gravel	11-12.5	4	8	8
4.5	11.5-16	Medium to fine SAND, clayey, occasional gravel, wet	13.5-15	7	10	12
7.9	16-23.9	Sandy CLAY to silty CLAY, gray, occasionlal small gravel	16-17.5	6	7	9
1.1	23.9-25	Silty, medium to fine SAND, gray/brown	18.5-20	4	7	9
			21-22.5	4	6	6
			23.5-25	5	6	9

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Page: 1 of 1
Well/Boring No. SB-51
Client: BOC Lansing
Project No.: 20682

Well/Boring Log Sheet

County	Township	Fraction	Section	T	R
Ingham	Lansing	SE 1/4 1/4 1/4	7	4N	2W

Contractor Stearns Drilling
Address: 6875 Industrial Pkwy
Dutton, MI
Equipment: Acker
Crew Chief: Mike Hefferan
Supervisor: R. Clapp

Drilling Method(s) **Depth**
3 1/4" ID HSA 30.5'
or 8" OD HSA

Grouting/Seal
Depth To Material/Method
30.5-1
Bent/Cement Grout w/ Tremie Rod
1-0 Concrete Cap

Development
N/A

Screen
Manufacturer: N/A
Material:
Model:
Slot/Gauze: Dia.:
Length:
Depth Set: To:

Casing Flush Mount Cap
Dia. Type Depth Set
N/A To
To

Date
Started: 3/30/89 Finished: 3/30/89

Elevation
Casing:
Ground:
Ref. Pt.:

Water Level 28.5' Ft. Below grade
Measure On: Measured immediately
After 2 mins. - 26.3'
After 4 mins. - 25.5'
After 30 mins. - 23.1'

Location See attached sketch

Remarks

Thickness	Depth to Base	LITHOLOGIC DESCRIPTION	Blow Counts 24" / 18" / 12" / 6" — Sample Depth				
0.8	0.8	CONCRETE, with re-bar	8.5-10.5	5	4	6	9
1.2	2	SAND, brown, fine, little silt	18.5-20.5	7	6	8	14
5	7	CLAY, brown, silty, some fine sand, little coarse to medium sand, trace fine gravel	20.5-30.5	10	12	9	10
1	8	CLAY, gravish brown, silty, some fine sand, little coarse to medium sand, trace coarse to fine gravel, slightly moist, fill					
4	12	CLAY, brown, mottled, brown to gray, silty, some fine sand, little coarse to medium sand, trace coarse to fine gravel, slightly moist					
4	16	CLAY, brown, silty, trace coarse to fine sand, trace coarse to fine gravel, slightly moist					
3.2	19.2	CLAY, brown, sandy, moist, with seams sand, wet					
7.8	27	CLAY, brownish gray, silty, some fine sand, little coarse to medium sand, trace coarse to fine gravel, slightly moist					
2.5	29.5	SAND, brown, fine, some silt, wet					
1+	30.5+	SILT, gray, some very fine sand, wet					
		EOB - 30.5'					

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Page: 1 of 2
Well/Boring No. SB-52
Client: BOC Lansing
Project No.: 20682

Well/Boring Log Sheet

County	Township	Fraction	Section	T	R
Ingham	Lansing	SE 1/4 1/4 1/4	7	4N	2W

Contractor Stearns Drilling
Address: 6875 Industrial Pkwy
Dutton, MI
Equipment: Acker
Crew Chief: Mike Hefferan
Supervisor: R. Clapp

Drilling Method(s) **Depth**
3 1/4" ID HSA 80.5'
or 8" OD HSA

Grouting/Seal
Depth To Material/Method
80.5-1
Bent/Cement Grout w/ Tremie Rod
1-0 Concrete Cap

Development
N/A

Screen
Manufacturer: N/A
Material:
Model:
Slot/Gauze: Dia.:
Length:
Depth Set: To:

Casing Flush Mount Cap
Dia. Type Depth Set
N/A To
To

Date
Started: 3/31/89 Finished: 3/31/89

Elevation
Casing:
Ground:
Ref. Pt.:

Water Level 72' Ft. Below grade
Measure On: 3/31/89 with fiberglass tape.

Location See attached sketch

Remarks Drove a stone (sample interval 48.5-50.5') recovery at 8" only (1) 2 50 ml soil sample could be taken

Thickness	Depth to Base	LITHOLOGIC DESCRIPTION	Sample Depth	Blow Counts 6"	12"	18"	24"
1	1	CONCRETE, reinforced	8.5-10.5	9	9	17	22
2	3	CLAY, brown, sandy, slightly moist	18.5-20.5	6	9	12	26
2	5	CLAY, brown, silty, trace coarse to fine sand, slightly moist	28.5-30.5	34	56	52	-
4.5	9.5	CLAY, brown, silty, little coarse to fine sand, trace coarse to fine gravel, slightly moist,	38.5-40.5	27	53	88	-
		with seams of sand, wet	48.5-50.5	71	100/4"	-	-
2.5	12	CLAY, brownish gray, silty, little coarse to fine sand, trace coarse to fine gravel, slightly moist	58.5-60.5	26	50	54	-
8.3	20.3	CLAY, brownish gray, silty and brown silty in alternating layers (6"), slightly moist, with					
		seams fine sand, wet					
5.7	26	SAND, brown, fine, some silt, dry					
9	35	SILT, gray, trace very fine sand, trace clay, moist at 29.5'					
7	42	SILT and CLAY, gray, little coarse to fine sand, little coarse to fine gravel, dry with					
		layers (1" to 1'), brown, fine sand, dry					
9	51	SAND and SILT, gray, fine, little coarse to medium sand, little coarse to fine gravel, dry					
17	68	SILT, gray, little clay, trace coarse to fine sand, trace coarse to fine gracel, dry, with					
		small layers very fine sand, dry					

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Well/Boring No. SB-52
Client: BOC Lansing
Project No.: 20682

Well/Boring Log Sheet

County	Township	Fraction	Section	T	R
Ingham	Lansing	SE 1/4 1/4 1/4	7	4N	2W

Contractor Stearns Drilling
Address: 6875 Industrial Pkwy
Dutton, MI
Equipment: Acker
Crew Chief: Mike Hefferan
Supervisor: R. Clapp

Drilling Method(s) **Depth**
3 1/4" ID HSA 80.5'
or 8" OD HSA

Grouting/Seal
Depth To Material/Method
80.5-1
Bent/Cement Grout w/ Tremie Rod
1-0 Concrete Cap

Development
N/A

Screen
Manufacturer: N/A
Material:
Model:
Slot/Gauze: Dia.:
Length:
Depth Set: To:

Casing Flush Mount Cap
Dia. Type Depth Set
N/A To
To

Date
Started: 3/31/89 Finished: 3/31/89

Elevation
Casing:
Ground:
Ref. Pt.:

Water Level 72' Ft. Below grade
Measure On: 3/31/89

Location See attached sketch

Remarks No water could be measured at 70' depth. The formation was too silty for the water to enter the augers quickly.

Thickness	Depth to Base	LITHOLOGIC DESCRIPTION	Sample Depth	Blow Counts 6"	12"	18"	24"
4	72	SILT, gray, some very fine sand, trace clay, trace of coal, wet	68.5-70.5	35	53	65	-
8.5+	80.5+	SAND, brown, fine, wet, with layers gray silty clay (6")	78.5-80.5	12	21	39	55
		EOB - 80'					

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Page: 1 of 1
Well/Boring No. SB-53
Client: BOC Lansing
Project No.: 20682

Well/Boring Log Sheet

County	Township	Fraction	Section	T	R
Ingham	Lansing	SE 1/4 1/4 1/4	7	4N	2W

Contractor Stearns Drilling
Address: 6875 Industrial Pkwy
Dutton, MI
Equipment: CME 550
Crew Chief: Jim Gryska
Supervisor: R. Clapp

Drilling Method(s) **Depth**
3 1/4" ID HSA 60.5'
or 8" OD HSA

Grouting/Seal

Depth	To	Material/Method
60.5	0'	Bent./Cement

Development
N/A

Screen
Manufacturer: N/A
Material:
Model:
Slot/Gauze: Dia.:
Length:
Depth Set: To:

Casing Flush Mount Cap

Dia.	Type	Depth Set
	N/A	To
		To

Date
Started: 4/6/89 Finished: 4/7/89

Elevation
Casing:
Ground:
Ref. Pt.:

Water Level ~5.5' Ft. Below grade
Measure On: 40.7' measured on 4/7/89
After augers sat for ~9 hours.

Location See attached sketch

Remarks At 58.5' spoon sample was wet. We waited 10 mins., then lowered tape to detect water. Found only mud, no real significant amount of water.

Thickness	Depth to Base	LITHOLOGIC DESCRIPTION	Sample Depth	Blow Counts 6"	12"	18"	24"	
17	17	CLAY, brown, sandy, some silt, little coarse to medium sand, little coarse to fine gravel,	8.5-10.5	3	6	5	-	
		moist, with seams of fine sand, wet	18.5-20.5	20	47	66	-	
2.5	19.5	SILT, brown, some fine sand, moist	28.5-30.5	9	14	18	-	
3.5	23	CLAY, brownish gray, silty, some coarse to fine sand, little coarse to fine gravel,	38.5-40.5	15	18	19	-	
		occasional cobble, dry	48.5-50.5	4	4	5	-	
11	35	SAND, brown, fine, some silt, trace clay lenses, dry	58.5-60.5	7	11	19	-	
		SAND, brown, fine, little silt, trace coarse to medium sand, trace coarse to fine gravel, dry						
13.5	48.5	SILT and CLAY, gray, some medium gravel, moist (transition unknown)						
11.5	60.5+	SILT, very fine, gray, wet						
		EOB - 60.5'						

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Well/Boring No. SB-54
Client: BOC Lansing
Project No.: 20682

Well/Boring Log Sheet

County	Township	Fraction	Section	T	R
Ingham	Lansing	SE 1/4 1/4 1/4	7	4N	2W

Contractor Stearns Drilling
Address: 6875 Industrial Pkwy
Dutton, MI
Equipment: Acker
Crew Chief: Mike Hefferan
Supervisor: R. Clapp

Drilling Method(s) **Depth**
3 1/4" ID HSA 70.5'
or 8" OD HSA

Grouting/Seal

Depth	To	Material/Method
70.5	-1'	Bent./Cement grout with Tremie Rod
1-0'		Concrete Cap

Development
N/A

Screen
Manufacturer: N/A
Material:
Model:
Slot/Gauze: Dia.:
Length:
Depth Set: To:

Casing Flush Mount Cap

Dia.	Type	Depth Set
	N/A	To
		To

Date
Started: 4/5/89 Finished: 4/5/89

Elevation
Casing:
Ground:
Ref. Pt.:

Water Level 6.2' Ft. Below grade
Measure On: See remark below.

Location See attached sketch

Remarks 7-8' - this interval does have a lot of water but we should be able to seal it off. The augers have seal the 1' layer off with cuttings by 15'.

Thickness	Depth to Base	LITHOLOGIC DESCRIPTION	Blow Counts 24" / 18" / 12" / 6" Sample Depth				
1	1	CONCRETE	8.5-10.5	7	6	15	12
0.4	1.4	SAND, brown, silty	18.5-20.5	29	30	20	12
5.6	7	CLAY, brown, silty, some coarse to fine sand, little coarse to fine gravel, moist	28.5-30.5	15	25	28	33
1	8	SAND, brown, fine to coarse, little silt, wet	38.5-40.5	16	29	33	36
3.5	11.5	CLAY, brown, sandy, some coarse to medium sand, little coarse to fine gravel, moist,	48.5-50.5	20	22	28	29
		with seams of fine sand, wet	58.5-60.5	34	76	100	-
9.5	21	CLAY, brownish gray, sandy, some coarse to medium sand, little coarse to fine gravel, moist,	68.5-70.5	16	32	33	90
		with layers of brown silty clay					
15	36	SAND, light brown, very fine, some silt, trace coarse to medium sand, trace coarse to fine					
		gravel, dry					
6	42	SILT, brownish gray, trace clay, trace very fine sand, dry					
14	56	CLAY, brownish gray, sandy, some coarse to medium sand, little coarse to fine gravel,					
		occasional cobble, moist, with seams sand, wet (pieces of coal)					
8	64	CLAY, brownish gray, some silt, little coarse to fine sand, little coarse to fine gravel, dry,					
		very compact (pieces of coal)					
6.5+	70.5+	SHALE, dark gray to black, very weathered					
		EOB - 70.5'					

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Well/Boring No. SB-55
Client: BOC Lansing
Project No.: 20682

Well/Boring Log Sheet

County	Township	Fraction	Section	T	R
Ingham	Lansing	SE 1/4 1/4 1/4	7	4N	2W

Contractor Stearns Drilling
Address: 6875 Industrial Pkwy
Dutton, MI
Equipment: Acker
Crew Chief: Mike Hefferan
Supervisor: R. Clapp

Drilling Method(s) **Depth**
3 1/4" ID HSA 70.5'
or 8" OD HSA

Grouting/Seal

Depth	To	Material/Method
70.5	-1'	Bent./Cement grout with Tremie Rod
1-0'		Concrete Cap

Development
N/A

Screen
Manufacturer: N/A
Material:
Model:
Slot/Gauze: Dia.:
Length:
Depth Set: To:

Casing Flush Mount Cap

Dia.	Type	Depth Set
	N/A	To
		To

Date
Started: 4/6/89 Finished: 4/7/89

Elevation
Casing:
Ground:
Ref. Pt.:

Water Level 68.5' Ft. Below grade
Measure On: Measured immediately
After 5 mins. - 67.1 After 10 mins. - 65.9

Location See attached sketch

Remarks Measured top of sanitary sewer line at 13' below grade.

Thickness	Depth to Base	LITHOLOGIC DESCRIPTION	Blow Counts 24" / 18" / 12" / 6" Sample Depth				
1	1	CONCRETE	8.5-10.5	5	6	5	6
4	5	CLAY, brown, sandy, some silt, little coarse of medium sand, little coarse to fine gravel,	18.5-20.5	23	17	26	-
		slightly moist	23.5-25.5	7	15	23	27
3	8	SAND, brown, fine, little coarse to fine gravel	28.5-30.5	17	15	25	35
8	16	CLAY, brownish gray, silty, little coarse to fine sand, little coarse to fine gravel, slightly moist	38.5-40.5	16	16	17	25
8.5	24.5	CLAY, brown, some silt, little fine to medium sand, trace coarse sand, trace coarse to	48.5-50.5	19	26	36	45
		fine gravel, moist	58.5-60.5	12	15	19	20
5.5	26	SAND, brown, very fine, some silt, dry	68.5-70.5	15	41	35	-
10	36	SAND, brown, very fine, silt, dry					
1	37	SILT, brownish gray, dry					
11	48	CLAY, brownish gray, sandy, some silt, little coarse to medium sand, little coarse to fine					
		gravel, dry					
8	56	SAND, brown, fine, little silt, dry					
9	67	SILT and CLAY, brownish gray, moist					
5+	70.5+	CLAY, gray, sandy, some silt, wet, pieces of sandstone					
		EOB - 70.5'					

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Page: 1 of 1
Well/Boring No. SB-56
Client: BOC Lansing
Project No.: 20682

Well/Boring Log Sheet

County	Township	Fraction	Section	T	R
Ingham	Lansing	SE 1/4 1/4 1/4	7	4N	2W

Contractor Stearns Drilling
Address: 6875 Industrial Pkwy
Dutton, MI
Equipment: Acker
Crew Chief: Mike Hefferan
Supervisor: R. Clapp

Drilling Method(s) **Depth**
3 1/4" ID HSA 80.5'
or 8" OD HSA

Grouting/Seal

Depth	To	Material/Method
80.5	-1'	Bent./Cement grout with Tremie Rod
1-0'		Concrete Cap

Development
N/A

Screen
Manufacturer: N/A
Material:
Model:
Slot/Gauze: Dia.:
Length:
Depth Set: To:

Casing Flush Mount Cap

Dia.	Type	Depth Set
	N/A	To
		To

Date
Started: 4/5/89 Finished: 4/6/89

Elevation
Casing:
Ground:
Ref. Pt.:

Water Level 62.5' Ft. Below grade
Measure On: Measured immediately after sandstone was encountered

Location See attached sketch

Remarks Sample interval at 28.5-30.5' looks like a good representative sample of the fill used to lay the sewer lines. Soil sample at 58.5-60.5' was wet, however, too impermeable to allow the water to readily enter the augers.

Thickness	Depth to Base	LITHOLOGIC DESCRIPTION	Sample Depth	Blow Counts 6"	12"	18"	24"
1	1	CONCRETE	8.5-10.5	4	4	3	4
15.5	16.5	CLAY, brown, sandy, some silt, little coarse ot medium sand, little coarse to fine gravel, moist	18.5-20.5	1	2	3	3
10.5	27	SAND, brown, fine, little silt, dry, with layers (6") coarse to fine sand	23.5-25.5	18	28	40	-
9	36	SAND, brown, coarse to fine, some fine gravel, little coarse gravel, dry	28.5-30.5	37	64	75	-
11	47	CLAY, brownish gray, sandy, some silt, some coarse to medium sand, some coarse to	38.5-40.5	27	37	41	-
		fine gravel	48.5-50.5	25	39	43	-
11	58	SAND, brown, fine, trace lenses of clay, little silt, dry	58.5-60.5	10	15	21	29
4	62	SILT, brownish gray, some fine sand, little clay, wet	68.5-70.5	16	24	23	36
14	76	CLAY and SILT, brownish gray with layers of brown clay and silt, moist	78.5-80.5	24	46	65	-
4.5+	80.5+	SAND, brown, fine to coarse, wet, with pieces of brown sandstone (weathered sandstone)					
		EOB - 80.5'					

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Page: 1 of 1
Well/Boring No. SB-57
Client: BOC Lansing
Project No.: 20682

Well/Boring Log Sheet

County	Township	Fraction	Section	T	R
Ingham	Lansing	SE 1/4 1/4 1/4	7	4N	2W

Contractor Stearns Drilling
Address: 6875 Industrial Pkwy
Dutton, MI
Equipment: CME 550
Crew Chief: Jim Gryska
Supervisor: R. Clapp

Drilling Method(s) **Depth**
3 1/4" ID HSA 70.5'
or 8" OD HSA

Grouting/Seal

Depth	To	Material/Method
70.5-0'		Bent./Cement grout with Tremie Rod

Development
N/A

Screen
Manufacturer: N/A
Material:
Model:
Slot/Gauze: Dia.:
Length:
Depth Set: To:

Casing Flush Mount Cap

Dia.	Type	Depth Set
	N/A	To
		To

Date
Started: 4/7/89 Finished: 4/10/89

Elevation
Casing:
Ground:
Ref. Pt.:

Water Level no Ft. Below grade
Measure On: Measured after 70' sample
After 30 minutes - 64'

Location See attached sketch

Remarks Bent. split spoon samples at 48.5-50.5'

Thickness	Depth to Base	LITHOLOGIC DESCRIPTION	Sample Depth	Blow Counts 6"	12"	18"	24"	
0.3	0.3	TOPSOIL, moist	8.5-10.5	3	4	6	-	
6.7	7	CLAY, brown, silty, some fine sand, moist	18.5-20.5	10	12	16	-	
6	13	CLAY, brownish gray, silty, some fine sand, trace coarse to medium sand, trace	23.5-25.5	6	10	17	-	
		fine gravel, moist	28.5-30.5	17	29	32	-	
9.5	22.5	SAND, brown, fine, some silt, dry	38.5-40.5	12	16	13	-	
3.5	26.0	CLAY, brown, silty, some coarse to fine sand, little coarse to fine gravel, moist, seams of	48.5-50.5	24	71	30	-	
		sand, dry	58.5-60.5	11	16	10	-	
9	35	SAND, brown, very fine, some silt, dry	68.5-70.5	8	14	15	-	
22	57	CLAY, brownish gray, sandy, some silt, little coarse to medium sand, little coarse to fine						
		gravel, occasional cobble, dry						
13.5+	70.5+	SILT and CLAY, brownish gray, moist, with seams of fine sand, wet						
		EOB - 70.5'						

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Well/Boring No. SB-58
Client: BOC Lansing
Project No.: 20682

Well/Boring Log Sheet

County	Township	Fraction	Section	T	R
Ingham	Lansing	SE 1/4 1/4 1/4	7	4N	2W

Contractor Stearns Drilling
Address: 6875 Industrial Pkwy
Dutton, MI
Equipment: Acker
Crew Chief: Mike Hefferan
Supervisor: R. Clapp

Drilling Method(s) **Depth**
3 1/4" ID HSA 60'
or 8" OD HSA

Grouting/Seal
Depth To Material/Method
60-0' Bent./Cement grout with Tremie Rod

Development
N/A

Screen
Manufacturer: N/A
Material:
Model:
Slot/Gauze: Dia.:
Length:
Depth Set: To:

Casing Flush Mount Cap
Dia. Type Depth Set
N/A To
To

Date
Started: 4/4/89 Finished: 4/4/89

Elevation
Casing:
Ground:
Ref. Pt.:

Water Level 55.6' Ft. Below grade
Measure On: Measured immediately
After 20 mins. - 55.3'/After 30 mins. - 54.7'

Location See attached sketch

Remarks
The water enters the augers very slowly due to the silty nature of the formation. If given enough time, the water level may come up as high as ~50'.

Thickness	Depth to Base	LITHOLOGIC DESCRIPTION	Sample Depth	Blow Counts 6"	12"	18"	24"
0.3	0.3	TOPSOIL	8-10	2	3	2	3
0.5	0.8	SAND, brown, fine	18-20	18	16	24	25
4.2	5	CLAY, brown, some silt, trace coarse to fine sand, moist	23-25	9	14	19	32
7	12	CLAY, brown, mottled, gray, silty, some fine sand, with seams of sand, wet	28-30	11	18	24	34
11.4	23.4	CLAY, brown, silty, some coarse to fine sand, some coarse to fine gravel, moist,	38-40	31	43	40	-
		with layers (6") brown silt, moist	48-50	9	13	32	56
13.1	36.5	SAND, brown, fine, little medium sand, trace coarse sand, trace coarse to fine gravel,	58-60	15	28	34	-
		slightly moist, with layers (6"-1') brown silt					
8.5	45	SILT, gray, some clay, some fine sand, little coarse to medium sand, little coarse to					
		fine gravel, slightly moist					
4	49	CLAY, gray, silty, some coarse to fine sand, some coarse to fine gravel, moist					
5	54	SILT, grayish brown, little clay, trace fine sand, wet					
6+	60+	SILT and very fine sand, grayish brown, wet (trace black fine sand-coal)					
		EOB - 60'					

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Page: 1 of 1
Well/Boring No. SB-59
Client: BOC Lansing
Project No.: 20682

Well/Boring Log Sheet

County	Township	Fraction	Section	T	R
Ingham	Lansing	SE 1/4 1/4 1/4	7	4N	2W

Contractor Stearns Drilling
Address: 6875 Industrial Pkwy
Dutton, MI
Equipment: Acker
Crew Chief: Mike Hefferan
Supervisor: R. Clapp

Drilling Method(s) **Depth**
3 1/4" ID HSA 60.5'
or 8" OD HSA

Grouting/Seal
Depth To Material/Method
60.5-0' Bent./Cement grout with Tremie Rod

Development
N/A

Screen
Manufacturer: N/A
Material:
Model:
Slot/Gauze: Dia.:
Length:
Depth Set: To:

Casing Flush Mount Cap
Dia. Type Depth Set
N/A To
To

Date
Started: 4/3/89 Finished: 4/4/89

Elevation
Casing:
Ground:
Ref. Pt.:

Water Level 56' Ft. Below grade
Measure On: 4/2/89 Fiberglass Tape

Location See attached sketch

Remarks

Thickness	Depth to Base	LITHOLOGIC DESCRIPTION	Sample Depth	Blow Counts 6"	12"	18"	24"
8	8	CLAY, brown, silty, some coarse to fine sand, very moist	8.5-10.5	4	3	3	2
8	16	CLAY, brownish gray, silty, some fine sand, trace coarse to medium sand, moist, with	18.5-20.5	3	3	3	8
		layers fine sand, some clay, very moist	23.5-25.5	7	10	11	13
8.7	24.7	SAND, brown, fine, trace coarse to medium sand, moist	28.5-30.5	8	13	22	37
5.6	30.3	CLAY, brown, silty, little fine sand, trace coarse to medium sand, trace coarse to fine	38.5-40.5	29	50	58	-
		gravel, slightly moist	48.5-50.5	38	79	64	-
0.7	31	SAND, brown, very fine, little silt, dry	58.5-60.5	18	25	51	-
19	50	SILT, gray, some clay, some fine sand, little coarse to medium sand, little coarse to					
		fine gravel, slightly moist					
6	56	SILT, gray, some clay, some fine sand, little coarse to medium sand, little coarse to fine					
		gravel, slightly moist, with seams of sand, wet					
3	59	SAND, brown, fine, some silt, wet					
1.5+	60.5+	SILT, gray, moist, with layers (6") brown fine sand, wet					
		EOB - 60.5'					

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Page: 1 of 1
Well/Boring No. SB-60
Client: BOC Lansing
Project No.: 20682

Well/Boring Log Sheet

County	Township	Fraction	Section	T	R
Ingham	Lansing	SE 1/4 1/4 1/4	7	4N	2W

Contractor Stearns Drilling
Address: 6875 Industrial Pkwy
Dutton, MI
Equipment: Acker
Crew Chief: Mike Hefferan
Supervisor: R. Clapp

Drilling Method(s) **Depth**
3 1/4" ID HSA 51'
or 8" OD HSA

Grouting/Seal
Depth To Material/Method
51-0' Bent./Cement grout pumped through Tremie Rod inside augers.

Development
N/A

Screen
Manufacturer: N/A
Material:
Model:
Slot/Gauze: Dia.:
Length:
Depth Set: To:

Casing Flush Mount Cap
Dia. Type Depth Set
N/A To
To

Date
Started: 3/28/89 Finished: 3/29/89

Elevation
Casing:
Ground:
Ref. Pt.:

Water Level 48.7' Ft. Below grade
Measure On: Measured immediately
After 5 mins. - 36.4' After 20 mins. - 34.2'

Location See attached sketch

Remarks
Water sample was obtained by S.S. bailer.
Bailer was lowered directly down augers.
No temp. well was used.

Thickness	Depth to Base	LITHOLOGIC DESCRIPTION	Sample Depth	Blow Counts 6"	12"	18"	24"
0.3	0.3	TOPSOIL	9-11	4	5	8	11
2.7	3	SAND, brown, fine, some coarse to medium sand, little fine gravel	19-21	10	24	28	32
4	7	SAND, brown, fine, some coarse to medium sand, little fine gravel, wet	29-31	21	26	34	42
10.5	17.5	CLAY, brown, silty, little coarse to fine sand, little fine gravel, slightly moist	39-41	14	18	28	32
8.5	26	SAND, brown, fine, dry	49-51	11	16	18	22
4	30	SAND, brown, coarse to fine, little coarse to fine gravel					
5	35	SAND, light brown, fine, some coarse to medium sand, trace coarse to fine gravel					
7	42	SILT, brown, trace very fine sand, with gray clay lenses					
9+	51+	SILT and CLAY, brown, trace fine sand, wet					
		EOB - 51'					

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Well/Boring No. SB-61
Client: BOC Lansing
Project No.: 20682

Well/Boring Log Sheet

County	Township	Fraction	Section	T	R
Ingham	Lansing	SE 1/4 1/4 1/4	7	4N	2W

Contractor Stearns Drilling
Address: 6875 Industrial Pkwy
Dutton, MI
Equipment: Acker
Crew Chief: Mike Hefferan
Supervisor: R. Clapp

Drilling Method(s) **Depth**
3 1/4" ID HSA 70.5'
or 8" OD HSA

Grouting/Seal
Depth To Material/Method
70.5-0' Bent./Cement grout
Tremie Rod through augers

Development
N/A

Screen
Manufacturer: N/A
Material:
Model:
Slot/Gauze: Dia.:
Length:
Depth Set: To:

Casing Flush Mount Cap
Dia. Type Depth Set
N/A To
To

Date
Started: 3/29/89 Finished: 3/30/89

Elevation
Casing:
Ground:
Ref. Pt.:

Water Level 65.3' Ft. Below grade
Measure On: See remark below
After 10 mins. - 64.4'

Location See attached sketch

Remarks After 3 attempts we were unable to recover the 18.5-20.5' sample interval - drove a stone.
Initial water level measured immediately after the 70'; sample water came up from the bottom of the augers rapidly after sample was taken.

Thickness	Depth to Base	LITHOLOGIC DESCRIPTION	Sample Depth	Blow Counts 6"	12"	18"	24"
0.4	0.4	TOPSOIL, moist	8.5-10.5	4	6	6	7
4.6	5	CLAY, gray, silty, trace coarse to fine sand, trace coarse to fine gravel, moist	18.5-20.5	1	2	2	2
21	26	CLAY, brown, silty, little coarse to fine sand, trace fine gravel, trace organics,	23.5-25.5	4	5	5	7
		slightly moist (fill), with seams of medium to fine sand, wet	28.5-30.5	21	37	51	53
1	27	CLAY, grayish brown, sandy, some coarse to medium sand, little coarse to fine gravel, moist	38.5-40.5	9	11	11	13
3	30	SAND, brown, fine, 1" layers coarse to fine sand, some fine gravel, dry	48.5-50.5	12	16	19	21
1.5	31.5	SAND, brown, fine, small layers (2") coarse to fine sand, some fine gravel, wet	58.5-60.5	15	21	21	25
10.5	42	SILT, gray, clayey, seams of very fine sand, moist	68.5-70.5	21	100/3"	-	-
13	55	SILT, brown, moist, with gray clay lenses, trace fine sand					
10	65	SAND, grayish brown, fine, some silt, moist					
3.5	68.5	SILT and SAND, brown, wet					
0.5+	69+	SANDSTONE, brown					
		EOB - 70.5'					

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Well/Boring No. SB #62
Client: BOC Lansing
Project No.: 20682

Well/Boring Log Sheet

County	Township	Fraction 1/4 1/4 1/4	Section	T	R

Contractor Soils & Material Eng. Inc
Address: Livonia, MI

Equipment: 45 CME

Supervisor: C. Cotton

Drilling Method(s) **Depth**
3 1/4" ID HSA 40.5

Grouting/Seal

Depth	To	Material/Method
0.0	40.5	Backfill

Development N/A

Screen
Manufacturer: N/A
Material:
Model:
Slot/Gauze: Dia.:
Length:
Depth Set: To:

Casing

Dia.	Type	Depth Set
	N/A	To
		To

Date
Started: 2/24/89 Finished: 2/24/89

Elevation
Casing: N/A
Ground:
Ref. Pt.:

Water Level N/A Ft. Below
Measure On:

Location See Sketch

Remarks Samples taken at 10.0' intervals.

8.5-10.5	1:22	
18.5-20.5	1:40	No odor
28.5-30.0	2:05	detected
38.5-40.5	2:45	

Special sample taken: 7.5-8.5 at 1:15 pm

Thickness	Depth to Base	LITHOLOGIC DESCRIPTION	Remarks			
1.0	0.0-1	Sand, medium, clayey, some small and medium gravel	7	8	9	14
6.5	1.0-7.5	Sand, medium fine, brown, moist	8	9	9	12
1.0	7.5-8.5	Sand, medium, black, very moist, soft, clay binder, no odor	29	40	51	-
8.5	8.5-17	Clay, very sandy, brown, very stiff, occasional small to medium gravel	26	30	41	52
		stone and coal bits				
2.0	17-19	Clay, gray, sandy, stiff, occasional small stone, slightly silty				
4.0	19-23	Clay, dark gray, very silty, very stiff				
2.4	23-25.4	Clay, gray to brown, sandy to very sandy				
1.6	25.4-27	Sand, light brown, medium fine to fine, loose, dry				
2.0	27-29	Clay, gray, moist, silty, stiff				
0.3	29-29.3	Sand, medium red/orange, mixed with small gravel				
0.5	29.3-29.8	Sand, gray, very fine, very silty, dry				
2.2	29.8-32	Silt, gray, dry				
8.5	32-40.5	Sand, very fine, gray/brown, very silty, dry				

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Well/Boring No. SB #63
Client: BOC Lansing
Project No.: 20682

Well/Boring Log Sheet

County	Township	Fraction 1/4 1/4 1/4	Section	T	R

Contractor Soils & Material Eng, Inc
Address: Livonia, MI

Equipment: CME 55 - Dick

Supervisor: C. Cotton

Drilling Method(s) **Depth**
3 1/4" ID HSA

Grouting/Seal
Depth To Material/Method

Development N/A

Screen
Manufacturer: N/A
Material:
Model:
Slot/Gauze: Dia.:
Length:
Depth Set: To:

Casing
Dia. Type Depth Set
N/A To
To

Date
Started: 2/23/89 Finished: 2/23/89

Elevation
Casing: N/A
Ground:
Ref. Pt.:

Water Level N/A Ft. Below
Measure On:

Location

Remarks Samples taken at 10.0' intervals.
8.5-10.5 48.5-50.5
18.5-20.5 58.5-60.5
28.5-30.5
38.5-40.5

Remarks

Thickness	Depth to Base	LITHOLOGIC DESCRIPTION
	0.0-5	Sand and Gravel, brown, loose, dry
	5-8	Sand, slight clay binder, some small and medium gravel
	8-15	Clay, very sandy, dark brown, seams of fine light sand, occasional small and medium gravel stone
	15-21	Clay, silty, dark gray/brown, occsasional layer of sandy clay, stiff, occasional small gravel
	21-24	Sand, light brown, very fine, loose, dry
	24-26	Clay, loose and crumbly, occasional small stones, dark brown/gray
	26-35	Silt, gray, dry, layered with very silty sand, light brown, dry, occasional layer of silty dry clay
	35-45	Silt and silty Sand, light to medium gray, very fine, dry
	45-57	Silty sand fine, light brown to gray/brown, occasional small stone, occasional lense of silty dry clay
	57-60.5	Clay, gray, silty, stiff, slightly moist

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Well/Boring No. SB #64
Client: BOC Lansing
Project No.: 20682

Well/Boring Log Sheet

County	Township	Fraction 1/4 1/4 1/4	Section	T	R

Contractor Soils & Material Eng. Inc
Address: Livonia, MI

Equipment: CME 55

Supervisor: C. Cotton

Drilling Method(s) **Depth**
3 1/4" ID HSA 40.5

Grouting/Seal

Depth	To	Material/Method
0.0	40.5	Backfill

Development N/A

Screen
Manufacturer: N/A
Material:
Model:
Slot/Gauze: Dia.:
Length:
Depth Set: To:

Casing

Dia.	Type	Depth Set
	N/A	To
		To

Date
Started: 1/3/89 Finished: 1/3/89

Elevation
Casing: N/A
Ground:
Ref. Pt.:

Water Level N/A Ft. Below
Measure On:

Location See Sketch

Remarks Ammonia odor throughout hole.

Remarks

Thick-ness	Depth to Base	LITHOLOGIC DESCRIPTION				
	0.0-6.5	Sand, medium fine, some small to medium, gray, brown, moist	5	7	8	
	6.5-12	Sand and Gravel, brown, slight clay binder, moist, becoming more clayey with depth	9	7	6	
	12-19.2	Clay, gray, sandy, some silt, mixed with small to medium gravel stone, moist	5	5	4	
	19.2-20	Sand, brown, meidum fine, some discoloration(yellow/green), moist	9	14	16	
	20-23	Clay, gray, slightly silty, sandy, dry, occasional very small gravel	6	8	10	12
	23-24.4	Sand, medium fine, very yellow green discoloration, moist	9	18	23	20
	24.4-28	Silty Sand, very fine, light gray, lenses of silty clay, dry	12	17	18	
	28-30	Silt, gray, slightly sandy, wet	23	40	41	
	30-39.8	Sand, very fine, light gray, slightly silty, dry, loose	20	29	25	
	39.8-40.5	Sand, very fine, gray, occasional small gravel, clay binder, moist	18	16	27	33

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Well/Boring No. SB #65
Client: BOC Lansing
Project No.: 20682

Well/Boring Log Sheet

County	Township	Fraction 1/4 1/4 1/4	Section	T	R

Contractor Soils & Material Eng. Inc
Address: Livonia, MI

Equipment: CME 55

Supervisor: C. Cotton

Drilling Method(s) **Depth**
4" Solid Stem auger 15.0'

Grouting/Seal

Depth	To	Material/Method
0.0-15.0'		Backfill

Development N/A

Screen
Manufacturer: N/A
Material:
Model:
Slot/Gauze: Dia.:
Length:
Depth Set: To:

Casing

Dia.	Type	Depth Set
	N/A	To
		To

Date
Started: 2/27/89 Finished: 2/28/89

Elevation
Casing: N/A
Ground:
Ref. Pt.:

Water Level N/A Ft. Below
Measure On:

Location See Sketch

Remarks No odor detected

Remarks

Thick-ness	Depth to Base	LITHOLOGIC DESCRIPTION				
	0.0-0.4	Sand, medium fine, most, occasional gravel	3	4	5	
	4.0-4.3	Gravel	5	4	4	
	4.3-6.5	Clay, sandy, moist, brown, some gravel	3	4	5	
	6.5-8	Sand, silty, moist, occasional gravel, clay binder	6	12	14	22
	8.0-	Abandoned hole due to steel pipe - see sketch for new offset position	6	7	9	9
	0.0-6	Sand, medium fine, moist, brown, occasional gravel				
	6-9.5	Clay, sandy, moist, stiff, greenish brown - oxidation				
	9.5-15	Clay, brown, slightly sandy and silty, stiff				

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Well/Boring No. SB #66
Client: BOC Lansing
Project No.: 20682

Well/Boring Log Sheet

County	Township	Fraction 1/4 1/4 1/4	Section	T	R

Contractor Soils & Material Eng. Inc
Address: Livonia, MI

Equipment: CME 55

Supervisor: C. Cotton

Drilling Method(s) **Depth**
4" Solid Stem auger 25.0'

Grouting/Seal

Depth	To	Material/Method
0.0-25.0'		Backfill

Development N/A

Screen
Manufacturer: N/A
Material:
Model:
Slot/Gauze: Dia.:
Length:
Depth Set: To:

Casing

Dia.	Type	Depth Set
	N/A	To
		To

Date
Started: 2/27/89 Finished: 2/27/89

Elevation
Casing: N/A
Ground:
Ref. Pt.:

Water Level N/A Ft. Below
Measure On:

Location See Sketch

Remarks No odor detected

Remarks

Thickness	Depth to Base	LITHOLOGIC DESCRIPTION						
	0.0-7.2	Sand, medium to medium fine, occasional small to large gravel stone	0.5-2	6	8	10		
	7.2-8.5	Clay, brown, sandy, occasional stone	2-3.5	12	14	14		
	8.5-9.5	Sand, medium fine, brown, clay binder, stiff to brittle	3.5-5	11	12	18		
	9.5-12	Clay, gray brown, silty, very stiff	8.5-10	17	18	10	11	
	12-16	Clay, very sandy, brown	13.5-15	5	7	10		
	16-19.5	Clay, gray, slightly sandy, silty, very moist	18.5-20.5	4	12	42	68	
	19.5-20.3	Sand, very fine, very silty, light brown, dry	23.5-25	7	8	10		
	20.3-23.8	Clay, sandy, brown						
	23.8-25	Clay, gray, very sandy, soft						

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Well/Boring No. SB #67
Client: BOC Lansing
Project No.: 20682

Well/Boring Log Sheet

County	Township	Fraction 1/4 1/4 1/4	Section	T	R

Contractor Soils & Material Eng. Inc
Address: Livonia, MI

Equipment: CME 55

Supervisor: C. Cotton

Drilling Method(s) **Depth**
4" Solid Stem auger 20.5'

Grouting/Seal

Depth	To	Material/Method
0.0-20.5'		Backfill

Development N/A

Screen
Manufacturer: N/A
Material:
Model:
Slot/Gauze: Dia.:
Length:
Depth Set: To:

Casing

Dia.	Type	Depth Set
	N/A	To
		To

Date
Started: 3/2/89 Finished: 3/2/89

Elevation
Casing: N/A
Ground:
Ref. Pt.:

Water Level N/A Ft. Below
Measure On:

Location See Sketch

Remarks No odor detected

Remarks

Thickness	Depth to Base	LITHOLOGIC DESCRIPTION				
	0.0-1.1	Wood block floor over concrete	7	7	13	
	1.1-4.5	Clay, sandy, brown and gray, swirled, moist, occasional small gravel	3	4	7	
	4.5-14.2	Sand, medium, clay binder, some small and medium gravel, brown,	10	15	19	14
		sand seams, wet at 8.5'	3	6	8	
	14.2-20.5	Clay, gray, silty and sandy, occasional very small gravel, moist, soft,	9	9	10	9
		becoming more stiff and more silty (less sandy) at 20'				

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Page: _____ of _____
Well/Boring No. SB #68
Client: BOC Lansing
Project No.: 20682

Well/Boring Log Sheet

County	Township	Fraction 1/4 1/4 1/4	Section	T	R

Contractor Soils & Material Eng. Inc
Address: Livonia, MI

Equipment: CME 55

Supervisor: C. Cotton

Drilling Method(s) **Depth**
3 1/4" HSA 40.5'

Grouting/Seal

Depth	To	Material/Method
0.0-40.5'		Backfill

Development N/A

Screen
Manufacturer: N/A
Material:
Model:
Slot/Gauze: Dia.:
Length:
Depth Set: To:

Casing

Dia.	Type	Depth Set
	N/A	To
		To

Date
Started: 3/2/89 Finished: 3/2/89

Elevation
Casing: N/A
Ground:
Ref. Pt.:

Water Level N/A Ft. Below .
Measure On:

Location See Sketch

Remarks Elevation is ~2.5' below floor elevation.

Remarks

Thickness	Depth to Base	LITHOLOGIC DESCRIPTION				
	0.0-1	Clay, sandy, brown, moist, some small gravel	8	12	12	
	1-6	Sand and Gravel, medium brown, loose	9	14	6	
	6-8	Sand, clay binder, some small gravel, seams of medium loose sand	4	5	4	
	8-14.5	Clay, sandy, silty, gray, occasional small gravel, moist, soft, becoming brown	3	4	6	7
	14.5-24	Sand, light brown with yellow hue, very fine, silty, loose to medium at 21'	6	9	19	
	24-30.4	Clay, gray, silty, soft, moist, occasional very small gravel	9	14	13	13
	30.4-36	Sand, light gray, fine, loose, dry	22	12	11	
	36-40.5	Sand, very fine, brown, clay binder, moist	8	10	14	24
			9	16	10	
			22	27	26	24

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Well/Boring No. SB #69
Client: BOC Lansing
Project No.: 20682

Well/Boring Log Sheet

County	Township	Fraction 1/4 1/4 1/4	Section	T	R

Contractor Soils & Material Eng. Inc
Address: Livonia, MI

Equipment: CME 55

Supervisor: C. Cotton

Drilling Method(s) **Depth**
3 1/4" HSA 60.5'

Grouting/Seal
Depth To Material/Method
0.0-60.5' Backfill

Development N/A

Screen
Manufacturer: N/A
Material:
Model:
Slot/Gauze: Dia.:
Length:
Depth Set: To:

Casing
Dia. Type Depth Set
N/A To
To

Date
Started: 3/2/89 Finished: 3/2/89

Elevation
Casing: N/A
Ground:
Ref. Pt.:

Water Level N/A Ft. Below
Measure On:

Location See Sketch

Remarks Elevation is ~5' below floor elevation.
Ammonia odor detected in wet layer at bottom of hole -
also noticed as augers were being pulled.

Remarks

Thick-ness	Depth to Base	LITHOLOGIC DESCRIPTION				
	0.0-0.5	Sand, medium, and gravel, dry, yellow/brown	3	3	5	
	0.5-9	Clay, sandy, some small gravel, moist, gray/brown	5	8	10	
	9-13	Clay, gray, silty, slight sandy, some small gravel stiff	2	3	4	
	13-14.8	Clay, brown, sandy, stiff	4	5	7	7
	14.8-30.4	Sand, medium fine to fine, slightly yellow/light brown, dry, (possible fill for sewer)	7	26	40	
	30.4-33.8	Sand, fine, gray/brown, silty	12	17	25	41
	33.8-34	Silt, dark gray, moist, clay binder	4	26	28	
	34-34.6	Sand, fine, light gray, very silty, dry, loose	16	26	30	40
	34.6-37	Sand, medium to coarse, gray, some very small gravel, dry loose	38	100 ~ 4"		
	37-38.8	Clay, dark gray, possible layers of shale, moist, stiff, silty	9	12	14	16
	38.8-41.5	Clay, brown, sandy, moist, seams of fine brown sand, occasional small gravel stone, becoming gray	26	50	65	
	41.5-48	Sand, fine, gray, slightly silty, moist	29	50	41	60
	48-57	Silt, gray, dry, clay binder, some coal or shale pieces, layers of very fine gray/brown sand (2-3")	30	43	65	
		dry, loose	44	44	43	44
	57-60.5	Sand, medium fine, clay binder, gray/brown, occasional small gravel, moist to wet at 60.3'				
		Ammonia odor at last spoon				

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Well/Boring No. SB #70
Client: BOC Lansing
Project No.: 20682

Well/Boring Log Sheet

County	Township	Fraction 1/4 1/4 1/4	Section	T	R

Contractor Soils & Material Eng. Inc
Address: Livonia, MI

Equipment: 45 CME

Supervisor: C. Cotton

Drilling Method(s) **Depth**
3 1/4" ID HSA 40.5'

Grouting/Seal

Depth	To	Material/Method
0.0-40.5'		Backfill

Development N/A

Screen
Manufacturer: N/A
Material:
Model:
Slot/Gauze: Dia.:
Length:
Depth Set: To:

Casing

Dia.	Type	Depth Set
	N/A	To
		To

Date
Started: 2/24/89 Finished: 2/24/89

Elevation
Casing: N/A
Ground:
Ref. Pt.:

Water Level N/A Ft. Below
Measure On:

Location See Sketch

Remarks Sample taken at 10" intervals

8.5-10.5	10:10	Chemical odor
18.5-20.5	10:46	Chemical odor
28.5-30.5	11:09	Odor like rat poison
38.5-40.5	11:30	Slight odor

Thickness	Depth to Base	LITHOLOGIC DESCRIPTION	Remarks			
0.5	0.0-0.5	Concrete (partially broken up)	5	7	8	9
2.0	0.5-2.5	Sand, clayey, medium, greenish brown, medium and large gravel stone	13	21	29	37
14.0	2.5-16.5	Clay, sandy, dark greenish brown, occasional stone, moist, silty	27	33	35	35
18.5	16.5-35	Sand, light brown, yellow/green tint, fine, silty, occasional lense of silty dry clay	17	27	33	31
5.5	35-40.5	Silt, gray, moist, some layers of fine light brown sand				

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Well/Boring No. SB #71
Client: BOC Lansing
Project No.: 20682

Well/Boring Log Sheet

County	Township	Fraction 1/4 1/4 1/4	Section	T	R

Contractor Soils & Material Eng. Inc
Address: Livonia, MI

Equipment: 45 CME

Supervisor: C. Cotton

Drilling Method(s) **Depth**
3 1/4" ID HSA 40.5'

Grouting/Seal

Depth	To	Material/Method
0.0	40.5'	Backfill

Development N/A

Screen
Manufacturer: N/A
Material:
Model:
Slot/Gauze: Dia.:
Length:
Depth Set: To:

Casing

Dia.	Type	Depth Set
	N/A	To
		To

Date
Started: 3/1/89 Finished: 3/1/89

Elevation
Casing: N/A
Ground:
Ref. Pt.:

Water Level N/A Ft. Below
Measure On:

Location See Sketch

Remarks Slight ammonia odor noted in yellow/brown sand layer (19-27'). Odor more evident while pulling augers.

Remarks

Thick-ness	Depth to Base	LITHOLOGIC DESCRIPTION					
	0.0-1	Wood block over concrete	7	8	9		
	1-7	Clay, brown, sandy, occasional stone, dry, hard	8	12	16		
	7-8	Clay, silty, red/brown, stiff, moist	10	16	16		
	8-12	Sand, clay, binder, layers of sand, medium, mixed with gravel, green/brown, very moist	15	22	18	13	
	12-18.8	Clay, gray, silty, slightly sandy, moist, becoming stiff	5	7	9		
	18.8-27.5	Sand, medium fine, green and yellow/brown, dry, loose, occasional stone	7	8	19	31	
	27.5-30.3	Clay, silty, gray, very soft, moist	9	9	12		
	30.3-40.2	Sand, brown, silty, slight ammonia odor, becoming gray and very fine, very silty, dry	27	60 for 3"			
	40.2-40.5	Clay, gray, silty, dry, stiff	10	23	22	23	
			29	32	30	27	

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Well/Boring No. SB #72
Client: BOC Lansing
Project No.: 20682

Well/Boring Log Sheet

County	Township	Fraction 1/4 1/4 1/4	Section	T	R

Contractor Soils & Material Eng. Inc
Address: Livonia, MI

Equipment: 55 CME

Supervisor: C. Cotton

Drilling Method(s) **Depth**
3 1/4" HSA 60'

Grouting/Seal
Depth To Material/Method
0.0-60' Backfill

Development N/A

Screen
Manufacturer: N/A
Material:
Model:
Slot/Gauze: Dia.:
Length:
Depth Set: To:

Casing
Dia. Type Depth Set
N/A To
To

Date
Started: 2/28/89 Finished: 2/28/89

Elevation
Casing: N/A
Ground:
Ref. Pt.:

Water Level N/A Ft. Below
Measure On:

Location See Sketch

Remarks 5 /12 hours down on time due to coring hole in concrete
Samples taken at 10' intervals
* Extra sample taken at 23.5-25.0 due to odor and color of silt lense
* Ammonia odor was detected while augers were being pulled*

Remarks

Thick-ness	Depth to Base	LITHOLOGIC DESCRIPTION				
	0.0-1.3	Wood block over concrete	4	9	11	
	1.3-2.5	Clay, slightly sandy, black with greenish tint, trace of gravel	3	5	5	
	2.5-4	Clay, gray to green, very sandy, occasional gravel stone	3	8	12	
	4-7.5	Clay, gray, silty, some sand - oxidized yellow/green color	16	17	24	17
	7.5-14	Clay, very sandy, discolored yellow green with brown base, some small gravel, very moist	5	6	5	
	14-19.5	Clay, gray, some sand, silty, occasional stone, moist to wet, soft	6	9	11	13
	19.5-23	Clay, gray, very stiff, silty, slightly moist	5	14	20	
	23-24.4	Clay, brown, very sandy, soft, moist, yellow discolored	3	4	10	35
	24.4-24.8	Silt, dry, yellow, odor, sweet, chemical, piece of coal in silt layer of spoon	20	24	28	
	24.8-30.2	Clay, very sandy, moist to wet, soft, some small to medium gravel	23	25	18	35
	30.2-38.8	Sand, very fine, very silty, dry, gray	20	25	27	
	38.8-40	Clay, very silty, slightly sandy, gray, dry	55	85	115	
	40-49.8	Sand, fine, silty, some medium gravel in layers, clay lenses, brown	55	27	55	71
	49.8-50	Sandstone and sand, gray brown	27	55	71	
	50-60	Silt, gray, silty, sandy, very fine, occasionsal 2-6" seam of silty clay from 55-60'	20	35	50	62

EDI Engineering & Science

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Well/Boring No. SB #74
Client: BOC Lansing
Project No.: 20682

Well/Boring Log Sheet

County	Township	Fraction 1/4 1/4 1/4	Section	T	R

Contractor Soils & Material Eng. Inc
Address: Livonia, MI

Equipment: 55 CME

Supervisor: C. Cotton

Drilling Method(s) **Depth**
4" HSA 15'

Grouting/Seal
Depth To Material/Method
0.0-15' Backfill

Development N/A

Screen
Manufacturer: N/A
Material:
Model:
Slot/Gauze: Dia.:
Length:
Depth Set: To:

Casing
Dia. Type Depth Set
N/A To
To

Date
Started: 3/2/89 Finished: 3/2/89

Elevation
Casing: N/A
Ground:
Ref. Pt.:

Water Level N/A Ft. Below
Measure On:

Location See Sketch

Remarks Very strong ammonia cleanser odor in area, ammonia odor very evident in soil also
Fuel oil odor encountered at ~8': see note in lof
VOA taken at 8.5-10.5'

Remarks

Thickness	Depth to Base	LITHOLOGIC DESCRIPTION				
	0.0-1	Wood block over cement	5	5	12	
	1-1.5	Sand, light brown, medium fine, loose, dry, some small and medium gravel	9	12	15	
	1.5-2	Sand, very fine, silty, clay binder, occasional small gravel	6	10	14	
	2-6	Clay, gray and brown marbled, sandy and silty, stiff, occasional small gravel	6	7	7	13
	6-12.5	Clay, very, sandy, light brown, some very small gravel, dry	4	8	9	
		*Spoon at 8.5-10.5' was wet sandy clay, saturated with a bright yellow/green, thin oily liquid, oily smell				
	12.5-15	Clay, gray, occasional small stones, moist, soft, only trace of yellow/green discoloration				

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Environmental Services Division

Well/Boring No.: Ch-8
Client: BOC Lansing
Project No.: 20682

Well/Boring Log Sheet

County	Township	Fraction	Section	T	R
	Lansing	1/4 1/4 1/4			

Contractor Stearns
Address: 6875 Industrial Park
Dutton, MI
Equipment: CME - 550
Crew Chief:
WW Supervisor: Darryl Krause

Drilling Method(s) **Depth**
4" ID HSA 70'

Grouting/Seal
Depth/To Material/Method
Granular Bent. Slurry
Baroid mud test used.

Development Bailed dry

Screen
Manufacturer: Johnson
Material: Stainless Steel
Model:
Slot/Gauze: #7 Dia.: 2" ID
Length: 3'
Depth Set: 69' To: 66'

Casing
Dia. Type Depth Set
2" ID Galv. To 66'
To +2'

Date
Started: 2/14/90 Finished:

Elevation
Casing:
Ground:
Ref. Pt.:

Water Level 65' Ft. Below surface
Measure On:

Location

Remarks Water sample was taken with a teflon bailer and then field filtered through a 0.4 micron filter

Thickness	(feet) Depth to Base	LITHOLOGIC DESCRIPTION	Sample Depth	Blow Counts 6"	12"	18"
6		Silt, some sand, very fine, occasional medium gravel, brown	8.5-10	4	5	4
1	6	Gravel, coarse	18.5-20	3	3	3
	7	Silt, some sand, very fine, brown	28.5-30	6	11	14
0.3	8-8.3	Gravel, coarse	38.5-40	15	17	23
4	8.5	Sand, medium, and Silt, occasional Gravel, coarse, brown				
0.5	12.5	Gravel, coarse				
3.5	13	Sand, medium, and Silt, fine gravel, brown				
2	16.5	Clay, silty, trace fine gravel, brown				
8.5	18.5	Clay, silty, trace coarse sand, trace fine gravel, brown, slight yellowish color above spoon, moist				
	27	Sand, very fine with lenses of silty clay, brown, mottled, gray				
	33	Sand, very fine, light brown				

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Environmental Services Division

Page: 2 of 2
Well/Boring No.: Ch-8
Client: BOC Lansing
Project No.: 20682

Well/Boring Log Sheet

County	Township	Fraction	Section	T	R
	Lansing	1/4 1/4 1/4			

Contractor Stearns
Address: 6875 Industrial Park
Dutton, MI
Equipment: CME - 550
Crew Chief:
WW Supervisor: Darryl Krause

Drilling Method(s) **Depth**
4" ID HSA 68.5
Spooned to 70'

Grouting/Seal
Depth/To Material/Method
Granular Bent. Slurry
Baroid mud test used.

Development Bailed dry

Screen
Manufacturer: Johnson
Material: Stainless Steel
Model:
Slot/Gauze: #7 Dia.: 2" ID
Length: 3'
Depth Set: 69' To: 66'

Casing
Dia. Type Depth Set
2" ID Galv. To 66'
To +2'

Date
Started: 2/14/90 Finished:

Elevation
Casing:
Ground:
Ref. Pt.:

Water Level 65' Ft. Below surface
Measure On:

Location

Remarks Water sample was taken with a teflon bailer and then field filtered through a 0.4 filter

Thickness	(feet) Depth to Base	LITHOLOGIC DESCRIPTION	Blow Counts Sample Depth	18"	12"	6"
1	42.5	Sand, very fine, some silt, coarse gravel, light brown	48.5-50	12	22	26
5	43.5	Sand, very fine, some silt, light brown	58.5-60	15	32	44
8	48.5	Sand, very fine, and Silt, trace gravel, light brown	68.5-70	5	7	10
	56.5	Sand, very fine, lenses of clay, light brown				
	68.5	Sand, very fine, lenses of clay, light brown, wet				
		Set Temp. Well				

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Page: 1 of 1
Well/Boring No.: Chrome Pit - CR-9-D
Client: BOC Lansing
Project No.: 20682

Well/Boring Log Sheet

County	Township	Fraction	Section	T	R
	Lansing	1/4 1/4 1/4			

Contractor Stearns Drilling
Address: 6875 Industrial Pkwy.
Dutton, MI
Equipment: CME 45C
Crew Chief: Roger Christianson
WW Supervisor: Mike Jones

Drilling Method(s) **Depth**
4 1/4" ID HSA 17'
Split Spoon 19'

Grouting/Seal
Depth/To Material/Method
19' Bent. Grout at 9.6 lbs/gal

Development

Screen
Manufacturer:
Material:
Model:
Slot/Gauze: Dia.:
Length:
Depth Set: To:

Casing
Dia. Type Depth Set
To
To

Date
Started: 2/21/90 Finished:

Elevation
Casing: N/A
Ground: ~12.5 from Cr 8 & Cr 12
Ref. Pt.: grade (not top of floor)

Water Level Ft. Below
Measure On:

Location

Remarks Select 7-9' spoon interval to intersect sample depths used at Cr 8 & Cr 12. Water (from earlier drilling and grouting) caused run-off and water into pit; noticeable erosion, north sidewall. BOC hose also possible source. Hit water seam ~4' to 6.5'; cave-in continues around augers to dia. of 2 1/2', and beginning to undermine rig's hyd. jacks. Call office. Since cave in has not stopped, end boring and grout.

Thickness (feet)	Depth to Base	LITHOLOGIC DESCRIPTION	Blow Counts 18"	18"	12"	6"
			Sample Depth			
	~1-2	Fill, sand, very fine to medium and silty, brown, rock and gravel	7-9	3	4	4 5
	6.5	Sand, fine, gravish brown, wet ~4-6.5' (see remarks)	17-19	9	14	17 21
	8	Clay, silty, occasional coarse gravel and rock, gray, dense, dry				
	17	Clay, very sandy, some silt, damp, gray				
		Silt, with fine sand and clay and occasional gravel, gray, dry				
		EOB				
		Hand Auger - to set shallow 2" Mon. well located ~6'W of Cr-9-D				

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Page: 1 of 1
Well/Boring No.: MW Cr-9
Client: BOC Lansing
Project No.: 20682

Well/Boring Log Sheet

County	Township	Fraction 1/4 1/4 1/4	Section	T	R

Contractor WWES
Address: 5555 Glenwood Hills Pkwy
Grand Rapids
Equipment: Hand Auger
Crew Chief:
WW Supervisor: Jim Wise

Drilling Method(s) **Depth**
Hand Auger 3'
Drove screen to 4.5'

Grouting/Seal
Depth/To Material/Method
0-4.5' Benseal-slurry from top

Development Bailed dry

Screen
Manufacturer: Johnson
Material: Stainless Steel
Model: CWW
Slot/Gauze: 7 Dia.: 2"
Length: 5'
Depth Set: +0.5 To: 4.5'

Casing
Dia. Type Depth Set
None To
To

Date
Started: 2/22/90 Finished: 2/22/90

Elevation
Casing:
Ground: ~12.5 from ground surface
Ref. Pt.:

Water Level 2' 9" Ft. Below grade
Measure On: 2/22/90

Location 6'W Ch-9-D

Remarks Hand auger down to 4' hit stiff clay. Water from 2-4'. Set temp. well and sample screen set from grade to 4.5' sample filtered in field.

Thickness	(feet) Depth to Base	LITHOLOGIC DESCRIPTION	Blow Counts 18" 12" 6" Sample Depth
	0-1	Sand, backfill with occasional gravel, brown	
	1-2	Sand, medium to fine, with clay and occasional gravel, brown	
	2-4	Sand, fine, with some clay, occasional gravel, wet, brown	
	4-4.5	Clay, with some fine sand, and occasional gravel, brown, dry	
		EOB	

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Environmental Services Division

Page: 2 of 2
Well/Boring No.: Ch-15
Client: BOC Lansing
Project No.: 20682

Well/Boring Log Sheet

County	Township	Fraction	Section	T	R
	Lansing	1/4 1/4 1/4			

Contractor Stearns Drilling
Address: 6875 Industrial Pkwy.
Dutton, MI
Equipment: CME 550
Crew Chief:
WW Supervisor: Darryl Krause

Drilling Method(s) **Depth**
HSA 78.5'
Spooned to 80'

Grouting/Seal

Depth/To	Material/Method
80'-surface	Granular, Bent. Slurry

Development Bailed augers dry

Screen
Manufacturer:
Material:
Model:
Slot/Gauze: Dia.:
Length:
Depth Set: To:

Casing

Dia.	Type	Depth Set
		To
		To

Date
Started: 2/13/90 Finished: 2/14/90

Elevation
Casing:
Ground:
Ref. Pt.:

Water Level 67' Ft. Below surface
Measure On:

Location

Remarks

Thickness	(feet) Depth to Base	LITHOLOGIC DESCRIPTION	Blow Counts 18" 12" 6" Sample Depth
1	53	Gravel, coarse	
2	54	Silt, some sand, very fine, gray	
1	56	Gravel, coarse	
11	57	Silt, some sand, very fine, gray	
7	68	Silt, very fine, very stiff, trace clay, gray	
3	75	Silt, very fine, very stiff, trace clay, coarse gravel (to 76') gray	
1	78.5	Sand, coarse, gravel, coarse	
	79.5	Bedrock	

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Well/Boring No.: Ch-15
Client: BOC Lansing
Project No.: 20682

Well/Boring Log Sheet

County	Township	Fraction	Section	T	R
	Lansing	1/4 1/4 1/4			

Contractor Stearns Drilling
Address: 6875 Industrial Pkwy, Dutton, MI
Equipment: CME 550
Crew Chief:
WW Supervisor: Darryl Krause

Drilling Method(s) **Depth**
HSA 78.5'
Spooned to 80'

Grouting/Seal
Depth/To Material/Method
80'-surface Granular, Bent, Slurry
Baroid mud balance to test density

Development Bailed augers dry

Screen
Manufacturer:
Material:
Model:
Slot/Gauze: Dia.:
Length:
Depth Set: To:

Casing
Dia. Type Depth Set
To
To

Date
Started: 2/13/90 Finished: 2/14/90

Elevation
Casing:
Ground:
Ref. Pt.:

Water Level 67' Ft. Below surface
Measure On:

Location

Remarks No water was found until bedrock. Augers were left in hole overnight. ~15' of water accumulated overnight. Augers were bailed dry using a teflon bailer and then a water sample was taken. Sample was field filtered.

Thickness	(feet) Depth to Base	LITHOLOGIC DESCRIPTION	Blow Counts Sample Depth	18"	12"	6"
11.5		Sand, fine to medium, trace silt, occasional gravel, light brown	8.5-10	2	5	4
4	11.5	Sand, fine, some silt, coarse gravel, light brown	18.5-20	3	10	10
4.5	15.5	Clay, trace silt, brown	28.5-30	6	11	12
4	20	Clay, silty, some coarse sand, occasional gravel, gray	38.5-40	7	14	20
4.5	24	Sand, fine, brown	48.5-50	11	23	27
6.5	28.5	Sand, very fine, lenses of silty clay, gray, mottled white	58.5-60	17	33	35
2.5	35	Clay, silty, some sand, fine, gray	68.5-70	10	16	20
7.5	37.5	Sand, very fine, gray	78.5-80	17	39	100/5"
3.5	45	Gravel, coarse, some sand, very fine				
4.5	48.5	Silt, trace coarse sand, brown, mottled, gray				

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Environmental Services Division

Page: 1 of 1
Well/Boring No.: MW-19
Client: BOC Lansing
Project No.: 21666.01
Date:
Started: 8/13/91 Finished: 8/13/91

"Drift Well"

Well/Boring Log Sheet

County	Township	Fraction	Section	T	R
Ingham	Lansing	SE1/4	7	4N	2W

Contractor: Stearns Drilling
Address: 6974 Hammond
Dutton, MI 49316
Equipment: CME 75
Crew Chief: Duane
WW Supervisor: Don Johnson

Drilling Method(s)	Depth
4 1/4" ID HSA	0.0-68.0'

Grouting/Seal Depth/To	Material/Method
See reverse	

Water Level 60' Ft. Below GD

Location

Remarks: 30 ppm in cuttings at 4.0'

Thickness	(feet) Depth to Base	LITHOLOGIC DESCRIPTION	Blow Counts Sample Depth	OVM/PID (ppm) 6"	12"	18"	24"	Response	Background
0.9	0.9	CONCRETE							
1.6	2.5	SAND, brown, fine to coarse and gravel fine to coarse, wet							
2	4.5	SAND, brown, fine to coarse and gravel, fine to coarse, dry							
2.5	7.0	CLAY, brown, sandy	8'-10'	2	3	3	4	0	0
8	15	CLAY, gray, sandy and soft with some fine gravel	18'-20'	17	22	30	19	0	0
5	20	CLAY, browns and grays, very dry and silty with some fine to medium							
		gravel and crushed stone, firm							
6	26	CLAY, gray, sandy and some fine gravel, dry-soft	28'-30'	4	11	9	8	0	0
3	29	SILT, gray, damp to wet							
0.2	29.2	SAND, gray, fine to coarse, dry							
7.8	37	SILT, gray, dry and some fine to very fine sands	38'-40'	11	15	19	23	0	0
9	46	SAND, gray, very fine to fine and trace of silts, dry							
12.5	58.5	CLAYEY, gray sands, and trace of gray silts with occasional fine	48'-50'	10	13	22	25	0	0
		gravel, very dry (crumbles)							
9.5	68	SAND, gray, very fine to fine and trace of gray silt, damp to wet	58'-60'	9	14	13	14	0	0

WW Engineering & Science

Project Name: BOC Lansing Plant #3

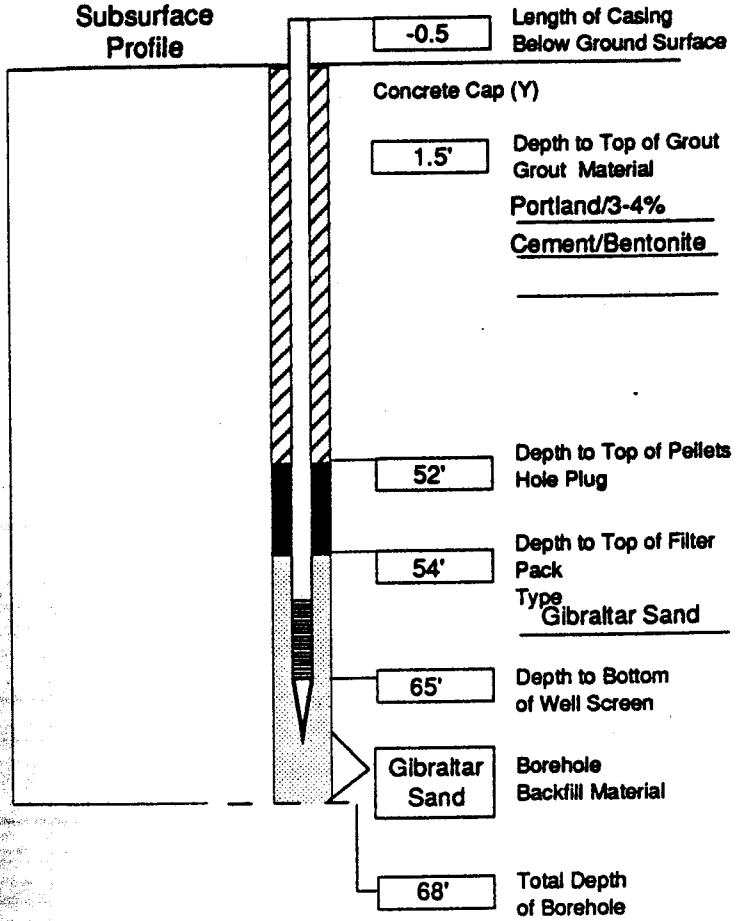
Project No: 21666.01

Log of Well Installation

Well Designation: MW 19

Date(s) of Installation: 8/13/91 To: 8/13/91

Generalized Subsurface Profile



Top of Casing Elevation: 100.485

Ground Surface Elevation: 100.735

Water Level Data

Date	Water Level Below TOC
8/30/91	56.69'

Development :

Survey Reference: TOC @ MW-88-1 (Assumed @ 99.73')

Well Casing

Diameter: 2"
Total Length: 55'
Material: PVC
Cap Type: Locking "J" Plug

Well Screen

Diameter: 2"
Length: 10'
Slot/Type: 10 Slot C.W.W.
Material: PVC

Protective Well Casing

Material: Steel Dia. 8"
Height Above Ground: Flush Mount Manhole
Lock Type: Locking "J" Plug on Well

General Notes:

Figure

WW Engineering & Science, Inc.
Environmental Services Division

Page: 1 of 1
Well/Boring No.: MW-21
Client: BOC Lansing
Project No.: 21666.01
Date:
Started: 8/15/91 Finished: 8/15/91

"Drift Well"

Well/Boring Log Sheet

County	Township	Fraction	Section	T	R
Ingham	Lansing	SE1/4	7	4N	2W

Contractor Stearns Drilling
Address: 6974 Hammond
Dutton, MI 49316
Equipment: CME 75
Crew Chief: Duane
WW Supervisor: Don Johnson

Drilling Method(s) — **Depth**
4 1/4" ID HSA — 0.0-66.0'*

Grouting/Seal Depth/To — Material/Method
See reverse

Water Level 61' Ft. Below GD

Location

Remarks * 93 ppm on cuttings at approx. 6' depth. 0.0 ppm throughout remaining borehole.

* Over drilled to 66' to allow water table ro rise and to allow room for a monitor well. (60' depth is the last split spoon taken)

Thickness	(feet) Depth to Base	LITHOLOGIC DESCRIPTION	Sample Depth	OVM/PID (ppm) Blow Counts 6"	12"	18"	24"	Response	Background
1.0	1.0	CONCRETE							
2.5	3.5	SAND, brown, fine to coarse and some fine gravel							
1.5	5.0	CLAY, brown, sandy and some fine to coarse gravel, dry	8'-10'	4	4	6	6	0	0
1.5	6.5	SAND, brownish gray with occasional fine gravel and trace of silty clay - 93 ppm							
7.5	14	CLAY, gray, sandy and gravelly, medium firm, dry, 0 ppm							
8	22	CLAY, gray, sandy and silty with occasional fine gravel, dry	18'-20'	5	13	15	13	0	0
3	25	SAND, brown, very fine to medium and some silts, dry							
7	32	SAND, brownish, gray, very fine to silty and some fine sand, dry	28'-30'	10	13	16	23	0	0
4.5	36.5	SAND, gray, very fine to silty, dry							
3.3	39.8	SILT, gray and some fine to very fine sands with occasional fine gravel	38'-40'	12	17	19	20	0	0
5.2	45	SILT, gray and some fine to very fine sands, wet							
4.5	49.5	CLAY, gray, silty and sandy, firm, dry (crumbles) and occasional fine gravel							
3.5	53	SILT, gray and some very fine gray sands, dry	48'-50'	12	19	27	28	0	0
7	60*	SILT, gray and some very fine to fine sands, wet						-	-
			58'-60'	4	10	13	13	0	0

WW Engineering & Science

Project Name: BOC Lansing Plant #3

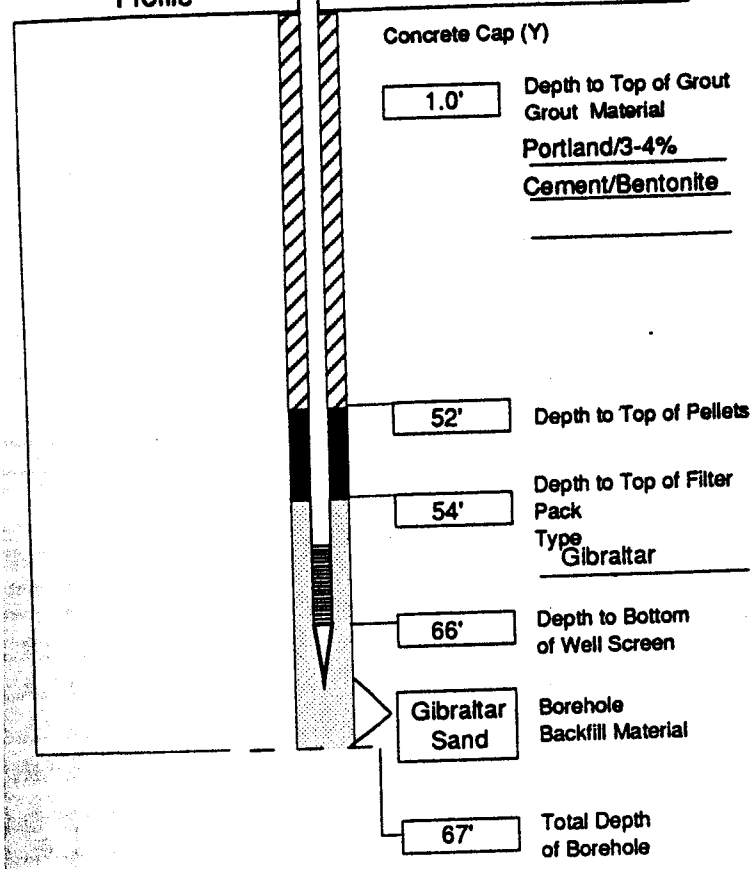
Project No: 21666.01

Log of Well Installation

Well Designation: MW-21

Date(s) of Installation: 8/15/91 To: 8/15/91

Generalized Subsurface Profile



Top of Casing Elevation: 100.465

Ground Surface Elevation: 100.885

Water Level Data

Date	Water Level Below TOC
8/30/91	55.65'

Development :

Survey Reference: TOC @ MW-88-1 (Assumed @ 99.73')

Well Casing

Diameter: 2"
Total Length: 56'
Material: PVC
Cap Type: Locking "J" Plug

Well Screen

Diameter: 2"
Length: 10'
Slot/Type: 10 Slot C.W.W.
Material: PVC

Protective Well Casing

Material: Steel Dia. 8"
Height Above Ground: Flush Mount Manhole
Lock Type: P-506

General Notes:

Figure

WW Engineering & Science, Inc.
Environmental Services Division

Page: 1 of 1
Well/Boring No.: MW-22
Client: BOC Lansing
Project No.: 21666.01
Date:
Started: 8/19/91 Finished: 8/30/91

"Drift Well"

Well/Boring Log Sheet

County	Township	Fraction	Section	T	R
Ingham	Lansing	SE1/4	7	4N	2W

Contractor: Stearns Drilling
Address: 6974 Hammond
Dutton, MI 49316
Equipment: CME 550
Crew Chief: Bryan Marshall
WW Supervisor: Don Johnson

Drilling Method(s)	Depth
4 1/4" ID HSA	0.0-63.0'*

Grouting/Seal Depth/To	Material/Method
See reverse	

Water Level 57' Ft. Below GD

Location

Remarks: *Over drilled to 63' to allow room for a monitor well.
Last split spoon sample collected at 58'-60' depth.

Thickness	(feet) Depth to Base	LITHOLOGIC DESCRIPTION	Sample Depth	Blow Counts 6"	12"	18"	24"	OVM/PID (ppm) Response	Background
0.8	0.8	CONCRETE							
0.7	1.5	SAND, brown, fine to coarse and some fine to medium gravel							
4.0	5.5	CLAY, brown, sandy and gravelly	8'-10'	3	8	8	12	0	0
3.5	9.0	CLAY, gray, sandy and some fine to medium gravel							
3.5	12.5	CLAY, gray, sandy and gravelly with trace of silt, firm, dry	18'-20'	10	10	15	17	0	0
6	18.5	CLAY, gray, silty and some fine sands and gravels							
1.0	19.5	SAND, brown, very fine to fine and some silty, dry	28'-30'	6	9	10	13	0	0
9.5	29	SAND, brown, very fine and some brown silt, dry							
4	33	SILT, gray, and some very fine gray sands, dry	38'-40'	8	16	20	23	0	0
15	48	SILT, gray, and some very fine sands with trace of clay, dry	48'-50'	27	29	34	41	0	0
9	57	CLAY, gray, silty and occasional fine gravel, dry	58'-60'	7	18	26	27	0	0
3	60*	SAND, gray, fine to medium and some gray silt, wet							
								-	-
		* Actual EOB @ 63' *							

NW Engineering & Science

Project Name: BOC Lansing Plant #3

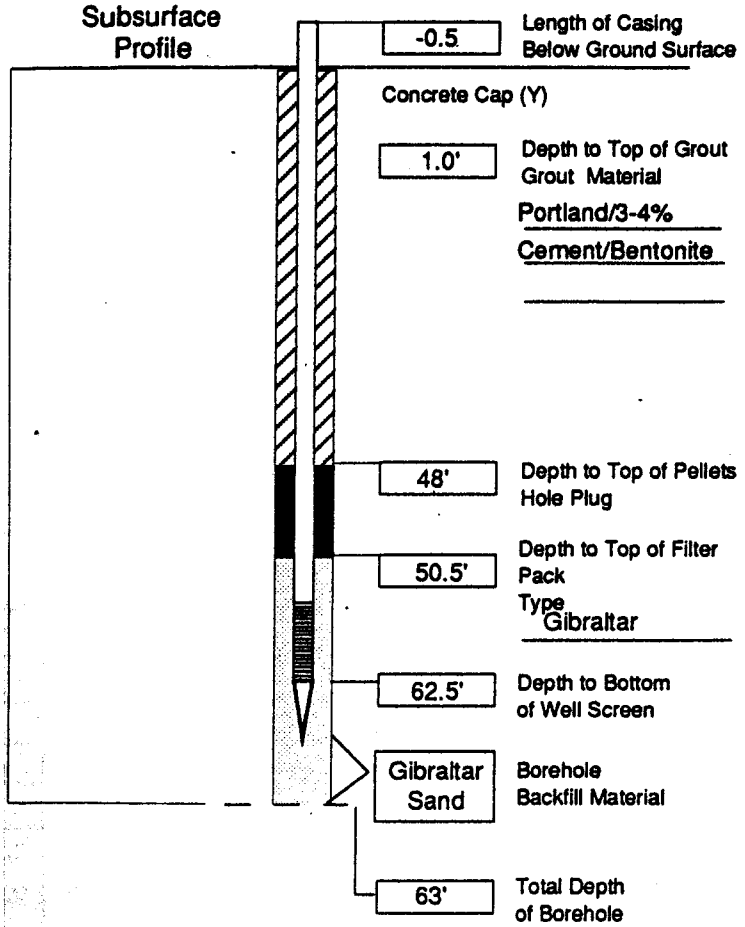
Project No: 21666.01

Log of Well Installation

Well Designation: MW-22

Date(s) of Installation: 8/19/91 To: 8/20/91

Generalized Subsurface Profile



Top of Casing Elevation: 100.435

Ground Surface Elevation: 100.825

Water Level Data

Date	Water Level Below TOC
8/30/91	55.74'

Development :

Survey Reference: TOC @ MW-88-1 (Assumed @ 99.73')

Well Casing

Diameter: 2"
Total Length: 52.5'
Material: PVC
Cap Type: Locking "J" Plug

Well Screen

Diameter: 2"
Length: 10'
Slot/Type: 10 Slot C.W.W.
Material: PVC

Protective Well Casing

Material: Steel Dia. 8"
Height Above Ground: Flush Mount Manhole
Lock Type: P-506

General Notes:

Figure

/W Engineering & Science, Inc.
Environmental Services Division

Page: 1 of 1
Well/Boring No.: MW-23
Client: BOC Lansing
Project No.: 21666.01
Date:
Started: 8/14/91 Finished: 8/14/91

"Drift Well"

Well/Boring Log Sheet

County	Township	Fraction	Section	T	R
Ingham	Lansing	SE1/4	7	4N	2W

Contractor Stearns Drilling
Address: 6974 Hammond
Dutton, MI 49316
Equipment: CME 75
Crew Chief: Duane
WW Supervisor: Don Johnson

Drilling Method(s) — **Depth**
4 1/4" ID HSA — 0.0-63.0'*

Grouting/Seal
Depth/To — Material/Method
See reverse

Location

Remarks

Water Level 58.2' Ft. Below GD

Thickness	(feet) Depth to Base	LITHOLOGIC DESCRIPTION	Sample Depth	Blow Counts 6"	12"	18"	24"	OVM/PID (ppm) Response	Background
0.8	0.8	CONCRETE							
1.1	1.9	SAND, brown and gravel, fine to coase (road gravel)							
0.6	2.5	CONCRETE (piece of conduit with wires in it came up with cutting)							
1.0	3.5	SAND, brown, fine to coarse and some fine to medium gravel							
2.5	6.0	CLAY, brown, sandy and occasional fine gravel	8'-10'	12	13	13	11	0	0
3.0	9.0	SAND, brown, very fine to medium with trace of silts, moist							
0.5	9.5	CLAY, brown, sandy, dry							
2.5	12	CLAY, gray, firm and some fine to medium gravel, dry	18'-20'	7	16	25	22	0	0
11	23	CLAY, brownish, gray, firm, dry, sandy with occasional fine gravel							
4	27	SAND, brown, fine to medium, dry	28'-30'	3	4	4	2	0	0
6	33	SAND, gray, very fine to fine and very silty with occasional fine gravel, damp							
7	40	SAND, gray, very fine to fine and some silts, dry	38'-40'	13	20	22	22	0	0
9.7	49.7	SILT, gray and some very fine gray sand with occasional fine sands, dry	48'-50'	12	23	25	26	0	0
0.8	50.5	CLAY, gray, firm, dry with trace of gray silts	58'-60'	7	15	23	26	0	0
9.5	60	SILT, gray and some fine to very fine sands with black specs, wet							
		* Overdrilled to 63'							

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Project Name: BOC Lansing Plant #3

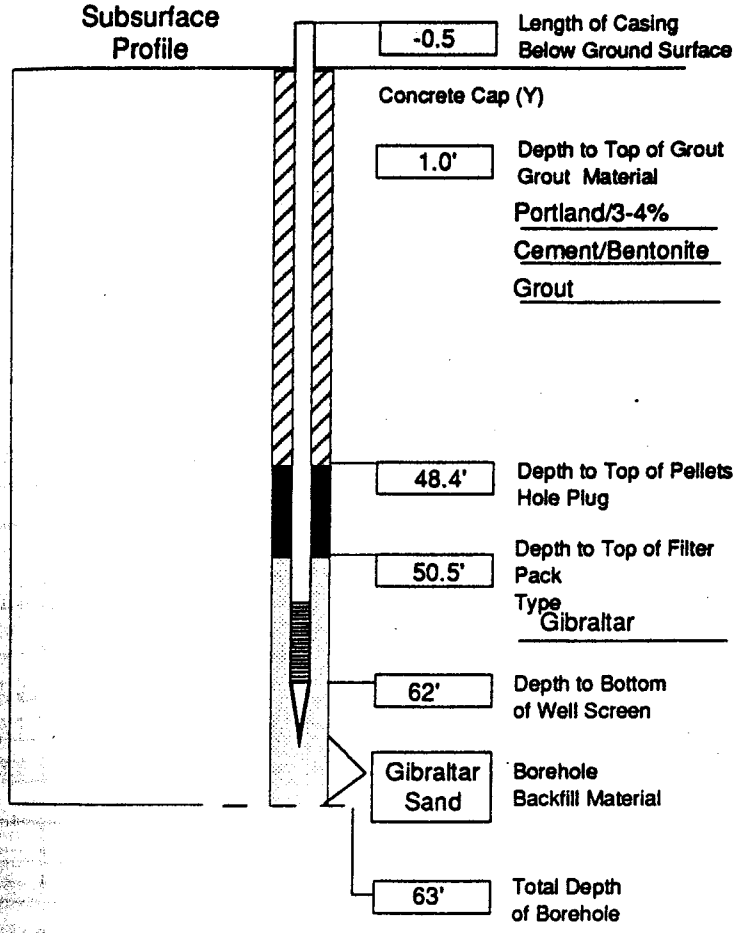
Project No: 21666.01

Log of Well Installation

Well Designation: MW-23

Date(s) of Installation: 8/14/91 To: 8/14/91

Generalized Subsurface Profile



Top of Casing Elevation: 100.195

Ground Surface Elevation: 100.605

Water Level Data

Date	Water Level Below TOC
8/30/91	54.68'

Development : _____

Survey Reference: TOC @ MW-88-1 (Assumed @ 99.73')

Well Casing

Diameter: 2"
Total Length: 52'
Material: PVC
Cap Type: Locking "J" Plug

Well Screen

Diameter: 2"
Length: 10'
Slot/Type: 10 Slot C.W.W.
Material: PVC

Protective Well Casing

Material: Steel Dia. 8"
Height Above Ground: Flush Mount Manhole
Lock Type: P-506

General Notes:

Figure

WW Engineering & Science, Inc.
Environmental Services Division

Page: 1 of 1
Well/Boring No.: MW-24(2)
Client: BOC Lansing
Project No.: 21666.01
Date:
Started: 8/9/91 Finished: 8/9/91

Well/Boring Log Sheet

County	Township	Fraction	Section	T	R
Ingham	Lansing	SE1/4	7	4N	2W

Contractor Stearns Drilling
Address: 6974 Hammond
Dutton, MI 49316
Equipment: CME 75
Crew Chief: Duane
WW Supervisor: Don Johnson

Drilling Method(s) **Depth**
4 1/4" ID HSA 0.0-7.0'

Grouting/Seal

Depth/To	Material/Method
0.0'-1.0'	Open Hole
1.0'-7.0'	Natural Soils & Benseal

Water Level _____ Ft. Below _____

Location

Remarks Hit concrete slab at 7' - refusal - pulled off of hole until it can be relocated

Thickness	(feet) Depth to Base	LITHOLOGIC DESCRIPTION	Blow Counts / Sample Depth	OVM/PID (ppm) 6"	12"	18"	24"	Response	Background
1.3	1.3	CONCRETE							
2.7	4.0	SAND, brown, fine to coarse and some fine gravel, dry							
3.0	7.0	SAND, brown, fine to coarse and some fine gravel, wet							
		CONCRETE							

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Environmental Services Division

Page: 1 of 1
Well/Boring No.: MW-24
Client: BOC Lansing
Project No.: 21666.01
Date:
Started: 8/20/91 Finished: 8/2191

"Drift Well"

Well/Boring Log Sheet

County	Township	Fraction	Section	T	R
Ingham	Lansing	SE1/4	7	4N	2W

Contractor Stearns Drilling
Address: 6974 Hammond
Dutton, MI 49316
Equipment: CME 550
Crew Chief: Bryan Marshall
WW Supervisor: Don Johnson

Drilling Method(s) — **Depth**
4 1/4" ID HSA — 0.0-63.0'*

Grouting/Seal Depth/To — Material/Method
See reverse

Water Level 56' Ft. Below GD

Location

Remarks This location is an offset of 10' to the east of the original attempt on 8-9-91
Overdrilled to 63' to allow room for the monitor well.

Thick-ness	(feet) Depth to Base	LITHOLOGIC DESCRIPTION	Sample Depth	Blow Counts 6"	12"	18"	24"	OVM/PID (ppm) Response	Background
0.2	0.2	ASPHALT							
0.8	1.0	CONCRETE							
2.5	3.5	SAND, brown, fine to coarse and some gravel, fine to medium							
3	6.5	CLAY, brown, very sandy, soft and some fine gravel, dry							
9.5	16	CLAY, gray, sandy and gravelly, medium firm, dry	8'-10'	2	4	6	6	0	0
12.5	28.5	CLAY, brownish gray, sandy with occasional fine sand seams, dry							
1.2	29.7	CLAY, gray, very sandy, very soft, moist	18'-20'	2	4	6	10	0	0
0.8	30.5	SAND, reddish brown, very fine to medium, dry and occasional fine gravel							
4.5	35	SAND, gray, very fine to fine and some silts with occasional thin layers of gray silty clay, dry	28'-30'	2	7	10	17	0	0
7	42	SAND, gray, clayey (slight clay binder) with occasional fine gravel and fine to very fine sand seams, dry							
15	57	CLAY, gray, sandy and trace of silts with some fine gravel, dry	38'-40'	5	12	13	18	0	0
2	59	SAND, gray, very fine to fine, wet						-	-
1.0	60	SILT, gray and trace of gray clay	48'-50'	17	32	27	36	0	0
			58'-60'	10	15	17	15	0	0

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Project Name: BOC Lansing Plant #3

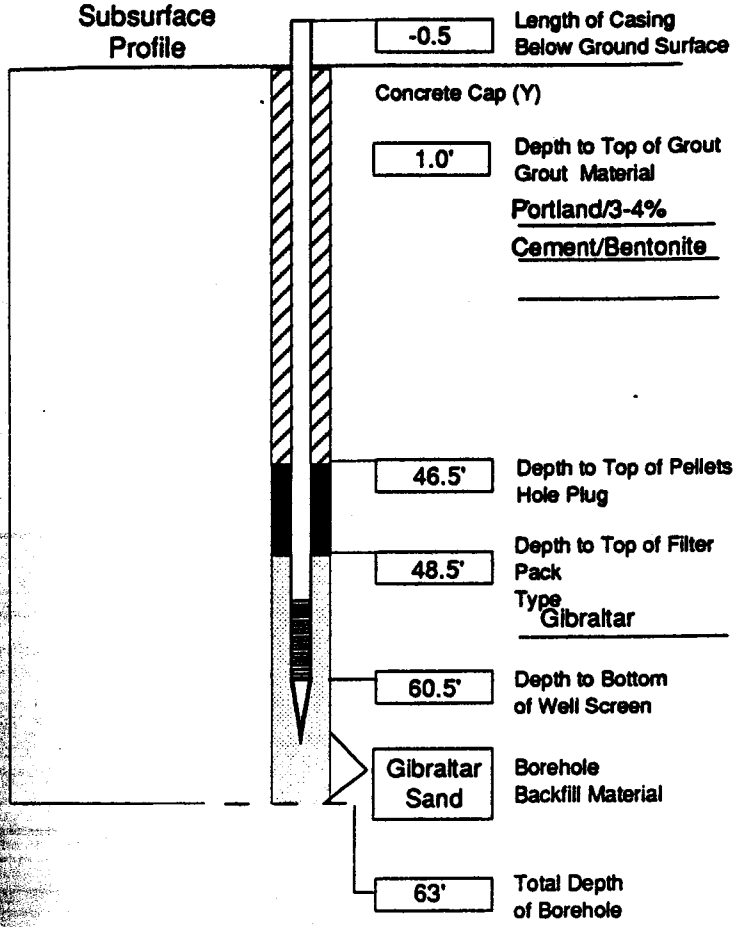
Project No: 21666.01

Log of Well Installation

Well Designation: MW-24

Date(s) of Installation: 8/21/91 To: 8/21/91

Generalized Subsurface Profile



Top of Casing Elevation: 100.375

Ground Surface Elevation: 100.74

Water Level Data

Date	Water Level Below TOC
8/30/91	55.73'

Development :

Survey Reference: TOC @ MW-88-1 (Assumed @ 99.73')

Well Casing

Diameter: 2"
Total Length: 50'
Material: PVC
Cap Type: Locking "J" Plug

Well Screen

Diameter: 2"
Length: 10'
Slot/Type: 10 Slot C.W.W.
Material: PVC

Protective Well Casing

Material: Steel Dia. 8"
Height Above Ground: Flush Mount Manhole
Lock Type: P-506

General Notes:

Figure

EDI Engineering & Science

Well/Boring No. 88-1
Client: BOC Lansing
Project No.: 20682

Well/Boring Log Sheet

County	Township	Fraction NE NE SW	Section	T	R

Contractor Stearns Drlg.
Address: Dutton, Mich

Equipment: 45 Acker

Supervisor: C. Cotton

Drilling Method(s) **Depth**
Auger / Split Spoon 45'
Mud Rotary 140

Grouting/Seal
Depth To Material/Method
103.0-103.5' Rubber Seal
0.0-103.0' Cement / Bentonite Grout

Development N/A

Screen
Manufacturer: N/A
Material:
Model:
Slot/Gauze: Dia.:
Length:
Depth Set: To:

Casing
Dia. Type Depth Set
N/A To
To

Date
Started: 9/19/88 Finished: 9/22/88

Elevation
Casing: N/A
Ground:
Ref. Pt.:

Water Level 77.45 Ft. Below TOC
Measure On: 9/22/88 - 4:30pm

Location NE Cor BOC Plant 3

Remarks (include here, other data available)

Thick-ness	Depth to Base	LITHOLOGIC DESCRIPTION	Sample Interval	Blow Counts 6"	12"	18"
2.5	0-2.5	TOPSOIL and brown CLAY, slightly sandy, some gravel	23.0-25.0	9	10	9
2.0	2.5-4.5	Medium to fine SAND, red, some clay	48.5-50.0	5	7	11
2.5	4.5-7.0	Sandy CLAY, light brown, moist at 6'	73.5-75.0	100 blows/1"		
1.0	7.0-8.0	Medium to fine SAND, light brown, wet				
6.0	8.0-14.0	Very sandy CLAY, light brown, wet				
2.0	14.0-16.0	Sandy CLAY, gray, wet				
3.0	16.0-19.0	Silty CLAY, gray, mixed with gravel, firm				
4.0	19.0-23.0	Sandy CLAY, light brown, gravelly, wet				
13.0	23.0-36.0	Medium SAND, light brown, gravelly, silty clay binder				
21.0	36.0-57.0	Silty CLAY, gray, occasional red/brown clay lense				
2.0	57.0-59.0	Very silty CLAY, gray, stiff				
4.0	59.0-63.0	CLAY, gray, lenses of sandy red/brown clay, soft				
3.0	63.0-66.0	Slightly sandy CLAY, red/brown				
5.0	66.0-71.0	Small GRAVEL mixed with medium to coarse SAND, brown/gray, some bits of coal				
2.0	71.0-73.0	Gravelly CLAY, light gray				
11.0	73.0-84.0	"SHALE", gray, sandstone or siltstone				
2.0	84.0-86.0	SHALE, black				
19.0	86.0-105.0	SANDSTONE, very light gray, soft				

EDI Engineering & Science

Page: 2 of 2
Well/Boring No. 88-1
Client: BOC Lansing
Project No.: 20682

Well/Boring Log Sheet

County	Township	Fraction NE NE SW	Section	T	R

Contractor Stearns Drlg.
Address: Dutton, Mich

Equipment:

Supervisor:

Drilling Method(s) **Depth**

Grouting/Seal
Depth To Material/Method

Development

Screen
Manufacturer:
Material:
Model:
Slot/Gauze: Dia.:
Length:
Depth Set: To:

Casing
Dia. Type Depth Set
To
To

Date
Started: Finished:

Elevation
Casing:
Ground:
Ref. Pt.:

Water Level Ft. Below
Measure On:

Location

Remarks (include here, other data available)

Blow Counts 18"
Remarks 12"
6"
Sample Interval

Thickness	Depth to Base	LITHOLOGIC DESCRIPTION
8.0	105.0-113.0	SANDSTONE, light brown, very soft, easily crumbled
4.0	113.0-117.0	SHALE, gray, hard
10.0	117.0-127.0	SILTSTONE, very dark gray, hard, very brittle
13.0	127.0-140.0	SHALE, dark gray, hard, layered with sandstone

WW Engineering & Science, Inc.
Environmental Services Division

Page: 1 of 1
Well/Boring No.: MW 91-1
Client: BOC Lansing
Project No.: 20682.01
Date:
Started: 8/2/91 Finished: 8/7/91

"Drift Well"

Well/Boring Log Sheet

County	Township	Fraction	Section	T	R
Ingham	Lansing	SE1/4	7	4N	2W

Contractor Stearns Drilling
Address: 6974 Hammond
Dutton, MI 49316
Equipment: CME 75
Crew Chief: Mike Hefferan
WW Supervisor: Don Johnson

Drilling Method(s) — **Depth**
6 1/4" ID HSA — 0.0-79.0'

Grouting/Seal Depth/To — Material/Method
See reverse MW #91-1

Water Level ____ Ft. Below ____

Location

Remarks No split spoons taken; "Visual" log of the subsurface.

ness	(feet) Depth to Base	LITHOLOGIC DESCRIPTION	Sample Depth	Blow Counts 6"	12"	18"	24"	PID/FID HNU (ppm) Response	Background
0.9	0.9	CONCRETE (cored)							
0.1	1.0	SAND, brown, fine to medium, and some fine to medium gravel							
3.5	4.5	CLAY, brown, dry							
2.5	7.0	CLAY, brown, sandy, dry, and some fine gravel							
3.5	10.5	CLAY, dark brown, sandy , medium-firm, dry with occasional fine gravel							
5.5	16.0	CLAY, gray, sandy, medium-firm, dry, and some fine gravel							
2.0	18.0	CLAY, gray, sandy, soft (modeling), and some fine gravel, moist							
17.0	35.0	SILT & SAND, gray, very fine to medium, wet							
7.0	42.0	SAND, gray, very fine to medium, dry to moist and trace clay, wet							
13.0	55.0	SAND, gray, very fine to coarse, wet							
15.0	70.0	SAND, gray, fine to coarse, and traces of gray clay, wet							
3.0	73.0	CLAY, gray, very sandy, soft, wet (sticky)							
3.0	76.0	SAND, gray, very fine to fine, and some silts, wet							
3.0	79.0	SANDSTONE (weathered), Bedrock	79.0-79.2'	100 for 2"				-	-
0.2	79.2	SHALE (weathered)							
		EOB @ 79.0'							

WW Engineering & Science

Project Name: BOC Lansing

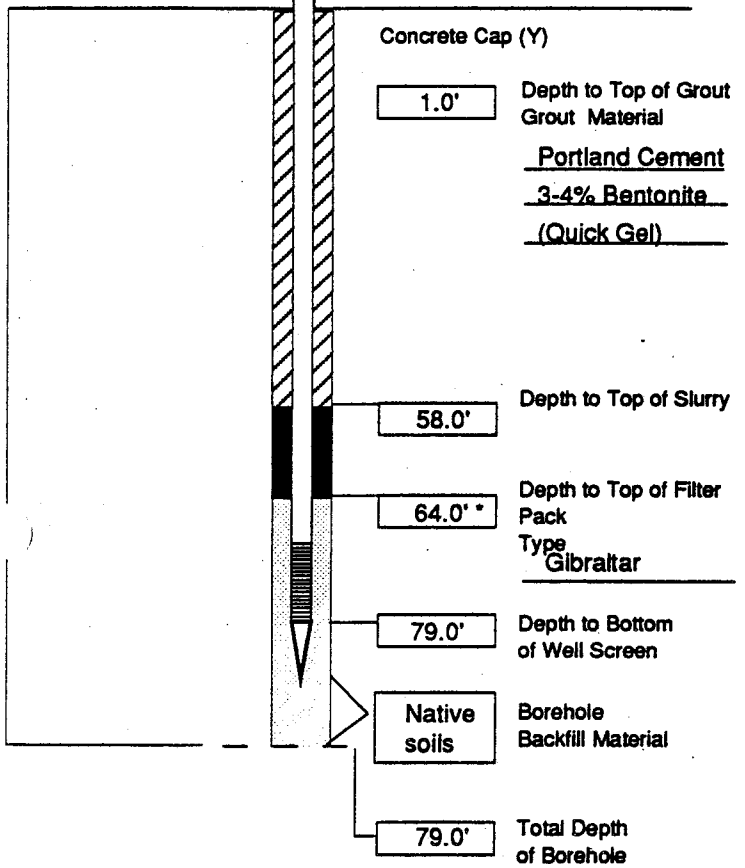
Project No: 20682.01

Log of Well Installation

Well Designation: MW 91-1

Date(s) of Installation: 8/7/91 To: 8/8/91

Generalized Subsurface Profile



Top of Casing Elevation: 100.385

Ground Surface Elevation: 100.65

Water Level Data

Date	Water Level Below TOC
8/30/91	57.46

Development : _____

Survey Reference: TOC @ MW-88-1
Assumed @ 99.73'

Well Casing

Diameter: 4"
Total Length: 68.5
Material: PVC
Cap Type: Locking J-Plug

Well Screen

Diameter: 4"
Length: 10'
Slot/Type: 10 Slot C.W.W.
Material: PVC

Protective Well Casing

Material: Steel Dia. 8"
Height Above Ground: Flush Mount
Lock Type: P-506

General Notes: 64.0' * = Possibly 3 to 4' of silt.

Figure

WW Engineering & Science, Inc.
Environmental Services Division

Page: 1 of 1
Well/Boring No.: MW 91-2
Client: BOC Lansing
Project No.: 20682.01
Date:
Started: 8/22/91 Finished: 8/23/91

"Drift Well"

Well/Boring Log Sheet

County	Township	Fraction	Section	T	R
Ingham	Lansing	SE1/4	7	4N	2W

Contractor Stearns Drilling
Address: 6974 Hammond
Dutton, MI 49316
Equipment: CME 550 (ATV)
Crew Chief: Bryan Marshall
WW Supervisor: Don Johnson

Drilling Method(s) — **Depth**
6 1/4" ID HSA — 0.0-80.0'

Grouting/Seal
Depth/To — Material/Method
See reverse

Water Level 62.0' Ft. Below Ground

Location

Remarks "Visual" log of soils. No split spoons taken - other than the Bedrock verification.

Thickness	(feet) Depth to Base	LITHOLOGIC DESCRIPTION	Blow Counts / Sample Depth	N/A 6"	PID/FID 12"	PID/FID 18"	PID/FID 24"	Response	Background
2.5	2.5	CONCRETE							
0.5	3.0	CLAY, gray, silty							
0.5	3.5	SAND, brownish-gray, fine to medium, and some fine gravel							
9.5	13.0	SAND, brown, fine to medium, and some fine gravel, dry							
2.5	15.5	SAND, brown, fine to medium, and occasional fine gravel, dry							
3.5	19.0	CLAY, brown, sandy, soft, and some fine gravel, dry							
0.2	19.2	CONCRETE							
5.8	25.0	CLAY, brown, sandy, and some fine gravel, dry							
5.0	30.0	SAND, brown, very fine to medium, and some silts, dry							
12.0	42.0	SAND, gray, very fine to medium, and some silts, dry							
14.0	56.0	SILT, gray, and some very fine to fine gray sand, wet							
6.0	62.0	CLAY, gray, sandy, soft, moist							
10.0	72.0	SILT, gray, and some fine sands, wet, and some fine gravel							
4.0	76.0	SANDSTONE (weathered), very hard but fractured, wet							
4.0	80.0	SANDSTONE and layers of weathered silty sandstone, dry							

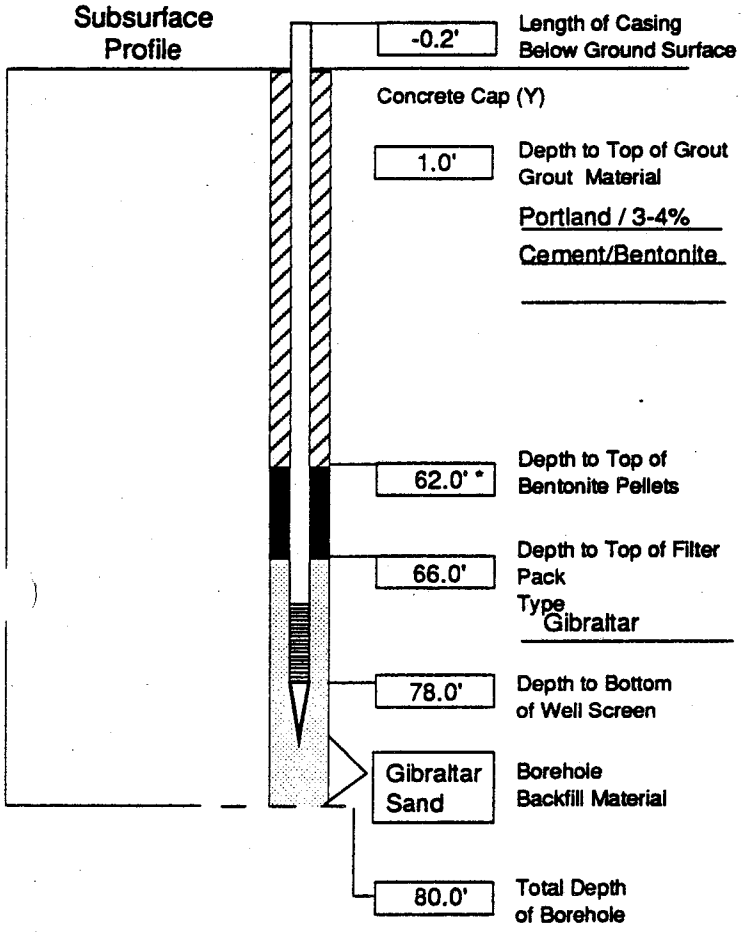
WW Engineering & Science

Project Name: BOC Lansing
Plant 3 Drift Well
Project No: 20682.01

Log of Well Installation

Well Designation: MW 91-2
Date(s) of Installation: 8/22/91 To: 8/23/91

Generalized Subsurface Profile



Top of Casing Elevation: 104.18

Ground Surface Elevation: 104.45

Water Level Data

Date	Water Level Below TOC
8/30/91	63.18'

Development :

Survey Reference: TOC @ MW-88-1
Assumed @ 99.73'

Well Casing
Diameter: 4"
Total Length: 68.0'
Material: PVC
Cap Type: Locking J-Plug

Well Screen
Diameter: 4"
Length: 10'
Slot/Type: 10 Slot C.W.W.
Material: PVC

Protective Well Casing
Material: Steel Dia. 8"
Height Above Ground: Flush Mount manhole
Lock Type: P-506

General Notes: During hole plug installation 1.0-1.5' of heave.

Figure

WW Engineering & Science, Inc.
Environmental Services Division

"Bedrock Well"

Well/Boring Log Sheet

Page: ____
Well/Boring No.: MW 91-3
Client: BOC Lansing
Project No.: 20682.01
Date: 7/22/91 7/24/91
Started: 3:00 pm Finished: 2:40 pm

County	Township	Fraction	Section	T	R
Ingham	Lansing	SE1/4	7	4N	2W

Contractor Stearns Drilling
Address: 6974 Hammond
Dutton, MI 49316
Equipment: CME 95
Crew Chief: Jim Gryska
WW Supervisor: Don Johnson

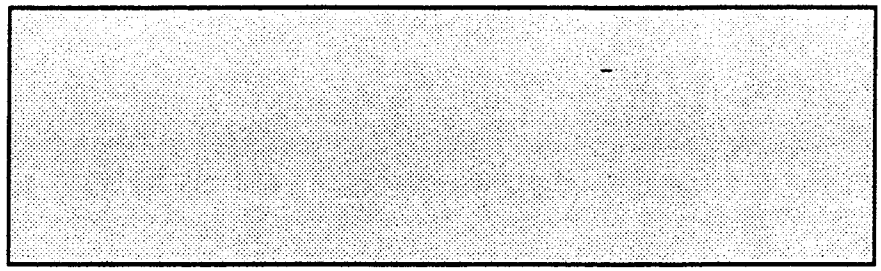
Drilling Method(s) **Depth**
7/22 4 1/4" ID HSA 0.0-104.0'
7/23 H20 Rotary (3 7/8" OD roller bit) 104.0-117.0'

Grouting/Seal

Depth/To	Material/Method
0.0-1.0'	Gravel-mix cement *
1.0-98.0'	Cement/Bentonite Grout
98.0-105.0'	Hole plug
105.0-117.0'	Open hole (Bedrock)

Water Level 50.0' Ft. Below Grade

Location



Remarks *Lithologic descriptions will be "generalized" due to drilling methods (I.E.: No split spooning)*.
*Protective casing 2'+ above grade.

Thickness	(feet) Depth to Base	LITHOLOGIC DESCRIPTION	Blow Counts Sample Depth	N/A 6"	PID/FID N/A 12"	18"	24"	Response	Background
0.4	0.4	GRASSES, topsoil							
1.6	2.0	SAND, brown, fine to coarse, and some fine to medium gravel, dry							
4.0	-	CLAY, brown, sandy, dry, and some fine to medium gravel, dry, and							
-	6.0	trace brown silt							
1.5	7.5	SAND, brown, very fine to medium, and some silts, damp							
4.5	12.0	CLAY, brown, sandy, medium-firm, dry, and some fine gravel							
2.0	14.0	CLAY, gray, sandy, firm, dry, and some fine to medium gravel							
6.0	20.0	SAND, brown, fine to medium, dry, and occasional coarse gravel							
11.0	31.0	CLAY, brown, silty and sandy, crumbles, and some fine gravel							
1.0	32.0	SAND, brown, fine to medium, and some fine to coarse gravel, dry							
18.0	50.0	SAND, gray, fine to coarse, and some fine gravel, dry							
12.0	62.0	SAND, gray, fine to meidum, and trace silts, dry							
6.0	68.0	SAND, gray, very fine to medium, and some silts, moist							
2.0	70.0	SAND, gray, fine to coarse, and some gravel, fine to coarse, wet							
12.0	82.0	SAND, gray, very fine to medium, and trace silts, wet							
15.0	97.0	SAND, gray, very fine to medium, clayey, damp to wet							
11.0	108.0	SANDSTONE, weathered (Bedrock), wet	104.0-104.1'	130					
5.0	113.0	BEDROCK (sandstone), and occasional layers of weathered shale							
	117.0	SHALE, black							
		EOB @ 117.0'							

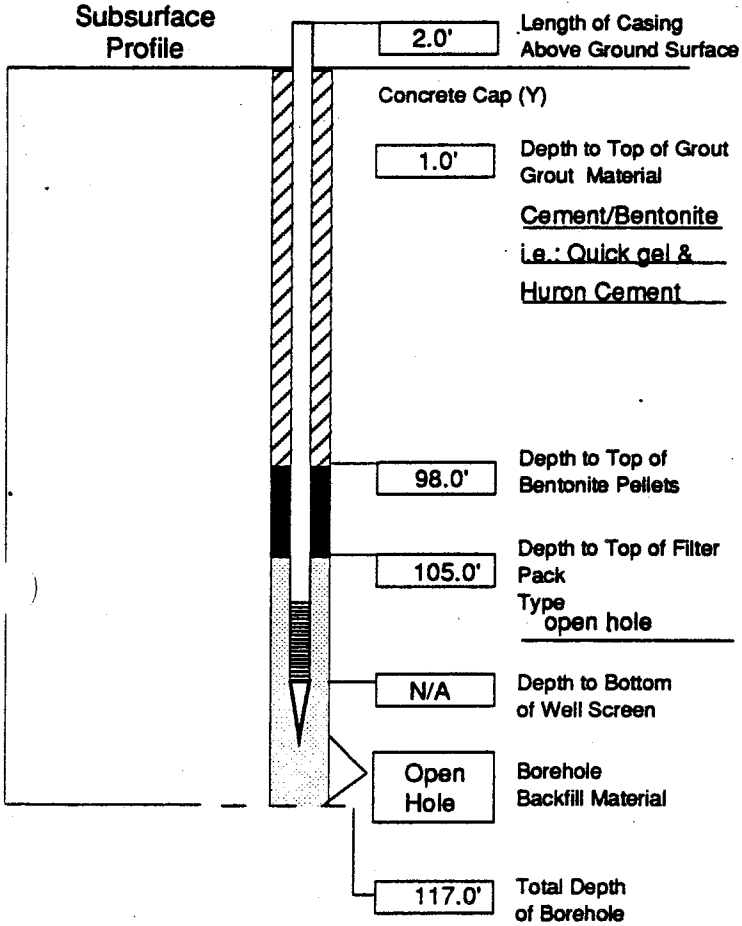
WW Engineering & Science

Project Name: BOC Lansing
Plant #3 - Bedrock well
Project No: 20682.01

Log of Well Installation

Well Designation: MW 91-3
Date(s) of Installation: 7/23/91 To: 7/24/91

Generalized Subsurface Profile



Top of Casing Elevation: 101.62

Ground Surface Elevation: 99.7

Water Level Data

Date	Water Level Below TOC
7/23/91	50.0'
8/30/91	67.20'

Development :

Survey Reference: TOC @ MW-88-1 (Assumed @ 99.73)

Well Casing
Diameter: 2"
Total Length: 107.0'
Material: PVC
Cap Type: PVC standard

Well Screen
Diameter: N/A
Length: 12'
Slot/Type: N/A
Material: Open hole (Bedrock)

Protective Well Casing
Material: Steel Dia. 4"
Height Above Ground: 2.0'
Lock Type: P-506

General Notes: Bedrock well has no screen attached to casing, only K-packers sealing off the drilled-out (over drilled) Bedrock.

* Grouting of well #91-3 started 7/24/91 at 9:00 am - completed 7/24/91 at 1:30 pm.

Figure

WW Engineering & Science, Inc.
Environmental Services Division

Page: 1 of 1
Well/Boring No.: MW 91-4
Client: BOC Lansing
Project No.: 20682.01
Date: 7/24/91 7/25/91
Started: 3:15 pm Finished: 11:10 am

"Bedrock Well"

Well/Boring Log Sheet

County	Township	Fraction	Section	T	R
Ingham	Lansing	SE1/4	7	4N	2W

Contractor Stearns Drilling
Address: 6974 Hammond
Dutton, MI 49316
Equipment: CME 95
Crew Chief: Jim Gryska
WW Supervisor: Don Johnson

Location

Drilling Method(s)	**Depth**
4 1/4" ID HSA	0.0-114.0'
H20 Rotary (3 7/8" roller bit)	114.0-132.0'

Grouting/Seal Depth/To	Material/Method
0.0-1.0'	*Gravel-mix cement *
1.0-111.0'	Cement/Bentonite Grout
111.0-116.0'	Hole plug (Bentonite)
116.0-132.5'	Open hole (Bedrock)

Remarks *Lithologic descriptions are "generalized" in depths due to drilling methods (I.E.: No split spooning)*.
**9" flush mount manhole with locking "J"-Plug - P-506 lock.

Water Level 60.0'+ Ft. Below Grade

ness	(feet) Depth to Base	LITHOLOGIC DESCRIPTION	Blow Counts Sample Depth	6"	12"	18"	24"	PID/FID Response	PID/FID Background
				N/A				N/A	
0.4	0.4	GRASSES, sand, brown, fine to medium, and some medium to coarse gravel							
3.1	3.5	CLAY, brown, sandy, and some fine to coarse gravel, dry							
9.0	12.5	CLAY, brown, sandy, and occasional fine to medium, gravel, dry							
5.5	18.0	SAND, brown, fine to medium, and trace brown clay, dry							
2.0	20.0	SAND, brown, very fine to medium, dry							
5.0	25.0	CLAY, brown, sandy, dry, and trace silts							
3.0	28.0	CLAY, brownish-gray, sandy, and some silts, moist							
4.0	32.0	SAND, brown, very fine to medium, and trace silt, dry							
13.0	45.0	SAND, brownish-gray, very fine to medium, dry, and some silts							
15.0	60.0	SAND, reddish-brown, fine to medium, dry							
35.0	95.0	SAND, reddish-brown, fine to coarse, wet, and some fine gravel							
8.0	-	SAND, brown, fine to coarse, and gravel, fine to coarse with occasional pieces							
-	103.0	of coal, wet	109.0-110.5'	29	15	9			
9.0	112.0	GRAVEL, fine to coarse, and sand, brown, fine to coarse, wet							
20.5	132.5	SANDSTONE, weathered (Bedrock), gray							
		EOB @ 132.5'							

WW Engineering & Science

Project Name: BOC Lansing
Plant #3 Bedrock Well
Project No: 20682.01

Log of Well Installation

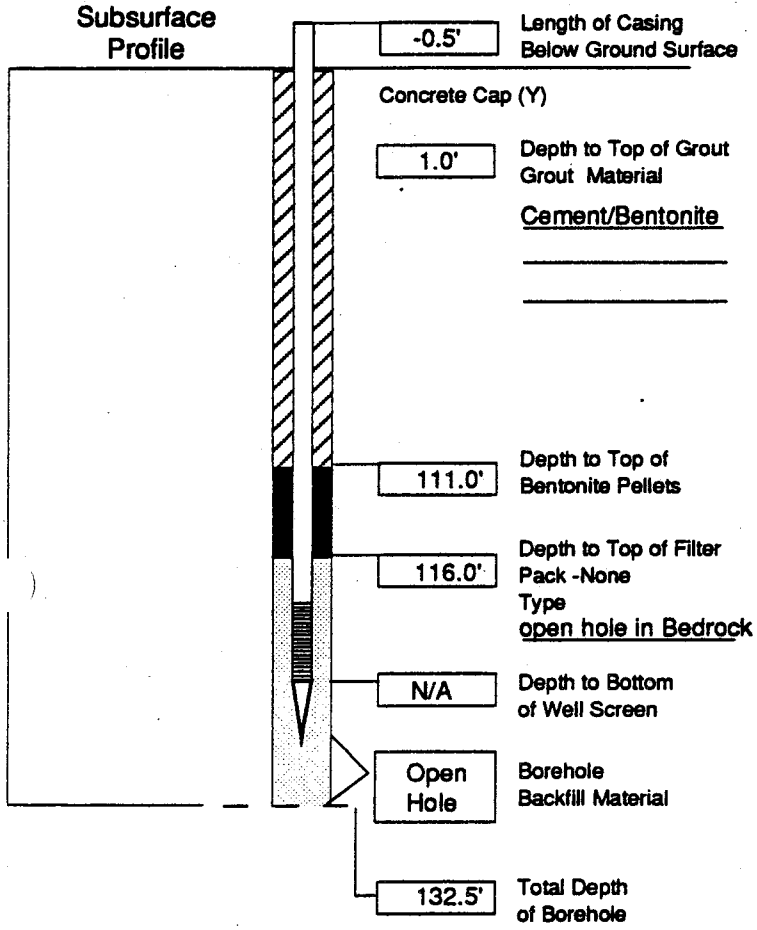
Well Designation: MW 91-4
Date(s) of Installation: 7/25/91 To: 7/25/91

Top of Casing Elevation: 96.45
Ground Surface Elevation: -

Water Level Data

Date	Water Level Below TOC

Generalized Subsurface Profile



Development : _____

Survey Reference: TOC @ MW-88-1
Assumed @ 99.73

Well Casing
Diameter: 2"
Total Length: 116.0'
Material: PVC
Cap Type: J-plug (locking)

Well Screen
Diameter: N/A
Length: N/A
Slot/Type: N/A
Material: N/A

Protective Well Casing
Material: Steel Dia. 9"
Height Above Ground: Flush mount
Lock Type: N/A

General Notes: No well screen used. K-packers attached to the bottom of the PVC casing at 116.0' depth - open hole in Bedrock is serving as screened area. Had to put hole plug inside the augers at a very slow rate as not to have it "Bridge". (2 bags hole plug)

45 bags of cement used to grout this well - 1 bag quick-gel.

This well was partially reconstructed on 9/11/91. An outer 6" diameter schedule 80 PVC casing was set from about 2' to 15' below ground. The original 2' diameter schedule 40 PVC casing was replaced with scheddule 80 PVC from 14' to ground surface.

Figure

WW Engineering & Science, Inc.
Environmental Services Division

"Bedrock Well"

Well/Boring Log Sheet

Page: ___ of ___
Well/Boring No.: MW 91-5
Client: BOC Lansing
Project No.: 20682.01
Date: 7/30/91 7/31/91
Started: 8:30 am Finished: 3:30 pm

County	Township	Fraction	Section	T	R
Ingham	Lansing	SE1/4	7	4N	2W

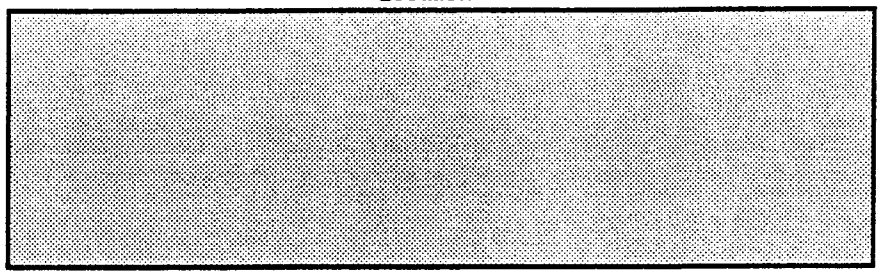
Contractor Steams Drilling
Address: 6974 Hammond
Dutton, MI 49316
Equipment: CME 75
Crew Chief: Mike Hefferan
WW Supervisor: Don Johnson

Drilling Method(s)	Depth
4 1/4" ID HSA	0.0-108.5'
H20 Rotary *	108.5-128.0'

Grouting/Seal Depth/To	Material/Method
0.0-1.0'	*Gravel-mix cement *
1.0-85.0'	Cement/Bentonite Grout
85.0-107.0'	Natural soils/cave-in
107.0-112.5'	Hole plug
112.5-128.0'	Open hole (Bedrock)

Water Level ~80.0' Ft. Below Grade

Location



Remarks *No drilling mud used - H20 only -
** 9" flush mount cap with locking J-plug (P-506 Lock)
Augers got stuck while attempting to pull back 2 augers and when finally broke free, dec ided to pull one extra auger (as they were still turning very hard). Thus causing cave-in above Bentonite seal.

ness	(feet) Depth to Base	LITHOLOGIC DESCRIPTION	Sample Depth	Blow Counts 6"	12"	18"	24"	PID/FID Response	Background
0.3	0.3	GRASSES, topsoil							
5.2	5.5	SAND, brown, fine to coarse, and some fine to medium gravel							
3.0	8.5	CLAY, brown, sandy, medium firm, dry, and occasional fine gravel							
4.5	13.0	CLAY, brownish-gray, sandy and gravelly, medium firm, dry							
13.0	26.0	CLAY, gray, sandy, medium firm, dry, and some fine gravel							
3.0	29.0	SAND, brown, fine to medium, and some fine gravel, dry							
4.0	33.0	SAND, brown, very fine to medium, and occasional coarse sands, dry							
7.0	40.0	SAND, brownish-gray, fine to medium, and some fine to medium gravel							
3.0	43.0	SAND, light brown, very fine to medium, dry with trace silts							
9.0	-	SAND, gray, very fine to medium, and some coarse sands, and trace gray silts,							
-	52.0	dry							
18.0	70.0	SAND, gray, very fine to silty, damp to wet							
37.0	107.0	SILT, gray, and some very fine to fine gray sands, wet	108.5-108.7'	100 for 2"					
21.0	128.0	BEDROCK, weathered sandstone, very hard							
		EOB @ 128.0'							

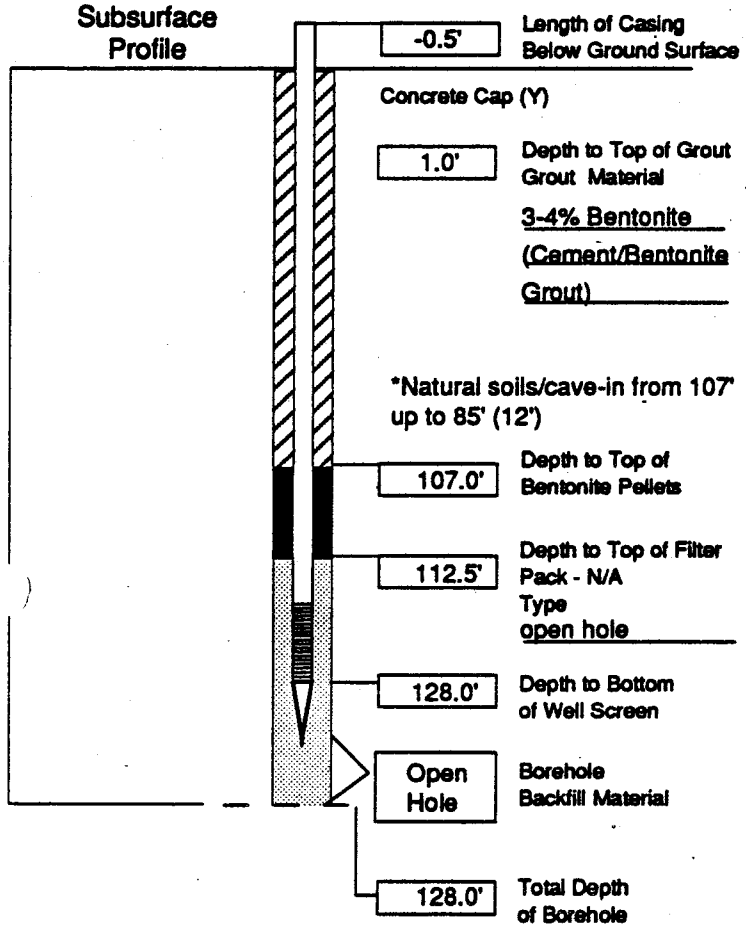
WW Engineering & Science

Project Name: BOC Lansing
Plant #3 Bedrock Well
Project No: 20682.01

Log of Well Installation

Well Designation: MW 91-5
Date(s) of Installation: 7/30/91 To: 7/31/91

Generalized Subsurface Profile



Top of Casing Elevation: 101.37

Ground Surface Elevation: 102.03

Water Level Data

Date	Water Level Below TOC
8/30/91	63.03'

Development :

Survey Reference: TOC @ MW-88-1 (Assumed @ 99.73)

Well Casing
Diameter: 2"
Total Length: 112.5'*
Material: PVC
Cap Type: J-plug (locking)

Well Screen
Diameter: N/A ** (3 7/8" openhole)
Length: N/A
Slot/Type: N/A
Material: N/A (openhole)

Protective Well Casing
Material: Steel Dia. 9"
Height Above Ground: Flush mount manhole
Lock Type: P-506 (J-Plug)

General Notes: *112.5' total casing with K-Packers
**Open hole in Bedrock served as screened area

Figure

MW Engineering & Science, Inc.
Environmental Services Division

Page: 1 of 1
Well/Boring No.: MW 91-6
Client: BOC Lansing
Project No.: 20682.01
Date: 7/31/91 8/2/91
Started: 4:40 pm Finished:

"Bedrock Well"

Well/Boring Log Sheet

County	Township	Fraction	Section	T	R
Ingham	Lansing	SE1/4	7	4N	2W

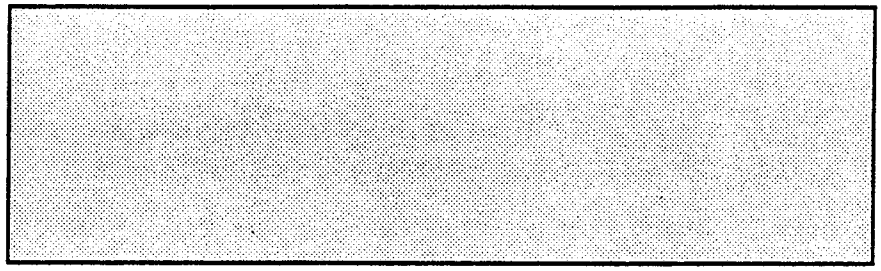
Contractor Stearns Drilling
Address: 6974 Hammond
Dutton, MI 49316
Equipment: CME 75
Crew Chief: Mike Hefferan
WW Supervisor: Don Johnson

Drilling Method(s)	Depth
4 1/4" ID HSA	0.0-78.0'
H20 Rotary 3 7/8" Roller Bit	78.0-98.0'

Grouting/Seal Depth/To	Material/Method
0.0-1.0'	Gravel-mix cement**
1.0-77.0'	Cement/Bentonite Grout
77.0-82.0'	Hole plug
82.0-98.50'	Open hole (Bedrock)

Water Level _____ Ft. Below _____

Location



Remarks * Shale lencountered left a slight sheen on water in the mud tub.
** 9" flush mount manhole.

Thickness	(feet) Depth to Base	LITHOLOGIC DESCRIPTION	Sample Depth	Blow Counts 6"	12"	18"	24"	PID/FID Response	Background
0.5	0.5	ASPHALT							
1.5	2.0	SAND, dark gray, and gravel, medium to coarse with some large stones							
2.0	4.0	GRAVEL, coarse, and some sand, dark gray, medium to coarse, dry							
3.5	7.5	SAND, black, medium to coarse, and occasional pieces of wood							
4.5	12.0	PEAT, black, soft							
9.0	21.0	CLAY, gray, sandy, and some fine gravel, soft, dry							
2.5	23.5	SAND, very fine to medium, and traces of silt and very soft clay, wet							
9.0	32.5	SAND, gray, sandy, and some fine gravel, moist, soft							
13.5	46.0	SAND, gray, very fine to fine, and some gray silt, dry							
17.0	63.0	SAND, brownish-gray, very fine to medium, and trace silts, dry							
10.0	73.0	GRAVEL, fine to coarse, and sand, fine to coarse, and some silts, wet							
4.0	77.0	SANDSTONE, weathered (Bedrock) *							
13.0	90.0	SANDSTONE - Bedrock	78.5-79.0	100 for 4"					
8.0	98.0	BEDROCK and layers of shale (weathered)*							
		EOB @ 98.0'							

WW Engineering & Science

Project Name: BOC Lansing Plant #3 Bedrock Well

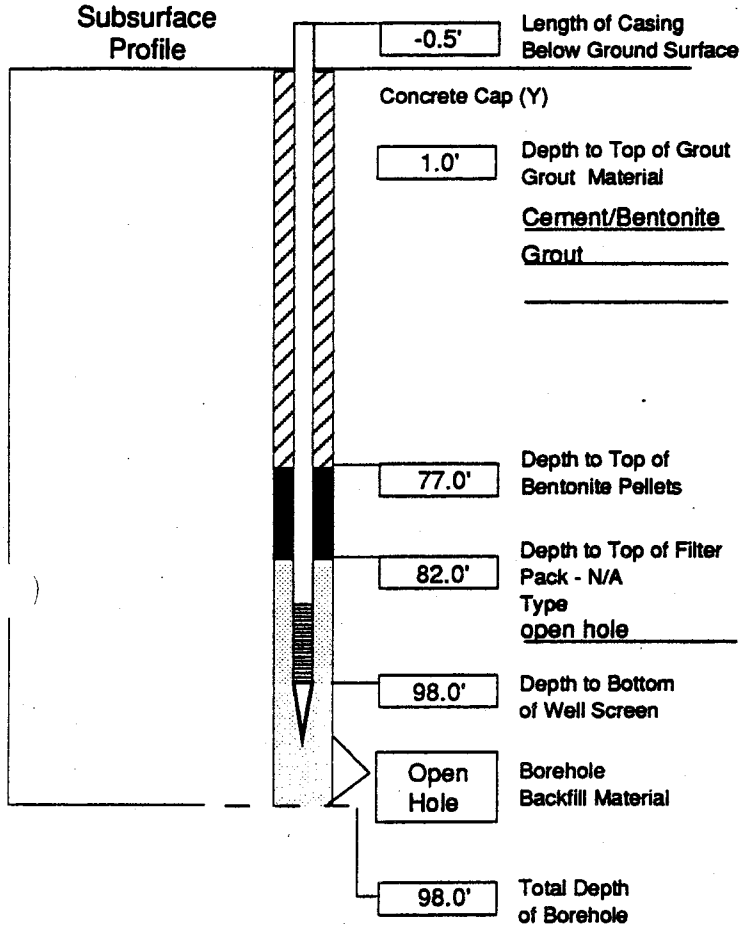
Project No: 20682.01

Log of Well Installation

Well Designation: MW 91-6

Date(s) of Installation: 8/1/91 To: 8/1/91

Generalized Subsurface Profile



Top of Casing Elevation: 92.52

Ground Surface Elevation: 92.89

Water Level Data

Date	Water Level Below TOC
8/30/91	59.81'

Development :

Survey Reference: TOC @ MW-88-1 (Assumed @ 99.73)

Well Casing

Diameter: 2"
Total Length: 82.0' *
Material: PVC
Cap Type: J-plug (locking)

Well Screen

Diameter: N/A **
Length: 16.0'
Slot/Type: N/A (open hole)
Material: J-plug (Bedrock)

Protective Well Casing

Material: Steel Dia. 9"
Height Above Ground: Flush mount manhole
Lock Type: P-506 (J-Plug)

General Notes:

* 82.0' total casing with K-packers

** Open hole in bedrock serves as screen area

Figure

URS CONSULTANTS, Inc.

TEST BORING LOG
BORING NO. **MW-93-1**

PROJECT: GM-Lansing, Plating Area, Plant 3	SHEET NO. 1 OF 2
CLIENT: GM-LAD	JOB NO. : 0535349.30
BORING CONTRACTOR: Geo Tek, Inc.	GROUND ELEVATION 863.65
GROUND WATER:	DATE STARTED: 10/15/93
DATE TIME LEV TYPE	DATE FINISHED: 10/18/93
	DRILLER: Peter Buell
	GEOLOGIST: Kovacs/Frazier (URS)
	REVIEWED BY:

	CAS.	SAMP.	CORE	TUBE
TYPE	HSA	SS	CME	
DIA.	4-1/4"	2"	3.5"	
WT.		140#		
FALL		30"		

* POCKET PENETROMETER READING

DEPTH FT	STRATA	SAMPLE NO.	SAMPLE TYPE	BLOWS PER 6"	RECOVERY RQD %	DESCRIPTION COLOR	CONSISTENCY HARDNESS	MATERIAL DESCRIPTION	CLASS USCS	REMARKS
1										topsoil
		S-1	CME		100	light brown		CLAYEY SILT/SILTY CLAY, trace Sand and Gravel	ML/CL	moist
5						brown				wet
		S-2	CME		100					
10										
		S-3	CME		100			SILTY SAND, trace Clay and Gravel	SM	
15										
		S-4	CME		100	gray		SILTY CLAY, trace Gravel	CL	
20										
		S-5	CME		100					
25						brown		SANDY SILT, trace Gravel and Clay	ML	moist
		S-6	CME		80					
30						gray & brown		alternating 2-12" layers of Clay, Silt and Sand	CL/ ML/ SM/SP	
		S-7	CME		100					
35										
		S-8	CME		100					
38										

COMMENTS Boring advanced with CME-750 drill rig and 4-1/4"I.D. hollow stem auger. 5 ft. continuous tube sampling 0-40 ft., standard split spoon sampling 40-77ft.

PROJECT NO. 0535349.30
BORING NO. MW-93-1

URS CONSULTANTS, Inc.

TEST BORING LOG
BORING NO. **MW-93-1**

PROJECT: GM-Lansing, Plating Area, Plant 3
SHEET NO. 2 OF 2
CLIENT: GM-LAD
JOB NO. : 0535349.30

DEPTH FT	STRATA	SAMPLE NO.	SAMPLE TYPE	BLOWS PER 6"		RECOVERY RQD %	DESCRIPTION COLOR	CONSISTENCY HARDNESS	MATERIAL DESCRIPTION	CLASS USCS	REMARKS
		S-8	CME			100			alternating 2-12" layers of Clay,	CL/	moist
40									Silt and Sand	ML/	
										SM/SP	
45											
		S-9	SS	7	15	75	gray				
				19	22						
50											
		S-10	SS	6	8	75					
				16	20						
55											
		S-11	SS	15	16	100			SANDY SILT/SILTY SAND		dry
				32	22						
60											
		S-12	SS	5	10	75					wet
				12	15						
65											
		S-13	SS	4	8	100					dry
				12	19						
70											
		S-14	SS	5	9	100					wet
				13	15						
75											
		S-15	SS	5	9	60					
				14	12						
80											

COMMENTS 2 inch PVC monitoring well installed in borehole. Screen interval 65-75 ft.

PROJECT NO. 0535349.30
BORING NO. MW-93-1

DRILLING SUMMARY

Geologist:
Michael Kovacs

Drilling Contractor:
Geo Tek

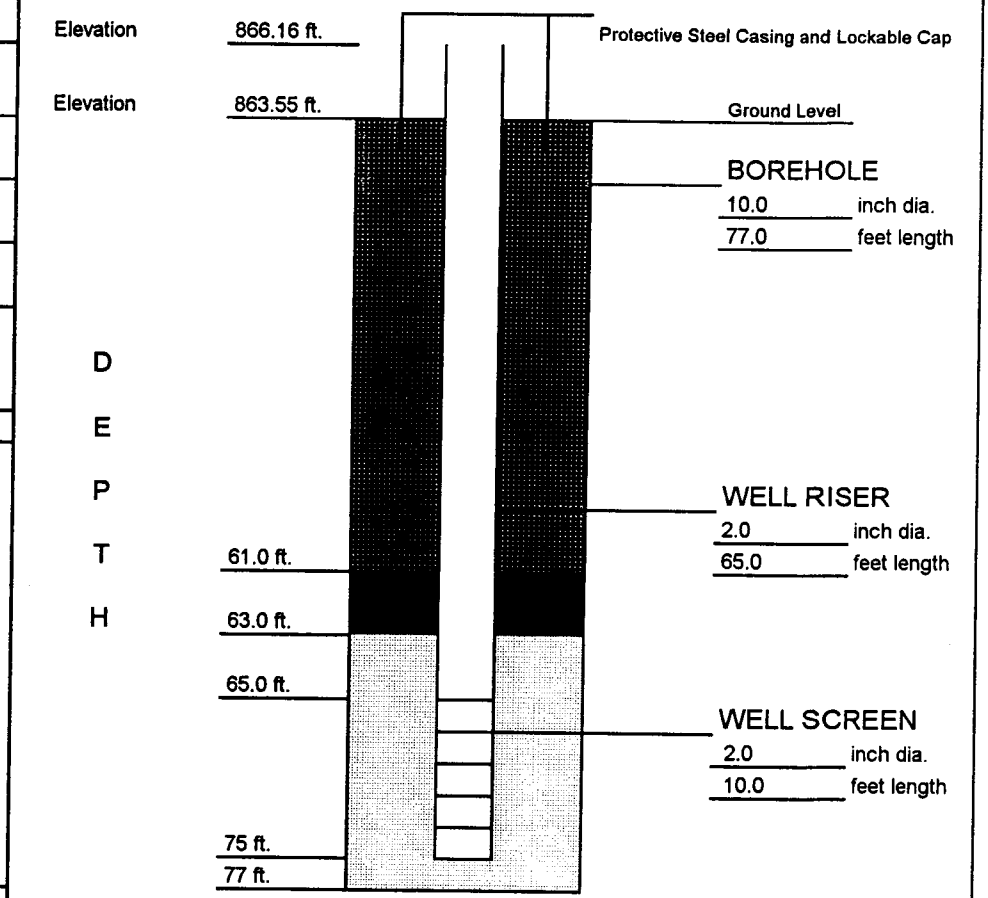
Driller:
Gary Qualls/Pete Buell

Date:
10/18/93

GEOLOGIC LOG

depth(ft.)	lithology
0 - 1'	Topsoil
1' - 25'	Silty Clay
25'-32'	Fine Sand
32'-77'	Silty Sand and Silt

WELL DESIGN



CASING MATERIAL

Surface: Steel Pipe

Monitor: Schedule 40 PVC

SCREEN MATERIAL

Type: Schedule 40 PVC

Slot Size: .010 inch

SEAL MATERIAL

Seal Type #1: Bentonite Slurry
Setting:

Seal Type #2: None
Setting:

FILTER MATERIAL

Type: #5 Sand

Setting: 63.0'-77.0'

ROCK CORING

Cored Interval: None

Core Diameter: None

Reamed Diameter: None

LEGEND

- Cement/Bentonite Grout
- Bentonite Seal
- Silica Sandpack

Client: General Motors Corp.	Project: GM Lansing - Plant 3	Project No.: 0535349.30
URS Consultants, Inc.	Monitoring Well Construction Details	Well Number: MW-93-1

URS CONSULTANTS, Inc.

TEST BORING LOG
BORING NO. MW-93-2

PROJECT: GM-Lansing, Plating Area, Plant 3
CLIENT: GM-LAD
BORING CONTRACTOR: Geo Tek, Inc.
SHEET NO. 1 OF 2
JOB NO. : 0535349.30
GROUND ELEVATION 863.99
DATE STARTED: 10/30/93
DATE FINISHED: 10/30/93
DRILLER: Gary Qualls
GEOLOGIST: Mike Kovacs (EMI)
REVIEWED BY:

GROUND WATER:					CAS.	SAMP.	CORE	TUBE
DATE	TIME	LEV	TYPE	TYPE	HSA	SS	CME	
				DIA.	4-1/4"	2"	3.5"	
				WT.		140#		
				FALL		30"		

* POCKET PENETROMETER READING

DEPTH FT	STRATA	SAMPLE NO.	SAMPLE TYPE	BLOWS PER 6"	RECOVERY RQD %	DESCRIPTION COLOR	CONSISTENCY HARDNESS	MATERIAL DESCRIPTION	CLASS USCS	REMARKS
1		S-1	CME			light brown brown		Concrete SANDY SILT. trace Clay, trace Gravel	ML	moist
5		S-2	CME		20	gray		SANDY SILT, some Gravel	ML	
10		S-3	CME		100			SANDY SILT, trace Gravel, trace Clay . . . interbedded Sand lenses	ML	
15		S-4	CME		100			SILTY CLAY, little fine Sand, trace Gravel	CL	
20		S-5	CME		100			. . . grade to SANDY CLAY		
25		S-6	CME		80			SILTY SAND	SM	
30		S-7	CME		80			SANDY SILT, some Clay, trace Gravel . . . lens medium SAND	ML	wet
35		S-8	CME		90			alternating layers of SAND, SILTY SAND and SANDY SILT	CL/ ML/ SM/SP	dry
38										

COMMENTS Boring advanced with CME-750 drill rig and 4-1/4"I.D. hollow stem auger. 5 ft. continuous tube sampling 0-40 ft., standard split spoon sampling 40-77ft.

PROJECT NO. 0535349.30
BORING NO. MW-93-1

URS CONSULTANTS, Inc.

TEST BORING LOG
BORING NO. **MW-93-2**

PROJECT: GM-Lansing, Plating Area, Plant 3
CLIENT: GM-LAD

SHEET NO. 2 OF 2
JOB NO. : 0535349.30

DEPTH FT	STRATA	SAMPLE NO.	SAMPLE TYPE	BLOWS PER 6"		RECOVERY RQD %	DESCRIPTION COLOR	CONSISTENCY HARDNESS	MATERIAL DESCRIPTION	CLASS USCS	REMARKS
		S-8	CME								
40									alternating layers of SAND, SILTY SAND and SANDY SILT		
45		S-9	SS	9	15	75	gray				
				17	18						
50		S-10	SS	5	8	75					moist
				10	10						
55		S-11	SS	11	17	90					
				19	20						
60		S-12	SS	10	13	90					
				13	25						
65		S-13	SS	6	8	100					
				12	20						
70		S-14	SS	4	6	100			. . . lens SILTY CLAY		
				7	10						
75		S-15	SS	6	4	100					
				7	11						
80											

COMMENTS 2 inch PVC monitoring well installed in borehole. Screen interval 65-75 ft.

PROJECT NO. 0535349.30
BORING NO. MW-93-1

DRILLING SUMMARY

Geologist: Michael Kovacs

Drilling Contractor: Geo Tek

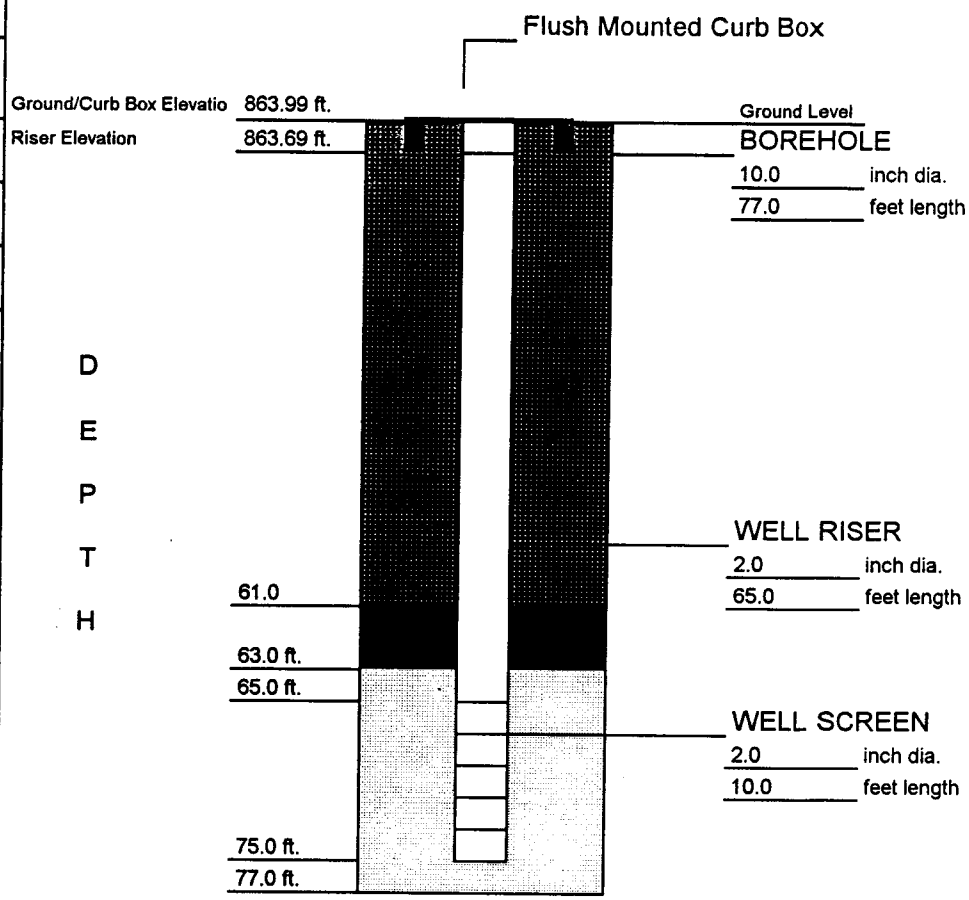
Driller: Gary Qualls

Date: 10/31/93

GEOLOGIC LOG

depth(ft.)	lithology
0'-1'	Concrete
1'-14'	Sandy Silt
14'-19'	Silty Clay
19'-77'	Silty Sand and Silt

WELL DESIGN



CASING MATERIAL

Surface: Steel Flush Mount

Monitor: Schedule 40 PVC

SCREEN MATERIAL

Type: Schedule 40 PVC

Slot Size: 0.01 inch

SEAL MATERIAL

Seal Type #1: Bentonite Slurry

Seal Type #2: None

Setting:

FILTER MATERIAL

Type: #5 Sand

Setting: 63.0-77.0 ft.

ROCK CORING

Cored Interval: None

Core Diameter: None

Reamed Diameter: None

LEGEND

Cement/Bentonite Grout

Bentonite Seal

Silica Sandpack

Client: General Motors Corp.	Project: GM Lansing -Plant 3	Project No.: 0535349.30
URS Consultants, Inc.	Monitoring Well Construction Details	Well Number: MW-93-2

URS CONSULTANTS, Inc.

TEST BORING LOG
BORING NO. **MW-93-3**

PROJECT: GM-Lansing, Plating Area
CLIENT: GM-LAD
BORING CONTRACTOR: Geo Tek, Inc.
SHEET NO. 1 OF 2
JOB NO. : 0535349.30
GROUND ELEVATION 864.02
DATE STARTED: 10/31/93
DATE FINISHED: 10/31/93
DRILLER: Gary Qualls
GEOLOGIST: Mike Kovacs (EMI)
REVIEWED BY:

GROUND WATER:					CAS.	SAMP.	CORE	TUBE
DATE	TIME	LEV	TYPE	TYPE	HSA	SS	CME	
				DIA.	4-1/4"	2"	3.5"	
				WT.		140#		
				FALL		30"		

* POCKET PENETROMETER READING

DEPTH FT	STRATA	SAMPLE NO.	SAMPLE TYPE	BLOWS PER 6"	RECOVERY RQD %	DESCRIPTION COLOR	CONSISTENCY HARDNESS	MATERIAL DESCRIPTION	CLASS USCS	REMARKS
1								Concrete		
		S-1	CME		80	brown to gray		SANDY SILT. trace Clay, trace Gravel . . . lens SANDY CLAY	Fill	most to dry
5		S-2	CME		100					dry
10		S-3	CME		80			CLAY, little fine Sand, trace Gravel		moist, petroleum odor no petroleum odor
15		S-4	CME		100					dry
20		S-5	CME		80					
25		S-6	CME		60			alternating layers of SAND, SILTY SAND and CLAYEY SILT		very moist dry
30		S-7	CME		80					
35		S-8	CME		100					moist
38										

COMMENTS Boring advanced with CME-750 drill rig and 4-1/4"I.D. hollow stem auger. 5 ft. continuous tube sampling 0-40 ft., standard split spoon sampling 40-77ft.

PROJECT NO. 0535349.30
BORING NO. MW-93-3

URS CONSULTANTS, Inc.

TEST BORING LOG
BORING NO. **MW-93-3**

PROJECT: GM-Lansing, Plating Area, Plant 3
SHEET NO. 2 OF 2
CLIENT: GM-LAD
JOB NO. : 0535349.30

DEPTH FT	STRATA	SAMPLE NO.	SAMPLE TYPE	BLOWS PER 6"		RECOVERY RQD %	DESCRIPTION COLOR	CONSISTENCY HARDNESS	MATERIAL DESCRIPTION	CLASS USCS	REMARKS
		S-8	CME			100					moist
40											
											dry
									alternating layers of SAND,		
									SILTY SAND and CLAYEY SILT		
45											
		S-9	SS	5	15	75	gray				wet
				24	28						moist
50											
		S-10	SS	7	10	100					
				15	18						
55											
		S-11	SS	10	17	100					
				22	17						
60											
		S-12	SS	9	23	75					dry
				36	25						
65											
		S-13	SS	13	18	100					very wet
				25	21						
70											
		S-14	SS	10	14	100			. . . lens CLAY, little fine Sand		
				16	22						
75											
		S-15	SS	9	16	75					
				16	24						
80											

COMMENTS 2 inch PVC monitoring well installed in borehole. Screen interval 65-75 ft.

PROJECT NO. 0535349.30
BORING NO. MW-93-3

DRILLING SUMMARY

Geologist: Michael Kovacs

Drilling Contractor: Geo Tek

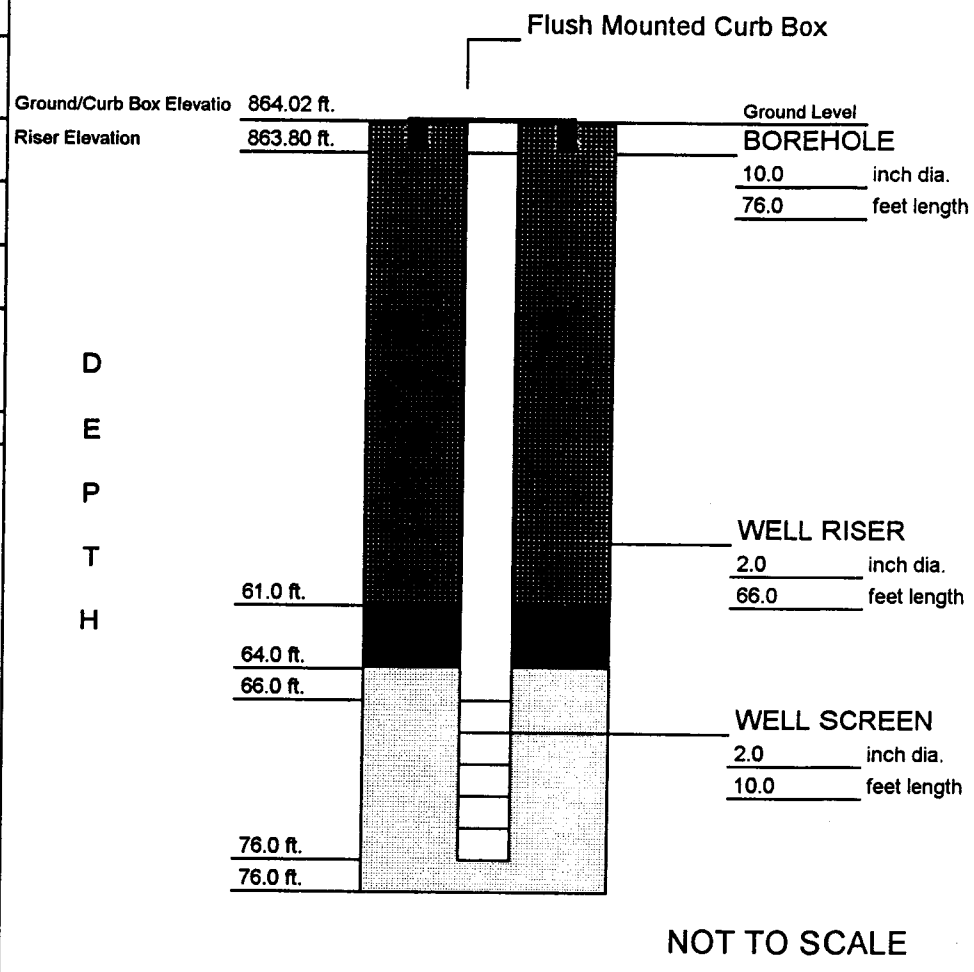
Driller: Gary Qualls

Date: 10/31/93

GEOLOGIC LOG

depth(ft.)	lithology
0'-1'	Concrete
1'-14'	Sandy Silt
14'-19'	Silty Clay
19'-76'	Silty Sand and Silt

WELL DESIGN



CASING MATERIAL

Surface: Steel Flush Mount

Monitor: Schedule 40 PVC

SCREEN MATERIAL

Type: Schedule 40 PVC

Slot Size: 0.01 inch

SEAL MATERIAL

Seal Type #1: Bentonite Pellets
Setting:

Seal Type #2: None
Setting:

FILTER MATERIAL

Type: #5 Sand

Setting: 64.0-76.0 ft.

ROCK CORING

Cored Interval: None

Core Diameter: None

Reamed Diameter: None

LEGEND

- Cement/Bentonite Grout
- Bentonite Seal
- Silica Sandpack

Client: General Motors Corp.	Project: GM Lansing -Plant 3	Project No.: 0535349.30
URS Consultants, Inc.	Monitoring Well Construction Details	Well Number: MW-93-3

Date Start/Finish: 10/21/02 - 10/22/02
Drilling Company: Toltest
Driller's Name: Jay Leonard
Drilling Method: Hollow-Stem Auger
Bit Size:
Auger Size: 4.25"
Rig Type: CME-75
Sampling Method: 2' Split Spoon

Northing: 5799.51
Easting: 3868.12
Casing Elevation: 865.71

Borehole Depth: 70' below grade
Surface Elevation: 863.47

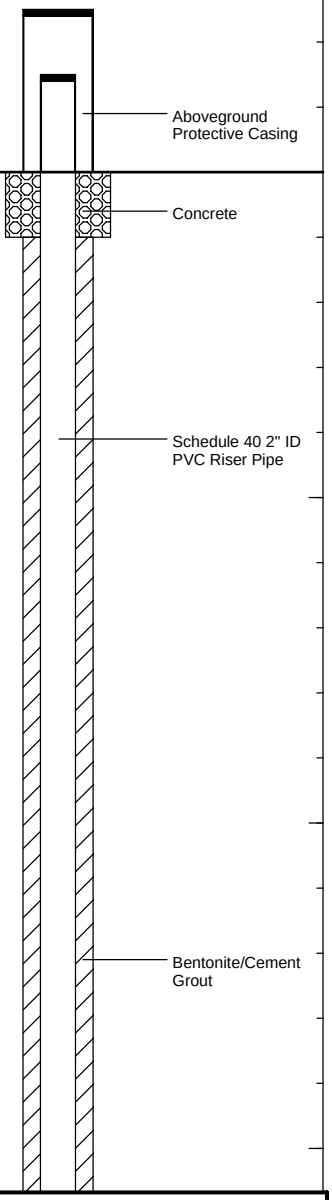
Geologist: J. Kralik

Well/Boring ID: MW02-01

Client: General Motors Corporation

Location: Lansing Plant #3
Lansing, Michigan

DEPTH	ELEVATION	Sample Run Number	Sample/Int/Type	Recovery (feet)	Blows / 6 Inches	N - Value	PID Headspace (ppm)	Analytical Sample	Geologic Column	Stratigraphic Description	Hydrostratigraphy
	865										
0		1	SS	1.5			0			Medium brown TOPSOIL, some sand and fine gravel, some light brownish gray (5 YR 6/1) fine sand and silt, trace cobble, medium dense.	Topsoil
	860	2	SS	1.0			0			Moderate yellow-brown (10 YR 5/4) SANDY SILTY CLAY (CL), fine to medium sand, trace silt and coarse sand, trace to little fine gravel, damp, very stiff/medium dense.	Sandy Silty Clay
5		3	SS	2.0			0			Little coarse sand and fine gravel, trace silt, damp, stiff/medium dense.	
		4	SS	2.0			0			Little coarse sand and fine gravel, trace to little silt, damp, hard/dense.	
	855	5	SS	2.0			0			Pale brown (5 YR 5/2) SANDY SILTY CLAY (CL), fine to medium sand, trace to little fine subangular to subrounded gravel, little silt, damp, very stiff/medium dense.	
10		6	SS	2.0			0			Brownish gray (5 YR 4/1) SANDY SILT (ML), fine to medium sand, trace clay and fine gravel/coarse sand, damp, medium dense.	Sandy Silt
		7	SS	2.0			0			Moderate brown (5 YR 4/4) SANDY SILT (ML), fine to medium sand, little fine to medium gravel, little clay, damp, medium dense. Rusty brown and orange medium to coarse sand at 13.2' bgs.	
	850										
15		8	SS	2.0			0				



ARCADIS BBL
Infrastructure, environment, facilities

Remarks:

Client:
General Motors Corporation

Site Location:
Lansing Plant #3
Lansing, Michigan

Well/Boring ID: MW02-01

Borehole Depth: 70' below grade

DEPTH / ELEVATION	Sample Run Number	Sample/Int/Type	Recovery (feet)	Blows / 6 Inches	N - Value	PID Headspace (ppm)	Analytical Sample	Geologic Column	Stratigraphic Description	Hydrostratigraphy	Well/Boring Construction
									Grayish orange (10 YR 7/4) SAND (SP), fine to medium grained, damp, medium dense.	Sand	
	9	SS	1.0			0			Moderate yellow-brown (10 YR 5/4) SILT (MH), trace fine to medium sand, damp, very dense, laminar bedding present.	Silt	
845	10	SS	1.5			0			Slight orange tint present, very dense.		
20	11	SS	2.0			0			Layer of sandy silt at 21.5-21.7' bgs, medium dense. Moist. Moist to wet.		
840	12	SS	2.0			0			Brownish gray (5 YR 4/1) GRAVELLY CLAY (GC), fine to medium rounded to subrounded gravel, some fine to medium sand and silt, moist to wet, hard.	Gravelly Clay	Schedule 40 2" ID PVC Riser Pipe
25	13	SS	5"			0			Brownish gray (5 YR 4/1) GRAVELLY CLAY (GC) AND SILT (MH), moist to wet, auger refusal at 23.8' bgs due to glacial cobble. Offset directly south off first attempt and redrill.		
	14	SS	2.0			0			Medium gray (N50) SANDY SILT (ML), fine to medium sand, some coarse sand, trace fine gravel, damp to moist, loose, medium brown sandy soil horizon at 26.5' bgs, fine to coarse grained, plant debris present, damp.	Sandy Silt	
835	15	SS	2.0			0			Light gray (N70) SAND (SP), very fine to fine grained, trace silt, damp, medium dense.	Sand	Bentonite/Cement Grout
30	16	SS	2.0			0			Dense.		
	17	SS	2.0			0			Light brownish gray (5 YR 6/1) SANDY SILT (ML), fine to medium sand, damp, loose.	Sandy Silt	
830									Light brown (5 YR 5/6) SILT (MH), trace clay, damp, loose, plant debris present.		
									Light brownish gray (5 YR 6/1) SANDY SILT (ML), fine to medium sand, damp, loose.		
									Brownish gray (5 YR 4/1) SILT (MH), moist to wet, medium dense.	Silt	
35	18	SS	2.0			0			Light brown (5 YR 5/6) SILT (MH), damp.		
									Brownish gray (5 YR 4/1) SILT (MH), moist to wet, medium dense.		

Remarks:

ARCADIS BBL
Infrastructure, environment, facilities

Client:
General Motors Corporation

Site Location:
Lansing Plant #3
Lansing, Michigan

Well/Boring ID: MW02-01

Borehole Depth: 70' below grade

DEPTH / ELEVATION	Sample Run Number	Sample/Int/Type	Recovery (feet)	Blows / 6 Inches	N - Value	PID Headspace (ppm)	Analytical Sample	Geologic Column	Stratigraphic Description	Hydrostratigraphy	Well/Boring Construction
									Brownish gray (5 YR 4/1) SILT (MH), moist to wet, medium dense.		
	19	SS	2.0			0			Light gray (N70) SAND (SP), very fine to fine grained, trace silt, damp, dense. Wet brownish gray silt from 38 to 38.25' bgs.		
825	20	SS	2.0			0					
40	21	SS	2.0			0			Dense.		Bentonite/Cement Grout
	22	SS	2.0			0			Very dense.	Sand	
820	23	SS	2.0			0					Schedule 40 2" ID PVC Riser Pipe
45	24	SS	2.0			0					
815	25	SS	2.0			0			Brownish gray (5 YR 4/1) SILT (MH), moist to wet, medium dense.	Silt	
50	26	SS	2.0			0			Brownish gray (5 YR 4/1) SAND (SP), very fine to fine grained, some clay, little silt, damp to moist, medium dense. Sandstone fragment at 50.5' bgs, becomes fine to medium grained at 50.5' bgs, medium dense.		
810	27	SS	2.0			0			Fine to medium grained, little coarse sand, trace fine gravel, dense, becoming wet.		
55									Some coarse sand, little fine gravel, trace medium gravel, subrounded to subangular sandstone and coal fragments present.		

ARCADIS BBL
Infrastructure, environment, facilities

Remarks:

Client:
General Motors Corporation

Site Location:
Lansing Plant #3
Lansing, Michigan

Well/Boring ID: MW02-01

Borehole Depth: 70' below grade

DEPTH / ELEVATION	Sample Run Number	Sample/Int/Type	Recovery (feet)	Blows / 6 Inches	N - Value	PID Headspace (ppm)	Analytical Sample	Geologic Column	Stratigraphic Description	Hydrostratigraphy	Well/Boring Construction
	28	SS	2.0			0					Bentonite Chip (Hydrated)
	29	SS	2.0			0			Brownish gray (5 YR 4/1) SAND (SW), fine to medium grained, some silt, little coarse sand and fine subrounded gravel, trace sandstone fragments, very dense, moist to wet.		Bentonite Chip (Hydrated)
805	30	SS	2.0			0			Brownish gray (5 YR 4/1) SAND (SW), fine to medium grained, some fine subangular to subrounded gravel, little coarse sand and silt, moist to wet, very dense.	Sand	Schedule 40 2" ID PVC Riser Pipe
60	31	SS	2.0			0			Moist to wet.		Filter Sand
	32	SS	2.0			0			Moist to wet.		
800	33	SS	2.0			0			Wet to saturated.		
65	34	SS	2.0			0			Shale fragments in tip.		0.010" Machine Slotted 2" ID Schedule 40 Well Screen
795	35	SS	2.0			0			Brownish gray (5 YR 4/1) to medium dark gray (N40) CLAY (CL), trace to little fine to medium sand, shale fragments present, damp.		
70									Medium dark gray SHALE (weathered), damp.	Shale	
790											

ARCADIS BBL
Infrastructure, environment, facilities

Remarks:

Date Start/Finish: 10/23/02 - 10/24/02
Drilling Company: Toltest
Driller's Name: Jay Leonard
Drilling Method: Hollow-Stem Auger
Bit Size:
Auger Size: 4.25"
Rig Type: CME-75
Sampling Method: 2' Split Spoon

Northing: 6676.89
Easting: 3006.62
Casing Elevation: 863.04

Borehole Depth: 86' below grade
Surface Elevation: 863.39

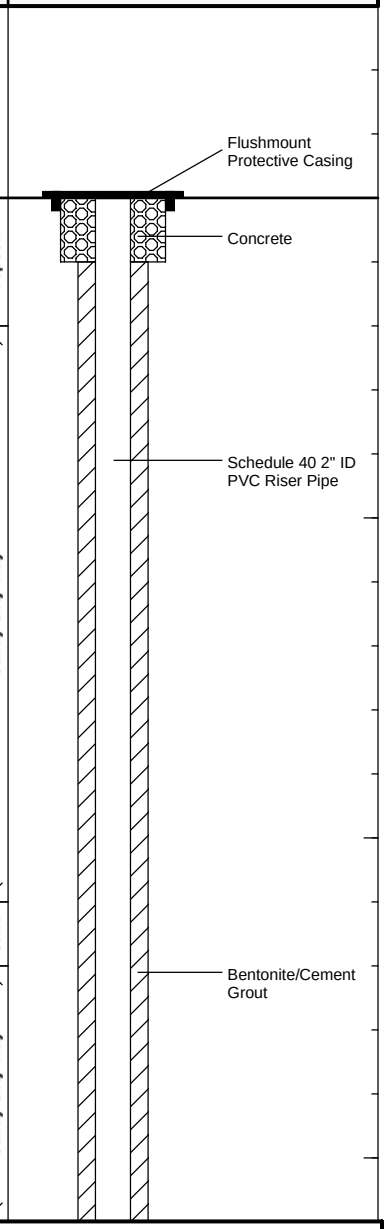
Geologist: J. Kralik

Well/Boring ID: MW02-02

Client: General Motors Corporation

Location: Lansing Plant #3
Lansing, Michigan

DEPTH / ELEVATION	Sample Run Number	Sample/Int/Type	Recovery (feet)	Blows / 6 Inches	N - Value	PID Headspace (ppm)	Analytical Sample	Geologic Column	Stratigraphic Description	Hydrostratigraphy
865 / 0	1	SS	2.0			0			Medium brown TOPSOIL, some light brownish gray (5 YR 6/1) silt, sand and fine gravel, plant debris present, damp, medium dense.	Topsoil
860 / 5	2	SS	2.0			0			Moderate brown (10 YR 4/4) SANDY SILTY CLAY (CL), fine to medium sand, trace coarse sand and fine gravel, stiff to very stiff.	Sandy Silty Clay
	3	SS	1.5			0			Moderate brown (5 YR 4/4) and grayish brown (5 YR 4/4) SANDY SILTY CLAY (CL), little coarse sand and fine gravel, very thin layers (<0.5") of medium sand present, stiff.	
	4	SS	1.5			0			Moderate yellow-brown (10 YR 5/4) SANDY SILTY CLAY (CL), fine to medium sand, trace fine subangular to subrounded gravel, damp, stiff.	
855 / 10	5	SS	1.5			0				
	6	SS	2.0			0			Moderate yellow-brown (10 YR 5/4) SAND (SP), fine grained, little medium sand, trace fine gravel and silt, medium dense.	Sand
850 / 15	7	SS	0.5			0			Moderate yellow-brown (10 YR 5/4) SANDY SILTY CLAY (CL), fine to medium sand, trace fine subangular to subrounded gravel, damp, medium dense. 1" medium brown sandy soil horizon with plant debris, damp, at 12' bgs.	Sandy Silty Clay
	8	SS	2.0			0			Grades into pale yellow brown (10 YR 6/2), trace coarse sand and fine gravel, damp, very stiff.	



ARCADIS BBL
Infrastructure, environment, facilities

Remarks:

Client:
General Motors Corporation

Site Location:
Lansing Plant #3
Lansing, Michigan

Well/Boring ID: MW02-02

Borehole Depth: 86' below grade

DEPTH / ELEVATION	Sample Run Number	Sample/Int/Type	Recovery (feet)	Blows / 6 Inches	N - Value	PID Headspace (ppm)	Analytical Sample	Geologic Column	Stratigraphic Description	Hydrostratigraphy	Well/Boring Construction
	9	SS	1.5			0			Brownish gray (5 YR 4/1) SILTY CLAY (CL), trace coarse sand and fine subangular to subrounded gravel, damp, very stiff, medium plasticity.	Silty Clay	
845	10	SS	2.0			0					
20	11	SS	2.0			0			Thin layer (<1") of very fine light gray sand at 21.5' bgs.		
	12	SS	2.0			0			Thin layer (<1") of very fine light gray sand at 22.5' bgs. Moist at 23-23.5' bgs.		
840									Moderate yellowish brown (10 YR 5/4) SANDY SILT (ML), fine to medium sand, little coarse sand and fine gravel, trace clay, damp, stiff, distinct contact with overlying silty clay, vertical fracturing with rusty brown-orange staining. Trace fine rounded gravel.	Sandy Sil	Schedule 40 2" ID PVC Riser Pipe
25	13	SS	2.0			0			Grayish orange (10 YR 7/4) SAND (SAND), fine to medium grained, damp, medium dense.	Sand	
	14	SS	1.75			0					
835	15	SS	2.0			0					Bentonite/Cement Grout
30									Becomes more gray, slightly silty at 29.5' bgs.		
	16	SS	2.0			0			Brownish gray (5 YR 4/1) SILT (MH), trace very fine to fine sand, damp.	Silt	
									Light brown (5 YR 5/6) SAND (SP), fine to medium grained, trace silt, damp, overall thin layers (<1") of red (10 R 4/8) sand present. Becoming light gray at depth.	Sand	
	17	SS	2.0			0			Brownish gray SILT (MH), damp, trace fine sand.	Sandy Silt	
830									Light gray (N70) SAND (SP), fine to medium grained, damp, thin bedding present.		
									Brownish gray (5 YR 4/1) SILT (MH), damp, trace fine sand and fine gravel, little clay.	Silt	
35	18	SS	2.0			0			Brownish gray (5 YR 4/1) SILT, damp.		

ARCADIS BBL
Infrastructure, environment, facilities

Remarks:

Client:
General Motors Corporation

Site Location:
Lansing Plant #3
Lansing, Michigan

Well/Boring ID: MW02-02

Borehole Depth: 86' below grade

DEPTH / ELEVATION	Sample Run Number	Sample/Int/Type	Recovery (feet)	Blows / 6 Inches	N - Value	PID Headspace (ppm)	Analytical Sample	Geologic Column	Stratigraphic Description	Hydrostratigraphy	Well/Boring Construction
	19	SS	1.5			0			Light gray (N70) SAND (SP), fine to medium grained, damp, thin bedding present.	Sand	
									Brownish gray (5 YR 4/1) SILT (MH), trace fine sand and fine gravel, little clay, damp.	Silt	
825	20	SS	2.0			0			Brownish gray (5 YR 4/1) SAND/SILTY SAND (SM), fine to medium grained, little coarse sand, trace fine gravel and coarse subangular gravel, damp, dense.	Sand/Silty Clay	
40	21	SS	2.0			0					Bentonite/Cement Grout
	22	SS	2.0			0			Medium dense.		
820											Schedule 40 2" ID PVC Riser Pipe
45	23	SS	2.0			0					
	24	ST-1	1.0						Shelby Tube ST-1 sampled from 46 - 48' bgs, SILTY SAND (SM).		
815	25	SS	2.0			0			Light gray (N70) SILT (MH/ML), some very fine sand, little fine sand, damp, medium dense. Thin layer (<1") of silty clay at 49' bgs.	Silt	
50	26	SS	1.5			0			Light brownish gray (5 YR 6/1) SAND (SP), medium grained, trace to little fine sand, damp, loose. Becoming sandy silt at depth. Becoming coarse at depth, trace fine rounded gravel.	Sand	
810	27	SS	2.0			0			Brownish gray (5 YR 4/1) SILTY SAND (SM), fine to medium grained, little fine subangular to subrounded gravel, trace coarse sand, damp, very dense.		
55	28	SS	2.0			0					

ARCADIS BBL
Infrastructure, environment, facilities

Remarks:

Client:
General Motors Corporation

Site Location:
Lansing Plant #3
Lansing, Michigan

Well/Boring ID: MW02-02

Borehole Depth: 86' below grade

DEPTH	ELEVATION	Sample Run Number	Sample/Int/Type	Recovery (feet)	Blows / 6 Inches	N - Value	PID Headspace (ppm)	Analytical Sample	Geologic Column	Stratigraphic Description	Hydrostratigraphy	Well/Boring Construction
		29	SS	2.0			0					
	805	30	SS	0.5			0					
60		31	SS	2.0			0			Sandstone/quartzite fragment in tip.		
		32	SS	2.0			0			More fine sands present, moist to damp.	Silty Sand	
	800	33	SS	2.0			0					
65		34	SS	2.0			0			Wet medium gray silt in tip of split spoon.		
	795	35	SS	2.0			0					
70			SS	2.0			0					
			SS	2.0			0			Brownish gray (5 YR 4/1) SILT (MH), trace to little very fine to fine sand, damp, very dense, wet zone at 73' - 73.25' bgs.	Silt	
	790									Brownish gray (5 YR 4/1) SILTY SAND (SM), fine to medium grained, damp. Thin layer (<1") of light brownish gray medium sand at 75' bgs.	Silty Sand	
75			SS	2.0			0			Brownish gray (5 YR 4/1) SILT (MH), moist, silty sand in tip of split spoon.	Silt	
										Brownish gray (5 YR 4/1) SILTY SAND (SM), fine to medium grained, damp.		

Schedule 40 2" ID PVC Riser Pipe
Bentonite/Cement Grout
Bentonite Chip (Hydrated)
Filter Sand
0.010" Machine Slotted 2" ID Schedule 40 Well Screen

ARCADIS BBL
Infrastructure, environment, facilities

Remarks:

Client:
General Motors Corporation

Site Location:
Lansing Plant #3
Lansing, Michigan

Well/Boring ID: MW02-02

Borehole Depth: 86' below grade

DEPTH / ELEVATION	Sample Run Number	Sample/Int/Type	Recovery (feet)	Blows / 6 Inches	N - Value	PID Headspace (ppm)	Analytical Sample	Geologic Column	Stratigraphic Description	Hydrostratigraphy	Well/Boring Construction
		SS	2.0			0			Light brownish gray SAND (SP), medium grained, damp. SILT. Brownish gray (5 YR 4/1) SILTY SAND (SM), fine to medium grained, damp.	Silty Sand/Silt	
785		SS	2.0			0			Brownish gray (5 YR 4/1) SILT (MH), trace clay, damp to moist, irregular contact with sand below. Interbedded brownish gray SILT (MH) and light brown medium grained SAND (SP), damp.	Silt/Sand/Silt	Filter Sand
80		SS	2.0			0			Brownish gray (5 YR 4/1) SILT (MH), trace clay, damp to moist, irregular contact with sand below. Light brown (5 YR 6/4) SAND (SP), medium grained, wet to saturated. 3" silt layer at 81-81.25' bgs.		
780		SS	2.0			0					0.010" Machine Slotted 2" ID Schedule 40 Well Screen
		SS	2.0			0			Brownish gray (5 YR 4/1) SANDY SILT (SM), fine to medium sand, damp.		
85		SS	2.0			0			Brownish gray (5 YR 4/1) SILT (MH), trace clay, damp to moist.		
775											
90											
770											
95											

ARCADIS BBL
Infrastructure, environment, facilities

Remarks:

Date Start/Finish: 10/25/02 - 10/29/02
Drilling Company: Toltest
Driller's Name: Jay Leonard
Drilling Method: Hollow-Stem Auger
Bit Size:
Auger Size: 4.25"
Rig Type: CME-75
Sampling Method: 2' Split Spoon

Northing: 6913.89
Easting: 3115.08
Casing Elevation: 859.83

Borehole Depth: 89.5' below grade
Surface Elevation: 860.18

Geologist: J. Kralik

Well/Boring ID: MW02-03

Client: General Motors Corporation

Location: Lansing Plant #3
Lansing, Michigan

DEPTH	ELEVATION	Sample Run Number	Sample/Int/Type	Recovery (feet)	Blows / 6 Inches	N - Value	PID Headspace (ppm)	Analytical Sample	Geologic Column	Stratigraphic Description	Hydrostratigraphy	Well/Boring Construction
0	860									ASPHALT.		Flushmount Protective Casing
										CONCRETE.		Concrete
		1	SS	1.5			0			Light to medium gray (N70 - N50) SILTY SANDY CLAY (CL), fine to medium grained sand, little coarse gravel, trace coarse sand, damp.		
		2	SS	1.5			0			Brownish gray (5 YR 4/1) SILTY SANDY CLAY (CL), fine to medium grained sand, little coarse sand, trace coarse gravel, damp.		Schedule 40 2" ID PVC Riser Pipe
5	855	3	SS	1.5			0			Some coarse sand, little fine to coarse gravel, damp.		
		4	SS	0.0			0			No recovery.		
		5	SS	2.0			0			Brownish gray (5 YR 4/1) SILTY SANDY CLAY (CL), fine to medium grained sand, little coarse sand, trace coarse gravel, damp.		
10	850	6	SS	2.0			0			Moderate yellowish brown and light gray (10 YR 5/4 and N70) SILTY SANDY CLAY (CL), mottled, fine to medium sand, little coarse sand, trace fine to coarse gravel, plant fragments present, vertical fracturing present.	Silty Sandy Clay	Bentonite/Cement Grout
		7	SS	1.5			0			Moderate yellowish brown (10 YR 5/4) SILTY SANDY CLAY (CL), fine to medium grained sand, little coarse sand and fine gravel, trace coarse gravel.		
15	845	8	SS	1.5			0			Thin (<1") layers of moderate yellow clay, 3" layer of brownish gray medium to coarse sand at 14.75' bgs.		

ARCADIS BBL
Infrastructure, environment, facilities

Remarks:

Client:
General Motors Corporation

Site Location:
Lansing Plant #3
Lansing, Michigan

Well/Boring ID: MW02-03

Borehole Depth: 89.5' below grade

DEPTH / ELEVATION	Sample Run Number	Sample/Int/Type	Recovery (feet)	Blows / 6 Inches	N - Value	PID Headspace (ppm)	Analytical Sample	Geologic Column	Stratigraphic Description	Hydrostratigraphy	Well/Boring Construction
	9	SS	2.0			0			Grading into brownish gray (5 YR 4/1) silty sandy clay.		
20 840	10	SS	1.75			0			Brownish gray (5 YR 4/1) SILTY SANDY CLAY (CL), fine to medium grained sand, little coarse sand and fine gravel, trace coarse gravel, damp, very stiff.		
	11	SS	1.5			0			Pale yellow brown (10 YR 6/2) SILTY SAND (SM), fine to medium grained, little clay, trace coarse sand, damp, dense.	ilty Sand	
	12	SS	2.0			0			Brownish gray (5 YR 4/1) CLAY (CL), trace subangular fine to coarse gravel, damp, very stiff, moderate to high plasticity.	Clay	
25 835	13	SS	1.75			0			Pale brownish gray SAND (SP), medium to coarse grained, moist to wet, medium dense.	Sand	Schedule 40 2" ID PVC Riser Pipe
									Brownish gray (5 YR 4/1) SILTY CLAY (CL), trace fine to medium sand, damp.	y Cl	
									Yellow-brown SAND (SP/SW), medium to coarse grained, little fine sand, some silt, trace fine gravel, wet, medium dense.	Sand	
	14	SS	2.0			0			Brownish gray CLAY (CL), some silt, trace fine to medium sand, damp.	la	
									Moderate yellow-brown SAND (SW), medium to coarse grained, some silt, little fine grained, trace fine gravel, damp.	Sand	Bentonite/Cement Grout
									Brownish gray CLAY (CL), some moderate yellow-brown mottling, some fine subangular gravel, trace fine to medium sand, damp, plastic.	Clay	
30 830	15	SS	2.0			0			Brownish gray SILT/SILTY CLAY (ML/CL), trace coarse sand and fine gravel, damp, very stiff, slight plasticity.	t/Silty Cl	
									Moderate yellow-brown SAND (SW), some rusty orange layers, fine to medium grained, some coarse sand and silt, damp, medium dense.	Sand	
	16	SS	1.5			0			Brownish gray (5 YR 4/1) SAND (SP), fine grained, some silt, damp, dense.		
									Moderate yellow-brown to pale yellow-brown SAND (SW), fine grained, little medium to coarse sand and fine gravel, damp, dense, thin bedding present.		
	17	SS	2.0			0			Brownish gray and light gray SAND (SW), fine grained, trace silt and fine rounded to subrounded gravel, damp, dense.		
35 825	18	SS	2.0			0			Medium dark gray (N40) SANDY SILTY CLAY (CL), fine sand, trace medium to coarse sand and fine gravel, damp, stiff, low to moderate plasticity.	Sandy Silty Clay	

ARCADIS BBL
Infrastructure, environment, facilities

Remarks:

Client:
General Motors Corporation

Site Location:
Lansing Plant #3
Lansing, Michigan

Well/Boring ID: MW02-03

Borehole Depth: 89.5' below grade

DEPTH / ELEVATION	Sample Run Number	Sample/Int/Type	Recovery (feet)	Blows / 6 Inches	N - Value	PID Headspace (ppm)	Analytical Sample	Geologic Column	Stratigraphic Description	Hydrostratigraphy	Well/Boring Construction
	19	SS	1.0			0			Light gray SAND (SP), fine grained, trace very fine sand and silt, damp, dense, poorly graded.	Sand	
40 820	20	SS	1.5			0					Bentonite/Cement Grout
	21	SS	1.5			0					
	22	SS	1.75			0					0.010" Machine Slotted 2" ID Schedule 40 Well Screen
45 815									Brownish gray (5 YR 4/1) CLAY (CL), damp, moderate plasticity.	Clay	
	23	SS	2.0			0			Light gray SAND (SP), fine grained, trace very fine sand and silt, damp, dense, poorly graded.	Sand	
	24	SS	2.0			0					
									Brownish gray (5 YR 4/1) SILTY SAND (SM), fine grained, trace coarse sand and fine to medium subangular to subrounded gravel, damp, dense.	Sand/Silty Sand	
50 810	25	SS	1.75			0					
	26	SS	2.0			0			Light gray to brownish gray SILTY SAND (SM), fine to medium grained, trace fine to medium gravel, rock fragments present, damp, very dense, bedding present.	Silty Sand	
	27	SS				0			Cobble at 54' bgs.		
55 805											
	28	SS				0					

Remarks:

ARCADIS BBL
Infrastructure, environment, facilities

Client:
General Motors Corporation

Site Location:
Lansing Plant #3
Lansing, Michigan

Well/Boring ID: MW02-03

Borehole Depth: 89.5' below grade

DEPTH / ELEVATION	Sample Run Number	Sample/Int/Type	Recovery (feet)	Blows / 6 Inches	N - Value	PID Headspace (ppm)	Analytical Sample	Geologic Column	Stratigraphic Description	Hydrostratigraphy	Well/Boring Construction
	29	SS				0			Light gray to brownish gray SILTY SAND (SM), very silty, fine to medium grained, damp, trace fine to medium gravel, rock gragments present, very dense, bedding present. Cobble at 58.5' bgs.		
60 / 800	30	SS	2.0			0			Brownish gray (5 YR 4/1) SANDY SILT (ML), fine to medium grained sand, trace to little coarse sand and fine gravel, damp, becoming a clayey sandy silt at depth.	Sandy Silt	Bentonite/Cement Grout
	31	SS	2.0			0					
	32	SS ST-3				0			Trace clay. Shelby Tube ST-3 sampled from 63 - 65' bgs, Sandy Silt (ML).		
65 / 795	33	SS	2.0			0					
	34	SS	0.5			0					
70 / 790	35	SS	2.0			0			Medium to dark gray SILT (MH), trace fine to medium sand, damp.	Silt	Schedule 40 2" ID PVC Riser Pipe
	36	SS	2.0			0			Wet at 71.5 - 72' bgs, thin (<1") layers of fine to medium grained sand at 72.5', becoming a sandy silt at 72.5 - 73' bgs.		
	37	SS	2.0			0					
75 / 785	38	SS	2.0			0			Pinkish gray sand at 76.5' bgs, fine to medium grained, damp.		Schedule 40 2" ID PVC Riser Pipe; Bentonite Chip (Hydrated)

Remarks:

ARCADIS BBL
Infrastructure, environment, facilities

Client:
General Motors Corporation

Site Location:
Lansing Plant #3
Lansing, Michigan

Well/Boring ID: MW02-03

Borehole Depth: 89.5' below grade

DEPTH / ELEVATION	Sample Run Number	Sample/Int/Type	Recovery (feet)	Blows / 6 Inches	N - Value	PID Headspace (ppm)	Analytical Sample	Geologic Column	Stratigraphic Description	Hydrostratigraphy	Well/Boring Construction
									Brownish gray (5 YR 4/1) SAND (SP), fine grained, damp.		
	39	SS	2.0			0			Medium to dark gray SILT (MH), trace fine to medium sand, damp.	Silt	
									Pinkish gray SAND (SP), medium to coarse, wet.		
									Medium to dark gray SILT (MH), trace fine to medium sand, damp.		
80 / 780	40	SS	2.0			0			Brownish gray (5 YR 4/1) SAND (SP), fine grained, damp.	Sand	
									Light gray - brownish gray (5 YR 4/1) SILTY SAND (SM), fine to medium sand, trace fine to medium gravel, damp, dense.		
	41	SS	2.0			0			Brownish gray (5 YR 4/1) SAND (SP), fine grained, damp.	Sand	0.010" Machine Slotted 2" ID Schedule 40 Well Screen
	42	SS				0			Medium to dark gray SILT (MH), trace fine to medium sand, damp.		
85 / 775											
	43	SS	1.5			0			Brownish gray (5 YR 4/1) SAND (SP), fine grained, damp.	Silt	Filter Sand
									Medium to dark gray SILT (MH), trace fine to medium sand, damp.	Silt	
									Light gray - brownish gray (5 YR 4/1) SILTY SAND (SM), fine to medium sand, trace fine to medium gravel, damp, dense.		
	44	SS	2.0			0			Brownish gray (5 YR 4/1) SAND (SP), fine grained, damp.		
									Medium to dark gray SILT (MH), trace fine to medium sand, damp.	Silt	
90 / 770											
95 / 765											

ARCADIS BBL
Infrastructure, environment, facilities

Remarks:

Date Start/Finish: 10/29/02 - 10/31/02
Drilling Company: Toltest
Driller's Name: Jay Leonard
Drilling Method: Hollow-Stem Auger
Bit Size:
Auger Size: 4.25"
Rig Type: CME-75
Sampling Method: 2' Split Spoon

Northing: 6917.81
Easting: 3301.92
Casing Elevation: 859.75

Borehole Depth: 89' below grade
Surface Elevation: 860.27

Geologist: J. Kralik

Well/Boring ID: MW02-04

Client: General Motors Corporation

Location: Lansing Plant #3
Lansing, Michigan

DEPTH	ELEVATION	Sample Run Number	Sample/Int/Type	Recovery (feet)	Blows / 6 Inches	N - Value	PID Headspace (ppm)	Analytical Sample	Geologic Column	Stratigraphic Description	Hydrostratigraphy	Well/Boring Construction
0	860									ASPHALT.		Flushmount Protective Casing
										CONCRETE.		Concrete
		1	SS	0.5			0			Moderate yellow brown SILTY SANDY CLAY (CL), fine to medium sand, little coarse sand, trace fine gravel, damp.	Silty Sandy Clay	
		2	SS	1.5			0			Pale yellow-brown to moderate yellow-brown.		Schedule 40 2" ID PVC Riser Pipe
5	855	3	SS	2.0			0			Cobble at 6' bgs.		
		4	SS	2.0			0			Pale yellow-brown SILTY SAND (SM), fine to medium grained sand, some fine subrounded to subangular gravel, trace coarse sand and clay, damp.	Silty Sand	
10	850	5	SS	1.5			0			Medium brown SILTY SANDY CLAY (CL), fine to medium grained sand, some fine gravel, grades into brownish gray at last 0.5', damp.	Sandy	
		6	SS	2.0			0			Brownish gray (5 YR 4/1) SILTY CLAY (CL), little fine gravel, trace fine to medium sand, damp, slightly plastic.	Silty Clay	Bentonite/Cement Grout
		7	SS	1.0			0					
15	845	8	SS	2.0			0			Less sand, becoming pale yellow brown at depth.		

ARCADIS BBL
Infrastructure, environment, facilities

Remarks:

Client:
General Motors Corporation

Site Location:
Lansing Plant #3
Lansing, Michigan

Well/Boring ID: MW02-04

Borehole Depth: 89' below grade

DEPTH / ELEVATION	Sample Run Number	Sample/Int/Type	Recovery (feet)	Blows / 6 Inches	N - Value	PID Headspace (ppm)	Analytical Sample	Geologic Column	Stratigraphic Description	Hydrostratigraphy	Well/Boring Construction
	9	SS	2.0			0			Moderate yellow brown SILTY SAND (SM), fine to medium grained, trace fine gravel and clay, damp.	Silty Clay Sandy Sa	
									Light yellow brown SAND (SP), medium grained, trace fine sand, damp.		
									Moderate yellow brown SILTY SAND (SM), fine to medium grained, trace fine gravel and clay, damp.		
20 / 840	10	SS	2.0			0			Pale yellow brown (10 YR 6/2) SILTY SAND (SM), fine to medium grained, little clay, trace coarse sand, damp, dense.	Silt	
									Pale brown to pale yellow-brown SILT (ML), little very fine to fine sand, trace fine gravel, damp.		
	11	SS	2.0			0			Moderate yellow-brown SILTY SAND (SM), fine to medium grained, trace to little fine gravel and clay, damp.	Silty Sand	
	12	SS	2.0			0			Medium gray CLAY/SILTY CLAY (CL), little fine gravel, moist, high plasticity.	Silty Clay/Silty Cla	Schedule 40 2" ID PVC Riser Pipe
25 / 835	13	SS	2.0			0			Brown SAND AND GRAVEL (GM), fine to coarse sand, fine to coarse gravel, trace silt.	Silty sand/sand clay	
									Light yellow brown SAND (SP), medium grained, trace very fine to fine grained, damp.		
	14	SS	2.0			0			Pale yellow brown to pale brownish gray SILT/SANDY SILT (SM), very fine to fine sand, trace fine gravel, damp.	Sandy Silt	Bentonite/Cement Grout
									Pale yellow-brown SAND/SILTY SAND (SM), fine to medium grained, trace clay and fine gravel, damp.		
									Brownish gray (5 YR 4/1) SANDY SILT (ML), fine to medium grained, damp. Little clay and cobble at 29' bgs.		
30 / 830	15	SS	2.0			0			Light gray (N70) SILT (MH), some very fine sand, medium dense to dense, damp, thin bedding present.	Silt	
	16	SS	2.0			0					
	17	SS	1.5			0					
35 / 825	18	SS	2.0			0					

ARCADIS BBL
Infrastructure, environment, facilities

Remarks:

Client:
General Motors Corporation

Site Location:
Lansing Plant #3
Lansing, Michigan

Well/Boring ID: MW02-04

Borehole Depth: 89' below grade

DEPTH / ELEVATION	Sample Run Number	Sample/Int/Type	Recovery (feet)	Blows / 6 Inches	N - Value	PID Headspace (ppm)	Analytical Sample	Geologic Column	Stratigraphic Description	Hydrostratigraphy	Well/Boring Construction
	19	SS	1.75			0			Light gray (N70) SILT (MH), some very fine sand, medium dense to dense, damp.		Light gray SILT, thin bedding present, some very fine sand, damp.
40 820	20	SS	2.0			0			Becomes wet at 40 - 40.5' bgs.		Bentonite/Cement Grout
	21	SS	1.75			0			Light gray (N70) SAND (SP), fine grained, little medium grained, damp. Very fine to fine grained, trace silt.	Sand	
	22	SS	2.0			0			Bedding present.		Schedule 40 2" ID PVC Riser Pipe
45 815	23	SS	2.0			0			Dark gray SILTY CLAY (CL), some fine to coarse gravel, little fine to medium sand, trace coarse sand, damp, non plastic.	Clay	
	24	SS	2.0			0			Brownish gray SAND (SW), fine to medium grained, some coarse sand and fine gravel, damp, sandstone cobble at 46.5' bgs.	Sand	
50 810	25	SS	2.0			0			Moderate brown to pinkish gray SAND (SW), fine to medium grained, some coarse sand and fine gravel, little silt, damp, rock fragments present. Some silt.		
	26	SS	2.0			0					
	27	SS	0.5			0			Cobble at 53.5' bgs.		
55 805	28	SS	2.0			0			Brownish gray SILT (ML), little fine sand, trace cobbles and fine gravel, damp.	Silt	
									Brownish gray to grayish pink SAND (SW), fine to medium grained, some sandstone cobbles and silt, little fine gravel, trace coarse sand, damp, very dense.	Sand	

ARCADIS BBL
Infrastructure, environment, facilities

Remarks:

Client:
General Motors Corporation

Site Location:
Lansing Plant #3
Lansing, Michigan

Well/Boring ID: MW02-04

Borehole Depth: 89' below grade

DEPTH / ELEVATION	Sample Run Number	Sample/Int/Type	Recovery (feet)	Blows / 6 Inches	N - Value	PID Headspace (ppm)	Analytical Sample	Geologic Column	Stratigraphic Description	Hydrostratigraphy	Well/Boring Construction
	29	SS	2.0			0			Brownish gray to grayish pink SAND (SW), fine to medium grained, some sandstone cobbles and silt, little fine gravel, trace coarse sand, damp, very dense.	Sand	
60 / 800	30	SS	2.0			0			Brownish gray (5 YR 4/1) SILT (ML), little fine sand, trace fine gravel, damp to moist.	Silt	Bentonite/Cement Grout
	31	SS	2.0			0			Clayey silt layer at 62 - 62.5' bgs. Silt becomes pinkish gray below 62.5' bgs.		
	32	SS	2.0			0			Some clay, thick (1-2") layers of grayish pink fine to medium grained sand at 63.75, 64.25 and 64.75' bgs.		
65 / 795	33	ST-4							Shelby Tube ST-4 sampled from 65 - 67' bgs, Silt with Sand (ML).		
	34	SS	1.5			0			Brownish gray (5 YR 4/1) SILTY SAND (SM), fine to medium grained, trace very fine sand and clay, damp to moist, thin (<1") layers of pinkish gray fine to medium sand.	Silty Sand	
70 / 790	35	SS	2.0			0			Brownish gray (5 YR 4/1) SILT (MH), trace very fine to fine sand, damp to moist.	Silt	Schedule 40 2" ID PVC Riser Pipe
	36	SS	2.0			0			Moderate brown SILTY SAND (SM), fine to medium sand, damp to moist.	y Sa	
	37	SS	2.0			0			Brownish gray (5 YR 4/1) SILT (MH), trace very fine to fine sand, damp to moist. Thin (<1") layers of pinkish gray medium sand, wet at 74', 74.5', 74.75' bgs.		Bentonite Chip (Hydrated)
75 / 785	38	SS	2.0			0			Thin (<1") sand layers at 75.5' bgs.	ilt	0.010" Machine Slotted 2" ID Schedule 40 Well Screen

ARCADIS BBL
Infrastructure, environment, facilities

Remarks:

Client:
General Motors Corporation

Site Location:
Lansing Plant #3
Lansing, Michigan

Well/Boring ID: MW02-04

Borehole Depth: 89' below grade

DEPTH / ELEVATION	Sample Run Number	Sample/Int/Type	Recovery (feet)	Blows / 6 Inches	N - Value	PID Headspace (ppm)	Analytical Sample	Geologic Column	Stratigraphic Description	Hydrostratigraphy	Well/Boring Construction
	39	SS	2.0			0			Laminar bedding present, trace medium sand from 77-77.5' bgs.		
80 / 780	40	SS	2.0			0			Thin sand layers (<1") at 80.5', 80.75' bgs, damp to moist		
	41	SS	1.5			0			Brownish gray (5 YR 4/1) SAND (SP), fine to medium grained, little coarse, damp to moist.	Sand	0.010" Machine Slotted 2" ID Schedule 40 Well Screen
									Brownish gray (5 YR 4/1) SILT (MH), trace very fine to fine sand, damp to moist.	Silt	
	42	SS	1.75			0			Brownish gray (5 YR 4/1) SAND (SP), fine to medium grained, little coarse, damp to moist.	Sand	
85 / 775									Brownish gray SILTY SAND (SM), fine to medium grained, trace coarse sand, moist to wet.	Sand	
	43	SS	2.0			0			Brownish gray (5 YR 4/1) SAND (SW), fine to medium grained, little coarse sand, trace fine gravel and silt, moist to wet.		Filter Sand
	44	SS	2.0			0					
90 / 770											
95 / 765											

ARCADIS BBL
Infrastructure, environment, facilities

Remarks:

Date Start/Finish: 9/20/04 - 9/21/04
Drilling Company: EDAC, Inc.
Driller's Name: Emerick Kish
Drilling Method: Hollow-Stem Auger/Water Rotary
Bit Size: 3.785"
Auger Size: 4.25"
Rig Type: Gus Pech 1100
Sampling Method: 2' Split Spoon

Northing: 5785.30
Easting: 3896.20
Casing Elevation: 862.89

Borehole Depth: 105' below grade
Surface Elevation: 863.20

Geologist: Wayne Patterson

Well/Boring ID: MW04-01

DRAFT

Client: General Motors Corporation

Location: Lansing Plant #3
Lansing, Michigan

DEPTH / ELEVATION	Sample Run Number	Sample/Int/Type	Recovery (feet)	Blows / 6 Inches	N - Value	PID Headspace (ppm)	Analytical Sample	Geologic Column	Stratigraphic Description	Hydrostratigraphy
865 / 0									Geology where split spoon samples not taken is based on soil samples collected at MW-02-01. Medium brown TOPSOIL, some sand and fine gravel, some light brownish gray (5 YR 6/1) fine sand and silt, trace cobble, medium dense.	TOPSOIL
860									Moderate yellow-brown (10 YR 5/4) SANDY SILTY CLAY (CL), fine to medium sand, trace silt and coarse sand, trace to little fine gravel, damp, very stiff.	CLAY AND SAND
5									Little coarse sand and fine gravel, trace silt, damp, stiff.	
									Little coarse sand and fine gravel, trace to little silt, damp, hard.	
855									Pale brown (5 YR 5/2) SANDY SILTY CLAY (CL), fine to medium sand, trace to little fine subangular to subrounded gravel, little silt, damp, very stiff.	
10	1	SS	2.0'			0			Brownish gray (5 YR 4/1) SANDY SILT (ML), fine to medium sand, trace clay and fine gravel/coarse sand, damp, medium dense. 1" Sand lens, wet.	SANDY SILT
850									Moderate brown (5 YR 4/4) SANDY SILT (ML), fine to medium sand, little fine to medium gravel, little clay, damp, medium dense. Rusty brown and orange medium to coarse sand at 13.2' bgs.	
15									Grayish orange (10 YR 7/4) SAND (SP), fine to medium grained, damp, medium dense.	

Well/Boring Construction

- Flushmount Protective Casing
- Concrete
- Schedule 40 2" ID PVC Riser Pipe
- Bentonite/Cement Grout

Remarks:

ARCADIS BBL
Infrastructure, environment, facilities

Project: 64429
Data File:MW04-01.dat
Template: J:\Rockware\LogPlot 2001\LogFiles\Templates\Soilboring.ldf
Date: 12/16/04

Client:
General Motors Corporation

Site Location:
Lansing Plant #3
Lansing, Michigan

Well/Boring ID: MW04-01

Borehole Depth: 105' below grade

DRAFT

DEPTH / ELEVATION	Sample Run Number	Sample/Int/Type	Recovery (feet)	Blows / 6 Inches	N - Value	PID Headspace (ppm)	Analytical Sample	Geologic Column	Stratigraphic Description	Hydrostratigraphy	Well/Boring Construction
									Moderate yellow-brown (10 YR 5/4) SILT (MH), trace fine to medium sand, damp, very dense, laminar bedding present.		
845									Slight orange tint present, very dense.		
20	2	SS	1.0'			0			Layer of sandy silt at 21.5-21.7' bgs, medium dense. Moist. Moist to wet.	SILT	
840									Brownish gray (5 YR 4/1) GRAVELLY CLAY (GC), fine to medium rounded to subrounded gravel, some fine to medium sand and silt, moist to wet, hard.		
25									Brownish gray (5 YR 4/1) GRAVELLY CLAY (GC) AND SILT (MH), moist to wet, auger refusal at 23.8' bgs due to glacial cobble. Offset directly south off first attempt and redrill.	GRAVEL AND SILT	Schedule 40 2" ID PVC Riser Pipe
835									Medium gray (N50) SANDY SILT (ML), fine to medium sand, some coarse sand, trace fine gravel, damp to moist, loose, medium brown sandy soil horizon at 26.5' bgs, fine to coarse grained, plant debris present, damp.	SANDY SILT	Bentonite/Cement Grout
30	3	SS	1.0'			0			Light gray (N70) SAND (SP), very fine to fine grained, trace silt, damp, medium dense. Dense.	SAND	
830									Light brownish gray (5 YR 6/1) SANDY SILT (ML), fine to medium sand, damp, loose. Light brown (5 YR 5/6) SILT (MH), trace clay, damp, loose, plant debris present. Light brownish gray (5 YR 6/1) SANDY SILT (ML), fine to medium sand, damp, loose.	SILTY S	
35									Brownish gray (5 YR 4/1) SILT (MH), moist to wet, medium dense. Light brown (5 YR 5/6) SILT (MH), damp. Brownish gray (5 YR 4/1) SILT (MH), moist to wet, medium dense. Brownish gray (5 YR 4/1) SILT (MH), moist to wet, medium dense.	SILT	

Remarks:

ARCADIS BBL
Infrastructure, environment, facilities

Client:
General Motors Corporation

Site Location:
Lansing Plant #3
Lansing, Michigan

Well/Boring ID: MW04-01

Borehole Depth: 105' below grade

DRAFT

DEPTH / ELEVATION	Sample Run Number	Sample/Int/Type	Recovery (feet)	Blows / 6 Inches	N - Value	PID Headspace (ppm)	Analytical Sample	Geologic Column	Stratigraphic Description	Hydrostratigraphy	Well/Boring Construction
									Light gray (N70) SAND (SP), very fine to fine grained, trace silt, damp, dense. Wet brownish gray silt from 38 to 38.25' bgs.	SAND	
825											
40									Dense.		Bentonite/Cement Grout
	4	SS	1.0'			0					
									Very dense.		
820											Schedule 40 2" ID PVC Riser Pipe
45											
815									Brownish gray (5 YR 4/1) SILT (MH), moist to wet, medium dense.	SILT	
									Brownish gray (5 YR 4/1) SAND (SP), very fine to fine grained, some clay, little silt, damp to moist, medium dense.	SAND	
50									Sandstone fragment at 50.5' bgs, becomes fine to medium grained at 50.5' bgs, medium dense.		
	5	SS	0.75'			0					
									Fine to medium grained, little coarse sand, trace fine gravel, dense, becoming wet.		
810											
									Some coarse sand, little fine gravel, trace medium gravel, subrounded to subangular sandstone and coal fragments present.		
55											

Remarks:

ARCADIS BBL
Infrastructure, environment, facilities

Client:
General Motors Corporation

Site Location:
Lansing Plant #3
Lansing, Michigan

Well/Boring ID: MW04-01

Borehole Depth: 105' below grade

DRAFT

DEPTH / ELEVATION	Sample Run Number	Sample/Int/Type	Recovery (feet)	Blows / 6 Inches	N - Value	PID Headspace (ppm)	Analytical Sample	Geologic Column	Stratigraphic Description	Hydrostratigraphy	Well/Boring Construction
									Brownish gray (5 YR 4/1) SAND (SW), fine to medium grained, some silt, little coarse sand and fine subrounded gravel, trace sandstone fragments, very dense, moist to wet.		
805									Brownish gray (5 YR 4/1) SAND (SW), fine to medium grained, some fine subangular to subrounded gravel, little coarse sand and silt, moist to wet, very dense.	SAND	
60									Moist to wet.		Bentonite/Cement Grout
	6	SS	1.0'			0					
									Moist to wet.		
800											
									Wet to saturated.		
65											
									Shale fragments in tip.		
	7	SS	1.5'			0					
795											
	8	SS	1.0'			0			Brownish gray (5 YR 4/1) to medium dark gray (N40) CLAY (CL), trace to little fine to medium sand, shale fragments present, damp.		
70									Medium dark gray SHALE (weathered), damp.	SHALE	Schedule 40 2" ID PVC Riser Pipe
	9	SS	1.0'			0					
	10	SS	1.5'			0					
790											
75		WR									

Remarks:

ARCADIS BBL
Infrastructure, environment, facilities

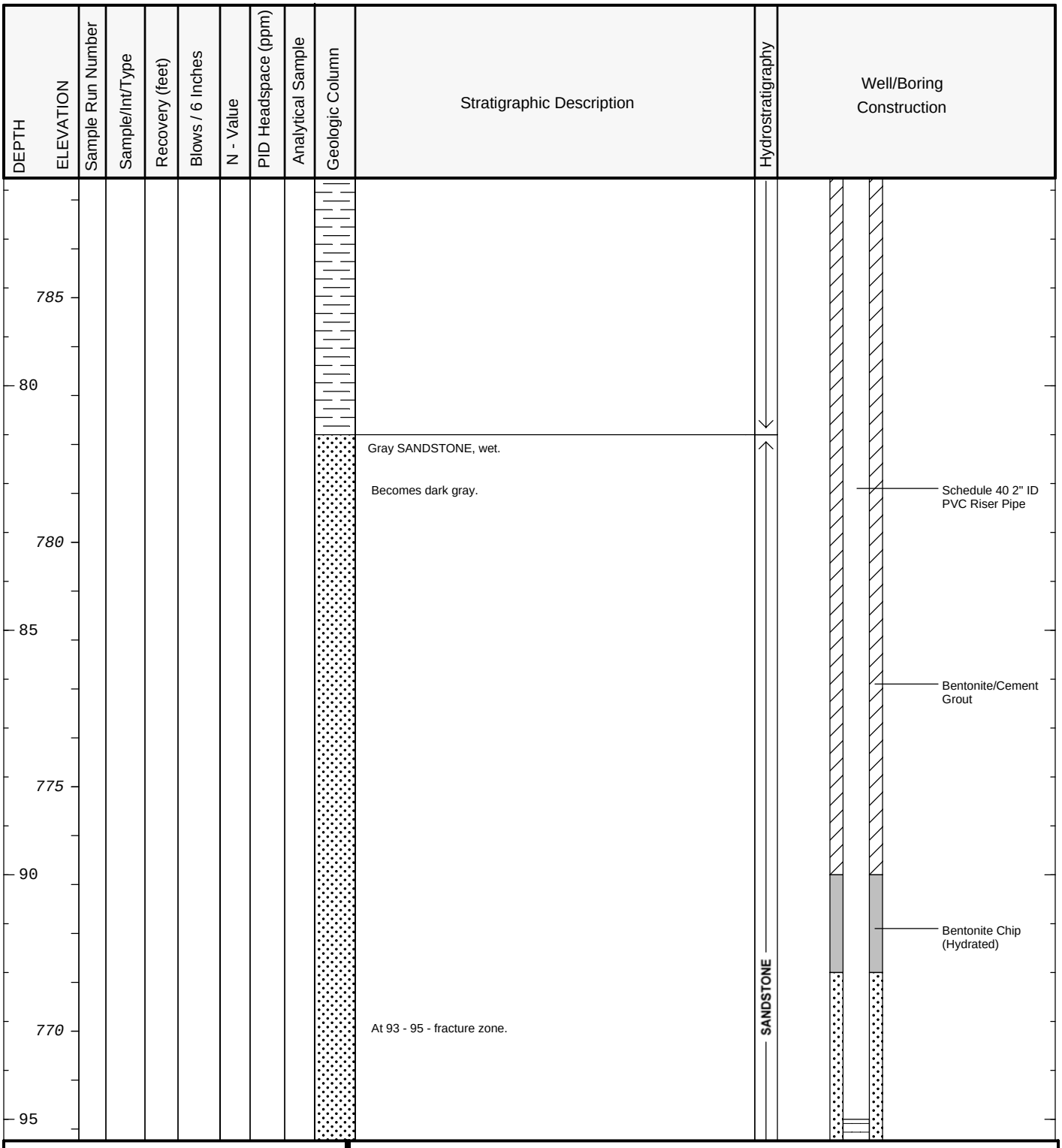
Client:
General Motors Corporation

Site Location:
Lansing Plant #3
Lansing, Michigan

Well/Boring ID: MW04-01

Borehole Depth: 105' below grade

DRAFT



Remarks:

ARCADIS BBL
Infrastructure, environment, facilities

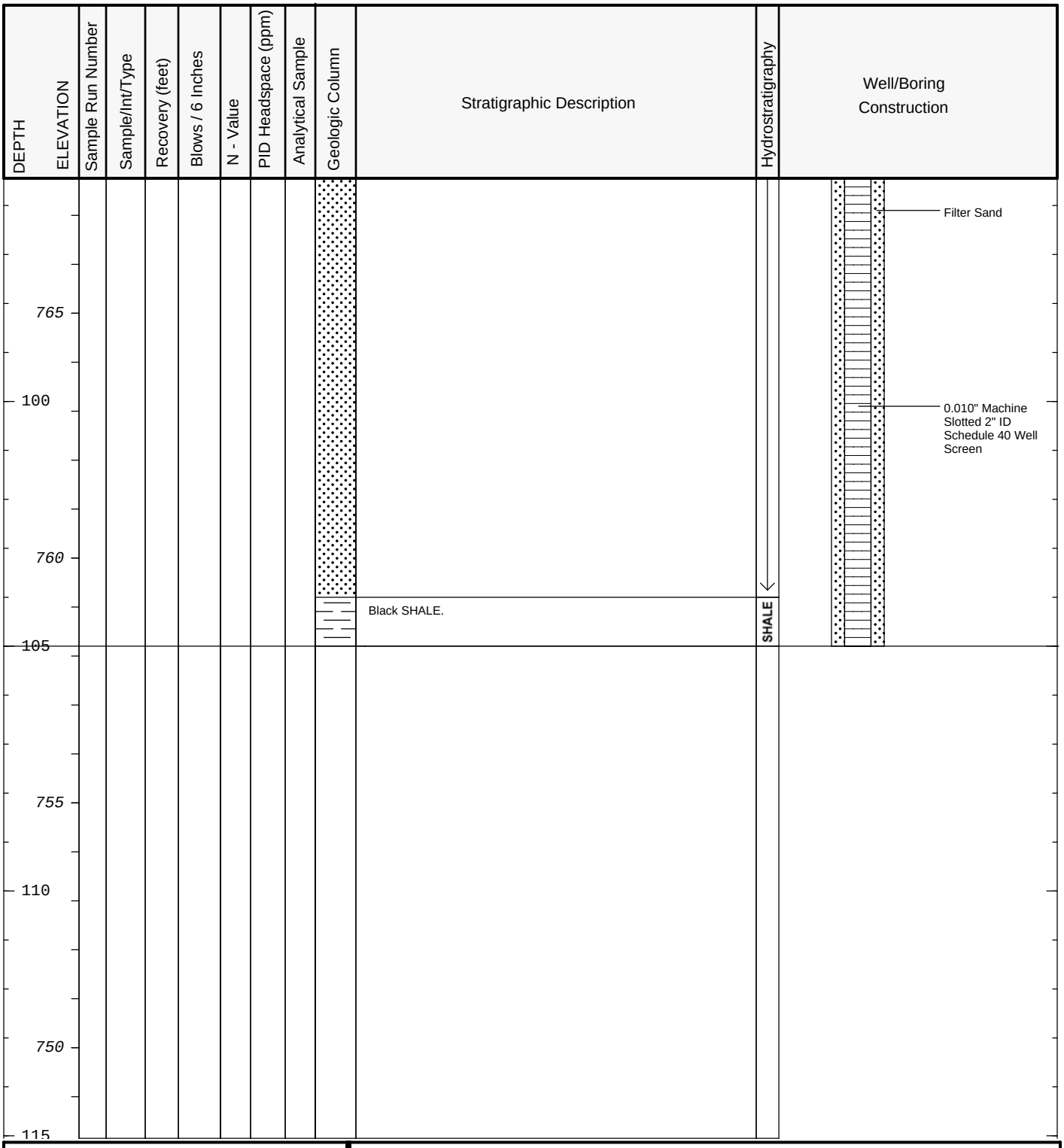
Client:
General Motors Corporation

Site Location:
Lansing Plant #3
Lansing, Michigan

Well/Boring ID: MW04-01

Borehole Depth: 105' below grade

DRAFT



ARCADIS BBL
Infrastructure, environment, facilities

Remarks:

Project: 64429
Data File:MW04-01.dat

Template: J:\Rockware\LogPlot 2001\LogFiles\Templates\Soilboring.ldf
Date: 12/16/04

Date Start/Finish: 9/22/04 - 9/23/04; 10/04/04
Drilling Company: EDAC, Inc.
Driller's Name: Emerick Kish
Drilling Method: Hollow-Stem Auger/Water Rotary
Bit Size: 3.785"
Auger Size: 4.25"
Rig Type: Gus Pech 1100
Sampling Method: 2' Split Spoon

Northing: 7441.49
Easting: 3261.25
Casing Elevation: 861.33

Borehole Depth: 136' below grade
Surface Elevation: 861.56

Geologist: Wayne Patterson

Well/Boring ID: MW04-02

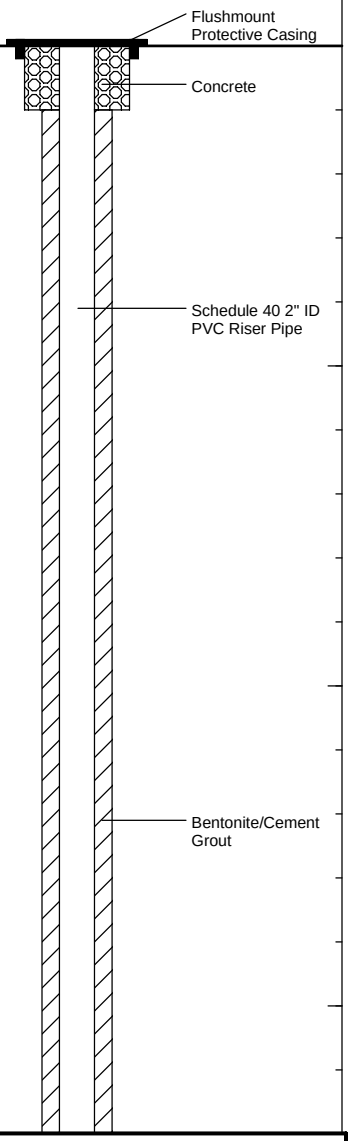
DRAFT

Client: General Motors Corporation

Location: Lansing Plant #3
Lansing, Michigan

DEPTH	ELEVATION	Sample Run Number	Sample/Int/Type	Recovery (feet)	Blows / 6 Inches	N - Value	PID Headspace (ppm)	Analytical Sample	Geologic Column	Stratigraphic Description	Hydrostratigraphy
0											
	860	1	SS	1.0'			0			Brown 10 YR 4/3 SANDY CLAY, slightly plastic, few Sand, few fine subrounded Gravel, damp, fill.	CLAY AND SAND
		2	SS	1.0'			0			Dark gray 10 YR 4/1 LEAN CLAY with SILT, little mottling with brown 10 YR 4/3, little fine to coarse angular to subangular Sand, few fine angular Gravel, damp, stiff, fill.	
5		3	SS	1.0'			0			At 3.0 - 3.2' - Brown 10 YR 4/3 fine Sand layer.	
	855	4	SS	0.75'			0			Color becomes Brown 10 YR 4/3	
		5	SS	1.0'			0				
10		6	SS	1.5'			0			Gray 10 YR 5/1 and brown 10 YR 4/3 mottled FAT CLAY with SILT, some fine Sand, trace fine subrounded Gravel, roots, very plastic, moist.	SILTY CLAY
	850	7	SS	1.0'			0			Gray 10YR and brown 10 YR 4/3 mottled LEAN CLAY with SILT, trace fine Sand, trace fine angular Gravel, medium stiff, damp to moist.	
		8	SS	1.0'			0			Increased Sand to little.	
15											
	845									Gray 10 YR 5/1 FAT CLAY with SILT, very plastic, trace fine to coarse subrounded Sand, rare fine subrounded Gravel, moist to wet.	

Well/Boring Construction



ARCADIS BBL
Infrastructure, environment, facilities

Remarks:

Client:
General Motors Corporation

Site Location:
Lansing Plant #3
Lansing, Michigan

Well/Boring ID: MW04-02

Borehole Depth: 136' below grade

DRAFT

DEPTH / ELEVATION	Sample Run Number	Sample/Int/Type	Recovery (feet)	Blows / 6 Inches	N - Value	PID Headspace (ppm)	Analytical Sample	Geologic Column	Stratigraphic Description	Hydrostratigraphy	Well/Boring Construction
	9	SS	1.5'			0					
	10	SS	1.0'			0			At 19 - 20' - interbedded with Brown 10 YR 4/3 fine to coarse subangular well graded SAND, saturated, dense.		
20											
840	11	SS	1.0'			0			Brown 10 YR 4/3 fine to coarse angular to subangular WELL GRADED SAND, rare fine angular Gravel, saturated, medium dense.	SAND	
	12	SS	1.5'			0			Some Silt Dark gray 10 YR 4/1 LEAN CLAY with SILT, trace fine to coarse subangular Sand, rare fine subangular to subrounded Gravel, stiff, damp, slightly plastic, clay till.		
25	13	SS	1.0'			0					Schedule 40 2" ID PVC Riser Pipe
835	14	SS	1.0'			0			Increased plasticity to moderately plastic, moist to wet.	SILTY CLAY	
	15	SS	0.75'			0					Bentonite/Cement Grout
30									Brown 10 YR 4/3 SILT, saturated. At 30 to 31.5' - few Clay, dry, dense.		
830	16	SS	1.0'			0			No Clay, saturated.	SILT	
	17	SS	1.5'			0					
35	18	SS	1.0'			0			Dark yellowish brown 10 YR 4/4 fine poorly graded SAND, dense, saturated.	SAND	
825									Very dark grayish brown 10 YR 3/2 and black 10 YR 2/1 LEAN CLAY with SILT, trace fine to coarse subrounded Sand, rare fine subrounded Gravel, stiff, weakly plastic, damp. 10 YR 3/2 only, damp to moist, slightly plastic.		

Remarks:

ARCADIS BBL
Infrastructure, environment, facilities

Client:
General Motors Corporation

Site Location:
Lansing Plant #3
Lansing, Michigan

Well/Boring ID: MW04-02

Borehole Depth: 136' below grade

DRAFT

DEPTH / ELEVATION	Sample Run Number	Sample/Int/Type	Recovery (feet)	Blows / 6 Inches	N - Value	PID Headspace (ppm)	Analytical Sample	Geologic Column	Stratigraphic Description	Hydrostratigraphy	Well/Boring Construction
	19	SS	1.0'			0					
									Color becoming dark gray 10 YR 4/1.	SILTY CLAY	
	20	SS	1.5'			0					
40											Bentonite/Cement Grout
	21	SS	2.0'			0					
820											
	22	SS	1.5'			0			Gray 10 YR 6/1 very fine poorly graded SAND, dry, dense, laminations present.	SAND	
											Schedule 40 2" ID PVC Riser Pipe
45	23	SS	1.0'			0					
815	24	SS	1.5'			0			Dark gray 10 YR 4/1, saturated, some Silt.		
	25	SS	1.0'			0			Dark gray 10 YR 4/1 SILT, some fine to coarse Sand, rare fine angular Gravel, saturated, dense.		
50	26	SS	1.0'			0			Dark gray 10 YR 4/1 fine poorly graded SAND, trace coarse Sand, rare fine Gravel, saturated, dense.		
810	27	SS	1.5'			0			Dark gray 10 YR 4/1 SILT, little to some fine to medium Sand, rare fine Gravel, few Clay, saturated, dense.		
									Increased Clay to some.		
55	28	SS	1.0'			0					
805									Lenses of fine Sand - up to 2" thick.		

ARCADIS BBL
Infrastructure, environment, facilities

Remarks:

Client:
General Motors Corporation

Site Location:
Lansing Plant #3
Lansing, Michigan

Well/Boring ID: MW04-02

Borehole Depth: 136' below grade

DRAFT

DEPTH / ELEVATION	Sample Run Number	Sample/Int/Type	Recovery (feet)	Blows / 6 Inches	N - Value	PID Headspace (ppm)	Analytical Sample	Geologic Column	Stratigraphic Description	Hydrostratigraphy	Well/Boring Construction
	29	SS	1.5'			0					
	30	SS	1.5'			0				SILT	
60									Medium dense.		Bentonite/Cement Grout
800	31	SS	1.5'			0					
	32	SS	1.0'			0			Trace Sand, rare Clay.		
65	33	SS	0.5'			0					
795	34	SS	1.0'			0			Gray 10 YR 4/1 fine to medium WELL GRADED SAND, occasional lenses of Silt, rare Clay, dense, saturated.	SAND	
	35	SS	1.0'			0			Dark gray 10 YR 4/1 SILT, little fine to coarse Sand, rare fine Gravel, very dense, damp to wet.	SILT	
70									Dark gray 10 YR 4/1 SILT, little fine to medium Sand, rare fine Gravel, very dense, saturated.		Schedule 40 2" ID PVC Riser Pipe
790	36	SS	1.0'			0					
	37	SS	1.5'			0					
75	38	SS	1.0'			0			3" lens highly compacted fine Sand, very dense.		
785											

ARCADIS BBL
Infrastructure, environment, facilities

Remarks:

Client:
General Motors Corporation

Site Location:
Lansing Plant #3
Lansing, Michigan

Well/Boring ID: MW04-02

Borehole Depth: 136' below grade

DRAFT

DEPTH / ELEVATION	Sample Run Number	Sample/Int/Type	Recovery (feet)	Blows / 6 Inches	N - Value	PID Headspace (ppm)	Analytical Sample	Geologic Column	Stratigraphic Description	Hydrostratigraphy	Well/Boring Construction
	39	SS	1.0'			0					
	40	SS	1.25'			0					
80											
	41	SS	1.5'			0					
780									Brown 10 YR 4/3 fine to medium poorly graded SAND, dense, saturated.		Schedule 40 2" ID PVC Riser Pipe
	42	SS	0.5'			0					
	43	SS	1.0'			0					
85											
775											Bentonite/Cement Grout
	44	SS	1.0'			0					
	45	SS	1.0'			0					
90									Mostly fine Sand.		
	46	SS	1.0'			0					
770											
	47	SS	2.0'			0					
	48	SS	2.0'			0					
95											
765										SAND	

Remarks:

ARCADIS BBL
Infrastructure, environment, facilities

Client:
General Motors Corporation

Site Location:
Lansing Plant #3
Lansing, Michigan

Well/Boring ID: MW04-02

Borehole Depth: 136' below grade

DRAFT

DEPTH / ELEVATION	Sample Run Number	Sample/Int/Type	Recovery (feet)	Blows / 6 Inches	N - Value	PID Headspace (ppm)	Analytical Sample	Geologic Column	Stratigraphic Description	Hydrostratigraphy	Well/Boring Construction
	49	SS	2.0'			0					
100											Schedule 40 2" ID PVC Riser Pipe
760	50	SS	2.0'			0					
	51	SS	2.0'			0					
105											
755	52	SS	2.0'			0					
	53	SS	1.5'			0					Bentonite/Cement Grout
110									Gray 10 YR 5/1 fine poorly graded SILTY SAND, rare Clay, saturated, medium dense.	SILTY SAND	
750	54	SS	0.5'			0			Gray 10 YR 6/1 fine poorly graded SAND, loose to medium dense, saturated, partly consolidated with depth, weathered sandstone.	SAND	
		WR							Gray 10 YR 6/1 fine SANDSTONE, fractured.		
115											
745											

ARCADIS BBL
Infrastructure, environment, facilities

Remarks:

Client:
General Motors Corporation

Site Location:
Lansing Plant #3
Lansing, Michigan

Well/Boring ID: MW04-02

Borehole Depth: 136' below grade

DRAFT

DEPTH / ELEVATION	Sample Run Number	Sample/Int/Type	Recovery (feet)	Blows / 6 Inches	N - Value	PID Headspace (ppm)	Analytical Sample	Geologic Column	Stratigraphic Description	Hydrostratigraphy	Well/Boring Construction
120 / 740									Out of fractured zone, harder Sandstone.	SANDSTONE	Bentonite Chip (Hydrated); Filter Sand; 0.010" Machine Slotted 2" ID Schedule 40 Well Screen
125 / 735											
130 / 730											
135 / 725											

ARCADIS BBL
Infrastructure, environment, facilities

Remarks:

Date Start/Finish: 9/30/04
Drilling Company: EDAC, Inc.
Driller's Name: Emerick Kish
Drilling Method: Hollow-Stem Auger
Bit Size: NA
Auger Size: 4.25"
Rig Type: Gus Pech 1100
Sampling Method: 2' Split Spoon

Northing: 6786.41
Easting: 2840.26
Casing Elevation: 860.99

Borehole Depth: 90' below grade
Surface Elevation: 861.41

Geologist: Wayne Patterson

Well/Boring ID: MW04-03

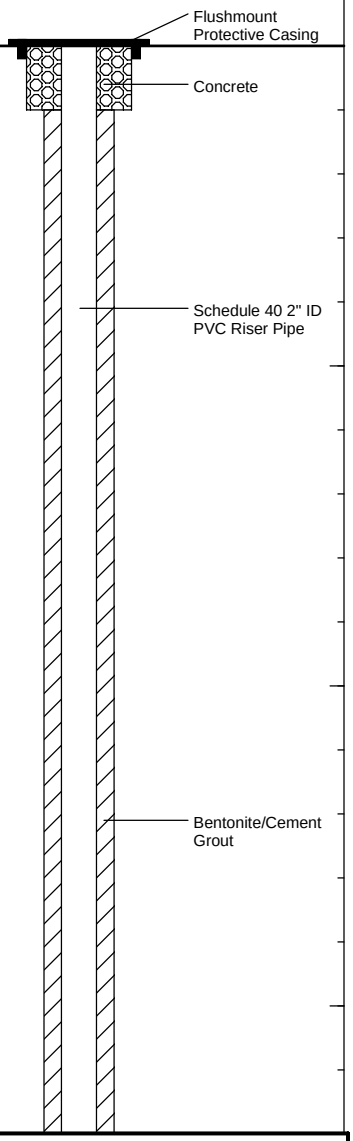
DRAFT

Client: General Motors Corporation

Location: Lansing Plant #3
Lansing, Michigan

DEPTH	ELEVATION	Stratigraphic Description	Hydrostratigraphy
0	860	Geology where split spoon samples not taken is based on soil samples collected at MW-04-02. Brown 10 YR 4/3 SANDY CLAY, slightly plastic, few Sand, few fine subrounded Gravel, damp, fill.	CLAY AND SAND
5	855	Dark gray 10 YR 4/1 LEAN CLAY with SILT, little mottling with brown 10 YR 4/3, little fine to coarse angular to subangular Sand, few fine angular Gravel, damp, stiff, fill. At 3.0 - 3.2' - Brown 10 YR 4/3 fine Sand layer. Color becomes Brown 10 YR 4/3	SILTY CLAY
10	850	Gray 10 YR 5/1 and brown 10 YR 4/3 mottled FAT CLAY with SILT, some fine Sand, trace fine subrounded Gravel, roots, very plastic, moist. Gray 10YR and brown 10 YR 4/3 mottled LEAN CLAY with SILT, trace fine Sand, trace fine angular Gravel, medium stiff, damp to moist. Increased Sand to little.	
15	845	Gray 10 YR 5/1 FAT CLAY with SILT, very plastic, trace fine to coarse subrounded Sand, rare fine subrounded Gravel, moist to wet.	

Well/Boring Construction



Remarks:

ARCADIS BBL
Infrastructure, environment, facilities

Client:
General Motors Corporation

Site Location:
Lansing Plant #3
Lansing, Michigan

Well/Boring ID: MW04-03

Borehole Depth: 90' below grade

DRAFT

DEPTH / ELEVATION	Sample Run Number	Sample/Int/Type	Recovery (feet)	Blows / 6 Inches	N - Value	PID Headspace (ppm)	Analytical Sample	Geologic Column	Stratigraphic Description	Hydrostratigraphy	Well/Boring Construction
									At 19 - 20' - interbedded with Brown 10 YR 4/3 fine to coarse subangular well graded SAND, saturated, dense.		
20 / 840	1	SS	1.5'			0			Brown 10 YR 4/3 fine to coarse angular to subangular WELL GRADED SAND, rare fine angular Gravel, saturated, medium dense.	SAND	
									Some Silt		
25 / 835									Dark gray 10 YR 4/1 LEAN CLAY with SILT, trace fine to coarse subangular Sand, rare fine subangular to subrounded Gravel, stiff, damp, slightly plastic, clay till.	SILTY CLAY	Schedule 40 2" ID PVC Riser Pipe
									Increased plasticity to moderately plastic, moist to wet.		Bentonite/Cement Grout
30 / 830									Brown 10 YR 4/3 SILT, saturated. At 30 to 31.5' - few Clay, dry, dense.	SILT	
									No Clay, saturated.		
35 / 825									Dark yellowish brown 10 YR 4/4 fine poorly graded SAND, dense, saturated.	SAND	
									Very dark grayish brown 10 YR 3/2 and black 10 YR 2/1 LEAN CLAY with SILT, trace fine to coarse subrounded Sand, rare fine subrounded Gravel, stiff, weakly plastic, damp. 10 YR 3/2 only, damp to moist, slightly plastic.		

Remarks:

ARCADIS BBL
Infrastructure, environment, facilities

Client:
General Motors Corporation

Site Location:
Lansing Plant #3
Lansing, Michigan

Well/Boring ID: MW04-03

Borehole Depth: 90' below grade

DRAFT

DEPTH / ELEVATION	Sample Run Number	Sample/Int/Type	Recovery (feet)	Blows / 6 Inches	N - Value	PID Headspace (ppm)	Analytical Sample	Geologic Column	Stratigraphic Description	Hydrostratigraphy	Well/Boring Construction
									Color becoming dark gray 10 YR 4/1.	SILTY CLAY	Bentonite/Cement Grout
40 / 820	2	SS	0						Gray 10 YR 6/1 very fine poorly graded SAND, dry, dense, laminations present.	SAND	Schedule 40 2" ID PVC Riser Pipe
45 / 815	3	SS	1.0'			0			Dark gray 10 YR 4/1, saturated, some Silt.		
									Dark gray 10 YR 4/1 SILT, some fine to coarse Sand, rare fine angular Gravel, saturated, dense.		
50 / 810									Dark gray 10 YR 4/1 fine poorly graded SAND, trace coarse Sand, rare fine Gravel, saturated, dense.		
									Dark gray 10 YR 4/1 SILT, little to some fine to medium Sand, rare fine Gravel, few Clay, saturated, dense.		
									Increased Clay to some.		
55 / 805									Lenses of fine Sand - up to 2" thick.		

ARCADIS BBL
Infrastructure, environment, facilities

Remarks:

Client:
General Motors Corporation

Site Location:
Lansing Plant #3
Lansing, Michigan

Well/Boring ID: MW04-03

Borehole Depth: 90' below grade

DRAFT

DEPTH / ELEVATION	Sample Run Number	Sample/Int/Type	Recovery (feet)	Blows / 6 Inches	N - Value	PID Headspace (ppm)	Analytical Sample	Geologic Column	Stratigraphic Description	Hydrostratigraphy	Well/Boring Construction
60 / 800	4	SS	1.0'			0			Medium dense.	SILT	Bentonite/Cement Grout
									Trace Sand, rare Clay.		
65 / 795									Gray 10 YR 4/1 fine to medium WELL GRADED SAND, occasional lenses of Silt, rare Clay, dense, saturated.	SAND	
									Dark gray 10 YR 4/1 SILT, little fine to coarse Sand, rare fine Gravel, very dense, damp to wet.	SILT	
70 / 790									Dark gray 10 YR 4/1 SILT, little fine to medium Sand, rare fine Gravel, very dense, saturated.		Schedule 40 2" ID PVC Riser Pipe
75 / 785									3" lens highly compacted fine Sand, very dense.		

Remarks:

ARCADIS BBL
Infrastructure, environment, facilities

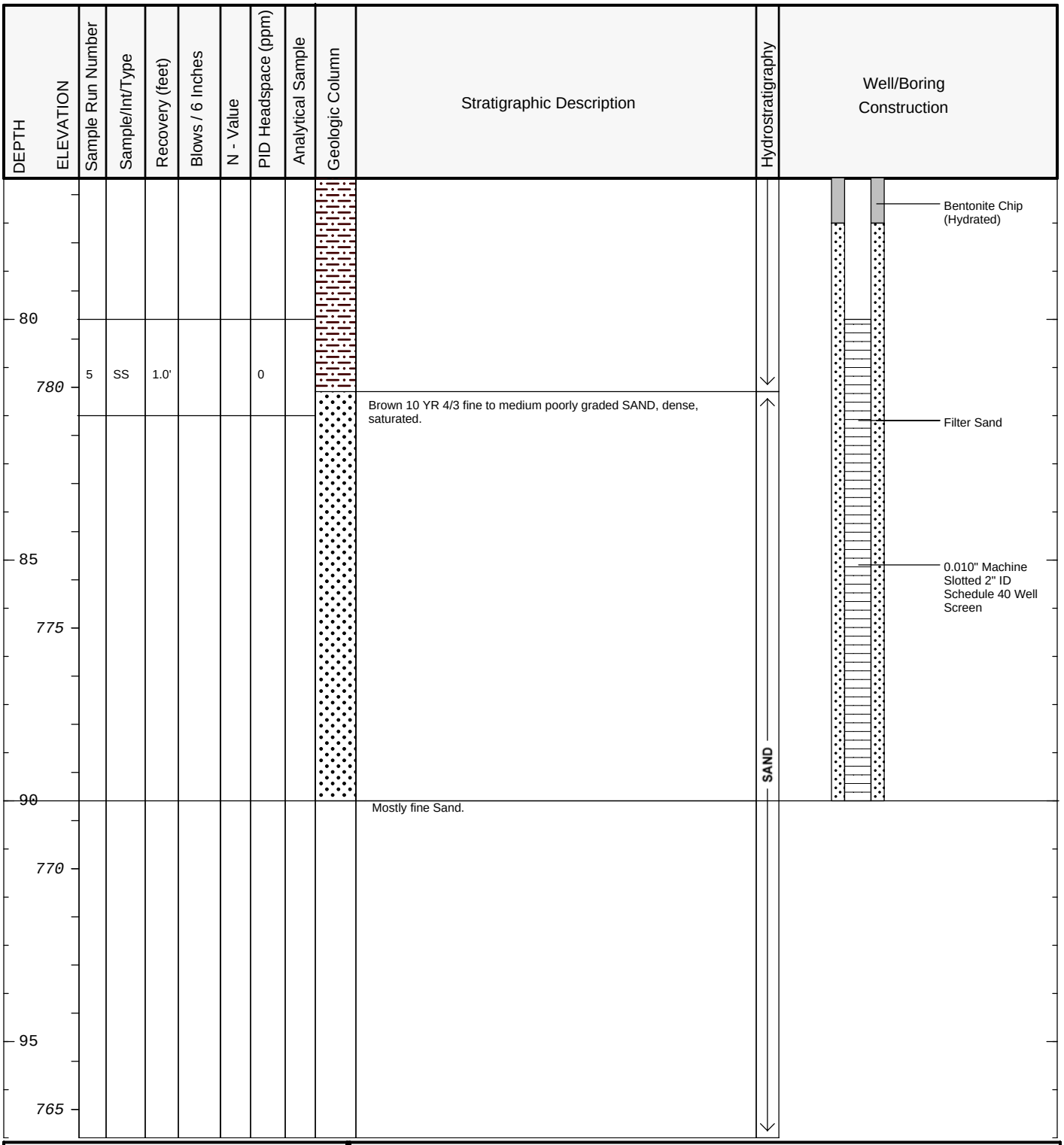
Client:
General Motors Corporation

Site Location:
Lansing Plant #3
Lansing, Michigan

Well/Boring ID: MW04-03

Borehole Depth: 90' below grade

DRAFT



ARCADIS BBL
Infrastructure, environment, facilities

Remarks:

Date Start/Finish: 9/27/04
Drilling Company: EDAC, Inc.
Driller's Name: Emerick Kish
Drilling Method: Hollow-Stem Auger
Bit Size: NA
Auger Size: 4.25"
Rig Type: Gus Pech 1100
Sampling Method: 2' Split Spoon

Northing: 6776.48
Easting: 2840.31
Casing Elevation: 856.05

Borehole Depth: 82' below grade
Surface Elevation: 856.53

Geologist: Wayne Patterson

Well/Boring ID: MW04-04

DRAFT

Client: General Motors Corporation

Location: Lansing Plant #3
Lansing, Michigan

DEPTH / ELEVATION	Sample Run Number	Sample/Int/Type	Recovery (feet)	Blows / 6 Inches	N - Value	PID Headspace (ppm)	Analytical Sample	Geologic Column	Stratigraphic Description	Hydrostratigraphy	Well/Boring Construction
0 / 856									Geology where split spoon samples not taken is based on soil samples collected at MW-91-04. GRASSES, Sand, brown, fine to medium, and some medium to coarse Gravel.	PSC	Flushmount Protective Casing
855									CLAY, brown sandy, and some fine to coarse Gravel, dry.	CLAY	Concrete
									CLAY, brown, sandy, and occasional fine to medium, Gravel, dry.		Schedule 40 2" ID PVC Riser Pipe
5 / 851	1	SS	0.2'						Brown 10 YR 4/3 SILT, few Clay, some fine to coarse Sand, little fine Gravel, dry.	SILT	
850											
10 / 846	2	SS	1.0'						Brown 10 YR 4/3 LEAN CLAY with SILT, some fine Sand, little fine Gravel, moist to wet, soft.	SILTY CLAY	Bentonite/Cement Grout
845											
15 / 841	3	SS	1.0'						Becoming stiff and dry.		
840									Yellowish brown 10 YR 5/6 poorly graded fine SAND, loose, dry.		

Remarks:

ARCADIS BBL
Infrastructure, environment, facilities

Client:
General Motors Corporation

Site Location:
Lansing Plant #3
Lansing, Michigan

Well/Boring ID: MW04-04

Borehole Depth: 82' below grade

DRAFT

DEPTH / ELEVATION	Sample Run Number	Sample/Int/Type	Recovery (feet)	Blows / 6 Inches	N - Value	PID Headspace (ppm)	Analytical Sample	Geologic Column	Stratigraphic Description	Hydrostratigraphy	Well/Boring Construction
20 / 835	4	SS	1.0'			0			Becoming moist.	SAND	
25 / 830	5	SS	0.2'						Dark gray 10 YR 4/1 LEAN CLAY with SILT, little fine Sand, occasional thin Sand lenses, damp to moist, medium stiff.	TY CL	Schedule 40 2" ID PVC Riser Pipe
									Grayish brown 10 YR 5/2 SILT, few Clay, dry to damp, dense.	SILT	Bentonite/Cement Grout
30 / 825	6	SS	1.5'						Pale brown 10 YR 6/3 poorly graded fine SAND, loose, dry.	SAND	
35 / 820	7	SS	0.5'						Becoming very fine.		

Remarks:

ARCADIS BBL
Infrastructure, environment, facilities

Client:
General Motors Corporation

Site Location:
Lansing Plant #3
Lansing, Michigan

Well/Boring ID: MW04-04

Borehole Depth: 82' below grade

DRAFT

DEPTH / ELEVATION	Sample Run Number	Sample/Int/Type	Recovery (feet)	Blows / 6 Inches	N - Value	PID Headspace (ppm)	Analytical Sample	Geologic Column	Stratigraphic Description	Hydrostratigraphy	Well/Boring Construction
40 / 815	8	SS	0.25'						Little fine subrounded Gravel.		Bentonite/Cement Grout
									Dark gray 10 YR 4/1 SILT, damp, dense, little coarse subrounded SAND.	SILT	Schedule 40 2" ID PVC Riser Pipe
45 / 810	9	SS	1.25'			0			Becoming dark grayish brown 10 YR 4/2, interbedded with lenses up to 2" thick of fine poorly graded Sand, dry.		
50 / 805	10	SS	1.5'						Grayish brown 10 YR 5/2 medium SAND, loose, dry.		
55 / 800		SS	1.0'						Becoming fine grained.		

ARCADIS BBL
Infrastructure, environment, facilities

Remarks:

Client:
General Motors Corporation

Site Location:
Lansing Plant #3
Lansing, Michigan

Well/Boring ID: MW04-04

Borehole Depth: 82' below grade

DRAFT

DEPTH / ELEVATION	Sample Run Number	Sample/Int/Type	Recovery (feet)	Blows / 6 Inches	N - Value	PID Headspace (ppm)	Analytical Sample	Geologic Column	Stratigraphic Description	Hydrostratigraphy	Well/Boring Construction
60 / 795	11	SS	1.75'			0			Poorly graded fine to medium, dry.	SAND	Bentonite/Cement Grout
65 / 790	12	SS	1.0'						Damp.		Bentonite Chip (Hydrated)
70 / 785	13	SS	1.0'						Dark grayish brown 10 YR 4/2 well graded fine to coarse SAND, saturated, medium dense.		Schedule 40 2" ID PVC Riser Pipe
75 / 780	14	SS	2.0'						Little fine Gravel.		Filter Sand

ARCADIS BBL
Infrastructure, environment, facilities

Remarks:

Client:
General Motors Corporation

Site Location:
Lansing Plant #3
Lansing, Michigan

Well/Boring ID: MW04-04

Borehole Depth: 82' below grade

DRAFT

DEPTH / ELEVATION	Sample Run Number	Sample/Int/Type	Recovery (feet)	Blows / 6 Inches	N - Value	PID Headspace (ppm)	Analytical Sample	Geologic Column	Stratigraphic Description	Hydrostratigraphy	Well/Boring Construction
80 / 775	15	SS	1.0'			0			Dark grayish brown 10 YR 4/2 fine well-graded GRAVEL, subangular to subrounded, little fine to coarse Sand, saturated, loose.	GRAVEL	0.010" Machine Slotted 2" ID Schedule 40 Well Screen
85 / 770											
90 / 765											
95 / 760											

ARCADIS BBL
Infrastructure, environment, facilities

Remarks:

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Page 1 of 1
Boring No. SB-1
Client: BOC Lansing
Project No.: 21253

County	Town	Section	T	R
Ingham				

Contractor Stearns Drilling
Address: 6875 Industrial Pkwy.
Dutton, MI
Equipment: D-25
Supervisor: Bill Pushaw

Drilling Method(s) Depth
H.S. Auger 13.0'

Grouting/Seal
Depth To Material/Method
13.0 0.0 Soil Bentonite
Bent/Cement Grout w/ Tremie Rod

Development
N/A

Date
Started: 5/16/89 Finished: 5/16/89

Elevation
Casing:
Ground:
Ref. Pt.:

Water Level Ft. Below
Measure On:

Location

9.5' EOB. The whole boring was

Thick-ness	Depth to Base	
	~3.5	
9.5		SAND, med. brown with gray
		SAND, med. gray saturated
		with gravel med. (1")
		EOB - 9.5'

Sample Depth	6"	12"	18"		
1.5-3.0	6	7	5	2	
4.0-5.5	2	2	2	350	
6.5-8.0	1	1	1	225	
9.0-10.5	1	1	1	500	
11.5-13.0					

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Page: 1 of 1
Well/Boring No. SB-2
Client: BOC Lansing
Project No.: 21253

Well/Boring Log Sheet

County	Township	Fraction	Section	T	R
Ingham	Lansing	1/4 1/4 1/4			

Contractor: Steams Drilling
Address: 6875 Industrial Pkwy
Dutton, MI
Equipment: D-25

Supervisor: Bill Pushaw

Drilling Method(s) Depth
H.S. Auger 13.0'

Grouting/Seal
Depth To Material/Method
3.0 0.0 Soil Bentonite

Development
N/A

Screen
Manufacturer: N/A
Material:
Model:
Slot/Gauze: Dia.:
Length:
Depth Set: To:

Casing Flush Mount Cap
Dia. Type Depth Set
N/A To
To

Date
Started: 5/16/89 Finished: 5/16/89

Elevation
Casing:
Ground:
Ref. Pt.:

Water Level Ft. Below
Measure On:

Location

Remarks 4.0'-5.5' & 6.5'-8.0'
Would not hold soil in them. Tried 4 times, soil is wet! So we spun soil up on augers for sample. It's mostly gray, wet, & contains odor. This whole boring was saturated. Maybe in vault? Hit concrete at 12.0'.

Thick-nes	Depth to Base	LITHOLOGIC DESCRIPTION	OVA	Blow Counts 18"	12"	6"
			Sample Depth			
	~3.5	SAND, med. brown, wet and gravel 3/4"	1.5-3.0	10	9	5	10
	6.5	SAND, med. gray-black, wet, odor, fine gravel, with occasional larger gravel. (3/4")	4.0-5.5	1	1	1	30
	12.0'	SAND, med. brownish gray, wet, trace small gravel	6.5-8.0	1	1	1	20
		Hit concrete or something hard at 12.0'	9.0-10.5	0	0	Hammer weight	10
			11.5-13.0	0	0	0	1
		EOB - 12.0'					

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Page: 1 of 1
Well/Boring No. SB-3
Client: BOC Lansing
Project No.: 21253

Well/Boring Log Sheet

County	Township	Fraction 1/4 1/4 1/4	Section	T	R

Contractor: Steams Drilling
Address: 6875 Industrial Pkwy
Dutton, MI
Equipment:
Supervisor: Bill Pushaw

Drilling Method(s) **Depth**
H.S. Auger 13.0'

Grouting/Seal

Depth	To	Material/Method
13.0	0.0	Soil / Bentonite

Development
N/A

Screen
Manufacturer: N/A
Material:
Model:
Slot/Gauze: Dia.:
Length:
Depth Set: To:

Casing Flush Mount Cap

Dia.	Type	Depth Set
	N/A	To
		To

Date
Started: 5/15/89 Finished: 5/15/89

Elevation
Casing:
Ground:
Ref. Pt.:

Water Level Ft. Below
Measure On:

Location

Remarks

OVA

Blow Counts: 18" / 12" / 6"

Thickness	Depth to Base	LITHOLOGIC DESCRIPTION	Sample Depth	18"	12"	6"	
	~3.5	SAND, med. brown moist fine gravel	1.5-3.0	3	3	4	10
	6.0	SAND, med., black, saturated strong odor with fine gravel	4.0-5.5	2	1	2	450
	9.4	SILTY CLAY, gray, trace fine gravel	6.5-8.0	7	11	12	100
	13.0	CLAY, (less silt) gray, occasional gravel	9.0-10.5	5	7	11	8
			11.5-13.0	5	5	7	7
		EOB -13.0'					

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Page: 1 of 1
Well/Boring No. SB-4
Client: BOC Lansing
Project No.: 21253

Well/Boring Log Sheet

nty	Township	Fraction 1/4 1/4 1/4	Section	T	R

ractor Stearns Drilling
ress: 6875 Industrial Pkwy
Dutton, MI
ment:
rvisor: Bill Pushaw

Screen
Manufacturer: N/A
Material:
Model:
Slot/Gauze: Dia.:
Length:
Depth Set: To:

Date
Started: 5/15/89 Finished: 5/15/89

Elevation
Casing:
Ground:
Ref. Pt.:

g Method(s) Depth
S. Auger 13.0'

Casing Flush Mount Cap

Dia.	Type	Depth Set
	N/A	To
		To

Water Level Ft. Below
Measure On:

ng/Seal

To	Material/Method
0.0	Soil / Bentonite

Location

Remarks

lopment
N/A

OVA
Blow Counts 18" / 12" / 6"

k- to Base	Depth	LITHOLOGIC DESCRIPTION	Sample Depth				
	13.0	SILTY CLAY, gray, trace fine sand, light brown, moist, occasional med. gravel-	1.5-3.0	4	4	3	30
		clay gradually	4.0-5.5	3	5	8	25
		Turned grayer and less silty as depth increased	6.5-8.0	5	8	8	35
			9.0-10.5	5	4	5	10
			11.5-13.0	4	6	9	2
		EOB -13.0'					

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Environmental Services Division

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Well/Boring No.: SB #4
Client: BOC Lansing
Project No.: 21544

Well/Boring Log Sheet

County	Township	Fraction 1/4 1/4 1/4	Section	T	R

Contractor Stearns Drilling
Address: 6875 Industrial Pkwy.
Dutton, MI
Equipment: CME 45C
Crew Chief: R. Christensen
WW Supervisor: C. Cotton

Drilling Method(s) **Depth**
4 1/4" HSA 17'

Grouting/Seal
Depth/To Material/Method
17-1' Baroid Bent. Batch #1-9.5 lb/gal
Benseal & Catalyst Grout
1-0' Redi Mix

Development
Bailed dry 2 times - 3.5 gal.
2 bags - benseal
1 1/2 qts - catalyst
50 gal - water

Screen Temp Well - SB #4
Manufacturer: Johnson
Material: Stainless Steel
Model: Cont. Wound
Slot/Gauze: 7 sl. Dia.: 2"
Length: 3'
Depth Set: 12.4' To: 15.4'

Casing
Dia. Type Depth Set
2" Galv. +2.9' To 12.4'
To

Date
Started: 2/12/90 Finished: 2/15/90

Elevation
Casing: N/A
Ground:
Ref. Pt.:

Water Level 13.68' Ft. Below surface
Measure On: 2/15/90

Location See sketch

Remarks Drilled through 1' concrete at 3-4' with 5" O.D. Solid Stem Auger

Thickness (feet)	Depth to Base (feet)	LITHOLOGIC DESCRIPTION	Blow Counts Sample Depth	24"	18"	12"	6"
0.6	0.6	Concrete (cored)					
1.9	2.5	Sand, medium coarse, some small gravel (fill), brown, moist	8.5-10	4	7	8	
0.7	3.2	Concrete (original pvt outside bldg. 301) **Could not cut through with auger head	15-17	13	4	6	5
2.8	6	Sand and Gravel, medium fine to coarse, brown, small to medium stone, moist					
5	11	Clay, very sandy, some small gravel, yellow tint-discolored, slightly moist					
2	13	Gravel, small to medium, some sand, moist to wet					
4	17	Clay, sandy, silty, some gravel, wet, slightly moist with depth					
	EOB						
		Let augers sit (pulled up to 12') overnight. 1.5' of water in open hole on 2/15/90 am.					
		Set well. Bailed all standing water from well and open annulus to bottom of well.					
		Let stand 15 mins. - slightly better recovery than previous 2 temp wells (SB #6 & 5).					
		Bailed dry again. Sampled at 11:20 am.					

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Well/Boring No. SB-5
Client: BOC Lansing
Project No.: 21253

Well/Boring Log Sheet

ty	Township	Fraction 1/4 1/4 1/4	Section	T	R

ctor Stearns Drilling
es: 6875 Industrial Pkwy
Dutton, MI
ment:
visor: Bill Pushaw

Screen
Manufacturer: N/A
Material:
Model:
Slot/Gauze: Dia.:
Length:
Depth Set: To:

Date
Started: 5/15/89 Finished: 5/15/89

Elevation
Casing:
Ground:
Ref. Pt.:

g Method(s) Depth
S. Auger 13.0'

Casing Flush Mount Cap
Dia. Type Depth Set
N/A To
To

Water Level Ft. Below
Measure On:

ng/Seal
To Material/Method
0.0 Soil / Bentonite

Location

Remarks

opment
N/A

OVA

Blow Counts 18" 12" 6"

k- Depth to Base	LITHOLOGIC DESCRIPTION	Sample Depth					
4.5	SAND, med. fine, brown with fine gravel	1.5-3.0	3	4	5	0	
4.9	SAND, med. black, wet with glass particles, odor	4.0-5.5	5	7	6	10	
9.2	SAND, med. grayish brown, wet, black streaks, odor	6.5-8.0	1	1	4	480	
11.5	SILTY CLAY, gray, moist	9.0-10.5	3	4	4	110	
13.0	CLAY, gray, spoon is wet	11.5-13.0	5	9	9	20	
	EOB -13.0'						

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Environmental Services Division

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Well/Boring No.: SB #5
Client: BOC Lansing
Project No.: 21544

Well/Boring Log Sheet

County	Township	Fraction 1/4 1/4 1/4	Section	T	R

Contractor Stearns Drilling
Address: 6875 Industrial Pkwy.
Dutton, MI
Equipment: CME 45C
Crew Chief: R. Christensen
WW Supervisor: C. Cotton

Drilling Method(s) **Depth**
4 1/4" HSA 23.5'

Grouting/Seal
Depth/To Material/Method
23.5-1' Baroid Bent. Batch #1=9.8 lb/gal
Benseal & Catalyst Grout #2=9.4 lb/gal
1-0' Redi Mix

Development Bailed dry 3 times or more
1/3 gal in 1 1/2 hrs. Sheen on purge water

Screen Temp Well - SB #5
Manufacturer: Johnson
Material: Stainless Steel
Model: Cont. Wound
Slot/Gauze: 7 sl. Dia.: 2"
Length: 3'
Depth Set: 14.3' To: 17.3'
.83

Casing
Dia. Type Depth Set
2" Galv. +1' To 14.3'
To

Date
Started: 2/12/90 Finished: 2/14/90

Elevation
Casing:
Ground:
Ref. Pt.:

Water Level 16.47' Ft. Below surface
Measure On: 2/14/90

Location See sketch
(Nickel Recovery - 301B)

Remarks Used 5" OD Solid Stem Auger to cut through 1' concrete at 3-4'. Note: cuttings from below 1st spoon depth were highly saturated with black oily material. Extra spoon taken at 15-16.5', see note below.

3 bags - benseal
2 qts - catalyst
90 gal - water

Thickness	(feet) Depth to Base	LITHOLOGIC DESCRIPTION	Sample Depth	Blow Counts 6"	12"	18"	24"
0.6	0.6	Concrete (cored)					
2.4	3	Sand, medium coarse, some small gravel, moist, brown	8.5-10	4	2	4	
1	4	Concrete	15-16.5	6	8	12	
6	10	Sand, poorly sorted, fine to coarse, some small to medium gravel, yellow/brown, moist, trace black oily sand at 10'	18.5-20	3	4	6	
5	15	Sand, medium fine, oily sheen, black, very moist, oily odor					
0.3	15.3	Clay, silty, slightly discolored with oily sheen, moist					
1.7	17	Sand and Gravel, may be slightly saturated, cuttings after 20' were coming up very moist					
		Note: spoon sample taken at 15.0-16.5' - top .3 clay, remainder of sample (sand and gravel)					
		fell out of spoon when pulled, no water after.					
6.5	23.5	Clay, sandy, some small gravel, slightly moist, gray					
	EOB						
		Very wet cuttings appeared as we augered down past 18-20'. Spoon sample at 18.5-20' was					
		not wet, and Steams was confident we were still in stiff clay below 20'. The sand and gravel					
		layer form 15-17' was most likely the zone producing the water. Pulled augers back to 13' and					
		set screen from 14-17'. After 40 mins. slightly less than a foot of water in well. Purged dry,					
		very slow recovery. May have silted up saturated zone with clay from below.					

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Well/Boring No. SB-6
Client: BOC Lansing
Project No.: 21253

Well/Boring Log Sheet

County	Township	Fraction 1/4 1/4 1/4	Section	T	R

Contractor Stearns Drilling
Address: 6875 Industrial Pkwy
Dutton, MI
Equipment:
Supervisor: Bill Pushaw

Drilling Method(s) **Depth**
H.S. Auger 13.0'

Grouting/Seal

Depth	To	Material/Method
13.0	0.0	Soil / Bentonite

Development
N/A

Screen
Manufacturer: N/A
Material:
Model:
Slot/Gauze: Dia.:
Length:
Depth Set: To:

Casing Flush Mount Cap

Dia.	Type	Depth Set
	N/A	To
		To

Date
Started: 5/16/89 Finished: 5/16/89

Elevation
Casing:
Ground:
Ref. Pt.:

Water Level Ft. Below
Measure On:

Location

Remarks

OVA

Blow Counts 18" / 12" / 6"

Thickness	Depth to Base	LITHOLOGIC DESCRIPTION	Sample Depth	18"	12"	6"	
		SILTY CLAY, brown, trace amounts gravel	1.5-3.0	3	5	3	15
		fine-med. moist at ~4.0' wet at ~9.0'	4.0-5.5	1	1	2	2
			6.5-8.0	0	0	0	0
			9.0-10.5	0	0	0	0
			11.5-13.0	0	0	0	0

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Environmental Services Division

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Well/Boring No.: SB #6
Client: BOC Lansing
Project No.: 21544

Well/Boring Log Sheet

County	Township	Fraction 1/4 1/4 1/4	Section	T	R

Contractor Stearns Drilling
Address: 6875 Industrial Pkwy.
Dutton, MI
Equipment: CME 45C
Crew Chief: R. Christensen
WW Supervisor: C. Cotton

Drilling Method(s) **Depth**
4 1/4" HSA 80.5'

Grouting/Seal
Depth/To Material/Method Batch
80.5-1' Baroid Gran. Benseal #1=10.2 lb/gal #2=9.5 lb/gal #3=9.5 lb/gal #4=9.5 lb/gal #5=9.4 lb/gal #6=9.3 lb/gal
Baroid Aqua Grout Catalyst Grout
1-0' Redi Mix

Development
Bailed dry 10 times - 1.5 gal.

Screen Temp Well - SB #6
Manufacturer: Johnson
Material: Stainless Steel
Model: Cont. Wound
Slot/Gauze: 7 sl. Dia.: 2"
Length: 3'
Depth Set: 67.6' To: 70.6'
Total depth from TOC = 72.6'

Casing

Dia.	Type	Depth Set	
2"	Galv.	+2'	To 67.6'
			To

Date
Started: 2/12/90 Finished: 2/13/90

Elevation
Casing: N/A
Ground:
Ref. Pt.:

Water Level 69.06' Ft. Below TOC
Measure On: 2/13/90

Location See sketch

Remarks A very moist to wet zone found at 22' produced some very sloppy cuttings, however after leaving hole overnight, no water accumulated in augers, not worth attempting to screen.

9 bags - benseal
6 qts - catalyst
250 gal - water

Thickness	(feet) Depth to Base	LITHOLOGIC DESCRIPTION	Sample Depth	Blow Counts 6"	12"	18"	24"
0.8	0.8	Concrete					
6.2	7	Sand, medium coarse, some gravel (fill), moist, brown	8.5-10	8	9	9	
1.9	8.9	Clay, very sandy, fine, moist	18.5-20	6	6	9	
0.6	9.5	Sand, fine, very moist to wet, brown	28.5-30	3	5	6	
3.5	13	Clay, very sandy, moist, brown, occasional small gravel	38.5-40	15	9	21	
9	22	Clay, silty, some very fine sand, gray, occasional small gravel, slightly moist	48.5-50	52	31	39	
14	36	Clay, sandy and silty, very moist, gray, occasional small gravel	58.5-60	20	25	36	
5	41	Sand, fine, silty, some small gravel, occasional layer of dry silty clay	68.5-70.5	19	21	25	29
9	50	Sand and Gravel, very silty, trace clay, fine grain, dry, gray	80-80.5	120 for 5"			
4	54	Sand, fine to medium, poorly sorted, dry, loose, light brown					
1	55	Gravel, large cobbles					
4.5	59.5	Sand, fine, very clayey, stiff, occasional gravel, gray/brown, slightly moist					
0.1	59.6	Sandstone, weathered, very brittle, light gray					
5.4	65	Sand, fine, very clayey, some small gravel					
5	70	Silt, moist, gray/brown					
10	80	Sand, fine, wet, slightly silty, set temp well at 70.6'					
.3	80.3	Silt, some fine sand, dense, slightly moist					
0.1	80.4	Coal					
0.1	80.5	Sandstone, light gray, brittle					
	EOB						

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Page: 1 of 1
Well/Boring No. SB-7
Client: BOC Lansing
Project No.: 21253

Well/Boring Log Sheet

County	Township	Fraction 1/4 1/4 1/4	Section	T	R

Contractor: Steams Drilling
Address: 6875 Industrial Pkwy
Dutton, MI
Equipment:
Supervisor: Bill Pushaw

Drilling Method(s) Depth
H.S. Auger 13.0'

Grouting/Seal
From To Material/Method
13.0 0.0 Soil / Bentonite

Development
N/A

Screen
Manufacturer: N/A
Material:
Model:
Slot/Gauze: Dia.:
Length:
Depth Set: To:

Casing Flush Mount Cap
Dia. Type Depth Set
N/A To
To

Date
Started: 5/16/89 Finished: 5/16/89

Elevation
Casing:
Ground:
Ref. Pt.:

Water Level Ft. Below
Measure On:

Location

Remarks
OVA will not light. I will check samples back at office. There is no visible contamination & no odors here.

OVA
Blow Counts 18"
12"
6"
Sample Depth

Thick-ness	Depth to Base	LITHOLOGIC DESCRIPTION	Sample Depth	18"	12"	6"	
	15.5	SILTY CLAY, brown, moist, occasional gravel, med. wet at 4.0'	1.5-3.0	2	5	6	
		Hit something hard at 15.5'	4.0-5.5	1	1	1	
			6.5-8.0	0	0	2	
			9.0-10.5	0	0	0	
		E.O.B. 15.5'	11.5-13.0	0	0	0	
		OVA readings = 0 ppm	14.0-15.5	0	0	1	

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Environmental Services Division

Page: 1 of 1
Well/Boring No.: SB #7
Client: BOC Lansing
Project No.: 21544

Well/Boring Log Sheet

County	Township	Fraction 1/4 1/4 1/4	Section	T	R

Contractor Stearns Drilling
Address: 6875 Industrial Pkwy, Dutton, MI
Equipment: CME 45C
Crew Chief: R. Christensen
WW Supervisor: C. Cotton

Drilling Method(s) **Depth**
4 1/4" HSA 30'

Grouting/Seal
Depth/To Material/Method Batch
30-1' Baroid Benseal #1=9.6 lb/gal #2=9.3 lb/gal
Granular Bent. & Catalyst Grout
1-0' Redi Mix

Development
Bailed dry 6 times - 2 gal.

Screen Temp Well - SB #7
Manufacturer: Johnson
Material: Stainless Steel
Model: Cont. Wound
Slot/Gauze: 7 sl. Dia.: 2"
Length: 3'
Depth Set: 25.4' To: 28.4'
Total depth from TOC = 31.6'

Casing
Dia. Type Depth Set
2" Galv. +3.2' To 25.4'
To

Date
Started: 2/15/90 Finished: 2/19/90

Elevation
Casing: N/A
Ground:
Ref. Pt.:

Water Level 26.90' Ft. Below TOC
Measure On: Bldg. 301B - Nickel Rec.

Location See sketch

Remarks Switched sample intervals per M. Jones phone conf. 2/15 pm - to catch lithology at "in between" intervals - see sample depth. Took extra spoon at 15-17' to check for sat. zone - no sample collected. Switched interval back to previous pattern after 25' per E. Strang, need horizontal consistency in samples.

Thickness (feet)	Depth to Base	LITHOLOGIC DESCRIPTION	Blow Counts 24" 18" 12" 6" Sample Depth					
1	1	Concrete						
2	3	Sand and Gravel, fine to coarse, medium brown, loose	4-6	3	4	6	7	
1.2	4.2	Concrete	13.5-15.5	4	4	7	8	
3.3	7.5	Clay, very sandy, some small and medium gravel, occasional seam fine sand, firm,	15-17	3	4	6	7	
		slightly yellow/brown, yellow coating around gravel stones at 4-5'	23.5-25.5	15	28	29	35	
2.5	10	Clay, sandy, occasional small gravel, moist, soft and cohesive, brown/yellow tint	28.5-30	3	3	4		
3.8	13.8	Sand, very clayey, medium grain, occasional small gravel, moist, brown/yellow tint						
9.9	23.7	Clay, sandy, slightly silty, some coarse sand and fine gravel, occcasional seam fine wet						
		sand between 14-15.5', then becoming more stiff, gray, moist						
1.3	25	Sand, fine, slightly silty, very discolored, yellow/orange, very moist						
1	26	Silt and Sand, trace of clay, very stiff, occasional small gray, gray, dry						
2	28	Sand, wet						
2	30	Clay, very sandy, very moist, occasional gravel and coal, gray						
	EOB	Water in augers after collecting sample at 28.5-30' stabilized at 21.8' below surface.						
		Set well at 28.4' to sample sat. sand layer, surprisingly poor recovery.						

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Page: 1 of 1
Well/Boring No. SB-8
Client: BOC Lansing
Project No.: 21253

Well/Boring Log Sheet

County	Township	Fraction 1/4 1/4 1/4	Section	T	R

Contractor: Stearns Drilling
Address: 6875 Industrial Pkwy, Dutton, MI
Equipment:
Supervisor: Bill Pushaw

Drilling Method(s) / **Depth**
H.S. Auger / 13.0'

Grouting/Seal

Depth	To	Material/Method
13.0	0.0	Soil / Bentonite

Development
N/A

Screen
Manufacturer: N/A
Material:
Model:
Slot/Gauze: Dia.:
Length:
Depth Set: To:

Casing Flush Mount Cap

Dia.	Type	Depth Set
	N/A	To
		To

Date
Started: 5/16/89 Finished: 5/16/89

Elevation
Casing:
Ground:
Ref. Pt.:

Water Level Ft. Below
Measure On:

Location

Remarks
OVA not working, will check back at lab to see if there are any readings. Soil here is primarily what appears to be clean sand. No visual contamination, no odors. Hit something hard and impassible just before 13.0'.

OVA
Blow Counts: 18" / 12" / 6"

Thick-ness	Depth to Base	LITHOLOGIC DESCRIPTION	Sample Depth	18"	12"	6"	
	4.5	SAND, med. brown with gravel med.	1.5-3.0	2	2	3	
	4.7	A few small lenses of silty clay at ~4.5'	4.0-5.5	4	4	5	
	10.00	SAND, fine, brown, moist	6.5-8.0	3	2	4	
	10.3	SILTY CLAY, brown (small lense)	9.0-10.5	3	3	4	
	13.0	SAND, fine, med. brown moist	11.5-13.0	3	5	10	
						concrete	
		OVA Readings =Oppm					

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Environmental Services Division

Page: 1 of 1
Well/Boring No.: SB #8
Client: BOC Lansing
Project No.: 21544

Well/Boring Log Sheet

County	Township	Fraction 1/4 1/4 1/4	Section	T	R

Contractor Stearns Drilling
Address: 6875 Industrial Pkwy.
Dutton, MI
Equipment: CME 45C
Crew Chief: R. Christensen
WW Supervisor: M. Jones

Drilling Method(s) **Depth**
4 1/4" ID HSA 79'

Grouting/Seal
Depth/To Material/Method
0-79.5' Bent. slurry/tremmie pipe

Development None

Screen
Manufacturer: N/A
Material:
Model:
Slot/Gauze: Dia.:
Length:
Depth Set: To:

Casing
Dia. Type Depth Set
N/A To
To

Date
Started: 2/20/90 Finished:

Elevation
Casing: N/A
Ground:
Ref. Pt.:

Water Level ~75' Ft. Below gr.
Measure On: 2/20/90

Location

Remarks Composite sample 1' to 7' (~1' concrete). No water 20-30', occasional damp seams only. 7 minutes to drill 58.5-60' with 400 psi hydra-pressure. 5 min 60-63' change ~61.5-66' resistance, probably rock, then 4 mins to 68.5' (from 66'). Rods, had to break at 10' intervals due to ceiling height. 4 mins at 500 psi. 77.5-78.5' Grab sample water from augers using Teflon Bailer.

Thickness (feet)	Depth to Base	LITHOLOGIC DESCRIPTION	Sample Depth	Blow Counts 1st	2nd	3rd	4th
	0.7	Concrete	1-3	3	2	3	4
	4	Clay, sandy, occasional fine gravel, brown, dry, hard	3-5	4	9	15	21
	5.2	Sand, clayey, some silt and occasional fine gravel, dense, dry, seam of light colored silty material, dry, hard	5-7	5	9	11	12
	8.8	Clay, sandy, some silt and fine gravel, brown pliable, dry	8.5-10	8	6	7	
	~11	Sand, clayey, occasional rock and gravel, brown, moist, decayed wood and occasional organics, top of seam	18.5-20	2	4	8	
			28.5-30	2	2	3	
	~14	Clay, sandy, brown, pliable, occasional moist seams	38.5-40	14	21	34	
	~27	Clay, sandy, pliable, gray, soft, occasional seams and pockets of brown peat, dry	48.5-50	12	14	18	
	28.8	Sand, gray, fine, dry	58.5-60	15	19	26	
	~36	Clay, silty, some very fine sand, gray, soft, moist, occasional sand lenses	68.5-70	9	16	27	
	38.5	Silt, dry, brown	79-80	35/1"			
	~48	Sand, very fine, with some silt, occasional medium to coarse sand, very light gray, dry	No recovery except shattered sandstone				
	~58	Silt, sandy, some coarse sand, gray, occasional fine gravel, dry					
	79.5	Silt, very sandy, gray, occasional rock and gravel, slightly moist					
		Bedrock, sandstone					
	EOB						

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Page: 1 of 1
Well/Boring No.: SB-9
Client: BOC Lansing
Project No.: 21253

Well/Boring Log Sheet

County	Township	Fraction 1/4 1/4 1/4	Section	T	R

Contractor Stearns Drilling
Address: Dutton, MI

Equipment: CME 55
Crew Chief: Gary Geerlings
Supervisor: R. Clapp

Drilling Method(s) **Depth**
3 1/4" ID HSA 70.5'
or ~10" OD HSA

Grouting/Seal

Depth/To	Material/Method
65-1'	Cement/Bent. Grout w/ Tremie Rod
1-0'	Redi-mix Concrete

Development N/A

Screen
Manufacturer: N/A
Material:
Model:
Slot/Gauze: Dia.:
Length:
Depth Set: To:

Casing

Dia.	Type	Depth Set
	N/A	To
		To

Date
Started: 11/13/89 Finished: 11/14/89

Elevation
Casing: N/A
Ground:
Ref. Pt.:

Water Level 59.5' Ft. Below ground
Measure On: Immediately after encountering aquifer - inside augers

Location See seperate location map

Remarks Background OVM = 1.3 ppm (head space test)
Sample at 14-15.5' was taken only to describe lithology, no recovery so we went down to next interval (drove stone). A stone lodged in lead auger probably prevented the recovery of the silt layer at this depth.

Thickness (feet)	Depth to Base	LITHOLOGIC DESCRIPTION	Sample Depth	Blow Counts 6"	12"	18"	OVM (ppm above background)
.1	1	CONCRETE	1-2	From auger flights			.7
1	2	CLAY, some silt, some fine sand, trace coarse to medium sand, trace fine gravel,	9-11	3	4	7	.7
		brown mottled clay, slightly moist	14-15.5	7	11	15	NR
6	8	CLAY, some silt, some fine sand, trace coarse to medium sand, trace coarse to fine gravel,	19-20.5	25	60 for 5"		0
		brown, slightly moist	24-25.5	3	5	15	.7
7	15	CLAY, some fine sand, little silt, little coarse to medium sand, trace fine gravel, brownish	29-30.5	7	6	6	0
		gray, slightly moist	39-40.5	18	25	40	0
3	18	SILT, some fine sand, trace clay, brown, dry	49-50.5	19	31	50	0
16	34	CLAY, little silt, little coarse to fine sand, trace coarse to fine gravel, brownish gray, moist,	59-60.5	27	25	32	0
		with seams fine sand, wet	69-70.5	10	9	10	0
11	45	SAND, fine, little silt, gray, dry					
9	54	CLAY, some fine sand, little coarse to medium sand, trace coarse to fine gravel,					
		occasional rubble, brownish gray, slightly moist				6"	
6.7	60.7	CLAY, some fine sand, little coarse to medium sand, brownish gray, moist with layers (4")					
		clayey sand, moist					
9.3	70	SAND, medium to fine, some coarse sand, trace fine gravel, gravish brown, wet					
0.4	70.4	SAND, coarse to fine, some fine gravel, trace coarse gravel, gravish brown, wet					
0.1+	70.5+	SAND, coarse to fine, some fine gravel, trace fine gravel, gravish brown, wet, with small					
		1/2" pieces of weathered black shale					
		NR = No Recovery					
		EOB - 70.5'					

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Environmental Services Division

Page: 1 of 1
Well/Boring No.: SB-10
Client: BOC Lansing
Project No.: 21253

Well/Boring Log Sheet

County	Township	Fraction 1/4 1/4 1/4	Section	T	R

Contractor Stearns Drilling
Address: Dutton, MI

Equipment: CME 55
Crew Chief: Gary Geerlings
Supervisor: R. Clapp

Drilling Method(s)	Depth
4 1/4" ID HSA	63'
or 8" OD HSA	

Grouting/Seal

Depth/To	Material/Method
58-58'	Cave In/Nat. Soils
58-1'	Cement/Bent. Grout
1-0'	Redi-mix Concrete

Development With SS Bailer
Total purged - 3.5 gals.

Screen Temp Well
Manufacturer: Johnson
Material: Stainless Steel
Model: Cont. Wire Wound
Slot/Gauze: 7 Dia.: 2"
Length: 5'
Depth Set: 58' To: 63'

Casing

Dia.	Type	Depth Set
2"	Galv.	0' To 58'
		To

Date
Started: 11/14/89 Finished: 11/15/89

Elevation
Casing: N/A
Ground:
Ref. Pt.:

Water Level 58.8' Ft. Below grade
Measure On: 11/15/89 ~14 hrs. after setting the well.

Location See base location map

Remarks Strong gasoline odor present in soils from about 1-5' below grade.
Screened formation has very low permeability.
Cloudy and rain, ~50°F, all day
Well was pulled imediately after sampling.

Depth (feet) to Base	LITHOLOGIC DESCRIPTION	Sample Depth	Blow Counts 6"	12"	18"	OVM (ppm above background) from auger flights
1	CONCRETE	1-2				85
5	CLAY, some silt, some fine sand, trace coarse to medium sand, trace fine gravel,	9-10.5	2	6	14	3
	brown mottled clay, moist, odor	18.5-20	24	28	45	0
8	CLAY, some silt, some fine sand, trace medium to coarse sand, trace coarse to fine gravel,	28.5-30	13	20	30	0
	brown, slightly moist, odor	38.5-40	15	25	47	0
17.5	CLAY, some fine sand, little silt, little coarse to medium sand, trace coarse to fine gravel,	50-51.5	25	50	48	0
	brownish gray, slightly moist	58.5-60	17	28	24	0
27	CLAY, some silt, some fine sand, trace coarse to to medium sand, trace coarse to fine gravel,					
	brown, dry, with layers (4") brown fine sand, gray, dry					
36	SILT, trace clay, trace fine sand, gray, dry					
43	SAND, very fine, some silt, gray, dry					
58	CLAY and SILT, some fine sand, trace coarse to medium sand, trace coarse to fine					
	gravel, brownish gray, slightly moist					
63+	SILT, some clay, little fine sand, gray to wet, with layers (1-2") brown fine sand, wet					
	EOB - 63'					

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Page: 1 of 1
Well/Boring No.: SB-11
Client: BOC Lansing
Project No.: 21253

Well/Boring Log Sheet

County	Township	Fraction 1/4 1/4 1/4	Section	T	R

Contractor Stearns Drilling
Address: Dutton, MI

Equipment: Acker
Tim/John
Supervisor: M. Christensen

Drilling Method(s) **Depth**
H. S. Auger 29'

Grouting/Seal
Depth/To Material/Method
7-1' Grout/Full Depth

Development N/A

Screen Temp Well
Manufacturer: Johnson
Material: Stainless Steel
Model: Cont. Wire Wound
Slot/Gauze: 10 Dia.: 2"
Length: 5'
Depth Set: 23' To: 18'

Casing
Dia. Type Depth Set
2" Galv. 18 To +1'
To

Date
Started: 11/9/89 Finished: 11/9/89

Elevation
Casing: N/A
Ground:
Ref. Pt.:

Water Level 22.1' Ft. Below surface
Measure On: 11/10/89

Location See base location map

Remarks Dry samples at 16' and 19', wet zone somewhere between.
After removing screen and casing water level rose to 9.8'.

Thickness	(feet) Depth to Base	LITHOLOGIC DESCRIPTION	Blow Counts / Sample Depth	Hnu (ppm above background) 24"	18"	12"	6"	
1	1	CONCRETE	1-3	off auger				0
12	13	SAND, medium (fill), moist	9-11	11	13	20	20	0
6.5	19.5	CLAY, brown, with occasional stone	14-16	4	8	10	14	0
1	20.5	SILT, brown, moist	19-21	13	22	5	8	0
3.5	24	CLAY, brown, sandy, moist	24-25.5	13	18	30	No sample	
1.5	25.5	SAND, brown, fine	29-31	8	10	14	9	0
4.5	30	SAND, very fine, silt						
1	31+	CLAY, sandy, brown						

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Page: 1 of 1
Well/Boring No.: SB-12
Client: BOC Lansing
Project No.: 21253

Well/Boring Log Sheet

County	Township	Fraction 1/4 1/4 1/4	Section	T	R

Contractor Stearns Drilling
Address: Dutton, MI

Equipment: Acker
Tim/John
Supervisor: M. Christensen

Drilling Method(s) **Depth**
H. S. Auger 14.5'

Grouting/Seal
Depth/To Material/Method
7-1' Grout/Full Depth

Development N/A

Screen Temp Well
Manufacturer: Johnson
Material: Stainless Steel
Model: Cont. Wire Wound
Slot/Gauze: 10 Dia.: 2"
Length: 5'
Depth Set: 14.9' To: 9.9'

Casing
Dia. Type Depth Set
2" Galv. 9.9' To +2'
To

Date
Started: 11/7/89 Finished: 11/7/89

Elevation
Casing: N/A
Ground:
Ref. Pt.:

Water Level 6.7' Ft. Below surface
Measure On: 11/8/89

Location See base location map

Remarks Water at 14.6' - 11/17/89 5:00 pm

Thickness (feet)	Depth to Base (feet)	LITHOLOGIC DESCRIPTION	Blow Counts Sample Depth	Hnu (ppm above background) 24"	18"	12"	6"	
1.2	1.2	CONCRETE with steel	1-3	off auger				0
2.8	4	SAND, medium brown, fill	9-11	5	9	15	14	0
5.5	9.5	CLAY, sandy, moist	14-16	11	17	22	48	0
2.5	12	CLAY, sandy, very slight moisture (till)						
2	14	SAND, fine, silty, wet						
2	16	CLAY, sandy, (till), very slight moisture						

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Page: 1 of 1
Well/Boring No.: SB-13
Client: BOC Lansing
Project No.: 21253

Well/Boring Log Sheet

County	Township	Fraction 1/4 1/4 1/4	Section	T	R

Contractor Stearns Drilling
Address: Dutton, MI

Equipment: Acker
Tim/John
Supervisor: M. Christensen

Drilling Method(s) **Depth**
H. S. Auger 14'

Grouting/Seal
Depth/To **Material/Method**
7-1' Grout/Full Depth

Development N/A

Screen Temp Well
Manufacturer: Johnson
Material: Stainless Steel
Model: Cont. Wire Wound
Slot/Gauze: 10 **Dia.:** 2"
Length: 5'
Depth Set: 15.5' **To:** 10.5'

Casing
Dia. Type Depth Set
2" Galv. 10.5' To +2'
To

Date
Started: 11/8/89 **Finished:** 11/8/89

Elevation
Casing: N/A
Ground:
Ref. Pt.:

Water Level 12.5' Ft. Below surface
Measure On: 11/8/89 12:30 pm, after setting ~1 hour.

Location See base location map

Remarks

Thickness (feet)	Depth to Base	LITHOLOGIC DESCRIPTION	Blow Counts Sample Depth	Hnu (ppm above background) 24"	18"	12"	6"	
1.2	1.2	CONCRETE with steel	1-3	off auger				3.5
1.8	3	SAND, medium brown, fill	9-11	5	7	11	13	19
12.2	15.2	CLAY, sandy, moist	14-16	3	5	9	12	0
0.2	15.4	SAND, medium, wet						
0.6	16	CLAY, sandy, moist						

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Page: 1 of 1
Well/Boring No.: SB-14
Client: BOC Lansing
Project No.: 21253

Well/Boring Log Sheet

County	Township	Fraction 1/4 1/4 1/4	Section	T	R

Contractor Stearns Drilling
Address: Dutton, MI

Equipment: Acker
Tim/John
Supervisor: M. Christensen

Drilling Method(s) **Depth**
H. S. Auger 47'

Grouting/Seal
Depth/To Material/Method
7-1' Grout/Full Depth

Development N/A

Screen Temp Well
Manufacturer: Johnson
Material: Stainless Steel
Model: Cont. Wire Wound
Slot/Gauze: 10 Dia.: 2"
Length: 5'
Depth Set: 38' To: 43'

Casing
Dia. Type Depth Set
2" Galv. 38' To +4'
To

Date
Started: 11/8/89 Finished: 11/9/89

Elevation
Casing: N/A
Ground:
Ref. Pt.:

Water Level 20' Ft. Below surface
Measure On: 11/9/89

Location See base location map

Remarks 8-8.2' soils wet but no water to sample.

Thickness (feet)	Depth to Base	LITHOLOGIC DESCRIPTION	Blow Counts / Sample Depth	Hnu (ppm above background) 24"	18"	12"	6"
1	1	CONCRETE with steel	1-3	off auger			9
2	3	SANDY, with gravels	6-8	9	12	18	13 3
3.7	6.7	CLAY, sandy	9-11	2	3	6	8 2
1	7	SAND, fine, very moist	14-16	5	7	10	13 0
1	8	CLAY, sandy, brown, slight moisture	19-21	22	30	34	22 1
0.2	8.2	SAND, medium to coarse, wet	29-31	15	20	21	17 0
5.8	14	CLAY, sandy, brown	39-41	18	25	31	27 0
5	19	CLAY, brown	47-49	17	23	28	35 0
10	29	CLAY, sandy, brown, very slight moisture					
2	31	SAND, very fine, silt, dry					
7	38	CLAY, sandy, slight moisture					
11	49	SAND, fine, very moist					

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Environmental Services Division

Page: 1 of 1
Well/Boring No.: SB-15
Client: BOC Lansing
Project No.: 21253

Well/Boring Log Sheet

County	Township	Fraction 1/4 1/4 1/4	Section	T	R

Contractor Stearns Drilling
Address: Dutton, MI

Equipment: Acker
Tim/Gary/John on 11/7/89
Supervisor: M. Christensen

Drilling Method(s) **Depth**
H. S. Auger 69'

Grouting/Seal
Depth/To Material/Method
7-1' Grout/Full Depth

Development N/A

Screen
Manufacturer:
Material:
Model:
Slot/Gauze: Dia.:
Length:
Depth Set: To:

Casing
Dia. Type Depth Set
To
To

Date
Started: 11/6/89 Finished: 11/7/89

Elevation
Casing: N/A
Ground:
Ref. Pt.:

Water Level 59.2' Ft. Below surface
Measure On: 11/6/89
53.6' water level 11/7/89

Location See base location map

Remarks Bailed sample through screened lead auger.

Thickness (feet)	Depth to Base	LITHOLOGIC DESCRIPTION	Blow Counts Sample Depth	Hnu (ppm above background) 24"	18"	12"	6"
0.8	0.8	CONCRETE with steel	1-3	2	4	5	5	0
1	1.8	SAND, medium (fill), wet	9-11	8	9	10	11	<1
1.2	3	CLAY, silty, moist, occasional stone	19-21	22	40	30		0
6.5	9.5	SILT, wet	29-31	11	16	20	22	0
8.5	18	CLAY, brown to gray, silty, moist	39-41	21	33	41		0
5	23	SAND, fine, silty, slight moisture	49-51	24	33	55		0
6	29	SILT, brown, wet, but no water to sample	59-61	16	17	17	19	0
21	50	SAND, very fine, slight moisture	69-71	2	5	7	9	0
19	69	SAND, fine, till						
1	70	SAND, coarse, with gravel, wet						

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Environmental Services Division

Page: 1 of 1
Well/Boring No.: SB-16 Plant 3
Client: BOC Lansing
Project No.: 21253

Well/Boring Log Sheet

County	Township	Fraction 1/4 1/4 1/4	Section	T	R

Contractor Stearns Drilling
Address: Dutton, MI

Equipment: Acker
Tim/John
Supervisor: M. Christensen

Drilling Method(s) **Depth**
H. S. Auger 60'

Grouting/Seal
Depth/To Material/Method
7-1' Grout/Full Depth

Development N/A

Screen
Manufacturer:
Material:
Model:
Slot/Gauze: Dia.:
Length:
Depth Set: To:

Casing
Dia. Type Depth Set
To
To

Date
Started: 11/3/89 Finished: 11/6/89

Elevation
Casing: N/A
Ground:
Ref. Pt.:

Water Level 59.2' Ft. Below surface
Measure On: 11/3/89

Location See base location map

Remarks Bailed sample through screened auger.
Sample: 1.2-3.2 39-40.5
9-11 Storm sewer at 9' in east MH 49-51
19-20.5 59-61
29-31

Thickness	(feet) Depth to Base	LITHOLOGIC DESCRIPTION	Blow Counts Sample Depth	Hnu 24"	18"	12"	6"	
1.2	1.2	CONCRETE with steel	1.2-3.2	10	13	14	9	<2
1.8	3	SAND, medium, brown, concrete, rubble	9-11	7	7	10	12	<0
8	11	CLAY, brown, sandy, moist	19-21	40	50	57		<2
8	19	CLAY, some sand, moist, brown	29-31	11	9	8	8	<2
6	25	SAND, medium to fine, slight binder, moist	39-40	22	40	43		<1
4	29	SAND, medium, brown, moist	49-51	18	20	26	31	<1
20	49	CLAY, silty, moist	59-61	17	28	35	40	<0
6	55	SAND, very fine, silty, slight moisture						
6	61	SAND, very fine, silty, wet						
		59' water sample from auger						

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Environmental Services Division

Page: 1 of 1
Well/Boring No.: SB-17
Client: BOC Lansing Plant 1
Project No.: 21666

Well/Boring Log Sheet

County	Township	Fraction	Section	T	R

Contractor Stearns Drilling Co.
Address: 6974 Hammond Rd.
Dutton, MI 49316
Equipment: Acker
Crew Chief: Paul Mills
WW Supervisor: R.Wagner, J. Cargil

Drilling Method(s) **Depth**
4 1/4" ID HSA (screened) 42.0'

Grouting/Seal
Depth/To
42.0'-39.3' Cave In Nat. Soils
39.3'-1.0' Cement/Bent. Grout
1.0'-0.0' Ready Mix

Development N/A

Screen
Manufacturer: N/A
Material:
Model:
Slot/Gauze: Dia.:
Length:
Depth Set: To:

Casing
Dia. Type Depth Set
N/A To
To

Date
Started: 4/24/90 Finished:

Elevation
Casing: N/A
Ground:
Ref. Pt.:

Water Level 41.0 Ft. Below ground
Measure On: Augers

Location

Remarks Back ground HNU 1ppm
RF= Refusal
NSR= No Sample Recovered

Thickness	(feet) Depth to Base	LITHOLOGIC DESCRIPTION	Blow Counts Sample Depth	HNU (ppm) 18"	12"	6"	
4.0'	4.0'	Sand, fine to med., brown occassional gravel, dry	1.0-2.5	5	9	15	0
4.5'	8.5'	Silt, with fine sand, clay binder, brown, moist	5.0-6.5	5	6	7/9	0
3.0'	11.5'	Clay, sandy, grey, moist, no odor	10-11.5	4	7	9	0
0.2'	11.7'	Sand, fine to med., grey, wet, no odor	15-16.5	9	11	10	0
8.3'	20.0'	Clay, sandy, grey, slightly moist, no odor	20-21.5	21	24	70	5
6.0'	26.0'	Sand, fine, with occassional gravel, brown to grey, dry, no odor	30-31.5	8	10	21	12.6
4.0'	30.0'	Sand, fine, light brown, dry, no odor	40-41.5	24	45	RF	NSR
12.0'	EOB	Silt, sandy, grey, moist, no odor, drove rock with spoon?					

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Environmental Services Division

Page: 1 of 1
Well/Boring No.: SB-18
Client: BOC Lansing Plant 1
Project No.: 21666

Well/Boring Log Sheet

County	Township	Fraction	Section	T	R

Contractor Steams Drilling Co.
Address: 6974 Hammond Rd.
Dutton, MI 49316
Equipment: Acker
Crew Chief: Paul Mills
WW Supervisor: R.Wagner, J. Cargil

Drilling Method(s) **Depth**
4 1/4" ID HSA 52.0'

Grouting/Seal
Depth/To
52.0'-1.0' Benut. Grout
1.0'-0.0' Ready Mix

Development N/A

Screen
Manufacturer: N/A
Material:
Model:
Slot/Gauze: Dia.:
Length:
Depth Set: To:

Casing
Dia. Type Depth Set
N/A To
To

Date
Started: 4/23/90 Finished: 4/23/90

Elevation
Casing: N/A
Ground:
Ref. Pt.:

Water Level dry Ft. Below
Measure On: N/A

Location

Remarks HNU may be slighty off calibration, no calibration gas.
Background 1 ppm, no noticable odors

Thickness	(feet) Depth to Base	LITHOLOGIC DESCRIPTION	PID (ppm)	Blow Counts 6"	12"	18"		
			Sample Depth					
7.5'	7.5'	Sand, fine to med., brown clay matrix, occassional gravel	0-1.5	4	4	8	70	
12.0'	19.5'	Clay, silty dark gray, dry, med., stiff	9.5-11.0	6	10	14	70	
3.5'	23.0'	Silt, brown, some sand, track of small gravel, dry	19.5-21.0	7	17	19	62	
5.0'	28.0'	Sand, brown, med., dry	30-31.5	9	15	10		
2.0'	30.0'	Sand, gray-brown, med. dry	40-41.5	10	18	53		
2.0'	32.0'	Silt, gray, trace of fine sand slightly moist	50-51.4	28	35	50/4.5		
9.0'	41.0'	Sand, gray fine, dry						
0.5'	41.5'	Clay, silty, brown, trace of sand & gracel, slightly moist						
0.5'	EOB	Sand, gray, fine: shale fragments in 50' to 51.4' spoon (from above) bedrock						

WW Engineering & Science, Inc.
Environmental Services Division

Page: 1 of 1
Well/Boring No.: SB-20
Client: BOC Lansing
Project No.: 21666.01
Date:
Started: 8/12/91 Finished: 8/12/91

Well/Boring Log Sheet

County	Township	Fraction	Section	T	R
Ingham	Lansing	SE1/4	7	4N	2W

Contractor Stearns Drilling
Address: 6974 Hammond
Dutton, MI 49316
Equipment: CME 75
Crew Chief: Duane
WW Supervisor: Don Johnson

Drilling Method(s) — **Depth**
4 1/4" ID HSA — 0.0-70.0'

Location

Grouting/Seal

Depth/To	Material/Method
0.0'-1.0'	Gravel Mix Cement
1.0'-70'	Cement/Bentonite Grout

Remarks No well set at this location. Boring only/soils sampled at 10-foot intervals to the water table.

Water Level 60' Ft. Below GD

Thickness	(feet) Depth to Base	LITHOLOGIC DESCRIPTION	Blow Counts Sample Depth	OVM/PID (ppm) 6"	12"	18"	24"	Response	Background
1.0	1.0	CONCRETE							
3.5	4.5	SAND, brown, fine to coarse and some fine to medium gravel							
2.5	7.0	CLAY, brown, sandy and some fine to medium gravel, dry	8'-10'	3	4	5	7	0	0
12	19	CLAY, gray, sandy and some fine gravel, dry	18'-20'	4	6	8	10	0	0
4	23	CLAY, gray, sandy, medium firm and trace of silt, dry	28'-30'	8	12	16	26	0	0
16	39	CLAY, gray, sandy and some fine to medium gravel, dry	38'-40'	12	19	26	34	0	0
0.5	39.5	SILT, gray and traces of gray clay, dry							
6.5	46	SAND, gray, fine to coarse and some fine to medium gravel with occasional coarse gravel	48'-50'	18	24	23	18	0	0
2.5	48.5	SILT, gray and some fine gray sand, moist	58'-60'	11	15	17	17	0	0
6.5	55	SILT, gray and some very fine gray sand, dry	68'-70'	3	5	5	7	0	0
8	63	CLAY, gray, very silty, dry and occasional fine gravel with pieces of coal							
6	69	SAND, gray, very fine to fine and some gray silts, wet							
1.0	70	SILT, gray and some very fine gray sands, moist							
		EOB @ 70'							

URS CONSULTANTS, Inc.

TEST BORING LOG
BORING NO. SB-25

PROJECT:	GM-Lansing, Plant #3, Area 3
CLIENT:	GM-LAD
BORING CONTRACTOR:	Geo-Tek Inc.
GROUND WATER:	

DATE	TIME	LEV	TYPE

	CAS.	SAMP.	CORE	TUBE
TYPE	HSA	CME		
DIA.	4-1/4"	3-1/2"		
WT.				
FALL				

* POCKET PENETROMETER READING

SHEET NO.	1 OF 1
JOB NO. :	E1-93-110
GROUND ELEVATION	860.32
DATE STARTED:	10/15/93
DATE FINISHED:	10/15/93
DRILLER:	Peter Buell
GEOLOGIST:	Michael Kovacs
REVIEWED BY:	David Frazier

DEPTH FT	STRATA	SAMPLE NO.	SAMPLE TYPE	BLOWS PER 6"	RECOVERY RQD %	DESCRIPTION COLOR	CONSISTENCY HARDNESS	MATERIAL DESCRIPTION	CLASS USCS	REMARKS
1								Asphalt over Concrete		
		S-1	CME		60	light brown/ grey		CLAYEY SILT, some fine Sand	Fill	moist
5		S-2	CME		100	brown/ grey		SANDY SILT, some Gravel	ML	moist
10		S-3	CME		100	brown		...grade: little Gravel CLAY, little fine Sand, some Gravel	CL	moist
15		S-4	CME		100	light grey		SANDY SILT, little Gravel	ML	very moist dry
20		S-5	CME		100	grey		SAND Seam	SP	dry
25		S-6	CME		90	grey		interbedded SAND and SILT	SP/ML	moist dry
30		S-7	CME		100	brown				moist
						grey		SILTY CLAY, little fine Sand	CL	very wet moist
35		S-8	CME			grey/ brown		SILTY SAND	SM	moist
40								End of Boring 39.0 ft.		

COMMENTS HNu readings not reported due to malfunctioning gauge. CME - 3.5" dia. x 5' soil coring tube

PROJECT NO. E1-93-110

URS CONSULTANTS, Inc.

TEST BORING LOG
BORING NO. SB-26

PROJECT: GM-Lansing, Plant #3, Area 3
CLIENT: GM-LAD
BORING CONTRACTOR: Geo-Tek Inc.
GROUND WATER:

DATE	TIME	LEV	TYPE

	CAS.	SAMP.	CORE	TUBE
TYPE	HSA	CME		
DIA.	4-1/4"	3-1/2"		
WT.				
FALL				

SHEET NO. 1 OF 1
JOB NO. : E1-93-110
GROUND ELEVATION 860.36
DATE STARTED: 10/14/93
DATE FINISHED: 10/14/93
DRILLER: Peter Buell
GEOLOGIST: Michael Kovacs
REVIEWED BY: David Frazier

* POCKET PENETROMETER READING

DEPTH FT	STRATA	SAMPLE NO.	SAMPLE TYPE	BLOWS PER 6"	RECOVERY RQD %	DESCRIPTION COLOR	CONSISTENCY HARDNESS	MATERIAL DESCRIPTION	CLASS USCS	REMARKS
1								Concrete		
		S-1	CME		50	brown		SAND	Fill	moist , Hnu = ND
5		S-2	CME		100	brown/ grey		SANDY SILT with fine Sand interbeds	ML	black stain @ 5' Hnu(5')=68ppm very moist moist
10		S-3	CME		100	grey		SILTY SAND, little Gravel	SM	Hnu(6-9')=ND wet Hnu(9-14')=ND dry
15		S-4	CME		100	grey		SANDY SILT	ML	dry wet
						grey		CLAY and SILT, little fine Sand, little Gravel	CL/ML	Hnu(14-19')=ND dry
20		S-5	CME		20	grey		interbedded fine SAND and SANDY SILT	SP/ML	Hnu(19-24')=ND
25		S-6	CME		100					Hnu(24-29')=ND moist
30		S-7	CME		100					vertical sand/silt beds Hnu(29-34')=ND moist
35		S-8	CME		100					Hnu(34-39')=ND
40								End of Boring 39.0 ft.		

COMMENTS ND - non detect. CME - 3.5" dia. x 5' soil coring tube.

PROJECT NO. E1-93-110

URS CONSULTANTS, Inc.

TEST BORING LOG
BORING NO. SB-27

PROJECT:	GM-Lansing, Plant #3, Area 3
CLIENT:	GM-LAD
BORING CONTRACTOR:	Geo-Tek Inc.
SHEET NO. 1 OF	1
JOB NO. :	E1-93-110
GROUND ELEVATION	860.16'
DATE STARTED:	10/14/93
DATE FINISHED:	10/14/93
DRILLER:	Peter Buell
GEOLOGIST:	Michael Kovacs
REVIEWED BY:	David Frazier

GROUND WATER:

DATE	TIME	LEV	TYPE

	CAS.	SAMP.	CORE	TUBE
TYPE	HSA	CME		
DIA.	4-1/4"	3-1/2		
WT.				
FALL				

* POCKET PENETROMETER READING

DEPTH FT	STRATA	SAMPLE NO.	SAMPLE TYPE	BLOWS PER 6"	RECOVERY RQD %	DESCRIPTION COLOR	CONSISTENCY HARDNESS	MATERIAL DESCRIPTION	CLASS USCS	REMARKS
1								1' Concrete		
		S-1	CME		50	brown		SAND, some Clay	Fill	Hnu(1-3')=ND moist
5		S-2	CME		100	brown		SILTY SAND with fine Sand interbeds ... little Gravel	SM	Hnu(3-8')=ND very moist
						grey		SAND and GRAVEL lens	SG	moist
10		S-3	CME		100					Hnu(8-13')=ND dry
15		S-4	CME		100	brown		SANDY SILT	ML	Hnu(13-18')=ND
20		S-5	CME		100					Hnu(18-23')=ND
25		S-6	CME		20	grey		interbedded fine SAND and SANDY SILT	SP/ML	Hnu(23-28')=ND dry
30		S-7	CME		100					Hnu(28-33')=ND moist very moist
35		S-8	CME		100			... little Gravel		Hnu(33-38')=ND moist
40								End of Boring 38.0 ft.		

COMMENTS ND - non detect. CME - 3.5" x 5' soil coring tube.

PROJECT NO. E1-93-110

Log of Well VEW-1

Plant #3 Tank Farm
Lansing, Michigan
Project Number: 4694-197

Client: *General Motors Coporation*	
Drilling Company: *ESE*	
Drilling Rig: *Hurricane*	**Drilling Method:** *Hollow Stem Auger*
Soil Sampling Device: *Split Spoon*	**Borehole Diameter (in.):** *8*
Date Started: *1/18/95* **Date Completed:** *1/18/95*	**Total Depth Drilled (ft.):** *16*
Apparent Depth to Saturation While Drilling (ft. bgl): *8*	**Ground Elevation (ft.):**

Completion Information

Screened Interval (ft. bgl): *6-16*	**Filter Pack Interval (ft. bgl):** *5-12*
Screen Length (ft.): *10*	**Filter Pack Type:** *Filter Sand*
Bottom Cap Length (ft.): *0.25*	**Upper Seal Interval (ft. bgl):** *0-1*
Screen Type: *PVC*	**Upper Seal Type:** *Cement*
Screen Slot Size/Dia. (in.): *0.010/4*	**Lower Seal Interval (ft. bgl):**
Total Casing (ft.): *5.5*	**Lower Seal Type:**
Casing Type/Dia. (in.): *PVC/4*	**Grout Interval (ft. bgl):** *1-5*
Top of Casing Elevation (ft.):	**Grout Type:** *Hydrated Granular Bentonite*
Survey Datum:	**Protective Casing Type:** *Flush Mount*

Explanation & Comments

Plant #3 Tank Farm

Log of Well VEW-1

Depth (feet bgl)	Soil/Rock Description	USCS Classification	Lithologic Log	Well Construction	Comments	Elevation (ft.)
0	**Concrete**			flush mount; cement		
	Clay lt. brown, 10YR6/3, lots sand, dry, slightly plastic			4-inch PVC casing; hydrated granular bentonite		
2						
4	**Clay** lt. brown, 10YR6/3, some sand, dry, trace gravel, hard					
6	**Clay** grayish brown, 10YR5/2, some sand, trace gravel, dry, hard					
8	**Clay** grayish brown, 10YR5/2, some sand, trace gravel, dry, hard, sand lens at 9-9.25 bgl - saturated	CL				
10	**Clay** gray, 10YR5/1, slightly plastic, moist, trace gravel, trace sand			4-inch PVC screen; filter sand		
12						
14						
16	End of Boring					

Log of Well SB-1/VOW-1

Plant #3 Tank Farm
Lansing, Michigan
Project Number: 4694-197

Client: *General Motors Coporation*	
Drilling Company: *ESE*	
Drilling Rig: *Hurricane*	**Drilling Method:** *Hollow Stem Auger*
Soil Sampling Device: *Split Spoon*	**Borehole Diameter (in.):** *8*
Date Started: *1/18/95* **Date Completed:** *1/18/95*	**Total Depth Drilled (ft.):** *13*
Apparent Depth to Saturation While Drilling (ft. bgl): *9*	**Ground Elevation (ft.):**

Completion Information

Screened Interval (ft. bgl): *8-13*	**Filter Pack Interval (ft. bgl):** *7-12*
Screen Length (ft.): *5*	**Filter Pack Type:** *Filter Sand*
Bottom Cap Length (ft.): *0.25*	**Upper Seal Interval (ft. bgl):** *0-1*
Screen Type: *PVC*	**Upper Seal Type:** *Cement*
Screen Slot Size/Dia. (in.): *0.010/2*	**Lower Seal Interval (ft. bgl):**
Total Casing (ft.): *7.5*	**Lower Seal Type:**
Casing Type/Dia. (in.): *PVC/2*	**Grout Interval (ft. bgl):** *1-7*
Top of Casing Elevation (ft.):	**Grout Type:** *Hydrated Granular Bentonite*
Survey Datum:	**Protective Casing Type:** *Flush Mount*

Explanation & Comments

Plant #3 Tank Farm — Log of Well SB-1/VOW-1

Depth (feet bgl)	Blow Counts	Sample Recovery (%)	PID or FID (ppm) Values	PID or FID (ppm) Profile	Soil/Rock Description and Comments	USCS Classification	Lithologic Log	Well Construction	Elevation (ft.)
0					Concrete			flush mount; cement	
2	56	75%	0		Clay lt. brown, 10YR6/3, lots sand, dry, slightly plastic			2-inch PVC casing	
4	63	90%	0		Clay lt. brown, 10YR6/3, some sand, dry, trace gravel, hard			hydrated granular bentonite	
6	56	50%	0		Clay grayish brown, 10YR5/2, some sand, trace gravel, dry, hard	CL			
8	40	75%	0		Clay grayish brown, 10YR5/2, some sand, trace gravel, dry, hard, sand lens at 9-9.25 bgl – saturated			2-inch PVC screen; filter sand	
10	36	80%	0		Clay gray, 10YR5/1, slightly plastic, moist, trace gravel, trace sand				
12									
14					End of Boring				
16									

Environmental Science & Engineering, Inc.

Log of Well VOW-2

Plant #3 Tank Farm
Lansing, Michigan
Project Number: 4694-197

Client: *General Motors Coporation*	
Drilling Company: *ESE*	
Drilling Rig: *Hurricane*	**Drilling Method:** *Hollow Stem Auger*
Soil Sampling Device: *Split Spoon*	**Borehole Diameter (in.):** *8*
Date Started: *1/18/95* **Date Completed:** *1/18/95*	**Total Depth Drilled (ft.):** *13*
Apparent Depth to Saturation While Drilling (ft. bgl): *8*	**Ground Elevation (ft.):**

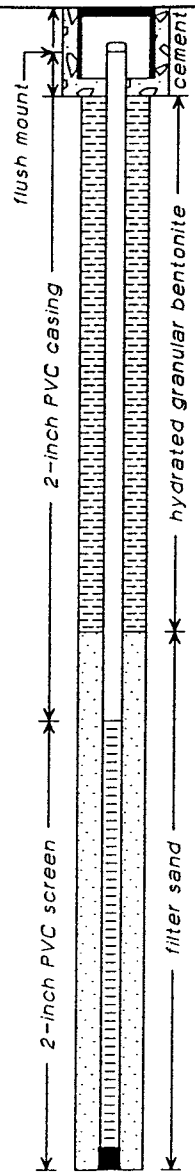
Completion Information

Screened Interval (ft. bgl): *8-13*	**Filter Pack Interval (ft. bgl):** *7-13*
Screen Length (ft.): *5*	**Filter Pack Type:** *Filter Sand*
Bottom Cap Length (ft.): *0.25*	**Upper Seal Interval (ft. bgl):** *0-1*
Screen Type: *PVC*	**Upper Seal Type:** *Cement*
Screen Slot Size/Dia. (in.): *0.010/2*	**Lower Seal Interval (ft. bgl):**
Total Casing (ft.): *7.5*	**Lower Seal Type:**
Casing Type/Dia. (in.): *PVC/2*	**Grout Interval (ft. bgl):** *1-7*
Top of Casing Elevation (ft.):	**Grout Type:** *Hydrated Granular Bentonite*
Survey Datum:	**Protective Casing Type:** *Flush Mount*

Explanation & Comments

Plant #3 Tank Farm — Log of Well VOW-2

Depth (feet bgl)	Soil/Rock Description	USCS Classification	Lithologic Log	Well Construction	Comments	Elevation (ft.)
0	Concrete					
2	Clay lt. brown, 10YR6/3, lots sand, dry, slightly plastic	CL				
4	Clay lt. brown, 10YR6/3, some sand, dry, trace gravel, hard					
6	Clay grayish brown, 10YR5/2, some sand, trace gravel, dry, hard					
8	Clay grayish brown, 10YR5/2, some sand, trace gravel, dry, hard, sand lens at 9–9.25 bgl – saturated					
10	Clay gray, 10YR5/1, slightly plastic, moist, trace gravel, trace sand					
12						
14	End of Boring					
16						



GM Lansing Plant 6
Boring Log Master List

Location Name	Have Boring Log
B-96-A	No
B-96-B	No
B-96-C	No
B-96-D	No
B-BP-1	Yes
B-BP-14	Yes
B-BP-15	Yes
B-BP-16	Yes
B-BP-2	Yes
B-BP-3	Yes
B-BP-4	Yes
B-BP-5	Yes
B-BP-6	Yes
B-BP-7	Yes
B-BP-8	Yes
CollectionSump	NA
Composite Waste	NA
E-1	Yes
E-10	Yes
E-11	Yes
E-12	Yes
E-13	Yes
E-14	Yes
E-15	Yes
E-16	Yes
E-17	Yes
E-18	Yes
E-19	Yes
E-2	Yes
E-20	Yes
E-21	Yes
E-22	Yes
E-23	Yes
E-24	Yes
E-25	Yes
E-26	Yes
E-27	Yes
E-28	Yes
E-29	Yes
E-3	Yes
E-30	Yes
E-31	Yes
E-32	Yes
E-33	Yes
E-34	Yes
E-34A	No
E-35	Yes
E-35A	No
E-36	Yes

GM Lansing Plant 6
Boring Log Master List

Location Name	Have Boring Log
E-36A	No
E-37	Yes
E-37A	No
E-38	Yes
E-38A	No
E-39	Yes
E-39A	No
E-4	Yes
E-40	Yes
E-40A	No
E-40A MD	NA
E-41	Yes
E-41A	No
E-5	Yes
E-7	Yes
E-8	Yes
E-9	Yes
Equipment Blank	NA
ExcavationWater	NA
G-1	Yes
G-10	Yes
G-2	Yes
G-3	Yes
G-4	Yes
G-5	Yes
G-6	Yes
G-7	Yes
G-8	Yes
G-9	Yes
GDW-96-BP1	No
GDW-96-BP2	No
GP-1	Yes
GP-10	Yes
GP-2	Yes
GP-3	Yes
GP-4	Yes
GP-5	Yes
GP-6	Yes
GP-7	Yes
GP-8	Yes
GP-9	Yes
MW-02-01	Yes
MW-02-02	Yes
MW-02-03	Yes
MW-03-01	Yes
MW-03-02	Yes
MW-03-03	Yes
MW-03-04	Yes
MW-03-05	Yes

GM Lansing Plant 6
Boring Log Master List

Location Name	Have Boring Log
MW-03-06	Yes
MW-03-07	Yes
MW-03-08	Yes
MW-04-01	Yes
MW-04-02	Yes
MW-04-03	Yes
MW-04-04	Yes
MW-04-05	Yes
MW-04-06	Yes
MW-1	Yes
MW-100	NA - Duplicate Sample
MW-101	NA - Duplicate Sample
MW-10A	No
MW-12A	No
MW-13A	No
MW-2	Yes
MW-3	Yes
MW-4	Yes
MWBP-10	Yes
MWBP-10	Yes
MWBP-10A	Yes
MWBP-11	Yes
MWBP-11	Yes
MWBP-11A	Yes
MWBP-12	Yes
MWBP-12	Yes
MWBP-12A	Yes
MWBP-13	Yes
MWBP-13A	Yes
Rinse Blank	NA
S-1	No
S-2	No
S-3	No
S-4	No
SA 10-2	Yes
SA 10-3	Yes
SA 10-4	Yes
SA 10-4R	Yes
SA 11-1	Yes
SA 11-10	Yes
SA 11-11	Yes
SA 11-12	Yes
SA 11-14	Yes
SA 11-15	Yes
SA 11-16	Yes
SA 11-17	Yes
SA 11-18	Yes
SA 11-1B	Yes
SA 11-2	Yes

GM Lansing Plant 6
Boring Log Master List

Location Name	Have Boring Log
SA 11-3	Yes
SA 11-4	Yes
SA 11-5	Yes
SA 11-6	Yes
SA 11-7	Yes
SA 11-8	Yes
SA 11-9	Yes
SA 12-1	Yes
SA 12-2	Yes
SA 12-3	Yes
SA 12-4	Yes
SA 13-1	Yes
SA 13-2	Yes
SA 14-1	Yes
SA 1-5	Yes
SA 1-6	Yes
SA 20-1	Yes
SA 20-2	Yes
SA 20-3	Yes
SA 20-4	Yes
SA 22-2	Yes
SA 22-3	Yes
SA 26-3	Yes
SA 28-1	Yes
SA 28-2	Yes
SA 28-3	Yes
SA 29-2	Yes
SA 29-3	Yes
SA 3-1	Yes
SA 3-2	Yes
SA 32-1	Yes
SA 32-2	Yes
SA 34-1	Yes
SA 34-2	Yes
SA 34-3	Yes
SA 34-4	Yes
SA 34-5	Yes
SA 34-6	Yes
SA 34-7	Yes
SA 34-8	Yes
SA 4-1	Yes
SA 4-3	Yes
SA 4-4	Yes
SA 4-5	Yes
SA 5-1	Yes
SA 5-4	Yes
SA 5-5	Yes
SA 6-1	Yes
SA 6-10	Yes

GM Lansing Plant 6
Boring Log Master List

Location Name	Have Boring Log
SA 6-11	Yes
SA 6-12	Yes
SA 6-2	Yes
SA 6-3	Yes
SA 6-4	Yes
SA 6-5	Yes
SA 6-6	Yes
SA 6-7	Yes
SA 6-8	Yes
SA 6-9	Yes
SA 7-1	Yes
SA 7-10	Yes
SA 7-2	Yes
SA 7-3	Yes
SA 7-4	Yes
SA 7-5	Yes
SA 7-6	Yes
SA 7-7	Yes
SA 7-8	Yes
SA 7-9	Yes
SA 8-1	Yes
SA 8-2	Yes
SA 8-3	Yes
SA 8-5	Yes
SA 8-6	Yes
SA 9-2	Yes
SB-1	Yes
SB-1A	No
SB-2	No
SB-3	Yes
SB-4	Yes
SB-5	Yes
SB-5A	No
SME-MW-1	Yes
SME-MW-2	Yes
SME-MW-3	Yes
SME-MW-4	Yes
SS-1	Yes
SS-2	Yes
SS-3	Yes
SW-1	NA - Side-Wall Sample
SW-1	NA - Side-Wall Sample
SW-2	NA - Side-Wall Sample
SW-2	NA - Side-Wall Sample
SW-3	NA - Side-Wall Sample
SW-3	NA - Side-Wall Sample
SW-4	NA - Side-Wall Sample
SW-4	NA - Side-Wall Sample
SW-5	NA - Side-Wall Sample

GM Lansing Plant 6
Boring Log Master List

Location Name	Have Boring Log
SW-5	NA - Side-Wall Sample
SW-6	NA - Side-Wall Sample
SW-7	NA - Side-Wall Sample
SW-8	NA - Side-Wall Sample
Trip Blank	NA
VEW-1	Yes
VEW-2	Yes
VEW-3	Yes
VEW-4	Yes
VEW-5	Yes
VEW-6	Yes
VEW-7	Yes
VEW-8	Yes
VEW-9	Yes
Waste Character	NA
Waste Water	NA

BORING LOG / MONITORING WELL DIAGRAM

ABB ENVIRONMENTAL SERVICES, INC.

PROJECT NO.: 5698-85	PROJECT NAME: GM BOC - BUILDING 23	BORING/WELL DESIGNATION: B-BP-1	BORING/WELL LOCATION:
DRILLING CONTRACTOR: ACCUSTAR	DRILLING METHOD: HOLLOW-STEM AUGERS	BOREHOLE SIZE: 8 IN.	BOREHOLE DEPTH: 20 FT.
DATE STARTED: 5-10-91	DATE COMPLETED: 5-10-91	GROUND ELEV.: NA FT.	MEASURING POINT ELEV: NA FT.
WELL DEPTH: N/A FT.			
RIG: D-50	DRILLER: J. TAFT	HELPER: O. KNIGHT	LOGGED BY: D. BELAN

SEE FIGURE 3

DEPTH (FT.)	DESCRIPTION	SAMPLE NO.	SAMPLE TYPE	BLOW COUNTS(N)	P.I. METER (ppm)	COMMENTS	WELL DATA
0	CONCRETE						
	SAND - brown-gray/black streaking, moist						
	CLAY - medium gray, very plastic, firm, damp, some black and green discoloration, no odor	3.5-5'	SS\LAB	2-3-3	BG		
5							
	CLAY - medium brown, very plastic, with interbedded brown sand, 1 inch gray sand at 10 feet	8.5-10'	SS\LAB	5-6-13	BG		
10							
	CLAY - medium gray, moderately plastic, silty and sandy, with wet thin wet sand layers, no odor	13.5-15'	SS\LAB	7-8-8	BG		
15							
	CLAY - medium gray, non-slightly plastic, damp, a few sand stringers, no odor	18.5-20'	SS\LAB	8-2-3	BG		
20	END OF BORING AT 20 FEET						

NOTES: BG - BACKGROUND
NA - NOT AVAILABLE
N/A - NOT APPLICABLE
LAB - COMPOSITE LABORATORY SAMPLE
SS - 18 INCH SPLIT-SPOON

BORING LOG / MONITORING WELL DIAGRAM

ABB ENVIRONMENTAL SERVICES, INC.

PROJECT NO.: 5698-85	PROJECT NAME: GM BOC - BUILDING 23	BORING/WELL DESIGNATION: B-BP-2	BORING/WELL LOCATION:
DRILLING CONTRACTOR: ACCUSTAR	DRILLING METHOD: HOLLOW-STEM AUGERS	BOREHOLE SIZE: 8 IN.	BOREHOLE DEPTH: 14 FT.
DATE STARTED: 5-10-91	DATE COMPLETED: 5-10-91	GROUND ELEV.: NA FT.	MEASURING POINT ELEV: NA FT.
WELL DEPTH: N/A FT.			
RIG: D-50	DRILLER: J. TAFT	HELPER: O. KNIGHT	LOGGED BY: D. BELAN

SEE FIGURE 3

DEPTH (FT.)	DESCRIPTION	SAMPLE NO.	SAMPLE TYPE	BLOW COUNTS(N)	P.I. METER (ppm)	COMMENTS	WELL DATA
0	SAND - red-brown, fine-medium grained, dry-damp, no odor	0-4'	LAB		BG		
5	SAND - medium brown, medium-coarse grained, damp-moist, gray stain, strong odor	6-9'	LAB		10-40	STRONG ODOR	
10		9-10.5'	LAB		50-150		
	SAND - medium brown, medium-coarse grained, moist-wet, some gray staining, strong odor	11-14'	LAB		5-10		
15	END OF BORING AT 14 FEET						
20							

NOTES: BG - BACKGROUND
NA - NOT AVAILABLE
N/A - NOT APPLICABLE
LAB - COMPOSITE LABORATORY SAMPLE
SOIL DESCRIPTIONS AND SAMPLES WERE TAKEN FROM DRILLING FLIGHTS

BORING LOG / MONITORING WELL DIAGRAM

ABB ENVIRONMENTAL SERVICES, INC.

PROJECT NO.: 5698-85	PROJECT NAME: GM BOC - BUILDING 23	BORING/WELL DESIGNATION: B-BP-3	BORING/WELL LOCATION:
DRILLING CONTRACTOR: ACCUSTAR	DRILLING METHOD: HOLLOW-STEM AUGERS	BOREHOLE SIZE: 8 IN.	BOREHOLE DEPTH: 20 FT.
DATE STARTED: 5-10-91	DATE COMPLETED: 5-10-91	GROUND ELEV.: NA FT.	MEASURING POINT ELEV: NA FT.
RIG: D-50	DRILLER: J. TAFT	HELPER: O. KNIGHT	LOGGED BY: D. BELAN

SEE FIGURE 3

DEPTH (FT.)	DESCRIPTION	SAMPLE NO.	SAMPLE TYPE	BLOW COUNTS(N)	P.I. METER (ppm)	COMMENTS	WELL DATA
0	CONCRETE						
	SANDY CLAY - medium brown, very plastic, firm, damp, with gravel, no odor	3.5-5'	SS\LAB	8-2-3	BG		
5							
	CLAY - medium gray, slightly-moderately plastic, stiff, damp, trace silt and sand, no odor	8.5-10'	SS\LAB	4-6-9	BG		
10							
	CLAY - medium gray, slightly plastic, very stiff, damp, little gravel, no odor	13.5-15'	SS\LAB	6-9-16	BG		
15							
	CLAY - medium gray, non-slightly plastic, damp, a few sand stringers, trace gravel, no odor	18.5-20'	SS\LAB	7-12-19	BG		
20	END OF BORING AT 20 FEET						

NOTES: BG - BACKGROUND
NA - NOT AVAILABLE
N/A - NOT APPLICABLE
LAB - COMPOSITE LABORATORY SAMPLE
SS - 18 INCH SPLIT-SPOON

URS CONSULTANTS, Inc.

TEST BORING LOG
BORING NO. B-BP-14

PROJECT:	GM-Lansing, Body Plant, Area 7
CLIENT:	GM-LAD
BORING CONTRACTOR/DRILL RIG:	Geo-Tek, Inc./CME 750
SHEET NO.	1 OF 1
JOB NO. :	E1-93-110
GROUND ELEVATION:	871.01
DATE STARTED:	10/31/93
DATE FINISHED:	10/31/93
DRILLER:	Peter Buell
GEOLOGIST:	David McMahon
REVIEWED BY:	David Frazier

GROUND WATER:

DATE	TIME	LEV	TYPE
10/31/94		15'	static

	CAS.	SAMP.	CORE	TUBE
TYPE	HSA	SS		
DIA.	4-1/4"	2"		
WT.		140#		
FALL		30"		

* POCKET PENETROMETER READING

DEPTH FT	STRATA	SAMPLE NO.	SAMPLE TYPE	BLOWS PER 6"		RECOVERY RQD %	DESCRIPTION COLOR	CONSISTENCY HARDNESS	MATERIAL DESCRIPTION	CLASS USCS	REMARKS
1									Asphalt		
		S-1	SS	10	10	80	brown	medium dense	fine to coarse SAND	Fill	moist, Hnu=ND
				6	9						
5											
		S-2	SS	2	2	80	grey	loose	SANDY GRAVEL	GW	wet, Hnu=ND
10				4	4						
		S-3	SS			0					
15											very wet, Hnu=ND
		S-4	SS	4	6	90	grey	stiff	SILTY CLAY	CL	wet, Hnu=ND
20				4	11						

COMMENTS: ND - non detect

PROJECT NO. E1-93-110
BORING NO. B-BP-14

URS CONSULTANTS, Inc.

TEST BORING LOG
BORING NO. B-BP-15

PROJECT:	GM-Lansing, Body Plant, Area 7
CLIENT:	GM-LAD
BORING CONTRACTOR/DRILL RIG:	Geo-Tek, Inc./CME 750
SHEET NO. 1 OF	1
JOB NO. :	E1-93-110
GROUND ELEVATION:	869.40'
DATE STARTED:	10/31/93
DATE FINISHED:	10/31/93
DRILLER:	Peter Buell
GEOLOGIST:	David McMahon
REVIEWED BY:	David Frazier

GROUND WATER:

DATE	TIME	LEV	TYPE
10/31/94		15'	static

	CAS.	SAMP.	CORE	TUBE
TYPE	HSA	SS		
DIA.	4-1/4"	2"		
WT.		140#		
FALL		30"		

* POCKET PENETROMETER READING

DEPTH FT	STRATA	SAMPLE NO.	SAMPLE TYPE	BLOWS PER 6"		RECOVERY RQD %	DESCRIPTION COLOR	CONSISTENCY HARDNESS	MATERIAL DESCRIPTION	CLASS USCS	REMARKS
1									Asphalt		
		S-1	SS	1	WH	50	brown	very loose	SAND and RUBBLE	Fill	dry, Hnu=ND
				WH	WH						
5											
		S-2	SS	WH	WH	35		loose			moist, Hnu=ND
10				5	6						
		S-3	SS	WH	WH	80	grey	very soft to stiff	SILTY CLAY, some Sand, with Sand lenses	CL	
15				9	6						moist, Hnu=ND
		S-4	SS	4	5	100	grey	stiff	SILTY CLAY with SANDY GRAVEL lenses	CL	moist, Hnu=ND
20				9	10						

COMMENTS: ND - non detect

PROJECT NO. E1-93-110
BORING NO. B-BP-15

URS CONSULTANTS, Inc.

TEST BORING LOG
BORING NO. B-BP-16

PROJECT: GM-Lansing, Body Plant, Area 7	SHEET NO. 1 OF 1
CLIENT: GM-LAD	JOB NO. : E1-93-110
BORING CONTRACTOR/DRILL RIG: Geo-Tek, Inc./CME 750	GROUND ELEVATION:
GROUND WATER:	DATE STARTED: 11/2/93
DATE: 10/31/94	DATE FINISHED: 11/2/93
TIME:	DRILLER: Peter Buell
LEV: 15	GEOLOGIST: David McMahon
TYPE: static	REVIEWED BY: David Frazier

	TYPE	CAS.	SAMP.	CORE	TUBE
TYPE		HSA	SS		
DIA.		4-1/4"	2"		
WT.			140#		
FALL			30"		

* POCKET PENETROMETER READING

DEPTH FT	STRATA	SAMPLE NO.	SAMPLE TYPE	BLOWS PER 6"	RECOVERY RQD %	DESCRIPTION COLOR	CONSISTENCY HARDNESS	MATERIAL DESCRIPTION	CLASS USCS	REMARKS
1	XXXX							Asphalt		
		S-1	grab			brown		fine to coarse SAND	fill	dry
5										
10										
15										
20										

COMMENTS: ND - non detect

PROJECT NO. E1-93-110
BORING NO. B-BP-16

WENCK ASSOCIATES, INCORPORATED

LOG OF TEST BORING NO: E-1

PROJECT NAME: B.O.C. LANSING AUTOMOTIVE
PROJECT LOCATION: BODY PLANT-LANSING, MICHIGAN

WENCK PROJ. NO: 0191-01-01
CHECKED BY: JWT

ELEV. (FT)	USCS GROUP	SUBSURFACE PROFILE: GROUND SURFACE ELEV: 868.01	DEPTH (FT)	SAMPLE TYPE	BLOW COUNT/6"	STD.PEN. RES. (N)	MOISTURE	PID READING (ppm)	LEAD COMPOSITE
868.01	N/A	ASPHALT	00.0						EP TOXICTY LEAD 2.26 mg/L
	GW	FILL: ROAD GRAVEL							
866.01	SP	FILL: loose to medium dense dark brown/black fine to medium SAND, trace coarse sand and fine gravel	2.0	S-1	5-6-6-5	12	DRY	1.2	
864.01	CL	FILL: medium brown SANDY CLAY with trace coarse sand and fine gravel	4.0						
862.01	SM	FILL: medium dense dark fine to medium SAND and fine to coarse GRAVEL with silt ▼	6.0	S-2	10-8-9-6	17	DRY	0.7	TCLP Lead 7.24 mg/L
860.01	CL	FILL: medium brown/gray SILTY CLAY with trace coarse sand and fine gravel	8.0	S-3	2-3-3-4	6	MOIST	1.7	
858.01			10.0						
856.01	CL	medium brown/gray SANDY CLAY with trace coarse sand and fine gravel (patches of orange/ brown sandy clay)	12.0						
854.01			14.0	S-4	6-8-10-14	18	WET	0.4	
852.01			16.0						TOTAL Lead 54.7 mg/kg
850.01	CL	medium to stiff brown/gray SILTY CLAY with trace coarse sand and fine gravel (patches of orange/brown sandy clay)	18.0	S-5	7-9-11-12	20	WET	0.2	
848.01		EOB ● 20 FT	20.0						
			22.0						
			24.0						
			26.0						
			28.0						
			30.0						
			32.0						
			34.0						
			36.0						

TOTAL DEPTH: 20 FT
DRILLING DATE: 7/30/92
INSPECTOR: JAMES W. TIGGELAAR
CONTRACTOR: MATECO DRILLING CO.
DRILLER: JACK MASKELL
DRILLING METHOD: 4 1/4 ID H.S.A. WITH AUGER BASKET
DRILLING METHOD: 2" X 2' SPLIT-SPOON WITH SPRING RET.

WATER LEVEL OBSERVATION:
WATER FIRST OBSERVED AT 6.2 FEET

FILE	GMB_E1.DWG
DATE	8-13-92 RLB

WENCK ASSOCIATES, INCORPORATED

LOG OF TEST BORING NO: E-2

PROJECT NAME: B.O.C. LANSING AUTOMOTIVE
PROJECT LOCATION: BODY PLANT-LANSING, MICHIGAN

WENCK PROJ. NO: 0191-01-01
CHECKED BY: JWT

ELEV. (FT)	USCS GROUP	SUBSURFACE PROFILE: GROUND SURFACE ELEV: 869.08	DEPTH (FT)	SAMPLE TYPE	BLOW COUNT/6"	STD.PEN. RES. (N)	MOISTURE	PID READING (ppm)
869.08	N/A	CONCRETE	00.0					
867.08	SP	FILL: medium dense fine to coarse light gray to white SAND AND fine to coarse GRAVEL	2.0	S-1	8-5-4-3	9	WET	1.1
865.08	CL	FILL: medium brown and dark brown and orange/ brown mottled SANDY CLAY with trace fine gravel and coarse sand	4.0					
863.08			6.0	S-2	2-2-2-3	4	WET	0.7
861.08	CL	FILL: soft to medium brown SANDY CLAY with trace coarse sand and fine gravel	8.0	S-3	4-5-9-8	14	MOIST	0.7
859.08			10.0					
857.08	CL	medium to stiff light brown/gray SANDY CLAY with trace fine gravel and coarse sand	12.0					
855.08			14.0	S-4	5-9-13-15	22	WET	1.4
853.08	CL	medium to stiff gray SANDY CLAY and SILTY CLAY with trace coarse sand and fine gravel	16.0					
851.08			18.0	S-5	4-5-7-8	12	WET	0.6
849.08		EOB @ 20 FT'	20.0					
			22.0					
			24.0					
			26.0					
			28.0					
			30.0					
			32.0					
			34.0					
			36.0					

TOTAL DEPTH: 20 FT
DRILLING DATE: 8/5/92
INSPECTOR: JAMES W. TIGGELAAR
CONTRACTOR: MATECO DRILLING CO.
DRILLER: JACK MASKELL

DRILLING METHOD: 4 1/4 ID H.S.A. WITH AUGER BASKET
DRILLING METHOD: 2" X 2' SPLIT-SPOON WITH SPRING RET.

WATER LEVEL OBSERVATION:
WATER FIRST OBSERVED AT 7.9 FEET

FILE	GMBLE2.DWG
DATE	8-13-92 RLB

WENCK ASSOCIATES, INCORPORATED

LOG OF TEST BORING NO: E-3

PROJECT NAME: B.O.C. LANSING AUTOMOTIVE
PROJECT LOCATION: BODY PLANT–LANSING, MICHIGAN

WENCK PROJ. NO: 0191-01-01
CHECKED BY: JWT

ELEV. (FT)	USCS GROUP	SUBSURFACE PROFILE: GROUND SURFACE ELEV: 868.82	DEPTH (FT)	SAMPLE TYPE	BLOW COUNT/6"	STD.PEN. RES. (N)	MOISTURE	PID READING (ppm)
868.82	N/A	BITUMINOUS MATERIAL	00.0					
866.82	SW	FILL: brown fine to coarse SAND and subrounded to angular gravel	2.0	S-1	5-4-5-8	9	MOIST	5.3
864.82	CL	FILL: medium to stiff brown SANDY CLAY with trace coarse sand and fine gravel	4.0					
862.82			6.0	S-2	5-5-8-9	13	MOIST	8.8
860.82	CL	FILL: medium to stiff brown/gray SILTY CLAY with trace coarse sand and fine gravel	8.0	S-3	4-7-9-7	16	MOIST	6.1
858.82	SP	FILL: brown fine to medium SAND	10.0					
856.82		▼	12.0					
854.82	CL	medium to stiff brown/gray SANDY CLAY with trace coarse sand and fine gravel	14.0	S-4	4-5-7-8	12	WET	2.3
852.82			16.0					
850.82	CL	stiff gray SILTY CLAY with trace coarse sand and fine subrounded gravel	18.0	S-5	4-7-11-11	18	WET	0.9
848.82		EOB @ 20 FT	20.0					
			22.0					
			24.0					
			26.0					
			28.0					
			30.0					
			32.0					
			34.0					
			36.0					

TOTAL DEPTH: 20 FT
DRILLING DATE: 8/3/92
INSPECTOR: JAMES W. TIGGELAAR
CONTRACTOR: MATECO DRILLING CO.
DRILLER: JACK MASKELL

DRILLING METHOD: 4 1/4 ID H.S.A. WITH AUGER BASKET
DRILLING METHOD: 2" X 2' SPLIT-SPOON WITH SPRING RET.

WATER LEVEL OBSERVATION:
WATER FIRST OBSERVED AT 12.5 FEET

FILE	GWB.E3.DWG
DATE	8-13-92 RLR

WENCK ASSOCIATES, INCORPORATED

LOG OF TEST BORING NO: E-4

PROJECT NAME: B.O.C. LANSING AUTOMOTIVE
PROJECT LOCATION: BODY PLANT-LANSING, MICHIGAN

WENCK PROJ. NO: 0191-01-01
CHECKED BY: JWT

SUBSURFACE PROFILE

SOIL SAMPLE DATA

ELEV. (FT)	USCS GROUP	GROUND SURFACE ELEV: 867.49	DEPTH (FT)	SAMPLE TYPE	BLOW COUNT/6"	STD.PEN. RES. (N)	MOISTURE	PID READING (ppm)
867.49	GP	FILL: RR cobbles - Angular fine to coarse dark GRAVEL	00.0					
865.49			2.0	S-1	4-7-3-2	-	WET	1.1
863.49	SM	FILL: medium dense dark brown coarse SAND with silt and fine gravel ▼	4.0					
				S-2	8-8-13-13	-	WET	77.0
861.49			6.0					
859.49			8.0	S-3	10-8-7-11	-	WET	44.0
857.49	CL	FILL: medium brown SANDY CLAY with trace fine gravel and coarse sand, occasional layer clayey sand	10.0					
855.49			12.0					
				S-4	13-13-16-17	-	WET	34.0
853.49			14.0					
851.49			16.0					
849.49			18.0					
				S-5	8-10-11-14	-	WET	22.0 (COMBINED)
847.47	CL	medium brown/gray SANDY CLAY with trace coarse sand and fine gravel	20.0					
				S-6	10-10-9-11	-	WET	
845.45		EOB @ 22 FT'	22.0					
			24.0					
			26.0					
			28.0					
			30.0					
			32.0					
			34.0					
			36.0					

TOTAL DEPTH: 22 FT
DRILLING DATE: 8/3/92
INSPECTOR: JAMES W. TIGGELAAR
CONTRACTOR: MATECO DRILLING CO.
DRILLER: JACK MASKELL
DRILLING METHOD: 4 1/4 ID H.S.A. WITH AUGER BASKET
DRILLING METHOD: 2" X 2' SPLIT-SPOON WITH SPRING RET.

WATER LEVEL OBSERVATION:
WATER FIRST OBSERVED AT 4.0 FEET

FILE	GMBLE4.DWG
DATE	8-14-92 RLB

WE. CK ASSOCIATES, INCORP RATED

LOG OF TEST BORING NO: E-5

PROJECT NAME: B.O.C. LANSING AUTOMOTIVE
PROJECT LOCATION: BODY PLANT-LANSING, MICHIGAN
WENCK PROJ. NO: 0191-01-01
CHECKED BY: JWT

ELEV. (FT)	USCS GROUP	SUBSURFACE PROFILE: GROUND SURFACE ELEV: 867.17	DEPTH (FT)	SAMPLE TYPE	BLOW COUNT/6"	STD.PEN. RES. (N)	MOISTURE	PID READING (ppm)
867.17	GP	FILL: RR cobbles - dark black fine to coarse angular GRAVEL and coarse angular to sub-rounded sand	00.0					
865.17	CL	FILL: medium brown SANDY CLAY with trace coarse sand and fine gravel	2.0	S-1	2-3-4-5	7	WET	450
863.17			4.0					
861.17			6.0	S-2	0-2-3-5	5	MOIST	300
859.17			8.0					
857.17			10.0	S-3	3-4-4-6	8	MOIST	25
855.17			12.0					
853.17			14.0	S-4	9-7-9-7	16	MOIST	71
851.17	CL	medium to stiff gray SANDY CLAY with trace fine to coarse gravel and coarse sand	16.0					
849.17			18.0	S-5	5-5-7-8	12	WET	81
847.17		EOB @ 20 FT	20.0					
			22.0					
			24.0					
			26.0					
			28.0					
			30.0					
			32.0					
			34.0					
			36.0					

TOTAL DEPTH: 20 FT
DRILLING DATE: 7/29/92
INSPECTOR: JAMES W. TIGGELAAR
CONTRACTOR: MATECO DRILLING CO.
DRILLER: JACK MASKELL
DRILLING METHOD: 4 1/4 ID H.S.A. WITH AUGER BASKET
DRILLING METHOD: 2" X 2' SPLIT-SPOON WITH SPRING RET.

WATER LEVEL OBSERVATION:
WATER FIRST OBSERVED AT 1.5 FEET

FILE	GMBLES.DWG
DATE	8-14-92 RLP

WENCK ASSOCIATES, INCORPORATED

LOG OF TEST BORING NO: E-7

PROJECT NAME: B.O.C. LANSING AUTOMOTIVE
PROJECT LOCATION: BODY PLANT LANSING, MICHIGAN

WENCK PROJ. NO: 0191-01-01
CHECKED BY: JWT

ELEV. (FT)	USCS GROUP	GROUND SURFACE ELEV: 868.38	DEPTH (FT)	SAMPLE TYPE	BLOW COUNT/6"	STD. PEN. RES. (N)	MOISTURE	PID READING (ppm)
868.38	N/A	BITUMINOUS MATERIAL	00.0					
	SL	FILL: CLAYEY SAND and fine gravel						
866.38			2.0	S-1	3-3-4-3	7	-	18.2
864.38			4.0					
862.38			6.0	S-2	2-4-5-8	9	MOIST	29.5
	CL	FILL: medium to stiff brown SANDY CLAY with trace coarse sand and fine gravel						
860.38			8.0	S-3	8-8-10-11	18	MOIST	12.5
858.38			10.0					
856.38			12.0					
854.38			14.0	S-4	18-15-16-22	31	WET	19.4 (COMBINED)
852.38	CL	medium to stiff light red/brown SANDY CLAY	16.0	S-5	12-15-18-20	33	MOIST	
850.38	CL	medium to stiff brown SANDY CLAY with trace fine gravel and coarse sand	18.0					
	CL	medium to stiff brown/gray SANDY CLAY, trace fine gravel and coarse sand		S-6	9-11-14-16	25	WET	3.8
848.38		EOB @ 20 FT	20.0					
			22.0					
			24.0					
			26.0					
			28.0					
			30.0					
			32.0					
			34.0					
			36.0					

TOTAL DEPTH: 20 FT
DRILLING DATE: 7/31/92
INSPECTOR: JAMES W. TIGGELAAR
CONTRACTOR: MATECO DRILLING CO.
DRILLER: CRAIG COCHRANE
DRILLING METHOD: 4 1/4 ID H.S.A. WITH AUGER BASKET
DRILLING METHOD: 2" X 2' SPLIT-SPOON WITH SPRING RET.

WATER LEVEL OBSERVATION:
GROUND WATER NOT OBSERVED

FILE: GMBLE7.DWG
DATE: 8-14-92 R.B

WE. CK ASSOCIATES, INCORF RATED

LOG OF TEST BORING NO: E-8

PROJECT NAME: B.O.C. LANSING AUTOMOTIVE
PROJECT LOCATION: BODY PLANT–LANSING, MICHIGAN

WENCK PROJ. NO: 0191-01-01
CHECKED BY: JWT

ELEV. (FT)	USCS GROUP	GROUND SURFACE ELEV: 867.54	DEPTH (FT)	SAMPLE TYPE	BLOW COUNT/6"	STD.PEN. RES. (N)	MOISTURE	PID READING (ppm)
867.54	N/A	BITUMINOUS MATERIAL	00.0					
865.54	SP	FILL: loose brown fine to coarse SAND with trace silt and fine gravel	2.0	S-1	0-0-0-3	0	MOIST	4.8
	CL	FILL: soft dark brown and gray and black SANDY CLAY						
863.54	GP	FILL: black fine GRAVEL	4.0					
861.54	CL	FILL: soft to medium brown and gray and black stained SANDY CLAY with trace fine gravel and coarse sand	6.0	S-2	2-2-9-7	11	WET	0.6
859.54	CL	FILL: medium to stiff brown SANDY CLAY with trace fine gravel and coarse sand	8.0	S-3	6-7-12-14	19	MOIST	4.1
857.54			10.0					
855.54	CL	stiff brown/gray SANDY CLAY with trace fine gravel	12.0	S-4	7-11-15-21	26	MOIST	0.1
853.54			14.0					
851.54	CL	stiff brown SANDY CLAY with trace fine gravel	16.0					
849.54	CL	stiff brown/gray to gray SANDY CLAY with trace fine gravel	18.0	S-5	7-8-13-18	21	MOIST	1.1
847.54		EOB @ 20 FT'	20.0					
			22.0					
			24.0					
			26.0					
			28.0					
			30.0					
			32.0					
			34.0					
			36.0					

TOTAL DEPTH: 20 FT
DRILLING DATE: 8/3/92
INSPECTOR: JAMES W. TIGGELAAR
CONTRACTOR: MATECO DRILLING CO.
DRILLER: JACK MASKELL

DRILLING METHOD: 4 1/4 ID H.S.A. WITH AUGER BASKET
DRILLING METHOD: 2" X 2' SPLIT-SPOON WITH SPRING RET.

WATER LEVEL OBSERVATION:
WATER FIRST OBSERVED AT 3.9 FEET

FILE	GWBLEB.DWG
DATE	8-14-92 RLB

WE CK ASSOCIATES, INCORF RATED

LOG OF TEST BORING NO: E-9

PROJECT NAME: B.O.C. LANSING AUTOMOTIVE
PROJECT LOCATION: BODY PLANT-LANSING, MICHIGAN

WENCK PROJ. NO: 0191-01-01
CHECKED BY: JWT

ELEV. (FT)	USCS GROUP	SUBSURFACE PROFILE: GROUND SURFACE ELEV: 867.36	DEPTH (FT)	SAMPLE TYPE	BLOW COUNT/6"	STD.PEN. RES. (N)	MOISTURE	PID READING (ppm)
867.36	N/A	CONCRETE	00.0					
865.36	SM	FILL: very loose dark brown fine to coarse SAND AND fine to coarse GRAVEL with silt	2.0	S-1	3-2-1-1	3	MOIST	5.6
863.36			4.0					
861.36	CL	FILL: soft brown and black and gray mottled SANDY CLAY with trace fine gravel and coarse sand	6.0	S-2	0-0-1-2	1	MOIST	1.4
859.36			8.0	S-3	2-2-2-2	4	WET	(COMBINED)
857.36	CL	FILL: medium to stiff brown and gray motteld SANDY CLAY with trace fine gravel and coarse sand	10.0	S-4	3-6-9-12	15	WET	0
855.36			12.0					
853.36	CL	stiff brown SANDY CLAY with trace fine gravel and coarse sand	14.0	S-5	7-11-15-16	26	WET	0.6
851.36			16.0					
849.36			18.0					
847.36	CL	stiff brown/gray to gray SANDY CLAY with trace coarse sand and fine gravel	20.0	S-6	4-6-9-11	WET	WET	0
		EOB @ 20 FT'	22.0					
			24.0					
			26.0					
			28.0					
			30.0					
			32.0					
			34.0					
			36.0					

TOTAL DEPTH: 20 FT
DRILLING DATE: 8/3/92
INSPECTOR: JAMES W. TIGGELAAR
CONTRACTOR: MATECO DRILLING CO.
DRILLER: JACK MASKELL
DRILLING METHOD: 4 1/4 ID H.S.A. WITH AUGER BASKET
DRILLING METHOD: 2" X 2' SPLIT-SPOON WITH SPRING RET.

WATER LEVEL OBSERVATION:
WATER FIRST OBSERVED AT 5.2 FEET

FILE	GMBLE9.DWG
DATE	8-14-92 RLP

WE CK ASSOCIATES, INCORP RATED

LOG OF TEST BORING NO: E-10

PROJECT NAME: B.O.C. LANSING AUTOMOTIVE
PROJECT LOCATION: BODY PLANT-LANSING, MICHIGAN

WENCK PROJ. NO: 0191-01-01
CHECKED BY: JWT

ELEV. (FT)	USCS GROUP	SUBSURFACE PROFILE: GROUND SURFACE ELEV: 870.92	DEPTH (FT)	SAMPLE TYPE	BLOW COUNT/6"	STD. PEN. RES. (N)	MOISTURE	PID READING (ppm)
870.92	N/A	ASPHALT	00.0					
	N/A	CONCRETE						
868.08			2.0	S-1	1-3-6-9	9	DRY	45.2
866.08			4.0					
864.08	CL	FILL: medium to stiff brown SANDY CLAY with trace fine gravel and coarse sand (occasional gray and orange/brown patches)	6.0	S-2	6-6-7-10	13	MOIST	121.5
862.08			8.0					
860.08			10.0	S-3	3-6-7-8	13	MOIST	158.6
858.08			12.0					
856.08	CL	medium to stiff brown SANDY CLAY with trace fine gravel and coarse sandy, occasional layer of brown fine to medium brown sand	14.0	S-4	4-4-5-7	9	MOIST	3.2
854.08			16.0					
852.08	CL	medium to stiff brown/gray SILTY CLAY with trace fine gravel and coarse sand, occasional layer gray sand and fine gravel	18.0	S-5	3-5-8-11	13	MOIST	0.7
850.08		EOB @ 20 FT	20.0					
			22.0					
			24.0					
			26.0					
			28.0					
			30.0					
			32.0					
			34.0					
			36.0					

TOTAL DEPTH: 20 FT
DRILLING DATE: 8/5/92
INSPECTOR: JAMES W. TIGGELAAR
CONTRACTOR: MATECO DRILLING CO.
DRILLER: JACK MASKELL
DRILLING METHOD: 4 1/4 ID H.S.A. WITH AUGER BASKET
DRILLING METHOD: 2" X 2' SPLIT-SPOON WITH SPRING RET.

WATER LEVEL OBSERVATION:
GROUNDWATER NOT OBSERVED

FILE GWB_E10.DWG
DATE 8-14-92 R:B

WE CK ASSOCIATES, INCORP RATED

LOG OF TEST BORING NO: E-11

PROJECT NAME: B.O.C. LANSING AUTOMOTIVE
PROJECT LOCATION: BODY PLANT-LANSING, MICHIGAN

WENCK PROJ. NO: 0191-01-01
CHECKED BY: JWT

ELEV. (FT)	USCS GROUP	GROUND SURFACE ELEV: 870.31	DEPTH (FT)	SAMPLE TYPE	BLOW COUNT/6"	STD.PEN. RES. (N)	MOISTURE	PID READING (ppm)
870.31	N/A	CONCRETE	00.0					
868.31	CL	FILL: loose to medium dense light brown and orange/brown and light gray mottled fine to coarse SAND, trace gravel, and cobbles	2.0	S-1	6-6-4-4	10	DRY	0.9
866.31			4.0					
864.31			6.0	S-2	2-3	-	MOIST	0.7
862.31	CL	FILL: medium brown to brown/gray SANDY CLAY with trace fine gravel with inter-layered thin veins of fine to coarse sand and fine subrounded to angular gravel	8.0	S-3	4-3-2-2	5	WET	0.9
860.31			10.0					
858.31	CL	medium brown SANDY CLAY with trace coarse sand and fine gravel	12.0					
856.31			14.0	S-4	3-4-6-8	10	MOIST	0.9
854.31	CL	medium brown/gray SANDY CLAY with trace coarse sand and fine gravel	16.0					
852.31			18.0	S-5	3-3-4-6	7	WET	0.7
850.31		EOB @ 20 FT	20.0					
			22.0					
			24.0					
			26.0					
			28.0					
			30.0					
			32.0					
			34.0					
			36.0					

TOTAL DEPTH: 20 FT
DRILLING DATE: 8/5/92
INSPECTOR: JAMES W. TIGGELAAR
CONTRACTOR: MATECO DRILLING CO.
DRILLER: JACK MASKELL
DRILLING METHOD: 4 1/4 ID H.S.A. WITH AUGER BASKET
DRILLING METHOD: 2" X 2' SPLIT-SPOON WITH SPRING RET.

WATER LEVEL OBSERVATION:
GROUNDWATER NOT OBSERVED

FILE GMB_E11.DWG
DATE 8-14-92 RLB

WENCK ASSOCIATES, INCORPORATED

LOG OF TEST BORING NO: E-12

PROJECT NAME: B.O.C. LANSING AUTOMOTIVE
PROJECT LOCATION: BODY PLANT–LANSING, MICHIGAN

WENCK PROJ. NO: 0191-01-01
CHECKED BY: JWT

SUBSURFACE PROFILE

SOIL SAMPLE DATA

ELEV. (FT)	USCS GROUP	GROUND SURFACE ELEV: 867.70	DEPTH (FT)	SAMPLE TYPE	BLOW COUNT/6"	STD.PEN. RES. (N)	MOISTURE	PID READING (ppm)
867.70	GW	FILL: RR cobbles – angular fine to coarse GRAVEL and subrounded fine gravel and coarse sand	00.0					
865.36	CL	FILL: medium to stiff brown SANDY CLAY with trace coarse sand and fine gravel	2.0	S-1	8-35	–	WET	1.5
863.36			4.0					
861.36			6.0	S-2	3-5-6-8	11	WET	3.0
859.36			8.0					
857.36	CL	medium to stiff brown and red SILTY CLAY with traces coarse to fine sand and gravel	10.0	S-3	5-8-15-15	23	WET	3.8
855.36			12.0					
853.36	CL	medium to stiff gray SILTY CLAY with traces coarse sand and fine gravel	14.0	S-4	4-5-7-8	12	WET	1.1
851.36			16.0					
849.36			18.0	S-5	4-6-8-10	14	WET	0.8
847.36		EOB @ 20 FT	20.0					
			22.0					
			24.0					
			26.0					
			28.0					
			30.0					
			32.0					
			34.0					
			36.0					

TOTAL DEPTH: 20 FT
DRILLING DATE: 7/29/92
INSPECTOR: JAMES W. TIGGELAAR
CONTRACTOR: MATECO DRILLING CO.
DRILLER: JACK MASKELL

DRILLING METHOD: 4 1/4 ID H.S.A. WITH AUGER BASKET
DRILLING METHOD: 2" X 2' SPLIT-SPOON WITH SPRING RET.

WATER LEVEL OBSERVATION:
WATER FIRST OBSERVED AT 1.8 FEET

FILE: GWBLE12.DWG
DATE: 8-14-92 R_B

WENCK ASSOCIATES, INCORPORATED

LOG OF TEST BORING NO: E-13

PROJECT NAME: B.O.C. LANSING AUTOMOTIVE
PROJECT LOCATION: BODY PLANT–LANSING, MICHIGAN

WENCK PROJ. NO: 0191-01-01
CHECKED BY: JWT

SUBSURFACE PROFILE

GROUND SURFACE ELEV: 868.53

ELEV. (FT)	USCS GROUP		DEPTH (FT)
868.53	N/A	BITUMINOUS MATERIAL	00.0
	SM	FILL: brown fine to medium SAND with silt	
866.36	CL	FILL: medium brown and black and gray mottled SANDY CLAY with trace fine gravel and coarse sand	2.0
864.36			4.0
862.36			6.0
860.36	CL	medium light brown to brown SANDY CLAY with occasional gray mottling with trace fine gravel and coarse sand, occasional layer brown sand	8.0
858.36			10.0
856.36			12.0
854.36			14.0
852.36	SM	brown fine to medium SAND with silt and coarse sand	16.0
850.36	CL	medium brown/gray to gray SANDY CLAY with trace coarse sand and fine gravel	18.0
848.36		EOB @ 20 FT	20.0
			22.0
			24.0
			26.0
			28.0
			30.0
			32.0
			34.0
			36.0

SOIL SAMPLE DATA

SAMPLE TYPE	BLOW COUNT/6"	STD. PEN. RES. (N)	MOISTURE	PID READING (ppm)
S-1	3-2-3-3	5	MOIST	3.9
S-2	5-4-5-7	9	MOIST	2.4
S-3	5-7-9-11	16	MOIST	0.9
S-4	9-9-12-10	21	WET	0 (COMBINED)
S-5	8-9-10-13	19	WET	
S-6	5-7-10-13	17	MOIST	0

TOTAL DEPTH: 20 FT
DRILLING DATE: 8/3/92
INSPECTOR: JAMES W. TIGGELAAR
CONTRACTOR: MATECO DRILLING CO.
DRILLER: JACK MASKELL
DRILLING METHOD: 4 1/4 ID H.S.A. WITH AUGER BASKET
DRILLING METHOD: 2" X 2' SPLIT-SPOON WITH SPRING RET.

WATER LEVEL OBSERVATION:
WATER FIRST OBSERVED AT . FEET

FILE GMBLE13.DWG
DATE 8-14-92 RLB

WE CK ASSOCIATES, INCORF RATED

LOE OF TEST BORINE NO: E-14

PROJECT NAME: B.O.C. LANSING AUTOMOTIVE
PROJECT LOCATION: BODY PLANT – LANSING, MICHIGAN

WENCK PROJ. NO: 0191-01-01
CHECKED BY: JWT

SUBSURFACE PROFILE

GROUND SURFACE ELEV: 868.45

ELEV. (FT)	USCS GROUP		DEPTH (FT)
868.45		ASPHALT	00.0
866.45	CL	FILL: very loose black fine to coarse SAND and fine gravel	2.0
864.45			4.0
862.45	CL	FILL: medium brown/orange/gray mottled fine sandy CLAY with trace coarse sand and fine gravel (occasional pockets fine to medium silty SAND)	6.0
860.45			8.0
858.45			10.0
856.45			12.0
854.45			14.0
	CL	fine to coarse silty SAND	
852.45	CL	FILL: medium to stiff brown/orange fine sandy CLAY with trace coarse sand and fine gravel	16.0
850.45	CL	medium dense brown/multicolored fine to medium coarse sand and silt	18.0
848.45			20.0
	CL	very stiff reddish gray fine sandy CLAY	
847.45		EOB @ 21 FT	22.0
			24.0
			26.0
			28.0
			30.0
			32.0
			34.0
			36.0

SOIL SAMPLE DATA

SAMPLE TYPE	BLOW COUNT/6"	MOISTURE (%)	EP TOXICITY LEAD (mg/L)	TCLP LEAD (mg/L)	TOTAL LEAD (mg/L)
S-1	2-1-1-1	MOIST	<0.01	<0.01	4.8
S-2	2-3-3-5	MOIST	<0.01	<0.01	4
S-3	1-2-4-4	WET	<0.01	<0.01	2.4
S-4	3-11-13-15	–	<0.01	<0.01	3

TOTAL DEPTH: 21 FT
DRILLING DATE: 9/4/92
INSPECTOR: JAMES W. TIGGELAAR
CONTRACTOR: MATECO
DRILLER: CRAIG COCHRANE
DRILLING METHOD: 4 1/4 ID H.S.A.
DRILLING METHOD: 2" X 2' SPLIT-SPOON

WATER LEVEL OBSERVATION:

FILE	GMCBLE14.DWG
DATE	9-14-92 R.B

WE CK ASSOCIATES, INCORF RATED

LOG OF TEST BORING NO: E-15

PROJECT NAME: B.O.C. LANSING AUTOMOTIVE
PROJECT LOCATION: BODY PLANT – LANSING, MICHIGAN

WENCK PROJ. NO: 0191-01-01
CHECKED BY: JWT

SUBSURFACE PROFILE

GROUND SURFACE ELEV: 868.19

ELEV. (FT)	USCS GROUP		DEPTH (FT)
868.19		ASPHALT	00.0
866.19	CL	FILL: very loose black fine to coarse SAND and fine gravel	2.0
864.19			4.0
862.19	CL	FILL: medium brown/gray orange mottled fine sandy CLAY with trace coarse sand and fine gravel	6.0
860.19			8.0
858.19		fine to medium silty SAND	10.0
856.19	CL	medium to stiff blue/gray fine SANDY CLAY	12.0
854.19			14.0
852.19	CL	FILL: medium to stiff brown/orange fine sandy CLAY with trace coarse sand and fine gravel	16.0
850.19	CL	medium to stiff brown with occasional gray and orange mottling fine SANDY CLAY with trace coarse sand and fine gravel	18.0
848.19			20.0
847.19		EOB @ 21 FT	22.0
			24.0
			26.0
			28.0
			30.0
			32.0
			34.0
			36.0

SOIL SAMPLE DATA

SAMPLE TYPE	BLOW COUNT/6"	MOISTURE (%)	EP TOXICITY LEAD (mg/L)	TCLP LEAD (mg/L)	TOTAL LEAD (mg/L)
S-1	2-1-1-2	MOIST	0.01	0.01	4.2
S-2	2-2-2-2	MOIST	0.01	0.01	8.9
S-3	4-7-7-10	MOIST	<0.01	<0.01	2.3
S-4	3-4-5-6	MOIST	0.01	<0.01	3.8

TOTAL DEPTH: 21 FT
DRILLING DATE: 9/4/92
INSPECTOR: JAMES W. TIGGELAAR
CONTRACTOR: MATECO
DRILLER: CRAIG COCHRANE
DRILLING METHOD: 4 1/4 ID H.S.A.
DRILLING METHOD: 2" X 2' SPLIT-SPOON

WATER LEVEL OBSERVATION:

FILE	GMCBLE15.DWG
DATE	9-14-92 RLB

WENCK ASSOCIATES, INCORPORATED

LOG OF TEST BORING NO: E-16

PROJECT NAME: B.O.C. LANSING AUTOMOTIVE
PROJECT LOCATION: BODY PLANT – LANSING, MICHIGAN

WENCK PROJ. NO: 0191-01-01
CHECKED BY: JWT

ELEV. (FT)	USCS GROUP	SUBSURFACE PROFILE	DEPTH (FT)	SAMPLE TYPE	BLOW COUNT/6"	MOISTURE (%)	EP TOXICITY LEAD (mg/L)	TCLP LEAD (mg/L)	TOTAL LEAD (mg/L)
867.91		GROUND SURFACE ELEV: 867.91	00.0						
		ASPHALT							
	CL	FILL: fine light brown sand and fine GRAVEL	2.0						
865.91									
863.91			4.0	S-1	4-1-2-2	DRY	45.3	3.72	1290
861.91	CL	FILL: medium to stiff brown/gray fine sandy CLAY with trace coarse sand and fine gravel	6.0						
859.91			8.0						
857.91			10.0	S-2	2-3-2-3	MOIST	–	–	–
855.91		medium dense black fine to coarse SAND and fine gravel	12.0	S-3	6-7-7-10	MOIST	0.06	<0.01	3.4
853.91	CL	FILL: stiff brown/gray/orange motteld fine sandy CLAY with trace coarse sand and fine gravel	14.0						
851.91			16.0	S-4	5-7-8-10	MOIST WET	0.06	0.07	6.1
849.91			18.0						
847.91	CL	soft to medium blue/gray/brown mottled fine sandy CLAY with trace coarse sand and fine gravel	20.0	S-5	5-8-10-12	–	0.37	0.42	66.5
846.91		EOB @ 21 FT	22.0						
			24.0						
			26.0						
			28.0						
			30.0						
			32.0						
			34.0						
			36.0						

TOTAL DEPTH: 21 FT
DRILLING DATE: 9/4/92
INSPECTOR: JAMES W. TIGGELAAR
CONTRACTOR: MATECO
DRILLER: CRAIG COCHRANE
DRILLING METHOD: 4 1/4 ID H.S.A.
DRILLING METHOD: 2" X 2' SPLIT-SPOON

WATER LEVEL OBSERVATION:
WATER FIRST OBSERVED AT APPROXIMATELY 16 FEET

FILE	GMCBLE16.DWG
DATE	9-14-92 RLB

WENCK ASSOCIATES, INCORPORATED

LOG OF TEST BORING NO: E-17

PROJECT NAME: B.O.C. LANSING AUTOMOTIVE
PROJECT LOCATION: BODY PLANT – LANSING, MICHIGAN

WENCK PROJ. NO: 0191-01-01
CHECKED BY: JWT

SUBSURFACE PROFILE

GROUND SURFACE ELEV: 867.42

ELEV. (FT)	USCS GROUP		DEPTH (FT)
867.42		ASPHALT	00.0
	CL	FILL: fine light brown sand and fine GRAVEL	
865.42			2.0
863.42			4.0
861.42	CL	FILL: stiff gray sandy CLAY	6.0
859.42	CL	FILL: stiff brown sandy CLAY	8.0
857.42			10.0
855.42			12.0
853.42	CL	stiff brown/gray sandy CLAY	14.0
851.42			16.0
849.42			18.0
847.42			20.0
846.42		EOB ● 21 FT	22.0
			24.0
			26.0
			28.0
			30.0
			32.0
			34.0
			36.0

SOIL SAMPLE DATA

SAMPLE TYPE	BLOW COUNT/6"	MOISTURE (%)	EP TOXICITY LEAD (mg/L)	TCLP LEAD (mg/L)	TOTAL LEAD (mg/L)
S-1	8-6-4-3	DRY	3.61	6.23	1480
S-2	9-12-11-14	MOIST	0.53	0.23	314
S-3	8-9-11-11	MOIST	0.21	0.05	63
S-4	5-6-7-4	MOIST	<0.01	<0.01	5.6

TOTAL DEPTH: 21 FT
DRILLING DATE: 9/4/92
INSPECTOR: JAMES W. TIGGELAAR
CONTRACTOR: MATECO
DRILLER: CRAIG COCHRANE
DRILLING METHOD: 4 1/4 ID H.S.A.
DRILLING METHOD: 2" X 2' SPLIT-SPOON

WATER LEVEL OBSERVATION:
WATER FIRST OBSERVED AT APPROXIMATELY 16 FEET

FILE	GMCBLE17.DWG
DATE	9-15-92 RLB

WENCK ASSOCIATES, INCORPORATED

LOG OF TEST BORING NO: E-18

PROJECT NAME: B.O.C. LANSING AUTOMOTIVE
PROJECT LOCATION: BODY PLANT – LANSING, MICHIGAN

WENCK PROJ. NO: 0191-01-01
CHECKED BY: MEG

SUBSURFACE PROFILE				SOIL SAMPLE DATA				
ELEV. (FT)	USCS GROUP	GROUND SURFACE ELEV: 866.7	DEPTH (FT)	SAMPLE TYPE	BLOW COUNT/6"	MOISTURE (%)	TOTAL LEAD (ppm)	TCLP LEAD (ppm)
866.7		CONCRETE	00.0					
	SM	FILL: loose brown SILTY SAND						
864.7	CL	FILL: soft gray SANDY CLAY; trace fine gravel	2.0	S-1	2-3-2-4	WET	188	4.2
	SP	FILL: loose black SAND and GRAVEL with silt						
862.7	CL	FILL: soft greenish gray/dark brown mottled SANDY CLAY; trace fine gravel with occasional light gray mottling	4.0					
				S-2	1-3-1-3	MOIST	5.9	0.012
860.7	CL	FILL: soft black/dark brown fine SAND CLAY with organic fiberous material and trace fine gravel	6.0					
858.7	CL	FILL: soft to medium gray/brown/orange brown mottled SANDY CLAY with trace fine gravel	8.0	S-3	2-3-5-8	WET	6	0.017
856.7			10.0					
854.7	CL	stiff brown/gray with occasional orange brown and pink mottled SANDY CLAY; trace fine gravel	12.0					
852.7			14.0	S-4	6-12-12-13	MOIST	2.7	<0.005
		EOB @ 15 FT	16.0					
			18.0					
			20.0					
			22.0					
			24.0					
			26.0					
			28.0					
			30.0					
			32.0					
			34.0					
			36.0					

TOTAL DEPTH: 15 FT
DRILLING DATE: 10/21/92
INSPECTOR: JAMES W. TIGGELAAR
CONTRACTOR: MATECO
DRILLER: VINCE BENNETT
DRILLING METHOD: 4 1/4 ID H.S.A.
SAMPLING METHOD: 2" X 2' SPLIT-SPOON W/"SPRING CATCHER"

WATER LEVEL OBSERVATION:
GROUNDWATER NOT OBSERVED

FILE	GMCBLE18.DWG
DATE	12-3-92 R.B

WENCK ASSOCIATES, INCORPORATED

LOG OF TEST BORING NO: E-19

PROJECT NAME: B.O.C. LANSING AUTOMOTIVE
PROJECT LOCATION: BODY PLANT – LANSING, MICHIGAN

WENCK PROJ. NO: 0191-01-01
CHECKED BY: MEG

SUBSURFACE PROFILE

ELEV. (FT)	USCS GROUP	GROUND SURFACE ELEV: 865.99	DEPTH (FT)
865.99		CONCRETE	00.0
	SP	FILL: loose brown SAND and FINE GRAVEL with silt	
863.99	CL	FILL: medium dark gray/black and brown and light gray and orange/brown mottled SANDY CLAY; trace fine gravel	2.0
861.99	CL	FILL: soft gray and dark gray mottled SANDY CLAY with trace fine gravel	4.0
859.99			6.0
857.99	CL	medium to stiff brown with occasional orange/brown and gray mottled SANDY CLAY; trace fine gravel	8.0
855.99			10.0
853.99			12.0
851.99			14.0
		EOB @ 15 FT	16.0
			18.0
			20.0
			22.0
			24.0
			26.0
			28.0
			30.0
			32.0
			34.0
			36.0

SOIL SAMPLE DATA

SAMPLE TYPE	BLOW COUNT/6"	MOISTURE (%)	TOTAL LEAD (ppm)	LEACHABLE LEAD (ppm)
S-1	4-7-5-5	MOIST	257	0.534
S-2	3-2-2-3	MOIST	8.5	0.017
S-3	4-6-8-12	MOIST	5.2	<0.005
S-4	4-6-9-11	MOIST	<0.005	<0.005

TOTAL DEPTH: 15 FT
DRILLING DATE: 10/21/92
INSPECTOR: JAMES W. TIGGELAAR
CONTRACTOR: MATECO
DRILLER: VINCE BENNETT
DRILLING METHOD: 4 1/4 ID H.S.A.
SAMPLING METHOD: 2" X 2' SPLIT-SPOON W/"SPRING CATCHER"

WATER LEVEL OBSERVATION:
GROUNDWATER NOT OBSERVED

FILE: GMCBLE19.DWG
DATE: 11-24-97 RLB

WENCK ASSOCIATES, INCORPORATED

LOG OF TEST BORING NO: E-20

PROJECT NAME: B.O.C. LANSING AUTOMOTIVE
PROJECT LOCATION: BODY PLANT – LANSING, MICHIGAN

WENCK PROJ. NO: 0191-01-01
CHECKED BY: MEG

ELEV. (FT)	USCS GROUP	GROUND SURFACE ELEV: 865.20	DEPTH (FT)	SAMPLE TYPE	BLOW COUNT/6"	MOISTURE (%)	TOTAL LEAD (ppm)	TCLP LEAD (ppm)
865.20		CONCRETE	00.0					
	SP	FILL: medium dense COARSE GRAVEL						
863.20	SW	FILL: medium dense brown SAND with silt and fine gravel	2.0	S-1	11-12-8-7	MOIST	4.1	<0.005
861.20	SP	FILL: very loose dark and multicolored FINE GRAVEL	4.0	S-2	2-1-2-1	WET	4.4	0.027
859.20			6.0					
857.20			8.0	S-3	6-8-11-13	WET	3.4	<0.005
855.20	CL	FILL: medium to stiff brown SANDY CLAY with trace fine gravel (occasional gray and light gray and orange mottling)	10.0					
853.20			12.0					
851.20	CL	stiff dark brown/dark gray SANDY CLAY with trace fine gravel	14.0	S-4	6-6-8-10	MOIST	2.3	<0.005
		EOB @ 15 FT	16.0					
			18.0					
			20.0					
			22.0					
			24.0					
			26.0					
			28.0					
			30.0					
			32.0					
			34.0					
			36.0					

TOTAL DEPTH: 15 FT
DRILLING DATE: 10/21/92
INSPECTOR: JAMES W. TIGGELAAR
CONTRACTOR: MATECO
DRILLER: VINCE BENNETT
DRILLING METHOD: 4 1/4 ID H.S.A.
SAMPLING METHOD: 2" X 2' SPLIT-SPOON W/"SPRING CATCHER"

WATER LEVEL OBSERVATION:
GROUNDWATER NOT OBSERVED

FILE	GMOBLE20.DWG
DATE	12-3-92 R.B

WENCK ASSOCIATES, INCORPORATED

LOG OF TEST BORING NO: E-21

PROJECT NAME: B.O.C. LANSING AUTOMOTIVE
PROJECT LOCATION: BODY PLANT – LANSING, MICHIGAN

WENCK PROJ. NO: 0191-01-01
CHECKED BY: MEG

ELEV. (FT)	USCS GROUP	SUBSURFACE PROFILE: GROUND SURFACE ELEV: 867.26	DEPTH (FT)	SAMPLE TYPE	BLOW COUNT/6"	MOISTURE (%)	TOTAL LEAD (ppm)	TCLP LEAD (ppm)
867.26		CONCRETE	00.0					
	SM	FILL: loose brown SAND with silt						
865.26	CL	FILL: medium greenish gray and brown and gray and black mottled SANDY CLAY (occasional orange/brown mottling at lower depths)	2.0	S-1	3-5-6-5	MOIST	10.4	0.02
863.26			4.0					
	CL	FILL: soft dark brown/black SANDY CLAY with brown fiberous organic material		S-2	1-2-1-2	MOIST	4.4	<0.005
861.26	CL	FILL: soft gray and light gray mottled SANDY CLAY; trace fine gravel	6.0					
859.26			8.0					
	CL	FILL: medium brown with occasional orange brown and light gray mottled SANDY CLAY; trace fine gravel		S-3	2-6-7-6	MOIST	3.5	<0.005
857.26			10.0					
855.26			12.0					
853.26	CL	medium dark brown/dark gray SANDY CLAY with trace fine gravel	14.0	S-4	3-5-6-8	MOIST	2.7	<0.005
		EOB @ 15 FT	16.0					
			18.0					
			20.0					
			22.0					
			24.0					
			26.0					
			28.0					
			30.0					
			32.0					
			34.0					
			36.0					

TOTAL DEPTH: 15 FT
DRILLING DATE: 10/21/92
INSPECTOR: JAMES W. TIGGELAAR
CONTRACTOR: MATECO
DRILLER: VINCE BENNETT
DRILLING METHOD: 4 1/4 ID H.S.A.
SAMPLING METHOD: 2" X 2' SPLIT-SPOON W/"SPRING CATCHER"

WATER LEVEL OBSERVATION:
GROUNDWATER NOT OBSERVED

FILE	GMCB_E21.DWG
DATE	12-3-92 R_B

WENCK ASSOCIATES, INCORPORATED

LOG OF TEST BORING NO: E-22

PROJECT NAME: B.O.C. LANSING AUTOMOTIVE
PROJECT LOCATION: BODY PLANT – LANSING, MICHIGAN

WENCK PROJ. NO: 0191-01-01
CHECKED BY: MEG

SUBSURFACE PROFILE

GROUND SURFACE ELEV: 867.26

ELEV. (FT)	USCS GROUP		DEPTH (FT)
867.26		CONCRETE	00.0
	CL	FILL: very soft brown SANDY CLAY with trace fine gravel	
865.26	SM	FILL: very loose black SAND with silt	2.0
863.26	CL	FILL: medium light gray and dark gray/brown and brown mottled SANDY CLAY with trace fine gravel	4.0
861.26			6.0
859.26	CL	FILL: medium light gray and dark gray/brown and brown mottled SANDY CLAY with orange brown mottling; trace fine to coarse red gravel	8.0
857.26			10.0
855.26	CL	FILL: medium brown SANDY CLAY with fine gravel (occasional orange brown and gray mottling)	12.0
853.26			14.0
		EOB @ 15 FT	16.0
			18.0
			20.0
			22.0
			24.0
			26.0
			28.0
			30.0
			32.0
			34.0
			36.0

SOIL SAMPLE DATA

SAMPLE TYPE	BLOW COUNT/6"	MOISTURE (%)	TOTAL LEAD (ppm)	TCLP LEAD (ppm)
S-1	2-2-1-2	MOIST	300	1.43
S-2	1-4-3-4	MOIST	9	<0.005
S-3	2-6-9-7	MOIST	11.5	<0.005
S-4	4-6-4-6	WET	2.9	<0.005

TOTAL DEPTH: 15 FT
DRILLING DATE: 10/21/92
INSPECTOR: JAMES W. TIGGELAAR
CONTRACTOR: MATECO
DRILLER: VINCE BENNETT
DRILLING METHOD: 4 1/4 ID H.S.A.
SAMPLING METHOD: 2" X 2' SPLIT-SPOON W/"SPRING CATCHER"

WATER LEVEL OBSERVATION:
GROUNDWATER NOT OBSERVED

FILE GMCBLE22.DWG
DATE 12-3-92 R:B

WENCK ASSOCIATES, INCORPORATED

LOG OF TEST BORING NO: E-23

PROJECT NAME: B.O.C. LANSING AUTOMOTIVE
PROJECT LOCATION: BODY PLANT – LANSING, MICHIGAN

WENCK PROJ. NO: 0191-01-01
CHECKED BY: MEG

SUBSURFACE PROFILE				SOIL SAMPLE DATA				
ELEV. (FT)	USCS GROUP	GROUND SURFACE ELEV: 867.24	DEPTH (FT)	SAMPLE TYPE	BLOW COUNT/6"	MOISTURE (%)	TOTAL LEAD (ppm)	TCLP LEAD (ppm)
867.24		ASPHALT	00.0					
865.24	CL/SM	FILL: medium black/dark brown/light brown mottled SANDY CLAY and brown SAND with trace silt	2.0	S-1	3-50-12-3	MOIST	829	5.43
863.24			4.0					
861.24	CL	FILL: soft to medium gray/dark gray/blue mottled SANDY CLAY with trace fine gravel	6.0	S-2	7-4-2-2	NO RECOVERY	--	--
				S-3	3-1-3-6	MOIST	9.8	0.02
859.24	CL	FILL: soft to medium brown/gray/light gray mottled SANDY CLAY with trace fine gravel	8.0	S-4	6-6-8-10	WET	15.4	0.12
857.24			10.0					
855.24	CL	medium brown/gray SANDY CLAY with trace fine gravel	12.0					
853.24			14.0	S-5	5-7-9-12	MOIST	10.7	<0.01
		EOB @ 15 FT	16.0					
			18.0					
			20.0					
			22.0					
			24.0					
			26.0					
			28.0					
			30.0					
			32.0					
			34.0					
			36.0					

TOTAL DEPTH: 15 FT
DRILLING DATE: 10/19/92
INSPECTOR: JAMES W. TIGGELAAR
CONTRACTOR: MATECO
DRILLER: VINCE BENNETT
DRILLING METHOD: 4 1/4 ID H.S.A.
SAMPLING METHOD: 2" X 2' SPLIT-SPOON W/"SPRING CATCHER"

WATER LEVEL OBSERVATION:
GROUNDWATER NOT OBSERVED

FILE	GMOBLE23.DWG
DATE	12-3-92 R.B

WENCK ASSOCIATES, INCORPORATED

LOG OF TEST BORING NO: E-24

PROJECT NAME: B.O.C. LANSING AUTOMOTIVE
PROJECT LOCATION: BODY PLANT – LANSING, MICHIGAN

WENCK PROJ. NO: 0191-01-01
CHECKED BY: MEG

SUBSURFACE PROFILE

GROUND SURFACE ELEV: 867.24

ELEV. (FT)	USCS GROUP		DEPTH (FT)
867.24		CONCRETE	00.0
	SM	FILL: very loose black SILTY SAND and fine gravel	
865.24	CL	FILL: soft orange brown/brown mottled SANDY CLAY; trace fine gravel	2.0
863.24	CL	FILL: soft brown/gray SANDY CLAY; trace fine gravel	4.0
861.24	SM	FILL: black medium to coarse SILTY SAND and fine gravel	6.0
		FILL: soft dark brown/dark gray SANDY CLAY; trace fine gravel	
859.24	CL	FILL: soft orange brown/gray mottled SANDY CLAY; trace fine gravel	8.0
857.24	SM	FILL: brown fine silty sand	10.0
		FILL: soft orange brown/gray mottled SANDY CLAY; trace fine gravel	
855.24	CL	FILL: medium brown with occasional orange brown/gray mottling SANDY CLAY; trace fine gravel	12.0
853.24		EOB @ 15 FT	14.0
			16.0
			18.0
			20.0
			22.0
			24.0
			26.0
			28.0
			30.0
			32.0
			34.0
			36.0

SOIL SAMPLE DATA

SAMPLE TYPE	BLOW COUNT/6"	MOISTURE (%)	TOTAL LEAD (ppm)	TCLP LEAD (ppm)
S-1	2-1-2-2	WET	5	0.286
S-2	1-2-2-1	WET	7	0.064
S-3	2-2-2-2	WET	16.9	<0.005
S-4	3-4-6-5	WET	23.1	<0.005

TOTAL DEPTH: 15 FT
DRILLING DATE: 10/20/92
INSPECTOR: JAMES W. TIGGELAAR
CONTRACTOR: MATECO
DRILLER: VINCE BENNETT

WATER LEVEL OBSERVATION:
GROUNDWATER NOT OBSERVED

DRILLING METHOD: 4 1/4 ID H.S.A.
SAMPLING METHOD: 2" X 2' SPLIT-SPOON W/"SPRING CATCHER"

FILE GWCBLE24.DWG
DATE 12-3-92 R.B

WENCK ASSOCIATES, INCORPORATED

LOG OF TEST BORING NO: E-25

PROJECT NAME: B.O.C. LANSING AUTOMOTIVE
PROJECT LOCATION: BODY PLANT – LANSING, MICHIGAN

WENCK PROJ. NO: 0191-01-01
CHECKED BY: MEG

ELEV. (FT)	USCS GROUP	SUBSURFACE PROFILE: GROUND SURFACE ELEV: 867.44	DEPTH (FT)	SAMPLE TYPE	BLOW COUNT/6"	MOISTURE (%)	TOTAL LEAD (ppm)	TCLP LEAD (ppm)
867.44		ASPHALT	00.0					
	SP/CL	FILL: loose black/dark brown fine to FILL: SAND and black/brown SANDY CLAY						
865.44			2.0	S-1	7-3-3-4	DRY	4030	37.3
863.44	CL	FILL: soft light brown SANDY CLAY with fine gravel	4.0					
				S-2	1-1-1-2	WET	25.2	0.48*
861.44			6.0					
859.44	CL	FILL: soft black/dark brown SANDY CLAY; trace fine gravel	8.0	S-3	2-1-2-3	MOIST	15.7	<0.01
857.44			10.0					
855.44	CL	medium brown/gray SANDY CLAY; trace fine gravel; occasional orange brown and light brown mottling	12.0					
853.44			14.0	S-4	4-6-7-10	WET	9.1	0.13*
		EOB @ 15 FT	16.0					
			18.0					
			20.0					
			22.0					
			24.0					
			26.0					
			28.0					
			30.0					
			32.0					
			34.0					
			36.0					

TOTAL DEPTH: 15 FT
DRILLING DATE: 10/19/92
INSPECTOR: JAMES W. TIGGELAAR
CONTRACTOR: MATECO
DRILLER: VINCE BENNETT
DRILLING METHOD: 4 1/4 ID H.S.A.
SAMPLING METHOD: 2" X 2' SPLIT-SPOON W/"SPRING CATCHER"

WATER LEVEL OBSERVATION:
GROUNDWATER NOT OBSERVED

* – EP TOXICITY LEAD GIVEN BECAUSE ITS VALUE HIGHER THAN TCLP LEAD

FILE	GMCBLE25.DWG
DATE	12-3-92 R.B

WENCK ASSOCIATES, INCORPORATED

LOG OF TEST BORING NO: E-26

PROJECT NAME: B.O.C. LANSING AUTOMOTIVE
PROJECT LOCATION: BODY PLANT – LANSING, MICHIGAN

WENCK PROJ. NO: 0191-01-01
CHECKED BY: MEG

SUBSURFACE PROFILE

ELEV. (FT)	USCS GROUP	GROUND SURFACE ELEV: 868.75	DEPTH (FT)
868.75		CONCRETE	00.0
	CL	FILL: soft brown/dark brown/orange brown/light gray mottled SANDY CLAY; trace fine gravel	
866.75	CL	FILL: black SANDY CLAY	2.0
864.75	CL	FILL: soft brown/dark brown/gray mottled SANDY CLAY; trace fine gravel	4.0
	CL	FILL: soft black SANDY CLAY	
862.75	CL	FILL: soft to medium dark brown/dark gray mottled SANDY CLAY; trace fine gravel	6.0
860.75			8.0
858.75	CL	FILL: soft to medium orange brown/gray/light gray mottled SANDY CLAY; trace fine gravel	10.0
856.75	CL	FILL: medium orange brown/brown SANDY CLAY with occasional light gray mottling; trace fine gravel	12.0
854.75			14.0
		EOB @ 15 FT	16.0
			18.0
			20.0
			22.0
			24.0
			26.0
			28.0
			30.0
			32.0
			34.0
			36.0

SOIL SAMPLE DATA

SAMPLE TYPE	BLOW COUNT/6"	MOISTURE (%)	TOTAL LEAD (ppm)	TCLP LEAD (ppm)
S-1	1-1-1-2	MOIST	18.2	0.035
S-2	4-4-4-2	WET	7.8	<0.005
S-3	2-1-2-3	WET	4.6	<0.005
S-4	3-5-6-10	--	3.9	<0.005

TOTAL DEPTH: 15 FT
DRILLING DATE: 10/20/92
INSPECTOR: JAMES W. TIGGELAAR
CONTRACTOR: MATECO
DRILLER: VINCE BENNETT
DRILLING METHOD: 4 1/4 ID H.S.A.
SAMPLING METHOD: 2" X 2' SPLIT-SPOON W/"SPRING CATCHER"

WATER LEVEL OBSERVATION:
GROUNDWATER NOT OBSERVED

FILE	GWCBLE26.DWG
DATE	11-24-92 RLB

WENCK ASSOCIATES, INCORPORATED

LOG OF TEST BORING NO: E-27

PROJECT NAME: B.O.C. LANSING AUTOMOTIVE
PROJECT LOCATION: BODY PLANT – LANSING, MICHIGAN

WENCK PROJ. NO: 0191-01-01
CHECKED BY: MEG

SUBSURFACE PROFILE

GROUND SURFACE ELEV: 867.35

ELEV. (FT)	USCS GROUP		DEPTH (FT)
867.35		ASPHALT	00.0
865.35	CL	FILL: medium to soft light brown/gray/light gray mottled SANDY CLAY; trace coarse gravel; occasional pockets fine to coarse sand with silt and fine gravel from approximately 3 to 7 feet; trace medium to coarse and fine gravel	2.0
863.35			4.0
861.35			6.0
859.35	CL	FILL: soft black SANDY CLAY; trace fine gravel	8.0
857.35	CL	FILL: soft brown/gray/blue mottled SANDY CLAY; trace fine gravel	10.0
855.35	CL	medium brown/gray and occasional orange/brown mottled SANDY CLAY with trace fine gravel	12.0
853.35			14.0
		EOB @ 15 FT	16.0
			18.0
			20.0
			22.0
			24.0
			26.0
			28.0
			30.0
			32.0
			34.0
			36.0

SOIL SAMPLE DATA

SAMPLE TYPE	BLOW COUNT/6"	MOISTURE (%)	TOTAL LEAD (ppm)	TCLP LEAD (ppm)
S-1	6-5-3-3	DRY	3240	14.8
S-2	2-2-1-2	MOIST	21.3	0.29
S-3	1-2-2-2	WET	6.9	0.08
S-4	3-4-7-8	WET	3.2	<0.01

TOTAL DEPTH: 15 FT
DRILLING DATE: 10/20/92
INSPECTOR: JAMES W. TIGGELAAR
CONTRACTOR: MATECO
DRILLER: VINCE BENNETT
DRILLING METHOD: 4 1/4 ID H.S.A.
SAMPLING METHOD: 2" X 2' SPLIT-SPOON W/"SPRING CATCHER"

WATER LEVEL OBSERVATION:
GROUNDWATER NOT OBSERVED

FILE: GMOBLE27.DWG
DATE: 12-3-92 RLB

WENCK ASSOCIATES, INCORPORATED

LOG OF TEST BORING NO: E-28

PROJECT NAME: B.O.C. LANSING AUTOMOTIVE
PROJECT LOCATION: BODY PLANT – LANSING, MICHIGAN

WENCK PROJ. NO: 0191-01-01
CHECKED BY: MEG

SUBSURFACE PROFILE

SOIL SAMPLE DATA

ELEV. (FT)	USCS GROUP	GROUND SURFACE ELEV: 868.26	DEPTH (FT)	SAMPLE TYPE	BLOW COUNT/6"	MOISTURE (%)	TOTAL LEAD (ppm)	TCLP LEAD (ppm)
868.26		ASPHALT	00.0					
866.26	CL	FILL: medium to stiff light brown/orange brown/light gray mottled SANDY CLAY with trace fine gravel	2.0	S-1	6-8-7-7	MOIST	2.8	<0.01
864.26	CL	FILL: soft brown/gray SANDY CLAY with trace fine gravel	4.0	S-2	1-1-1-1	WET	62.4	0.05
862.26			6.0					
860.26	CL	FILL: medium orange brown/light gray/gray mottled SANDY CLAY with trace fine gravel	8.0	S-3	1-2-5-7	WET	3.8	<0.01
858.26			10.0					
856.26	CL	medium brown/gray with occasional orange brown mottling SANDY CLAY with trace fine gravel	12.0	S-4	3-5-7-9	WET	2.8	<0.01
854.26			14.0					
		EOB @ 15 FT	16.0					
			18.0					
			20.0					
			22.0					
			24.0					
			26.0					
			28.0					
			30.0					
			32.0					
			34.0					
			36.0					

TOTAL DEPTH: 15 FT
DRILLING DATE: 10/20/92
INSPECTOR: JAMES W. TIGGELAAR
CONTRACTOR: MATECO
DRILLER: VINCE BENNETT
DRILLING METHOD: 4 1/4 ID H.S.A.
SAMPLING METHOD: 2" X 2' SPLIT-SPOON W/"SPRING CATCHER"

WATER LEVEL OBSERVATION:
GROUNDWATER NOT OBSERVED

FILE	GMCBLE28.DWG
DATE	12-3-92 R.B

WENCK ASSOCIATES, INCORPORATED

LOG OF TEST BORING NO: E-29

PROJECT NAME: B.O.C. LANSING AUTOMOTIVE
PROJECT LOCATION: BODY PLANT – LANSING, MICHIGAN

WENCK PROJ. NO: 0191-01-01
CHECKED BY: MEG

SUBSURFACE PROFILE

SOIL SAMPLE DATA

ELEV. (FT)	USCS GROUP	GROUND SURFACE ELEV: 866.75	DEPTH (FT)	SAMPLE TYPE	BLOW COUNT/6"	MOISTURE (%)	TOTAL LEAD (ppm)	TCLP LEAD (ppm)
866.75		ASPHALT	00.0					
864.75	SP	FILL: loose light brown FINE SAND; trace coarse gravel	2.0	S-1	2-2-2-2	DRY	1.8	<0.01
862.75	SM	FILL: very loose brown SILTY SAND; trace gravel	4.0	S-2	2-1-1-1	WET	4.9	0.04
860.75			6.0					
858.75	CL	FILL: soft to medium gray SANDY CLAY with brown mottlings ("specs"); trace fine gravel	8.0	S-3	2-2-2-3	MOIST	4.5	<0.01
856.75			10.0					
854.75	CL	FILL: medium brown/gray mottled SANDY CLAY; trace fine gravel	12.0					
852.75			14.0	S-4	2-3-5-8	MOIST	3.2	<0.01
		EOB @ 15 FT	16.0					
			18.0					
			20.0					
			22.0					
			24.0					
			26.0					
			28.0					
			30.0					
			32.0					
			34.0					
			36.0					

TOTAL DEPTH: 15 FT
DRILLING DATE: 10/19/92
INSPECTOR: JAMES W. TIGGELAAR
CONTRACTOR: MATECO
DRILLER: VINCE BENNETT
DRILLING METHOD: 4 1/4 ID H.S.A.
SAMPLING METHOD: 2" X 2' SPLIT-SPOON W/"SPRING CATCHER"

WATER LEVEL OBSERVATION:
GROUNDWATER NOT OBSERVED

FILE	GMCBLE29.DWG
DATE	12-3-92 RLB

WENCK ASSOCIATES, INCORPORATED

LOG OF TEST BORING NO: E-30

PROJECT NAME: B.O.C. LANSING AUTOMOTIVE
PROJECT LOCATION: BODY PLANT – LANSING, MICHIGAN

WENCK PROJ. NO: 0191-01-01
CHECKED BY: MEG

SUBSURFACE PROFILE				SOIL SAMPLE DATA			
ELEV. (FT)	USCS GROUP	GROUND SURFACE ELEV: 868.65	DEPTH (FT)	SAMPLE TYPE	BLOW COUNT/6"	MOISTURE (%)	
868.65		CONCRETE WITH REBAR	00.0				
		CONCRETE					
		GRAVEL/ASPHALT					
866.65		CONCRETE	2.0				
	SM	FILL: loose brown/orange brown/occasional dark green/black SAND with silt and white fine gravel		S-1	3-4-4-3	--	
864.65			4.0				
				S-2	3-4-5-2	NO RECOVERY	
862.65	CL	FILL: medium brown SANDY CLAY; occasional gray/orange brown/light green/pink mottling; trace fine gravel	6.0				
				S-3	4-6-8-15	--	
860.65			8.0				
	SM	multicolored brown SAND with silt		S-4	3-4-8-14	--	
858.65			10.0				
856.65	CL	medium to stiff brown/gray SANDY CLAY with occasional orange brown mottling; trace fine gravel	12.0				
854.65			14.0	S-5	6-8-16-19	--	
	CL	stiff reddish brown SANDY CLAY; trace fine gravel					
		EOB @ 15 FT	16.0				
			18.0				
			20.0				
			22.0				
			24.0				
			26.0				
			28.0				
			30.0				
			32.0				
			34.0				
			36.0				

TOTAL DEPTH: 15 FT
DRILLING DATE: 10/20/92
INSPECTOR: JAMES W. TIGGELAAR
CONTRACTOR: MATECO
DRILLER: VINCE BENNETT
DRILLING METHOD: 4 1/4 ID H.S.A.
SAMPLING METHOD: 2" X 2' SPLIT-SPOON W/"SPRING CATCHER"

WATER LEVEL OBSERVATION:
GROUNDWATER NOT OBSERVED

FILE	GMCBLE3C.DWG
DATE	12-3-92 R.B

WENCK ASSOCIATES, INCORPORATED

LOG OF TEST BORING NO: E-31

PROJECT NAME: B.O.C. LANSING AUTOMOTIVE
PROJECT LOCATION: BODY PLANT – LANSING, MICHIGAN

WENCK PROJ. NO: 0191-01-01
CHECKED BY: MEG

SUBSURFACE PROFILE

SOIL SAMPLE DATA

ELEV. (FT)	USCS GROUP	GROUND SURFACE ELEV: 873.4	DEPTH (FT)	SAMPLE TYPE	BLOW COUNT/6"	MOISTURE (%)	TOTAL LEAD (ppm)	TCLP LEAD (ppm)
873.4		COAL	00.0					
871.4	CL	FILL: medium to stiff gray/dark gray/brown mottled SANDY CLAY with trace fine gravel; trace fiberous organic material	2.0	S-1	11-10-14-13	DRY	35.7	0.299
869.4			4.0					
867.4	SM	FILL: soft black and light gray mottled SANDY CLAY with trace fine gravel and organics	6.0	S-2	2-1-2-3	MOIST	17	0.025
865.4			8.0					
863.4	CL	soft brown/gray/orange brown mottled SANDY CLAY with trace fine gravel (becoming all brown/gray at lower depth)	10.0	S-3	2-2-3-4	MOIST	4.4	<0.005
861.4			12.0					
859.4			14.0	S-4	3-3-3-4	MOIST	3.7	<0.005
		EOB @ 15 FT	16.0					
			18.0					
			20.0					
			22.0					
			24.0					
			26.0					
			28.0					
			30.0					
			32.0					
			34.0					
			36.0					

TOTAL DEPTH: 15 FT
DRILLING DATE: 10/22/92
INSPECTOR: JAMES W. TIGGELAAR
CONTRACTOR: MATECO
DRILLER: VINCE BENNETT
DRILLING METHOD: 4 1/4 ID H.S.A.
SAMPLING METHOD: 2" X 2' SPLIT-SPOON W/"SPRING CATCHER"

WATER LEVEL OBSERVATION:
GROUNDWATER NOT OBSERVED

FILE	GMGB_E31.DWG
DATE	12-3-92 R_B

WENCK ASSOCIATES, INCORPORATED

LOG OF TEST BORING NO: E-32

PROJECT NAME: B.O.C. LANSING AUTOMOTIVE
PROJECT LOCATION: BODY PLANT – LANSING, MICHIGAN

WENCK PROJ. NO: 0191-01-01
CHECKED BY: MEG

SUBSURFACE PROFILE				SOIL SAMPLE DATA				
ELEV (FT)	USCS GROUP	GROUND SURFACE ELEV: 871.62	DEPTH (FT)	SAMPLE TYPE	BLOW COUNT/6"	MOISTURE (%)	TOTAL LEAD (ppm)	TCLP LEAD (ppm)
871.62		BITUMINOUS MATERIAL	00.0					
869.62	CL	FILL: medium brown/black/light gray/orange brown mottled SANDY CLAY with trace fine gravel	2.0	S-1	4-6-5-4	DRY	3.7	<0.005
			4.0					
	C	FILL: stiff to medium brown SANDY CLAY with trace fine grave	6.0	S-2	1-2-4-6	MOIST	190	<0.005
			8.0	S-3	7-10-12-8	MOIST	6.9	<0.005
	CL	medium brown/gray SANDY CLAY with trace fine gravel	10.0					
			12.0					
			14.0	S-4	2-4-5-8	WET	3.8	<0.005
		EOB @ 15 FT	16.0					
			18.0					
			20.0					
			22.0					
			24.0					
			26.0					
			28.0					
			30.0					
			32.0					
			34.0					
			36.0					

DEPTH: 15 FT
ING DATE: 10/22/92
NSPECTOR: JAMES W. TIGGELAAR
NTRACTOR: MATECO
ER: VINCE BENNETT
NG METHOD: 4 1/4 ID H.S.A.
PLING METHOD: 2" X 2' SPLIT-SPOON W/"SPRING CATCHER"

WATER LEVEL OBSERVATION:
GROUNDWATER NOT OBSERVED

FILE	GMCBLE32.DWG
DATE	12-3-92 R.B

WENCK ASSOCIATES, INCORPORATED

LOG OF TEST BORING NO: E-33

PROJECT NAME: B.O.C. LANSING AUTOMOTIVE
PROJECT LOCATION: BODY PLANT – LANSING, MICHIGAN

WENCK PROJ. NO: 0191-01-01
CHECKED BY: MEG

SUBSURFACE PROFILE				SOIL SAMPLE DATA				
ELEV. (FT)	USCS GROUP	GROUND SURFACE ELEV: 870.69	DEPTH (FT)	SAMPLE TYPE	BLOW COUNT/6"	MOISTURE (%)	TOTAL LEAD (ppm)	TCLP LEAD (ppm)
870.69		CONCRETE	00.0					
868.69	SP	brown fine SAND with trace medium to coarse sand and fine gravel	2.0	HA-1	--	MOIST	3	<0.005
866.69	SM/CL	gray fine SAND with silt and soft to med. gray fine SANDY CLAY with trace med. to coarse sand and fine gravel	4.0					
	SM	black fine SAND with silt and soft to med. black fine SANDY CLAY with trace med. to coarse sand and fine gravel						
864.69	SM/CL	gray fine SAND with silt and soft to med. gray fine SANDY CLAY with trace med. to coarse sand and fine gravel	6.0	HA-2	--	MOIST	3.1	<0.005
	SM/CL	gray SANDY CLAY with trace med. to coarse sand and fine gravel						
	SM/GP	gray fine SAND with silt and soft to med. gray fine SANDY CLAY with trace med. to coarse sand and fine gravel		HA-3	--	WET	1.8	<0.005
861.19	CL	gray med. to coarse multicolored SAND with silt and fine GRAVEL	8.0					
	CL/GP	med. gray/pink/dark gray mottled SANDY CLAY w/trace gravel						
		med. to stiff brown/light brown mottled SANDY CLAY and coarse GRAVEL						
		EOB @ 8.5 FT	10.0					
			12.0					
			14.0					
			16.0					
			18.0					
			20.0					
			22.0					
			24.0					
			26.0					
			28.0					
			30.0					
			32.0					
			34.0					
			36.0					

TOTAL DEPTH: 8.5 FT
DRILLING DATE: 10/23/92
INSPECTOR: JAMES W. TIGGELAAR
CONTRACTOR: –
DRILLER: JAMES W. TIGGELAAR
DRILLING METHOD: 3" OD HAND AUGER
SAMPLING METHOD: 3" OD HAND AUGER

WATER LEVEL OBSERVATION:
WATER FIRST OBSERVED AT 6 FEET

NOTE: ALL ABOVE SOILS AR FILL.

FILE	GWCBLE33.DWG
DATE	12-3-92 R.S.

URS CONSULTANTS, Inc.

TEST BORING LOG
BORING NO. E-34

PROJECT: GM-Lansing, Body Plant, Area 9
CLIENT: GM-LAD
BORING CONTRACTOR/DRILL RIG: Geo-Tek, Inc./CME 750
GROUND WATER:

DATE	TIME	LEV	TYPE

	CAS.	SAMP.	CORE	TUBE
TYPE	HSA	CME		
DIA.	4-1/4"	3.5"		
WT.				
FALL				

* POCKET PENETROMETER READING

SHEET NO. 1 OF 1
JOB NO. : E1-93-110
GROUND ELEVATION 866.20
DATE STARTED: 10/21/93
DATE FINISHED: 10/21/93
DRILLER: Peter Buell
GEOLOGIST: David McMahon
REVIEWED BY:

DEPTH FT	STRATA	SAMPLE NO.	SAMPLE TYPE	BLOWS PER 6"	RECOVERY RQD %	DESCRIPTION COLOR	CONSISTENCY HARDNESS	MATERIAL DESCRIPTION	CLASS USCS	REMARKS
1		S-1	CME		10	brown	soft	Construction Sand	Fill	wet
5		S-2	CME		10	grey	soft	SILTY CLAY, with 6" Sand seam	CL/ SP	wet
10		S-3	CME		10		soft	SILTY CLAY	CL	wet
15								End of Boring		Composite sample taken from 0 to 15' (due to poor sample recovery). Discrete sample collected from 15' depth.
20										

COMMENTS: CME - 3.5 ID x 5' soil core tube

PROJECT NO. E1-93-110

URS CONSULTANTS, Inc.

TEST BORING LOG
BORING NO. E-35

ROJECT: GM-Lansing, Body Plant, Area 9
CLIENT: GM-LAD
BORING CONTRACTOR/DRILL RIG: Geo-Tek, Inc./CME 750
GROUND WATER:

DATE	TIME	LEV	TYPE

	CAS.	SAMP.	CORE	TUBE
TYPE	HSA	CME		
DIA.	4-1/4"	3.5"		
WT.				
FALL				

SHEET NO. 1 OF 1
JOB NO. : E1-93-110
GROUND ELEVATION 866.28
DATE STARTED: 10/22/93
DATE FINISHED: 10/22/93
DRILLER: Peter Buell
GEOLOGIST: Mike Kovacs
REVIEWED BY:

* POCKET PENETROMETER READING

DEPTH FT	STRATA	SAMPLE NO.	SAMPLE TYPE	BLOWS PER 6"	RECOVERY RQD %	DESCRIPTION COLOR	CONSISTENCY HARDNESS	MATERIAL DESCRIPTION	CLASS USCS	REMARKS
1		S-1	CME		60	black	soft	6" Asphalt SAND and GRAVEL	Fill	
5		S-2	CME		10	grey		SANDY SILT, trace Gravel	Fill	very moist
10		S-3	CME		100	grey/ brown	soft	SANDY CLAY, trace Gravel	CL	wet, mottled
15								End of Boring		Composite sample taken from 3.5 to 8.5'
20										Discrete sample collected at 13.5' depth.

COMMENTS: CME - 3.5 ID x 5' soil core tube

PROJECT NO. E1-93-110

URS CONSULTANTS, Inc.

TEST BORING LOG
BORING NO. E-36

PROJECT: GM-Lansing, Body Plant, Area 9
CLIENT: GM-LAD
BORING CONTRACTOR/DRILL RIG: Geo-Tek, Inc./CME 750
GROUND WATER:

DATE	TIME	LEV	TYPE

	CAS.	SAMP.	CORE	TUBE
TYPE	HSA	CME		
DIA.	4-1/4"	3.5"		
WT.				
FALL				

* POCKET PENETROMETER READING

SHEET NO. 1 OF 1
JOB NO. : E1-93-110
GROUND ELEVATION 866.44
DATE STARTED: 10/21/93
DATE FINISHED: 10/21/93
DRILLER: Peter Buell
GEOLOGIST: David McMahon
REVIEWED BY:

DEPTH FT	STRATA	SAMPLE NO.	SAMPLE TYPE	BLOWS PER 6"	RECOVERY RQD %	DESCRIPTION COLOR	CONSISTENCY HARDNESS	MATERIAL DESCRIPTION	CLASS USCS	REMARKS
1		S-1	CME		10	brown	soft	SAND grading to SILTY CLAY	Fill	dry
5		S-2	CME		15	grey	soft	SILTY CLAY	Fill	wet
10		S-3	CME		100	grey	hard	SILTY CLAY	CL	wet
15								End of Boring		Composite sample taken from 4 to 9.5' Discrete sample collected at 14' depth.
20										

COMMENTS: CME - 3.5 ID x 5' soil core tube

PROJECT NO. E1-93-110

URS CONSULTANTS, Inc.

TEST BORING LOG
BORING NO. E-37

PROJECT: GM-Lansing, Body Plant, Area 9
SHEET NO. 1 OF 1
CLIENT: GM-LAD
JOB NO. : E1-93-110
BORING CONTRACTOR/DRILL RIG: Geo-Tek, Inc./CME 750
GROUND ELEVATION 866.41
DATE STARTED: 10/22/93
DATE FINISHED: 10/22/93
DRILLER: Peter Buell
GEOLOGIST: Mike Kovacs
REVIEWED BY:

GROUND WATER:

DATE	TIME	LEV	TYPE

	CAS.	SAMP.	CORE	TUBE
TYPE	HSA	CME		
DIA.	4-1/4"	3.5"		
WT.				
FALL				

* POCKET PENETROMETER READING

DEPTH FT	STRATA	SAMPLE NO.	SAMPLE TYPE	BLOWS PER 6"	RECOVERY RQD %	DESCRIPTION COLOR	CONSISTENCY HARDNESS	MATERIAL DESCRIPTION	CLASS USCS	REMARKS
1		S-1	CME		60	black	soft	SAND and GRAVEL		
							soft	SANDY SILT, trace Gravel		wet
5		S-2	CME		100	grey	soft	SANDY CLAY, trace Gravel	Fill	wet
10		S-3	CME		90	black grey	soft	organic SANDY CLAY SANDY SILT	ML	
						grey	soft	medium SAND, trace Gravel	SP	wet
15								End of Boring		Composite sample taken from 3.5 to 8.5'
20										Discrete sample collected at 11.5' depth.

COMMENTS: CME - 3.5 ID x 5' soil core tube

PROJECT NO. E1-93-110

URS CONSULTANTS, Inc.

TEST BORING LOG
BORING NO. E-38

PROJECT: GM-Lansing, Body Plant, Area 9
CLIENT: GM-LAD
BORING CONTRACTOR/DRILL RIG: Geo-Tek, Inc./CME 750
GROUND WATER:

DATE	TIME	LEV	TYPE

	CAS.	SAMP.	CORE	TUBE
TYPE	HSA	CME		
DIA.	4-1/4"	3.5"		
WT.				
FALL				

* POCKET PENETROMETER READING

SHEET NO. 1 OF 1
JOB NO. : E1-93-110
GROUND ELEVATION 866.39
DATE STARTED: 10/21/93
DATE FINISHED: 10/21/93
DRILLER: Peter Buell
GEOLOGIST: David McMahon
REVIEWED BY:

DEPTH FT	STRATA	SAMPLE NO.	SAMPLE TYPE	BLOWS PER 6"	RECOVERY RQD %	DESCRIPTION COLOR	CONSISTENCY HARDNESS	MATERIAL DESCRIPTION	CLASS USCS	REMARKS
1		S-1	CME		10	black/ brown	soft	Asphalt Construction debris	Fill	moist
5		S-2	CME		85	grey	soft	SILTY CLAY	CL	wet water in boring
10		S-3	CME		95		soft	SAND and GRAVEL	SW	wet
15								End of Boring		Composite sample taken from 1 to 4' Discrete sample collected at 9.5' depth.
20										

COMMENTS: CME - 3.5 ID x 5' soil core tube

PROJECT NO. E1-93-110

URS CONSULTANTS, Inc.

TEST BORING LOG
BORING NO. E-39

PROJECT: GM-Lansing, Body Plant, Area 9
CLIENT: GM-LAD
BORING CONTRACTOR/DRILL RIG: Geo-Tek, Inc./CME 750
GROUND WATER:

DATE	TIME	LEV	TYPE

	CAS.	SAMP.	CORE	TUBE
TYPE	HSA	CME		
DIA.	4-1/4"	3.5"		
WT.				
FALL				

* POCKET PENETROMETER READING

SHEET NO. 1 OF 1
JOB NO. : E1-93-110
GROUND ELEVATION 867.94
DATE STARTED: 10/22/93
DATE FINISHED: 10/22/93
DRILLER: Peter Buell
GEOLOGIST: Mike Kovacs
REVIEWED BY:

DEPTH FT	STRATA	SAMPLE NO.	SAMPLE TYPE	BLOWS PER 6"	RECOVERY RQD %	DESCRIPTION COLOR	CONSISTENCY HARDNESS	MATERIAL DESCRIPTION	CLASS USCS	REMARKS
1								GRAVELY SAND		drilled through rubble from 1.5 to 3' -no sample taken
		S-1	CME		20			Concrete	Fill	
						grey	soft	SILTY CLAY, tr. Sand, tr. Gravel	Fill	
5						brown		SANDY GRAVEL	Fill	
		S-2	CME		0					no recovery, soil descriptions from auger cuttings
10										
		S-3	CME		0					
15		S-4	SS			grey	soft	SANDY CLAY, trace Gravel	CL	
								End of Boring		Fill sample taken from 3 to 4'
20										Discrete sample collected at 14 to 16'

COMMENTS: CME - 3.5 ID x 5' soil core tube

PROJECT NO. E1-93-110

URS CONSULTANTS, Inc.

TEST BORING LOG
BORING NO. E-40

PROJECT: GM-Lansing, Body Plant, Area 9
CLIENT: GM-LAD
BORING CONTRACTOR/DRILL RIG: Geo-Tek, Inc./CME 750
GROUND WATER:

DATE	TIME	LEV	TYPE

	CAS.	SAMP.	CORE	TUBE
TYPE	HSA	CME		
DIA.	4-1/4"	3.5"		
WT.				
FALL				

* POCKET PENETROMETER READING

SHEET NO. 1 OF 1
JOB NO. : E1-93-110
GROUND ELEVATION 869.00
DATE STARTED: 10/21/93
DATE FINISHED: 10/21/93
DRILLER: Peter Buell
GEOLOGIST: David McMahon
REVIEWED BY:

DEPTH FT	STRATA	SAMPLE NO.	SAMPLE TYPE	SAMPLE BLOWS PER 6"	SAMPLE RECOVERY RQD %	DESCRIPTION COLOR	DESCRIPTION CONSISTENCY HARDNESS	DESCRIPTION MATERIAL DESCRIPTION	DESCRIPTION CLASS USCS	REMARKS
1								Asphalt		
						brown	soft	SAND	Fill	
		S-1	CME		90					
5						grey	soft	SANDY CLAY	CL	moist
		S-2	CME		70					
10										
		S-3	CME		100	brown		. . . grade: some Gravel	CL	moist
15										
								End of Boring		Composite sample taken from 1 to 15'
20										Discrete sample collected at 6' depth.

COMMENTS: CME - 3.5 ID x 5' soil core tube

PROJECT NO. E1-93-110

URS CONSULTANTS, Inc.

TEST BORING LOG
BORING NO. E-41

PROJECT: GM-Lansing, Body Plant, Area 9
SHEET NO. 1 OF 1
CLIENT: GM-LAD
JOB NO. : E1-93-110
BORING CONTRACTOR/DRILL RIG: Geo-Tek, Inc./CME 750
GROUND ELEVATION 867.41
DATE STARTED: 10/21/93
DATE FINISHED: 10/21/93
DRILLER: Peter Buell
GEOLOGIST: Mike Kovacs
REVIEWED BY:

GROUND WATER:

DATE	TIME	LEV	TYPE

	CAS.	SAMP.	CORE	TUBE
TYPE	HSA	CME		
DIA.	4-1/4"	3.5"		
WT.				
FALL				

* POCKET PENETROMETER READING

DEPTH FT	STRATA	SAMPLE NO.	SAMPLE TYPE	SAMPLE BLOWS PER 6"	SAMPLE RECOVERY RQD %	DESCRIPTION COLOR	DESCRIPTION CONSISTENCY HARDNESS	DESCRIPTION MATERIAL DESCRIPTION	DESCRIPTION CLASS USCS	REMARKS
1								Concrete		
						brown		SAND		
		S-1	CME		60	brown/ grey		SANDY CLAY	Fill	
								. . . layer black SANDY CLAY		
5								. . . grade: trace Gravel		moist
		S-2	CME		70	grey		SANDY CLAY	CL	
10								. . . grade: some Gravel		
		S-3	CME		100			SANDY SILT	ML	moist
15								End of Boring		Composite sample taken from 3 to 7'
20										Discrete sample collected at 14'

COMMENTS: ND - non detect

PROJECT NO. E1-93-110

WE..CK ASSOCIATES, INCORF..RATED

LOG OF TEST BORING NO: G-1

PROJECT NAME: B.O.C. LANSING AUTOMOTIVE
PROJECT LOCATION: BODY PLANT–LANSING, MICHIGAN

WENCK PROJ. NO: 0191-01-01
CHECKED BY: JWT

SUBSURFACE PROFILE				SOIL SAMPLE DATA						
ELEV. (FT)	USCS GROUP	GROUND SURFACE ELEV: 872.13	DEPTH (FT)	SAMPLE TYPE	BLOW COUNT/6"	STD.PEN. RES. (N)	MOISTURE (%)	DRY DENSITY (PCF)	UNCONF. COMP.ST. (PSF)	PID READING (ppm)
872.13	N/A	CONCRETE SLAB	00.0							
	SW	FILL: light gray fine to coarse sand and fine gravel with silt								
70.13			2.0	LS-1	4-6-10-12	16	DRY	–	–	2.5
68.13			4.0							
	CL	FILL: medium to stiff brown and gray and orange/brown mottled SANDY CLAY with trace fine gravel and coarse sand		LS-2	5-8-9-10	17	DRY	–	–	2.0
66.13			6.0							
64.13			8.0	LS-3	5-10-15-18	25	(11,7)	128.3	–	1.2
62.13			10.0							
60.13			12.0							
58.13			14.0	LS-4	3-3-4-5	7	WET	–	–	1.0
	CL	medium brown/gray to gray SANDY CLAY with trace fine gravel and coarse sand, occasional layers of silty sand								
56.13			16.0							
54.13			18.0	LS-5	4-5-6-9	11	WET	–	–	0.8
52.13			20.0							
	CL	medium to stiff brown/gray to gray SANDY CLAY with trace fine gravel and coarse sand								
50.13			22.0							
48.13			24.0	LS-6	7-9-11-14	20	MOIST	–	–	1.2
	CL	medium to stiff gray SILTY CLAY with trace fine gravel and coarse sand								
46.13			26.0							
44.13			28.0	LS-7	11-13-13-14	26	MOIST	–	–	1.0
42.13	CL	medium to stiff gray SANDY CLAY with frequent layers of gray fine to medium silty sand	30.0							
40.13	CL	soft to medium gray SANDY CLAY with trace coarse sand and fine gravel	32.0							
38.13	SM	very dense gray SILTY SAND with trace coarse sand and fine gravel	34.0	LS-8	6-19-43-68	64	WET	–	–	0.6
36.13		EOB @ 35 FT	36.0							

TOTAL DEPTH: 35 FT
DRILLING DATE: 8/4/92
INSPECTOR: JAMES W. TIGGELAAR
CONTRACTOR: MATECO DRILLING CO.
DRILLER: JACK MASKELL
DRILLING METHOD: 4 1/4 ID H.S.A. WITH AUGER BASKET
DRILLING METHOD: 2" X 2' SPLIT-SPOON WITH SAMPLE RET.

WATER LEVEL OBSERVATION:
GROUNDWATER NOT ENCOUNTERED

FILE GMBLG1.DWG
DATE 8-[illegible]-92 RJR

WEI .K ASSOCIATES, INCORP :ATED

LOG OF TEST BORING NO: G-2 (originally E-6)

PROJECT NAME: B.O.C. LANSING AUTOMOTIVE
PROJECT LOCATION: BODY PLANT-LANSING, MICHIGAN

WENCK PROJ. NO: 0191-01-01
CHECKED BY: JWT

SUBSURFACE PROFILE

ELEV. (FT)	USCS GROUP	GROUND SURFACE ELEV: 869.09	DEPTH (FT)
869.09	N/A	BITUMINOUS MATERIAL	00.0
867.09	SP	FILL: coarse brown SAND	2.0
865.09			4.0
863.09	CL	FILL: medium to stiff brown SANDY CLAY with trace fine gravel and coarse sand	6.0
861.09			8.0
859.09			10.0
857.09			12.0
855.09			14.0
853.09			16.0
851.09			18.0
849.09	CL	medium to stiff brown/gray SANDY CLAY with trace fine gravel and coarse sand	20.0
847.09			22.0
845.09			24.0
843.09			26.0
841.09			28.0
839.09	SM	medium dense gray fine SILTY SAND	30.0
	CL	medium to stiff gray SANDY CLAY with trace fine gravel and coarse sand	
837.09			32.0
	SM	dense brown/gray fine SILTY SAND	
835.09			34.0
	CL	medium to stiff gray SANDY CLAY with trace fine gravel and coarse sand	
	SM	dense gray fine SILTY SAND w/Trace Fine Gravel and Coarse Sand	
833.09		EOB @ 35 FT	36.0

SOIL SAMPLE DATA

SAMPLE TYPE	BLOW COUNT/6"	STD.PEN. RES. (N)	MOISTURE (%)	DRY DENSITY (PCF)	UNCONF. COMP.ST. (PSF)	PID READING (ppm)
LS-1	3-3-2-2	5	DRY	-	-	1.4
LS-2	5-7-10-13	17	MOIST	-	-	0.9
LS-3	4-5-7-8	12	WET	-	-	3.7
ST-1	PUSHED	-	-	-	-	-
LS-4	4-5-7-9	12	WET	-	-	0.7
LS-5	4-7-9-10	16	WET	-	-	0.3
LS-6	10-8-9-12	17	WET	-	-	0.4
LS-7	0-16-23-26	49	WET	-	-	0.1

TOTAL DEPTH: 35 FT
DRILLING DATE: 7/27/92
INSPECTOR: JAMES W. TIGGELAAR
CONTRACTOR: MATECO DRILLING CO.
DRILLER: JACK MASKELL
DRILLING METHOD: 4 1/4 ID H.S.A. WITH AUGER BASKET
DRILLING METHOD: 2" X 2' SPLIT-SPOON (LINED);
3" X 2' SHELBY TUBE

WATER LEVEL OBSERVATION:
WATER FIRST OBSERVED AT 10.8 FEET

FILE	GMBLG2.DWG
DATE	8-11-92 RLB

WE. CK ASSOCIATES, INCORF RATED

LOG OF TEST BORING NO: G-3

PROJECT NAME: B.O.C. LANSING AUTOMOTIVE
PROJECT LOCATION: BODY PLANT-LANSING, MICHIGAN

WENCK PROJ. NO: 0191-01-01
CHECKED BY: JWT

ELEV. (FT)	USCS GROUP	GROUND SURFACE ELEV: 869.51	DEPTH (FT)	SAMPLE TYPE	BLOW COUNT/6"	STD.PEN. RES. (N)	MOISTURE (%)	DRY DENSITY (PCF)	UNCONF. COMP.ST. (PSF)	PID READING (ppm)
		SUBSURFACE PROFILE		SOIL SAMPLE DATA						
869.51	N/A	BITUMINOUS MATERIAL	00.0							
	SC	FILL: brown fine to coarse SAND with brown sandy clay								
67.51			2.0	S-1	2-3-4-4	7	MOIST	-	-	1.0
65.51			4.0							
63.51	CL	FILL: medium to stiff brown SANDY CLAY with trace fine gravel and coarse sand, black staining, occasional layer brown sand	6.0	S-2	3-6-9-11	15	MOIST	-	-	1.5
61.51			8.0							
59.51			10.0	ST-1	PUSHED	-	(12.6)	129.7	6400	4.8
57.51			12.0							
55.51	CL	medium to stiff brown/gray to gray SANDY CLAY with trace fine gravel and coarse sand	14.0	LS-1	6-6-6-8	12	WET	-	-	2.7
53.51			16.0							
51.51			18.0	ST-2	PUSHED	-	(10.3)	130.6	-	5.1
49.51			20.0							
47.51			22.0							
45.51	CL	stiff to very stiff gray SILTY CLAY with trace coarse sand and fine gravel	24.0	LS-2	6-10-13-16	23	MOIST	-	-	1.5
43.51			26.0							
41.51			28.0	ST-3	PUSHED	-	(13.6)	114.9	-	0.8
39.51			30.0							
37.51			32.0							
35.51	CL	medium to stiff gray SANDY CLAY with trace coarse sand and fine gravel, occasional layer gray silty sand	34.0	LS-3	5-6-11-19	17	WET	-	-	0.8
33.51			36.0							

TOTAL DEPTH: 50 FT
DRILLING DATE: 8/4/92
INSPECTOR: JAMES W. TIGGELAAR
CONTRACTOR: MATECO DRILLING CO.
DRILLER: JACK MASKELL

WATER LEVEL OBSERVATION:
WATER FIRST OBSERVED AT 12.2 FEET

DRILLING METHOD: 4 1/4 ID H.S.A. WITH AUGER BASKET
DRILLING METHOD: 2" X 2' SPLIT-SPOON WITH SAMPLE RET.;
3" X 2' SHELBY TUBE

FILE GVB-G3.DWG
DATE 8 [illegible]-92 R.B

WE CK ASSOCIATES, INCORF RATED

LOG OF TEST BORING NO: G-3

PROJECT NAME: B.O.C. AUTOMOTIVE
PROJECT LOCATION: BODY PLANT-LANSING, MICHIGAN

WENCK PROJ. NO: 0191-01-01
CHECKED BY: JWT

SUBSURFACE PROFILE

ELEV. (FT)	USCS GROUP		DEPTH (FT)
33.51			36.0
31.51	CL	medium to stiff gray SILTY CLAY with trace sand and fine gravel	38.0
29.51			40.0
27.51			42.0
25.51	CL	stiff gray SILTY CLAY with trace fine gravel	44.0
23.51			46.0
21.51			48.0
19.51		very dense light gray fine to medium SAND AND fine to coarse GRAVEL	50.0
		EOB @ 50 FT	52.0
			54.0
			56.0
			58.0
			60.0
			62.0
			64.0
			66.0
			68.0
			70.0
			72.0

SOIL SAMPLE DATA

SAMPLE TYPE	BLOW COUNT/6"	STD.PEN. RES. (N)	MOISTURE (%)	DRY DENSITY (PCF)	UNCONF. COMP.ST. (PSF)	PID READING (ppm)
LS-4	6-7-10-12	17	-	-	-	0.8
ST-4	PUSHED	-	(10.1)	129.1	7200	1.2
LS-5	7-29-70-80/4"	99	MOIST	-	-	0.6

TOTAL DEPTH: 50 FT
DRILLING DATE: 8/4/92
INSPECTOR: JAMES W. TIGGELAAR
CONTRACTOR: MATECO DRILLING CO.
DRILLER: JACK MASKELL

DRILLING METHOD: 4 1/4 ID H.S.A. WITH AUGER BASKET
DRILLING METHOD: 2" X 2' SPLIT-SPOON WITH SAMPLE RET.;
3" X 2' SHELBY TUBE

WATER LEVEL OBSERVATION:
WATER FIRST OBSERVED AT 12.2 FEET

FILE	GMBLG38.DWG
DATE	8-11-92 RLB

WENCK ASSOCIATES, INCORPORATED

LOG OF TEST BORING NO: G-4

PROJECT NAME: B.O.C. LANSING AUTOMOTIVE
PROJECT LOCATION: BODY PLANT–LANSING, MICHIGAN

WENCK PROJ. NO: 0191-01-01
CHECKED BY: JWT

SUBSURFACE PROFILE				SOIL SAMPLE DATA						
ELEV. (FT)	USCS GROUP	GROUND SURFACE ELEV: 869.81	DEPTH (FT)	SAMPLE TYPE	BLOW COUNT/6"	STD.PEN. RES. (N)	MOISTURE (%)	DRY DENSITY (PCF)	UNCONF. COMP.ST. (PSF)	PID READING (ppm)
869.81	N/A	BITUMINOUS MATERIAL	00.0							
	SP	FILL: coarse brown SAND								
67.81			2.0	LS-1	3-4-3-4	7	MOIST	–	–	2.5
65.81			4.0							
63.81			6.0	LS-2	3-3-4-5	7	MOIST	–	–	2.3
61.81	CL	FILL: medium brown SANDY CLAY with trace coarse sand and fine gravel	8.0	LS-3	0-1-1-2	2	WET	–	–	0.5
59.81			10.0							
57.81			12.0							
55.81			14.0	LS-4	3-8-11-7	19	–	–	–	0.3
53.81			16.0							
51.81			18.0	LS-5	3-4-8-11	12	WET	–	–	0.0
49.81			20.0							
47.81	CL	stiff gray SANDY CLAY with trace coarse sand and fine gravel	22.0							
45.81			24.0	LS-6	4-7-10-11	17	(17.2)	113.9	3600	0.0
43.81			26.0							
41.81			28.0	LS-7	4-5-7-9	12	WET	–	–	0.0
39.81			30.0							
37.81			32.0	LS-8	7-6-7-7	13	WET	–	–	(COMBINED)
35.81	SM	very dense gray fine SILTY SAND	34.0							
				ST-1	(no sample)	–	–	–	–	–
33.81			36.0	LS-9	19-29-36-40	65	WET	–	–	1.4

TOTAL DEPTH: 49 FT
DRILLING DATE: 7/24/92
INSPECTOR: JAMES W. TIGGELAAR
CONTRACTOR: MATECO DRILLING CO.
DRILLER: JACK MASKELL
DRILLING METHOD: 4 1/4 ID H.S.A. WITH AUGER BASKET
DRILLING METHOD: 2" X 2' SPLIT-SPOON;
3" X 2' SHELBY TUBE

WATER LEVEL OBSERVATION:
WATER FIRST OBSERVED AT 6.3 FEET

FILE	GMBLG4.DWG
DATE	8-11-92 RLB

WE CK ASSOCIATES, INCORF RATED

LOG OF TEST BORING NO: G-4

PROJECT NAME: B.O.C. AUTOMOTIVE
PROJECT LOCATION: BODY PLANT-LANSING, MICHIGAN

WENCK PROJ. NO: 0191-01-01
CHECKED BY: JWT

SUBSURFACE PROFILE

ELEV. (FT)	USCS GROUP		DEPTH (FT)
33.81		same as above	36.0
31.81			38.0
29.81	CL	stiff gray SANDY CLAY, trace coarse sand and fine gravel	40.0
27.81			42.0
25.81	CL	dense gray CLAYEY SAND with trace coarse sand and fine gravel	44.0
23.81			46.0
21.81	CL	stiff gray CLAY	48.0
	CL	very dense gray medium to coarse SILTY SAND AND fine to coarse GRAVEL	50.0
		EOB @ 50 FT	52.0
			54.0
			56.0
			58.0
			60.0
			62.0
			64.0
			66.0
			68.0
			70.0
			72.0

SOIL SAMPLE DATA

SAMPLE TYPE	BLOW COUNT/6"	STD.PEN. RES. (N)	MOISTURE (%)	DRY DENSITY (PCF)	UNCONF. COMP.ST. (PSF)	PID READING (ppm)
LS-10	7-8-12-13	20	-	-	-	0.3
LS-11	14-16-18-28	34	WET	-	-	0.1
LS-12	12-17-36-53	53	WET	-	-	0

TOTAL DEPTH: 50 FT
DRILLING DATE: 7/24/92
INSPECTOR: JAMES W. TIGGELAAR
CONTRACTOR: MATECO DRILLING CO.
DRILLER: JACK MASKELL
DRILLING METHOD: 4 1/4 ID H.S.A. WITH AUGER BASKET
DRILLING METHOD: 2" X 2' SPLIT-SPOON (LINED);
3" X 2' SHELBY TUBE

WATER LEVEL OBSERVATION:
WATER FIRST OBSERVED AT 12.2 FEET ON 7-24-92
GROUNDWATER OBSERVED AT 4.6 FEET ON 7-27-92

FILE	GMB:G48.DWG
DATE	8-11-92 R.B

WE CK ASSOCIATES, INCORF RATED

LOG OF TEST BORING NO: G-5

PROJECT NAME: B.O.C. AUTOMOTIVE
PROJECT LOCATION: BODY PLANT-LANSING, MICHIGAN

WENCK PROJ. NO: 0191-01-01
CHECKED BY: JWT

SUBSURFACE PROFILE				SOIL SAMPLE DATA						
ELEV. (FT)	USCS GROUP	GROUND SURFACE ELEV: 868.12	DEPTH (FT)	SAMPLE TYPE	BLOW COUNT/6"	STD.PEN. RES. (N)	MOISTURE (%)	DRY DENSITY (PCF)	UNCONF. COMP.ST. (PSF)	PID READING (ppm)
868.12	N/A	BITUMINOUS MATERIAL	00.0							
	SM	FILL: very loose silty/oily brown/gray fine to coarse SAND								
866.12	CL	FILL: soft brown/gray SANDY CLAY with black staining	2.0	LS-1	0-0-0-3	0	WET	-	-	340
864.12	CL	FILL: highly stained dark black/brown/gray SANDY CLAY	4.0							
862.12	CL	FILL: soft to medium brown/gray SANDY CLAY with trace coarse sand and fine gravel	6.0	LS-2	4-4-4-3	8	WET	-	-	225
860.12			8.0							
				LS-3	2-3-4-5	7	WET	-	-	214
858.12			10.0							
856.12	CL	medium to stiff brown/gray SILTY CLAY with trace coarse sand and fine gravel, occasional layer silty sand	12.0							
854.12			14.0	LS-4	6-8-12-14	20	-	-	-	178
852.12			16.0							
850.12			18.0							
				LS-5	7-9-13-16	22	(9.6)	137.7	3200	43
848.12			20.0							
846.12			22.0							
844.12			24.0	LS-6	-	-	WET	-	-	41
842.12			26.0							
840.12			28.0							
				LS-7	6-14-13-9	27	WET	-	-	50
838.12	SP	medium dense brown/gray fine to medium SAND with silt	30.0							
836.12			32.0							
834.12	CL	medium to stiff brown/gray SILTY CLAY with trace grave' and coarse sand	34.0	LS-8	10-11-14-15	25	WET	-	-	162
832.12		E.O.B. @ 35 FT'	36.0							

TOTAL DEPTH: 35 FT
DRILLING DATE: 7/29/92
INSPECTOR: JAMES W. TIGGELAAR
CONTRACTOR: MATECODRILLING CO.
DRILLER: JACK MASKELL

WATER LEVEL OBSERVATION:
WATER FIRST OBSERVED AT 2.5 FEET

DRILLING METHOD: 4 1/4 ID H.S.A. WITH AUGER BASKET
DRILLING METHOD: 2" X 2' SPLIT-SPOON RET. AND BRASS LINERS; 3 X 2" SHELBY TUBE

FILE	GWBLGS.DWG
DATE	8-11-92 R.B

WENCK ASSOCIATES, INCORPORATED

LOG OF TEST BORING NO: G-6

PROJECT NAME: B.O.C. AUTOMOTIVE
PROJECT LOCATION: BODY PLANT–LANSING, MICHIGAN
WENCK PROJ. NO: 0191-01-01
CHECKED BY: JWT

ELEV. (FT)	USCS GROUP	SUBSURFACE PROFILE: GROUND SURFACE ELEV: 867.90	DEPTH (FT)	SAMPLE TYPE	BLOW COUNT/6"	STD.PEN. RES. (N)	MOISTURE (%)	DRY DENSITY (PCF)	LEAD COMPOSITE	UNCONF. COMP.ST. (PSF)	PID READING (ppm)
867.90	N/A	ASPHALT	00.0								
	GW	FILL: ROAD GRAVEL									
865.90	SM	FILL: loose light brown fine to coarse SAND and fine gravel, occasional layer black stained sandy clay	2.0	LS-1	4-2-3-3	5	DRY	–	EP TOXICITY LEAD 0.08 mg/L	–	5.2
863.90			4.0								
861.90			6.0	LS-2	2-1-1-1	2	WET	–		–	2.9
859.90			8.0	LS-3	2-6-5-3	11	WET	–		–	186.0
857.90	CL	FILL: soft dark brown SANDY CLAY (black stains, gray patches)	10.0								
855.90			12.0								
853.90	CL	FILL: medium brown SANDY CLAY with traces and layers of dense fine to coarse brown sand and fine gravel	14.0	LS-4	6-8-13-16	21	WET	–		–	34.0
851.90			16.0						TCLP Lead 0.7 mg/L		
849.90	CL	medium to stiff brown/gray SILTY CLAY with trace coarse sand and fine gravel	18.0	LS-5	6-8-10-12	18	WET	–		–	24.0
847.90			20.0								
845.90	CL	medium brown/gray SANDY CLAY with trace fine gravel and coarse sand	22.0								
843.90			24.0	LS-6	5-6-9-11	15	WET	–	TOTAL Lead 47.1 mg/kg	–	12.5
841.90			26.0								
839.90			28.0	LS-7	7-9-13-13	22	WET	–		–	8.2
837.90	CL	medium to stiff gray SILTY CLAY with trace fine gravel and coarse sand	30.0								
835.90			32.0								
833.90	SM	medium dense fine SILTY SAND with trace fine gravel and coarse sand	34.0	LS-8	11-15-15-13	30	WET	–		–	5.8
831.90		EOB @ 35 FT	36.0								

TOTAL DEPTH: 35 FT
DRILLING DATE: 7/30/92
INSPECTOR: JAMES W. TIGGELAAR
CONTRACTOR: MATECO DRILLING CO.
DRILLER: JACK MASKELL

WATER LEVEL OBSERVATION:
WATER FIRST OBSERVED AT 3.8 FEET

DRILLING METHOD: 4 1/4 ID H.S.A. WITH AUGER BASKET
DRILLING METHOD: 2" X 2' SPLIT-SPOON RET. AND BRASS LINERS;
3" X 2' SHELBY TUBE

FILE	GMBLG6.DWG
DATE	8-17-92 RLB

WENCK ASSOCIATES, INCORPORATED

LOG OF TEST BORING NO: G-7

PROJECT NAME: B.O.C. AUTOMOTIVE
PROJECT LOCATION: BODY PLANT–LANSING, MICHIGAN

WENCK PROJ. NO: 0191-01-01
CHECKED BY: JWT

ELEV. (FT)	USCS GROUP	GROUND SURFACE ELEV: 868.57	DEPTH (FT)	SAMPLE TYPE	BLOW COUNT/6"	STD.PEN. RES. (N)	MOISTURE (%)	DRY DENSITY (PCF)	LEAD COMPOSITE	UNCONF. COMP.ST. (PSF)	PID READING (ppm)
868.57	N/A	ASPHALT	00.0								
	GW	FILL: ROAD GRAVEL									
866.57	SP	FILL: loose dark brown/black fine to coarse SAND and FINE GRAVEL	2.0	LS-1	3-2-3-4	5	MOIST	–		–	2.3
864.57	CL	FILL: soft to medium brown SANDY CLAY with trace fine gravel and coarse sand (patches of light gray and orange/brown)	4.0								
862.57			6.0	LS-2	2-2-2-4	4	MOIST	–	EP TOXICITY LEAD <0.01 mg/L	–	3.6
860.57			8.0	LS-3	3-2-3-4	5	WET	–		–	0.8
858.57	SC	FILL: loose fine SAND with sandy clay	10.0								
856.57	CL	FILL: medium brown SANDY CLAY with trace fine gravel and coarse sand	12.0								
854.57	SM	FILL: layers of fine to medium brown SAND WITH SILT and trace coarse sand and fine gravel	14.0	LS-4	5-7-8-10	15	WET	–		–	1.5
852.57	CL	medium brown SANDY CLAY with trace fine gravel and coarse sand	16.0								
850.57	SM	medium dense brown/light brown fine medium SAND with trace silt and coarse sand and fine gravel ▼	18.0	LS-5	8-10-13-21	23	WET	–	TCLP Lead 0.05 mg/L	–	1.6
848.57	CL	medium brown/gray SANDY CLAY and brown/red sandy clay with trace coarse sand and fine gravel	20.0								
846.57	SM	loose brown fine to medium SAND with silt and trace coarse sand and fine gravel	22.0								
844.57	CL	medium to stiff gray SANDY CLAY with trace coarse sand and fine gravel	24.0	LS-6	4-6-8-10	14	WET	–		–	0.8
842.57	CL	medium brown/red and light gray SANDY CLAY with trace fine gravel and coarse sand	26.0								
840.57	CL	medium to stiff gray SANDY CLAY with trace fine gravel and coarse sand	28.0	LS-7	7-8-10-12	18	WET	–		–	1.0
838.57	CL	medium to stiff gray SILTY CLAY with trace coarse sand and fine gravel	30.0								
836.57	CL	medium gray SANDY CLAY with trace coarse sand and fine gravel with rough patches near base	32.0						TOTAL Lead 12 mg/kg		
834.57			34.0	LS-8	6-7-9-11	16	WET	–		–	0.7
832.57		EOB @ 35 FT	36.0								

TOTAL DEPTH: 35 FT
DRILLING DATE: 7/31/92
INSPECTOR: JAMES W. TIGGELAAR
CONTRACTOR: MATECO DRILLING CO.
DRILLER: JACK MASKELL
DRILLING METHOD: 4 1/4 ID H.S.A. WITH AUGER BASKET
DRILLING METHOD: 2" X 2' SPLIT-SPOON WITH SPRING RET.

WATER LEVEL OBSERVATION:
WATER FIRST OBSERVED AT 18.5 FEET

FILE GMBLG7.DWG
DATE 8-11-92 RLB

WE. CK ASSOCIATES, INCORF RATED

LOG OF TEST BORING NO: G-8 (originally G-2)

PROJECT NAME: B.O.C. AUTOMOTIVE
PROJECT LOCATION: BODY PLANT-LANSING, MICHIGAN
WENCK PROJ. NO: 0191-01-01
CHECKED BY: JWT

ELEV (FT)	USCS GROUP	SUBSURFACE PROFILE — GROUND SURFACE ELEV: 867.85	DEPTH (FT)	SAMPLE TYPE	BLOW COUNT/6"	STD.PEN. RES. (N)	MOISTURE (%)	DRY DENSITY (PCF)	UNCONF. COMP.ST. (PSF)	PID READING (ppm)
867.85			00.0							
	GP	FILL: RR COBBLES - medium dense angular fine to coarse dark GRAVEL								
865.85			2.0	LS-1	1-7-13-15	20	WET	-	-	1.1
863.85	GP	FILL: medium dense sub-rounded fine GRAVEL	4.0							
				LS-2	4-6-8-12	14	WET	-	-	0.1
861.85			6.0							
	CL	FILL: medium to stiff brown SANDY CLAY with trace fine and coarse gravel and coarse sand		LS-3	7-20-15-11	35	WET	-	-	0
859.85			8.0							
857.85			10.0							
855.85			12.0							
				LS-4	4-20-15-11	35	WET	-	-	0.3
853.85	CL	medium to stiff brown/gray SANDY CLAY with trace fine and coarse gravel and coarse sand	14.0							
851.85			16.0							
849.85	CL	medium to stiff gray SILTY CLAY with trace coarse sand and fine gravel	18.0	LS-5	5-6-7-10	13	WET	-	-	0
847.85			20.0							
845.85			22.0							
				LS-6	8-7-8-6	15	WET	-	-	0.1
843.85	CL	medium to stiff gray SILTY CLAY with trace coarse sand and fine gravel, with occasional layer silty fine sand	24.0							
841.85			26.0							
839.85			28.0							
				LS-7	17-20-14-10	34	(11.0)	127.6	-	0
837.85			30.0							
	CL	medium to stiff gray SANDY CLAY								
835.85			32.0							
833.85			34.0							
	CL	medium to stiff gray SILTY CLAY with trace fine gravel and coarse sand		LS-8	6-7-9-11	16	WET	-	-	0.1
831.85			36.0							

TOTAL DEPTH: 50 FT
DRILLING DATE: 7/28/92
INSPECTOR: JAMES W. TIGGELAAR
CONTRACTOR: MATECO DRILLING CO.
DRILLER: JACK MASKELL
DRILLING METHOD: 4 1/4 ID H.S.A. WITH AUGER BASKET
DRILLING METHOD: 2" X 2' SPLIT-SPOON LINED

WATER LEVEL OBSERVATION:
WATER FIRST OBSERVED AT 3.0 FEET

FILE	GWBLG8.DWG
DATE	8-11-92 RLB

WENCK ASSOCIATES, INCORPORATED

LOG OF TEST BORING NO: G-8 (originally G-2)

PROJECT NAME: B.O.C. AUTOMOTIVE
PROJECT LOCATION: BODY PLANT-LANSING, MICHIGAN
WENCK PROJ. NO: 0191-01-01
CHECKED BY: JWT

SUBSURFACE PROFILE

ELEV. (FT)	USCS GROUP		DEPTH (FT)
31.85			36.0
29.85			38.0
27.85	CL	same as above	40.0
25.85			42.0
23.85			44.0
21.85			46.0
19.85	GM	gray to black very dense fine to coarse GRAVEL and fine to coarse sand and silt	48.0
17.85		EOB @ 49.1 FT	50.0
			52.0
			54.0
			56.0
			58.0
			60.0
			62.0
			64.0
			66.0
			68.0
			70.0
			72.0

SOIL SAMPLE DATA

SAMPLE TYPE	BLOW COUNT/6"	STD.PEN. RES. (N)	MOISTURE (%)	DRY DENSITY (PCF)	UNCONF. COMP.ST. (PSF)	PID READING (ppm)
LS-9	5-7-10-12	17	WET	-	-	0.5
LS-10	10-13-14-17	27	WET	-	-	1.2
LS-11	38-70-50/2"	120	WET	-	-	0.7

TOTAL DEPTH: 49.1 FT
DRILLING DATE: 7/28/92
INSPECTOR: JAMES W. TIGGELAAR
CONTRACTOR: MATECO DRILLING CO.
DRILLER: JACK MASKELL
DRILLING METHOD: 4 1/4 ID H.S.A. WITH AUGER BASKET
DRILLING METHOD: 2" X 2' SPLIT-SPOON (LINED);

WATER LEVEL OBSERVATION:
WATER FIRST OBSERVED AT 3 FEET

FILE	GMB: G88.DWG
DATE	8-11-92 RLB

WENCK ASSOCIATES, INCORPORATED

LOG OF TEST BORING NO: G-9

PROJECT NAME: B.O.C. LANSING AUTOMOTIVE
PROJECT LOCATION: BODY PLANT – LANSING, MICHIGAN

WENCK PROJ. NO: 0191-01-01
CHECKED BY: MEG

ELEV. (FT)	USCS GROUP	GROUND SURFACE ELEV: 866.26	DEPTH (FT)	SAMPLE TYPE	BLOW COUNT/6"	MOISTURE (%)	SPT (N)	TOTAL Pb (ppm)	TCLP LEAD (ppm)
866.26		ASPHALT	00.0						
	SM	FILL: medium dense dark brown/black SAND		LS-1	7-9-10	DRY	19	131	0.43
864.26	CL	FILL: medium dark gray/black light gray mottled SANDY CLAY with trace coarse sand and fine gravel	2.0	LS-2	6-6-6-10	MOIST	12	32.4	0.05
862.26	CL	FILL: soft to medium red SANDY CLAY with trace fine gravel and coarse sgravel and ▼	4.0	ST-1	PUSHED	WET	--	6.6	0.16*
860.26	CL	FILL: medium light gray/gray/occasional black SANDY CLAY with trace coarse sand and fine gravel	6.0	ST-2	PUSHED	--	--	6.3	<0.01
858.26			8.0	LS-3	1/1'-1/6"-2/6"	--	1	7.2	<0.01
856.26	CL	FILL: very soft dark brown/occasional black SANDY CLAY and very soft light gray/brown/gray mottled SANDY CLAY; trace coarse sand and fine gravel	10.0						
854.26			12.0						
852.26			14.0	LS-4	1/1'-1/6"-2/6"	WET	1	4.2	<0.01
850.26			16.0						
848.26	CL	medium light gray SANDY CLAY with trace coarse sand and fine gravel	18.0	LS-5	3-3-5-12	WET	8	--	--
846.26			20.0						
844.26	CL	medium to stiff brown/gray SANDY CLAY with trace medium to coarse sand and fine gravel	22.0						
842.26			24.0	LS-6	9-7-9-15	WET	16	--	--
840.26			26.0						
838.26			28.0	LS-7	6-11-12-19	WET	23	--	--
836.26		EOB @ 30 FT	30.0						
			32.0						
			34.0						
			36.0						

TOTAL DEPTH: 30 FT
DRILLING DATE: 10/14/92
INSPECTOR: JAMES W. TIGGELAAR
CONTRACTOR: PEARSON
DRILLER: BERNARD PRIELIPP

WATER LEVEL OBSERVATION:
WATER FIRST OBSERVED AT 4 FEET

DRILLING METHOD: 4 1/4 ID H.S.A. W/CENTER BIT
SAMPLING METHOD: 2" X 2' SPLIT-SPOON W/FLEX-PLUG W/PLASTIC LINER

* – EP TOXICITY LEAD GIVEN BECAUSE ITS VALUE HIGHER THAN TCLP LEAD

FILE: GMCB_G9.DWG
DATE: 12-3-92 R.B

WE CK ASSOCIATES, INCORF RATED

LOG OF TEST BORING NO: G-10

PROJECT NAME: B.O.C. LANSING AUTOMOTIVE
PROJECT LOCATION: BODY PLANT – LANSING, MICHIGAN

WENCK PROJ. NO: 0191-01-01
CHECKED BY: MEG

SUBSURFACE PROFILE

ELEV. (FT)	USCS GROUP	GROUND SURFACE ELEV: 864.95	DEPTH (FT)
864.95		ASPHALT	00.0
862.95	SP/CL	FILL: brown/black fine to medium SAND and dark gray/black/white/brown mottled SANDY CLAY; trace fine gravel and coarse sand	2.0
860.95	CL	FILL: very soft dark brown/dark blue mottled SANDY CLAY with organic fibers throughout; trace fine gravel and coarse sand	4.0
858.95			6.0
856.95	SM	FILL: medium dense dark brown/gray SILTY FINE SAND	8.0
854.95	CL	FILL: medium dark brown/orange/gray mottled SANDY CLAY with occasional pockets/layers of silty fine sand and trace coarse sand and fine gravel	10.0
852.95			12.0
850.42	CL	medium to stiff dark brown/gray SANDY CLAY with trace coarse sand and fine gravel with occasional layers of gray silty sand	14.0
848.42			16.0
846.42			18.0
844.42	SM	gray SILTY SAND	20.0
842.42	CL	medium to stiff dark brown/gray SANDY CLAY with trace coarse sand and fine gravel with occasional layers of gray silty sand	22.0
840.42	SM	gray SILTY SAND	24.0
838.42	CL	stiff to very stiff dark brown/gray SANDY CLAY with trace coarse sand and fine gravel; occasional thin layers of silty sand	26.0
836.42			28.0
834.42		EOB @ 30 FT	30.0
			32.0
			34.0
			36.0

SOIL SAMPLE DATA

SAMPLE TYPE	BLOW COUNT/6"	MOISTURE (%)	SPT (N)	TOTAL Pb (ppm)	TCLP LEAD (ppm)
LS-1	9-9-9	DRY	18	48.5	0.03
LS-2	5-8-8-7	DRY	16	28.3	0.02
LS-3	1/1"-1/1'-2/11"	WET	2	9.2	0.02
LS-4	5-8-8-10	WET	16	3.2	<0.01
LS-5	2-4-4-8	WET	8	3.6	<0.01
LS-6	5-10-16-24	WET	26	--	--
LS-7	0-0-13-15	WET	13	--	--
LS-8	7-9-15-31	WET	24	--	--

TOTAL DEPTH: 30 FT
DRILLING DATE: 10/14/92
INSPECTOR: JAMES W. TIGGELAAR
CONTRACTOR: PEARSON
DRILLER: BERNARD PRIELIPP

WATER LEVEL OBSERVATION:
WATER FIRST OBSERVED AT 4 FEET

DRILLING METHOD: 4 1/4 ID H.S.A. W/CENTER BIT
SAMPLING METHOD: 2" X 2' SPLIT-SPOON W/FLEX-PLUG W/PLASTIC LINER

FILE	GWCB_G10.DWG
DATE	12-3-92 RLB

SME PROJECT NAME General Motors Area 9

SME PROJECT NUMBER LE-25107

SME ON-SITE REPRESENTATIVE Michael R. Burtraw

SOIL PROBE SAMPLING FIELD LOG

DATE/TIME START October 23, 1996 **BORING NUMBER** GP-1

DRIVE DEPTH FROM/TO		SAMPLE RECOVERY	PID READING	SAMPLE DESCRIPTION	SAMPLE SUBMITTED TO LAB
2.0 ft	6.0 ft	3.0 ft (2.0 - 5.7 ft)	----------	Sandy Clay, Soft, Trace of Stone, Gray	Soil 5.0 ft
		(5.7 - 6.0 ft)	----------	Silty Sand, Trace Clay, Black and Gray	
6.0 ft	10.0 ft	4.0 ft (6.0 - 7.5 ft)	----------	Silty Sand, Trace Clay, Black and Gray	Soil 6.0 ft
		(7.5 - 9.5 ft)	----------	Sandy Clay, Gray Green	Soil 8.0 ft
		(9.5 - 10.0 ft)	----------	Silty Sand, Gray, Wet	

DEPTH TO WATER Approximately 9.5 ft
BACKFILL METHOD Bentonite
***PPM = PARTS PER MILLION**

geoprobe\le25107\gps\burtraw-cro

SME PROJECT NAME General Motors Area 9

SME PROJECT NUMBER LE-25107

SME ON-SITE REPRESENTATIVE Michael R. Burtraw

SOIL PROBE SAMPLING FIELD LOG

DATE/TIME START October 23, 1996 **BORING NUMBER** GP-2

DRIVE DEPTH FROM	DRIVE DEPTH TO	SAMPLE RECOVERY	PID READING	SAMPLE DESCRIPTION	SAMPLE SUBMITTED TO LAB
2.0 ft	6.0 ft	3.0 ft (2.0 - 4.5 ft)	----------	Silty Sand, Trace Clay and Gravel, Black, Red, Brown, Gray	Soil 3.0 ft
		(4.5 - 5.5 ft)	----------	Silty Sand, Trace Stone and Cinder, Black	Soil 5.0 ft
		(5.5 - 6.0 ft)	----------	Sandy Clay, Soft, Gray-Green	
6.0 ft	10.0 ft	2.5 ft (6.0 - 9.0 ft)	----------	Silty Sand, Trace Clay, Wet, Black, Gray-Green	Soil 8.0 ft
		(9.0 - 10.0 ft)	----------	Silty Sand, Gray-Green, Wet	

DEPTH TO WATER Approximately 6.0 ft
BACKFILL METHOD Bentonite
***PPM = PARTS PER MILLION**

geoprobe\le25107\gps\burtraw-cro

SME PROJECT NAME General Motors Area 9

SME PROJECT NUMBER LE-25107

SME ON-SITE REPRESENTATIVE Michael R. Burtraw

SOIL PROBE SAMPLING FIELD LOG

DATE/TIME START October 23, 1996 **BORING NUMBER** GP-3

DRIVE DEPTH FROM	DRIVE DEPTH TO	SAMPLE RECOVERY	PID READING	SAMPLE DESCRIPTION	SAMPLE SUBMITTED TO LAB
2.0 ft	6.0 ft	4.0 ft (2.0 - 4.5 ft)	----------	Sandy Clay, Moist, Brown, Gray- Green	
		(4.5 - 6.0 ft)	----------	Fine Sandy Silt, Trace Clay, Brown, Gray-Green	Soil 5.0 ft
6.0 ft	10.0 ft	4.0 ft	----------	Fine Sandy Silt, Trace Clay, Brown and Gray, Occasional Wet Lens	Soil 8.0 ft

DEPTH TO WATER Approximately 8.0 ft
BACKFILL METHOD Bentonite
***PPM = PARTS PER MILLION**

geoprobe\le25107\gps\burtraw-cro

SME PROJECT NAME General Motors Area 9

SME PROJECT NUMBER LE-25107

SME ON-SITE REPRESENTATIVE Michael R. Burtraw

SOIL PROBE SAMPLING FIELD LOG

DATE/TIME START October 23, 1996 **BORING NUMBER** GP-4

DRIVE DEPTH FROM/TO		SAMPLE RECOVERY	PID READING	SAMPLE DESCRIPTION	SAMPLE SUBMITTED TO LAB
2.0 ft	6.0 ft	4.0 ft	----------	Sandy Clay, Trace Silt, Mottled Gray and Brown	Soil 5.0 ft
6.0 ft	10.0 ft	3.0 ft	----------	Sandy Clay, Trace Silt, Mottled Gray and Brown	Soil 8.0 ft

DEPTH TO WATER Not Encountered
BACKFILL METHOD Bentonite
***PPM = PARTS PER MILLION**

geoprobe\le25107\gps\burtraw-cro

SME PROJECT NAME General Motors Area 9

SME PROJECT NUMBER LE-25107

SME ON-SITE REPRESENTATIVE Michael R. Burtraw

SOIL PROBE SAMPLING FIELD LOG

DATE/TIME START October 23, 1996 **BORING NUMBER** GP-5

DRIVE DEPTH FROM	DRIVE DEPTH TO	SAMPLE RECOVERY	PID READING	SAMPLE DESCRIPTION	SAMPLE SUBMITTED TO LAB
2.0 ft	6.0 ft	3.0 ft (2.0 - 5.5 ft)	----------	Silty Sand, Fine to Medium, Brown, Red, Gray, White, Trace of Black	
		(5.5 - 6.0 ft)	----------	Silty Sand, Fine to Medium, White, Trace of Gray	Soil 5.0 ft
6.8 ft	10.8 ft	1.0 ft (9.8 - 10.0 ft)	----------	Silty Sand, Fine, Wet	
		(10.0 - 10.5 ft)	----------	Silty Sand, Black With Trace Gray	Soil 10.0 ft
		(10.5 - 10.8 ft)	----------	Sandy Clay, Brown, Gray- Green	
		Note: 3 feet of water recovered. In sample tube from 6.8 - 10.8 ft			

DEPTH TO WATER Approximately 6.8 ft
BACKFILL METHOD Bentonite
***PPM = PARTS PER MILLION**

geoprobe\le25107\gps\burtraw-cro

SME PROJECT NAME General Motors Area 9

SME PROJECT NUMBER LE-25107

SME ON-SITE REPRESENTATIVE Michael R. Burtraw

SOIL PROBE SAMPLING FIELD LOG

DATE/TIME START October 23, 1996 **BORING NUMBER** GP-6

DRIVE DEPTH FROM/TO		SAMPLE RECOVERY	PID READING	SAMPLE DESCRIPTION	SAMPLE SUBMITTED TO LAB
2.0 ft	6.0 ft	3.0 ft	----------	Silty Sand, Fine to Medium, Gray- Green With Trace of Black	Soil 5.0 ft
6.0 ft	10.0 ft	4.0 ft (6.0 - 8.0 ft)	----------	Silty Sand, Fine to Medium, Gray- Green With Trace of Black	
		(8.0 - 9.0 ft)	----------	Silty Sand, Fine to Medium, Trace of Clay, Black	Soil 8.0 ft
		(9.0 - 10.0 ft)	----------	Silty Sand, Fine to Medium, Trace of Clay, Gray-Brown	

DEPTH TO WATER Not Encountered

BACKFILL METHOD Bentonite

***PPM = PARTS PER MILLION**

geoprobe\le25107\gps\burtraw-cro

SME PROJECT NAME General Motors Area 9

SME PROJECT NUMBER LE-25107

SME ON-SITE REPRESENTATIVE Michael R. Burtraw

SOIL PROBE SAMPLING FIELD LOG

DATE/TIME START October 23, 1996 **BORING NUMBER** GP-7

DRIVE DEPTH FROM/TO		SAMPLE RECOVERY	PID READING	SAMPLE DESCRIPTION	SAMPLE SUBMITTED TO LAB
2.0 ft	6.0 ft	4.0 ft	----------	Sandy Clay, Trace of Silt, Black and Gray	Soil 5.0 ft
6.0 ft	10.0 ft	4.0 ft	----------	Very Sandy Clay, Gray	Soil 8.0 ft

DEPTH TO WATER Not Encountered

BACKFILL METHOD Bentonite

***PPM = PARTS PER MILLION**

geoprobe\le25107\gps\burtraw-cro

SME PROJECT NAME General Motors Area 9

SME PROJECT NUMBER LE-25107

SME ON-SITE REPRESENTATIVE Michael R. Burtraw

SOIL PROBE SAMPLING FIELD LOG

DATE/TIME START October 23, 1996 **BORING NUMBER** GP-8

DRIVE DEPTH FROM/TO		SAMPLE RECOVERY	PID READING	SAMPLE DESCRIPTION	SAMPLE SUBMITTED TO LAB
2.0 ft	6.0 ft	2.0 ft	----------	Silty Sand, Fine to Medium, Gray and Black, Wet 5.5 to 6.0 Ft	Soil 5.0 ft
6.0 ft	10.0 ft	4.0 ft (6.0 - 9.8 ft)	----------	Silty Sand, Fine to Medium, Gray-Black, Wet	
		(9.8 - 10.0 ft)	----------	Silty Sand, Trace of Clay, Black	Soil 10.0 ft

DEPTH TO WATER Approximately 5.5 ft
BACKFILL METHOD Bentonite
***PPM = PARTS PER MILLION**

geoprobe\le25107\gps\burtraw-cro

SME PROJECT NAME General Motors Area 9

SME PROJECT NUMBER LE-25107

SME ON-SITE REPRESENTATIVE Michael R. Burtraw

SOIL PROBE SAMPLING FIELD LOG

DATE/TIME START October 23, 1996 **BORING NUMBER** GP-9

DRIVE DEPTH FROM	DRIVE DEPTH TO	SAMPLE RECOVERY	PID READING	SAMPLE DESCRIPTION	SAMPLE SUBMITTED TO LAB
2.0 ft	6.0 ft	2.5 ft	----------	Slity Sand, Fine to Coarse, Occasional Gravel, Gray-Green	Soil 5.0 ft
6.0 ft	10.0 ft	3.5 ft (6.0 - 7.0 ft)	----------	Silty Sand, Fine to Medium, Gray-Green, Wet	
		(7.0 - 8.0 ft)	----------	Silty Sand, Trace of Clay, Black	Soil 7.0 ft
		(8.0 - 10 ft)	----------	Sandy Clay, Gray-Green	Soil 8.0 ft

DEPTH TO WATER Approximately 6.0 ft
BACKFILL METHOD Bentonite
***PPM = PARTS PER MILLION**

geoprobe\le25107\gps\burtraw-cro

SME PROJECT NAME General Motors Area 9

SME PROJECT NUMBER LE-25107

SME ON-SITE REPRESENTATIVE Michael R. Burtraw

SOIL PROBE SAMPLING FIELD LOG

DATE/TIME START October 23, 1996 **BORING NUMBER** GP-10

DRIVE DEPTH FROM	DRIVE DEPTH TO	SAMPLE RECOVERY	PID READING	SAMPLE DESCRIPTION	SAMPLE SUBMITTED TO LAB
2.0 ft	6.0 ft	2.0 ft	----------	Silty Sand, Trace of Clay, Black	Soil 5.0 ft
6.0 ft	10.0 ft	2.0 ft (6.0 - 8.0 ft)	----------	Peastone, Black, Wet	
		(8.0 - 10.0 ft)	----------	Sandy Clay, Gray-Black	Soil 9.0 ft

DEPTH TO WATER Approximately 6.0 ft
BACKFILL METHOD Bentonite
***PPM = PARTS PER MILLION**

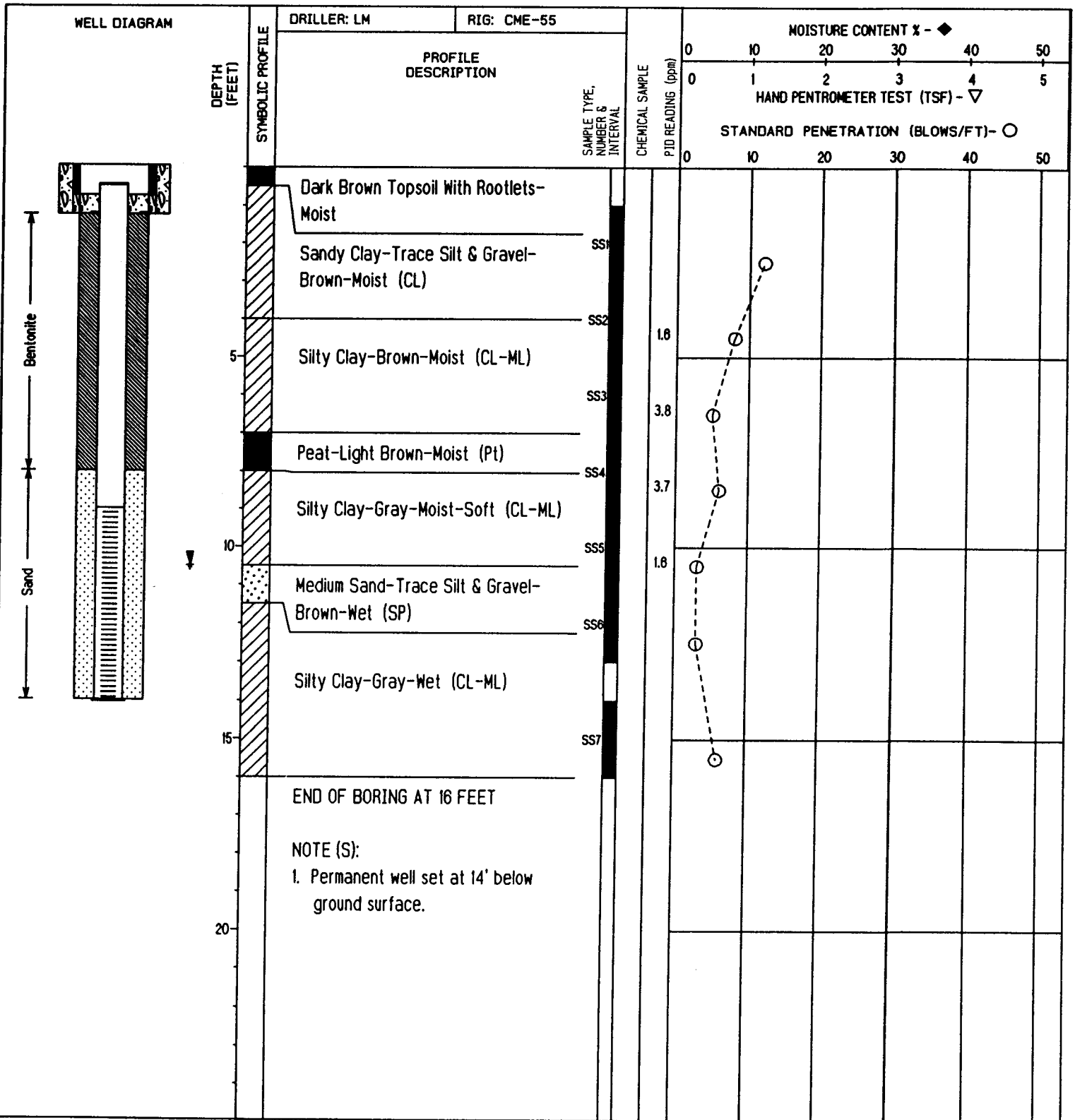
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SOIL AND MATERIALS ENGINEERS, INC

JOB NAME: Gate 4 Gasoline Tank
JOB LOCATION: Lansing, Michigan
CLIENT: GM – SCG

GEO/ENG: RSR REVIEWED BY: KLC
DATE: 11-2-95
JOB NUMBER: LE-24815

BORING MW-1
SHEET: 1



WATER LEVEL OBSERVATIONS

▼ GROUNDWATER ENCOUNTERED DURING DRILLING
▽ GROUNDWATER AFTER DRILLING

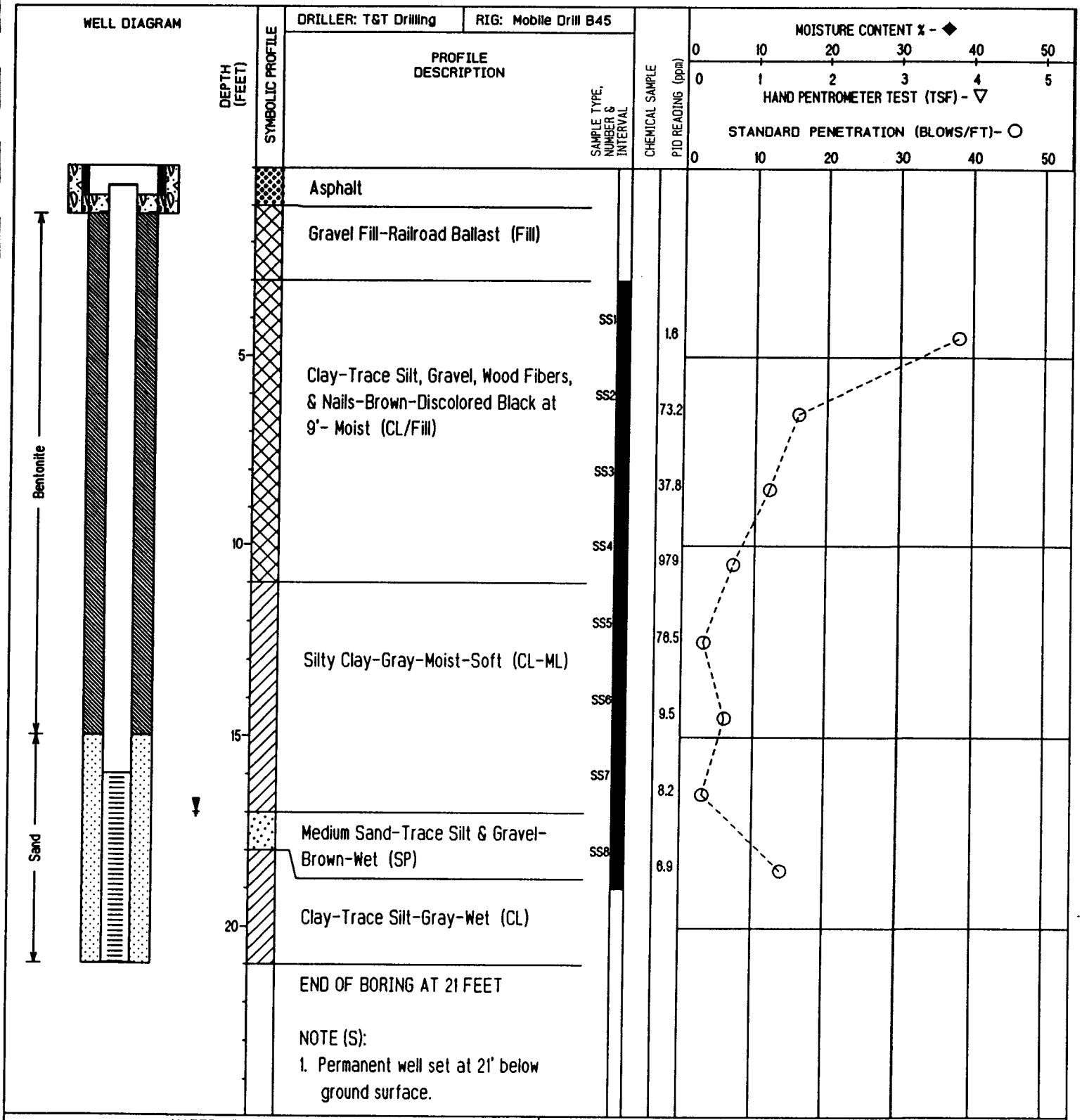
NOTES:
1. THE INDICATED STRATIFICATION LINES ARE APPROXIMATE IN SITU, THE TRANSITION BETWEEN MATERIALS MAY BE GRADUAL.
2. NR = NO RESPONSE FROM PID
3. NA = NOT ANALYZED

SOIL AND MATERIALS ENGINEERS, INC

JOB NAME: Gate 4 Gasoline Tank
JOB LOCATION: Lansing, Michigan
CLIENT: GM – SCG

GEO/ENG: RSR REVIEWED BY: KLC
DATE: 11-2-95
JOB NUMBER: LE-24815

BORING MW-2
SHEET: 1



WATER LEVEL OBSERVATIONS
▼ GROUNDWATER ENCOUNTERED DURING DRILLING
▽ GROUNDWATER AFTER DRILLING

NOTES:
1. THE INDICATED STRATIFICATION LINES ARE APPROXIMATE IN SITU, THE TRANSITION BETWEEN MATERIALS MAY BE GRADUAL.
2. NR = NO RESPONSE FROM PID
3. NA = NOT ANALYZED

SOIL AND MATERIALS ENGINEERS, INC

JOB NAME: Area 9 Lead Evaluation
JOB LOCATION: Lansing, Michigan
CLIENT: GM – Body Plant

GEO/ENG: KLC REVIEWED BY: GTD
DATE: 3-13-08
JOB NUMBER: LE-25107

BORING MW-1
SHEET: 1

WELL DIAGRAM

DEPTH (FEET)	SYMBOLIC PROFILE	PROFILE DESCRIPTION	SAMPLE TYPE, NUMBER & INTERVAL	CHEMICAL SAMPLE	HNU/OVM (ppm)
0		DRILLER: LN RIG: 44			
		Concrete Pavement	SS1		
5		Sand and Gravel – Broken Concrete (Fill)	SS2		
		Sandy Topsoil – Red Brown to Black (Topsoil)			
10		Silty Clay – Mottled Gray and White (CL) (Probable Fill)	SS3		
		Peat – Dark Brown to Black (PT)			
15		Organic Clay – Gray to Black (Marl)	SS4		
20			SS5		
		Sandy Clay – Trace Silt and Gravel – Gray (CL)	SS6		
25			SS7		
30			SS8		
		Silty Fine Sand – Gray – Wet (SM)	SS9		
35		END OF BORING AT 34.5 FEET			
40		NOTE (S): 1. Permanent well set at 34.5 feet below ground surface.			
45					

MOISTURE CONTENT % – ◆
0 10 20 30 40 50
HAND PENTROMETER TEST (TSF) – ▽
0 1 2 3 4 5
STANDARD PENETRATION (BLOWS/FT) – ○
0 10 20 30 40 50

Grout
Bentonite
Sand

WATER LEVEL OBSERVATIONS
▼ GROUNDWATER ENCOUNTERED DURING DRILLING
▼ GROUNDWATER AFTER DRILLING

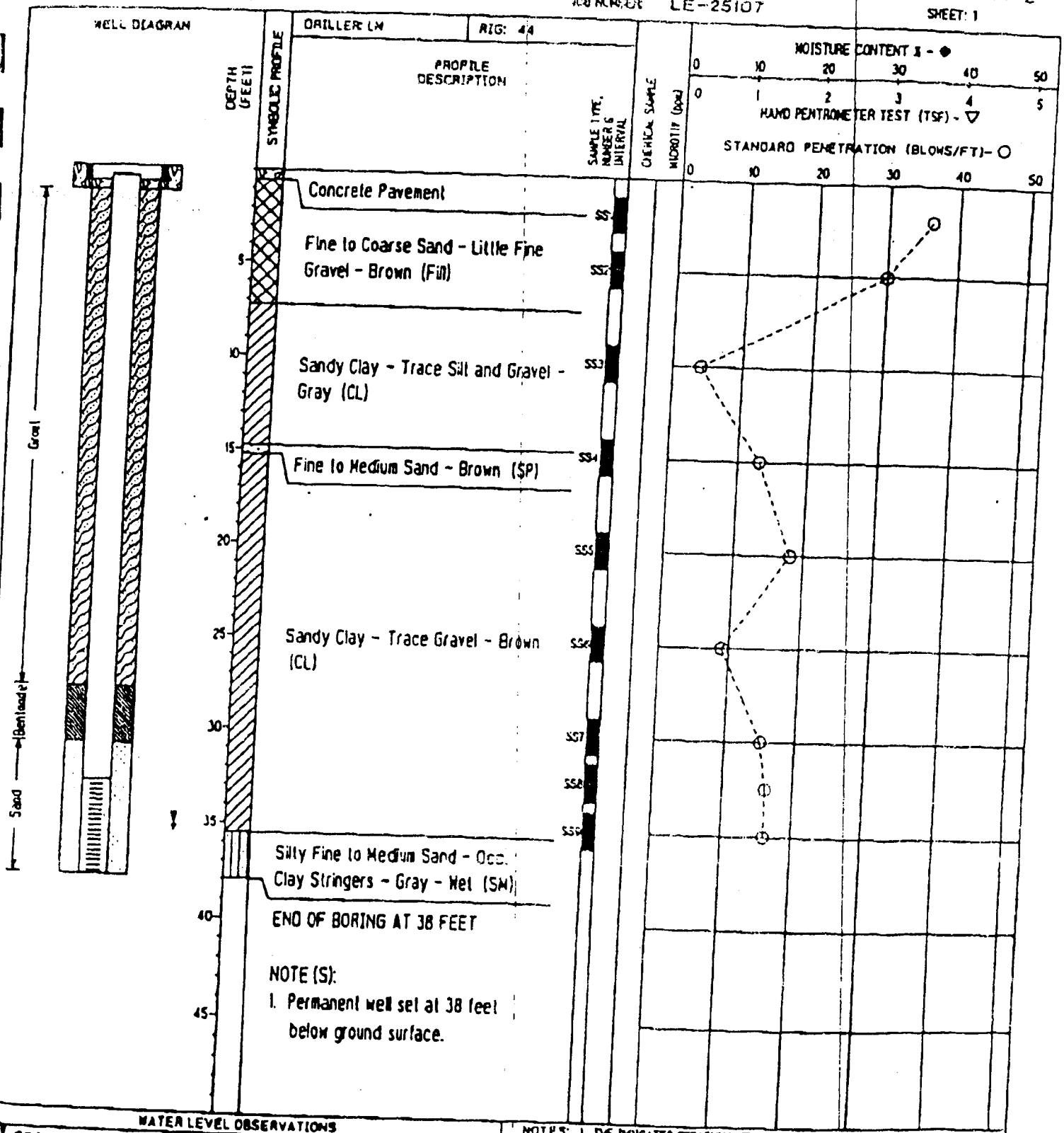
NOTES: 1. THE INDICATED STRATIFICATION LINES ARE APPROXIMATE IN SITU THE TRANSITION BETWEEN MATERIALS MAY BE GRADUAL.
2. ND = NON-DETECTION LIMIT

SOIL AND MATERIALS ENGINEERS, INC

JOB NAME: Area 9 Lead Evaluation
JOB LOCATION: Lansing, Michigan
CLIENT: GM - Body Plant

GEO/ENG: KLC REVIEWED BY: GTD
DATE: 3-13-96
JOB NUMBER: LE-25107

BORING MW-2
SHEET: 1



WATER LEVEL OBSERVATIONS
▼ GROUNDWATER ENCOUNTERED DURING DRILLING
▼ GROUNDWATER AFTER DRILLING

NOTES: 1. THE INDICATED STRATIFICATION LINES ARE APPROXIMATE IN SITU, THE TRANSITION BETWEEN MATERIALS MAY BE GRADUAL.
2. ND = NON-DETECTION LIMIT

SOIL AND MATERIALS ENGINEERS, INC

JOB NAME: Area 9 Lead Evaluation
JOB LOCATION: Lansing, Michigan
CLIENT: GM – Body Plant

DES/ENG: KLC REVIEWED BY: GTD
DATE: 3-14-98
JOB NUMBER: LE-26107

BORING MW-3
SHEET: 1

WELL DIAGRAM

DRILLER: LM RIG: 44

DEPTH (FEET)	SYMBOLIC PROFILE	PROFILE DESCRIPTION	SAMPLE TYPE, NUMBER & INTERVAL	CHEMICAL SAMPLE
0		Asphalt Over Concrete Pavement		
		Aggregate Base Gravel (Fill)	SS1	
5		Silty Clay - Little Sand - Mottled Olive Gray and Black (CL) (Probable Fill)	SS2	
10		Silty Fine Sand - Gray - Wet (SM)	SS3	
15		Silty Clay - Some Sand and Fine Gravel - Gray - Moist (CL)	SS4	
20		Silty Fine Sand - Little Gravel - Trace Silt and Clay - Gray - Moist (SM)	SS5	
25			SS6	
30		Sandy Clay - Some Silt - Trace Gravel - Gray (CL)	SS7	
			SS8	
35			SS9	
		Silty Fine Sand - Gray - Wet (SM)	SS10	
40		END OF BORING AT 39 FEET		
45		NOTE (S): 1. Permanent well set at 39 feet below ground surface.		

Grout
Sand — Bentonite

MOISTURE CONTENT % - ◆
0 10 20 30 40 50

0 1 2 3 4 5
HAND PENETROMETER TEST (TSF) - ▽

STANDARD PENETRATION (BLOWS/FT) - ○
0 10 20 30 40 50

WATER LEVEL OBSERVATIONS
▼ GROUNDWATER ENCOUNTERED DURING DRILLING
▼ GROUNDWATER AFTER DRILLING

NOTES: 1. THE DESIGNATED STRATIFICATION LINES ARE APPROXIMATE IN SITU THE TRANSITION BETWEEN MATERIALS MAY BE GRADUAL
2. ND = NON-DETECTION LIMIT

SOIL AND MATERIALS ENGINEERS, INC

JOB NAME: Area 9 Lead Evaluation
JOB LOCATION: Lansing, Michigan
CLIENT: GM – Body Plant

GEO/ENG: RSR REVIEWED BY: KLC
DATE: 3-15-90
JOB NUMBER: LE-25107

BORING MW-4
SHEET: 1

WELL DIAGRAM | DRILLER: LM | RIG: 44

DEPTH (FEET)	SYMBOLIC PROFILE	PROFILE DESCRIPTION	SAMPLE TYPE, NUMBER & INTERVAL	CHEMICAL SAMPLE	MICROTIP (ppm)
0		Asphalt Pavement			
		Aggregate Base Gravel (FM)			
5		Silty Clay – Trace Sand – Mottled Gray and Black (CL) (Probable Fill)	SS1		
			SS2		
10			SS3		
15			SS4		
20		Sandy Clay – Trace Silt and Gravel – Gray (CL)	SS5		
25			SS6		
30			SS7		
			SS8		
35		Silty Fine Sand – Gray – Wet (SM)			
		END OF BORING AT 36 FEET			
40		NOTE (S): 1. Permanent well set at 38 feet below ground surface.			
45					

MOISTURE CONTENT % – ◆
0 10 20 30 40 50
HAND PENTROMETER TEST (TSF) – ▽
0 1 2 3 4 5
STANDARD PENETRATION (BLOWS/FT) – ○
0 10 20 30 40 50

Grout
Sand

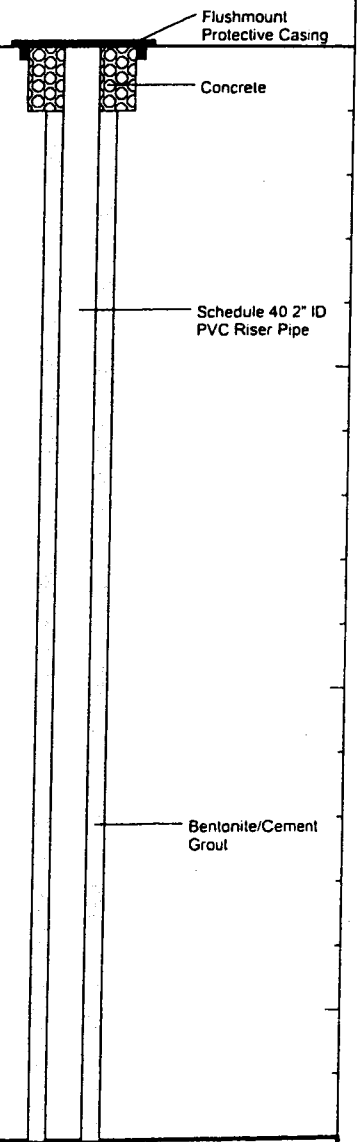
WATER LEVEL OBSERVATIONS
▼ GROUNDWATER ENCOUNTERED DURING DRILLING
▼ GROUNDWATER AFTER DRILLING

NOTES: 1. THE INDICATED STRATIFICATION LINES ARE APPROXIMATE IN SITU, THE TRANSITION BETWEEN MATERIALS MAY BE GRADUAL.
2. ND = NON-DETECTION LIMIT

Date Start/Finish: 11/07/02 **Drilling Company:** Toltest **Driller's Name:** Jay Leonard **Drilling Method:** Hollow-Stem Auger **Bit Size:** **Auger Size:** 4.25" **Rig Type:** CME-75 **Sampling Method:** 2' Split Spoon	**Northing:** 3836.73 **Easting:** 4312.77 **Casing Elevation:** 866.33 **Borehole Depth:** 47' below grade **Surface Elevation:** 866.63 **Geologist:** J. Kralik	**Well/Boring ID:** MW02-1 **Client:** General Motors Corporation **Location:** Lansing Plant #6 Lansing, Michigan

DEPTH	ELEVATION	Sample Run Number	Sample/Int/Type	Recovery (feet)	Blows / 6 Inches	N - Value	PID Headspace (ppm)	Analytical Sample	Geologic Column	Stratigraphic Description
0										ASPHALT.
										Brownish-gray to blackish-gray FILL, fine to medium sand, fine to coarse gravel, wood debris, clay, red brick, black slag, damp, medium dense/stiff, no apparent odor.
	865	1	SS	1.5	9 9 4 4		0 ppm			
		2	SS	1.5	5 21 4 3		0 ppm			Medium dense.
5		3	SS	1.5	1 2 1 1		0 ppm			Moist to wet, very loose/soft.
	860	4	SS	1.5	1 1 1		0 ppm			Lght gray to light brownish-gray CLAY and SANDY CLAY (CL), fine to medium sand, trace fine gravel, moist to wet, soft.
10		5	SS	1.5	1 2 2 1		0 ppm			Light gray to light brownish gray SANDY CLAY (CL), medium to coarse sand, trace fine gravel, moist, soft.
	855	6	SS	1.5	2 2 2 2		0 ppm			Some silt and very fine sand, damp to moist..
		7	SS	2.0	2 2 4 3		0 ppm			Light gray SILTY SAND (SM), fine grained, little medium sand, moist to wet, loose.
15		8	GW	1.5	3 3 4 2		0 ppm			Groundwater sample GW-02-01 taken at 15-19 ft bgs.
	850									

Well/Boring Construction



BBL
BLASLAND, BOUCK & LEE, INC.
engineers & scientists

Remarks: SS - split spoon; bgs - below ground surface
GW - groundwater; ST - Shelby Tube

Client:
General Motors Corporation

Site Location:
Lansing Plant #6
Lansing, Michigan

Well/Boring ID: MW02-1

Borehole Depth: 47' below grade

DEPTH / ELEVATION	Sample Run Number	Sample/Int/Type	Recovery (feet)	Blows / 6 Inches	N - Value	PID Headspace (ppm)	Analytical Sample	Geologic Column	Stratigraphic Description
	9	SS	0.5	3 3 3 4		0 ppm			Light gray SILTY SAND (SM), fine grained, little medium sand, moist to wet, loose.
									Some clay, trace coarse sand and fine gravel, moist to wet, loose.
20	10	SS	1.0	3 4 5 7		0 ppm			
845	11	SS	1.5	6 8 9 11		0 ppm			SANDY SILT (ML), very fine to fine grained sand, little clay, trace coarse sand, damp to moist, medium dense, "sticky".
	12	SS	2.0	3 4 6 7		0 ppm			Brownish gray SILTY CLAY (CL), slightly to moderately plastic, little fine to coarse sand and fine gravel, damp, stiff.
25	13	SS	2.0			0 ppm			
840	14	SS	2.0	3 5 9 11		0 ppm			Trace coarse subangular gravel, stiff.
	15	ST-1	2.0	2 3 5 8		0 ppm			Medium stiff. Shelby tube ST-1 sampled from 30.5-31 ft bgs, lean clay with sand (CL).
30									
835	16	SS	2.0	5 7 10 11		0 ppm			Very stiff.
	17	SS	2.0	3 5 7 9		0 ppm			Stiff.
35									
830	18	SS	2.0	4 5 7 8		0 ppm			

Well/Boring Construction

- Schedule 40 2" ID PVC Riser Pipe
- Bentonite/Cement Grout
- Bentonite Chip (Hydrated)
- Filter Sand
- 0.010" Machine Slotted 2" ID Schedule 40 Well Screen

BBL
BLASLAND, BOUCK & LEE, INC.
engineers & scientists

Remarks: SS - split spoon; bgs - below ground surface
GW - groundwater; ST - Shelby Tube

Client:
General Motors Corporation

Site Location:
Lansing Plant #6
Lansing, Michigan

Well/Boring ID: MW02-1

Borehole Depth: 47' below grade

DEPTH / ELEVATION	Sample Run Number	Sample/Int/Type	Recovery (feet)	Blows / 6 Inches	N - Value	PID Headspace (ppm)	Analytical Sample	Geologic Column	Stratigraphic Description	Well/Boring Construction
	19	SS	2.0	7 7 9 10		0 ppm			Brownish gray SILTY CLAY (CL), slight to moderately plastic, little fine to coarse sand, trace fine gravel, damp, stiff.	
40	20	SS	2.0	5 9 8 9		0 ppm			Brownish gray SILT (MH), little clay and fine to medium sand, trace coarse sand, moist to wet, medium dense.	Filter Sand
825	21	SS	2.0	7 9 10 11		0 ppm			Thin (<1") medium sand layers present, medium dense.	
	22	SS	2.0	3 5 6 7		0 ppm			Brownish gray SILTY CLAY (CL), slight to moderately plastic, little fine to coarse sand, trace fine gravel, damp, stiff.	0.010" Machine Slotted 2" ID Schedule 40 Well Screen
45	23	SS	2.0	4 7 11 16		0 ppm			Stiff.	
820										

BBL
BLASLAND, BOUCK & LEE, INC.
engineers & scientists

Remarks: SS - split spoon; bgs - below ground surface
GW - groundwater; ST - Shelby Tube

Date Start/Finish: 11/08/02
Drilling Company: Toltest
Driller's Name: Jay Leonard
Drilling Method: Hollow-Stem Auger
Bit Size:
Auger Size: 4.25"
Rig Type: CME-75
Sampling Method: 2' Split Spoon

Northing: 3733.97
Easting: 4334.22
Casing Elevation: 868.44

Borehole Depth: 47' below grade
Surface Elevation: 868.76

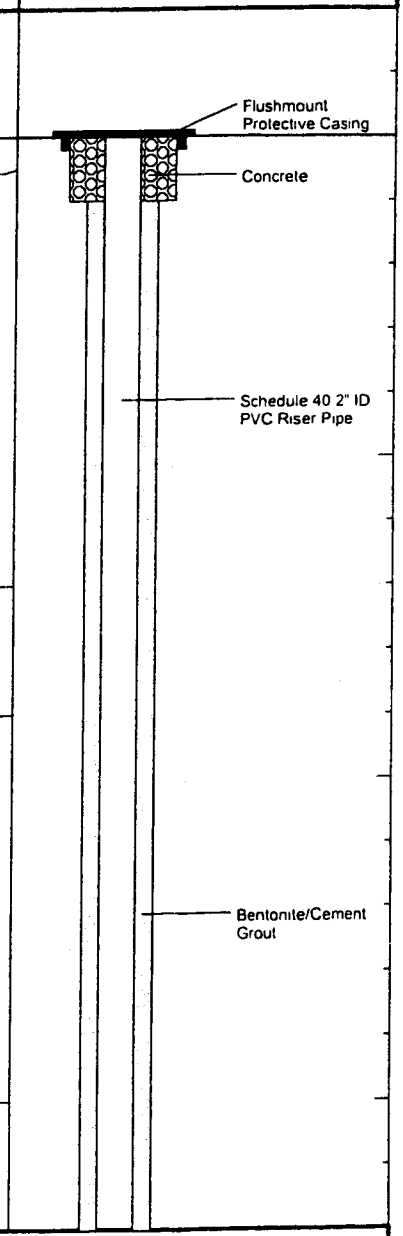
Geologist: J. Kralik

Well/Boring ID: MW02-2

Client: General Motors Corporation

Location: Lansing Plant #6
Lansing, Michigan

DEPTH	ELEVATION	Sample Run Number	Sample/Int/Type	Recovery (feet)	Blows / 6 Inches	N - Value	PID Headspace (ppm)	Analytical Sample	Geologic Column	Stratigraphic Description
	870									
0										ASPHALT.
										Yellow-brown to blackish-brown FILL, fine to coarse sand and fine to medium gravel, damp, loose.
		1	SS	0.5	3 3 3 2		0 ppm			
										Black slag and metal/wood debris present.
	865	2	SS	0.5	4 3 3 5		0 ppm			
5		3	SS	1.5	3 3 2 2		0 ppm			0.5' olive-gray moist soft clay, little fine gravel at depth.
		4	SS	NR	1 2 2 2		0 ppm			No recovery due to soft soils.
	860									
10		5	SS	2.0	1 2 3 4		0 ppm			Olive-gray CLAY (CL), some fine gravel, little fine to coarse sand, trace silt, plant debris and roots present, medium stiff to firm, moist.
		6	SS	1.5	2 3 4 5		0 ppm			Wet at depth, plant debris present.
	855	7	SS	NR	1 4 6 7		0 ppm			Little clay and sandstone fragments in tip, possible cobble.
15		8	SS	2.0	2 3 6 7		0 ppm			Brownish gray CLAY (CL), some fine to coarse sand, little fine subrounded to subangular gravel, plant debris present, some yellow-brown mottling at depth, silt and sand partings from 16.5' to 17' bgs, damp, stiff.



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Remarks: SS - split spoon; bgs - below ground surface
GW - groundwater; ST - Shelby Tube

Client:
General Motors Corporation

Site Location:
Lansing Plant #6
Lansing, Michigan

Well/Boring ID: MW02-2

Borehole Depth: 47' below grade

DEPTH / ELEVATION	Sample Run Number	Sample/Int/Type	Recovery (feet)	Blows / 6 Inches	N - Value	PID Headspace (ppm)	Analytical Sample	Geologic Column	Stratigraphic Description
	9	SS	2.0	5 7 12 1		0 ppm			Brownish gray CLAY (CL), some fine to coarse sand, little fine subrounded to subangular gravel, damp, very stiff.
850									
				4					Silty, stiff, wet sand and gravel seams from 19-20' bgs.
20	10	GW SS	1.0	5 6 6		0 ppm			Groundwater sample GW-02-02 taken at 19-21' bgs.
									Trace fine gravel.
	11	SS	2.0	8 9 10 12		0 ppm			
845	12	SS	2.0	5 7 6 7		0 ppm			
25	13	SS	2.0	3 7 5 9		0 ppm			
	14	SS	2.0	4 7 7 7		0 ppm			
840									Shelby Tube ST-2 sampled from 29-31' bgs, lean clay with sand (CL).
30	15	ST-2	2.0						
	16	SS	2.0	8 9 9 9		0 ppm			Fine to medium brownish gray wet sand in tip of split spoon, no fine gravel present.
									3" layer of brownish gray fine to medium sand from 33 - 33.25' bgs.
835	17	SS	2.0	2 6 4 4		0 ppm			4" layer of brownish gray silty sand, fine to medium grained, from 34 - 34.3' bgs, becoming siltier at depth.
35	18	SS	2.0	3 4 5 7		0 ppm			Brownish gray SILTY CLAY (CL), trace coarse sand, damp, stiff.

Well/Boring Construction

- Schedule 40 2" ID PVC Riser Pipe
- Bentonite/Cement Grout
- Bentonite Chip (Hydrated)
- Filter Sand
- 0.010" Machine Slotted 2" ID Schedule 40 Well Screen

Remarks: SS - split spoon; bgs - below ground surface
GW - groundwater; ST - Shelby Tube

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Client:
General Motors Corporation

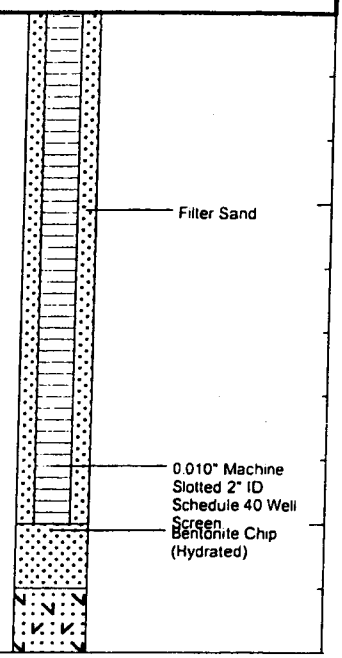
Site Location:
Lansing Plant #6
Lansing, Michigan

Well/Boring ID: MW02-2

Borehole Depth: 47' below grade

DEPTH	ELEVATION	Sample Run Number	Sample/Int/Type	Recovery (feet)	Blows / 6 Inches	N - Value	PID Headspace (ppm)	Analytical Sample	Geologic Column	Stratigraphic Description
		19	SS	0.5	12 15 19 23		0 ppm			Brownish gray SILTY CLAY (CL), trace coarse sand, damp, stiff.
	830									
40		20	SS	2.0	2 2 2 1		0 ppm			Brownish gray SILT (MH), little fine sand, trace clay, saturated, very loose/soft.
		21	SS	2.0	2 4 6 8		0 ppm			Brownish gray SILTY CLAY (CL), some very fine to fine sand, little medium to coarse sand, trace subrounded to subangular fine gravel, damp to moist, stiff. Wet fine to medium grained sand parting at 42.25' bgs.
	825	22	SS	1.5	3 7 9 11		0 ppm			
45		23	SS	2.0	32 30 50(6")		0 ppm			Brownish gray SAND and GRAVEL (GW), fine to coarse grained, rock fragments present, damp, very dense. Two thin (<1") layers of peat at 46.25 ft and 46.4 ft bgs. Shale in tip of split spoon.

Well/Boring Construction



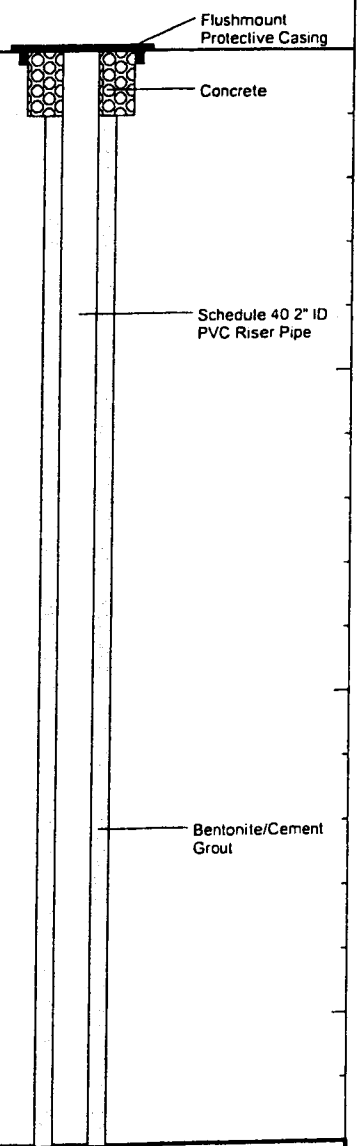
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Remarks: SS - split spoon; bgs - below ground surface
GW - groundwater; ST - Shelby Tube

Date Start/Finish: 11/11/02 **Drilling Company:** Toltest **Driller's Name:** Jay Leonard **Drilling Method:** Hollow-Stem Auger **Bit Size:** **Auger Size:** 4.25" **Rig Type:** CME-75 **Sampling Method:** 2' Split Spoon	**Northing:** 3786.03 **Easting:** 4394.71 **Casing Elevation:** 869.87 **Borehole Depth:** 47' below grade **Surface Elevation:** 870.29 **Geologist:** J. Kralik	**Well/Boring ID:** MW02-3 **Client:** General Motors Corporation **Location:** Lansing Plant #6 Lansing, Michigan

DEPTH	ELEVATION	Sample Run Number	Sample/Int/Type	Recovery (feet)	Blows / 6 Inches	N - Value	PID Headspace (ppm)	Analytical Sample	Geologic Column	Stratigraphic Description
0	870									ASPHALT.
		1	SS	2.0	5 8 10 16		0 ppm			Moderate yellow-brown FILL, fine sand, some medium sand, little silt, trace fine gravel, damp, medium dense.
										Brownish gray-black FILL, sand and gravel present, wood debris.
		2	SS	1.5	11 13 8 6		0 ppm			Moderate yellow-brown FILL, sand, gravel, medium clay, black sandy clay, wood debris, brownish gray gravelly clay.
5	865	3	SS	1.5	4 4 50(5")		0 ppm			Moderate yellow-brown FILL, sand and gravel, black sandy clay with some fine gravel, brownish gray silty gravelly clay.
		4	SS	0.5	1 1 2 1		0 ppm			Moderate yellow-brown FILL, sandy clay, fine to medium grained, damp, crushed concrete present.
		5	SS	2.0	1 1 1 1		0 ppm			Brownish gray FILL, sandy silty clay, fine to medium grained, damp to wet, soft.
10	860									Dark brown to blackish brown silty clayey SAND (SM), with plant fragments, "peaty" odor present. Possible soil horizon.
		6	SS	1.5	1 1 2 4		0 ppm			Blackish brown-brownish gray SILTY CLAY (CL), damp, thin (1") wet gravelly layer at 11.5' bgs.
										Brownish gray SAND (SP), medium grained, some coarse, wet to saturated.
		7	SS	0.5	1 2 2 1		0 ppm			Grayish green CLAY (CL), some fine gravel, little fine sand, damp, soft to very soft.
15	855									Brownish gray CLAY (CL), some fine gravel, sandstone cobble at 15.5' bgs, damp.
		8	GW	2.0	5 5 6 4		0 ppm			Mottled yellow-brown and light gray SILTY CLAY (CL), some fine gravel, damp, becoming more silty at depth.

Well/Boring Construction



Remarks: SS - split spoon; bgs - below ground surface
GW - groundwater; ST - Shelby Tube

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Client:
General Motors Corporation

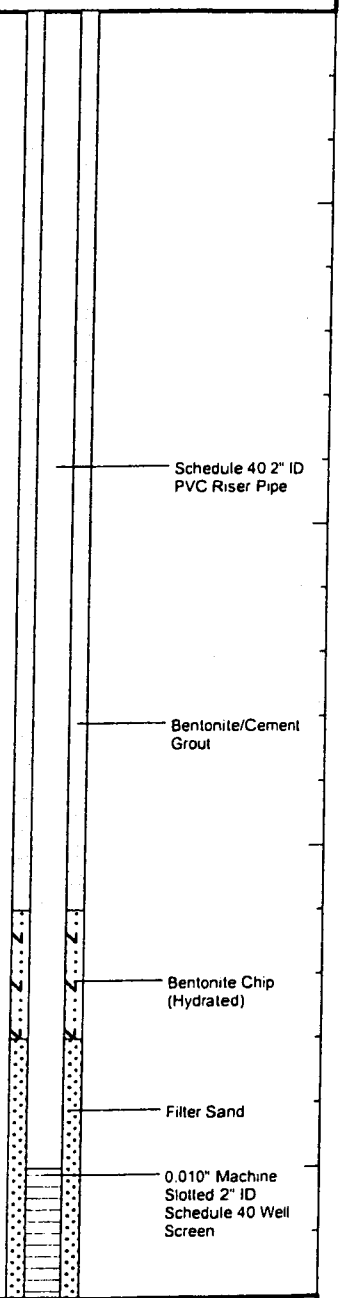
Site Location:
Lansing Plant #6
Lansing, Michigan

Well/Boring ID: MW02-3

Borehole Depth: 47' below grade

DEPTH	ELEVATION	Sample Run Number	Sample/Int/Type	Recovery (feet)	Blows / 6 Inches	N - Value	PID Headspace (ppm)	Analytical Sample	Geologic Column	Stratigraphic Description
		9	SS	2.0	2 3 5 9		0 ppm			Brownish gray CLAY (CL), some fine sand and silt, trace coarse sand and fine gravel, thin (<1") fine to coarse wet sand layers from 17-19' bgs, damp.
20	850	10	GW SS	2.0	1 3 4 5		0 ppm			Brownish gray CLAY (CL), some fine sand and silt, trace coarse sand and fine gravel, peat fragments present, damp. Some yellow and greenish-gray mottling at 19-19.2' bgs, plant fragments present. Groundwater sample GW-02-03 taken at 17-21' bgs.
		11	SS	2.0	4 7 10 8		0 ppm			Thin (<1") layer of medium wet sand at 22.3' bgs, damp, very stiff.
		12	SS	1.5	3 4 8 10		0 ppm			Stiff.
25	845	13	SS	1.5	6 12 12 13		0 ppm			Very stiff.
		14	SS	1.5	4 10 13 11		0 ppm			Very stiff.
30	840	15	SS	1.5	3 4 7 7		0 ppm			Stiff.
		16	SS	2.0	3 4 9 10		0 ppm			Stiff.
		17	SS	2.0	5 7 7 7		0 ppm			
35	835	18	ST-3	1.5						Shelby Tube ST-3 sampled from 35-37 ft bgs, sandy silty clay (CL-ML).
										Brownish gray SILTY CLAY (CL), trace coarse sand and fine gravel.

Well/Boring Construction



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Client:
General Motors Corporation

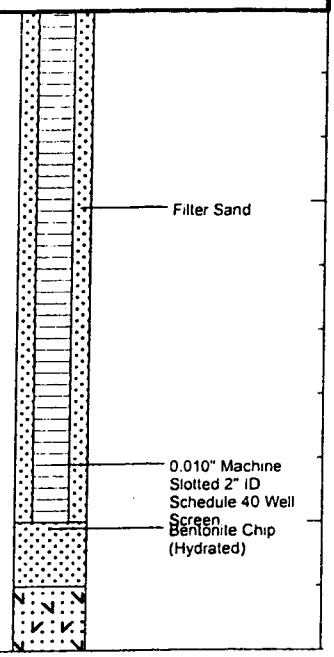
Site Location:
Lansing Plant #6
Lansing, Michigan

Well/Boring ID: MW02-3

Borehole Depth: 47' below grade

DEPTH / ELEVATION	Sample Run Number	Sample/Int/Type	Recovery (feet)	Blows / 6 Inches	N - Value	PID Headspace (ppm)	Analytical Sample	Geologic Column	Stratigraphic Description
				4					damp.
	19	SS	2.0	5 7 7		0 ppm			Brownish gray SILTY SAND (SM), very fine to medium grained, wet to saturated, medium dense.
									Brownish gray CLAY (CL).
40 830	20	SS	2.0	6 5 7 7		0 ppm			Brownish gray SILTY SAND (SM), very fine to medium grained, wet to saturated, medium dense.
	21	SS	2.0	4 5 4 4		0 ppm			SILT (MH).
	22	SS	2.0	5 5 4 5		0 ppm			Brownish gray SILTY CLAY (CL), some very fine to fine sand, little medium to coarse sand, trace fine gravel, damp, stiff.
45 825	23	SS	2.0	3 4 9 5		0 ppm			Stiff

Well/Boring Construction

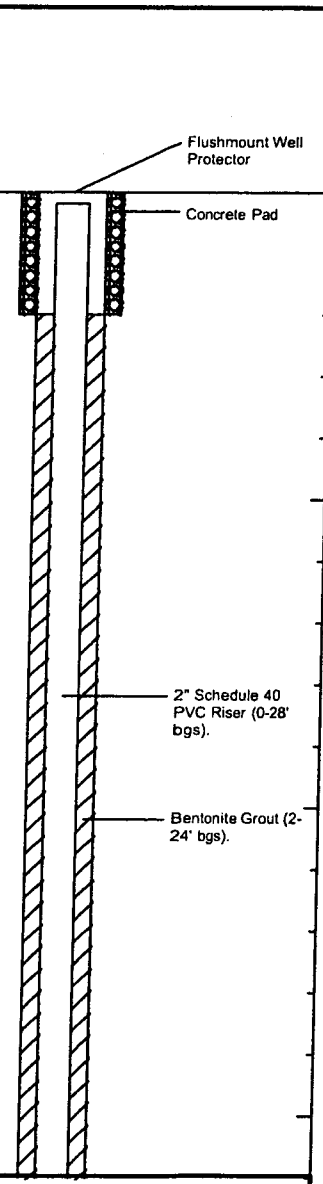


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Remarks: SS - split spoon; bgs - below ground surface
GW - groundwater; ST - Shelby Tube

Date Start/Finish: 7/28/03 **Drilling Company:** Prosonic Corp. **Driller's Name:** D. Bond **Drilling Method:** Hollow Stem Auger **Auger Size:** 4.25" ID **Rig Type:** CME 85 **Sampling Method:** 5' Macrocore	**Northing:** 4121.81 **Easting:** 4493.88 **Casing Elevation:** 861.85 **Borehole Depth:** 50' below grade **Surface Elevation:** 862.15' **Geologist:** J. Kralik	**Well/Boring ID:** MW-03-01 **Client:** General Motors Corporation **Location:** GM Lansing Plant #6

DEPTH / ELEVATION	Sample Run Number	Sample/Int/Type	Recovery (feet)	Blows / 15 inches	N - Value	PID Headspace (ppm)	USCS Code	Geologic Column	Stratigraphic Description
865 / 0									
0				NA	NA				ASPHALT, black coarse Sand, some Gravel. [FILL]
860	1	0-5	4			NA	CL		Brown to yellowish brown SILTY CLAY (CL), some fine to medium Sand, little coarse Sand, fine Gravel, moist, light gray mottling at depth. Thin (<1") wet layers at 4' bgs and 5'bgs.
5				7 7 7 7	14		SP		Yellowish brown medium SAND (SP), little fine Sand, Silt, trace coarse Sand, medium dense, wet, no odor.
855	2	5-10	5			NA			Brown to yellowish brown SILTY CLAY CL), some fine to medium Sand, little coarse Sand, fine Gravel, moist. Thin (<1") wet layer at 7.5' bgs.
10				2 2 3 2	5		CL		Grayish brown CLAY (CL), some Silt, very fine to fine Sand, little fine angular Gravel, medium firm, moist, no odor.
850	3	10-15	5			NA			
15				3					
	4	15-20	4	3	6	NA			



Well/Boring Construction

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Remarks: bgs = below ground surface
NA = Not Applicable/Available

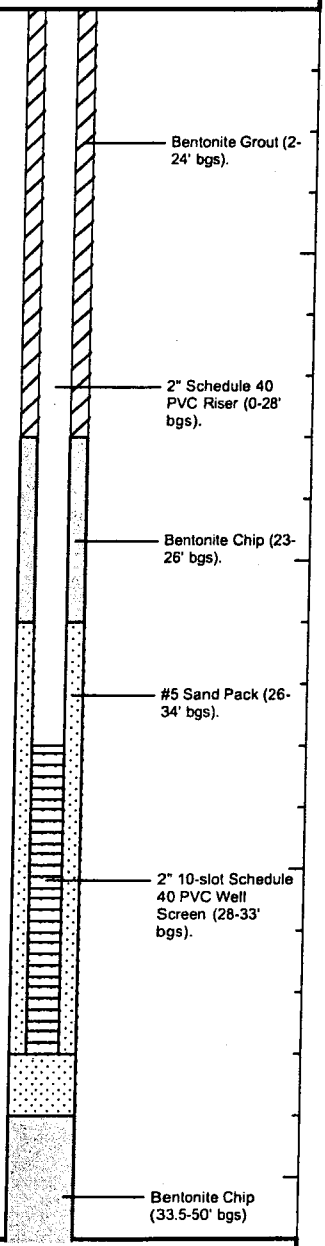
Client:
General Motors Corporation

Site Location:
GM Lansing
Plant #6

Well/Boring ID: MW-03-01

Borehole Depth: 50' below grade

DEPTH / ELEVATION	Sample Run Number	Sample/Int/Type	Recovery (feet)	Blows / 6 Inches	N - Value	PID Headspace (ppm)	USCS Code	Geologic Column	Stratigraphic Description
845	4	15-20	4	3 4	6	NA	CL		Grayish brown CLAY (CL), some Silt, very fine to fine Sand, little fine angular Gravel, medium firm, moist, no odor.
							ML		Grayish brown fine SILT (ML), some Clay, trace fine Sand, moist, no odor.
							SW		Grayish brown fine to medium SAND (SW), little coarse Sand, trace rounded medium Gravel, wet to 19.75' bgs, moist to 20' bgs, silty at depth.
20									
840	5	20-25	5	5 5 7 6	12	NA	CL		Grayish brown CLAY (CL), some Silt, very fine Sand, trace coarse angular Gravel, stiff, moist, no odor.
25									
835	6	25-30	5	6 7 3 5	10	NA			Grayish brown SILTY CLAY (CL), little fine Sand, fine Gravel, stiff, moist to damp, slight to moderate plasticity.
30							ML		Grayish brown SANDY SILT (ML), fine to medium Sand, medium dense, moist to wet, no odor.
830	7	30-35	4	3 5 12 6	17	NA	CL		Grayish brown CLAY (CL), some Silt, little fine Sand, trace find Gravel, damp.
35	8	35-40	5	3 5	20	NA	ML		Grayish brown CLAYEY SILT (ML), little to some Clay at top, little fine to medium Gravel, trace very fine to coarse Sand, slight plasticity.



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Remarks: bgs = below ground surface
NA = Not Applicable/Available

Client:
General Motors Corporation

Site Location:
GM Lansing
Plant #6

Well/Boring ID: MW-03-01

Borehole Depth: 50' below grade

DEPTH / ELEVATION	Sample Run Number	Sample/Int/Type	Recovery (feet)	Blows / 6 Inches	N - Value	PID Headspace (ppm)	USCS Code	Geologic Column	Stratigraphic Description	Well/Boring Construction
825	8	35-40	5	15 25	20	NA	ML		Grayish brown SILT/CLAYEY SILT (ML), little to some Clay at top, little fine to medium Gravel, trace very fine to coarse Sand, slight plasticity.	
40							GW		Gray to grayish brown SAND and GRAVEL (GW), medium to coarse Sand, fine to medium subrounded to rounded Gravel, dry to damp, loose.	Bentonite Chip (33.5-50' bgs)
820	9	40-45	5	9 7 9 10	16	NA	ML		Grayish brown SILT/SANDY SILT (ML), some coarse Sand to fine Gravel, little Clay, trace coarse angular Gravel and Rock fragments, medium dense, damp, silty at depth.	
45										
815	10	45-50	4	5 8 10 17	18	NA	CL		Grayish brown SILTY CLAY (CL), little fine to medium Sand, very stiff, damp to moist, moderate plasticity.	
50									End of boring at 50' bgs.	
810										
55										

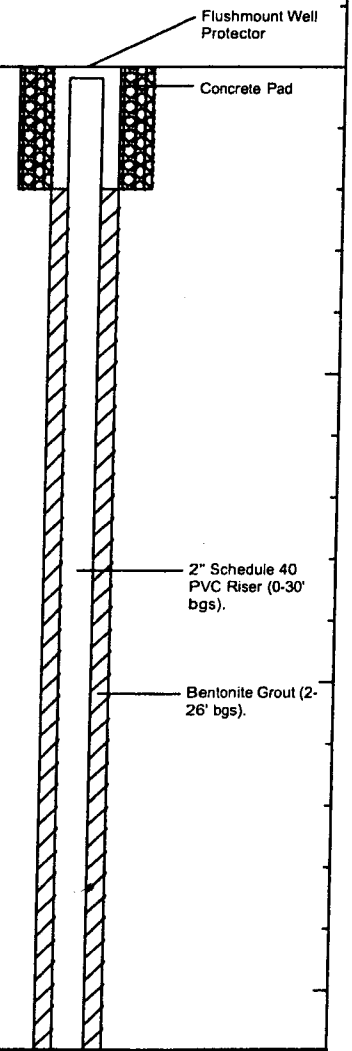
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Remarks: bgs = below ground surface
NA = Not Applicable/Available

Date Start/Finish: 7/29/03 **Drilling Company:** Prosonic Corp. **Driller's Name:** D. Bond **Drilling Method:** Hollow Stem Auger **Auger Size:** 4.25" ID **Rig Type:** CME 85 **Sampling Method:** 5' Macrocore	**Northing:** 4127.68 **Easting:** 4349.57 **Casing Elevation:** 864.91 **Borehole Depth:** 66.5' below grade **Surface Elevation:** 865.21 **Geologist:** J. Kralik	**Well/Boring ID:** MW-03-02 **Client:** General Motors Corporation **Location:** GM Lansing Plant #6

DEPTH	ELEVATION	Sample Run Number	Sample/Int/Type	Recovery (feet)	Blows / 15 inches	N - Value	PID Headspace (ppm)	USCS Code	Geologic Column	Stratigraphic Description
0	865	1	0-5	NA	5 3 2 3	5	NA	CL		ASPHALT. GRAVEL. Brown to yellow-brown CLAY (CL), some fine to medium Sand, little coarse Sand, trace fine angular to subrounded Gravel, firm, moist, no apparent odor.
								SP		Brown to yellow-brown fine to medium SAND (SP), wet.
5	860	2	5-10	NA	5 6 10 11	16	NA			Brown to yellow-brown SILTY CLAY (CL), some fine to medium Sand, little coarse Sand, fine Gravel, very stiff, moist, slight to no plasticity, light mottling to 7' bgs. Increased Gravel content at 5-7' bgs.
10	855	3	10-15	NA	2 5 9 15	14	NA	CL		Cobble at 9.5-10' bgs. Gray-brown CLAY (CL), some Silt, very fine to fine Sand, little fine Gravel, medium stiff, moist, no apparent odor. Wet Sand layer (2") at 13' bgs.
15	850	4	15-20	NA	3 3	7	NA			

Well/Boring Construction



Remarks: bgs = below ground surface; NA = Not Applicable/Available. Original soil boring backfilled with bentonite grout; MW-03-02 offset, drilled, and set.

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Client:
General Motors Corporation

Site Location:
GM Lansing
Plant #6

Well/Boring ID: MW-03-02

Borehole Depth: 66.5' below grade

DEPTH	ELEVATION	Sample Run Number	Sample/Int/Type	Recovery (feet)	Blows / 6 Inches	N - Value	PID Headspace (ppm)	USCS Code	Geologic Column	Stratigraphic Description
					4 7	7				Gray-brown CLAY (CL), some Silt, very fine to fine Sand, little fine Gravel, medium stiff, moist, no apparent odor. Wet Sand layer (2") at 13' bgs.
		4	15-20	NA			NA			
										Gray-brown medium Silty SAND, trace Clay, wet, at 19-19.5' bgs.
20	845				6 9 14 12	23		CL		Gray-brown Sand, wet, at 20.5-21' bgs.
		5	20-25	NA			NA			
										Gray-brown Sand, wet, at 23.5-24' bgs.
25	840				4 7 12 23	19				
		6	25-30	5			NA	SP		Gray-brown medium to coarse SAND (SP), wet.
								CL		Gray-brown SILTY CLAY (CL), little very fine to fine Sand, trace fine Gravel, moist, slight to no plasticity, no odor.
30	835				2 6 6 6	12				
		7	30-35	NA			NA			
								ML		Gray-brown SANDY SILT (ML), very fine to fine Sand, trace Clay, wet, medium dense.
35	830									
		8	35-40	NA	4 3	6	NA			

Well/Boring Construction

- Bentonite Grout (2-26' bgs).
- 2" Schedule 40 PVC Riser (0-30' bgs).
- Bentonite Chip (26-28' bgs).
- #5 Sand Pack (28-40' bgs).
- 2" 10-slot Schedule 40 PVC Well Screen (30-40' bgs).

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Remarks: bgs = below ground surface; NA = Not Applicable/Available. Original soil boring backfilled with bentonite grout; MW-03-02 offset, drilled, and set.

Client:
General Motors Corporation

Site Location:
GM Lansing
Plant #6

Well/Boring ID: MW-03-02

Borehole Depth: 66.5' below grade

DEPTH	ELEVATION	Sample Run Number	Sample/Int/Type	Recovery (feet)	Blows / 6 Inches	N - Value	PID Headspace (ppm)	USCS Code	Geologic Column	Stratigraphic Description
					3 3	6				Gray-brown SANDY SILT (ML), very fine to fine Sand, trace Clay, wet, medium dense.
		8	35-40	NA			NA			Gray-brown SILT (ML), little to some Clay, trace fine angular Gravel, moist.
40	825				4 8 11 16	19				Gray-brown CLAYEY SILT (ML), some fine to coarse Sand, fine rounded to subrounded Gravel, trace fine angular Gravel to Rock fragments, moist, very stiff, no odor. Less coarse material at depth. [TILL]
		9	40-45	NA			NA	ML		
45	820				6 9 17 60	26				
		10	45-50	NA			NA			Gray to light gray SAND and GRAVEL (SP), fine to coarse Sand, fine to medium angular to rounded gravel, damp, loose.
50	815				19 37 43 23	80		SP		Clayey SILT (ML). [TILL] Gray-brown fine to medium SILTY SAND (SP), little coarse Sand, fine Gravel, damp, very dense, Quartzite Cobble at 50.25' bgs. Sandstone fragment at 51' bgs.
		11	50-55	5			NA			Gray-brown CLAYEY SILT (ML), little fine to coarse Sand, fine to medium angular to subrounded Gravel, damp, very dense. [TILL]
55	810							ML		
		12	55-60	5	18 28	64	NA			

Well/Boring Construction

- #5 Sand Pack (28-40' bgs).
- 2" 10-slot Schedule 40 PVC Well Screen (30-40' bgs).
- Bentonite Chip (40-70' bgs).

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Remarks: bgs = below ground surface; NA = Not Applicable/Available. Original soil boring backfilled with bentonite grout; MW-03-02 offset, drilled, and set.

Client:
General Motors Corporation

Site Location:
GM Lansing
Plant #6

Well/Boring ID: MW-03-02

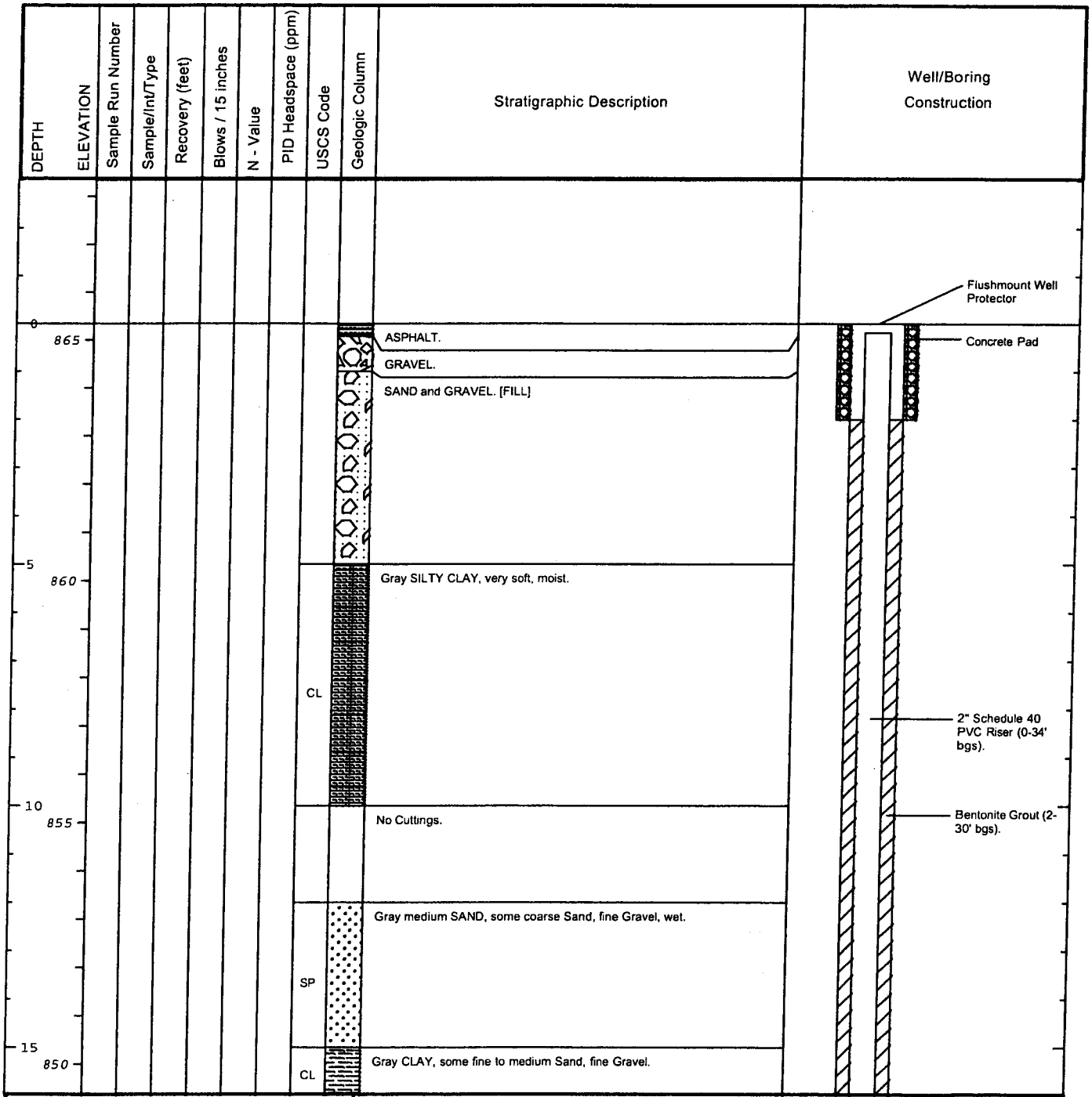
Borehole Depth: 66.5' below grade

DEPTH / ELEVATION	Sample Run Number	Sample/Int/Type	Recovery (feet)	Blows / 6 Inches	N - Value	PID Headspace (ppm)	USCS Code	Geologic Column	Stratigraphic Description	Well/Boring Construction
	12	55-60	5	36 34	64	NA	ML		Gray-brown CLAYEY SILT (ML), little fine to coarse Sand, fine to medium angular to subrounded Gravel, damp, very dense.	
60 805	13	60-65	5	31 47 50 43	97	NA			Sandstone fragments at 60-65' bgs.	Bentonite Chip (40-70' bgs).
65 800	14	65-70	1.5	28 47 280 X	327	NA			Brown-gray to light gray medium grained weathered SANDSTONE, some Silt, fine Sand.	
70 795									End of boring at 70' bgs.	
75 790										

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Remarks: bgs = below ground surface; NA = Not Applicable/Available. Original soil boring backfilled with bentonite grout; MW-03-02 offset, drilled, and set.

Date Start/Finish: 7/30/03 **Drilling Company:** Prosonic Corp. **Driller's Name:** D. Bond **Drilling Method:** Hollow Stem Auger **Auger Size:** 4.25" ID **Rig Type:** CME 85 **Sampling Method:** 5' Macrocore	**Northing:** 3922.97 **Easting:** 4332.51 **Casing Elevation:** 865.05' **Borehole Depth:** 40' below grade **Surface Elevation:** 865.35' **Geologist:** J. Kralik	**Well/Boring ID:** MW-03-03 **Client:** General Motors Corporation **Location:** GM Lansing Plant #6



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Remarks: bgs = below ground surface; NA = Not Applicable/Available.

Drill and set installation. Boring logged by cuttings to 30' bgs.

Client:
General Motors Corporation

Site Location:
GM Lansing
Plant #6

Well/Boring ID: MW-03-03

Borehole Depth: 40' below grade

DEPTH / ELEVATION	Sample Run Number	Sample/Int/Type	Recovery (feet)	Blows / 6 Inches	N - Value	PID Headspace (ppm)	USCS Code	Geologic Column	Stratigraphic Description	Well/Boring Construction
							CL		Gray CLAY, some fine to medium Sand, fine Gravel.	Bentonite Grout (2-30' bgs).
20 / 845							SW		Gray fine SAND, wet.	2" Schedule 40 PVC Riser (0-34' bgs).
25 / 840									SAND and CLAY, wet.	
30 / 835				2 2 4 6	6		CL		Grayish brown SILTY CLAY (CL), little fine to coarse Sand, fine subrounded Gravel, medium stiff, damp, no apparent odor.	Bentonite Chip (30-32' bgs).
	1	30-35	5			NA	ML/CL		Grayish brown SILT/SILTY CLAY (ML/CL), some medium to coarse Sand, fine subrounded Gravel.	#5 Sand Pack (32-40' bgs).
35 / 830	2	35-40	5	3 5	14	NA			Thin (1") layer of medium to coarse Sand at 36' bgs.	2" 10-slot Schedule 40 PVC Well Screen (34-39' bgs).

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Remarks: bgs = below ground surface; NA = Not Applicable/Available.

Drill and set installation. Boring logged by cuttings to 30' bgs.

Client:
General Motors Corporation

Site Location:
GM Lansing
Plant #6

Well/Boring ID: MW-03-03

Borehole Depth: 40' below grade

DEPTH / ELEVATION	Sample Run Number	Sample/Int/Type	Recovery (feet)	Blows / 6 Inches	N - Value	PID Headspace (ppm)	USCS Code	Geologic Column	Stratigraphic Description	Well/Boring Construction
				9 6	14		ML		Grayish brown SILT (ML).	
	2	35-40	5			NA	SP		Grayish brown fine to medium SILTY SAND (SP), wet, no apparent odor.	2" 10-slot Schedule 40 PVC Well Screen (34-39' bgs).
							ML		Grayish brown SILT.	#5 Sand Pack (32-40' bgs).
40 825									End of boring at 40' bgs.	
45 820										
50 815										
55 810										

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Remarks: bgs = below ground surface; NA = Not Applicable/Available.

Drill and set installation. Boring logged by cuttings to 30' bgs.

Date Start/Finish: 7/30/03 **Drilling Company:** Prosonic Corp. **Driller's Name:** D. Bond **Drilling Method:** Hollow Stem Auger **Auger Size:** 4.25" ID **Rig Type:** CME 85 **Sampling Method:** 5' Macrocore	**Northing:** 3937.71 **Easting:** 4159.37 **Casing Elevation:** 865.81 **Borehole Depth:** 45' below grade **Surface Elevation:** 866.11 **Geologist:** J. Kralik	**Well/Boring ID:** MW-03-04 **Client:** General Motors Corporation **Location:** GM Lansing Plant #6

DEPTH	ELEVATION	Sample Run Number	Sample/Int/Type	Recovery (feet)	Blows / 15 inches	N - Value	PID Headspace (ppm)	USCS Code	Geologic Column	Stratigraphic Description
0	865	1	0-5	5	2 7 3 4	10	NA			ASPHALT. GRAVEL. Brown to yellowish brown SILTY CLAY (CL), some fine to medium Sand, little coarse Sand, fine Gravel, stiff, moist, light gray mottling, no odor.
5	860	2	5-10	5	5 5 6 8	11	NA	CL		Little medium Gravel, 5-12.5' bgs.
10	855	3	10-15	5	3 5 7 8	12	NA			Brownish gray SILTY CLAY (CL), little fine Sand, fine Gravel, damp, no odor. Yellowish brown SILTY CLAY (CL), thin (<1") yellow-brown sand layers.
15		4	15-20	5	6 8	16	NA	ML		Grayish brown SILT (ML).

Well/Boring Construction

Flushmount Well Protector

Concrete Pad.

Bentonite Grout (2-29' bgs).

2" Schedule 40 PVC Riser (0-33' bgs).

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Remarks: bgs = below ground surface; NA = Not Applicable/Available.

Client:
General Motors Corporation

Site Location:
GM Lansing
Plant #6

Well/Boring ID: MW-03-04

Borehole Depth: 45' below grade

DEPTH / ELEVATION	Sample Run Number	Sample/Int/Type	Recovery (feet)	Blows / 6 Inches	N - Value	PID Headspace (ppm)	USCS Code	Geologic Column	Stratigraphic Description	Well/Boring Construction
850				8			ML		Grayish brown SILT (ML).	
				5	16				Grayish brown SILTY CLAY (CL), some very fine to fine Sand, little fine Gravel, moist, slightly to non-plastic, no odor.	Bentonite Grout (2-29' bgs).
	4	15-20	5			NA				
20							CL			2" Schedule 40 PVC Riser (0-33' bgs).
845				2						
				3						
				7	10					
				8						
	5	20-25	5			NA				
							ML		Grayish brown CLAYEY SILT (ML), little very fine to fine Sand, trace medium to coarse Sand, fine Gravel, moist, no odor.	
25										
				4						
840				11						
				10	21					
				9						
							CL		Reddish brown CLAY (CL), trace very fine to fine Sand and Silt, damp, vertical fracturing with greenish-gray fine Sand infillings.	
	6	25-30	5			NA				
							ML		Grayish brown CLAYEY SILT (ML), little very fine to fine Sand, trace medium to coarse Sand, fine Gravel, trace Rock fragments, medium dense, moist, no odor.	
30										
				4						
835				7					Dolostone Cobble at 30.5' bgs.	Bentonite Chip (29-31' bgs)
				11	18					
				16						
	7	30-35	5			NA				#5 Sand Pack (31-45' bgs).
35										
				3						
	8	35-40	5	5	13	NA				2" 10-slot Schedule 40 PVC Well Screen (33-43' bgs).

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Client:
General Motors Corporation

Site Location:
GM Lansing
Plant #6

Well/Boring ID: MW-03-04

Borehole Depth: 45' below grade

DEPTH	ELEVATION	Sample Run Number	Sample/Int/Type	Recovery (feet)	Blows / 6 Inches	N - Value	PID Headspace (ppm)	USCS Code	Geologic Column	Stratigraphic Description	Well/Boring Construction
0	830	8	35-40	5	8 9	13	NA	SP		Grayish brown very fine to medium SAND (SP), grading into Silt at depth, wet.	#5 Sand Pack (31-45' bgs).
								ML		Grayish brown SILT (ML), little very fine to fine Sand, wet to moist.	2" 10-slot Schedule 40 PVC Well Screen (33-43' bgs).
40	825	9	40-45	5	4 5 7 6	12	NA	SP		Grayish brown SAND (SP), wet.	
								ML		Grayish brown SILT (ML), little very fine to fine Sand, wet to moist.	
45								CL		Brownish gray SILTY CLAY (CL), little very fine to medium Sand, trace fine Gravel, damp, slightly to non plastic.	
										End of boring at 45' bgs.	
	820										
50											
	815										
55											

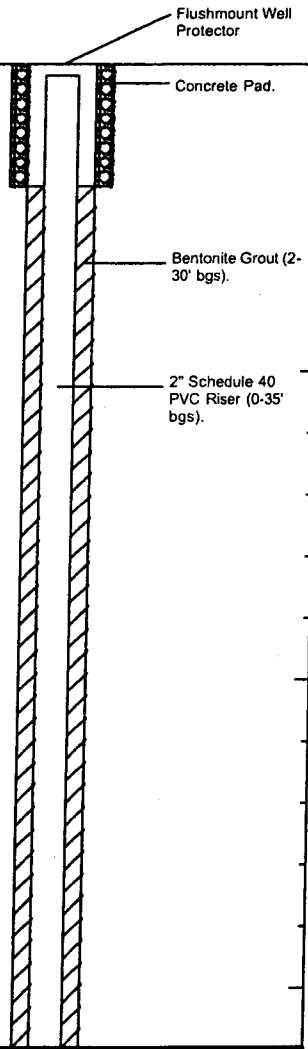
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Remarks: bgs = below ground surface; NA = Not Applicable/Available.

Date Start/Finish: 8/14/03 **Drilling Company:** Prosonic Corp. **Driller's Name:** D. Bond **Drilling Method:** Hollow Stem Auger **Auger Size:** 4.25" ID **Rig Type:** CME 85 **Sampling Method:** 5' macrocore	**Northing:** 3927.84 **Easting:** 4614.59 **Casing Elevation:** 869.15 **Borehole Depth:** 70' below grade **Surface Elevation:** 869.49 **Geologist:** J. Kralik	**Well/Boring ID:** MW-03-05 **Client:** General Motors Corporation **Location:** GM Lansing Plant #6

DEPTH	ELEVATION	Sample Run Number	Sample/Int/Type	Recovery (feet)	Blows / 15 inches	N - Value	PID Headspace (ppm)	USCS Code	Geologic Column	Stratigraphic Description
	870									
0					9 10 11 13	21				CONCRETE.
		1	0-5	4.5			NA	SP		Yellowish brown to pale brown medium to coarse SAND (SP), little fine Gravel, trace Clay, medium dense, dry to damp, no odor. [FILL]
	865									
5					5 27 13 4	40				ASPHALT.
		2	5-10	3.5			NA	ML		Yellowish brown to gray-brown SANDY SILT (ML), trace fine to medium Gravel, damp.
										Black fine GRAVEL (3" layer).
								CL		Greenish gray SANDY CLAY (CL), soft, damp.
	860									
10					3 5 6 8	11				Yellowish brown fine to medium SAND (SP), little fine Gravel, medium dense, damp to wet.
		3	10-15	3			NA	SP		
	855									
15										Grayish brown SANDY CLAY (CL), some fine Sand, little Silt, fine Gravel, stiff, damp to wet, slight plasticity, no odor.
		4	15-20	1.5	2 3	9	NA	CL		

Well/Boring Construction



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Client:
General Motors Corporation

Site Location:
GM Lansing
Plant #6

Well/Boring ID: MW-03-05

Borehole Depth: 70' below grade

DEPTH	ELEVATION	Sample Run Number	Sample/Int/Type	Recovery (feet)	Blows / 6 Inches	N - Value	PID Headspace (ppm)	USCS Code	Geologic Column	Stratigraphic Description
					6 7	9				Grayish brown Sandy CLAY, some fine Sand, little Silt, fine Gravel, stiff, damp to wet, slight plasticity, no odor.
		4	15-20	1.5			NA	CL		
	850									
20					3 7 8 13	15		SP		Dark gray fine SAND (SP), wet. Cobble 20.2' bgs.
										Dark gray CLAY (CL), some Silt, very fine to fine Sand, little coarse Sand, fine Gravel, damp to moist, very stiff, slightly plastic.
		5	20-25	3			NA			
	845									
25					4 5 6 9	11				Cobble at 25.3' bgs.
		6	25-30	3			NA	CL		Cobble at 28' bgs.
	840									
30					8 8 7 5	15				Gray-brown fine SAND layer at 30.5-31.5' bgs.
		7	30-35	3			NA			
	835									
35										
		8	35-40	NA	3 5	14	NA	SP		Grayish brown fine SAND (SP), some medium Sand, Silt, medium dense, wet.

Well/Boring Construction

- Bentonite Grout (2-30' bgs).
- 2" Schedule 40 PVC Riser (0-35' bgs).
- Bentonite Chip (30-33' bgs)
- #5 Sand Pack (33-46' bgs).
- 2" 10-slot Schedule 40 PVC Well Screen (35-45' bgs).

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Remarks: bgs = below ground surface; NA = Not Applicable/Available.

Client:
General Motors Corporation

Site Location:
GM Lansing
Plant #6

Well/Boring ID: MW-03-05

Borehole Depth: 70' below grade

DEPTH / ELEVATION	Sample Run Number	Sample/Int/Type	Recovery (feet)	Blows / 6 Inches	N - Value	PID Headspace (ppm)	USCS Code	Geologic Column	Stratigraphic Description	Well/Boring Construction
				9 10	14		SP		Grayish brown fine SAND, some medium Sand, Silt, medium dense, wet.	
	8	35-40	NA			NA			Dark gray SILTY CLAY (CL), little very fine to fine Sand, firm, damp to moist, slightly plastic.	#5 Sand Pack (33-46' bgs).
830										2" 10-slot Schedule 40 PVC Well Screen (35-45' bgs).
40				3 3 4 3	7		CL			
	9	40-45	NA			NA				
825									Grayish brown SILT (ML), some fine to coarse Gravel, trace fine to coarse Gravel, trace fine to coarse Sand, Shale, Sandstone fragments, hard, dry.	
45				32 89 34 40	123					
	10	45-50	NA			NA				Borehole backfilled with Bentonite Chip (46-59' bgs).
820							ML			
50				56 131 X X	187				Moist to wet at 50-52' bgs.	
	11	50-55	2			NA				
815										
55										
	12	55-60	4	NA NA	NA	NA	SP		Grayish brown fine to medium SAND (SP).	

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Remarks: bgs = below ground surface; NA = Not Applicable/Available.

Client:
General Motors Corporation

Site Location:
GM Lansing
Plant #6

Well/Boring ID: MW-03-05

Borehole Depth: 70' below grade

DEPTH	ELEVATION	Sample Run Number	Sample/Int/Type	Recovery (feet)	Blows / 6 Inches	N - Value	PID Headspace (ppm)	USCS Code	Geologic Column	Stratigraphic Description
					NA NA	NA				Light gray SILT (ML).
		12	55-60	4			NA			Grayish brown SILT (ML), Sandstone fragments.
	810									
60					15 26 32 26	58		ML		
		13	60-65	4			NA			
	805									
65					36 150 X X	186		CL		CLAY (CL), weathered Sandstone fragments.
										Weathered SANDSTONE.
		14	65-70	1			NA			
	800									
70										End of boring at 70' bgs.
	795									
75										

Well/Boring Construction

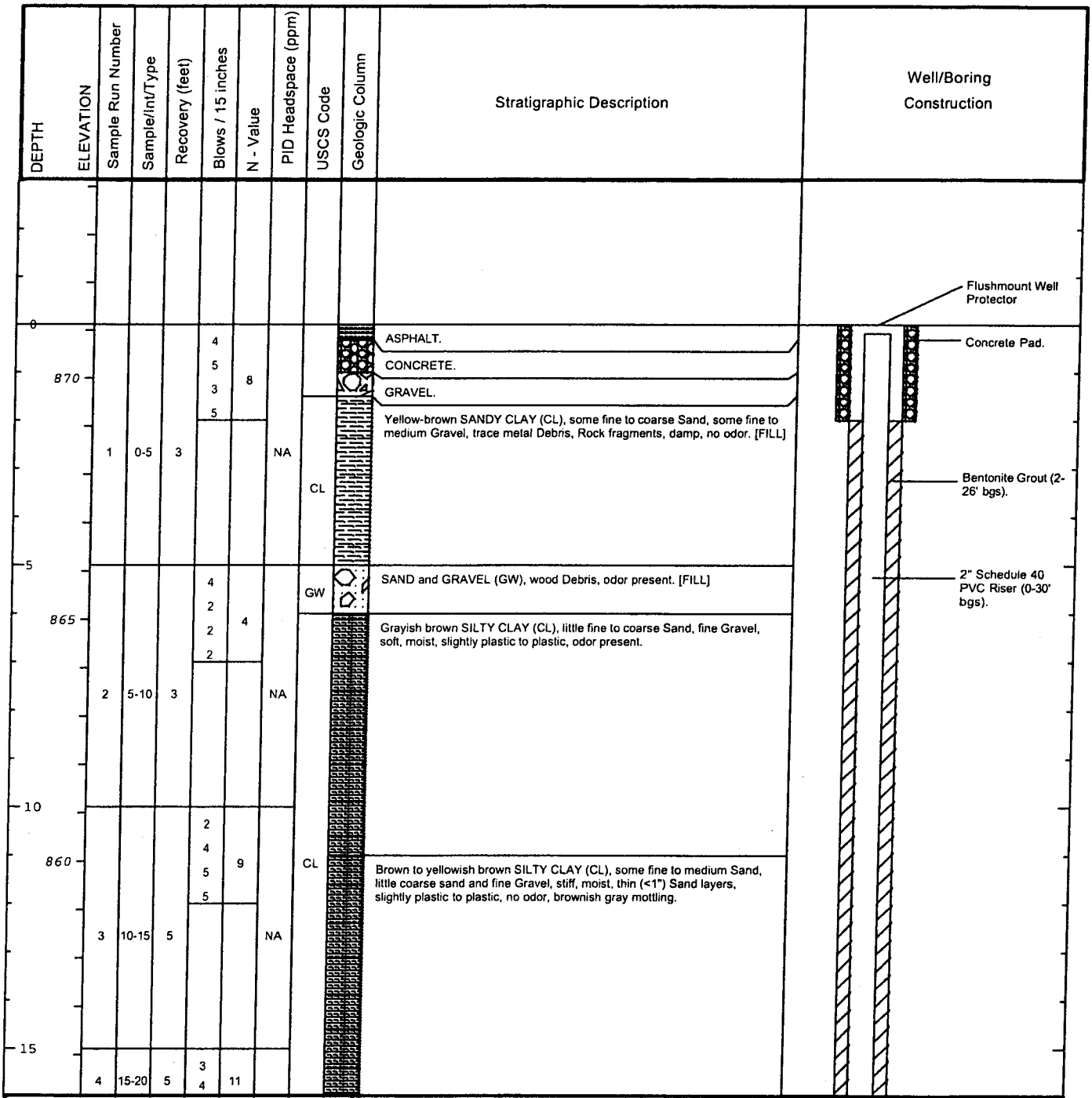
Borehole backfilled with Bentonite Chip (46-59' bgs).

Natural Collapse (59-66' bgs).

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Remarks: bgs = below ground surface; NA = Not Applicable/Available.

Date Start/Finish: 7/31/03 **Drilling Company:** Prosonic Corp. **Driller's Name:** D. Bond **Drilling Method:** Hollow Stem Auger **Auger Size:** 4.25" ID **Rig Type:** CME 85 **Sampling Method:** 5' macrocore	**Northing:** 3714.36 **Easting:** 4607.69 **Casing Elevation:** 870.81 **Borehole Depth:** 45' below grade **Surface Elevation:** 871.11 **Geologist:** J. Kralik	**Well/Boring ID:** MW-03-06 **Client:** General Motors Corporation **Location:** GM Lansing Plant #6



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Remarks: bgs = below ground surface; NA = Not Applicable/Available.

Client:
General Motors Corporation

Site Location:
GM Lansing
Plant #6

Well/Boring ID: MW-03-06

Borehole Depth: 45' below grade

DEPTH / ELEVATION	Sample Run Number	Sample/Int/Type	Recovery (feet)	Blows / 6 Inches	N - Value	PID Headspace (ppm)	USCS Code	Geologic Column	Stratigraphic Description
855	4	15-20	5	7 8	11	NA	CL		Brown to yellowish brown SILTY CLAY (CL), some fine to medium Sand, little coarse sand and fine Gravel, stiff, moist, thin (<1") Sand layers, slightly plastic to plastic, no odor, brownish gray mottling.
							ML		Grayish brown CLAYEY SILT (ML), little medium to coarse Sand, fine Gravel, trace coarse Gravel, moist, no odor, yellowish brown mottling at top.
20									
850	5	20-25	5	2 3 4 7	7	NA	SP		Grayish brown fine SAND (SP), trace very fine Sand, Silt, wet.
							ML		Grayish brown CLAYEY SILT (ML), little medium to coarse Sand, fine Gravel, trace coarse Gravel, moist, no odor.
									Grayish brown SILT (ML), some very fine to fine Sand, wet to moist.
25									
845	6	25-30	5	2 3 3 5	6	NA	CL		Grayish brown SILTY CLAY (CL), little very fine to medium Sand, trace coarse Sand, fine Gravel, some thin (<1") grayish brown Silt layers, damp to moist, medium stiff, slightly plastic.
30									
840	7	30-35	5	3 5 6 14	11	NA			Wet Silt layer 33.5-34.5' bgs.
35	8	35-40	5	2 4	12				

Well/Boring Construction

- Bentonite Grout (2-26' bgs).
- 2" Schedule 40 PVC Riser (0-30' bgs).
- Bentonite Chip (26-28' bgs)
- #5 Sand Pack (28-45' bgs).
- 2" 10-slot Schedule 40 PVC Well Screen (30-40' bgs).

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Remarks: bgs = below ground surface; NA = Not Applicable/Available.

Client:
General Motors Corporation

Site Location:
GM Lansing
Plant #6

Well/Boring ID: MW-03-06

Borehole Depth: 45' below grade

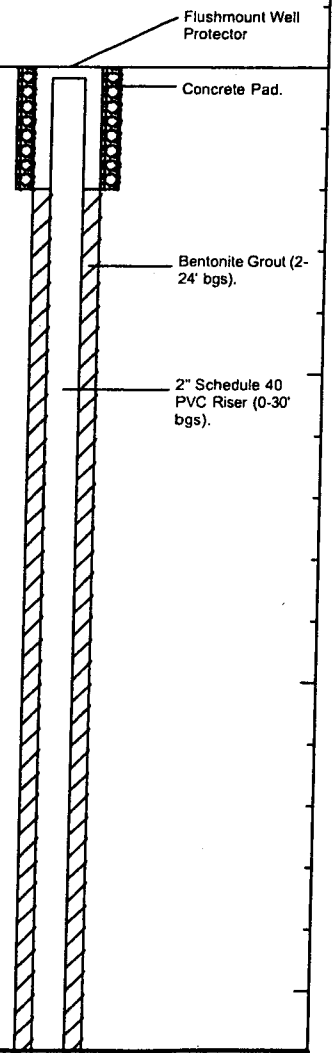
DEPTH / ELEVATION	Sample Run Number	Sample/Int/Type	Recovery (feet)	Blows / 6 Inches	N - Value	PID Headspace (ppm)	USCS Code	Geologic Column	Stratigraphic Description	Well/Boring Construction
835				8	12		CL		Grayish brown SILTY CLAY (CL), as above.	
				9					Grayish brown SILT (ML), wet.	
	8	35-40	5			NA	ML			#5 Sand Pack (28-45' bgs).
40									Grayish brown SILTY CLAY (CL), thin (<1") Sand layers, moist.	2" 10-slot Schedule 40 PVC Well Screen (30-40' bgs).
830				12 8 5 5	13					
	9	40-45	5			NA	CL			
45									End of boring at 45' bgs.	
825										
50										
820										
55										

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Remarks: bgs = below ground surface; NA = Not Applicable/Available.

Date Start/Finish: 7/31/03 **Drilling Company:** Prosonic Corp. **Driller's Name:** D. Bond **Drilling Method:** Hollow Stem Auger **Auger Size:** 4.25" ID **Rig Type:** CME 85 **Sampling Method:** 5' macrocore	**Northing:** 3792.27 **Easting:** 4142.92 **Casing Elevation:** 867.16 **Borehole Depth:** 45' below grade **Surface Elevation:** 867.32 **Geologist:** J. Kralik	**Well/Boring ID:** MW-03-07 **Client:** General Motors Corporation **Location:** GM Lansing Plant #6

DEPTH / ELEVATION	Sample Run Number	Sample/Int/Type	Recovery (feet)	Blows / 15 inches	N - Value	PID Headspace (ppm)	USCS Code	Geologic Column	Stratigraphic Description
870									
0				8 8 9 14	17		SW		CONCRETE. Yellowish brown medium SAND (SW), some fine to coarse Sand, medium dense, damp, no odor.
865	1	0-5	3			NA	GW		Yellowish brown to brownish black fine to coarse SAND and fine to medium GRAVEL (GW), damp, slight odor. [FILL]
5				3 4 2 3	8		CL		Grayish black SANDY CLAY (CL), fine Sand, some Silt and medium Sand, trace coarse Sand and fine to medium Gravel, soft to firm, damp, plant debris present, slight odor.
860	2	5-10	5			NA	TS		Black Sandy TOPSOIL (TS), some Clay, plant Debris, moist, slight odor.
10				1 3 5 6	8		CL		Dark greenish gray CLAY (CL), little very fine to fine Sand, trace fine Gravel, damp, slightly plastic, no apparent odor. SANDY CLAY (CL), medium Sand, trace coarse Sand, moist.
855	3	10-15	4			NA	ML		Yellowish brown CLAYEY SILT (ML), some fine Sand, little coarse Sand, fine Gravel, thin (<1") wet medium Sand layers, medium stiff, moist to wet, light gray mottling, no odor.
15	4	15-20	4	3 3	8	NA			



Well/Boring Construction

Remarks: bgs = below ground surface; NA = Not Applicable/Available.

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Client:
General Motors Corporation

Site Location:
GM Lansing
Plant #6

Well/Boring ID: MW-03-07

Borehole Depth: 45' below grade

DEPTH / ELEVATION	Sample Run Number	Sample/Int/Type	Recovery (feet)	Blows / 6 Inches	N - Value	PID Headspace (ppm)	USCS Code	Geologic Column	Stratigraphic Description	Well/Boring Construction
850	4	15-20	4	5 9	8	NA	ML		Yellowish brown CLAYEY SILT (ML), some fine Sand, little coarse Sand, fine Gravel, thin (<1") wet medium Sand layers, medium stiff, moist to wet, light gray mottling, no odor.	Bentonite Grout (2-24' bgs).
20							ML/CL		Grayish brown SILTY CLAY (ML/CL), some very fine to fine Sand, little medium Sand, trace coarse Sand and fine Gravel, stiff, damp.	2" Schedule 40 PVC Riser (0-30' bgs).
				3 6 8 10	14					
845	5	20-25	4			NA				
							SP		Grayish brown fine SAND (SP), little Silt, trace Clay, wet.	
25				3 5 10 11	15		ML/CL		Grayish brown SILTY CLAY (ML/CL), some very fine to fine Sand, little medium Sand, trace coarse Sand and fine Gravel, stiff, damp.	Bentonite Chip (24-28' bgs)
840	6	25-30	5			NA			2" layer of fine Sand at 26.5' bgs, wet.	
									2" layer of fine to coarse Sand and fine Gravel at 28.75' bgs, wet.	#5 Sand Pack (28-45' bgs).
30				2 5 6 8	11					2" 10-slot Schedule 40 PVC Well Screen (30-40' bgs).
835	7	30-35	5			NA			Thin (<1") layer of Silt at 34' bgs, wet.	
35	8	35-40	5	4 5	12	NA	ML		Grayish brown SILT (ML), some very fine Sand, wet.	

Remarks: bgs = below ground surface; NA = Not Applicable/Available.

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Client:
General Motors Corporation

Site Location:
GM Lansing
Plant #6

Well/Boring ID: MW-03-07

Borehole Depth: 45' below grade

DEPTH / ELEVATION	Sample Run Number	Sample/Int/Type	Recovery (feet)	Blows / 6 Inches	N - Value	PID Headspace (ppm)	USCS Code	Geologic Column	Stratigraphic Description	Well/Boring Construction
830	8	35-40	5	7 5	12	NA	ML		Grayish brown SILT (ML), some very fine Sand, wet.	#5 Sand Pack (28-45' bgs). 2" 10-slot Schedule 40 PVC Well Screen (30-40' bgs).
40										
				3 3 3 5	6		ML/CL		SILTY CLAY (ML/CL).	
825	9	40-45	5			NA				
45									End of boring at 45' bgs.	
820										
50										
815										
55										

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Remarks: bgs = below ground surface; NA = Not Applicable/Available.

Date Start/Finish: 8/4/03-8/5/2003 **Drilling Company:** Prosonic Corp. **Driller's Name:** D. Bond **Drilling Method:** Hollow Stem Auger **Auger Size:** 4.25" ID **Rig Type:** CME 85 **Sampling Method:** 5' macrocore	**Northing:** 3605.88 **Easting:** 4408.31 **Casing Elevation:** 869.41 **Borehole Depth:** 70' below grade **Surface Elevation:** 869.71 **Geologist:** J. Kralik	**Well/Boring ID:** MW-03-08 **Client:** General Motors Corporation **Location:** GM Lansing Plant #6

DEPTH / ELEVATION	Sample Run Number	Sample/Int/Type	Recovery (feet)	Blows / 15 inches	N - Value	PID Headspace (ppm)	USCS Code	Geologic Column	Stratigraphic Description	Well/Boring Construction
0 / 870										Flushmount Well Protector
				8 9 9 8	18				CONCRETE. Yellowish brown SAND. [FILL] Light gray SAND and GRAVEL. [FILL] Brownish gray SILTY CLAY, very stiff. [FILL]	Concrete Pad.
	1	0-5	3			NA			Greenish gray CLAY (CL), very soft, odor present.	Bentonite Grout (2-30' bgs).
5 / 865				2 3 4 6	7				Brown CLAY (CL), little fine to coarse Sand and fine Gravel, trace medium to coarse Gravel, medium stiff, damp, slight yellow brown mottling present.	2" Schedule 40 PVC Riser (0-35' bgs).
	2	5-10	5			NA				
10 / 860				12 11 11 13	22		CL		Yellowish brown CLAY/SILTY CLAY (CL), little fine to coarse Sand and fine Gravel, damp, slight brown to grayish brown mottling present.	
	3	10-15	1			NA			Very soft from 12-20' bgs.	
15 / 855				3 4	10					
	4	15-20	1			NA			Yellowish brown SILTY CLAY (CL), little very fine to coarse Sand, stiff, damp, soft in some places.	

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Remarks: bgs = below ground surface; NA = Not Applicable/Available.

Client:
General Motors Corporation

Site Location:
GM Lansing
Plant #6

Well/Boring ID: MW-03-08

Borehole Depth: 70' below grade

DEPTH / ELEVATION	Sample Run Number	Sample/Int/Type	Recovery (feet)	Blows / 6 Inches	N - Value	PID Headspace (ppm)	USCS Code	Geologic Column	Stratigraphic Description	Well/Boring Construction
20 / 850	4	15-20	1	6, 6	10	NA			Yellowish brown SILTY CLAY (CL), little very fine to coarse Sand, stiff, damp, soft in some places.	Bentonite Grout (2-30' bgs).
	5	20-25	5	4, 4, 6, 7	10	NA	CL		Grayish brown CLAY/SILTY CLAY (CL), little medium to coarse Sand and fine Gravel, stiff, damp, very plastic, some yellowish brown mottling present.	2" Schedule 40 PVC Riser (0-35' bgs).
25 / 845	6	25-30	1	7, 8, 11, 12	19	NA			Trace coarse Gravel, moist.	
30 / 840	7	30-35	4	4, 5, 6, 7	11	NA	SP		Grayish brown fine SAND (SP), some Silt, trace medium to coarse Sand, loose, damp.	Bentonite Chip (30-33' bgs)
							CL		Grayish brown CLAY/SILTY CLAY (CL), little medium to coarse Sand and fine Gravel, stiff, damp, very plastic, some yellowish brown mottling present.	
							ML		Grayish brown SILT (ML), little very fine to fine Sand, damp to wet.	#5 Sand Pack (33-45.5' bgs).
35 / 835	8	35-40	5	5, 4	9	NA	SP		Grayish brown very fine to fine SAND (SP), some Silt, trace medium to coarse Sand, loose, wet.	2" 10-slot Schedule 40 PVC Well Screen (35-45' bgs)

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Remarks: bgs = below ground surface; NA = Not Applicable/Available.

Client:
General Motors Corporation

Site Location:
GM Lansing
Plant #6

Well/Boring ID: MW-03-08

Borehole Depth: 70' below grade

DEPTH / ELEVATION	Sample Run Number	Sample/Int/Type	Recovery (feet)	Blows / 6 Inches	N - Value	PID Headspace (ppm)	USCS Code	Geologic Column	Stratigraphic Description
				5 6	9		SP		Grayish brown very fine to fine SAND (SP), some Silt, trace medium to coarse Sand, loose, wet.
	8	35-40	5			NA			
									Grayish brown CLAY/SILTY CLAY (CL), little medium to coarse Sand and fine Gravel, stiff, damp, very plastic, some yellowish brown mottling present.
830 40				3 6 8 15	14				Thin (<1") layer of wet fine Sand at 41.3' bgs.
	9	40-45	5			NA	CL		Wet fine to medium Sand from 42.4-42.9' bgs,
									Thin (<1") layer of wet fine Sand at 44.1' bgs.
825 45				6 12 14 18	26				
	10	45-50	2			NA			Cobble at 48.5' bgs.
820 50				8 14 27 55	41				Light gray to reddish gray SAND and GRAVEL (SP), fine to coarse Sand, fine to coarse Gravel, trace Silt, Sandstone and Shale fragments, dense, dry to damp no apparent odor.
	11	50-55	4			NA	SP		
815 55				17 17	39				
	12	55-60	4			NA			

Well/Boring Construction

- #5 Sand Pack (33-45.5' bgs).
- 2" 10-slot Schedule 40 PVC Well Screen (35-45' bgs)
- Bentonite Chip (45.5-70' bgs)

Remarks: bgs = below ground surface; NA = Not Applicable/Available.

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Client:
General Motors Corporation

Site Location:
GM Lansing
Plant #6

Well/Boring ID: MW-03-08

Borehole Depth: 70' below grade

DEPTH / ELEVATION	Sample Run Number	Sample/Int/Type	Recovery (feet)	Blows / 6 Inches	N - Value	PID Headspace (ppm)	USCS Code	Geologic Column	Stratigraphic Description	Well/Boring Construction
				22 15	39		SP		Light gray to reddish gray SAND and GRAVEL (SP), as above.	
60 810	12	55-60	4			NA			Light grayish brown to grayish brown SILT (ML), some very fine to fine Sand, trace fine Gravel, dense, dry to damp.	Bentonite Chip (45.5-70' bgs)
				12 19 25 30	44		ML			
	13	60-65	5			NA				
65 805				17 35 51 70	86				Weathered SANDSTONE.	
	14	65-70	2.5			NA			SANDSTONE.	
70 800									End of boring at 70' bgs.	
75 795										

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Remarks: bgs = below ground surface; NA = Not Applicable/Available.

Date Start/Finish: 9/29/04
Drilling Company: EDAC, Inc.
Driller's Name: Emerick Kish
Drilling Method: Hollow Stem Auger/Water Rotary
Bit Size: 3.785"
Auger Size: 4.25" ID
Rig Type: Gus Pech 1100
Sampling Method: 2' split spoon

Northing: 3785.0020
Easting: 4143.1740
Casing Elevation: 867.20

Borehole Depth: 88' below grade
Surface Elevation: 867.47

Geologist: Wayne Patterson

Well/Boring ID: MW04-01

Client: General Motors Corporation

Location: GM Lansing
Plant #6

DRAFT

DEPTH	ELEVATION	Sample Run Number	Sample/Int/Type	Recovery (feet)	Blows / 6 Inches	N - Value	PID Headspace (ppm)	Analytical Sample	Geologic Column	Stratigraphic Description	Hydrostratigraphy	Well/Boring Construction
0	0									CONCRETE.		Flushmount Protective Casing; Concrete Pad.
										Yellowish brown medium SAND (SW), some fine to coarse Sand, medium dense, damp, no odor.		
										Yellowish brown to brownish black fine to coarse SAND and fine to medium GRAVEL (GW), damp, slight odor. [FILL]		Cement/Bentonite Grout.
5	-5									Grayish black SANDY CLAY (CL), fine Sand, some Silt and medium Sand, trace coarse Sand and fine to medium Gravel, soft to firm, damp, plant debris present, slight odor.		2" Schedule 40 PVC Riser.
										Black Sandy TOPSOIL (TS), some Clay, plant Debris, moist, slight odor.		
										Dark greenish gray CLAY (CL), little very fine to fine Sand, trace fine Gravel, damp, slightly plastic, no apparent odor.		
10	-10	1	SS	0.5'	5 2 1 2	3	0			SANDY CLAY (CL), medium Sand, trace coarse Sand, moist.		
										Yellowish brown CLAYEY SILT (ML), some fine Sand, little coarse Sand, fine Gravel, thin (<1") wet medium Sand layers, medium stiff, moist to wet, light gray mottling, no odor.		
15	-15											

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Remarks: bgs = below ground surface; NA = Not Applicable/Available; WOR - weight of rod

Client:
General Motors Corporation

Site Location:
GM Lansing
Plant #6

Well/Boring ID: MW04-01

Borehole Depth: 88' below grade

DRAFT

DEPTH ELEVATION	Sample Run Number	Sample/Int/Type	Recovery (feet)	Blows / 6 Inches	N - Value	PID Headspace (ppm)	Analytical Sample	Geologic Column	Stratigraphic Description	Hydrostratigraphy	Well/Boring Construction
									Yellowish brown CLAYEY SILT (ML), some fine Sand, little coarse Sand, fine Gravel, thin (<1") wet medium Sand layers, medium stiff, moist to wet, light gray mottling, no odor.		Cement/Bentonite Grout.
									Dark grayish brown 10 YR 4/2 LEAN CLAY with SILT (CL), trace fine to coarse Sand, rare fine Gravel, medium stiff, damp, native clay till.		2" Schedule 40 PVC Riser.
20-20	2	SS	1.0'	6 4 5 6	9	0					
25-25									2" layer of fine Sand at 26.5' bgs, wet.		
									2" layer of fine to coarse Sand and fine Gravel at 28.75' bgs, wet.		
30-30	3	SS	1.5'	- 5 9 7	14	0					
									Thin (<1") layer of Silt at 34' bgs, wet.		
35-35											

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Remarks: bgs = below ground surface; NA = Not Applicable/Available; WOR - weight of rod

Client:
General Motors Corporation

Site Location:
GM Lansing
Plant #6

Well/Boring ID: MW04-01

Borehole Depth: 88' below grade

DRAFT

DEPTH ELEVATION	Sample Run Number	Sample/Int/Type	Recovery (feet)	Blows / 6 Inches	N - Value	PID Headspace (ppm)	Analytical Sample	Geologic Column	Stratigraphic Description	Hydrostratigraphy	Well/Boring Construction
									Grayish brown SILT (ML), some very fine Sand, wet.		Cement/Bentonite Grout.
											2" Schedule 40 PVC Riser.
40-40	4	SS	0.5'	6 6 20 28	26	0					
45-45									End of boring at 45' bgs.		
	4	SS	1.0'	4 8 16 16	24	0					
	5	SS	1.0'	8 12 15 21	27	0					
50-50	6	SS	1.5'	4 6 12 26	18	0					
	7	SS	1.0'	12 30 33 31	63	0			Dark grayish brown 10 YR 4/2 fine to coarse well graded SAND and GRAVEL (GW), few Clay, little Silt, saturated. Dark grayish brown 10 YR 4/2 fine poorly graded SILTY SAND (SM), loose, saturated.		
55-55	8	SS	1.0'	17 31 41 50	72	0			Dark grayish brown 10 YR 4/2 fine to coarse well graded SAND and GRAVEL (GW), few Clay, little Silt, saturated.		

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Remarks: bgs = below ground surface; NA = Not Applicable/Available; WOR - weight of rod

Client:
General Motors Corporation

Site Location:
GM Lansing
Plant #6

Well/Boring ID: MW04-01

Borehole Depth: 88' below grade

DRAFT

DEPTH ELEVATION	Sample Run Number	Sample/Int/Type	Recovery (feet)	Blows / 6 Inches	N - Value	PID Headspace (ppm)	Analytical Sample	Geologic Column	Stratigraphic Description	Hydrostratigraphy	Well/Boring Construction
	8	SS	1.0'	25 40 26 36	66	0					Cement/Bentonite Grout.
	9	SS	1.5'	WOR 16 20 17	36	0			Dark grayish brown 10 YR 4/2 SILT (ML), little Clay, little fine to coarse Sand, little fine Gravel, wet, dense.		2" Schedule 40 PVC Riser.
60-60	10	SS	0.75'	13 35 17 21	52	0					
	11	SS	0.25'	92 50 - -	50	0			Dark grayish brown 10 YR 4/2 fine poorly graded SAND (SP), loose, dry to damp.		
65-65	12	SS	0.5'	34 75 - -	75	0					
	13	SS	0.75'	29 80 - -	80	0					
	14	SS	0.1'	130 - - -	130	0			Gray 2.5 4/1 fine to medium SANDSTONE, predominately fine grained, medium hard to hard.		
70-70		WR									
75-75											Bentonite Chip (hydrated).

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Remarks: bgs = below ground surface; NA = Not Applicable/Available; WOR - weight of rod

Client:
General Motors Corporation

Site Location:
GM Lansing
Plant #6

Well/Boring ID: MW04-01

Borehole Depth: 88' below grade

DRAFT

DEPTH / ELEVATION	Sample Run Number	Sample/Int/Type	Recovery (feet)	Blows / 6 Inches	N - Value	PID Headspace (ppm)	Analytical Sample	Geologic Column	Stratigraphic Description	Hydrostratigraphy	Well/Boring Construction
80-80											Filter Sand.
85-85											2" 10-slot Schedule 40 PVC Well Screen.

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Remarks: bgs = below ground surface; NA = Not Applicable/Available; WOR - weight of rod

Date Start/Finish: 10/6/04
Drilling Company: EDAC, Inc.
Driller's Name: Emerick Kish
Drilling Method: Hollow-Stem Auger
Bit Size: NA
Auger Size: 4.25"
Rig Type: Gus Pech 1100
Sampling Method: 2' Split Spoon

Northing: 3590.5350
Easting: 4599.3170
Casing Elevation: 871.03

Borehole Depth: 61.75' below grade
Surface Elevation: 871.35

Geologist: Wayne Patterson

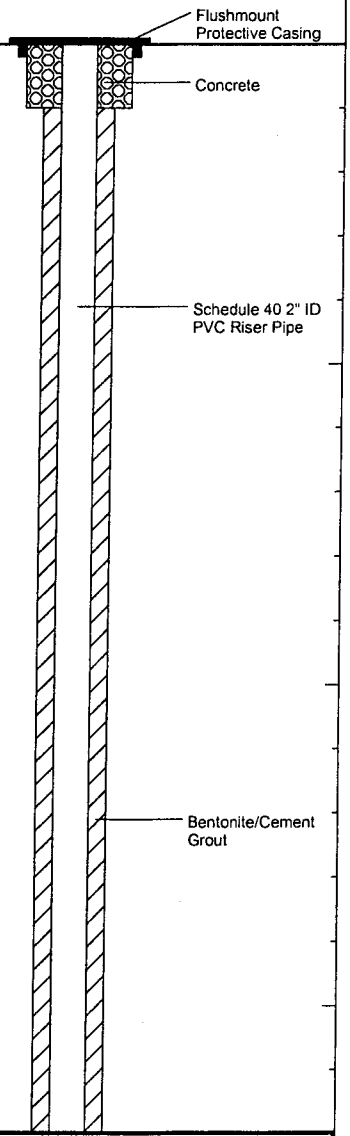
Well/Boring ID: MW04-02
Client: General Motors Corporation

Location: Lansing Plant #6
Lansing, Michigan

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DEPTH	ELEVATION	Sample Run Number	Sample/Int/Type	Recovery (feet)	Blows / 6 Inches	N - Value	PID Headspace (ppm)	Analytical Sample	Geologic Column	Stratigraphic Description	Hydrostratigraphy
0											
	870	1	SS	0.25'	3 3 4 6	7	0.2			Yellowish brown 10 YR 5/6 fine poorly graded SAND (SP), loose, damp, some Clay at surface.	SAND
		2	SS	1.0'	8 7 7 6	14	0				
5		3	SS	1.5'	4 3 5 7	8	0			Dark yellowish brown 10 YR 4/4 LEAN CLAY with SILT (CL), some coarse angular Sand, rare fine angular Gravel, damp, stiff. At 5.0 - 5.5' - black stained, saturated, no odor.	
	865	4	SS	0.2'	8 9 10 14	19	0			Sand is fine to coarse grained.	
		5	SS	1.0'	8 8 10 15	18	0			Occasional thin lenses of fine Clayey Sand.	
10		6	SS	1.5'	10 6 8 12	14	0			Color becomes dark gray 10 YR 4/1, increasing amount of Silt with depth.	
	860	7	SS	1.5'	6 3 4 5	7	0			Color is brown 10 YR 4/3, moist, very silty.	SILTY CLAY
15		8	SS	0.1'	8 6 7 13	13	0				
	855				6 2					Color is Dark gray 10 YR 4/1, less Silt content.	

Well/Boring Construction



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Remarks: SS - split spoon; bgs - below ground surface; WOR - weight of rod

Client:
General Motors Corporation

Site Location:
Lansing Plant #6
Lansing, Michigan

Well/Boring ID: MW04-02

Borehole Depth: 61.75' below grade

DRAFT

DEPTH / ELEVATION	Sample Run Number	Sample/Int/Type	Recovery (feet)	Blows / 6 Inches	N - Value	PID Headspace (ppm)	Analytical Sample	Geologic Column	Stratigraphic Description	Hydrostratigraphy	Well/Boring Construction
	9	SS	1.5'	5 6	7	0			Little fine to coarse Sand.		
	10	SS	1.5'	3 4 9 12	13	0					
20 850	11	SS	0.25'	5 6 5 8	11	0			Brown 10 YR 4/3 fine poorly graded SAND (SP), rare fine Gravel, saturated, loose.		
	12	SS	1.5'	4 6 10 15	16	0			Dark gray 10 YR 4/1 LEAN CLAY with SILT (CL), little fine to coarse Sand, some fine angular Gravel, damp, stiff.		
25	13	SS	2.0'	6 8 8 10	16	0			Few fine to coarse Sand, medium stiff, moderately plastic.	SILTY CLAY	Schedule 40 2" ID PVC Riser Pipe
845	14	SS	2.0'	5 5 7 7	12	0			Becoming soft and very plastic.		
	15	SS	1.5'	WOR 6 10 16	16	0			Grayish brown 10 YR 5/2 SILT (ML), loose, medium dense, dry.	SILT	Bentonite/Cement Grout
30 840	16	SS	2.0'	15 12 7 6	19	0			Dark gray 10 YR 4/1 LEAN CLAY with SILT (CL), little fine to coarse Sand, some fine angular Gravel, very plastic, saturated, soft. At 30.8 - 31.4' - fine Sand lens.	SILTY CLAY	
	17	SS	1.5'	7 6 5 5	11	0			Soft, saturated, and very plastic.		Bentonite Chip (Hydrated)
35	18	SS	1.5'	WOR WOR WOR 12	1	0			Dark grayish brown 10 YR 4/2 fine Sand and Silt, saturated.		
835				14 19					Dark grayish brown 10 YR 4/2 SILT (ML), saturated, loose to medium dense.	LT	

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Remarks: SS - split spoon; bgs - below ground surface; WOR - weight of rod

Client:
General Motors Corporation

Site Location:
Lansing Plant #6
Lansing, Michigan

Well/Boring ID: MW04-02

Borehole Depth: 61.75' below grade

DRAFT

DEPTH	ELEVATION	Sample Run Number	Sample/Int/Type	Recovery (feet)	Blows / 6 Inches	N - Value	PID Headspace (ppm)	Analytical Sample	Geologic Column	Stratigraphic Description	Hydrostratigraphy	Well/Boring Construction
		19	SS	1.0'	27 36	46	0				SI	
		20	SS	1.5'	WOR 5 7 6	12	0			Dark gray 10 YR 4/1 LEAN CLAY with SILT (CL), few fine to coarse Sand, rare to few fine Gravel, saturated, medium dense, moderately plastic.	SILTY CLAY	Filter Sand
40		21	SS	1.0'	WOR WOR 8 10	9	0			1" fine Sand lens. Moist, veins of saturation.		0.010" Machine Slotted 2" ID Schedule 40 Well Screen
	830	22	SS	1.5'	5 7 9 11	16	0					
45		23	SS	1.5'	WOR 8 8 10	16	0			6" increased Sand content, saturated.		
	825	24	SS	1.0'	32 60 - -	60	0					
		25	SS	0.5'	38 65 - -	65	0			Dark grayish brown 10 YR 4/2 angular fine to coarse well graded SAND and GRAVEL (GW), rare Silt, dense, dry.	GRAVEL AND SAND	
50		26	SS	1.0'	33 51 50 -	51	0					
	820	27	SS	1.25'	9 21 33 30	54	0					
55		28	SS	1.25'	WOR 17 20 22	37	0			Angular to subrounded grains.		
	815				WOR 17							

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Remarks: SS - split spoon; bgs - below ground surface; WOR - weight of rod

Client:
General Motors Corporation

Site Location:
Lansing Plant #6
Lansing, Michigan

Well/Boring ID: MW04-02

Borehole Depth: 61.75' below grade

DRAFT

DEPTH / ELEVATION	Sample Run Number	Sample/Int/Type	Recovery (feet)	Blows / 6 Inches	N - Value	PID Headspace (ppm)	Analytical Sample	Geologic Column	Stratigraphic Description	Hydrostratigraphy	Well/Boring Construction
	29	SS	1.25	20 22	37	0					
	30	SS	1.5'	17 19 23 26	42	0					
60									Gray 10YR 6/1 weathered SANDSTONE.	SANDSTONE	
810	31	SS	1.0'	19 38 80	118	0					

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engineers & scientists

Remarks: SS - split spoon; bgs - below ground surface; WOR - weight of rod

Date Start/Finish: 10/07/04
Drilling Company: EDAC, Inc.
Driller's Name: Emerick Kish
Drilling Method: Hollow-Stem Auger
Bit Size: NA
Auger Size: 4.25"
Rig Type: Gus Pech 1100
Sampling Method: 2' Split Spoon

Northing: 3616.8390
Easting: 4717.1300
Casing Elevation: 870.78

Borehole Depth: 62' below grade
Surface Elevation: 871.16

Geologist: Wayne Patterson

Well/Boring ID: MW04-03

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Client: General Motors Corporation

Location: Lansing Plant #6
Lansing, Michigan

DEPTH	ELEVATION	Sample Run Number	Sample/Int/Type	Recovery (feet)	Blows / 6 Inches	N - Value	PID Headspace (ppm)	Analytical Sample	Geologic Column	Stratigraphic Description	Hydrostratigraphy	Well/Boring Construction
0	870	1	SS	0.1'	6 6 8 9	14	0			Asphalt.	ASPHALT	Flushmount Protective Casing; Concrete
		2	SS	0.2'	4 9 12 12	21	0			Dark grayish brown 10 YR 4/2 LEAN CLAY with SILT (CL), some fine to coarse subangular Sand, medium stiff, damp, moderately plastic.		
5	865	3	SS	0.5'	7 4 4 5	8	0			Mottling with grayish brown 10 YR 5/2, soft, moist.		Schedule 40 2" ID PVC Riser Pipe
		4	SS	0	5 3 5 15	8	0					
		5	SS	0.5'	2 2 4 6	6	0			No mottling, vertical fractures with gray 10 YR 5/1 coloring and saturation, rare fine subangular Gravel.		
10	860	6	SS	0.2'	6 9 12 14	21	0			No fractures, soft.		
		7	SS	1.5'	4 3 4 6	7	0			Color becoming dark gray 10 YR 4/1, wet.		Bentonite/Cement Grout
15		8	SS	1.75'	6 8 9 9	17	0			Medium stiff, moist.		
	855				4 5					Damp.		

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Remarks: SS - split spoon; bgs - below ground surface; WOR - weight of rod

Client:
General Motors Corporation

Site Location:
Lansing Plant #6
Lansing, Michigan

Well/Boring ID: MW04-03

Borehole Depth: 62' below grade

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DEPTH	ELEVATION	Sample Run Number	Sample/Int/Type	Recovery (feet)	Blows / 6 Inches	N - Value	PID Headspace (ppm)	Analytical Sample	Geologic Column	Stratigraphic Description	Hydrostratigraphy	Well/Boring Construction
		9	SS	1.5'	10 8	15	0					
					4 6 10 12					Little fine to coarse Sand.		
		10	SS	2.0'		16	0					
20					4 7 7 10					Stiff.		
	850	11	SS	2.0'		14	0					
					4 5 6 10					Few fine to coarse Sand.		
		12	SS	1.5'		11	0				SILTY CLAY	
					4 4 6 8							Schedule 40 2" ID PVC Riser Pipe
25		13	SS	1.5'		10	0					
	845				WOR 6 6 8					Becoming moist, very plastic, medium stiff.		
		14	SS	2.0'		12	0					
					WOR WOR 9 12							Bentonite/Cement Grout
		15	SS	1.0'		9	0					
30					WOR 10 8 10					2" Silty Sand lens, few Clay, few fine Gravel, wet. Wet.		
	840	16	SS	1.5'		18	0			2" Silt lens, few fine Gravel, moist.		
					5 7 10 12							Bentonite Chip (Hydrated)
		17	SS	0		17	0					
					7 7 15 7							
35		18	SS	1.5'		22	0			2" fine to medium Sand lens, dry. Silt is saturated.		
	835				WOR 7					Saturated, soft.		Filter Sand

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Remarks: SS - split spoon; bgs - below ground surface; WOR - weight of rod

Client:
General Motors Corporation

Site Location:
Lansing Plant #6
Lansing, Michigan

Well/Boring ID: MW04-03

Borehole Depth: 62' below grade

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DEPTH	ELEVATION	Sample Run Number	Sample/Int/Type	Recovery (feet)	Blows / 6 Inches	N - Value	PID Headspace (ppm)	Analytical Sample	Geologic Column	Stratigraphic Description	Hydrostratigraphy	Well/Boring Construction
		19	SS	1.0'	6 7	13	0					
		20	SS	1.0'	1 5 7 9	12	0					
40										Medium stiff, slightly plastic.		0.010" Machine Slotted 2" ID Schedule 40 Well Screen
	830	21	SS	1.5'	7 10 8 8	18	0			Stiff, little fine to coarse Sand, damp.		
		22	SS	1.0'	12 23 15 17	38	0					
45		23	SS	1.0'	18 51 50 -	101	0					Bentonite Chip (Hydrated)
	825	24	SS	0	38 60 - -	60	0			Dark grayish brown 10 YR 4/2 angular fine to coarse well graded SAND and GRAVEL (GW), few Silt, damp, dense.	GRAVEL AND SAND	
		25	SS	0.5'	36 49 50 -	99	0			Dry, rare Silt.		
50												
	820	26	SS	1.0'	17 28 36 22	64	0			Few Gravel, moist fine to coarse subangular Sand, dry.		
55												Natural Collapse
	815				23 70							

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Remarks: SS - split spoon; bgs - below ground surface; WOR - weight of rod

Client:
General Motors Corporation

Site Location:
Lansing Plant #6
Lansing, Michigan

Well/Boring ID: MW04-03

Borehole Depth: 62' below grade

DRAFT

DEPTH / ELEVATION	Sample Run Number	Sample/Int/Type	Recovery (feet)	Blows / 6 Inches	N - Value	PID Headspace (ppm)	Analytical Sample	Geologic Column	Stratigraphic Description	Hydrostratigraphy	Well/Boring Construction
	27	SS	0.5'	73	143	0					
				-					Black SHALE.	SHALE	
60				80					Gray 10 YR 6/1 fine SANDSTONE, dry.	SANDSTONE	
810	28	SS	0.2'	-	80	0					
				-							

BBL
BLASLAND, BOUCK & LEE, INC.
engineers & scientists

Remarks: SS - split spoon; bgs - below ground surface; WOR - weight of rod

Date Start/Finish: 10/12/04
Drilling Company: EDAC, Inc.
Driller's Name: Emerick Kish
Drilling Method: Hollow-Stem Auger/Water Rotary
Bit Size: 3.785"
Auger Size: 4.25"
Rig Type: Gus Pech 1100
Sampling Method: NA

Northing: 3610.4140
Easting: 4717.2180
Casing Elevation: 870.77

Borehole Depth: 108' below grade
Surface Elevation: 871.15

Geologist: Wayne Patterson

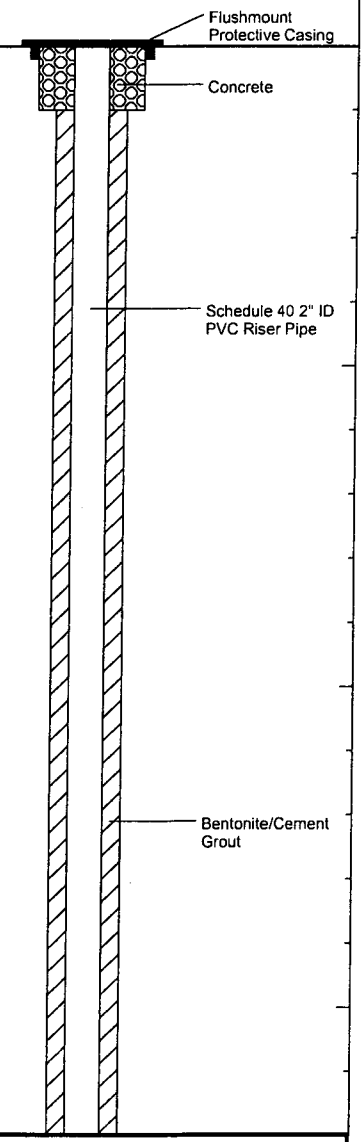
Well/Boring ID: MW04-04
Client: General Motors Corporation

Location: Lansing Plant #6
Lansing, Michigan

DRAFT

DEPTH	ELEVATION	Sample Run Number	Sample/Int/Type	Recovery (feet)	Blows / 6 Inches	N - Value	PID Headspace (ppm)	Analytical Sample	Geologic Column	Stratigraphic Description	Hydrostratigraphy
0	870	1	SS	0.1'	6 6 8 9	14	0			Asphalt.	ASPHALT
		2	SS	0.2'	4 9 12 12	21	0			Dark grayish brown 10 YR 4/2 LEAN CLAY with SILT (CL), some fine to coarse subangular Sand, medium stiff, damp, moderately plastic.	
5	865	3	SS	0.5'	7 4 4 5	8	0			Mottling with grayish brown 10 YR 5/2, soft, moist.	
		4	SS	0	5 3 5 15	8	0				
		5	SS	0.5'	2 2 4 6	6	0			No mottling, vertical fractures with gray 10 YR 5/1 coloring and saturation, rare fine subangular Gravel.	
10	860	6	SS	0.2'	6 9 12 14	21	0			No fractures, soft.	
		7	SS	1.5'	4 3 4 6	7	0			Color becoming dark gray 10 YR 4/1, wet.	
15		8	SS	1.75'	6 8 9 9	17	0			Medium stiff, moist.	
	855				4 5					Damp.	

Well/Boring Construction



BBL
BLASLAND, BOUCK & LEE, INC.
engineers & scientists

Remarks: SS - split spoon; bgs - below ground surface
WOR - weight of rod; WR - water rotary

Client:
General Motors Corporation

Site Location:
Lansing Plant #6
Lansing, Michigan

Well/Boring ID: MW04-04

Borehole Depth: 108' below grade

DRAFT

DEPTH / ELEVATION	Sample Run Number	Sample/Int/Type	Recovery (feet)	Blows / 6 Inches	N - Value	PID Headspace (ppm)	Analytical Sample	Geologic Column	Stratigraphic Description	Hydrostratigraphy	Well/Boring Construction
	9	SS	1.5'	10 8	15	0					
				4 6					Little fine to coarse Sand.		
	10	SS	2.0'	10 12	16	0					
20				4					Stiff.		
850	11	SS	2.0'	7 7 10	14	0					
				4					Few fine to coarse Sand.		
	12	SS	1.5'	5 6 10	11	0				SILTY CLAY	
				4							Schedule 40 2" ID PVC Riser Pipe
25	13	SS	1.5'	4 6 8	10	0					
845				WOR					Becoming moist, very plastic, medium stiff.		
	14	SS	2.0'	6 6 8	12	0					
				WOR							Bentonite/Cement Grout
	15	SS	1.0'	WOR 9 12	9	0					
30				WOR					2" Silty Sand lens, few Clay, few fine Gravel, wet. Wet.		
840	16	SS	1.5'	10 8 10	18	0			2" Silt lens, few fine Gravel, moist.		
	17	SS	0	5 7 10 12	17	0					
				7							
35	18	SS	1.5'	7 15 7	22	0			2" fine to medium Sand lens, dry. Silt is saturated.		
835				WOR 7					Saturated, soft.		

BBL
BLASLAND, BOUCK & LEE, INC.
engineers & scientists

Remarks: SS - split spoon; bgs - below ground surface
WOR - weight of rod; WR - water rotary

Client:
General Motors Corporation

Site Location:
Lansing Plant #6
Lansing, Michigan

Well/Boring ID: MW04-04

Borehole Depth: 108' below grade

DRAFT

DEPTH	ELEVATION	Sample Run Number	Sample/Int/Type	Recovery (feet)	Blows / 6 Inches	N - Value	PID Headspace (ppm)	Analytical Sample	Geologic Column	Stratigraphic Description	Hydrostratigraphy	Well/Boring Construction
		19	SS	1.0'	6 7	13	0					
		20	SS	1.0'	1 5 7 9	12	0					
40										Medium stiff, slightly plastic.		Schedule 40 2" ID PVC Riser Pipe
	830	21	SS	1.5'	7 10 8 8	18	0					
										Stiff, little fine to coarse Sand, damp.		
		22	SS	1.0'	12 23 15 17	38	0					
45		23	SS	1.0'	18 51 50 -	101	0					Bentonite/Cement Grout
	825									Dark grayish brown 10 YR 4/2 angular fine to coarse well graded SAND and GRAVEL (GW), few Silt, damp, dense.	GRAVEL AND SAND	
		24	SS	0	38 60 - -	60	0					
										Dry, rare Silt.		
		25	SS	0.5'	36 49 50 -	99	0					
50												
	820											
		26	SS	1.0'	17 28 36 22	64	0					
										Few Gravel, moist fine to coarse subangular Sand, dry.		
55												
	815				23 70							

BBL
BLASLAND, BOUCK & LEE, INC.
engineers & scientists

Remarks: SS - split spoon; bgs - below ground surface
WOR - weight of rod; WR - water rotary

Client:
General Motors Corporation

Site Location:
Lansing Plant #6
Lansing, Michigan

Well/Boring ID: MW04-04

Borehole Depth: 108' below grade

DRAFT

DEPTH	ELEVATION	Sample Run Number	Sample/Int/Type	Recovery (feet)	Blows / 6 Inches	N - Value	PID Headspace (ppm)	Analytical Sample	Geologic Column	Stratigraphic Description	Hydrostratigraphy	Well/Boring Construction
		27	SS	0.5'	73 -	143	0					
										Black SHALE.	SHALE	
60	810	28	SS	0.2'	80 - - -	80	0			Gray 10 YR 6/1 fine SANDSTONE, dry.	SANDSTONE	Schedule 40 2" ID PVC Riser Pipe
			WR									
65	805											Bentonite/Cement Grout
70	800									Thin Shale layer.		
75	795											

BBL
BLASLAND, BOUCK & LEE, INC.
engineers & scientists

Remarks: SS - split spoon; bgs - below ground surface
WOR - weight of rod; WR - water rotary

Client:
General Motors Corporation

Site Location:
Lansing Plant #6
Lansing, Michigan

Well/Boring ID: MW04-04

Borehole Depth: 108' below grade

DRAFT

DEPTH	ELEVATION	Sample Run Number	Sample/Int/Type	Recovery (feet)	Blows / 6 Inches	N - Value	PID Headspace (ppm)	Analytical Sample	Geologic Column	Stratigraphic Description	Hydrostratigraphy	Well/Boring Construction
80	790											Schedule 40 2" ID PVC Riser Pipe
85	785											Bentonite/Cement Grout
90	780											
95	775											Bentonite Chip (Hydrated)

BBL
BLASLAND, BOUCK & LEE, INC.
engineers & scientists

Remarks: SS - split spoon; bgs - below ground surface
WOR - weight of rod; WR - water rotary

Client:
General Motors Corporation

Site Location:
Lansing Plant #6
Lansing, Michigan

Well/Boring ID: MW04-04

Borehole Depth: 108' below grade

DRAFT

DEPTH / ELEVATION	Sample Run Number	Sample/Int/Type	Recovery (feet)	Blows / 6 Inches	N - Value	PID Headspace (ppm)	Analytical Sample	Geologic Column	Stratigraphic Description	Hydrostratigraphy	Well/Boring Construction
100 / 770											Filter Sand
											0.010" Machine Slotted 2" ID Schedule 40 Well Screen
105 / 765											

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BLASLAND, BOUCK & LEE, INC.
engineers & scientists

Remarks: SS - split spoon; bgs - below ground surface
WOR - weight of rod; WR - water rotary

Date Start/Finish: 10/8/04
Drilling Company: EDAC, Inc.
Driller's Name: Emerick Kish
Drilling Method: Hollow-Stem Auger
Bit Size: NA
Auger Size: 4.25"
Rig Type: Gus Pech 1100
Sampling Method: 2' Split Spoon

Northing: 4203.4580
Easting: 4652.2184
Casing Elevation: 858.57

Borehole Depth: 50' below grade
Surface Elevation: 859.07

Geologist: Wayne Patterson

Well/Boring ID: MW04-05

Client: General Motors Corporation

Location: Lansing Plant #6
Lansing, Michigan

DRAFT

DEPTH	ELEVATION	Sample Run Number	Sample/Int/Type	Recovery (feet)	Blows / 6 Inches	N - Value	PID Headspace (ppm)	Analytical Sample	Geologic Column	Stratigraphic Description
	860									
0										
		1	SS	0.1'	6 7 5 8	12	0			Brown 10 YR 6/3 and gray 10 YR 5/1 mottled LEAN CLAY with SILT (CL), little fine to coarse Sand, stiff, dry, weakly plastic.
		2	SS	0.2'	7 7 8 7	15	0			
	855	3	SS	0.5'	6 5 6 7	11	0			Greenish gray Gley 1 6/1 LEAN CLAY (CL), very plastic, medium stiff, damp, little mottling with dark gray 10 YR 4/1.
5		4	SS	0	2 3 2 4	5	0			Gray 10 YR 5/1 SILT (ML), plant debris present, few Clay, slight Peat odor, damp to moist.
	850	5	SS	0.5'	2 3 5 6	8	0			Brown 10 YR 4/3 SANDY SILT (SM), little Clay lenses, saturated, loose.
10		6	SS	0.2'	2 2 3 2	5	0			Dark gray 10 YR 4/1 LEAN CLAY with SILT (CL), little fine to medium subangular Sand, rare fine Gravel, wet, medium stiff.
		7	SS	1.5'	2 3 5 5	8	0			Dark gray 10 YR 4/1 fine to medium poorly graded SAND (SP), loose, saturated, top 3" fine to coarse grained.
	845									
15		8	SS	1.75'	3 4 2 2	6	0			
					9 7					

Hydrostratigraphy: ASPHALT

Well/Boring Construction:
- Flushmount Protective Casing
- Concrete
- Schedule 40 2" ID PVC Riser Pipe
- Bentonite/Cement Grout
- Bentonite Chip (Hydrated)

BBL
BLASLAND, BOUCK & LEE, INC.
engineers & scientists

Remarks: SS - split spoon; bgs - below ground surface; WOR - weight of rod

Client:
General Motors Corporation

Site Location:
Lansing Plant #6
Lansing, Michigan

Well/Boring ID: MW04-05

Borehole Depth: 50' below grade

DRAFT

DEPTH / ELEVATION	Sample Run Number	Sample/Int/Type	Recovery (feet)	Blows / 6 Inches	N - Value	PID Headspace (ppm)	Analytical Sample	Geologic Column	Stratigraphic Description	Hydrostratigraphy	Well/Boring Construction
	9	SS	1.5'	8 7	15	0			Dark gray 10 YR 4/1 SANDY SILT (SM), fine to coarse Sand, wet, dense.		
840	10	SS	2.0'	3 4 6 5	10	0			Dark gray 10 YR 4/1 LEAN CLAY with SILT (CL), few fine to coarse Sand, stiff, moist to wet, weakly plastic.		
20	11	SS	2.0'	3 4 4 5	8	0			Very plastic, rare Sand.		
	12	SS	1.5'	1 3 3 7	6	0			Very silty, weakly plastic, becoming soft, few fine to coarse Sand.	SILTY CLAY	Filter Sand
835	13	SS	1.5'	5 6 7 11	13	0					0.010" Machine Slotted 2" ID Schedule 40 Well Screen
25	14	SS	2.0'	6 5 6 6	11	0			Dark gray 10 YR 4/1 SILT (ML), saturated.		
830	15	SS	1.0'	WOR 9 6 6	15	0			Dark gray 10 YR 4/1 LEAN CLAY with SILT (CL), few fine to coarse subangular Sand, weakly plastic, medium stiff, damp.		
30	16	SS	1.5'	WOR WOR 6 6	7	0			Few little Sand, rare fine Gravel.		
			0								
825	17	SS	1.5'	26 53 70 -	123	0			Dark gray 10 YR 4/1 SILT (ML), few fine angular Gravel, dense, dry, 2" lens of fine subrounded Gravel at top.		Bentonite/Cement Grout
35				28 43					Very dense, few fine to coarse Sand, rare fine Gravel.		

BBL
BLASLAND, BOUCK & LEE, INC.
engineers & scientists

Remarks: SS - split spoon; bgs - below ground surface; WOR - weight of rod

Client:
General Motors Corporation

Site Location:
Lansing Plant #6
Lansing, Michigan

Well/Boring ID: MW04-05

Borehole Depth: 50' below grade

DRAFT

DEPTH / ELEVATION	Sample Run Number	Sample/Int/Type	Recovery (feet)	Blows / 6 Inches	N - Value	PID Headspace (ppm)	Analytical Sample	Geologic Column	Stratigraphic Description	Hydrostratigraphy	Well/Boring Construction
	18	SS	1.0'	49 41	92	0			Few Clay, moist.		
820	19	SS	1.0'	7 8 10 10	18	0			Some Clay, wet to saturated, little fine to coarse Sand, few fine Gravel, soft, weakly plastic.		
40	20	SS	1.5'	WOR WOR 8 7	9	0			Dark gray 10 YR 4/1 LEAN CLAY with SILT (CL), little fine to coarse Sand, few fine Gravel, soft to medium stiff, moderately plastic, wet.		
	21	SS	1.0'	WOR 11 8 9	19	0					
815	22	SS	1.0'	WOR 33 8 6	41	0			2" Sand and Gravel lens, wet.	GRAVEL AND SAND	Natural Collapse
45	23	SS	0	WOR 12 28 26	40	0			Light Gray 10 YR 7/1 fine SANDSTONE, dry weathered, interbedded with dark gray 10 YR 4/1 fine SILTY SAND (SM), dry to damp.		
810	24	SS	0.5'	31 51 50	101	0					
50											

BBL
BLASLAND, BOUCK & LEE, INC.
engineers & scientists

Remarks: SS - split spoon; bgs - below ground surface; WOR - weight of rod

Date Start/Finish: 10/11/04
Drilling Company: EDAC, Inc.
Driller's Name: Emerick Kish
Drilling Method: Hollow-Stem Auger/Water Rotary
Bit Size: 3.785"
Auger Size: 4.25"
Rig Type: Gus Pech 1100
Sampling Method: 2' Split Spoon

Northing: 4216.3970
Easting: 4652.2330
Casing Elevation: 858.70

Borehole Depth: 98' below grade
Surface Elevation: 859.05

Geologist: Wayne Patterson

Well/Boring ID: MW04-06

Client: General Motors Corporation

Location: Lansing Plant #6
Lansing, Michigan

DRAFT

DEPTH / ELEVATION	Sample Run Number	Sample/Int/Type	Recovery (feet)	Blows / 6 Inches	N - Value	PID Headspace (ppm)	Analytical Sample	Geologic Column	Stratigraphic Description	Hydrostratigraphy	Well/Boring Construction
860 / 0									Brown 10 YR 6/3 and gray 10 YR 5/1 mottled LEAN CLAY with SILT (CL), little fine to coarse Sand, stiff, dry, weakly plastic.	ASPHALT	Flushmount Protective Casing; Concrete
855 / 5									Greenish gray Gley 1 6/1 LEAN CLAY (CL), very plastic, medium stiff, damp, little mottling with dark gray 10 YR 4/1.		Schedule 40 2" ID PVC Riser Pipe
									Gray 10 YR 5/1 SILT (ML), plant debris present, few Clay, slight Peat odor, damp to moist.		
850 / 10									Brown 10 YR 4/3 SANDY SILT (SM), little Clay lenses, saturated, loose.		
									Dark gray 10 YR 4/1 LEAN CLAY with SILT (CL), little fine to medium subangular Sand, rare fine Gravel, wet, medium stiff.		Bentonite/Cement Grout
845 / 15									Dark gray 10 YR 4/1 fine to medium poorly graded SAND (SP), loose, saturated, top 3" fine to coarse grained.		

BBL
BLASLAND, BOUCK & LEE, INC.
engineers & scientists

Remarks: SS - split spoon; bgs - below ground surface; WOR - weight of rod

Client:
General Motors Corporation

Site Location:
Lansing Plant #6
Lansing, Michigan

Well/Boring ID: MW04-06

Borehole Depth: 98' below grade

DRAFT

DEPTH / ELEVATION	Sample Run Number	Sample/Int/Type	Recovery (feet)	Blows / 6 Inches	N - Value	PID Headspace (ppm)	Analytical Sample	Geologic Column	Stratigraphic Description	Hydrostratigraphy	Well/Boring Construction
840 / 20									Dark gray 10 YR 4/1 SANDY SILT (SM), fine to coarse Sand, wet, dense.	SILTY CLAY	Schedule 40 2" ID PVC Riser Pipe
									Dark gray 10 YR 4/1 LEAN CLAY with SILT (CL), few fine to coarse Sand, stiff, moist to wet, weakly plastic.		
									Very plastic, rare Sand.		
									Very silty, weakly plastic, becoming soft, few fine to coarse Sand.		
835 / 25											Bentonite/Cement Grout
									Dark gray 10 YR 4/1 SILT (ML), saturated.		
830 / 30									Dark gray 10 YR 4/1 LEAN CLAY with SILT (CL), few fine to coarse subangular Sand, weakly plastic, medium stiff, damp.		
									Few little Sand, rare fine Gravel.		
825 / 35									Dark gray 10 YR 4/1 SILT (ML), few fine angular Gravel, dense, dry, 2" lens of fine subrounded Gravel at top.		
									Very dense, few fine to coarse Sand, rare fine Gravel.		

BBL
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Remarks: SS - split spoon; bgs - below ground surface; WOR - weight of rod

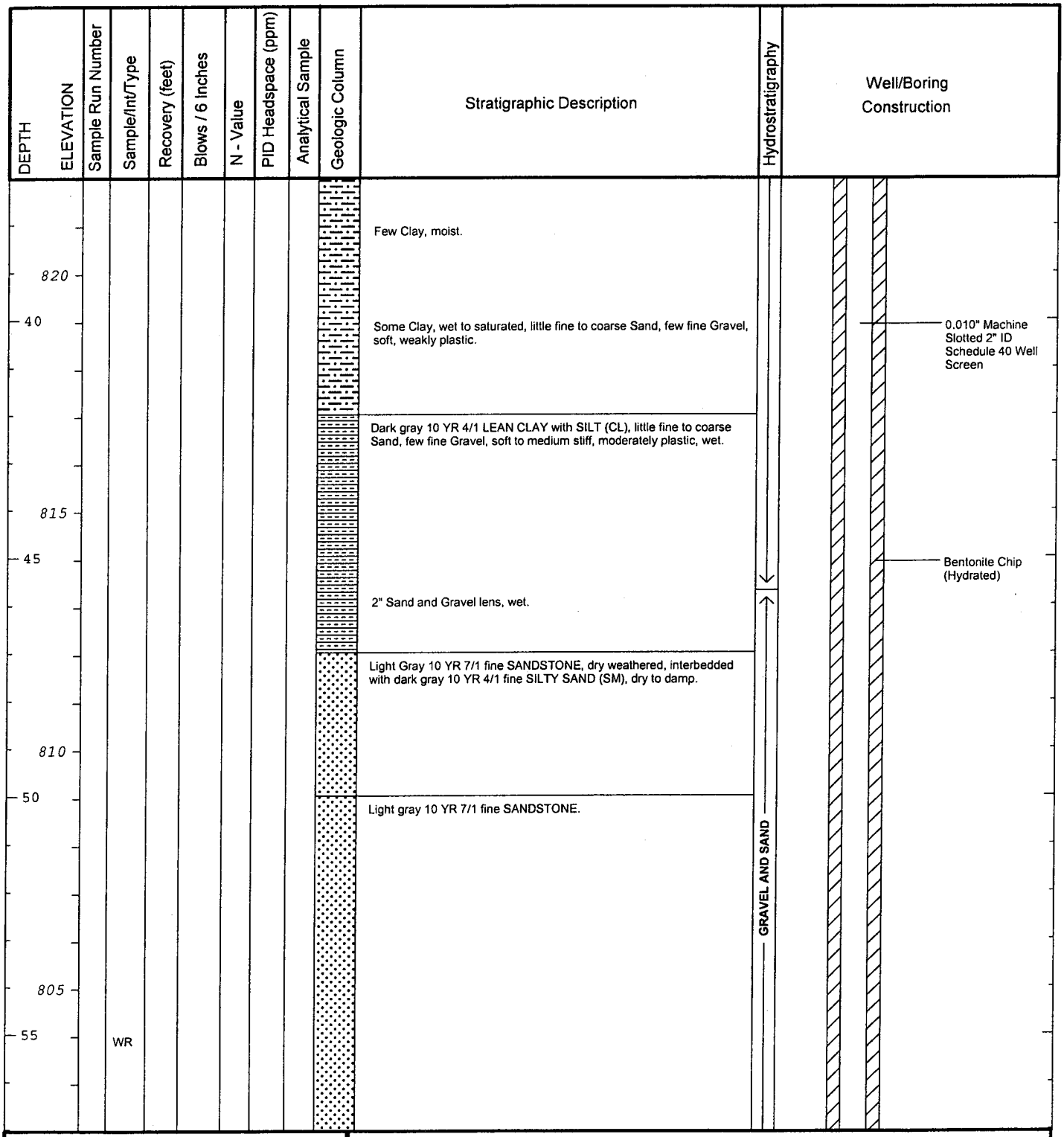
Client:
General Motors Corporation

Site Location:
Lansing Plant #6
Lansing, Michigan

Well/Boring ID: MW04-06

Borehole Depth: 98' below grade

DRAFT



BBL
BLASLAND, BOUCK & LEE, INC.
engineers & scientists

Remarks: SS - split spoon; bgs - below ground surface; WOR - weight of rod

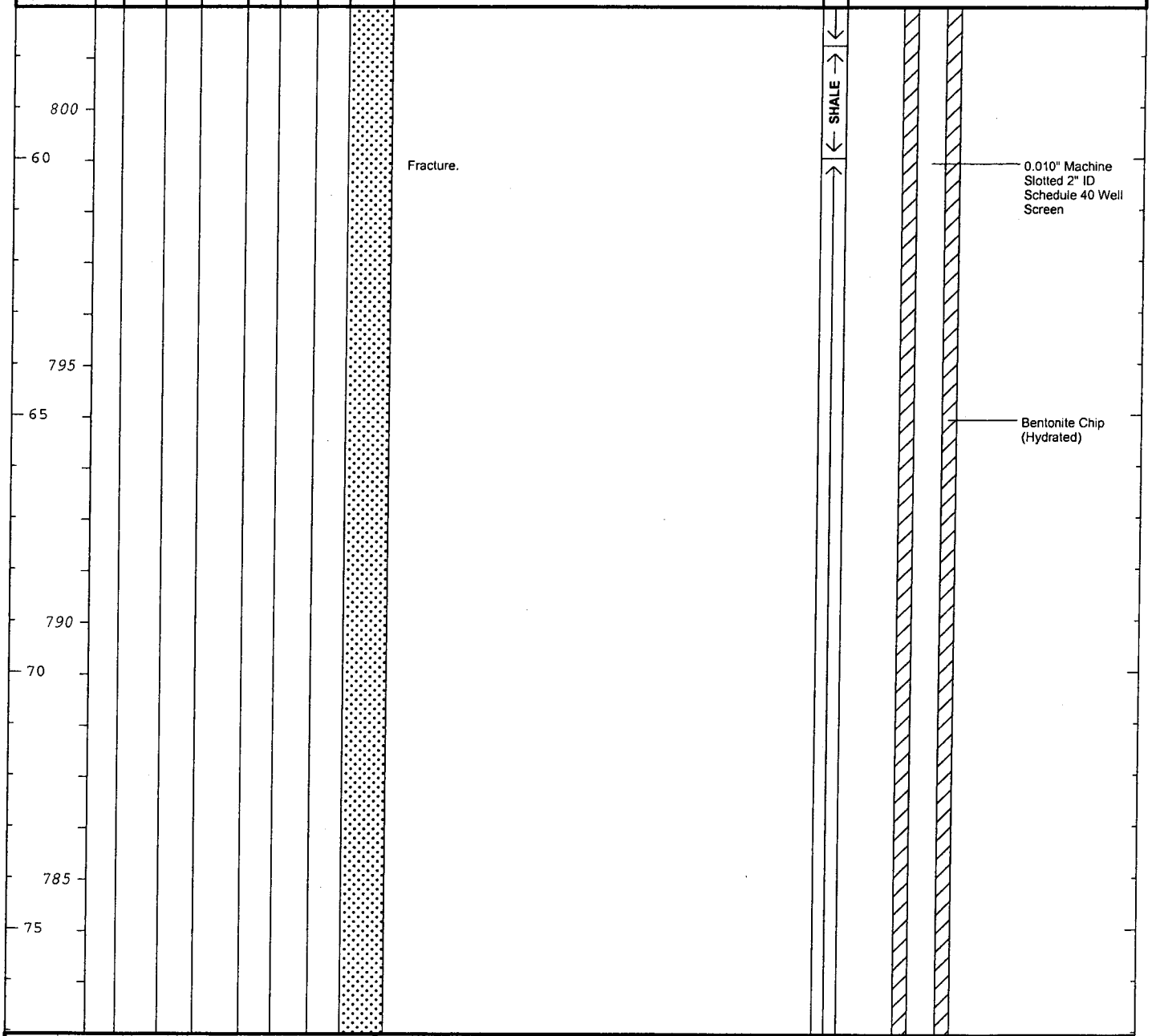
Client:
General Motors Corporation

Site Location:
Lansing Plant #6
Lansing, Michigan

Well/Boring ID: MW04-06

Borehole Depth: 98' below grade

DRAFT



BBL
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Remarks: SS - split spoon; bgs - below ground surface; WOR - weight of rod

Client:
General Motors Corporation

Site Location:
Lansing Plant #6
Lansing, Michigan

Well/Boring ID: MW04-06

Borehole Depth: 98' below grade

DRAFT

DEPTH / ELEVATION	Sample Run Number	Sample/Int/Type	Recovery (feet)	Blows / 6 Inches	N - Value	PID Headspace (ppm)	Analytical Sample	Geologic Column	Stratigraphic Description	Hydrostratigraphy	Well/Boring Construction
780 / 80									At 83 - 85' - fractures.	SANDSTONE	Bentonite Chip (Hydrated)
775 / 85											
770 / 90											Filter Sand
765 / 95											0.010" Machine Slotted 2" ID Schedule 40 Well Screen

BBL
BLASLAND, BOUCK & LEE, INC.
engineers & scientists

Remarks: SS - split spoon; bgs - below ground surface; WOR - weight of rod

Client:
General Motors Corporation

Site Location:
Lansing Plant #6
Lansing, Michigan

Well/Boring ID: MW04-06

Borehole Depth: 98' below grade

DRAFT

DEPTH / ELEVATION	Sample Run Number	Sample/Int/Type	Recovery (feet)	Blows / 6 Inches	N - Value	PID Headspace (ppm)	Analytical Sample	Geologic Column	Stratigraphic Description	Hydrostratigraphy	Well/Boring Construction

BBL
BLASLAND, BOUCK & LEE, INC.
engineers & scientists

Remarks: SS - split spoon; bgs - below ground surface; WOR - weight of rod

URS CONSULTANTS, Inc.

TEST BORING LOG
BORING NO. MWBP-10A

PROJECT:	GM-Lansing, Body Plant, Area 7
CLIENT:	GM-LAD
BORING CONTRACTOR/DRILL RIG:	Geo-Tek, Inc./CME 750
SHEET NO.	1 OF 1
JOB NO. :	E1-93-110
GROUND ELEVATION:	867.41'
DATE STARTED:	10/31/93
DATE FINISHED:	10/31/93
DRILLER:	Peter Buell
GEOLOGIST:	David McMahon
REVIEWED BY:	David Frazier

GROUND WATER:

DATE	TIME	LEV	TYPE
10/31/94		30'	static

	CAS.	SAMP.	CORE	TUBE
TYPE	HSA	SS		
DIA.	4-1/4"	2"		
WT.		140#		
FALL		30"		

* POCKET PENETROMETER READING

DEPTH FT	STRATA	SAMPLE NO.	SAMPLE TYPE	BLOWS PER 6"	RECOVERY RQD %	DESCRIPTION COLOR	CONSISTENCY HARDNESS	MATERIAL DESCRIPTION	CLASS USCS	REMARKS
1								Asphalt		
5										
10										
15										
20										first sample recovered at 23 feet
25		S-1	SS		100	grey		SILTY CLAY with interbedded SAND lenses	CL/SP	dry
30		S-2	SS	4 2	100	grey	very loose	medium SAND	SP	very wet
35		S-3	SS	4 8	100		stiff	SILTY CLAY	ML	very wet
								SAND and GRAVEL	GW	very wet
40		S-4	SS	4 5	100	grey	stiff	SILTY CLAY, trace Gravel	CL	

COMMENTS ND - non detect.

PROJECT NO. E1-93-110
BORING NO. MWBP-10A

URS CONSULTANTS, Inc.

TEST BORING LOG
BORING NO. MWBP-12A

PROJECT: GM-Lansing, Body Plant, Area 7	SHEET NO. 1 OF 1
CLIENT: GM-LAD	JOB NO. : E1-93-110
BORING CONTRACTOR/DRILL RIG: Geo-Tek, Inc./CME 750	GROUND ELEVATION 870.24
GROUND WATER:	DATE STARTED: 10/30/93
DATE: 10/30/94 TIME: LEV: 35' TYPE: static	DATE FINISHED: 10/30/93
	DRILLER: Peter Buell
	GEOLOGIST: David McMahon
	REVIEWED BY: David Frazier

	CAS.	SAMP.	CORE	TUBE
TYPE	HSA	SS		
DIA.	4-1/4"	2"		
WT.		140#		
FALL		30"		

* POCKET PENETROMETER READING

DEPTH FT	STRATA	SAMPLE NO.	SAMPLE TYPE	BLOWS PER 6"	RECOVERY RQD %	DESCRIPTION COLOR	CONSISTENCY HARDNESS	MATERIAL DESCRIPTION	CLASS USCS	REMARKS
1								Concrete		
5										
10										
15										
20										first sample recovered at 27 feet
25										
					80	grey	medium dense	SILTY CLAY	CL	very wet
		S-1	SS	6	6		very stiff	medium SAND	SP	dry
				12	9					
30										soil description based on field
								SAND and GRAVEL		observations
		S-2	SS	3	3		loose			
35				5	7					very wet
		S-3	SS	2	5	grey	stiff	SILTY CLAY, trace Gravel	ML	dry
40				6	11					

COMMENTS ND - non detect.

PROJECT NO. E1-93-110
BORING NO. MWBP-12A

URS CONSULTANTS, Inc.

TEST BORING LOG
BORING NO. MWBP-13A

PROJECT: GM-Lansing, Body Plant, Area 7	SHEET NO. 1 OF 1
CLIENT: GM-LAD	JOB NO. : E1-93-110
BORING CONTRACTOR/DRILL RIG: Geo-Tek, Inc./CME 750	GROUND ELEVATION: 870.28'

GROUND WATER:					CAS.	SAMP.	CORE	TUBE	DATE STARTED: 10/31/93
DATE	TIME	LEV	TYPE	TYPE	HSA	SS			DATE FINISHED: 10/31/93
10/31/94		30'	static	DIA.	4-1/4"	2"			DRILLER: Peter Buell
				WT.		140#			GEOLOGIST: David McMahon
				FALL		30"			REVIEWED BY: David Frazier

* POCKET PENETROMETER READING

DEPTH FT	STRATA	SAMPLE NO.	SAMPLE TYPE	BLOWS PER 6"		RECOVERY RQD %	DESCRIPTION COLOR	CONSISTENCY HARDNESS	MATERIAL DESCRIPTION	CLASS USCS	REMARKS
1	XXXX								Asphalt		
5											
10											
15											
20											first sample recovered at 23 feet
		S-1	SS	8	11	100	grey	medium dense	medium SAND	SP	dry
25				10	19						
		S-2	SS	8	9	100	grey	very stiff	SANDY CLAY	CL	dry
30				10	18						
		S-3	SS	4	6	100	grey	stiff	SILTY CLAY, trace Gravel	CL	moist
35				8	9						
									SAND and GRAVEL	GW	very wet
		S-4	SS	5	6	100					
40				6	12				SILTY CLAY, trace Gravel	CL	

COMMENTS Hole advanced at former well MW-13 location due to underground utility interferences.

PROJECT NO. E1-93-110
BORING NO. MWBP-13A

DRILLING SUMMARY

Geologist: David A. McMahon

Drilling Company: Geo-Tek, Inc.

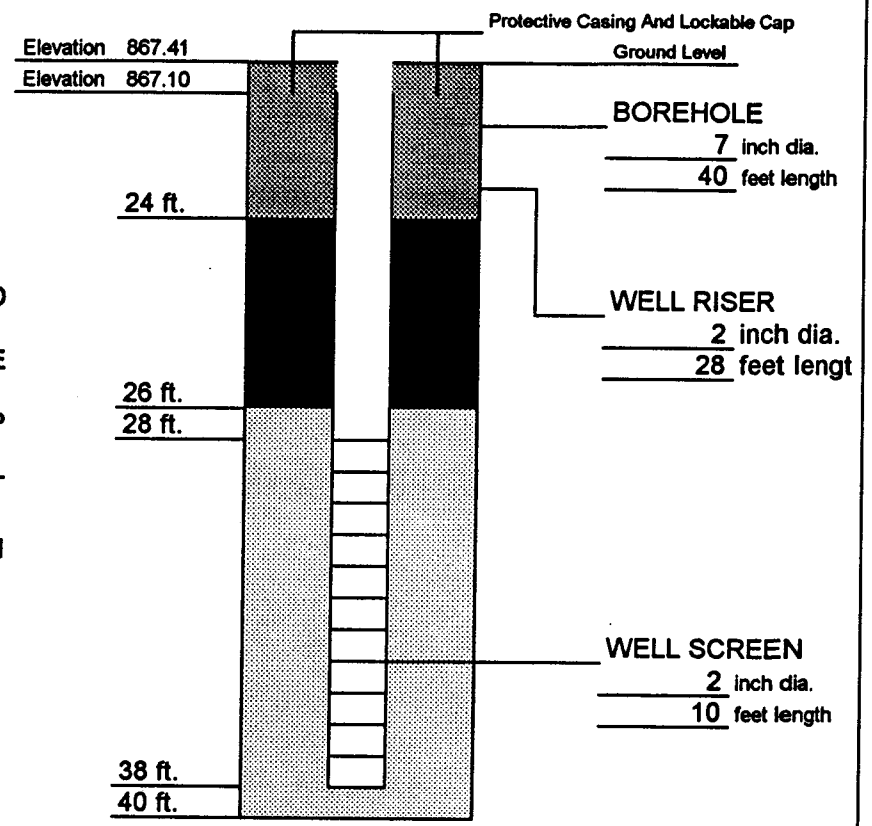
Driller: Pete Buell

Date: 10/31/93

GEOLOGIC LOG

depth(ft.)	lithology
23-26	SILTY CLAY
26-30	medium SAND
30-35	SILTY CLAY
35-37	SAND and GRAVEL
37-40	SILTY CLAY, trace Gravel

DEPTH



WELL DESIGN

CASING MATERIAL	*SCREEN MATERIAL*	*SEAL MATERIAL*
Surface: Cast Iron	Type: machine slotted PVC	Seal Type #1: Cement (0-1.5')
Monitor: PVC	Slot Size: 0.01 inch	Seal Type #2: Bentonite chips (1.5 - 7')
		Seal Type #3: Cement grout (7 to 24')
		Seal Type #4: Bentonite chips (24-26')

FILTER MATERIAL	*ROCK CORING*	*LEGEND*
Type: Global Filter Pack #5	Cored Interval: None	Cement/Bentonite Grout
Setting: 26-40 ft.	Core Diameter: None	Bentonite Seal
	Reamed Diameter None	Silica Sandpack

Client: GM LAD	Project Body Plant, Area 7	Project No.: E1-93-110
URS Consultants, Inc.	**Monitoring Well Construction Details**	**Well Number:** MWBP-10A

DRILLING SUMMARY

Geologist: David A. McMahon

Drilling Company: Geo-Tek, Inc.

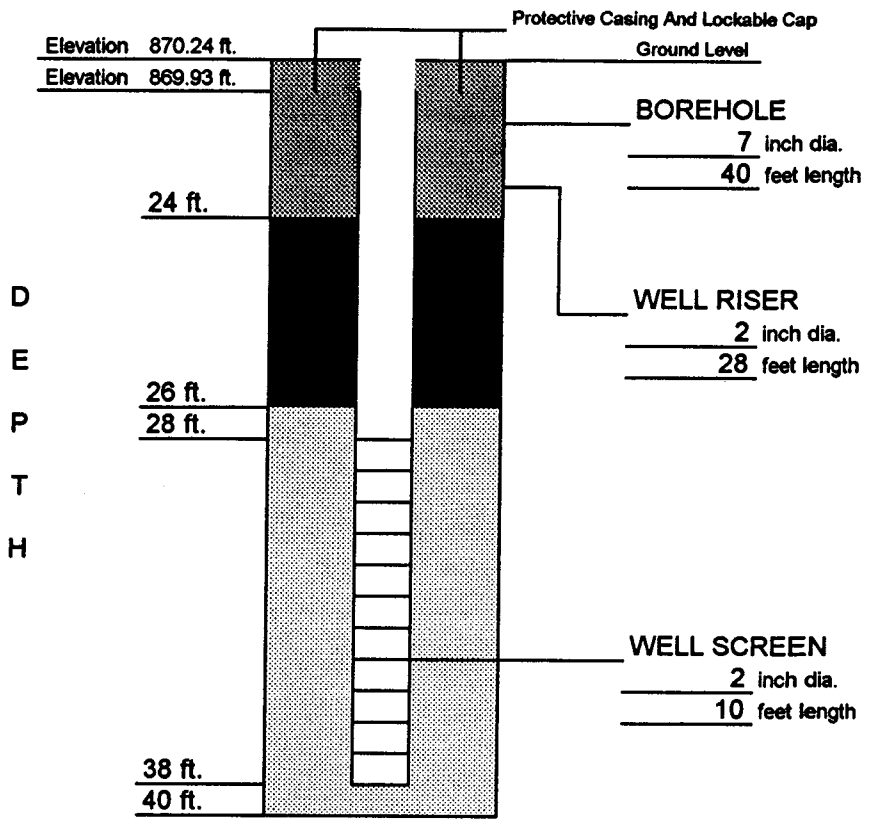
Driller: Pete Buell

Date: 10/30/93

GEOLOGIC LOG

depth(ft.)	lithology
26-27	SILTY CLAY
27-37	SAND and GRAVEL
37-40	SILTY CLAY, trace Gravel

WELL DESIGN



CASING MATERIAL	*SCREEN MATERIAL*	*SEAL MATERIAL*
Surface: Cast Iron	Type: machine slotted PVC	Seal Type #1: Cement (0-1.5')
Monitor: PVC	Slot Size: 0.01 inch	Seal Type #2: Bentonite chips (1.5 - 7')
		Seal Type #3: Cement grout (7 to 24')
		Seal Type #4: Bentonite chips (24-26')

FILTER MATERIAL	*ROCK CORING*	*LEGEND*
Type: Global Filter Pack #5	Cored Interval: None	Cement/Bentonite Grout
Setting: 26-40 ft.	Core Diameter: None	Bentonite Seal
	Reamed Diameter None	Silica Sandpack

Client: GM LAD	Project Body Plant, Area 7	Project No.: E1-93-110
URS Consultants, Inc.	**Monitoring Well Construction Details**	**Well Number:** MWBP-12A

DRILLING SUMMARY

Geologist: David A. McMahon

Drilling Company: Geo-Tek, Inc.

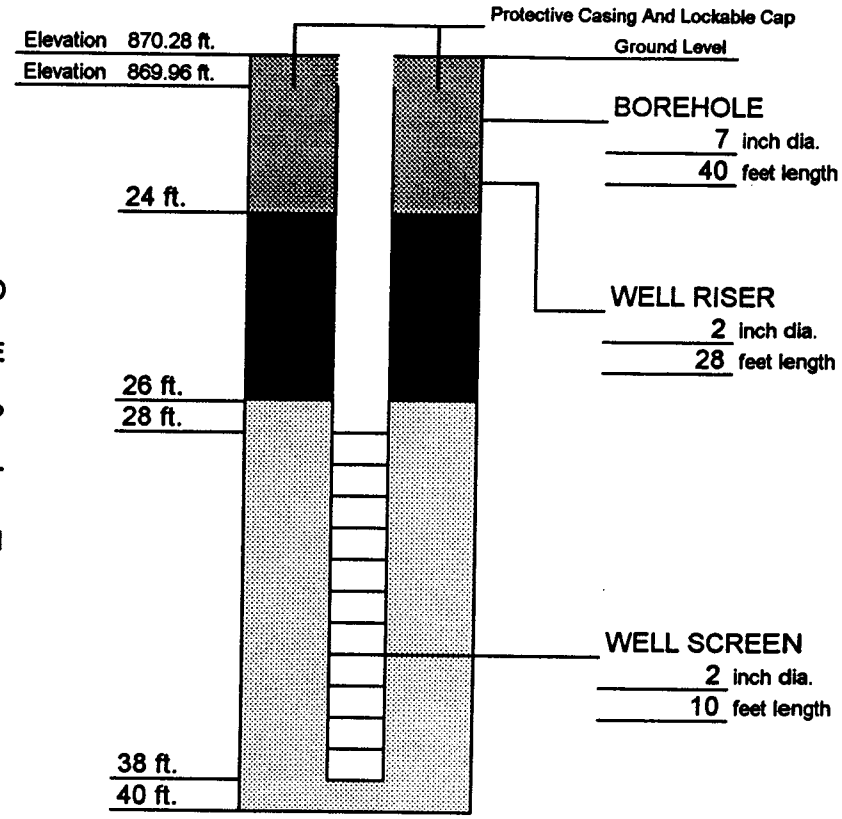
Driller: Pete Buell

Date: 10/31/93

GEOLOGIC LOG

depth(ft.)	lithology
23-25	medium SAND
28-29	SANDY CLAY
29-35	SILTY CLAY, trace Gravel
35-37'	SAND and Gravel
37-40'	SILTY CLAY, trace Gravel

DEPTH



WELL DESIGN

CASING MATERIAL

Surface: Cast Iron

Monitor: PVC

SCREEN MATERIAL

Type: machine slotted PVC

Slot Size: 0.01 inch

SEAL MATERIAL

Seal Type #1: Cement (0-1.5')

Seal Type #2: Bentonite chips (1.5 - 7')

Seal Type #3: Cement grout (7 to 24')

Seal Type #4: Bentonite chips (24-26')

FILTER MATERIAL

Type: Global Filter Pack #5

Setting: 26-40 ft.

ROCK CORING

Cored Interval: None

Core Diameter: None

Reamed Diameter None

LEGEND

Cement/Bentonite Grout

Bentonite Seal

Silica Sandpack

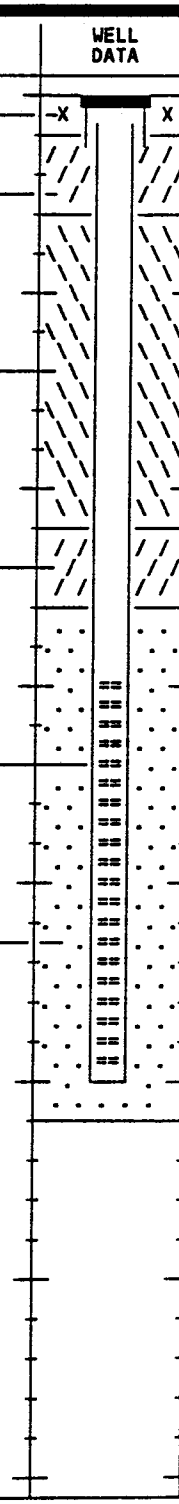
Client: GM LAD	Project Body Plant, Area 7	Project No.: E1-93-110
URS Consultants, Inc.	**Monitoring Well Construction Details**	**Well Number:** MWBP-13A

BORING LOG / MONITORING WELL DIAGRAM

ABB ENVIRONMENTAL SERVICES, INC.

PROJECT NO.: 5698-86	PROJECT NAME: GM-BOC - LANSING		BORING/WELL DESIGNATION: MWBP-10	BORING/WELL LOCATION:
DRILLING CONTRACTOR: P.S.I.		DRILLING METHOD: HOLLOW-STEM AUGER	BOREHOLE SIZE: 8.25 IN. / BOREHOLE DEPTH: 26 FT.	Please refer to Figure 5
DATE STARTED: 08-28-91	DATE COMPLETED: 08-28-91	GROUND ELEV.: - - FT. / MEASURING POINT ELEV: - - - FT.	WELL DEPTH: 25 FT.	
RIG: CME-55	DRILLER: M. BOND	HELPER: A. BABB	LOGGED BY: D. BELAN	

DEPTH (FT.)	DESCRIPTION	SAMPLE NO.	SAMPLE TYPE	BLOW COUNTS(N)	P.I. METER	COMMENTS
0	CONCRETE (6 inches)				(ppm)	WELL COMPLETE BELOW GROUND WITH LOCKABLE PROTECTIVE COVER
						CONCRETE
						BENTONITE PELLETS
5	CLAY - gray-yellow, moderately plastic, soft, damp-moist.	4-6'	SS	1-2-1-2	BG	
	SANDY CLAY - black-brown, moderately plastic, soft.					BENTONITE SLURRY
10	CLAY - medium gray, moderately-highly plastic, soft, wet, mixed with fine sand at 10-11 feet.	9-11'	SS	1 for 1' 3-4	BG	
						BENTONITE CHIPS
15	CLAY - medium gray, slightly-moderately plastic, firm, damp-moist, some fine sand and silt.	14-16'	SS/L	1-2-4-4	2-4	
						2-INCH I.D., 10-FOOT LONG, 10 SLOT PVC WELL SCREEN
20	CLAY - medium gray, slightly-moderately plastic, stiff, damp-moist, several very thin moist silt layers.	19-21'	SS/L	2-4-6-7	2-5	
						SAND FILTER PACK
25	CLAY - gray, slightly plastic, very stiff, damp.	24-26'	SS	8-16-12-10	1-2	
	SAND - gray, very fine to fine grained, very firm, damp.					
	END OF BORING AT 26 FEET.					
30						
35						



NOTES: BG - BACKGROUND
SS - SPLIT SPOON
L - LABORATORY SAMPLE
N/A - NOT APPLICABLE

CR341

BORING LOG / MONITORING WELL DIAGRAM

ABB ENVIRONMENTAL SERVICES, INC.

PROJECT NO.: 5698-86	PROJECT NAME: GM-BOC - LANSING		BORING/WELL DESIGNATION: MWBP-11	BORING/WELL LOCATION:
DRILLING CONTRACTOR: P.S.I.	DRILLING METHOD: HOLLOW-STEM AUGER		BOREHOLE SIZE: 8.25 IN. / BOREHOLE DEPTH: 26 FT.	Please refer to Figure 5
DATE STARTED: 08-27-91	DATE COMPLETED: 08-27-91	GROUND ELEV.: - - FT. / MEASURING POINT ELEV: - - - FT.	WELL DEPTH: N/A FT.	
RIG: CME-55	DRILLER: M. BOND	HELPER: A. BABB	LOGGED BY: D. BELAN	

DEPTH (FT.)	DESCRIPTION	SAMPLE NO.	SAMPLE TYPE	BLOW COUNTS(N)	P.I. METER (ppm)	COMMENTS	WELL DATA
0	CONCRETE (8 inches)						NO WELL INSTALLED
5	SAND - medium brown, fine-medium grained, dense, damp, some gravel.	4-6'	SS	8-18-25-36	BG		
10	SAND - brown, fine-coarse, very loose, wet, some gravel.	9-11'	SS/L	2-1-2-3	BG		
	SILTY CLAY - brown, soft, damp, trace fine gravel.						
15	CLAY - gray, non-plastic, very stiff, damp, trace gravel.	14-16'	SS	5-7-10-12	BG		
20	SAND - yellow-brown, very fine-fine grained, very dense, damp.	19-21'	SS	10-22-35-33	BG		
25	SAND - yellow-tan, very fine-fine grained, very dense, damp, banded.	24-26'	SS/L	18-32-35-50	BG		
	END OF BORING AT 26 FEET.						
30							
35							

NOTES: BG - BACKGROUND
SS - SPLIT SPOON
L - LABORATORY SAMPLE
N/A - NOT APPLICABLE

CR341

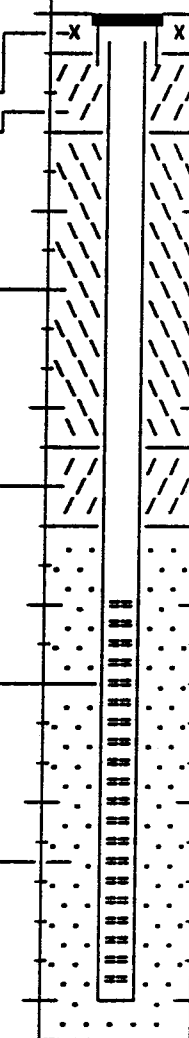
BORING LOG / MONITORING WELL DIAGRAM

ABB ENVIRONMENTAL SERVICES, INC.

PROJECT NO.: 5698-86	PROJECT NAME: GM-BOC - LANSING		BORING/WELL DESIGNATION: MWBP-12	BORING/WELL LOCATION:
DRILLING CONTRACTOR: P.S.I.		DRILLING METHOD: HOLLOW-STEM AUGER	BOREHOLE SIZE: 8.25 IN. / BOREHOLE DEPTH: 26 FT.	Please refer to Figure 5
DATE STARTED: 08-27-91	DATE COMPLETED: 08-27-91	GROUND ELEV.: - - FT. / MEASURING POINT ELEV: - - - FT.	WELL DEPTH: 25 FT.	
RIG: CME-55	DRILLER: M. BOND	HELPER: A. BABB	LOGGED BY: D. BELAN	

DEPTH (FT.)	DESCRIPTION	SAMPLE NO.	SAMPLE TYPE	BLOW COUNTS(N)	P.I. METER	COMMENTS
0	CONCRETE (8 inches)				(ppm)	WELL COMPLETE BELOW GROUND WITH LOCKABLE PROTECTIVE COVER
	GRAVEL AND SAND					CONCRETE
						BENTONITE PELLETS
5	CLAY - medium brown & gray, very fine grained, slightly-moderately plastic, firm, damp-moist, abundant gravel.	4-6'	SS	3-4-3-12	BG	
						BENTONITE SLURRY
10	SANDY CLAY - black, very fine grained, soft-firm, damp, silty, strong odor.	9-11'	SS/L	2-3-4-4	8-20	
	2" gray clay @ 11 feet.					BENTONITE CHIPS
15	CLAY - medium gray, slightly-moderately plastic, firm, moist, trace gravel, no odor.	14-16'	SS	2-3-3-5	BG	
						2-INCH I.D., 10-FOOT LONG, 10 SLOT PVC WELL SCREEN
20	CLAY - gray, slightly-moderately plastic, soft-firm, damp-moist, trace gravel, fine thin sand layers.	19-21'	SS/L	2-2-3-4	BG	
						SAND FILTER PACK
25	CLAY - gray, slightly-moderately plastic, stiff-very stiff, damp, trace gravel.	24-26'	SS	5-6-11-12	BG	
	END OF BORING AT 26 FEET.					
30						
35						

WELL DATA



NOTES: BG - BACKGROUND
SS - SPLIT SPOON
L - LABORATORY SAMPLE
N/A - NOT APPLICABLE

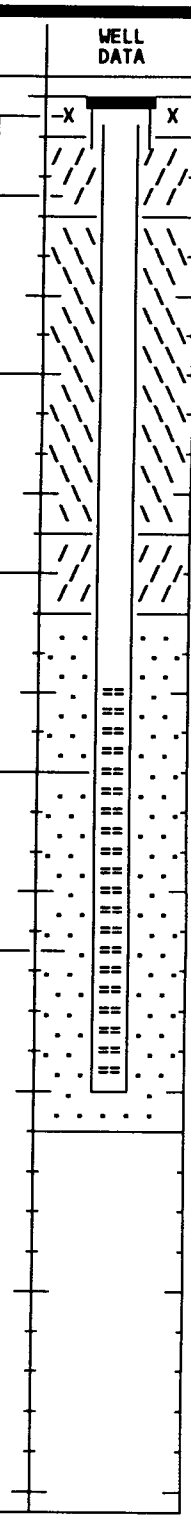
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BORING LOG / MONITORING WELL DIAGRAM

ABB ENVIRONMENTAL SERVICES, INC.

PROJECT NO.: 5698-86	PROJECT NAME: GM-BOC - LANSING		BORING/WELL DESIGNATION: MWBP-13	BORING/WELL LOCATION: Please refer to Figure 5
DRILLING CONTRACTOR: P.S.I.	DRILLING METHOD: HOLLOW-STEM AUGER		BOREHOLE SIZE: 8.25 IN. / BOREHOLE DEPTH: 26 FT.	
DATE STARTED: 08-27-91	DATE COMPLETED: 08-27-91	GROUND ELEV.: - - FT. / MEASURING POINT ELEV: - - - FT.	WELL DEPTH: 25 FT.	
RIG: CME-55	DRILLER: M. BOND	HELPER: A. BABB	LOGGED BY: D. BELAN	

DEPTH (FT.)	DESCRIPTION	SAMPLE NO.	SAMPLE TYPE	BLOW COUNTS(N)	P.I. METER (ppm)	COMMENTS
0	CONCRETE (8 inches)					WELL COMPLETE BELOW GROUND WITH LOCKABLE PROTECTIVE COVER
	SAND					CONCRETE
						BENTONITE PELLETS
5	CLAY - medium brown & gray, moderately plastic, stiff, damp, trace sand and fine gravel.	4-6'	SS	5-6-4-5	BG	
						BENTONITE SLURRY
10	CLAY - medium brown, slightly plastic, very stiff, damp, little sand.	9-11'	SS	5-8-10-8	BG	
	2" gray clay @ 11 feet, plastic, moist.					BENTONITE CHIPS
15	CLAY - medium to dark gray, slightly plastic, very stiff, damp, trace silt and very fine sand.	14-16'	SS	9-11-13-15	BG	
						2-INCH I.D., 10-FOOT LONG, 10 SLOT PVC WELL SCREEN
20	CLAY - medium gray, non-plastic, very stiff, damp. 3-4" silt zone @ 20 feet, wet.	19-21'	SS/L	5-10-15-14	BG	
						SAND FILTER PACK
25	SAND & SILT - medium to light brown, very fine grained, hard, damp.	24-26'	SS/L	8-16-24-32	BG	
	END OF BORING AT 26 FEET.					
30						
35						



NOTES: BG - BACKGROUND
SS - SPLIT SPOON
L - LABORATORY SAMPLE
N/A - NOT APPLICABLE

URS CONSULTANTS, Inc.

TEST BORING LOG
BORING NO. MWBP-10

PROJECT:	GM-Lansing, Plant #6, Area 8
CLIENT:	GM-LAD
BORING CONTRACTOR:	Geo-Tek Inc.
SHEET NO.	1 OF 1
JOB NO. :	E1-93-110
GROUND ELEVATION	868.23
DATE STARTED:	10/19/93
DATE FINISHED:	11/16/93
DRILLER:	Peter Buell
GEOLOGIST:	McMahon/Kovacs (EM)
REVIEWED BY:	David Frazier (URS)

GROUND WATER:

DATE	TIME	LEV	TYPE
11/16/93		37'	static

	CAS.	SAMP.	CORE	TUBE
TYPE	HSA	CME		
DIA.	4-1/4"	3.5"		
WT.				
FALL				

* POCKET PENETROMETER READING

DEPTH FT	STRATA	SAMPLE NO.	SAMPLE TYPE	BLOWS PER 6"	RECOVERY RQD %	DESCRIPTION COLOR	CONSISTENCY HARDNESS	MATERIAL DESCRIPTION	CLASS USCS	REMARKS
1								Concrete		
		S-1	CME		90	light brown		SAND	Fill	moist Hnu(1-5')=ND
5										
		S-2	CME		100					Hnu(5-10')=ND
						light brown		SILTY CLAY, trace Gravel	CL	moist
10						brown		SANDY CLAY, with abundant Sand stringers	SC	wet Hnu(10-15')=ND
		S-3	CME		90					
15										
		S-4	CME		90					Hnu(15-20")=ND
						grey		SILTY CLAY, trace Gravel	CL	wet
20										
		S-5	CME							Hnu(20-23')=ND
										Hnu(23-28')=ND
25		S-6	CME		90					
						grey		fine SAND	SP	dry
						brown		SILT, some fine Sand	ML	dry
						light brown		medium SAND	SP	dry
30		S-7	CME		100					Hnu(28-33')=ND
						grey		CLAY, some fine SAND	SC	moist
35		S-8	CME		80					Hnu(33-38')=ND
						grey		SILTY SAND	SM	very wet
						grey		fine SAND	SP	wet
						grey		Sandy CLAY	CL	moist
40								End of Boring 39 ft.		
42										

COMMENTS ND=non detect. Boring was drilled to 24 ft. on 10/19/93. Subsequently advanced to 38 ft. on 11/16/93.

PROJECT NO. E1-93-110

URS CONSULTANTS, Inc.

TEST BORING LOG
BORING NO. MWBP-11

PROJECT:	GM-Lansing, Plant #6, Area 8
CLIENT:	GM-LAD
BORING CONTRACTOR:	Geo-Tek Inc.
SHEET NO.	1 OF 1
JOB NO. :	E1-93-110
GROUND ELEVATION	869.04
DATE STARTED:	10/20/93
DATE FINISHED:	10/20/93
DRILLER:	Peter Buell
GEOLOGIST:	David McMahon (EM)
REVIEWED BY:	David Frazier (URS)

GROUND WATER:

DATE	TIME	LEV	TYPE

	CAS.	SAMP.	CORE	TUBE
TYPE	HSA	CME		
DIA.	4-1/4"	3.5"		
WT.				
FALL				

* POCKET PENETROMETER READING

DEPTH FT	STRATA	SAMPLE NO.	SAMPLE TYPE	BLOWS PER 6"	RECOVERY RQD %	DESCRIPTION COLOR	CONSISTENCY HARDNESS	MATERIAL DESCRIPTION	CLASS USCS	REMARKS
1								Concrete		
		S-1	CME		75	brown		SAND	Fill	dry Hnu(2-5')=ND
5		S-2	CME		85	brown		SILTY CLAY	CL	dry Hnu(5-10')=ND moist
10		S-3	CME		95	brown/ grey		SILTY SAND	SM	Hnu(10-15')=ND very wet
15		S-4	CME		95	grey		CLAY, trace Gravael	CL	wet Hnu(15-20')=ND
20								End of Boring 20 ft.		
25										
30										
35										
40										

COMMENTS ND = non detect

PROJECT NO. E1-93-110

URS CONSULTANTS, Inc.

TEST BORING LOG
BORING NO. MWBP-11A

PROJECT:	GM-Lansing, Plant #6, Area 8
CLIENT:	GM-LAD
BORING CONTRACTOR:	Geo-Tek Inc.
SHEET NO.	1 OF 1
JOB NO. :	E1-93-110
GROUND ELEVATION	869.14
DATE STARTED:	11/17/93
DATE FINISHED:	11/17/93
DRILLER:	Peter Buell
GEOLOGIST:	Michael Kovacs (EM)
REVIEWED BY:	David Frazier (URS)

GROUND WATER:

DATE	TIME	LEV	TYPE

	CAS.	SAMP.	CORE	TUBE
TYPE	HSA	CME		
DIA.	4-1/4"	3.5"		
WT.				
FALL				

* POCKET PENETROMETER READING

DEPTH FT	STRATA	SAMPLE NO.	SAMPLE TYPE	BLOWS PER 6"	RECOVERY RQD %	DESCRIPTION COLOR	CONSISTENCY HARDNESS	MATERIAL DESCRIPTION	CLASS USCS	REMARKS
1										
5										
10										
15										
20										started sampling @ 24 ft.
25		S-1	CME		90	grey		fine SAND	SP	dry
						grey		CLAY, some fine Sand	CL	moist
30		S-2	CME		100					
35		S-3	CME		100	grey		SILTY fine SAND	SM	very wet
						grey		SAND and GRAVEL	GM	moist
						grey		SANDY SILT, trace Clay	ML	wet moist
40								End of Boring 39 ft.		
42										

COMMENTS

PROJECT NO. E1-93-110

URS CONSULTANTS, Inc.

TEST BORING LOG
BORING NO. MWBP-12

PROJECT: GM-Lansing, Plant #6, Area 8	SHEET NO. 1 OF 1
CLIENT: GM-LAD	JOB NO. : E1-93-110
BORING CONTRACTOR: Geo-Tek Inc.	GROUND ELEVATION 869.69
GROUND WATER:	DATE STARTED: 10/19/93
DATE / TIME / LEV / TYPE	DATE FINISHED: 11/16/93
	DRILLER: Peter Buell
	GEOLOGIST: McMahon/Kovacs (EM)
	REVIEWED BY: David Frazier (URS)

	TYPE	CAS.	SAMP.	CORE	TUBE
TYPE	HSA	CME			
DIA.	4-1/4"	3.5"			
WT.					
FALL					

* POCKET PENETROMETER READING

DEPTH FT	STRATA	SAMPLE NO.	SAMPLE TYPE	BLOWS PER 6"	RECOVERY RQD %	DESCRIPTION COLOR	CONSISTENCY HARDNESS	MATERIAL DESCRIPTION	CLASS USCS	REMARKS
1								Concrete		
		S-1	CME		65	brown		SAND	Fill	Hnu(1-4')=ND wet
5		S-2	CME		100	green/ grey		CLAY, trace Gravel, with fine Sand lenses	CL	Hnu(5-10')=ND
10		S-3	CME		35	yellow		SANDY SILT, with abundant Clay and Sand stringers	ML	very wet Hnu(10-15')=ND
15		S-4	CME		95	light grey		SILTY CLAY, trace Gravel	CL	dry Hnu(15-20')=ND
20		S-5	CME		90	light grey		fine to medium SAND	SM	Hnu(20-24')=ND dry
		S-6	CME		90			SANDY SILT	ML	
25						light grey		fine to medium SAND	SM	Hnu(23-28')=ND moist
30		S-7	CME		100	grey		SANDY CLAY	CL	Hnu(28-33')=ND moist
35		S-8	CME		60	grey		Silty fine SAND	SM	Hnu(33-38')=ND wet moist
40								END of Boring 38 ft.		
42										

COMMENTS ND=non detect. Boring was drilled to 24 ft. on 10/19/93. Subsequently advanced to 38 ft. on 11/16/93.

PROJECT NO. E1-93-110

DRILLING SUMMARY

Geologist: Mike Kovacs

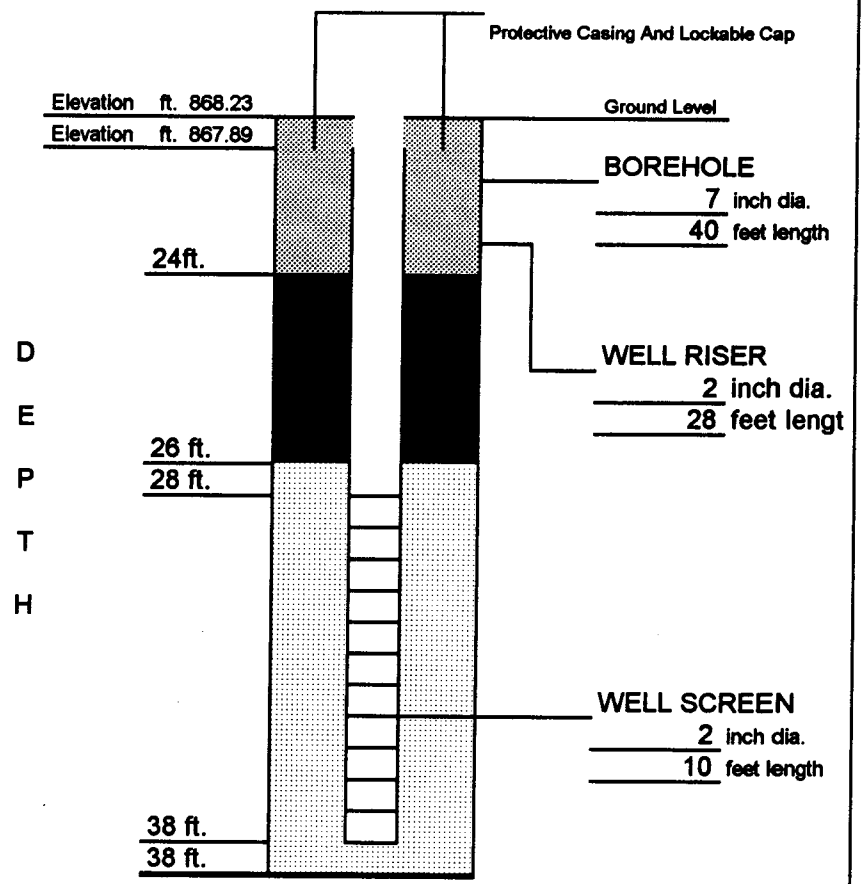
Drilling Company: Geo-Tek

Driller: Pete Buell

Date: 11/16/93

GEOLOGIC LOG

depth(ft.)	lithology
0-2	Reinforced Concrete
25-25 1/2	Fine Sand
25 1/2-30	Fine Sandy silt
30-35	Fine Sandy clay
35-38	Med. Sand and Gravel



WELL DESIGN

CASING MATERIAL	*SCREEN MATERIAL*	*SEAL MATERIAL*
Surface: Cast Iron	Type: sch. 40 slotted PVC	Seal Type #1: Cement-bentonite grout Setting: 0-24 ft.
Monitor: PVC	Slot Size: 0.010 inches	Seal Type #2: Bentonite pellets Setting: 24-26 ft.

FILTER MATERIAL	*ROCK CORING*	*LEGEND*
Type: medium to coarse sand	Cored Interval: None	Cement/Bentonite Grout
Setting: 26-38 ft.	Core Diameter: None	Bentonite Seal
	Reamed Diameter None	Silica Sandpack

Client: URS/ GM LAD	Project Body Plant, Area 8	Project No.: E1-93-110
Enviromatrix, Inc. Detroit, Michigan	**Monitoring Well Construction Details**	**Well Number:** MWBP-10

DRILLING SUMMARY

Geologist:
David A. McMahon

Drilling Company:
Geo-Tek

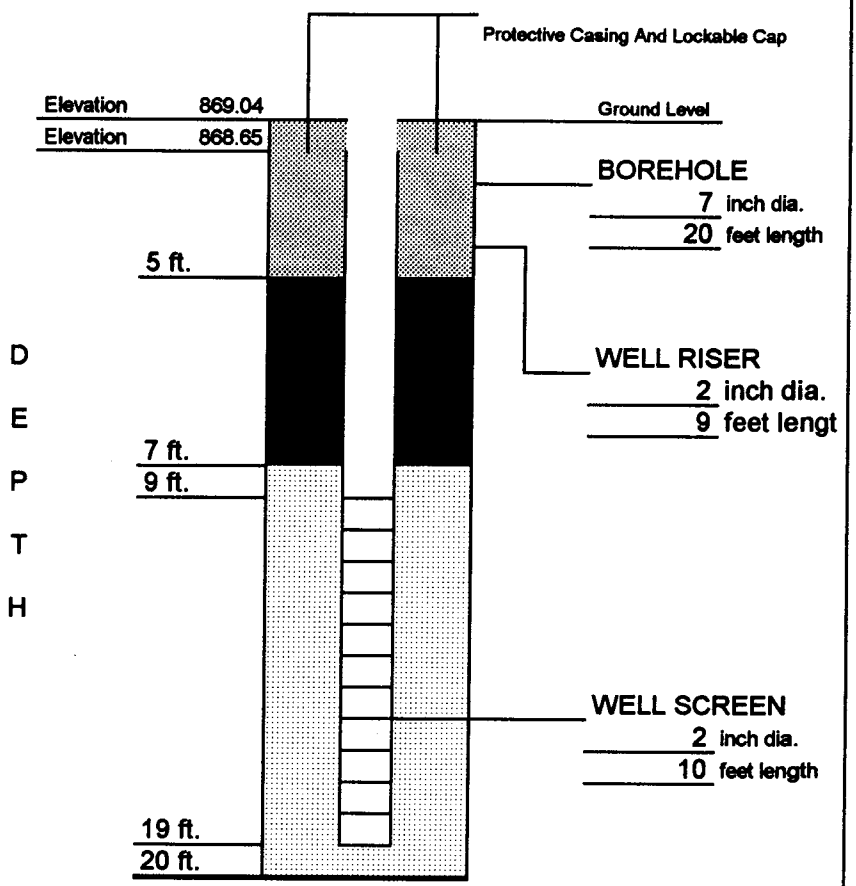
Driller:
Pete Buell

Date:
10/20/93

GEOLOGIC LOG

depth(ft.)	lithology
0-2	Reinforced Concrete
2-3	Fill Sand
3-10 1/2	Silty-Clay
!0 1/2-11	Fine Sand
11-20	Clay Till

WELL DESIGN



CASING MATERIAL	*SCREEN MATERIAL*	*SEAL MATERIAL*
Surface: Cast Iron	Type: sch. 40 slotted PVC	Seal Type #1: Cement-bentonite grout Setting: 0-5 ft.
Monitor: PVC	Slot Size: 0.010 inches	Seal Type #2: Bentonite pellets Setting: 5-7 ft.

FILTER MATERIAL	*ROCK CORING*	*LEGEND*
Type: medium to coarse sand	Cored Interval: None	Cement/Bentonite Grout
Setting: 7-20 ft.	Core Diameter: None	Bentonite Seal
	Reamed Diameter None	Silica Sandpack

Client: URS/ GM LAD	Project Body Plant, Area 8	Project No.: E1-93-110
Enviromatrix, Inc. Detroit, Michigan	**Monitoring Well Construction Details**	**Well Number:** MWBP-11

DRILLING SUMMARY

Geologist: David A. McMahon

Drilling Company: Geo-Tek

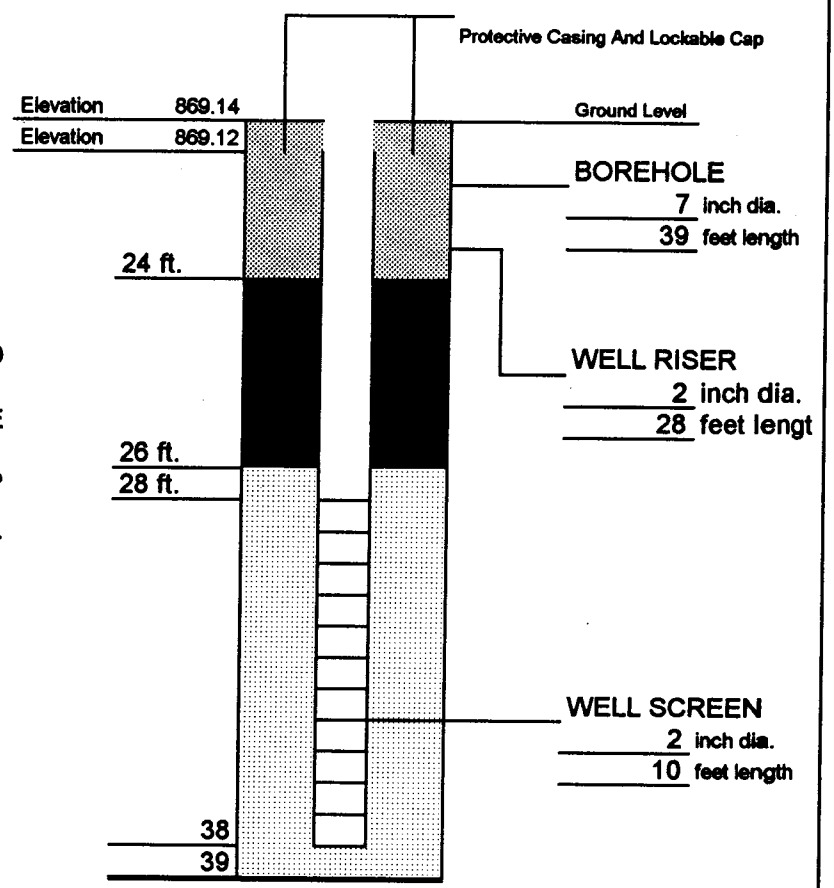
Driller: Pete Buell

Date: 10/31/93

GEOLOGIC LOG

depth(ft.)	lithology
25-28	Grey Silt-Clay
28-30	Sand
30-35	Alternating Silt-Clay-Sand
35-38	Gravel
38-39	Grey Clay Till

DEPTH



WELL DESIGN

CASING MATERIAL	*SCREEN MATERIAL*	*SEAL MATERIAL*
Surface: Cast Iron	Type: sch. 40 slotted PVC	Seal Type #1: Cement-bentonite grout Setting: 0-24 ft.
Monitor: PVC	Slot Size: 0.01 inches	Seal Type #2: Bentonite pellets Setting: 24-26 ft.

FILTER MATERIAL	*ROCK CORING*	*LEGEND*
Type: medium to coarse sand	Cored Interval: None	Cement/Bentonite Grout
Setting: 8-39 ft.	Core Diameter: None	Bentonite Seal
	Reamed Diameter None	Silica Sandpack

Client: URS/GM LAD	Project Body Plant, Area 8	Project No.: E1-93-110
Enviromatrix, Inc. Detroit, Michigan	**Monitoring Well Construction Details**	**Well Number:** MWBP-11A

DRILLING SUMMARY

Geologist: Mike Kovacs/McMahon

Drilling Company: Geo-Tek

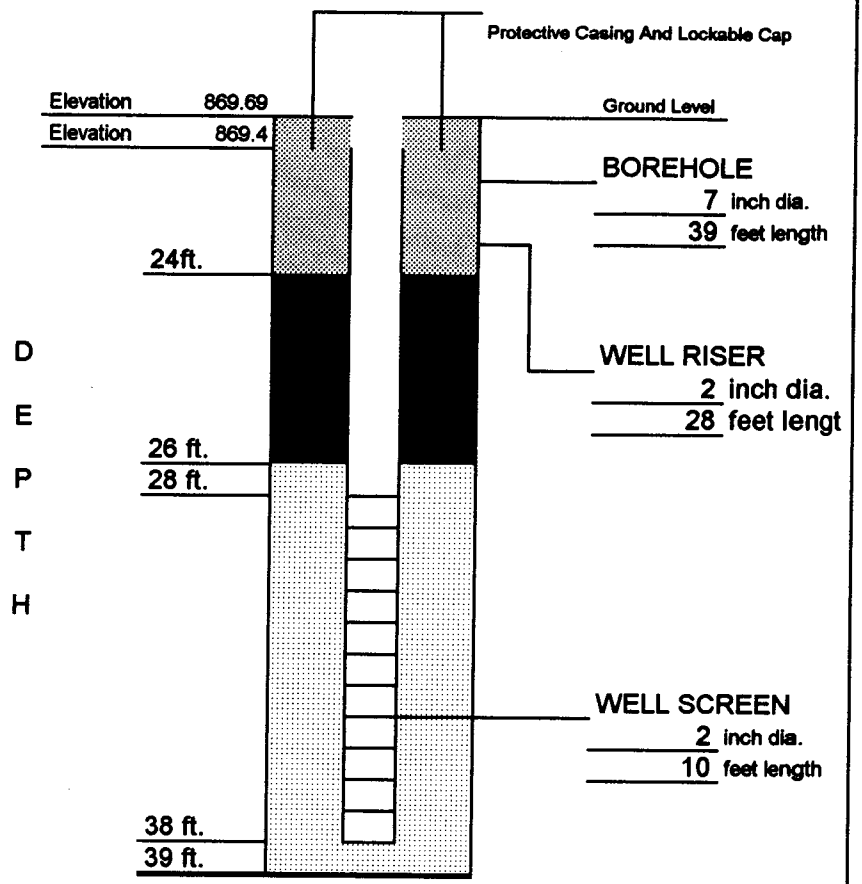
Driller: Pete Buell

Date: 11/16/93

GEOLOGIC LOG

depth(ft.)	lithology
	Reinforced
0-2	Concrete
2-5	Fill Sand
5-9 1/2	Mottled Clay
9 1/2-11 1/2	Sandy-Silt/Sand
	Water Saturate
11 1/2-21	Silty-Clay
21-25	Fine Sand
25-30	Fine Sandy-Silt
30-35	Fine Sandy-Cla
35-39	Med. Sand/Grav

WELL DESIGN



CASING MATERIAL	*SCREEN MATERIAL*	*SEAL MATERIAL*
Surface: Cast Iron	Type: sch. 40 slotted PVC	Seal Type #1: Cement-bentonite grout Setting: 0-24 ft.
Monitor: PVC	Slot Size: 0.010 inches	Seal Type #2: Bentonite pellets Setting: 24-26 ft.

FILTER MATERIAL	*ROCK CORING*	*LEGEND*
Type: Coarse Silica Sand	Cored Interval: None	Cement/Bentonite Grout
Setting: 26-39 ft.	Core Diameter: None	Bentonite Seal
	Reamed Diameter None	Silica Sandpack

Client: URS/ GM LAD	Project Body Plant, Area 8	Project No.: E1-93-110
Enviromatrix, Inc. Detroit, Michigan	**Monitoring Well Construction Details**	**Well Number:** MWBP-12

Date Start/Finish: 11/11/05
Drilling Company: Altech
Driller's Name: Johnny Davis
Drilling Method: Direct Push
Rig Type: 6610 DT
Auger Size: NA
Sampler Size: 5' macrocore

Northing: 450221.67
Easting: 13065297.35
Casing Elevation: NA

Borehole Depth: 12'
Surface Elevation: 870.92

Descriptions By: Wayne Patterson

Well/Boring ID: SA1-5

Client: General Motors Corporation

Location: Lansing Plant #6

DRAFT

DEPTH / ELEVATION	Sample Run Number	Sample/Int/Type	Recovery (feet)	PID Headspace (ppm)	Oil/Water Shake Test	pH Value	USCS Code	Geologic Column	Stratigraphic Description	Well/Boring Construction
							NA		CONCRETE	
870	1	0 - 5 DP	5	0.0	ND	7.0-8.0	SP		10YR 5/6 Yellowish brown fine POORLY GRADED SAND (SP), loose, dry to moist, no odor, (fill).	
5										Boring backfilled with bentonite.
865	2	5 - 10 DP	4.5	0.0 0.0	ND	7.0-8.0 7.0-8.0				
10										
860	3	10-12 DP	2	0.0	ND	7.0-8.0	CL		10YR 5/2 Grayish brown LEAN CLAY (CL), few fine to coarse angular to subangular Sand, very stiff (3.5 TSF), low to medium dry strength, medium plasticity, medium toughness, no dilatancy, dry, no odor.	
15										
855										

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Remarks: Soil sample collected at 3-5' below ground surface and analyzed for metals
NA = not applicable
DP = direct push
Neg = negative
Pos = positive
ND = not done
Duplicate collected

Date Start/Finish: 11/11/05
Drilling Company: Altech
Driller's Name: Johnny Davis
Drilling Method: Direct Push
Rig Type: 6610 DT
Auger Size: NA
Sampler Size: 5' macrocore

Northing: 450227.74
Easting: 13065274.66
Casing Elevation: NA

Borehole Depth: 11'
Surface Elevation: 870.89

Descriptions By: Wayne Patterson

Well/Boring ID: SA1-6

Client: General Motors Corporation

Location: Lansing Plant #6

DRAFT

DEPTH / ELEVATION	Sample Run Number	Sample/Int/Type	Recovery (feet)	PID Headspace (ppm)	Oil/Water Shake Test	pH Value	USCS Code	Geologic Column	Stratigraphic Description	Well/Boring Construction
							NA		CONCRETE	
870									10YR 5/6 Yellowish brown fine POORLY GRADED SAND (SP), loose, dry to moist, no odor, (fill).	
	1	1-6 DP	2	0.0	ND	7.0-8.0				
5										Boring backfilled with bentonite.
865							SP			
	2	6-11 DP	2	0.0	ND	7.0-8.0				
10									SAA, wet. At 10-10.25' - SAA, 10YR 5/2 grayish brown	
860										
15										
855										

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Remarks: No soil sample collected
NA = not applicable
DP = direct push
Neg = negative
Pos = positive
ND = not done
SAA = same as above

Date Start/Finish: 11/11/05
Drilling Company: Altech
Driller's Name: Johnny Davis
Drilling Method: Direct Push
Rig Type: 6610 DT
Auger Size: NA
Sampler Size: 5' macrocore

Northing: 449773.42
Easting: 13065453.44
Casing Elevation: NA

Borehole Depth: 16'
Surface Elevation: 867.14

Descriptions By: Wayne Patterson

Well/Boring ID: SA3-1

Client: General Motors Corporation

Location: Lansing Plant #6

DRAFT

DEPTH	ELEVATION	Sample Run Number	Sample/Int/Type	Recovery (feet)	PID Headspace (ppm)	Oil/Water Shake Test	pH Value	USCS Code	Geologic Column	Stratigraphic Description	Well/Boring Construction
								NA		CONCRETE	
	865	1	1 - 6 DP	3	0.1	ND	7.0-8.0	SP		10YR 4/3 Brown fine to coarse POORLY GRADED SAND (SP), dense, moist, (fill).	
					0.1		7.0-8.0				
5										10YR 5/2 Grayish brown becoming 10YR 4/3 brown at 7' SANDY LEAN CLAY (CL), little to some fine to coarse Sand, soft, moist, no odor, high plasticity, low to medium toughness, medium dry strength, roots in gray colored Clay (vertical fractures) from 5 - 7.'	Boring backfilled with bentonite.
	860	2	6 - 11 DP	4	0.4	ND	7.0-8.0	CL			
10					0.4		7.0-8.0				
	855	3	11 - 16 DP	4	0.0	ND	7.0-8.0				
15					0.0		7.0-8.0	CL		10YR 4/1 Dark Gray LEAN CLAY (CL), trace fine to coarse subangular Sand, medium stiff (1.5-2.0 TSF), medium to high plasticity, medium dry strength, medium toughness, no dilatancy, moist, no odor.	
	850										

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Remarks: Soil sample collected at 14-16' below ground surface and analyzed for metals
NA = not applicable
DP = direct push
Neg = negative
Pos = positive
ND = not done
TSF = tons per square foot

Date Start/Finish: 11/11/05
Drilling Company: Altech
Driller's Name: Johnny Davis
Drilling Method: Direct Push
Rig Type: 6610 DT
Auger Size: NA
Sampler Size: 5' macrocore

Northing: 449755.09
Easting: 13065469.14
Casing Elevation: NA

Borehole Depth: 16'
Surface Elevation: 866.76

Descriptions By: Wayne Patterson

Well/Boring ID: SA3-2

Client: General Motors Corporation

Location: Lansing Plant #6

DRAFT

DEPTH / ELEVATION	Sample Run Number	Sample/Int/Type	Recovery (feet)	PID Headspace (ppm)	Oil/Water Shake Test	pH Value	USCS Code	Geologic Column	Stratigraphic Description	Well/Boring Construction
							NA		CONCRETE	
865	1	1 - 6 DP	3	0.7	ND	7-8	SM		Dark yellowish brown (10YR 4/6), fine to coarse SILTY SAND (SM), trace fine, angular Gravel, moist, no odor, (fill).	
				0.4					Dark gray (10YR 4/1) with little yellowish brown (10YR 5/8) mottling, SANDY LEAN CLAY (CL), little to some fine to coarse, subangular Sand, soft to very soft (< or = 0.5 TSF), low to medium toughness, no dilatancy, medium dry strengthm medium to high plasticity, moist, no odor, (fill).	Boring backfilled with bentonite.
5										
860	2	6 - 11 DP	4	0.5	ND	7-8				
10				0.4			CL		At 10' bgs color is dark gray (10YR 4/1), (native).	
									At 11' bgs - wet.	
855	3	11 - 16 DP	4	0.3	ND	7-8				
15				0.3					At 15' bgs - stiff (3.5 TSF).	
850										

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Remarks: Soil sample collected at 9-11' below ground surface and analyzed for metals
NA = not applicable
DP = direct push
Neg = negative
Pos = positive
ND = not done
TSF = tons per square foot

Date Start/Finish: 11/11/05
Drilling Company: Altech
Driller's Name: Johnny Davis
Drilling Method: Direct Push
Rig Type: 6610 DT
Auger Size: NA
Sampler Size: 5' macrocore

Northing: 449760.23
Easting: 13065638.52
Casing Elevation: NA

Borehole Depth: 16'
Surface Elevation: 866.41

Descriptions By: Wayne Patterson

Well/Boring ID: SA4-1

Client: General Motors Corporation

Location: Lansing Plant #6

DRAFT

DEPTH / ELEVATION	Sample Run Number	Sample/Int/Type	Recovery (feet)	PID Headspace (ppm)	Oil/Water Shake Test	pH Value	USCS Code	Geologic Column	Stratigraphic Description	Well/Boring Construction
							NA		CONCRETE.	
865	1	1 - 6 DP	3	0.3	ND	7-8	SP		Dark yellowish brown (10YR 4/6), fine, POORLY GRADED SAND, trace fine, subangular Gravel, dry to moist, loose, (fill).	
5				0.5						Boring backfilled with bentonite.
860	2	6 - 11 DP	2	0.2	ND	10-11				
10							GP		Dark gray (10YR 4/1) POORLY GRADED GRAVEL, mostly fine, angular Gravel, some fine to coarse, angular Sand, wet, loose, no odor, (Fill).	
855	3	11 - 16 DP	0.1	ND	Pos	ND				
15										
850										

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Remarks: Soil sample collected at 9-11' below ground surface and analyzed for metals
NA = not applicable
DP = direct push
Neg = negative
Pos = positive
ND = not done
TSF = tons per square foot

Project: 64430.203
Data File: SA4-1
Template: I:\rockware\logplot\logfiles\64430\Auger_well2003-LA.ldf
Date: 11/28/05

Date Start/Finish: 11/10/05
Drilling Company: Altech
Driller's Name: Johnny Davis
Drilling Method: Direct Push
Rig Type: 6610 DT
Auger Size: NA
Sampler Size: 5' macrocore

Northing: 449772.91
Easting: 13065735.44
Casing Elevation: NA

Borehole Depth: 14'
Surface Elevation: 870.05

Descriptions By: Wayne Patterson

Well/Boring ID: SA4-3

Client: General Motors Corporation

Location: Lansing Plant #6

DRAFT

DEPTH / ELEVATION	Sample Run Number	Sample/Int/Type	Recovery (feet)	PID Headspace (ppm)	Oil/Water Shake Test	pH Value	USCS Code	Geologic Column	Stratigraphic Description	Well/Boring Construction
870							NA		CONCRETE	
	1	1 - 6 DP	4	5.5	ND	7.0 - 7.5			10YR 4/3 Brown fine POORLY GRADED SAND (SP), loose nonplastic, trace fine angular Gravel, dry, strong hydrocarbon odor (fill).	
5 865				4.3		7.0 - 7.5				Boring backfilled with bentonite.
	2	6-11 DP	4	9.1	Neg	7.0 - 7.5	SP		SAA, Strong odor, little fine subrounded Gravel, fine to coarse angular to subangular Sand.	
10 860				904		7.0 - 7.5				
	3	11-14 DP	2	1700	ND	7.0 - 7.5			SAA, Wet with product, strong hydrocarbon odor, few Silt.	
									Refusal	
15 855										

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Remarks: Soil sample collected at 9-11' below ground surface and analyzed for VOCs and metals
NA = not applicable
DP = direct push
Neg = negative
Pos = positive
ND = not done
SAA = same as above

Date Start/Finish: 11/10/05
Drilling Company: Altech
Driller's Name: Johnny Davis
Drilling Method: Direct Push
Rig Type: 6610 DT
Auger Size: NA
Sampler Size: 5' macrocore

Northing: 449794.18
Easting: 130065769.65
Casing Elevation: NA

Borehole Depth: 16'
Surface Elevation: 874.01

Descriptions By: Wayne Patterson

Well/Boring ID: SA4-4

Client: General Motors Corporation

Location: Lansing Plant #6

DRAFT

DEPTH / ELEVATION	Sample Run Number	Sample/Int/Type	Recovery (feet)	PID Headspace (ppm)	Oil/Water Shake Test	pH Value	USCS Code	Geologic Column	Stratigraphic Description
							NA		CONCRETE
	1	1 - 6 DP	4	4.8	ND	7.0			10YR 4/4 Dark yellowish brown fine POORLY GRADED SAND (SP), trace fine subrounded Gravel, loose, dry (fill).
870									
5				3.3		7.0			
	2	6-11 DP	4	3.2	ND	7.0	SP		SAA, 10YR 5/8 Yellowish brown, no Gravel, medium dense, moist, no odor.
865									
10				6.5		7.0			SAA, 3" Black Slag, no odor.
	3	11-16 DP	3	3.7	ND	7.0			
860							CL		10YR 5/2 Grayish brown LEAN CLAY (CL), medium to high plasticity, medium dry strength, no dilatancy, medium toughness, moist, no odor, (fill).
15				6.1		7.0			At 15' - 2" Concrete.
							ML		10YR 2/1 Black SILT (ML), possible organics, moist, medium dense.

Well/Boring Construction

Boring backfilled with bentonite.

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Remarks: Soil sample collected at 14-16' below ground surface and analyzed for metals
NA = not applicable
DP = direct push
Neg = negative
Pos = positive
ND = not done
SAA = same as above
TSF = tons per square foot

Date Start/Finish: 11/10/05
Drilling Company: Altech
Driller's Name: Johnny Davis
Drilling Method: Direct Push
Rig Type: 6610 DT
Auger Size: NA
Sampler Size: 5' macrocore

Northing: 449758.58
Easting: 13065778.90
Casing Elevation: NA

Borehole Depth: 16'
Surface Elevation: 870.82

Descriptions By: Wayne Patterson

Well/Boring ID: SA4-5

Client: General Motors Corporation

Location: Lansing Plant #6

DEPTH / ELEVATION	Sample Run Number	Sample/Int/Type	Recovery (feet)	PID Headspace (ppm)	Oil/Water Shake Test	pH Value	USCS Code	Geologic Column	Stratigraphic Description	Well/Boring Construction
870									CONCRETE.	
							NA		FILL, Concrete, Slag, Sand.	
	1	1 - 6 DP	4	0.5	ND	7			Dark yellowish brown (10YR 4/6), fine, POORLY GRADED SAND, trace fine, subangular Gravel, loose to medium dense, dry, (fill).	
5 / 865				0.1						Boring backfilled with bentonite.
	2	6-11 DP	5	0.3	ND	8	SP		SAA - Black (10Y 2/1) discolored soil, strong hydrocarbon odor.	
10 / 860				169						
	3	11-16 DP	3	151	ND	11			SAA - Dark gray brown (10YR 4/2), little Silt.	
15 / 855										

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Remarks: Soil sample collected at 9-11' below ground surface and analyzed for VOCs and metals
NA = not applicable
DP = direct push
Neg = negative
Pos = positive
ND = not done
SAA = same as above

Date Start/Finish: 11/10/05
Drilling Company: Altech
Driller's Name: Johnny Davis
Drilling Method: Direct Push
Rig Type: 6610 DT
Auger Size: NA
Sampler Size: 5' macrocore

Northing: 450028.87
Easting: 13065581.58
Casing Elevation: NA

Borehole Depth: 10'
Surface Elevation: 874.36

Descriptions By: Wayne Patterson

Well/Boring ID: SA5-1

Client: General Motors Corporation

Location: Lansing Plant #6

DRAFT

DEPTH / ELEVATION	Sample Run Number	Sample/Int/Type	Recovery (feet)	PID Headspace (ppm)	Oil/Water Shake Test	pH Value	USCS Code	Geologic Column	Stratigraphic Description	Well/Boring Construction
							NA		CONCRETE	
	1	0 - 5 DP	3	0.1	Neg	7.0	SP		10YR 4/4 Dark yellowish brown fine POORLY GRADED SAND (SP), trace fine subrounded Gravel, loose, dry to moist, no odor (fill).	
870				0.0		7.0				
5										Boring backfilled with bentonite.
	2	5 - 10 DP	4	0.0	ND	7.0	CL		10YR 4/2 Dark grayish brown LEAN CLAY (CL), trace fine Sand, trace fine subrounded Gravel, medium dense (2.0 TSF), medium plasticity, no dilatancy, low to medium toughness, low dry strength.	
865				0.3		7.0				
10										
860										
15										

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Remarks: Soil sample collected at 8-10' below ground surface and analyzed for metals
NA = not applicable
DP = direct push
Neg = negative
Pos = positive
ND = not done
TSF = tons per square feet

Date Start/Finish: 11/10/05
Drilling Company: Altech
Driller's Name: Johnny Davis
Drilling Method: Direct Push
Rig Type: 6610 DT
Auger Size: NA
Sampler Size: 5' macrocore

Northing: 450001.17
Easting: 13065634.65
Casing Elevation: NA

Borehole Depth: 4'
Surface Elevation: 874.33

Descriptions By: Wayne Patterson

Well/Boring ID: SA5-4

Client: General Motors Corporation

Location: Lansing Plant #6

DRAFT

DEPTH / ELEVATION	Sample Run Number	Sample/Int/Type	Recovery (feet)	PID Headspace (ppm)	Oil/Water Shake Test	pH Value	USCS Code	Geologic Column	Stratigraphic Description	Well/Boring Construction
							NA		CONCRETE	
	1	0 - 4 DP	3	0.0	ND	7.5	SP		10YR 6/3 Pale Brown fine POORLY GRADED SAND (SP), loose, no odor, dry (fill).	Boring backfilled with bentonite.
870									Refusal, concrete.	
5										
865										
10										
860										
15										

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Remarks: No soil sample collected
NA = not applicable
DP = direct push
Neg = negative
Pos = positive
ND = not done
TSF = tons per square foot

Date Start/Finish: 11/10/05
Drilling Company: Altech
Driller's Name: Johnny Davis
Drilling Method: Direct Push
Rig Type: 6610 DT
Auger Size: NA
Sampler Size: 5' macrocore

Northing: 450105.15
Easting: 13065630.92
Casing Elevation: NA

Borehole Depth: 10'
Surface Elevation: 873.68

Descriptions By: Wayne Patterson

Well/Boring ID: SA5-5

Client: General Motors Corporation

Location: Lansing Plant #6

DRAFT

DEPTH / ELEVATION	Sample Run Number	Sample/Int/Type	Recovery (feet)	PID Headspace (ppm)	Oil/Water Shake Test	pH Value	USCS Code	Geologic Column	Stratigraphic Description	Well/Boring Construction
							NA		CONCRETE	
									10YR 4/6 Dark yellow brown, fine, POORLY GRADED SAND (SP), dry, strong hydrocarbon odor (fill).	
870	1	0 - 5 DP	3	496	Neg	7.0				
5							SP			Boring backfilled with bentonite.
				310		7.0				
	2	5 - 10 DP	2		ND					
865				631		7.0				
10										
860										
15										
855										

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Remarks: Soil sample collected at 6-8' below ground surface and analyzed for metals
NA = not applicable
DP = direct push
Neg = negative
Pos = positive
ND = not done
TSF = tons per square feet

Project: 64430.020
Data File: SA5-5
Template: :I\rockware\logplot\logfiles\template\Augerwell2005-LA.ldf
Date: 11/07/05

Date Start/Finish: 11/3/05
Drilling Company: Altech
Driller's Name: Johnny Davis
Drilling Method: Direct Push
Rig Type: 6610 DT
Auger Size: NA
Sampler Size: 5' macrocore

Northing: 450838.74
Easting: 13065801.39
Casing Elevation: NA

Borehole Depth: 10'
Surface Elevation: 869.75

Descriptions By: Wayne Patterson

Well/Boring ID: SA6-1

Client: General Motors Corporation

Location: Lansing Plant #6

DRAFT

DEPTH / ELEVATION	Sample Run Number	Sample/Int/Type	Recovery (feet)	PID Headspace (ppm)	Oil/Water Shake Test	pH Value	USCS Code	Geologic Column	Stratigraphic Description	Well/Boring Construction
	1	0 - 5 DP	2.5	0.4	ND	7.0	GP		GRAVEL (GP), wet (fill).	
									SAA, At 3 to 3.4' - 10YR 2/1 Black stained Gravel, some Organic Silt (OL), wet.	
							SP		10YR 4/4 dark yellowish brown fine POORLY GRADED SAND (SP), dense (>0.28 TSF), wet, no odor, (fill).	
865 5							GP		PEA GRAVEL (GP), wet (fill).	
				0.4		7.0				Boring backfilled with bentonite.
	2	5 - 10 DP	4	1.7	ND	7.0	CL		10YR 5/4 Yellowish brown LEAN CLAY (CL), few fine to coarse subangular Sand, very stiff to hard (>4.5 TSF), no dilatancy, medium dry strength, medium plasticity, medium toughness.	
									Becoming 10YR 5/4 grayish brown.	
860 10				1.5		7.0				
855 15										

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Remarks: Soil sample collected at 2.5-4.5' below ground surface and analyzed for metals.
NA = not applicable
DP = direct push
Neg = negative
Pos = positive
ND = not done
TSF = tons per square foot

Date Start/Finish: 11/3/05
Drilling Company: Altech
Driller's Name: Johnny Davis
Drilling Method: Direct Push
Rig Type: 6610 DT
Auger Size: NA
Sampler Size: 5' macrocore

Northing: 450931.98
Easting: 13065755.16
Casing Elevation: NA

Borehole Depth: 10'
Surface Elevation: 869.80

Descriptions By: Wayne Patterson

Well/Boring ID: SA6-2

Client: General Motors Corporation

Location: Lansing Plant #6

DRAFT

DEPTH	ELEVATION	Sample Run Number	Sample/Int/Type	Recovery (feet)	PID Headspace (ppm)	Oil/Water Shake Test	pH Value	USCS Code	Geologic Column	Stratigraphic Description	Well/Boring Construction
								NA		CONCRETE.	
								GP		GRAVEL.	
		1	0 - 5 DP	2	0.5	ND	8.5				
								SP		10YR 4/4 Dark yellowish brown fine POORLY GRADED SAND (SP), dense (>0.28 TSF), moist, no odor, (fill).	
5	865										
										10YR 4/2 Dark grayish brown GRAVELLY CLAY (CL), some fine subangular to subrounded Gravel, few fine to coarse subangular Sand, soft, low toughness, medium plasticity, low dry strength, no dilatancy, moist (fill).	Boring backfilled with bentonite.
		2	5 - 10 DP	4	1.2	ND	12.5	CL		10YR 5/4 Yellowish brown LEAN CLAY (CL), few fine to coarse subangular Sand, very stiff (>4.5 TSF), no dilatancy, medium dry strength, medium plasticity, medium toughness (fill).	
					0.7		11.5				
10	860										
15	855										

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Remarks: Soil sample collected at 4-6' below ground surface and analyzed for metals.
NA = not applicable
DP = direct push
Neg = negative
Pos = positive
ND = not done
TSF = tons per square foot

Date Start/Finish: 11/3/05
Drilling Company: Altech
Driller's Name: Johnny Davis
Drilling Method: Direct Push
Rig Type: 6610 DT
Auger Size: NA
Sampler Size: 5' macrocore

Northing: 450979.35
Easting: 13065728.22
Casing Elevation: NA

Borehole Depth: 10'
Surface Elevation: 869.79

Descriptions By: Wayne Patterson

Well/Boring ID: SA6-3

Client: General Motors Corporation

Location: Lansing Plant #6

DRAFT

DEPTH	ELEVATION	Sample Run Number	Sample/Int/Type	Recovery (feet)	PID Headspace (ppm)	Oil/Water Shake Test	pH Value	USCS Code	Geologic Column	Stratigraphic Description	Well/Boring Construction
								NA		CONCRETE.	
								GP		GRAVEL (GP).	
		1	0 - 5 DP	2	0.9	ND	7.0-7.5				
								SP		10YR 4/3 Brown fine to coarse POORLY GRADED SAND (SP), (fill).	
5	865							CL		10YR 4/2 Dark grayish brown GRAVELLY CLAY (CL), some fine subangular to subrounded Gravel, few fine to coarse subangular Sand, soft, low toughness, medium plasticity, low dry strength, no dilatancy, moist (fill).	Boring backfilled with bentonite.
		2	5 - 10 DP	3	0.8	ND	7.0-7.5				
								OH		10YR 3/1 Very dark gray ORGANIC CLAY (OH), trace roots/vegetation throughout, dry to moist, peaty odor, no dilatancy, medium stiff to stiff (1.25 TSF), medium plasticity, low dry strength, low to medium toughness.	
10	860				1.2		7.0-7.5	CL		10YR 5/4 Yellowish brown LEAN CLAY, few fine to coarse subangular Sand, very stiff (>4.5 TSF), no dilatancy, medium dry strength, medium plasticity, medium toughness.	
15	855										

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Remarks: Soil sample collected at 3-5' below ground surface and analyzed for metals.
NA = not applicable
DP = direct push
Neg = negative
Pos = positive
ND = not done
TSF = tons per square foot

Date Start/Finish: 11/3/05
Drilling Company: Altech
Driller's Name: Johnny Davis
Drilling Method: Direct Push
Rig Type: 6610 DT
Auger Size: NA
Sampler Size: 5' macrocore

Northing: 451036.54
Easting: 13065699.32
Casing Elevation: NA

Borehole Depth: 10'
Surface Elevation: 868.24

Descriptions By: Wayne Patterson

Well/Boring ID: SA6-4

Client: General Motors Corporation

Location: Lansing Plant #6

DRAFT

DEPTH / ELEVATION	Sample Run Number	Sample/Int/Type	Recovery (feet)	PID Headspace (ppm)	Oil/Water Shake Test	pH Value	USCS Code	Geologic Column	Stratigraphic Description	Well/Boring Construction
							NA		CONCRETE.	
							GP		GRAVEL (GP).	
							SP		10YR 4/4 fine to medium POORLY GRADED SAND (SP) (fill).	
	1	0 - 5 DP	3		Neg		SM		10YR 2/1 Black fine to coarse SILTY SAND with GRAVEL (SM), strong odor, moist, nonplastic, low toughness, rapid dilatancy, low dry strength (fill).	
865				323		7.0-7.5			10YR 4/1 Dark gray with 10YR 6/1 Gray mottling LEAN CLAY (CL), few fine to coarse subangular Sand, very stiff to hard (>4.5 TSF), medium plasticity, medium dry strength, medium toughness, no dilatancy, moist (fill).	
5										Boring backfilled with bentonite.
							CL			
	2	5 - 10 DP	2	721	Neg	7.0-7.5				
860				803		7.0-7.5			SAA, Some black staining, strong odor, moist.	
10										
855										
15										
850										

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Remarks: Soil sample collected at 8-10' below ground surface and analyzed for VOCs and metals.
NA = not applicable
DP = direct push
Neg = negative
Pos = positive
ND = not done
TSF = tons per square foot

Date Start/Finish: 11/3/05
Drilling Company: Altech
Driller's Name: Johnny Davis
Drilling Method: Direct Push
Rig Type: 6610 DT
Auger Size: NA
Sampler Size: 5' macrocore

Northing: 451057.20
Easting: 13065638.97
Casing Elevation: NA

Borehole Depth: 10'
Surface Elevation: 867.96

Descriptions By: Wayne Patterson

Well/Boring ID: SA6-5

Client: General Motors Corporation

Location: Lansing Plant #6

DRAFT

DEPTH / ELEVATION	Sample Run Number	Sample/Int/Type	Recovery (feet)	PID Headspace (ppm)	Oil/Water Shake Test	pH Value	USCS Code	Geologic Column	Stratigraphic Description	Well/Boring Construction
							NA		CONCRETE.	
865	1	0 - 5 DP	3	1.4	ND	7.0	SP		10YR 5/4 Yellowish brown fine to medium POORLY GRADED SAND (SP), dense (>0.28 TSF), moist, no odor, (fill).	
5				2.4		7.0	GW		10YR 5/4 Yellowish brown fine WELL GRADED GRAVEL with SAND (GW), mostly fine subangular Gravel, little fine to coarse subangular Sand, few Silt, dense, moist, nonplastic, low toughness, rapid dilatancy, low dry strength (fill).	Boring backfilled with bentonite.
860	2	5 - 10 DP	4	0.7	ND	7.0			SAA, Wet.	
10				1.8		7.0	CL		10YR 5/1 Gray and 10YR 5/4 dark yellowish brown mottled LEAN CLAY (CL), few fine to coarse subangular Sand, stiff (2.5 TSF), dry to moist, medium to high dry strength, medium plasticity, medium toughness (fill).	
855										
15										
850										

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Remarks: Soil sample collected at 3-5' below ground surface and analyzed for metals.
NA = not applicable
DP = direct push
Neg = negative
Pos = positive
ND = not done
TSF = tons per square foot

Date Start/Finish: 11/3/05
Drilling Company: Altech
Driller's Name: Johnny Davis
Drilling Method: Direct Push
Rig Type: 6610 DT
Auger Size: NA
Sampler Size: 5' macrocore

Northing: 451032.16
Easting: 13065599.53
Casing Elevation: NA

Borehole Depth: 10'
Surface Elevation: 868.17

Descriptions By: Wayne Patterson

Well/Boring ID: SA6-6

Client: General Motors Corporation

Location: Lansing Plant #6

DRAFT

DEPTH / ELEVATION	Sample Run Number	Sample/Int/Type	Recovery (feet)	PID Headspace (ppm)	Oil/Water Shake Test	pH Value	USCS Code	Geologic Column	Stratigraphic Description	Well/Boring Construction
							NA		CONCRETE.	
865	1	0 - 5 DP	3	1.1	ND	7.0	SP		10 YR 5/4 Yellowish brown fine to medium POORLY GRADED SAND (SP), trace Silt, dense (>0.28 TSF), moist to wet, no odor, (fill).	
5				0.3		7.0			10YR 2/1 Black ORGANIC CLAY (OH), trace roots/vegetation throughout, dry to moist, peaty odor, no dilatancy, medium stiff to stiff (1.25 TSF), medium plasticity, low dry strength, low to medium toughness.	Boring backfilled with bentonite.
860	2	5 - 10 DP	4	1.3	ND	7.0	OH			
				1.4		7.0				
10										
855										
15										
850										

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Remarks: Soil sample collected at 4-6' below ground surface and analyzed for metals.
NA = not applicable
DP = direct push
Neg = negative
Pos = positive
ND = not done
TSF = tons per square foot

Date Start/Finish: 11/3/05
Drilling Company: Altech
Driller's Name: Johnny Davis
Drilling Method: Direct Push
Rig Type: 6610 DT
Auger Size: NA
Sampler Size: 5' macrocore

Northing: 450913.62
Easting: 13065617.61
Casing Elevation: NA

Borehole Depth: 10'
Surface Elevation: 869.76

Descriptions By: Wayne Patterson

Well/Boring ID: SA6-7

Client: General Motors Corporation

Location: Lansing Plant #6

DRAFT

DEPTH / ELEVATION	Sample Run Number	Sample/Int/Type	Recovery (feet)	PID Headspace (ppm)	Oil/Water Shake Test	pH Value	USCS Code	Geologic Column	Stratigraphic Description	Well/Boring Construction
0							FL		GRAVEL.	
				1.6		6.5-7.0			COAL (fill).	
	1	0 - 5 DP	4		ND				10YR 4/3 Brown and 10YR 6/1 Gray mottled LEAN CLAY (CL), trace fine to coarse subangular Sand, trace fine subangular Gravel, medium stiff (2.5 TSF), no dilatancy, medium toughness, medium plasticity, medium dry strength, dry to moist, no odor (fill).	
				1.0		6.5-7.0				
865 5									SAA, At 4.5 to 6' - Some 10YR 3/1 very dark gray coloration, possible organics.	
				1.8		6.5-7.0	CL			Boring backfilled with bentonite.
				0.9		6.5-7.0				
	2	5 - 10 DP	5		ND				SAA, No mottling.	
				0.9		6.5-7.0				
860 10										
855 15										

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Remarks: Soil sample collected at 4-6' below ground surface and analyzed for metals.
NA = not applicable
DP = direct push
Neg = negative
Pos = positive
ND = not done
TSF = tons per square foot

Project: 64430.203
Data File: SA6-7
Template: I:\rockware\logplot\logfiles\64430\Augerwell2005-LA.ldf
Date: 11/28/05

Date Start/Finish: 11/2/05
Drilling Company: Altech
Driller's Name: Johnny Davis
Drilling Method: Direct Push
Rig Type: 6610 DT
Auger Size: NA
Sampler Size: 5' macrocore

Northing: 450844.39
Easting: 13065625.78
Casing Elevation: NA

Borehole Depth: 10'
Surface Elevation: 869.90

Descriptions By: Wayne Patterson

Well/Boring ID: SA6-8

Client: General Motors Corporation

Location: Lansing Plant #6

DRAFT

DEPTH / ELEVATION	Sample Run Number	Sample/Int/Type	Recovery (feet)	PID Headspace (ppm)	Oil/Water Shake Test	pH Value	USCS Code	Geologic Column	Stratigraphic Description	Well/Boring Construction
									Gravel	
				0.8		7.0	NA		FILL - coal, wood, some lean Clay, some 10YR 5/8 Yellowish brown fine Sand.	
	1	0 - 5 DP	4.5		Neg					
				1.5		7.0			10YR 3/1 Very dark gray LEAN CLAY (CL), trace fine to coarse subangular Sand, medium stiff (0.75 TSF), low toughness, low dry strength, low to medium plasticity, moist, no odor, possible natural organics, (fill).	
5 865				1.0		7.0			SAA - 10YR 5/4 Yellowish brown, trace fine subangular Gravel, stiff (2.0 TSF), no dilatancy, medium plasticity, medium dry strength, dry to moist, no odor.	Boring backfilled with bentonite.
	2	5 - 10 DP	5	1.1	ND	7.0	CL			
10 860				1.3		7.0				
15 855										

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Remarks: Soil sample collected at 3-5' below ground surface and analyzed for metals
NA = not applicable
DP = direct push
Neg = negative
Pos = positive
ND = not done
TSF = tons per square foot

Date Start/Finish: 11/2/05
Drilling Company: Altech
Driller's Name: Johnny Davis
Drilling Method: Direct Push
Rig Type: 6610 DT
Auger Size: NA
Sampler Size: 5' macrocore

Northing: 450789.45
Easting: 13065655.56
Casing Elevation: NA

Borehole Depth: 10'
Surface Elevation: 870.37

Descriptions By: Wayne Patterson

Well/Boring ID: SA6-9

DRAFT

Client: General Motors Corporation

Location: Lansing Plant #6

DEPTH / ELEVATION	Sample Run Number	Sample/Int/Type	Recovery (feet)	PID Headspace (ppm)	Oil/Water Shake Test	pH Value	USCS Code	Geologic Column	Stratigraphic Description	Well/Boring Construction
870							NA		Gravel.	
				0.6		7.0			Coal.	
	1	0 - 5 DP	5		ND				10YR 4/4 Dark yellowish brown FAT CLAY (CH), few fine to coarse subangular Sand, medium to high toughness, high dry strength, very stiff (4.0 TSF), moist, no odor (fill).	
				0.2		7.0			SAA, At 1.2' - Vertical fractures with 10YR 6/2 light brownish gray coloring.	
5 865				0.1		7.0	CH			Boring backfilled with bentonite.
	2	5 - 10 DP	5	0.3	ND	7.0			SAA, No gray coloring.	
				0.8		7.0				
10 860										
15 855										

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Remarks: Soil sample collected at 6-8' below ground surface and analyzed for metals
NA = not applicable
DP = direct push
Neg = negative
Pos = positive
ND = not done
TSF = tons per square foot

Project: 64430.203
Data File: SA6-9
Template: I:\rockware\logplot\logfiles\64430\Augerwell2005-LA.ldf
Date: 11/28/05

Date Start/Finish: 11/3/05
Drilling Company: Altech
Driller's Name: Johnny Davis
Drilling Method: Direct Push
Rig Type: 6610 DT
Auger Size: NA
Sampler Size: 5' macrocore

Northing: 450738.33
Easting: 13065687.32
Casing Elevation: NA

Borehole Depth: 16'
Surface Elevation: 870.05

Descriptions By: Wayne Patterson

Well/Boring ID: SA6-10

Client: General Motors Corporation

Location: Lansing Plant #6

DRAFT

DEPTH / ELEVATION	Sample Run Number	Sample/Int/Type	Recovery (feet)	PID Headspace (ppm)	Oil/Water Shake Test	pH Value	USCS Code	Geologic Column	Stratigraphic Description	Well/Boring Construction
870							GP		Gravel (GP).	
				0.2		7.0-7.5			10YR 4/4 Dark yellowish brown FAT CLAY (CH), few fine to coarse subangular Sand, trace fine subangular Gravel, high plasticity, medium to high toughness, high dry strength, very stiff (4.0 TSF), dry to moist, no odor (fill).	
	1	1 - 6 DP	5		ND				SAA, At 1 to 3' - little 10YR 2/2 very dark brown coloring, some angular to subangular Gravel.	
				0.2		7.0-7.5	CH			
5 865				0.1		7.0-7.5				Boring backfilled with bentonite.
				0.2		7.0-7.5				
	2	6 - 11 DP	5	0.3	ND	7.0-7.5			10 YR 4/1 Dark gray LEAN CLAY (CL), few fine to coarse subangular Sand, trace fine subangular Gravel, medium stiff (0.75 TSF), no dilatancy, high plasticity, medium toughness, medium dry strength, moist, no odor.	
10 860				0.2		7.0-7.5				
				0.4		7.0-7.5	CL			
	3	11 - 16 DP	4		ND					
15 855				0.2		7.0-7.5				

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Remarks: Soil sample collected at 8-10' below ground surface and analyzed for metals
NA = not applicable
DP = direct push
Neg = negative
Pos = positive
ND = not done
TSF = tons per square foot

Date Start/Finish: 11/4/05
Drilling Company: Altech
Driller's Name: Johnny Davis
Drilling Method: Direct Push
Rig Type: 6610 DT
Auger Size: NA
Sampler Size: 5' macrocore

Northing: 450720.18
Easting: 13065749.28
Casing Elevation: NA

Borehole Depth: 10'
Surface Elevation: 871.07

Descriptions By: Wayne Patterson

Well/Boring ID: SA6-11

Client: General Motors Corporation

Location: Lansing Plant #6

DRAFT

DEPTH / ELEVATION	Sample Run Number	Sample/Int/Type	Recovery (feet)	PID Headspace (ppm)	Oil/Water Shake Test	pH Value	USCS Code	Geologic Column	Stratigraphic Description	Well/Boring Construction
870	1	0 - 5 DP	4	0.4	ND	7.0-7.5	CL		10YR 5/4 Yellowish brown LEAN CLAY (CL), few fine to coarse subangular Sand, trace fine subangular Gravel, very stiff (3.5 - 4.0 TSF), no dilatancy, medium to high plasticity, medium toughness, medium dry strength, moist, no odor.	
				0.3		7.0-7.5				
5 865	2	5 - 10 DP	5	0.1	ND	7.0-7.5			SAA, Occasional lense of wet Silt.	Boring backfilled with bentonite.
				0.5		7.0-7.5				
10 860										
15 855										

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Remarks: Soil sample collected at 8-10' below ground surface and analyzed for metals.
NA = not applicable
DP = direct push
Neg = negative
Pos = positive
ND = not done
TSF = tons per square foot

Date Start/Finish: 11/4/05
Drilling Company: Altech
Driller's Name: Johnny Davis
Drilling Method: Direct Push
Rig Type: 6610 DT
Auger Size: NA
Sampler Size: 5' macrocore

Northing: 450756.66
Easting: 13065810.44
Casing Elevation: NA

Borehole Depth: 10'
Surface Elevation: 872.29

Descriptions By: Wayne Patterson

Well/Boring ID: SA6-12

Client: General Motors Corporation

Location: Lansing Plant #6

DRAFT

DEPTH / ELEVATION	Sample Run Number	Sample/Int/Type	Recovery (feet)	PID Headspace (ppm)	Oil/Water Shake Test	pH Value	USCS Code	Geologic Column	Stratigraphic Description	Well/Boring Construction
							NA		CONCRETE	
870	1	0 - 5 DP	3	0.4	ND	7.5			10YR 4/3 Brown SANDY LEAN CLAY (CL), little fine to coarse angular to subangular Sand, trace fine subrounded Gravel, soft to medium stiff (1.0 TSF), no dilatancy, medium dry strength, medium to high toughness, medium plasticity, dry to moist, no odor (fill).	
5				0.6		7.5	CL			Boring backfilled with bentonite.
865	2	5 - 10 DP	5	0.6	ND	10.5			10YR 4/4 Dark yellowish brown and 10YR 6/1 Gray mottled, very stiff to hard (>4.5 TSF), dry.	
				0.4		12				
10										
860										
15										
855										

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Remarks: Soil sample collected at 8-10' below ground surface and analyzed for metals
NA = not applicable
DP = direct push
Neg = negative
Pos = positive
ND = not done
TSF = tons per square foot

Date Start/Finish: 11/8/05
Drilling Company: Altech
Driller's Name: Johnny Davis
Drilling Method: Direct Push
Rig Type: 6610 DT
Auger Size: NA
Sampler Size: 5' macrocore

Northing: 450612.68
Easting: 13066166.33
Casing Elevation: NA

Borehole Depth: 16'
Surface Elevation: 871.25

Descriptions By: Wayne Patterson

Well/Boring ID: SA7-1

Client: General Motors Corporation

Location: Lansing Plant #6

DRAFT

DEPTH / ELEVATION	Sample Run Number	Sample/Int/Type	Recovery (feet)	PID Headspace (ppm)	Oil/Water Shake Test	pH Value	USCS Code	Geologic Column	Stratigraphic Description	Well/Boring Construction
							NA		CONCRETE	
870									FILL - wood and Sandy Clay.	
	1	1 - 6 DP	4.5	0.0	ND	6-7			10YR 4/1 Dark gray LEAN CLAY (CL), few fine-coarse angular Sand, trace fine angular-subangular Gravel, stiff-very stiff (1.5-3.0 TSF), medium plasticity, medium-high toughness, medium dry strength, no dilatancy, dry-moist, no odor, fill.	
				0.0		6-7				
5				0.5						Boring backfilled with bentonite.
865						6-7				
	2	6-11 DP	4.0	0.0	ND	6-7	CL		SAA, color becomes 10YR 6/4 Light yellowish brown.	
10				0.0		6-7			SAA, 1" lense fine-coarse POORLY GRADED SILTY SAND (SM), wet. SAA, color is 10YR 4/6 Red, hard (>4.5 TSF), no odor.	
860						6-7			SAA, becomes 10YR 4/1 Dark gray in color.	
	3	11-16 DP	4.0	0.0	ND	6-7				
15				0.0						
855										

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Remarks: Soil sample collected at 9-11' below ground surface and analyzed for metals
NA = not applicable
DP = direct push
Neg = negative
Pos = positive
ND = not done
SAA = same as above
TSF = tons per square foot

Date Start/Finish: 11/8/05
Drilling Company: Altech
Driller's Name: Johnny Davis
Drilling Method: Direct Push
Rig Type: 6610 DT
Auger Size: NA
Sampler Size: 5' macrocore

Northing: 450611.77
Easting: 13066092.87
Casing Elevation: NA

Borehole Depth: 16'
Surface Elevation: 871.31

Descriptions By: Wayne Patterson

Well/Boring ID: SA7-2

DRAFT

Client: General Motors Corporation

Location: Lansing Plant #6

DEPTH / ELEVATION	Sample Run Number	Sample/Int/Type	Recovery (feet)	PID Headspace (ppm)	Oil/Water Shake Test	pH Value	USCS Code	Geologic Column	Stratigraphic Description	Well/Boring Construction
							NA		ASPHALT	
870	1	1 - 6 DP	4	0.0	ND	7.0	CL		10YR 4/4 Dark yellowish brown LEAN CLAY (CL), few fine-coarse subangular Sand, trace fine subangular Gravel, medium-high plasticity, medium dry strength, stiff (2.75 TSF), no dilatancy, medium toughness dry-moist, no odor, fill, lenses of Sandy Clay throughout up to 4" thick.	
				0.0		7.0				
5										Boring backfilled with bentonite.
865	2	6-11 DP	5	0.0	ND	7.0				
				0.0		7.0				
10				0.1		7.0			SAA, color becomes 10YR 4/1 Dark gray, native	
860	3	11-16 DP	4	0.0	ND	7.0			SAA, soft, wet	
				0.0		7.0				
15										
855										

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Remarks: Soil sample collected at 4-6' below ground surface and analyzed for metals
NA = not applicable
DP = direct push
Neg = negative
Pos = positive
ND = not done
SAA = same as above
TSF = tons per square foot

Date Start/Finish: 11/8/05
Drilling Company: Altech
Driller's Name: Johnny Davis
Drilling Method: Direct Push
Rig Type: 6610 DT
Auger Size: NA
Sampler Size: 5' macrocore

Northing: 450614.20
Easting: 13066022.14
Casing Elevation: NA

Borehole Depth: 16'
Surface Elevation: 871.10

Descriptions By: Wayne Patterson

Well/Boring ID: SA7-3

Client: General Motors Corporation

Location: Lansing Plant #6

DRAFT

DEPTH / ELEVATION	Sample Run Number	Sample/Int/Type	Recovery (feet)	PID Headspace (ppm)	Oil/Water Shake Test	pH Value	USCS Code	Geologic Column	Stratigraphic Description	Well/Boring Construction
							NA		ASPHALT	
870									Gravel aggregate (GP), railroad bedding, fill, wet.	
	1	1 - 6 DP	3	ND	ND	7.0	GP			
				0.0		7.0				
5									10YR 4/4 Dark yellowish brown LEAN CLAY (CL), few fine-coarse subangular Sand, trace fine subangular Gravel, medium-high plasticity, medium dry strength, stiff (2.75 TSF), dilatancy - some, medium toughness, dry-moist, no odor, fill.	Boring backfilled with bentonite.
865				ND		7.0				
	2	6-11 DP	4	0.0	ND	7.0			SAA, color becomes 10YR 4/1 Dark gray.	
10				0.0		7.0	CL			
860										
	3	11-16 DP	4	0.0	ND	7.0			SAA, wet, soft	
				0.0		7.0				
15										
855										

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Remarks: Soil sample collected at 7-9' below ground surface and analyzed for metals
NA = not applicable
DP = direct push
Neg = negative
Pos = positive
ND = not done
SAA = same as above
TSF = tons per square foot

Date Start/Finish: 11/8/05
Drilling Company: Altech
Driller's Name: Johnny Davis
Drilling Method: Direct Push
Rig Type: 6610 DT
Auger Size: NA
Sampler Size: 5' macrocore

Northing: 450616.23
Easting: 13065951.38
Casing Elevation: NA

Borehole Depth: 16'
Surface Elevation: 871.22

Descriptions By: Wayne Patterson

Well/Boring ID: SA7-4

Client: General Motors Corporation

Location: Lansing Plant #6

DRAFT

DEPTH / ELEVATION	Sample Run Number	Sample/Int/Type	Recovery (feet)	PID Headspace (ppm)	Oil/Water Shake Test	pH Value	USCS Code	Geologic Column	Stratigraphic Description	Well/Boring Construction
							NA		ASPHALT	
870	1	1 - 6 DP	3	1.4	ND	6 - 7.0'	CL		10YR 4/2 Dark gray brown SANDY LEAN CLAY with GRAVEL (CL), some fine-coarse Sand, little angular fine Gravel, few Coal, moist, no odor, soft, high plasticity, medium toughness, low-medium dry strength, no dilatancy, (fill).	
				0.1		6 - 7.0'			SAA, Color becomes very dark gray 10YR 3/1	
5										Boring backfilled with bentonite.
865	2	6-11 DP	5	0.3	ND	6 - 7.0'	CL		10YR 4/4 Dark yellow brown LEAN CLAY (CL), few fine-coarse angular-subangular Sand, trace fine angular-subangular Gravel, stiff- very stiff (2.75 TSF), medium-high plasticity, medium toughness, low-medium dry strength, no dilatancy, dry to moist, no odor, (fill).	
				0.0		6 - 7.0'				
10				0.0		6 - 7.0'			SAA, wet, soft	
860	3	11-16 DP	4	0.1	ND	6 - 7.0'			SAA, 10YR 4/1 Dark gray in color,.	
				0.1		6 - 7.0'				
15										
855										

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Remarks: Soil sample collected at 8-10' below ground surface and analyzed for metals
NA = not applicable
DP = direct push
Neg = negative
Pos = positive
ND = not done
SAA = same as above
TSF = tons per square foot

Project: 64430.020
Data File: SA7-4
Template: :I\rockware\logplot\logfiles\template\Augerwell2005-LA.ldf
Date: 11/14/05

Date Start/Finish: 11/7/05
Drilling Company: Altech
Driller's Name: Johnny Davis
Drilling Method: Direct Push
Rig Type: 6610 DT
Auger Size: NA
Sampler Size: 5' macrocore

Northing: 450682.72
Easting: 13065906.56
Casing Elevation: NA

Borehole Depth: 16'
Surface Elevation: 874.39

Descriptions By: Wayne Patterson

Well/Boring ID: SA7-5

Client: General Motors Corporation

Location: Lansing Plant #6

DRAFT

DEPTH / ELEVATION	Sample Run Number	Sample/Int/Type	Recovery (feet)	PID Headspace (ppm)	Oil/Water Shake Test	pH Value	USCS Code	Geologic Column	Stratigraphic Description	Well/Boring Construction
							NA		ASPHALT over CONCRETE	
				0.0		7.0-7.5	SP		10YR 4/4 Dark yellowish brown fine POORLY GRADED SAND (SP), 0.26 TSF, moist, no odor, nonplastic, low dry strength, low toughness, rapid dilatancy (fill).	
	1	1 - 6 DP	3		ND					
870				0.0		7.0-7.5			10YR 4/4 Dark yellowish brown LEAN CLAY (CL), few fine to coarse angular to subangular Sand, trace fine subrounded Gravel, very stiff (3.5 TSF), high plasticity, no dilatancy, medium toughness, medium dry strength.	
5										Boring backfilled with bentonite.
	2	6-11 DP	4	0.0	ND	7.0-7.5	CL			
865										
10										
	3	11-16 DP	5	0.0	ND	7.0-7.5				
				0.0		7.0-7.5				
860										
15				0.0		7.0-7.5			Becoming 10YR 4/1 Dark gray in color.	

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Remarks: Soil sample collected at 12 - 14' below ground surface and analyzed for metals.
NA = not applicable
DP = direct push
Neg = negative
Pos = positive
ND = not done
TSF = tons per square feet

Date Start/Finish: 11/7/05
Drilling Company: Altech
Driller's Name: Johnny Davis
Drilling Method: Direct Push
Rig Type: 6610 DT
Auger Size: NA
Sampler Size: 5' macrocore

Northing: 450734.39
Easting: 13065912.92
Casing Elevation: NA

Borehole Depth: 16'
Surface Elevation: 874.37

Descriptions By: Wayne Patterson

Well/Boring ID: SA7-6

Client: General Motors Corporation

Location: Lansing Plant #6

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DEPTH / ELEVATION	Sample Run Number	Sample/Int/Type	Recovery (feet)	PID Headspace (ppm)	Oil/Water Shake Test	pH Value	USCS Code	Geologic Column	Stratigraphic Description	Well/Boring Construction
							NA		ASPHALT over CONCRETE	
	1	1 - 6 DP	1	0.1	Neg	7.0-7.5	CL		10YR 4/3 Brown LEAN CLAY (CL), few fine to coarse angular Sand, trace fine angular Gravel, little Coal, moist, no odor, slow dilatancy, low toughness, high plasticity, medium dry strength, occasional 10YR 2/1 black staining throughout (fill).	
870 5										
	2	6-11 DP	2	0.1	Neg	7.0-7.5			10YR 5/2 Grayish brown in color.	
865 10										Boring backfilled with bentonite.
	3	11-16 DP	4	0.1	ND	7.0-7.5			10YR 5/3 Brown LEAN CLAY (CL), few fine to coarse angular to subangular Sand, trace fine angular to subangular Gravel, moist, no odor, no dilatancy, medium toughness, medium plasticity, medium dry strength.	
860 15				0.0		7.0-7.5				

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Remarks: Soil sample collected at 14 - 16' below ground surface and analyzed for metals.
NA = not applicable
DP = direct push
Neg = negative
Pos = positive
ND = not done
TSF = tons per square feet

Project: 64430.203
Data File: SA7-6
Template: I:\rockware\logplot\logfiles\64430\Augerwell2005-LA.ldf
Date: 11/30/05

Date Start/Finish: 11/7/05
Drilling Company: Altech
Driller's Name: Johnny Davis
Drilling Method: Direct Push
Rig Type: 6610 DT
Auger Size: NA
Sampler Size: 5' macrocore

Northing: 450759.74
Easting: 13066025.10
Casing Elevation: NA

Borehole Depth: 16'
Surface Elevation: 870.28

Descriptions By: Wayne Patterson

Well/Boring ID: SA7-7

Client: General Motors Corporation

Location: Lansing Plant #6

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DEPTH / ELEVATION	Sample Run Number	Sample/Int/Type	Recovery (feet)	PID Headspace (ppm)	Oil/Water Shake Test	pH Value	USCS Code	Geologic Column	Stratigraphic Description	Well/Boring Construction
870									GRAVEL (GP), railroad bedding (fill).	
	1	1 - 6 DP	4	0.0	ND	7.0-7.5	GP			
				0.2		7.0-7.5			10YR 5/4 Yellowish brown LEAN CLAY (CL), few fine to coarse angular to subangular Sand, trace fine angular Gravel, very stiff (4.25 TSF), dry to moist, no odor, medium to high plasticity, no dilatancy, medium toughness, medium dry strength.	
5 865										Boring backfilled with bentonite.
	2	6-11 DP	3	0.0	ND	7.0-7.5	CL			
				0.1		7.0-7.5				
10 860									SAA, Wet.	
	3	11-16 DP	4	0.0	ND	7.0-7.5			SAA, Soft, becoming 10YR 4/1 Dark gray.	
15 855				0.1		7.0-7.5				

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Remarks: Soil sample collected at 9-11' below ground surface and analyzed for metals.
NA = not applicable
DP = direct push
Neg = negative
Pos = positive
ND = not done
TSF = tons per square feet

Project: 64430.203
Data File: SA7-7
Template: I:\rockware\logplot\logfiles\64430\Augerwell2005-LA.ldf
Date: 11/30/05

Date Start/Finish: 11/7/05
Drilling Company: Altech
Driller's Name: Johnny Davis
Drilling Method: Direct Push
Rig Type: 6610 DT
Auger Size: NA
Sampler Size: 5' macrocore

Northing: 450758.06
Easting: 13066076.76
Casing Elevation: NA

Borehole Depth: 16'
Surface Elevation: 870.15

Descriptions By: Wayne Patterson

Well/Boring ID: SA7-8

Client: General Motors Corporation

Location: Lansing Plant #6

DRAFT

DEPTH / ELEVATION	Sample Run Number	Sample/Int/Type	Recovery (feet)	PID Headspace (ppm)	Oil/Water Shake Test	pH Value	USCS Code	Geologic Column	Stratigraphic Description	Well/Boring Construction
870									GRAVEL (GP), railroad bedding (fill).	
				0.5		ND	GP			
	1	1 - 6 DP	5	0.5	ND	7.0-7.5			10YR 4/4 Dark yellowish brown LEAN CLAY (CL), few fine to coarse angular to subangular Sand, trace fine angular Gravel, moist, no odor, medium plasticity, medium toughness, medium dry strength, no dilatancy, medium stiff (1.0 TSF) (fill).	
5 865				0.1		7.0-7.5				Boring backfilled with bentonite.
				0.0		7.0-7.5				
	2	6-11 DP	5	0.1	ND	7.0-7.5	CL			
10 860				0.2		7.0-7.5			SAA, Wet.	
				0.4		7.0-7.5				
	3	11-16 DP	4.5	0.4	ND	7.0-7.5			SAA, Soft, becoming 10YR 4/1 Dark gray.	
15 855										

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Remarks: Soil sample collected at 10-12' below ground surface and analyzed for metals.
NA = not applicable
DP = direct push
Neg = negative
Pos = positive
ND = not done
TSF = tons per square feet

Date Start/Finish: 11/7/05
Drilling Company: Altech
Driller's Name: Johnny Davis
Drilling Method: Direct Push
Rig Type: 6610 DT
Auger Size: NA
Sampler Size: 5' macrocore

Northing: 450742.25
Easting: 13066151.13
Casing Elevation: NA

Borehole Depth: 16'
Surface Elevation: 873.04

Descriptions By: Wayne Patterson

Well/Boring ID: SA7-9

Client: General Motors Corporation

Location: Lansing Plant #6

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DEPTH / ELEVATION	Sample Run Number	Sample/Int/Type	Recovery (feet)	PID Headspace (ppm)	Oil/Water Shake Test	pH Value	USCS Code	Geologic Column	Stratigraphic Description	Well/Boring Construction
							NA		CONCRETE	
									10YR 6/4 Light yellowish brown fine POORLY GRADED SAND (SP), 0.20 TSF, dry, no odor, (fill).	
870	1	1 - 6 DP	4	0.0	ND	7.0-7.5	SP			
				0.1		7.0-7.5				
5									SAA, Wet	Boring backfilled with bentonite.
	2	6-11 DP	5	0.0	ND	7.0-7.5			SAA, At 7-9' - Very dark gray discoloration, no odor, few fibers of unknown origin.	
865				0.1		7.0-7.5			10YR 4/4 Dark yellowish brown and 10YR 6/1 Gray mottled LEAN CLAY (CL), few fine to coarse subangular Sand, trace fine angular to subangular Gravel, medium stiff (1.0 TSF), medium to high plasticity, medium toughness, medium dry strength, no dilatancy, dry to moist, no odor.	
10										
	3	11-16 DP	3	0.1	ND	7.0-7.5	CL			
860				0.0		7.0-7.5				
15									SAA, Becoming 10YR 4/1 Dark gray in color.	
855										

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Remarks: Soil sample collected at 7-9' below ground surface and analyzed for metals.
NA = not applicable
DP = direct push
Neg = negative
Pos = positive
ND = not done
TSF = tons per square feet

Date Start/Finish: 11/7/05
Drilling Company: Altech
Driller's Name: Johnny Davis
Drilling Method: Direct Push
Rig Type: 6610 DT
Auger Size: NA
Sampler Size: 5' macrocore

Northing: NA
Easting: NA
Casing Elevation: NA

Borehole Depth: 16'
Surface Elevation: NA

Descriptions By: Wayne Patterson

Well/Boring ID: SA7-10

DRAFT

Client: General Motors Corporation

Location: Lansing Plant #6

DEPTH / ELEVATION	Sample Run Number	Sample/Int/Type	Recovery (feet)	PID Headspace (ppm)	Oil/Water Shake Test	pH Value	USCS Code	Geologic Column	Stratigraphic Description	Well/Boring Construction
							NA		ASPHALT over CONCRETE.	
				0.0		ND			10YR 4/4 Dark yellowish brown AND 10yr 6/1 Gray mottled LEAN CLAY (CL), few fine to coarse angular to subangular Sand, trace fine angular to subangular Gravel, very stiff to hard (4.25 TSF) dry, medium plasticity, no odor, medium dry strength, no dilatancy, medium toughness (fill).	
	1	1 - 6 DP	5	0.0	ND	8.5				
5 -5				0.0		7.5				Boring backfilled with bentonite.
				0.1		9.5				
	2	6-11 DP	5		ND					
				0.0		9.5	CL			
10-10				0.0		10.0				
									SAA, Wet.	
				0.0		10.0				
									SAA, Soft, becoming 10YR 4/1 Dark gray.	
	3	11-16 DP	4.5		ND					
				0.0		10.0				
15-15										

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Remarks: Soil sample collected at 10-12' below ground surface and analyzed for metals.
NA = not applicable
DP = direct push
Neg = negative
Pos = positive
ND = not done
TSF = tons per square feet

Date Start/Finish: 11/9/05
Drilling Company: Altech
Driller's Name: Johnny Davis
Drilling Method: Direct Push
Rig Type: 6610 DT
Auger Size: NA
Sampler Size: 5' macrocore

Northing: 450791.69
Easting: 13065909.85
Casing Elevation: NA

Borehole Depth: 16'
Surface Elevation: 873.48

Descriptions By: Wayne Patterson

Well/Boring ID: SA8-1

Client: General Motors Corporation

Location: Lansing Plant #6

DRAFT

DEPTH	ELEVATION	Sample Run Number	Sample/Int/Type	Recovery (feet)	PID Headspace (ppm)	Oil/Water Shake Test	pH Value	USCS Code	Geologic Column	Stratigraphic Description	Well/Boring Construction
								NA		ASPHALT over Concrete	
		1	1 - 6 DP	2.5	0.4	ND	8.0			10YR 4/6 Dark yellowish brown LEAN CLAY (CL), few fine-coarse angular Sand, trace fine angular Gravel, medium stiff (1.0 TSF), moist, no odor, no dilatancy, low-medium dry strength, medium plasticity, low-medium toughness, (fill).	
870											
5											Boring backfilled with bentonite.
					0.4		12.0				
865		2	6-11 DP	5	0.4	ND	12.0	CL			
10					0.2		12.0				
										SAA, 3" lense of very soft, wet Silt.	
										SAA, Color becomes 10YR 4/1 Dark gray, Sand and Gravel, subangular-angular.	
860		3	11-16 DP	5	0.3	ND	12.0				
15					0.3						
855											

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Remarks: Soil sample collected at 9-11' below ground surface and analyzed for metals
NA = not applicable
DP = direct push
Neg = negative
Pos = positive
ND = not done
SAA = same as above
TSF = tons per square foot

Date Start/Finish: 11/9/05
Drilling Company: Altech
Driller's Name: Johnny Davis
Drilling Method: Direct Push
Rig Type: 6610 DT
Auger Size: NA
Sampler Size: 5' macrocore

Northing: 450848.35
Easting: 13065908.86
Casing Elevation: NA

Borehole Depth: 16'
Surface Elevation: 871.86

Descriptions By: Wayne Patterson

Well/Boring ID: SA8-2

Client: General Motors Corporation

Location: Lansing Plant #6

DEPTH	ELEVATION	Sample Run Number	Sample/Int/Type	Recovery (feet)	PID Headspace (ppm)	Oil/Water Shake Test	pH Value	USCS Code	Geologic Column	Stratigraphic Description	Well/Boring Construction
								NA		CONCRETE	
								SP		Fine-coarse POORLY GRADED SAND (SP), fill.	
	870	1	1 - 6 DP	4	0.6	ND	ND	CL		10YR 4/6 Dark yellow brown LEAN CLAY (CL), few fine-coarse angular Sand, trace fine angular-subanglur Gravel, soft, wet, no odor, dilatancy - none, high plasticity, low-medium toughness, medium dry strength, fill.	
5					0.5						Boring backfilled with bentonite.
	865	2	6-11 DP	5	0.6	ND	ND				
10					0.4					SAA, color becomes 10YR 4/1, Dark gray, dry-moist, few Silt, stiff (2.0 TSF)	
	860	3	11-16 DP	3.5	0.4	ND	ND				
15					0.4						
	855										

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Remarks: Soil sample collected at 14-16' below ground surface and analyzed for metals
NA = not applicable
DP = direct push
ND = not done
SAA = same as above

Date Start/Finish: 11/8/05
Drilling Company: Altech
Driller's Name: Johnny Davis
Drilling Method: Direct Push
Rig Type: 6610 DT
Auger Size: NA
Sampler Size: 5' macrocore

Northing: 450860.34
Easting: 13065942.97
Casing Elevation: NA

Borehole Depth: 16'
Surface Elevation: 871.77

Descriptions By: Wayne Patterson

Well/Boring ID: SA8-3

DRAFT

Client: General Motors Corporation

Location: Lansing Plant #6

DEPTH / ELEVATION	Sample Run Number	Sample/Int/Type	Recovery (feet)	PID Headspace (ppm)	Oil/Water Shake Test	pH Value	USCS Code	Geologic Column	Stratigraphic Description	Well/Boring Construction
							NA		ASPHALT over Concrete	
870	1	1 - 6 DP	4	4.9	ND	6-7			10YR 4/4 Dark yellowish brown with some 10YR 6/1 gray vertical fractures LEAN CLAY (CL), trace fine-coarse angular-subangular Sand, stiff-very stiff (2.0-3.0 TSF), dry-moist, no odor, medium plasticity, medium-high toughness, no dilatancy, medium dry strength, fill.	
				5.2		6-7				
5				3.5						Boring backfilled with bentonite.
865	2	6-11 DP	4	3.0	ND	6-7	CL		SAA, no gray coloring, becoming soft, moist, trace fine subrounded Gravel.	
10				2.7		6-7				
860	3	11-16 DP	4	4.2	ND	6-7			SAA, 10YR 4/1 Dark gray, soft, moist,-wet, native.	
15				3.4		6-7				
855										

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Remarks: Soil sample collected at 14-16' below ground surface and analyzed for metals
NA = not applicable
DP = direct push
Neg = negative
Pos = positive
ND = not done
SAA = same as above
TSF = tons per square foot

Date Start/Finish: 11/8/05
Drilling Company: Altech
Driller's Name: Johnny Davis
Drilling Method: Direct Push
Rig Type: 6610 DT
Auger Size: NA
Sampler Size: 5' macrocore

Northing: 450858.84
Easting: 13066134.76
Casing Elevation: NA

Borehole Depth: 16'
Surface Elevation: 871.66

Descriptions By: Wayne Patterson

Well/Boring ID: SA8-5

Client: General Motors Corporation

Location: Lansing Plant #6

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DEPTH / ELEVATION	Sample Run Number	Sample/Int/Type	Recovery (feet)	PID Headspace (ppm)	Oil/Water Shake Test	pH Value	USCS Code	Geologic Column	Stratigraphic Description	Well/Boring Construction
							NA		ASPHALT over Concrete	
870	1	1 - 6 DP	2	3.2	ND	6-7 6-7	CL		10YR 4/4 Dark yellow brown and 10YR 4/1 Dark gray mottled LEAN CLAY with SAND (CL), little fine-coarse angular Sand, trace fine angular-subangluar Gravel, soft-medium stiff (<1.0 TSF), dry-moist, no odor, high plasticity, medium dry strength, no dilatancy, medium toughness, (fill).	Boring backfilled with bentonite.
5										
865	2	6-11 DP	5	8.7 6.6 4.7	ND	6-7 6-7 6-7			SAA, Very dark gray 10YR 3/1 coloration. SAA, 10YR 4/4 Dark yellow brown.	
10										
860	3	11-16 DP	5	5.6 4.8	ND	6-7 6-7			SAA, 10YR 4/1 Dark gray.	
15										
855										

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Remarks: Soil sample collected at 7-9' below ground surface and analyzed for metals
NA = not applicable
DP = direct push
Neg = negative
Pos = positive
ND = not done
SAA = same as above
TSF = tons per square foot

Date Start/Finish: 11/7/05
Drilling Company: Altech
Driller's Name: Johnny Davis
Drilling Method: Direct Push
Rig Type: 6610 DT
Auger Size: NA
Sampler Size: 5' macrocore

Northing: 450808.13
Easting: 13066149.41
Casing Elevation: NA

Borehole Depth: 16'
Surface Elevation: 870.46

Descriptions By: Wayne Patterson

Well/Boring ID: SA8-6

Client: General Motors Corporation

Location: Lansing Plant #6

DRAFT

DEPTH	ELEVATION	Sample Run Number	Sample/Int/Type	Recovery (feet)	PID Headspace (ppm)	Oil/Water Shake Test	pH Value	USCS Code	Geologic Column	Stratigraphic Description	Well/Boring Construction
	870							NA		ASPHALT over CONCRETE.	
		1	0 - 6 DP	4	0.0	ND	9.5	CL		10YR 4/4 Dark yellowish brown and 10YR 6/1 Gray mottled LEAN CLAY (CL), few fine to coarse angular to subangular Sand, trace fine angular to subangular Gravel, medium stiff - stiff (0.5 - 1.5 TSF), dry, no odor, low to medium dry strength, medium plasticity, no dilatancy, medium toughness (fill).	
					0.0		9.5				
5	865										Boring backfilled with bentonite.
		2	6-11 DP	5	0.1	ND	11.0				
					0.0		8.5-9.0			SAA, Becoming 10YR 4/1 Dark gray.	
10	860				0.1		8.5-9.0				
		3	11-16 DP	5	0.0	ND	8.5-9.0				
					0.0		8.5-9.0			SAA, Soft, moist to wet.	
15	855				0.0		8.5-9.0				

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Remarks: Soil sample collected at 12-14' below ground surface and analyzed for metals.
NA = not applicable
DP = direct push
Neg = negative
Pos = positive
ND = not done
TSF = tons per square feet

Date Start/Finish: 11/8/05
Drilling Company: Altech
Driller's Name: Johnny Davis
Drilling Method: Direct Push
Rig Type: 6610 DT
Auger Size: NA
Sampler Size: 5' macrocore

Northing: 450718.40
Easting: 13066194.67
Casing Elevation: NA

Borehole Depth: 10'
Surface Elevation: 871.76

Descriptions By: Wayne Patterson

Well/Boring ID: SA9-2

DRAFT

Client: General Motors Corporation

Location: Lansing Plant #6

DEPTH / ELEVATION	Sample Run Number	Sample/Int/Type	Recovery (feet)	PID Headspace (ppm)	Oil/Water Shake Test	pH Value	USCS Code	Geologic Column	Stratigraphic Description	Well/Boring Construction
870							NA		ASPHALT over Concrete	
	1	0 - 5 DP	4	4.5	ND	6-7			10YR 4/3 Brown and 10YR 6/1 Gray mottled LEAN CLAY WITH SAND (CL), little fine-coarse subangular Sand, trace fine subangular-subrounded Gravel, very stiff becoming stiff (2.25-4.0 TSF), medium-high plasticity, medium dry strength, medium toughness, no dilatancy, no odor, dry becoming moist with depth, fill.	
				4.8		6-7				
5							CL			Boring backfilled with bentonite.
865				4.7		6-7				
	2	5-10 DP	5	4.1	ND	6-7				
10				5.2						
860										
15										
855										

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Remarks: Soil sample collected at 8-10' below ground surface and analyzed for metals
NA = not applicable
DP = direct push
Neg = negative
Pos = positive
ND = not done
TSF = tons per square foot

Date Start/Finish: 11/3/05
Drilling Company: Altech
Driller's Name: Johnny Davis
Drilling Method: Direct Push
Rig Type: 6610 DT
Auger Size: NA
Sampler Size: 5' macrocore

Northing: 450769.56
Easting: 13065588.38
Casing Elevation: NA

Borehole Depth: 16'
Surface Elevation: 870.01

Descriptions By: Wayne Patterson

Well/Boring ID: SA10-2

Client: General Motors Corporation

Location: Lansing Plant #6

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DEPTH / ELEVATION	Sample Run Number	Sample/Int/Type	Recovery (feet)	PID Headspace (ppm)	Oil/Water Shake Test	pH Value	USCS Code	Geologic Column	Stratigraphic Description	Well/Boring Construction
							NA		Gravel	
	1	1 - 6 DP	3	0.5	ND	7.0	SP		10YR 4/4 Dark yellowish brown fine POORLY GRADED SAND (SP), very dense (>0.28 TSF), dry, no odor, (fill).	
				0.6		9.0				
5 865									SAA - 10YR 3/6 Dark yellowish brown, loose to medium dense (0.23 TSF), wet, no odor.	Boring backfilled with bentonite.
	2	6 - 11 DP	5	1.1	ND	9.0				
				1.1		10.5	SP			
10 860				1.0		7.5				
	3	11 - 16 DP	5	0.7	ND	7.5			SAA - At 12 to 13' - Wet.	
				0.6		7.5				
15 855				0.7		7.5	CL		10YR 4/3 Brown LEAN CLAY (CL), few fine to coarse subangular Sand, trace fine subangular Gravel, medium stiff (1.75 TSF), moist, no odor, no dilatancy, high plasticity, medium dry strength, medium toughness.	

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Remarks: Soil sample collected at 2-4' below ground surface and analyzed for metals
NA = not applicable
DP = direct push
Neg = negative
Pos = positive
ND = not done
TSF = tons per square foot

Date Start/Finish: 11/7/05
Drilling Company: Altech
Driller's Name: Johnny Davis
Drilling Method: Direct Push
Rig Type: 6610 DT
Auger Size: NA
Sampler Size: 5' macrocore

Northing: 450740.62
Easting: 13065856.05
Casing Elevation: NA

Borehole Depth: 16'
Surface Elevation: 874.06

Descriptions By: Wayne Patterson

Well/Boring ID: SA10-3

Client: General Motors Corporation

Location: Lansing Plant #6

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DEPTH	ELEVATION	Sample Run Number	Sample/Int/Type	Recovery (feet)	PID Headspace (ppm)	Oil/Water Shake Test	pH Value	USCS Code	Geologic Column	Stratigraphic Description	Well/Boring Construction
								NA		CONCRETE	
								SP		10YR 4/4 Dark yellowish brown fine POORLY GRADED SAND (SP) (fill).	
		1	1 - 6 DP	4.5	0.2	ND	7.0	CL		10YR 4/2 Dark grayish brown with 10YR 6/1 Gray mottling LEAN CLAY (CL), trace fine to coarse angular to subangular Sand, high plasticity, stiff to very stiff (3.0-3.5 TSF), medium dry strength, no dilatancy, medium toughness, dry to moist, no odor (fill).	
	870				0.1		7.0				
5											Boring backfilled with bentonite.
		2	6-11 DP	5	0.4	ND	7.0			SAA, Trace fine subangular Gravel, stiff (2.0 TSF), moist, no mottling.	
	865				0.4		7.0				
10											
		3	11-16 DP	4	0.5	ND	7.0			SAA, Becoming 10YR 4/1 Dark gray.	
	860										
15					0.0		7.0				

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Remarks: Soil sample collected at 14 - 16' below ground surface and analyzed for metals.
NA = not applicable
DP = direct push
Neg = negative
Pos = positive
ND = not done
TSF = tons per square feet

Date Start/Finish: 11/4/05
Drilling Company: Altech
Driller's Name: Johnny Davis
Drilling Method: Direct Push
Rig Type: 6610 DT
Auger Size: NA
Sampler Size: 5' macrocore

Northing: 450742.21
Easting: 13065886.18
Casing Elevation: NA

Borehole Depth: 16'
Surface Elevation: 874.08

Descriptions By: Wayne Patterson

Well/Boring ID: SA10-4

Client: General Motors Corporation

Location: Lansing Plant #6

DRAFT

DEPTH	ELEVATION	Sample Run Number	Sample/Int/Type	Recovery (feet)	PID Headspace (ppm)	Oil/Water Shake Test	pH Value	USCS Code	Geologic Column	Stratigraphic Description	Well/Boring Construction
								NA		ASPHALT	
		1	1 - 6 DP	3	1.6	ND	ND	SP		2.5YR 6/2 Light brownish gray fine POORLY GRADED SAND (SP), dense (>0.28 TSF), moist, nonplastic, rapid dilatancy.	
5	870				1.8			GP		10YR 3/2 Very dark grayish brown PEA GRAFVEL, moist to wet (fill).	Boring backfilled with bentonite.
										Void, wet.	
		2	6-11 DP	0	NR	NR	6-7				
10	865										
		3	11-16 DP	0	NR	NR	ND				
15	860										

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Remarks: Soil sample collected at 9-11' below ground surface and analyzed for metals
NA = not applicable
DP = direct push
Neg = negative
Pos = positive
ND = not done
SAA = same as above
NR = no recovery

Date Start/Finish: 11/4/05
Drilling Company: Altech
Driller's Name: Johnny Davis
Drilling Method: Direct Push
Rig Type: 6610 DT
Auger Size: NA
Sampler Size: 5' macrocore

Northing: 450742.21
Easting: 13065886.18
Casing Elevation: NA

Borehole Depth: 16'
Surface Elevation: 874.08

Descriptions By: Wayne Patterson

Well/Boring ID: SA10-4R

Client: General Motors Corporation

Location: Lansing Plant #6

DRAFT

DEPTH	ELEVATION	Sample Run Number	Sample/Int/Type	Recovery (feet)	PID Headspace (ppm)	Oil/Water Shake Test	pH Value	USCS Code	Geologic Column	Stratigraphic Description	Well/Boring Construction
								NA		ASPHALT	
					ND		7.0			10YR 4/4 Dark yellowish brown SANDY LEAN CLAY (CL), little fine to coarse subangular Sand, medium stiff (O.5 TSF), medium to high dry strength, no dilatancy, medium to high plasticity, medium toughness, little coal beneath asphalt (fill).	
		1	1 - 6 DP	4	0.7	ND	7.0				
	870										
5					0.7		7.0			SAA, 10YR 5/3 Light olive brown, very stiff (>4.5 TSF), little mottling with 10YR 6/1 Gray coloring.	Boring backfilled with bentonite.
					0.4		7.0				
		2	6-11 DP	5		ND		CL			
	865				0.3		7.0				
10											
					0.4		7.0				
					0.2		7.0				
		3	11-16 DP	5		ND					
	860										
15					0.2		7.0				

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Remarks: Soil sample collected at 8 - 10' below ground surface and analyzed for metals.
NA = not applicable
DP = direct push
Neg = negative
Pos = positive
ND = not done
TSF = tons per square feet

Date Start/Finish: 11/2/05
Drilling Company: Altech
Driller's Name: Johnny Davis
Drilling Method: Direct Push
Rig Type: 6610 DT
Auger Size: NA
Sampler Size: 5' macrocore

Northing: 450886.41
Easting: 13066568.27
Casing Elevation: NA

Borehole Depth: 10'
Surface Elevation: 874.35

Descriptions By: Wayne Patterson

Well/Boring ID: SA11-1

DRAFT

Client: General Motors Corporation

Location: Lansing Plant #6

DEPTH / ELEVATION	Sample Run Number	Sample/Int/Type	Recovery (feet)	PID Headspace (ppm)	Oil/Water Shake Test	pH Value	USCS Code	Geologic Column	Stratigraphic Description	Well/Boring Construction
							NA		CONCRETE	
	1	0 - 5 DP	3	0.9	Neg	7.5	CL		10YR 5/3 Brown LEAN CLAY (CL), few fine to coarse subangular Sand, trace fine subangular Gravel, very stiff (3.5 TSF), moist, no odor, no dilatancy, medium toughness, high plasticity (fill).	
870									At 3 to 5' - 10YR 2/2 Very dark brown coloring, trace wood debris, possible organics.	
5										Boring backfilled with bentonite.
	2	5 - 10 DP	4	1.0	ND	8.0	SW		10YR 4/4 Dark yellowish brown fine to coarse WELL GRADED SAND (SW), increasing grain size with depth, 0.21 TSF, dry, no odor, (fill).	
865				1.3		8.0	CL		10YR 5/3 Brown LEAN CLAY with SAND (CL), little fine to coarse subangular Sand, trace fine subangular Gravel, very stiff (2.75 TSF), no dilatancy, high plasticity, medium toughness, medium dry strength, moist, no odor.	
10										
860										
15										

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Remarks: Soil sample collected at 3-5' below ground surface and analyzed for metals
NA = not applicable
DP = direct push
Neg = negative
Pos = positive
ND = not done
TSF = tons per square foot

Project: 64430.203
Data File: SA11-1
Template: I:\rockware\logplot\logfiles\64430\Augerwell2005-LA.ldf
Date: 11/28/05

Date Start/Finish: 11/1/05
Drilling Company: Altech
Driller's Name: Johnny Davis
Drilling Method: Direct Push
Rig Type: 6610 DT
Auger Size: NA
Sampler Size: 5' macrocore

Northing: NA
Easting: NA
Casing Elevation: NA

Borehole Depth: 10'
Surface Elevation: NA

Descriptions By: Wayne Patterson

Well/Boring ID: SA11-1B

DRAFT

Client: General Motors Corporation

Location: Lansing Plant #6

DEPTH / ELEVATION	Sample Run Number	Sample/Int/Type	Recovery (feet)	PID Headspace (ppm)	Oil/Water Shake Test	pH Value	USCS Code	Geologic Column	Stratigraphic Description	Well/Boring Construction
0							NA		CONCRETE	
									Black 10YR 2/1 Clay, fill.	
				3.4		6.5 - 7.0			10YR 4/3 Brown and 10YR 4/2 Dark gray brown mottled LEAN CLAY (CL), few fine-coarse subangular Sand, trace fine subangular Gravel, dry-moist, stiff (2.5 TSF), no dilatancy, medium toughness, medium dry strength, medium plasticity, no odor (fill).	
	1	0 - 5 DP	5		ND					
				3.0		6.5 - 7.0			10YR 4/4 Dark yellow brown with 10YR 6/1 gray colored vertical fractures, LEAN CLAY (CL), few fine-coarse subangular Sand, trace fine subangular Gravel, very stiff-hard, (>4.5 TSF) dry-moist, no odor, no dilatancy, medium toughness, high dry strength, medium plasticity.	
5 -5				3.3		6.5 - 7.0	CL			Boring backfilled with bentonite.
	2	5 - 10 DP	5	1.1	ND	6.5 - 7.0			SAA, no gray vertical coloring.	
				3.7		6.5 - 7.0				
10 -10										
15 -15										

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Remarks: Soil sample collected at 6-8' below ground surface and analyzed for metals
NA = not applicable
DP = direct push
Neg = negative
Pos = positive
ND = not done
SAA = same as above
TSF = tons per square foot

Date Start/Finish: 11/1/05
Drilling Company: Altech
Driller's Name: Johnny Davis
Drilling Method: Direct Push
Rig Type: 6610 DT
Auger Size: NA
Sampler Size: 5' macrocore

Northing: 450965.34
Easting: 13066578.54
Casing Elevation: NA

Borehole Depth: 10'
Surface Elevation: 874.35

Descriptions By: Wayne Patterson

Well/Boring ID: SA11-2

DRAFT

Client: General Motors Corporation

Location: Lansing Plant #6

DEPTH / ELEVATION	Sample Run Number	Sample/Int/Type	Recovery (feet)	PID Headspace (ppm)	Oil/Water Shake Test	pH Value	USCS Code	Geologic Column	Stratigraphic Description	Well/Boring Construction
							NA		CONCRETE	
	1	0 - 5 DP	2	2.3	Neg	6.5 - 7.0	SM		10YR 3/4 Dark yellowish brown SANDY SILT (SM), some fine-medium subangular Sand, trace fine subangular Gravel, rapid dilatancy, nonplastic, low toughness, low dry strength, dry, no odor, little black staining at 4.0' and 4.5', loose, fill.	
870				1.2		6.5 - 7.0				
5										Boring backfilled with bentonite.
	2	5 - 10 DP	4	1.6	Neg	6.5 - 7.0	CL		10YR 4/3 Brown and 10YR 5/6 yellowish brown mottled LEAN CLAY (CL), medium plasticity, no dilatancy, high dry strength, medium toughness, dry-moist, no odor, medium stiff.	
				2.4		6.5 - 7.0				
865							SP		10YR 6/11 Light yellowish brown very fine POORLY GRADED SAND (SP), loose, dry, no odor.	
10							CL		10YR 4/3 Brown LEAN CLAY (CL), few fine-coarse subangular Sand, medium dry strength, no dilatancy, medium plasticity, medium toughness, stiff (3.0 TSF), dry-moist, no odor, native.	
860										
15										

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Remarks: Soil sample collected at 6-8' below ground surface and analyzed for metals
NA = not applicable
DP = direct push
Neg = negative
Pos = positive
ND = not done
TSF = tons per square foot

Date Start/Finish: 10/31/05
Drilling Company: Altech
Driller's Name: Johnny Davis
Drilling Method: Direct Push
Rig Type: 6610 DT
Auger Size: NA
Sampler Size: 5' macrocore

Northing: 451030.73
Easting: 13066578.13
Casing Elevation: NA

Borehole Depth: 7.5
Surface Elevation: 874.27

Descriptions By: Wayne Patterson

Well/Boring ID: SA11-3

Client: General Motors Corporation

Location: Lansing Plant #6

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DEPTH / ELEVATION	Sample Run Number	Sample/Int/Type	Recovery (feet)	PID Headspace (ppm)	Oil/Water Shake Test	pH Value	USCS Code	Geologic Column	Stratigraphic Description	Well/Boring Construction
							NA		CONCRETE	
	1	0 - 5 DP	2.5	0.8 0.8	ND	ND	SP		10YR 4/3 Brown fine POORLY GRADED SAND (SP), loose-medium dense, dry, no odor, trace Silt, (fill).	Boring backfilled with bentonite.
870 5	2	5 - 7.2' DP	2	1.3	ND	ND			Refusal	
865 10										
860 15										

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Remarks: Soil sample collected at 5.5-7.5' below ground surface and analyzed for metals
NA = not applicable
DP = direct push
Neg = negative
Pos = positive
ND = not done

Date Start/Finish: 10/31/05
Drilling Company: Altech
Driller's Name: Johnny Davis
Drilling Method: Direct Push
Rig Type: 6610 DT
Auger Size: NA
Sampler Size: 5' macrocore

Northing: 451111.51
Easting: 13066575.15
Casing Elevation: 874.32

Borehole Depth: 10'
Surface Elevation: NA

Descriptions By: Wayne Patterson

Well/Boring ID: SA11-4

DRAFT

Client: General Motors Corporation

Location: Lansing Plant #6

DEPTH / ELEVATION	Sample Run Number	Sample/Int/Type	Recovery (feet)	PID Headspace (ppm)	Oil/Water Shake Test	pH Value	USCS Code	Geologic Column	Stratigraphic Description	Well/Boring Construction
							NA		CONCRETE	
				4.1		6.5 - 7.0			10YR 4/6 Dark yellowish brown LEAN CLAY (CL), trace fine-coarse subangular sand, stiff (3.5 TSF), medium dry strength, no dilatancy, medium toughness, dry, no odor, (fill).	
	1	0 - 5 DP	4.5		ND					
				2.1		6.5 - 7.0			10 YR 5/4 Yellowish brown with 10YR 6/1 gray mottling LEAN CLAY (CL), trace fine-coarse subangular Sand, very stiff (>4.5 TSF), dry, no odor, no dilatancy, medium toughness, medium dry strength, medium plasticity.	
870										
5				3.5		6.5 - 7.0	CL			Boring backfilled with bentonite.
	2	5 - 10 DP	5.0	1.7	ND	6.5 - 7.0				
									10YR 4/4 Dark yellowish brown LEAN CLAY (CL), trace medium-coarse subangular Sand, very stiff (3.5 TSF) dry, no odor, high dry strength, high plasticity, no dilatancy.	
865				1.7		6.5 - 7.0				
10										
860										
15										

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Remarks: Soil sample collected at 8-10' below ground surface and analyzed for metals
NA = not applicable
DP = direct push
Neg = negative
Pos = positive
ND = not done
TSF = tons per square foot

Date Start/Finish: 10/31/05
Drilling Company: Altech
Driller's Name: Johnny Davis
Drilling Method: Direct Push
Rig Type: 6610 DT
Auger Size: NA
Sampler Size: 5' macrocore

Northing: 451187.49
Easting: 13066569.90
Casing Elevation: NA

Borehole Depth: 10'
Surface Elevation: 874.33

Descriptions By: Wayne Patterson

Well/Boring ID: SA11-5

Client: General Motors Corporation

Location: Lansing Plant #6

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DEPTH / ELEVATION	Sample Run Number	Sample/Int/Type	Recovery (feet)	PID Headspace (ppm)	Oil/Water Shake Test	pH Value	USCS Code	Geologic Column	Stratigraphic Description	Well/Boring Construction
							NA		CONCRETE	
				5.4		6.5 - 7.0			10YR 5/4 Yellowish brown LEAN CLAY (CL), trace fine-coarse angular Sand, moist, no dilatancy, high dry strength, low toughness, high plasticity soft, (1.0 TSF), no odor. (fill).	
	1	0 - 5 DP	4.5		ND					
				2.5		6.5 - 7.0			10 YR 5/4 Yellowish brown with 10YR 6/1 gray bertical fractures LEAN CLAY (CL), trace fine-coarse subrounded Sand, medium toughness, medium dry strength, low plasticity, dry, no odor, hard (>4.5 TSF).	
870										
5				3.5		6.5 - 7.0	CL			Boring backfilled with bentonite.
				2.2		6.5 - 7.0				
	2	5 - 10 DP	5.0		ND				10YR 5/4 Yellowish brown LEAN CLAY (CL), trace fine-coarse subangular Sand, moist, high dry strength, no dilatancy, high toughness, high plasticity, no odor, 1" Sand lense at 8', stiff (2.5TSF). (native)	
865				3.6		6.5 - 7.0				
10										
860										
15										

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Remarks: Soil sample collected at 0.7-2.7' below ground surface and analyzed for metals
NA = not applicable
DP = direct push
Neg = negative
Pos = positive
ND = not done
TSF = tons per square foot

Date Start/Finish: 10/31/05
Drilling Company: Altech
Driller's Name: Johnny Davis
Drilling Method: Direct Push
Rig Type: 6610 DT
Auger Size: NA
Sampler Size: 5' macrocore

Northing: 451264.74
Easting: 13066568.68
Casing Elevation: NA

Borehole Depth: 10'
Surface Elevation: 874.36

Descriptions By: Wayne Patterson

Well/Boring ID: SA11-6

Client: General Motors Corporation

Location: Lansing Plant #6

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DEPTH / ELEVATION	Sample Run Number	Sample/Int/Type	Recovery (feet)	PID Headspace (ppm)	Oil/Water Shake Test	pH Value	USCS Code	Geologic Column	Stratigraphic Description	Well/Boring Construction
							NA		CONCRETE	
				2.4		6.5 - 7.0	ML		10YR 4/4 Dark yellowish brown SILT (ML), nonplastic, low dry strength, at 2.5', cobble or coarse Gravel.	
	1	0 - 5 DP	5	1.3	ND	6.5 - 7.0			10 YR 4/4 Dark yellowish brown LEAN CLAY (CL), trace fine-coarse angular-subangular Sand, medium plasticity, medium toughness, no dilatancy, medium dry strength, stiff.	
870										
5				2.2		6.5 - 7.0				Boring backfilled with bentonite.
							CL		SAA, 10YR 4/4 Dark yellow brown fine poorly graded Sand (SP), dense, dry, no odor.	
	2	5 - 10 DP	4.5	1.7	ND	6.5 - 7.0			SAA, Trace fine subangular Gravel	
865				1.6		6.5 - 7.0				
10										
860										
15										

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Remarks: Soil sample collected at 2-4' below ground surface and analyzed for metals
NA = not applicable
DP = direct push
Neg = negative
Pos = positive
ND = not done
SAA = same as above
TSF = tons per square foot

Date Start/Finish: 10/31/05
Drilling Company: Altech
Driller's Name: Johnny Davis
Drilling Method: Direct Push
Rig Type: 6610 DT
Auger Size: NA
Sampler Size: NA

Northing: 451337.49
Easting: 13066570.16
Casing Elevation: NA

Borehole Depth: 10'
Surface Elevation: 874.32

Descriptions By: Wayne Patterson

Well/Boring ID: SA11-7

Client: General Motors Corporation

Location: Lansing Plant #6

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DEPTH / ELEVATION	Sample Run Number	Sample/Int/Type	Recovery (feet)	PID Headspace (ppm)	Oil/Water Shake Test	pH Value	USCS Code	Geologic Column	Stratigraphic Description	Well/Boring Construction
							NA		CONCRETE	
	1	0 - 5 DP	4.0	1.5	ND	6.5 - 7.0 6.5 - 7.0	ML		10YR 4/4 Dark yellowish brown SILT (ML), dry, no odor, some fine Sand (3" thick) at surface, stiff (2.5 TSF), nonplastic. (fill).	
870										
5									10 YR 5/6 Yellowish brown with 10YR 6/1 gray mottling LEAN CLAY (CL), few fine-coarse angular Sand, trace fine angular Gravel, very stiff, dry, no odor, medium toughness, medium plasticity, no dilatancy.	Boring backfilled with bentonite.
	2	5 - 10 DP	5.0	1.5	ND	6.5 - 7.0 6.5 - 7.0	CL		10YR 4/4 Dark yellowish brown LEAN CLAY (CL), trace fine-coarse angular-subangular Sand, trace fine subangular-subrounded Gravel, stiff, damp, no odor, interbedded with fine Poorly Graded Sand (SP) lenses up to 3" thick, medium density, dry, no odor, medium toughness, medium plasticity, no dilatancy.	
865										
10										
860										
15										

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Remarks: Soil sample collected at 4-6' below ground surface and analyzed for metals
NA = not applicable
DP = direct push
Neg = negative
Pos = positive
ND = not done
TSF = tons per square foot

Date Start/Finish: 10/31/05
Drilling Company: Altech
Driller's Name: Johnny Davis
Drilling Method: Direct Push
Rig Type: 6610 DT
Auger Size: NA
Sampler Size: 5' macrocore

Northing: 451412.20
Easting: 13066564.37
Casing Elevation: NA

Borehole Depth: 10'
Surface Elevation: 874.34

Descriptions By: Wayne Patterson

Well/Boring ID: SA11-8

Client: General Motors Corporation

Location: Lansing Plant #6

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DEPTH / ELEVATION	Sample Run Number	Sample/Int/Type	Recovery (feet)	PID Headspace (ppm)	Oil/Water Shake Test	pH Value	USCS Code	Geologic Column	Stratigraphic Description	Well/Boring Construction
							NA		CONCRETE	
						6.5 - 7.0	ML		10YR 4/4 Dark yellowish brown SILT (ML), dry, no odor, some fine Sand at surface, stiff (2.5 TSF) , nonplastic, (fill).	
870 5	1	0 - 5 DP	5	1.0	Neg	6.5 - 7.0	CL		10YR 5/6 Yellowish brown with 10YR 6/1 gray mottling, LEAN CLAY (CL), few fine-coarse angular Sand, trace fine angular Gravel, stiff, dry, no odor, medium toughness, medium plasticity, no dilatancy.	Boring backfilled with bentonite.
	2	5 - 10 DP	4.3	1.0	Neg	6.5 - 7.0			10YR 4/4 Brown LEAN CLAY (CL), few fine-coarse angular Sand, trace fine angular Gravel, stiff, moist, no odor, medium toughness, medium plasticity, no dilatancy.	
865 10										
860 15										

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Remarks: Soil sample collected at 8-10' below ground surface and analyzed for metals
NA = not applicable
DP = direct push
Neg = negative
Pos = positive
ND = not done
TSF = tons per square foot

Date Start/Finish: 11/2/05
Drilling Company: Altech
Driller's Name: Johnny Davis
Drilling Method: Direct Push
Rig Type: 6610 DT
Auger Size: NA
Sampler Size: 5' macrocore

Northing: 450879.55
Easting: 13066640.36
Casing Elevation: NA

Borehole Depth: 10'
Surface Elevation: 874.30

Descriptions By: Wayne Patterson

Well/Boring ID: SA11-9

DRAFT

Client: General Motors Corporation

Location: Lansing Plant #6

DEPTH / ELEVATION	Sample Run Number	Sample/Int/Type	Recovery (feet)	PID Headspace (ppm)	Oil/Water Shake Test	pH Value	USCS Code	Geologic Column	Stratigraphic Description	Well/Boring Construction
							NA		CONCRETE	
				5.3		6.5-7.0			10YR 4/4 Dark yellowish brown LEAN CLAY with SAND (CL), little fine to coarse subangular Sand, trace fine subangular Gravel, very stiff (3.5 TSF), high dry strength, medium to high toughness, high plasticity, dry to moist, no odor, fill.	
	1	0 - 5 DP	4.7		ND					
				4.3		6.5-7.0			SAA, At 0.75 to 1.5' - mottling with 10YR 4/3 brown.	
870									SAA, At 1.5 to 5.0' - No mottling, occassional vertical fractures with 10YR 6/1 Gray coloring.	
5				4.4		6.5-7.0	CL			Boring backfilled with bentonite.
				4.7		6.5-7.0				
	2	5 - 10 DP	5		ND					
865				3.6		9.0				
10										
860										
15										

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Remarks: Soil sample collected at 8-10' below ground surface and analyzed for metals
NA = not applicable
DP = direct push
Neg = negative
Pos = positive
ND = not done
TSF = tons per square foot

Date Start/Finish: 11/2/05
Drilling Company: Altech
Driller's Name: Johnny Davis
Drilling Method: Direct Push
Rig Type: 6610 DT
Auger Size: NA
Sampler Size: 5' macrocore

Northing: 450960.62
Easting: 13066643.90
Casing Elevation: NA

Borehole Depth: 10'
Surface Elevation: 874.30

Descriptions By: Wayne Patterson

Well/Boring ID: SA11-10

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Client: General Motors Corporation

Location: Lansing Plant #6

DEPTH / ELEVATION	Sample Run Number	Sample/Int/Type	Recovery (feet)	PID Headspace (ppm)	Oil/Water Shake Test	pH Value	USCS Code	Geologic Column	Stratigraphic Description	Well/Boring Construction
							NA		CONCRETE	
870	1	0 - 5 DP	2	4.3	ND	7.5	CL		10YR 4/4 Dark yellowish brown with 10YR 2/2 very dark brown mottling LEAN CLAY with SAND (CL), little fine to coarse subangular Sand, trace fine subangular Gravel, stiff to very stiff (2.5 TSF), no dilatancy, medium dry strength, medium toughness, medium plasticity, dry to moist, no odor, (fill).	
5										Boring backfilled with bentonite.
	2	5 - 10 DP	4	1.4	ND	8.0				
865				1.3		8.0			SAA - 10YR 4/3 Brown, very stiff to hard (>4.5 TSF), medium to high dry strength.	
10										
860										
15										

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Remarks: Soil sample collected at 3-5' below ground surface and analyzed for metals
NA = not applicable
DP = direct push
Neg = negative
Pos = positive
ND = not done
TSF = tons per square foot

Date Start/Finish: 11/1/05
Drilling Company: Altech
Driller's Name: Johnny Davis
Drilling Method: Direct Push
Rig Type: 6610 DT
Auger Size: NA
Sampler Size: 5' macrocore

Northing: 451032.36
Easting: 13066648.94
Casing Elevation: NA

Borehole Depth: 10'
Surface Elevation: 874.31

Descriptions By: Wayne Patterson

Well/Boring ID: SA11-11

Client: General Motors Corporation

Location: Lansing Plant #6

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DEPTH / ELEVATION	Sample Run Number	Sample/Int/Type	Recovery (feet)	PID Headspace (ppm)	Oil/Water Shake Test	pH Value	USCS Code	Geologic Column	Stratigraphic Description	Well/Boring Construction
							NA		CONCRETE	
				0.4		7.0			10YR 4/4 Dark yellow brown and 10YR 4/2 dark gray brown mottled LEAN CLAY (CL), few fine-coarse subangular Sand, trace fine subangular Gravel, dry-moist, stiff (1.75 TSF), no dilatancy, medium toughness, medium dry strength, medium plasticity, no odor, fill.	
	1	0 - 5 DP	5		ND					
				1.3		7.0			10YR 4/4 Dark yellow brown LEAN CLAY (CL), 10YR 6/1 gray colored vertical fractures, few fine-coarse subangular Sand, trace fine subangular Gravel, very stiff (>4.5 TSF), no dilatancy, medium toughness, high dry strength, medium plasticity.	
870										
5				1.0		7.0	CL			Boring backfilled with bentonite.
				2.2		7.0				
	2	5 - 10 DP	5		ND				SAA, no gray colored vertical coloring.	
865				1.8		7.0				
10										
860										
15										

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Remarks: Soil sample collected at 4-6' below ground surface and analyzed for metals
NA = not applicable
DP = direct push
Neg = negative
Pos = positive
ND = not done
SAA = same as above
TSF = tons per square foot

Date Start/Finish: DRAFT
Drilling Company: Altech
Driller's Name: Johnny Davis
Drilling Method: Direct Push
Rig Type: 6610 DT
Auger Size: NA
Sampler Size: 5' macrocore

Northing: 451111.41
Easting: 13066649.05
Casing Elevation: NA

Borehole Depth: 10'
Surface Elevation: 874.12

Descriptions By: Wayne Patterson

Well/Boring ID: SA11-12

DRAFT

Client: General Motors Corporation

Location: Lansing Plant #6

DEPTH / ELEVATION	Sample Run Number	Sample/Int/Type	Recovery (feet)	PID Headspace (ppm)	Oil/Water Shake Test	pH Value	USCS Code	Geologic Column	Stratigraphic Description	Well/Boring Construction
0							NA		CONCRETE	
	1	0 - 5 DP	4.7	3.7	ND	7.0	CL		10YR 5/6 Yellowish brown with 10YR 6/1 gray mottling LEAN CLAY (CL), trace fine subangular Sand, dry-moist, medium stiff (0.75 TSF), no dilatancy, high dry strength, medium toughness, high plasticity, no odor (fill).	
870				2.5		7.0				
5				2.4		7.0				Boring backfilled with bentonite.
	2	5 - 10 DP	5	1.4	ND	7.0			10YR 5/4 Yellowish brown LEAN CLAY with SAND (CL), little fine-coarse subangular Gravel, trace fine subangular Gravel, medium stiff (0.75 TSF), no dilatancy, low toughness, medium dry strength, medium plasticity, moist, no odor.	
865				1.5		7.0				
10										
860										
15										

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Remarks: Soil sample collected at 2-4' below ground surface and analyzed for metals
NA = not applicable
DP = direct push
Neg = negative
Pos = positive
ND = not done
TSF = tons per square foot

Project: 64430.020
Data File: SA11-12
Template: :I\rockware\logplot\logfiles\template\Auger_well2003-LA.ldf
Date: 11/09/05

Date Start/Finish: 11/1/05
Drilling Company: Altech
Driller's Name: Johnny Davis
Drilling Method: Direct Push
Rig Type: 6610 DT
Auger Size: NA
Sampler Size: 5' macrocore

Northing: 451263.66
Easting: 13066650.40
Casing Elevation: NA

Borehole Depth: 10'
Surface Elevation: 874.24

Descriptions By: Wayne Patterson

Well/Boring ID: SA11-14

Client: General Motors Corporation

Location: Lansing Plant #6

DRAFT

DEPTH / ELEVATION	Sample Run Number	Sample/Int/Type	Recovery (feet)	PID Headspace (ppm)	Oil/Water Shake Test	pH Value	USCS Code	Geologic Column	Stratigraphic Description	Well/Boring Construction
							NA		CONCRETE	
	1	0 - 5 DP	3	2.2	ND	6.5 - 7.0	SM		10YR 5/4 Yellowish brown fine POORLY GRADED SAND with SILT (SM), trace Silt, medium dense, dry, no odor, (fill).	
870				0.9		6.5 - 7.0			10YR 4/4 Dark yellowish brown SANDY LEAN CLAY (CL), some fine-coarse subangular Sand, trace fine subangular Gravel, no dilatancy, high toughness, high plasticity, medium dry strength, stiff (2.5 TSF), dry-moist, no odor.	
5										Boring backfilled with bentonite.
	2	5 - 10 DP	4.5	2.0	ND	6.5 - 7.0	CL			
865				2.9		6.5 - 7.0				
10										
860										
15										

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Remarks: Soil sample collected at 8-10' below ground surface and analyzed for metals
NA = not applicable
DP = direct push
Neg = negative
Pos = positive
ND = not done
TSF = tons per square foot

Date Start/Finish: 11/1/05
Drilling Company: Altech
Driller's Name: Johnny Davis
Drilling Method: Direct Push
Rig Type: 6610 DT
Auger Size: NA
Sampler Size: 5' macrocore

Northing: 451340.38
Easting: 13066651.77
Casing Elevation: NA

Borehole Depth: 10'
Surface Elevation: 874.24

Descriptions By: Wayne Patterson

Well/Boring ID: SA11-15

Client: General Motors Corporation

Location: Lansing Plant #6

DRAFT

DEPTH / ELEVATION	Sample Run Number	Sample/Int/Type	Recovery (feet)	PID Headspace (ppm)	Oil/Water Shake Test	pH Value	USCS Code	Geologic Column	Stratigraphic Description	Well/Boring Construction
							NA		CONCRETE	
	1	0 - 5 DP	5	0.5	ND	6.5 - 7.0	CL		10YR 4/4 Dark yellowish brown SANDY LEAN CLAY (CL), few vertical fractions with 10YR 6/1 gray coloring, some fine-coarse subangular Sand, trace fine subangular Gravel, no dilatancy, medium-high toughness, high dry strength, medium-high plasticity, dry-moist, no odor, very stiff-hard (>4.5 TSF).	
				1.2		6.5 - 7.0			10YR 4/4 Dark yellowish brown SANDY LEAN CLAY (CL), no vertical fractures, trace fine angular Gravel, dry, medium dense (3.0 TSF).	
870										
5										
	2	5 - 10 DP	4.5	1.3	ND	6.5 - 7.0			at 6.5' a 3" lense of fine-coarse angular-subangular WELL GRADED SAND (SW), trace fine, angular Gravel, dry, medium dense (3.0TSF).	Boring backfilled with bentonite.
							SW			
				1.5		6.5 - 7.0	CL		10YR 4/4 Dark yellowish brown SANDY LEAN CLAY (CL), no vertical fractures, trace fine angular Gravel, dry, medium dense (3.0 TSF).	
865				1.2		6.5 - 7.0				
10										
860										
15										

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Remarks: Soil sample collected at 0-2' below ground surface and analyzed for metals
NA = not applicable
DP = direct push
Neg = negative
Pos = positive
ND = not done
Duplicate collected
TSF = tons per square foot

Date Start/Finish: 11/1/05
Drilling Company: Altech
Driller's Name: Johnny Davis
Drilling Method: Direct Push
Rig Type: 6610 DT
Auger Size: NA
Sampler Size: 5' macrocore

Northing: 451410.75
Easting: 13066652.48
Casing Elevation: NA

Borehole Depth: 10'
Surface Elevation: 874.30

Descriptions By: Wayne Patterson

Well/Boring ID: SA11-16

Client: General Motors Corporation

Location: Lansing Plant #6

DRAFT

DEPTH / ELEVATION	Sample Run Number	Sample/Int/Type	Recovery (feet)	PID Headspace (ppm)	Oil/Water Shake Test	pH Value	USCS Code	Geologic Column	Stratigraphic Description	Well/Boring Construction
							NA		CONCRETE	
				2.3		6.5 - 7.0			10YR 4/4 Dark yellowish brown LEAN CLAY (CL), trace fine subangular Gravel, stiff (1.5 TSF), dry -moist, no odor, no dilatancy, medium-dry strength, medium toughness, medium plasticity.	
	1	0 - 5 DP	4.3		ND					
				2.2		6.5 - 7.0			10YR 5/6 Yellowish brown SANDY LEAN CLAY (CL), some fine-coarse subangular Sand, trace fine subangular Gravel, no dilatancy, medium toughness, medium plasticity, medium dry strength, stiff (3.0 TSF), dry-moist, no odor, increasing amount of Sand at 8.0'.	
870										
5				2.8		6.5 - 7.0	CL			Boring backfilled with bentonite.
	2	5 - 10 DP	5	2.7	ND	6.5 - 7.0				
865				1.2		6.5 - 7.0				
10										
860										
15										

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Remarks: Soil sample collected at 2-4' below ground surface and analyzed for metals
NA = not applicable
DP = direct push
Neg = negative
Pos = positive
ND = not done
TSF = tons per square foot

Date Start/Finish: 11/1/05
Drilling Company: Altech
Driller's Name: Johnny Davis
Drilling Method: Direct Push
Rig Type: 6610 DT
Auger Size: NA
Sampler Size: 5' macrocore

Northing: 450988.17
Easting: 13066664.96
Casing Elevation: NA

Borehole Depth: 10'
Surface Elevation: 874.32

Descriptions By: Wayne Patterson

Well/Boring ID: SA11-17

DRAFT

Client: General Motors Corporation

Location: Lansing Plant #6

DEPTH / ELEVATION	Sample Run Number	Sample/Int/Type	Recovery (feet)	PID Headspace (ppm)	Oil/Water Shake Test	pH Value	USCS Code	Geologic Column	Stratigraphic Description	Well/Boring Construction
							NA		CONCRETE	
						6.5-7.0			Void space.	
	1	0 - 5 DP	2	1.1	ND	6.5-7.0	GP		10YR 4/3 Brown fine subrounded POORLY GRADED GRAVEL (GP) (Pea Gravel), moist, no odor, loose, (fill).	
870										
5				3.2		6.5-7.0				Boring backfilled with bentonite.
	2	5 - 10 DP	5	1.1	ND	6.5-7.0	CL		10YR 4/4 Dark yellowish brown and 10YR 6/1 gray in vertical fractures LEAN CLAY (CL), hard (>4.5 TSF), no dilatancy, high toughness, high dry strength, high plasticity, dry-moist, no odor.	
865				1.1		6.5-7.0			10YR 4/4 Dark yellow brown and 10YR 6/1 no vertical fractures LEAN CLAY (CL), no vertical fractures or gray coloring, trace fine subangular Sand, stiff (2.5 TSF), moist, no odor.	
10										
860										
15										

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Remarks: Soil sample collected at 4-6' below ground surface and analyzed for metals
NA = not applicable
DP = direct push
Neg = negative
Pos = positive
ND = not done
TSF = tons per square foot

Date Start/Finish: 11/1/05
Drilling Company: Altech
Driller's Name: Johnny Davis
Drilling Method: Direct Push
Rig Type: 6610 DT
Auger Size: NA
Sampler Size: 5' macrocore

Northing: 451025.52
Easting: 13066675.20
Casing Elevation: NA

Borehole Depth: 10'
Surface Elevation: 874.29

Descriptions By: Wayne Patterson

Well/Boring ID: SA11-18

DRAFT

Client: General Motors Corporation

Location: Lansing Plant #6

DEPTH / ELEVATION	Sample Run Number	Sample/Int/Type	Recovery (feet)	PID Headspace (ppm)	Oil/Water Shake Test	pH Value	USCS Code	Geologic Column	Stratigraphic Description	Well/Boring Construction
0							NA		CONCRETE	
									10YR 2/1 Black SLAG, fill.	
				3.4		6.5-7.0			10YR 4/3 Brown and 10YR 4/2 Dark grayish brown mottled LEAN CLAY (CL), few fine to coarse subangular Sand, trace fine subangular Gravel, dry to moist, stiff (2.5 TSF), no dilatancy, medium toughness, medium dry strength, medium plasticity, no odor, (fill).	
	1	0 - 5 DP	5		ND					
				3.0		6.5-7.0			SAA - At 2.5' bgs 10 YR 4/4 Dark yellowish brown with 10YR 6/1 Gray colored vertical fractures, very stiff to hard (> 4.5 TSF), high dry strength.	
870										
5				3.3		6.5-7.0	CL			Boring backfilled with bentonite.
				1.1		6.5-7.0				
	2	5 - 10 DP	5		ND				SAA - No Gray vertical coloring.	
865				3.7		6.5-7.0				
10										
860										
15										

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Remarks: Soil sample collected at 6-8' below ground surface and analyzed for metals
NA = not applicable
DP = direct push
Neg = negative
Pos = positive
ND = not done
TSF = tons per square foot

Date Start/Finish: 11/2/05
Drilling Company: Altech
Driller's Name: Johnny Davis
Drilling Method: Direct Push
Rig Type: 6610 DT
Auger Size: NA
Sampler Size: 5' macrocore

Northing: 451122.37
Easting: 13065956.72
Casing Elevation: NA

Borehole Depth: 16'
Surface Elevation: 869.92

Descriptions By: Wayne Patterson

Well/Boring ID: SA12-1

Client: General Motors Corporation

Location: Lansing Plant #6

DRAFT

DEPTH	ELEVATION	Sample Run Number	Sample/Int/Type	Recovery (feet)	PID Headspace (ppm)	Oil/Water Shake Test	pH Value	USCS Code	Geologic Column	Stratigraphic Description	Well/Boring Construction
								NA		ASPHALT over CONCRETE.	
					0.5		7.5-8.0	SP		10YR 5/4 Yelllowish brown fine angular to subangular POORLY GRADED SAND (SP), 0.11 TSF, dry, no odor (fill).	
		1	1 - 6 DP	5		Neg	7.5-8.0			10YR 4/3 Brown LEAN CLAY with SAND (CL), little fine to coarse subangular Sand, trace fine subangular Gravel, very stiff to hard (>4.5 TSF), no dilatancy, medium to high dry strength, medium toughness, medium to high plasticity, dry, no odor.	
5	865				0.9						
					0.2		7.5-8.0				Boring backfilled with bentonite.
					0.2		7.5-8.0	CL			
		2	6 - 11 DP	3		ND					
10	860				0.9		7.5-8.0			10YR 3/1 Very dark gray SANDY FAT CLAY (CH), some fine to coarse subangular Sand, moist, no odor, high dry strength, no dilatancy, high toughness, soft.	
					1.4		7.5-8.0	CH			
		3	11 - 16 DP	5	1.3	ND	7.5-8.0				
15	855				1.3		7.5-8.0	CL		10YR 4/3 Brown LEAN CLAY with SAND (CL), little fine to coarse subangular Sand, very stiff (2.25 TSF), no dilatancy, medium to high dry strength, high plasticity, medium toughness, dry to moist, no odor.	

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Remarks: Soil sample collected at 9-11' below ground surface and analyzed for metals
NA = not applicable
DP = direct push
Neg = negative
Pos = positive
ND = not done
TSF = tons per square foot

Date Start/Finish: 11/2/05
Drilling Company: Altech
Driller's Name: Johnny Davis
Drilling Method: Direct Push
Rig Type: 6610 DT
Auger Size: NA
Sampler Size: 5' macrocore

Northing: 451152.76
Easting: 13065975.25
Casing Elevation: NA

Borehole Depth: 16'
Surface Elevation: 870.43

Descriptions By: Wayne Patterson

Well/Boring ID: SA12-2

Client: General Motors Corporation

Location: Lansing Plant #6

DRAFT

DEPTH / ELEVATION	Sample Run Number	Sample/Int/Type	Recovery (feet)	PID Headspace (ppm)	Oil/Water Shake Test	pH Value	USCS Code	Geologic Column	Stratigraphic Description	Well/Boring Construction
870							NA		ASPHALT over CONCRETE.	
							SP		10YR 5/4 Yellowish brown fine angular to subangular POORLY GRADED SAND (SP), dry, no odor, (fill).	
	1	1 - 6 DP	5	1.0	Neg	7.5-8.0				
				0.9		7.5-8.0	CL		10YR 3/1 Very dark gray LEAN CLAY with SAND (CL), little fine to coarse subangular Sand, trace fine subangular Gravel, very stiff to hard (>4.5 TSF), no dilatancy, medium to high dry strength, medium toughness, medium to high plasticity, dry, no odor.	
5 865				0.8		7.5-8.0				Boring backfilled with bentonite.
	2	6 - 11 DP	1	0.6	ND	7.5-8.0				
10 860							CH		10YR 3/1 Very dark gray SANDY FAT CLAY (CH), fine to coarse subangular Sand, wet, no odor, high dry strength, no dilatancy, high toughness, soft.	
	3	11 - 16 DP	5	0.6	ND	7.5-8.0	CL		10YR 4/3 Brown fine to medium subangular POORLY GRADED SILTY SAND interbedded with LEAN CLAY with SAND (SM/CL), Sand is 0.12 TSF, nonplastic, no dry strength, low toughness, wet, no odor, Clay is SAA at 2.8 to 10.5'.	
				0.8		7.5-8.0				
15 855				0.3		7.5-8.0				

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Remarks: Soil sample collected at 10-12' below ground surface and analyzed for metals
NA = not applicable
DP = direct push
Neg = negative
Pos = positive
ND = not done
TSF = tons per square foot

Date Start/Finish: 11/2/05
Drilling Company: Altech
Driller's Name: Johnny Davis
Drilling Method: Direct Push
Rig Type: 6610 DT
Auger Size: NA
Sampler Size: 5' macrocore

Northing: 451123.37
Easting: 13065990.71
Casing Elevation: NA

Borehole Depth: 16'
Surface Elevation: 870.47

Descriptions By: Wayne Patterson

Well/Boring ID: SA12-3

Client: General Motors Corporation

Location: Lansing Plant #6

DRAFT

DEPTH / ELEVATION	Sample Run Number	Sample/Int/Type	Recovery (feet)	PID Headspace (ppm)	Oil/Water Shake Test	pH Value	USCS Code	Geologic Column	Stratigraphic Description	Well/Boring Construction
870							NA		ASPHALT over CONCRETE.	
	1	1 - 6 DP	3	0.6	ND	8.0	SM		10YR 3/4 Dark yellowish brown fine to medium POORLY GRADED SAND with SILT (SM), little Silt, (0.27 TSF), moist, no odor, (fill).	
				0.7		8.0				
5 865										Boring backfilled with bentonite.
	2	6 - 11 DP	4	0.2	ND	8.0	CL		10YR 3/1 Very dark gray LEAN CLAY with SAND (CL), little fine to coarse subangular Sand, trace fine subangular Gravel, soft (0.25 TSF), no dilatancy, medium dry strength, medium toughness, high plasticity, moist, no odor.	
10 860				3.2		8.0				
	3	11 - 16 DP	5	0.4	ND	8.0			SAA, At 12 to 13' - Wet.	
				0.9		8.0			SAA, becomes brown, medium stiff (0.75 TSF).	
15 855				0.4		8.0				

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Remarks: Soil sample collected at 10-12' below ground surface and analyzed for metals
NA = not applicable
DP = direct push
Neg = negative
Pos = positive
ND = not done
TSF = tons per square foot

Date Start/Finish: 11/3/05
Drilling Company: Altech
Driller's Name: Johnny Davis
Drilling Method: Direct Push
Rig Type: 6610 DT
Auger Size: NA
Sampler Size: 5' macrocore

Northing: 451099.34
Easting: 13065975.00
Casing Elevation: NA

Borehole Depth: 16'
Surface Elevation: 870.41

Descriptions By: Wayne Patterson

Well/Boring ID: SA12-4

Client: General Motors Corporation

Location: Lansing Plant #6

DRAFT

DEPTH / ELEVATION	Sample Run Number	Sample/Int/Type	Recovery (feet)	PID Headspace (ppm)	Oil/Water Shake Test	pH Value	USCS Code	Geologic Column	Stratigraphic Description	Well/Boring Construction
870							NA		ASPHALT over CONCRETE.	
	1	1 - 6 DP	5	0.7	ND	7.0-7.5	CL		10YR 4/2 Dark grayish brown LEAN CLAY with SAND (CL), little fine to coarse subangular Sand, trace fine angular to subangular Gravel, stiff (2.25 TSF), no dilatancy, high plasticity, medium to high dry strength, medium toughness, dry, no odor (fill).	
				1.8		7.0-7.5			SAA, At 1 to 3' - little 10YR 2/2 very dark brown coloring, some angular to subangular Gravel.	
5 865				0.8		7.0-7.5			10YR 5/2 Grayish brown LEAN CLAY with SAND (CL), little fine to coarse subangular Sand, trace fine subangular Gravel, very stiff to hard (>4.5 TSF), no dilatancy, medium plasticity, medium toughness, high dry strength, dry to moist, no odor.	Boring backfilled with bentonite.
	2	6 - 11 DP	2	NA	ND	NA				
				NA		NA				
10 860				5.2		7.0-7.5	CL			
	3	11 - 16 DP	5	383	Pos	7.0-7.5				
				10.3		7.0-7.5			SAA, becomes brown, high plasticity, medium to dry strength, moist, no odor.	
15 855				0.7		7.0-7.5				

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Remarks: Soil sample collected at 11-13' below ground surface and analyzed for VOCs, SVOCs, and metals
NA = not applicable
DP = direct push
Neg = negative
Pos = positive
ND = not done
TSF = tons per square foot

Project: 64430.203
Data File: SA12-4
Template: I:\rockware\logplot\logfiles\64430\Augerwell2005-LA.ldf
Date: 11/28/05

Date Start/Finish: 11/8/05
Drilling Company: Altech
Driller's Name: Johnny Davis
Drilling Method: Direct Push
Rig Type: 6610 DT
Auger Size: NA
Sampler Size: 5' macrocore

Northing: 451317.01
Easting: 13066141.29
Casing Elevation: NA

Borehole Depth: 16'
Surface Elevation: 869.60

Descriptions By: Wayne Patterson

Well/Boring ID: SA13-1

Client: General Motors Corporation

Location: Lansing Plant #6

DRAFT

DEPTH	ELEVATION	Sample Run Number	Sample/Int/Type	Recovery (feet)	PID Headspace (ppm)	Oil/Water Shake Test	pH Value	USCS Code	Geologic Column	Stratigraphic Description	Well/Boring Construction
								NA		CONCRETE	
					5.6		6-7	SP		10YR 4/6 Dark yellowish brown fine-coarse POORLY GRADED SAND (SP), trace fine subangular Gravel, trace Silt, dry, no odor, (fill).	
		1	1 - 6 DP	3		ND					
	865				6.0		6-7				
5											Boring backfilled with bentonite.
							6-7				
		2	6-11 DP	4	1.0	ND	6-7			SAA, 4" Asphalt SAA, Pea Gravel, some Clay, fill.	
	860				0.7		6-7				
10											
							6-7	SP GP		SAND and GRAVEL (SP/GP), very little recovery, very soft, wet.	
		3	11-16 DP	0.1	ND	ND					
	855						6-7				
15											

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Remarks: Soil sample collected at 7-9' below ground surface and analyzed for metals
NA = not applicable
DP = direct push
Neg = negative
Pos = positive
ND = not done
SAA = same as above

Date Start/Finish: 11/8/05
Drilling Company: Altech
Driller's Name: Johnny Davis
Drilling Method: Direct Push
Rig Type: 6610 DT
Auger Size: NA
Sampler Size: 5' macrocore

Northing: 451320.56
Easting: 13066154.32
Casing Elevation: NA

Borehole Depth: 16'
Surface Elevation: 869.77

Descriptions By: Wayne Patterson

Well/Boring ID: SA13-2

Client: General Motors Corporation

Location: Lansing Plant #6

DRAFT

DEPTH	ELEVATION	Sample Run Number	Sample/Int/Type	Recovery (feet)	PID Headspace (ppm)	Oil/Water Shake Test	pH Value	USCS Code	Geologic Column	Stratigraphic Description	Well/Boring Construction
								NA		CONCRETE	
		1	0 - 6 DP	2	0.5	ND	6-7 6-7	SP		10YR 4/6 Dark yellowish brown fine-coarse POORLY GRADED SAND (SP), trace fine subangular Gravel, trace Silt, dry, no odor (fill).	
5	865										
		2	6-11 DP	3	0.7 0.5	ND	6-7 6-7 6-7			SAA, 4" Asphalt SAA, Pea Gravel, some Clay, fill.	Boring backfilled with bentonite.
10	860										
		3	11-16 DP	0		ND	6-7 6-7	SP/GP		SAND and GRAVEL (SP/GP), very little recovery, very soft, wet.	
15	855										

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Remarks: Soil sample collected at 9-11' below ground surface and analyzed for metals
NA = not applicable
DP = direct push
Neg = negative
Pos = positive
ND = not done
SAA = same as above

Date Start/Finish: 11/9/05
Drilling Company: Altech
Driller's Name: Johnny Davis
Drilling Method: Direct Push
Rig Type: 6610 DT
Auger Size: NA
Sampler Size: 5' macrocore

Northing: 451320.56
Easting: 13066154.32
Casing Elevation: NA

Borehole Depth: 10'
Surface Elevation: 869.77

Descriptions By: Wayne Patterson

Well/Boring ID: SA14-1

Client: General Motors Corporation

Location: Lansing Plant #6

DRAFT

DEPTH / ELEVATION	Sample Run Number	Sample/Int/Type	Recovery (feet)	PID Headspace (ppm)	Oil/Water Shake Test	pH Value	USCS Code	Geologic Column	Stratigraphic Description	Well/Boring Construction
							NA		CONCRETE	
	1	0 - 5 DP	3.5	5.0	Neg	7.0-8.0	SP		2.5Y 6/4 Light yellowish brown fine POORLY GRADED SAND (SP), loose, nonplastic, dry, no odor, (fill).	
				5.1		7.0-8.0				
5 / 865										Boring backfilled with bentonite.
	2	5 - 10 DP	4	5.7	Neg	7.0-8.0				
				5.5		7.0-8.0			SAA, 10YR 5/3 Brown, few Clay, trace fine angular Gravel.	
10 / 860										
15 / 855										

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Remarks: Soil sample collected at 8-10' below ground surface and analyzed for metals
NA = not applicable
DP = direct push
Neg = negative
Pos = positive
ND = not done
TSF = tons per square foot

Date Start/Finish: 11/4/05
Drilling Company: Altech
Driller's Name: Johnny Davis
Drilling Method: Direct Push
Rig Type: 6610 DT
Auger Size: NA
Sampler Size: 5' macrocore

Northing: 450682.58
Easting: 13065764.98
Casing Elevation: NA

Borehole Depth: 16'
Surface Elevation: 870.90

Descriptions By: Wayne Patterson

Well/Boring ID: SA20-1

Client: General Motors Corporation

Location: Lansing Plant #6

DRAFT

DEPTH / ELEVATION	Sample Run Number	Sample/Int/Type	Recovery (feet)	PID Headspace (ppm)	Oil/Water Shake Test	pH Value	USCS Code	Geologic Column	Stratigraphic Description	Well/Boring Construction
870							NA		CONCRETE.	
							GP		GRAVEL (GP).	
	1	1 - 6 DP	3	0.3	ND	7.0-7.5	CL		10YR 4/4 Dark yellowish brown and 10YR 6/1 Gray mottled LEAN CLAY (CL), trace fine to coarse angular to subangular Sand, trace fine angular to subangular Gravel, soft, moist, no odor, high plasticity, low to medium toughness, medium dry strength, no dilatancy, trace coal in top 1' (fill).	
5									SAA, At 4' - Wet.	Boring backfilled with bentonite.
865				0.9		7.0-7.5				
	2	6-11 DP	5	0.5	ND	7.0-7.5	SM		2.5Y 4/3 Olive brown fine to coarse angular to subangular SILTY SAND (SM), decreasing grain size with depth, dense (>0.28 TSF), wet, no odor.	
10										
860				0.6		7.0-7.5				
	3	11-16 DP	5	0.5	ND	7.0-7.5				
15				0.8		7.0-7.5				
855										

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Remarks: Soil sample collected at 4-6' below ground surface and analyzed for metals
NA = not applicable
DP = direct push
Neg = negative
Pos = positive
ND = not done
TSF = tons per square foot

Project: 64430.203
Data File: SA20-1
Template: I:\rockware\logplot\logfiles\64430\Augerwell2005-LA.ldf
Date: 11/29/05

Date Start/Finish: 11/4/05
Drilling Company: Altech
Driller's Name: Johnny Davis
Drilling Method: Direct Push
Rig Type: 6610 DT
Auger Size: NA
Sampler Size: 5' macrocore

Northing: 450655.65
Easting: 13065820.29
Casing Elevation: NA

Borehole Depth: 16'
Surface Elevation: 871.74

Descriptions By: Wayne Patterson

Well/Boring ID: SA20-2

DRAFT

Client: General Motors Corporation

Location: Lansing Plant #6

DEPTH / ELEVATION	Sample Run Number	Sample/Int/Type	Recovery (feet)	PID Headspace (ppm)	Oil/Water Shake Test	pH Value	USCS Code	Geologic Column	Stratigraphic Description	Well/Boring Construction
							NA		CONCRETE.	
870	1	1 - 6 DP	5	0.6	ND	9.5			10YR 4/4 Dark Yellowish brown LEAN CLAY (CL), few fine to coarse angular to subangular Sand, trace fine subrounded Gravel, stiff (1.25 TSF), becoming very stiff (4.0 TSF) at 9', medium dry strength, medium to high toughness, med to high plasticity, no dilatancy, dry to moist, no odor, some mottling with 10YR 6/1Gray down to 11' (fill).	
				0.8		9.5				
5										Boring backfilled with bentonite.
865	2	6-11 DP	4	1.7	ND	9.5	CL			
				0.6		9.5				
10										
860	3	11-16 DP	4	0.7	ND	8.5				
				0.5		8.5			SAA, Color becomes 10YR 4/1 Dark gray, moist.	
15										
855										

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Remarks: Soil sample collected at 14-16' below ground surface and analyzed for metals
NA = not applicable
DP = direct push
Neg = negative
Pos = positive
ND = not done
TSF = tons per square foot

Date Start/Finish: 11/4/05
Drilling Company: Altech
Driller's Name: Johnny Davis
Drilling Method: Direct Push
Rig Type: 6610 DT
Auger Size: NA
Sampler Size: 5' macrocore

Northing: 450709.07
Easting: 13065797.28
Casing Elevation: NA

Borehole Depth: 16'
Surface Elevation: 871.23

Descriptions By: Wayne Patterson

Well/Boring ID: SA20-3

Client: General Motors Corporation

Location: Lansing Plant #6

DRAFT

DEPTH / ELEVATION	Sample Run Number	Sample/Int/Type	Recovery (feet)	PID Headspace (ppm)	Oil/Water Shake Test	pH Value	USCS Code	Geologic Column	Stratigraphic Description	Well/Boring Construction
									Gravel.	
870	1	1 - 6 DP	2	0.5	ND	6.5-7.0	SM		10YR 4/4 Dark Yelllowish brown fine to coarse angular to subangular SILTY SAND (SM), dense to very dense (>0.28 TSF), moist, no odor, (fill).	
5										Boring backfilled with bentonite.
865	2	6-11 DP	3	0.7	ND	6.5-7.0				
				0.7		6.5-7.0	CL		10YR 4/1 Dark gray LEAN CLAY with SAND (CL), little fine to coarse angular to subangular Sand, soft, moist, no odor, no dilatancy, medium to high plasticity, low to medium toughness, medium dry strength (fill).	
10										
860	3	11-16 DP	4.5	0.4	ND	6.5-7.0				
									SAA, 10YR 4/3 Brown coloring.	
15				0.2		6.5-7.0			SAA, Medium stiff (1.0 TSF).	
855										

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Remarks: Soil sample collected at 7-9' below ground surface and analyzed for metals
NA = not applicable
DP = direct push
Neg = negative
Pos = positive
ND = not done
TSF = tons per square foot

Date Start/Finish: 11/4/05
Drilling Company: Altech
Driller's Name: Johnny Davis
Drilling Method: Direct Push
Rig Type: 6610 DT
Auger Size: NA
Sampler Size: 5' macrocore

Northing: 450676.25
Easting: 13065859.63
Casing Elevation: NA

Borehole Depth: 16'
Surface Elevation: 873.72

Descriptions By: Wayne Patterson

Well/Boring ID: SA20-4

Client: General Motors Corporation

Location: Lansing Plant #6

DRAFT

DEPTH / ELEVATION	Sample Run Number	Sample/Int/Type	Recovery (feet)	PID Headspace (ppm)	Oil/Water Shake Test	pH Value	USCS Code	Geologic Column	Stratigraphic Description	Well/Boring Construction
							NA		ASPHALT.	
	1	1 - 6 DP	4	0.7 1.0	ND	6.5-7.0 9.5	SW		10YR 4/4 Dark yellowish brown fine to coarse angular to subangular WELL GRADED SAND (SW), trace Silt, dry to moist, no odor, dense to very dense (>0.28 TSF), (fill).	Boring backfilled with bentonite.
870 5	2	6-11 DP	5	1.4 1.4 13.3	Neg	ND 8.5 10.5			SAA, Moist to wet, some Wood, mostly Gravel, little 10YR 2/1 Black staining.	
865 10	3	11-16 DP	4	9.2 1.6	ND	7.5 7.5	CL		10YR 4/4 Dark yellowish brown LEAN CLAY (CL), few fine to coarse angular to subangular Sand, trace fine subrounded Gravel, very stiff (4.0 TSF), medium dry strength, medium to high toughness, medium to high plasticity, no dilatancy, dry to moist, no odor (fill).	
860 15										
855										

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Remarks: Soil sample collected at 10-12' below ground surface and analyzed for VOCs and metals
NA = not applicable
DP = direct push
Neg = negative
Pos = positive
ND = not done
TSF = tons per square foot

Date Start/Finish: 11/2/05
Drilling Company: Altech
Driller's Name: Johnny Davis
Drilling Method: Direct Push
Rig Type: 6610 DT
Auger Size: NA
Sampler Size: 5' macrocore

Northing: 450789.80
Easting: 13066446.03
Casing Elevation: NA

Borehole Depth: 10'
Surface Elevation: 874.27

Descriptions By: Wayne Patterson

Well/Boring ID: SA22-2

DRAFT

Client: General Motors Corporation

Location: Lansing Plant #6

DEPTH / ELEVATION	Sample Run Number	Sample/Int/Type	Recovery (feet)	PID Headspace (ppm)	Oil/Water Shake Test	pH Value	USCS Code	Geologic Column	Stratigraphic Description	Well/Boring Construction
							NA		CONCRETE	
				4.5		6.5-7.0	CL		10YR 4/4 Dark yellowish brown LEAN CLAY with SAND (CL), little fine to coarse subangular Sand, trace fine subangular Gravel, stiff (>4.5 TSF), medium to high dry strength, medium toughness, medium to high plasticity, dry, no odor, fill.	
	1	0 - 5 DP	4.5		Neg					
				4.1		6.5-7.0			SAA, At 3 to 4' - 10YR 2/2 Very dark brown coloring.	
870										
5				2.7		6.5-7.0			SAA, At 5.2 to 5.5' - Mostly fine angular Sand.	Boring backfilled with bentonite.
									SAA, At 6 to 6.5' - 5YR 4/3 Reddish brown coloring.	
				4.1		6.5-7.0				
	2	5 - 10 DP	5		ND					
865				3.5		6.5-7.0				
10										
860										
15										

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Remarks: Soil sample collected at 2-4' below ground surface and analyzed for metals
NA = not applicable
DP = direct push
Neg = negative
Pos = positive
ND = not done
TSF = tons per square foot

Date Start/Finish: 11/2/05
Drilling Company: Altech
Driller's Name: Johnny Davis
Drilling Method: Direct Push
Rig Type: 6610 DT
Auger Size: NA
Sampler Size: 5' macrocore

Northing: 450854.99
Easting: 13066462.71
Casing Elevation: NA

Borehole Depth: 10'
Surface Elevation: 874.25

Descriptions By: Wayne Patterson

Well/Boring ID: SA22-3

Client: General Motors Corporation

Location: Lansing Plant #6

DRAFT

DEPTH / ELEVATION	Sample Run Number	Sample/Int/Type	Recovery (feet)	PID Headspace (ppm)	Oil/Water Shake Test	pH Value	USCS Code	Geologic Column	Stratigraphic Description	Well/Boring Construction
							NA		CONCRETE	
				3.4		6.5-7.0			10YR 4/3 Brown SANDY LEAN CLAY (CL), some fine to coarse subangular Sand, trace fine subangular Gravel, very stiff to hard (> 4.5 TSF), dry, no odor, no dilatancy, high dry strenth, medium toughness, medium plasticity, fill.	
	1	0 - 5 DP	4.5		Neg					
				4.2		6.5-7.0	CL		SAA, At 2 - 3' - 10YR 2/2 Very dark brown coloring.	
870										
5				3.2		6.5-7.0				Boring backfilled with bentonite.
									10YR 6/4 Light yellowish brown SILT (ML), 3.5 TSF, dry to moist, no odor, medium to high dry strength, low toughness, low plasticity.	
				5.2		6.5-7.0				
	2	5 - 10 DP	5		ND		ML			
865				4.4		6.5-7.0				
10										
860										
15										

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Remarks: Soil sample collected at 2-4' below ground surface and analyzed for metals
NA = not applicable
DP = direct push
Neg = negative
Pos = positive
ND = not done
TSF = tons per square foot

Date Start/Finish: 11/10/05
Drilling Company: Altech
Driller's Name: Johnny Davis
Drilling Method: Direct Push
Rig Type: 6610 DT
Auger Size: NA
Sampler Size: 5' macrocore

Northing: 450333.68
Easting: 13066146.50
Casing Elevation: NA

Borehole Depth: 10'
Surface Elevation: 874.30

Descriptions By: Wayne Patterson

Well/Boring ID: SA26-3

Client: General Motors Corporation

Location: Lansing Plant #6

DRAFT

DEPTH / ELEVATION	Sample Run Number	Sample/Int/Type	Recovery (feet)	PID Headspace (ppm)	Oil/Water Shake Test	pH Value	USCS Code	Geologic Column	Stratigraphic Description	Well/Boring Construction
							NA		CONCRETE	
870 5	1	0 - 6 DP	3	0.0	ND	6.5-7.0	SP		10YR 4/4 Dark yellowish brown fine POORLY GRADED SAND (SP), loose, moist, no odor, (fill).	Boring backfilled with bentonite.
									Refusal, concrete.	
865 10										
860 15										

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Remarks: Soil sample collected at 3-5' below ground surface and analyzed for metals
NA = not applicable
DP = direct push
Neg = negative
Pos = positive
ND = not done
TSF = tons per square foot

Date Start/Finish: 11/9/05
Drilling Company: Altech
Driller's Name: Johnny Davis
Drilling Method: Direct Push
Rig Type: 6610 DT
Auger Size: NA
Sampler Size: 5' macrocore

Northing: 450474.87
Easting: 13066065.62
Casing Elevation: NA

Borehole Depth: 4'
Surface Elevation: 874.43

Descriptions By: Wayne Patterson

Well/Boring ID: SA28-1

Client: General Motors Corporation

Location: Lansing Plant #6

DRAFT

DEPTH / ELEVATION	Sample Run Number	Sample/Int/Type	Recovery (feet)	PID Headspace (ppm)	Oil/Water Shake Test	pH Value	USCS Code	Geologic Column	Stratigraphic Description	Well/Boring Construction
							NA		CONCRETE	
	1	0 - 4 DP	3	6.5	Neg	13	ML		10YR 3/1 Dark gray SILT (ML), wet, no odor, nonplastic, slow dilatancy, low dry strength, low toughness, (fill). Refusal, concrete over wood.	Boring backfilled with bentonite.
870 5										
865 10										
860 15										

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Remarks: No soil sample collected
NA = not applicable
DP = direct push
Neg = negative
Pos = positive
ND = not done
TSF = tons per square foot

Date Start/Finish: 11/9/05
Drilling Company: Altech
Driller's Name: Johnny Davis
Drilling Method: Direct Push
Rig Type: 6610 DT
Auger Size: NA
Sampler Size: 5' macrocore

Northing: 450507.84
Easting: 13066047.70
Casing Elevation: NA

Borehole Depth: 3'
Surface Elevation: 874.34

Descriptions By: Wayne Patterson

Well/Boring ID: SA28-2

Client: General Motors Corporation

Location: Lansing Plant #6

DRAFT

DEPTH / ELEVATION	Sample Run Number	Sample/Int/Type	Recovery (feet)	PID Headspace (ppm)	Oil/Water Shake Test	pH Value	USCS Code	Geologic Column	Stratigraphic Description	Well/Boring Construction
							NA		CONCRETE	
	1	0 - 3 DP	3	3.7	Neg	13	ML		10YR 3/1 Dark gray SILT (ML), wet, no odor, nonplastic, slow dilatancy, low dry strength, low toughness, (fill).	Boring backfilled with bentonite.
									Refusal, concrete over wood.	
870										
5										
865										
10										
860										
15										

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Remarks: No soil sample collected
NA = not applicable
DP = direct push
Neg = negative
Pos = positive
ND = not done
TSF = tons per square foot

Date Start/Finish: 11/9/05
Drilling Company: Altech
Driller's Name: Johnny Davis
Drilling Method: Direct Push
Rig Type: 6610 DT
Auger Size: NA
Sampler Size: 5' macrocore

Northing: 450578.47
Easting: 13066072.49
Casing Elevation: NA

Borehole Depth: 10'
Surface Elevation: 874.41

Descriptions By: Wayne Patterson

Well/Boring ID: SA28-3

Client: General Motors Corporation

Location: Lansing Plant #6

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DEPTH / ELEVATION	Sample Run Number	Sample/Int/Type	Recovery (feet)	PID Headspace (ppm)	Oil/Water Shake Test	pH Value	USCS Code	Geologic Column	Stratigraphic Description	Well/Boring Construction
							NA		CONCRETE	
	1	0 - 5 DP	3	5.0	Neg	7.0-8.0			10YR 4/6 Dark yellowish brown fine POORLY GRADED SAND (SP), loose (0.125 TSF), (fill).	
870				5.1		7.0-8.0				
5							SP		10YR 4/3 Brown LEAN CLAY (CL), few fine to coarse subangular to subrounded Sand, trace subangular to subrounded Gravel, very stiff to hard (>4.5 TSF), medium dry strength, medium plasticity, medium toughness, no dilatancy (fill).	Boring backfilled with bentonite.
	2	5 - 10 DP	4	5.7	Neg	7.0-8.0			SAA, 10YR 5/3 Brown, few Clay, trace fine angular Gravel.	
865				5.5		7.0-8.0				
10										
860										
15										

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Remarks: No soil sample collected
NA = not applicable
DP = direct push
Neg = negative
Pos = positive
ND = not done
TSF = tons per square foot

Date Start/Finish: 11/9/05
Drilling Company: Altech
Driller's Name: Johnny Davis
Drilling Method: Direct Push
Rig Type: 6610 DT
Auger Size: NA
Sampler Size: 5' macrocore

Northing: NA
Easting: NA
Casing Elevation: NA

Borehole Depth: 10'
Surface Elevation: NA

Descriptions By: Wayne Patterson

Well/Boring ID: SA29-2

DRAFT

Client: General Motors Corporation

Location: Lansing Plant #6

DEPTH / ELEVATION	Sample Run Number	Sample/Int/Type	Recovery (feet)	PID Headspace (ppm)	Oil/Water Shake Test	pH Value	USCS Code	Geologic Column	Stratigraphic Description	Well/Boring Construction
0							NA		CONCRETE	
							SP		10YR 5/3 Brown fine POORLY GRADED SAND (SP), loose to medium dense, dry, no odor, (fill).	
	1	0 - 5 DP	2.5	7.9	ND	7.0-7.5			10YR 5/3 Brown LEAN CLAY (CL), few fine to coarse angular to subangular Sand, trace fine subangular Gravel, very stiff (>4.5 TSF), becoming medium stiff (2.0 TSF), medium to high plasticity, medium dry strength, medium to high toughness, no dilatancy, (fill).	
				8.6		7.0-7.5				
5 -5										Boring backfilled with bentonite.
				8.6		7.0-7.5	CL		SAA, At 6.0-6.5' - 10YR 2/1 Black Slag.	
	2	5 - 10 DP	3		ND					
				8.4		7.0-7.5				
10 10										
15 15										

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Remarks: Soil sample collected at 8-10' below ground surface and analyzed for metals
NA = not applicable
DP = direct push
Neg = negative
Pos = positive
ND = not done
TSF = tons per square foot

Date Start/Finish: 11/9/05
Drilling Company: Altech
Driller's Name: Johnny Davis
Drilling Method: Direct Push
Rig Type: 6610 DT
Auger Size: NA
Sampler Size: 5' macrocore

Northing: 450349.73
Easting: 13065966.04
Casing Elevation: NA

Borehole Depth: 7'
Surface Elevation: 874.40

Descriptions By: Wayne Patterson

Well/Boring ID: SA29-3

Client: General Motors Corporation

Location: Lansing Plant #6

DRAFT

DEPTH / ELEVATION	Sample Run Number	Sample/Int/Type	Recovery (feet)	PID Headspace (ppm)	Oil/Water Shake Test	pH Value	USCS Code	Geologic Column	Stratigraphic Description	Well/Boring Construction
							NA		CONCRETE	
									Weathered Concrete, Gravel, weak (fill).	
	1	0 - 5 DP	4	ND	ND	7.0-7.5	SW			
870						7.0-7.5			aT 4 - 4.5' - 10YR 4/3 Brown fine to coarse WELL GRADED SAND (SW), dry, no odor, (fill).	
5										Boring backfilled with bentonite.
	2	5 - 7 DP	1	ND	ND	7.0-7.5				
									Refusal.	
865										
10										
860										
15										

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Remarks: Soil sample collected at 8-10' below ground surface and analyzed for metals
NA = not applicable
DP = direct push
Neg = negative
Pos = positive
ND = not done
TSF = tons per square foot

Date Start/Finish: 11/9/05
Drilling Company: Altech
Driller's Name: Johnny Davis
Drilling Method: Direct Push
Rig Type: 6610 DT
Auger Size: NA
Sampler Size: 5' macrocore

Northing: 450528.02
Easting: 13066007.04
Casing Elevation: NA

Borehole Depth: 10'
Surface Elevation: 874.40

Descriptions By: Wayne Patterson

Well/Boring ID: SA32-1

DRAFT

Client: General Motors Corporation

Location: Lansing Plant #6

DEPTH / ELEVATION	Sample Run Number	Sample/Int/Type	Recovery (feet)	PID Headspace (ppm)	Oil/Water Shake Test	pH Value	USCS Code	Geologic Column	Stratigraphic Description	Well/Boring Construction
							NA		CONCRETE	
	1	0 - 5 DP	4	6.9 8.7	ND	8 8	SW		10YR 6/4 Light yellowish brown SAND (SW), trace fine subangular Gravel, loose, dry, no odor, (fill).	
870 5	2	5 - 10 DP	5	8.3 8.6 8.4	ND	11 11 12	CL		10YR 5/4 Yellowish brown LEAN CLAY (CL), few fine to coarse angular to subangular Sand, trace fine subangular Gravel, very stiff to hard (>4.5 TSF), dry, no odor, medium dry strength, medium plasticity, medium toughness, no dilatancy, (fill).	Boring backfilled with bentonite.
865 10										
860 15										

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Remarks: Soil sample collected at 8-10' below ground surface and analyzed for metals
NA = not applicable
DP = direct push
Neg = negative
Pos = positive
ND = not done
TSF = tons per square foot

Date Start/Finish: 11/9/05
Drilling Company: Altech
Driller's Name: Johnny Davis
Drilling Method: Direct Push
Rig Type: 6610 DT
Auger Size: NA
Sampler Size: 5' macrocore

Northing: 450569.55
Easting: 13066007.81
Casing Elevation: NA

Borehole Depth: 4'
Surface Elevation: 874.38

Descriptions By: Wayne Patterson

Well/Boring ID: SA32-2

Client: General Motors Corporation

Location: Lansing Plant #6

DRAFT

DEPTH / ELEVATION	Sample Run Number	Sample/Int/Type	Recovery (feet)	PID Headspace (ppm)	Oil/Water Shake Test	pH Value	USCS Code	Geologic Column	Stratigraphic Description	Well/Boring Construction
							NA		CONCRETE	
	1	0 - 4 DP	3	5.0	Neg	8.0	SW		10YR 4/6 Dark yellowish brown fine to coarse WELL GRADED SAND (SW), loose, dry, no odor, some 10YR 3/1 very dark gray coloration 8" to 2', (fill).	Boring backfilled with bentonite.
870									Refusal, asphalt over concrete.	
5										
865										
10										
860										
15										

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Remarks: No soil sample collected
NA = not applicable
DP = direct push
Neg = negative
Pos = positive
ND = not done
TSF = tons per square foot

Date Start/Finish: 11/11/05
Drilling Company: Altech
Driller's Name: Johnny Davis
Drilling Method: Direct Push
Rig Type: 6610 DT
Auger Size: NA
Sampler Size: 5' macrocore

Northing: 451602.75
Easting: 13065731.44
Casing Elevation: NA

Borehole Depth: 10'
Surface Elevation: 862.93

Descriptions By: Wayne Patterson

Well/Boring ID: SA34-1

Client: General Motors Corporation

Location: Lansing Plant #6

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DEPTH / ELEVATION	Sample Run Number	Sample/Int/Type	Recovery (feet)	PID Headspace (ppm)	Oil/Water Shake Test	pH Value	USCS Code	Geologic Column	Stratigraphic Description	Well/Boring Construction
860							NA		ASPHALT	
	1	0 - 5 DP	3	0.4	ND	7.0 - 8.0			10YR 4/4 Dark yellowish brown and 10YR 5/8 yellowish brown mottled LEAN CLAY (CL), medium plasticity, low to medium dry strength, low to medium toughness, no dilatancy, stiff to very stiff (2.0-2.5 TSF), dry to moist, no odor (fill).	
				0.5		7.0 - 8.0			SAA, trace fine angular to subangular Gravel.	
5							CL		SAA, trace to few fine to coarse subangular Sand, no mottling.	Boring backfilled with bentonite.
	2	5 - 10 DP	4	0.3	ND	7.0 - 8.0				
855				0.0		7.0 - 8.0				
10										
850										
15										
845										

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Remarks: Soil sample collected at 3-5' below ground surface and analyzed for metals.
NA = not applicable
DP = direct push
Neg = negative
Pos = positive
ND = not done
SAA = same as above
TSF = tons per square foot

Date Start/Finish: 11/11/05
Drilling Company: Altech
Driller's Name: Johnny Davis
Drilling Method: Direct Push
Rig Type: 6610 DT
Auger Size: NA
Sampler Size: 5' macrocore

Northing: 451750.23
Easting: 13065679.80
Casing Elevation: NA

Borehole Depth: 10'
Surface Elevation: 860.64

Descriptions By: Wayne Patterson

Well/Boring ID: SA34-2

Client: General Motors Corporation

Location: Lansing Plant #6

DRAFT

DEPTH / ELEVATION	Sample Run Number	Sample/Int/Type	Recovery (feet)	PID Headspace (ppm)	Oil/Water Shake Test	pH Value	USCS Code	Geologic Column	Stratigraphic Description	Well/Boring Construction
860							NA		ASPHALT	
				0.4		7.0-8.0	ML		10YR 2/1 Black SILT (ML), few fine angular Gravel and fine to coarse angular Sand, loose, moist, no odor, nonplastic, low dry strength, slow dilatanacy	
	1	0 - 5 DP	3.5		ND				10YR 4/1 Dark gray becoming 10YR 5/6 Yellowish brown at 4' fine to coarse predominantly fine WELL GRADED SAND (SW), medium dense, moist, no odor.	
				0.5		7.0-8.0				
5							SW			Boring backfilled with bentonite.
855										
				0.3		7.0-8.0				
	2	5 - 10 DP	4		ND					
				0.0		7.0-8.0	ML		10YR 5/6 Yellowish brown SILT (ML), medium dense, wet, no odor, nonplastic, low dry strength, low toughness, slow dilatancy.	
10										
850										
15										
845										

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Remarks: No soil sample collected.
NA = not applicable
DP = direct push
Neg = negative
Pos = positive
ND = not done
SAA = same as above
TSF = tons per square foot

Date Start/Finish: 11/11/05
Drilling Company: Altech
Driller's Name: Johnny Davis
Drilling Method: Direct Push
Rig Type: 6610 DT
Auger Size: NA
Sampler Size: 5' macrocore

Northing: 451591.22
Easting: 13065982.75
Casing Elevation: NA

Borehole Depth: 10'
Surface Elevation: 860.04

Descriptions By: Wayne Patterson

Well/Boring ID: SA34-3

Client: General Motors Corporation

Location: Lansing Plant #6

DRAFT

DEPTH / ELEVATION	Sample Run Number	Sample/Int/Type	Recovery (feet)	PID Headspace (ppm)	Oil/Water Shake Test	pH Value	USCS Code	Geologic Column	Stratigraphic Description	Well/Boring Construction
0 860							NA		ASPHALT	
	1	0 - 5 DP	4	0.8	ND	7.0-8.0	CL		10YR 4/1 Dark gray and 10YR 5/8 Yellowish brown mottled LEAN CLAY (CL), trace fine to medium subangular Sand, very stiff to hard (>4.5 TSF), no dilatancy, medium to high toughness, medium plasticity, medium dry strength, dry, no odor (fill).	
				0.5		7.0-8.0			SAA, 10YR 5/8 Yellowish brown LEAN CLAY as above.	
5 855										Boring backfilled with bentonite.
	2	5 - 10 DP	4	0.1	ND	7.0-8.0			SAA, Some mottling with 10YR 4/4 dark yellowish brown.	
				0.0		7.0-8.0				
10 850										
15 845										

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Remarks: No soil sample collected.
NA = not applicable
DP = direct push
Neg = negative
Pos = positive
ND = not done
TSF = tons per square foot

Date Start/Finish: 11/11/05
Drilling Company: Altech
Driller's Name: Johnny Davis
Drilling Method: Direct Push
Rig Type: 6610 DT
Auger Size: NA
Sampler Size: 5' macrocore

Northing: 451699.87
Easting: 13066026.14
Casing Elevation: NA

Borehole Depth: 10'
Surface Elevation: 859.21

Descriptions By: Wayne Patterson

Well/Boring ID: SA34-4

Client: General Motors Corporation

Location: Lansing Plant #6

DRAFT

DEPTH / ELEVATION	Sample Run Number	Sample/Int/Type	Recovery (feet)	PID Headspace (ppm)	Oil/Water Shake Test	pH Value	USCS Code	Geologic Column	Stratigraphic Description	Well/Boring Construction
							NA		ASPHALT	
	1	0 - 5 DP	3	0.9	ND	7.0-8.0	CL		10YR 4/1 Dark gray and 10YR 5/8 Yellowish brown mottled LEAN CLAY (CL), stiff (3.0 TSF), no dilatancy, medium toughness, low to medium plasticity, medium dry strength, dry to moist, no odor (fill).	
				1.2		7.0-8.0				
855										
5										Boring backfilled with bentonite.
	2	5 - 10 DP	4	0.9	ND	7.0-8.0	SP		10YR 7/2 Light gray fine to medium POORLY GRADED SAND (SP), moist, medium dense.	
				0.1		7.0-8.0			SAA, 2" lense of light gray Clay as at 6 - 7' Fine to coarse Sand	
850										
10										
845										
15										

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Remarks: No soil sample collected.
NA = not applicable
DP = direct push
Neg = negative
Pos = positive
ND = not done
TSF = tons per square foot

Date Start/Finish: 11/11/05
Drilling Company: Altech
Driller's Name: Johnny Davis
Drilling Method: Direct Push
Rig Type: 6610 DT
Auger Size: NA
Sampler Size: 5' macrocore

Northing: 451432.89
Easting: 13065643.92
Casing Elevation: NA

Borehole Depth: 10'
Surface Elevation: 865.72

Descriptions By: Wayne Patterson

Well/Boring ID: SA34-5

Client: General Motors Corporation

Location: Lansing Plant #6

DRAFT

DEPTH / ELEVATION	Sample Run Number	Sample/Int/Type	Recovery (feet)	PID Headspace (ppm)	Oil/Water Shake Test	pH Value	USCS Code	Geologic Column	Stratigraphic Description	Well/Boring Construction
							NA		ASPHALT	
	1	0 - 5 DP	4	0.0	ND	7.0-8.0	CL		10YR 4/6 Dark yellowish brown and 10YR 4/1 Dark gray mottled LEAN CLAY (CL), fine to coarse subangular Sand, trace fine subangular Gravel, moist, no odor, medium stiff (1.75 TSF), medium plasticity, low to medium dry strength, medium toughness, no dilatancy, (fill).	
855				0.0		7.0-8.0			10YR 4/6 Dark yellowish brown LEAN CLAY (CL), few fine to coarse subangular Sand, very stiff (3.5 TSF), medium dry strength, medium plasticity, no dilatancy, medium to high toughness.	Boring backfilled with bentonite.
5										
	2	5 - 10 DP	4	0.0	ND	7.0-8.0	CL			
850				0.1		7.0-8.0				
10										
845										
15										

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Remarks: No soil sample collected
NA = not applicable
DP = direct push
Neg = negative
Pos = positive
ND = not done
SAA = same as above
TSF = tons per square foot

Date Start/Finish: 11/11/05
Drilling Company: Altech
Driller's Name: Johnny Davis
Drilling Method: Direct Push
Rig Type: 6610 DT
Auger Size: NA
Sampler Size: 5' macrocore

Northing: 451357.27
Easting: 13065842.38
Casing Elevation: NA

Borehole Depth: 10'
Surface Elevation: 863.86

Descriptions By: Wayne Patterson

Well/Boring ID: SA34-6

Client: General Motors Corporation

Location: Lansing Plant #6

DRAFT

DEPTH / ELEVATION	Sample Run Number	Sample/Int/Type	Recovery (feet)	PID Headspace (ppm)	Oil/Water Shake Test	pH Value	USCS Code	Geologic Column	Stratigraphic Description	Well/Boring Construction
							NA		ASPHALT	
	1	0 - 5 DP	2	1.3	ND	12-13	ML		10YR 3/1 Very dark gray SILT (ML), few Clay, few fine to coarse angular Sand, trace fine angular Gravel, nonplastic, dry, no odor, low dry strength, low toughness, (fill).	
855										
5									Gley 1 8/ White SILT (ML), very soft, wet, slight odor, nonplastic, low toughness, low dry strength, possible paint sludge?	Boring backfilled with bentonite.
	2	5 - 10 DP	4	67	ND	12-13	ML			
									At 9.0' - SAA, 2" lense of Gravelly Silt (ML), fine angular Gravel.	
850				3.5		12-13	OL/OH		10YR 2/2 Very dark brown PEAT (OL/OH), roots, vegetation, organic odor, (native).	
10										
845										
15										

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Remarks: Soil sample collected 6 - 8' below ground surface and analyzed for VOCs and metals
NA = not applicable
DP = direct push
Neg = negative
Pos = positive
ND = not done
SAA = same as above

Project: 64430.203
Data File: SA34-6
Template: I:\rockware\logplot\logfiles\64430\Augerwell2005-LA.ldf
Date: 11/28/05

Date Start/Finish: 11/14/05
Drilling Company: Altech
Driller's Name: Johnny Davis
Drilling Method: Direct Push
Rig Type: 6610 DT
Auger Size: NA
Sampler Size: 5' macrocore

Northing: 449860.49
Easting: 13065267.70
Casing Elevation: NA

Borehole Depth: 10'
Surface Elevation: 868.99

Descriptions By: Wayne Patterson

Well/Boring ID: SA34-7

Client: General Motors Corporation

Location: Lansing Plant #6

DRAFT

DEPTH / ELEVATION	Sample Run Number	Sample/Int/Type	Recovery (feet)	PID Headspace (ppm)	Oil/Water Shake Test	pH Value	USCS Code	Geologic Column	Stratigraphic Description	Well/Boring Construction
							NA		ASPHALT	
	1	0 - 5 DP	4	1.3	ND	7.0	GP		10YR 4/3 Dark yellowish brown POORLY GRADED GRAVEL (GP), some fine to coarse angular to subangular Sand, mostly fine to coarse angular to subangular Gravel, trace Concrete, loose, dry, no odor, (fill).	
865				0.2		7.0			10YR 4/4 Dark yellowish brown and 10YR 6/1 Gray mottled LEAN CLAY (CL), trace fine to coarse subangular Sand, trace fine angular to subangular Gravel, medium high plasticity, stiff to very stiff (2.5-3.0 TSF), medium dry strength, medium toughness, no dilatancy, moist, no odor, (fill).	
5										Boring backfilled with bentonite.
	2	5 - 10 DP	5	0.6	ND	7.0	CL		SAA, no mottling with gray color	
860				0.8		7.0				
10				0.7		7.0				
855										
15										

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Remarks: No soil sample collected.
NA = not applicable
DP = direct push
Neg = negative
Pos = positive
ND = not done
SAA = same as above
TSF = tons per square foot

Project: 64430.203
Data File: SA34-7
Template: I:\rockware\logplot\logfiles\64430\Augerwell2005-LA.ldf
Date: 11/28/05

Date Start/Finish: 11/14/05
Drilling Company: Altech
Driller's Name: Johnny Davis
Drilling Method: Direct Push
Rig Type: 6610 DT
Auger Size: NA
Sampler Size: 5' macrocore

Northing: 450005.72
Easting: 13065125.00
Casing Elevation: NA

Borehole Depth: 10'
Surface Elevation: 870.17

Descriptions By: Wayne Patterson

Well/Boring ID: SA34-8

Client: General Motors Corporation

Location: Lansing Plant #6

DRAFT

DEPTH / ELEVATION	Sample Run Number	Sample/Int/Type	Recovery (feet)	PID Headspace (ppm)	Oil/Water Shake Test	pH Value	USCS Code	Geologic Column	Stratigraphic Description	Well/Boring Construction
870							NA		ASPHALT	
	1	0 - 5 DP	4	1.3	ND	7.0			10YR 4/4 Dark yellowish brown LEAN CLAY (CL), occasional vertical fractures with 10YR 6/1 Gray coloring, trace fine to coarse angular to subangular Sand, trace fine angular to subangular Gravel, very stiff to hard (3.0->4.5 TSF), medium plasticity, low to medium dry strength, no dilatancy, medium toughness, dry to moist, no odor, (fill).	
				0.6		7.0				
5 865							CL			Boring backfilled with bentonite.
									SAA, no mottling	
	2	5 - 10 DP	4	0.6	ND	7.0				
				0.5		7.0			SAA, moist, occasional Silt lenses	
10 860										
15 855										

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Remarks: No soil sample collected.
NA = not applicable
DP = direct push
Neg = negative
Pos = positive
ND = not done
SAA = same as above
TSF = tons per square foot

Project: 64430.203
Data File: SA34-8
Template: I:\rockware\logplot\logfiles\64430\Augerwell2005-LA.ldf
Date: 11/28/05

SOIL AND MATERIALS ENGINEERS, INC

JOB NAME: Gate 4 Gasoline Tank
JOB LOCATION: Lansing, Michigan
CLIENT: GM – SCG

GEO/ENG: KLC REVIEWED BY: KLC
DATE: 1-6-96
JOB NUMBER: LE-24815

BORING SB-3
SHEET: 1

WELL DIAGRAM

DRILLER: T & T Drilling RIG: Earth Probe

DEPTH (FEET)	SYMBOLIC PROFILE	PROFILE DESCRIPTION	SAMPLE TYPE, NUMBER & INTERVAL	CHEMICAL SAMPLE	PID READING (ppm)
0		0.12 Feet asphalt – concrete to 0.92 feet			
		Fine to medium sand –little gravel – brown – moist (SP/Fill)	MS		NR
5		Clayey sand – sandy clay – little gravel – dark brown (SC-CL)	MS		NR
10		Sandy clay – trace gravel and wood pieces – mottled dark brown and olive brown (CL)	MS		11.6
		Peat – black – some odor (PT)	MS		45.4
15		Silty organic clay (marl) – grayish brown – very soft (OH)	MS		5.2
		Sandy silt – brown –wet (SM)	LB		4.8
20		End of Boring at 19.5 Feet			

MOISTURE CONTENT % – ◆
0 10 20 30 40 50
0 1 2 3 4 5
HAND PENTROMETER TEST (TSF) – ▽
STANDARD PENETRATION (BLOWS/FT) – O
0 10 20 30 40 50

WATER LEVEL OBSERVATIONS
▼ GROUNDWATER ENCOUNTERED DURING DRILLING
▽ GROUNDWATER AFTER DRILLING

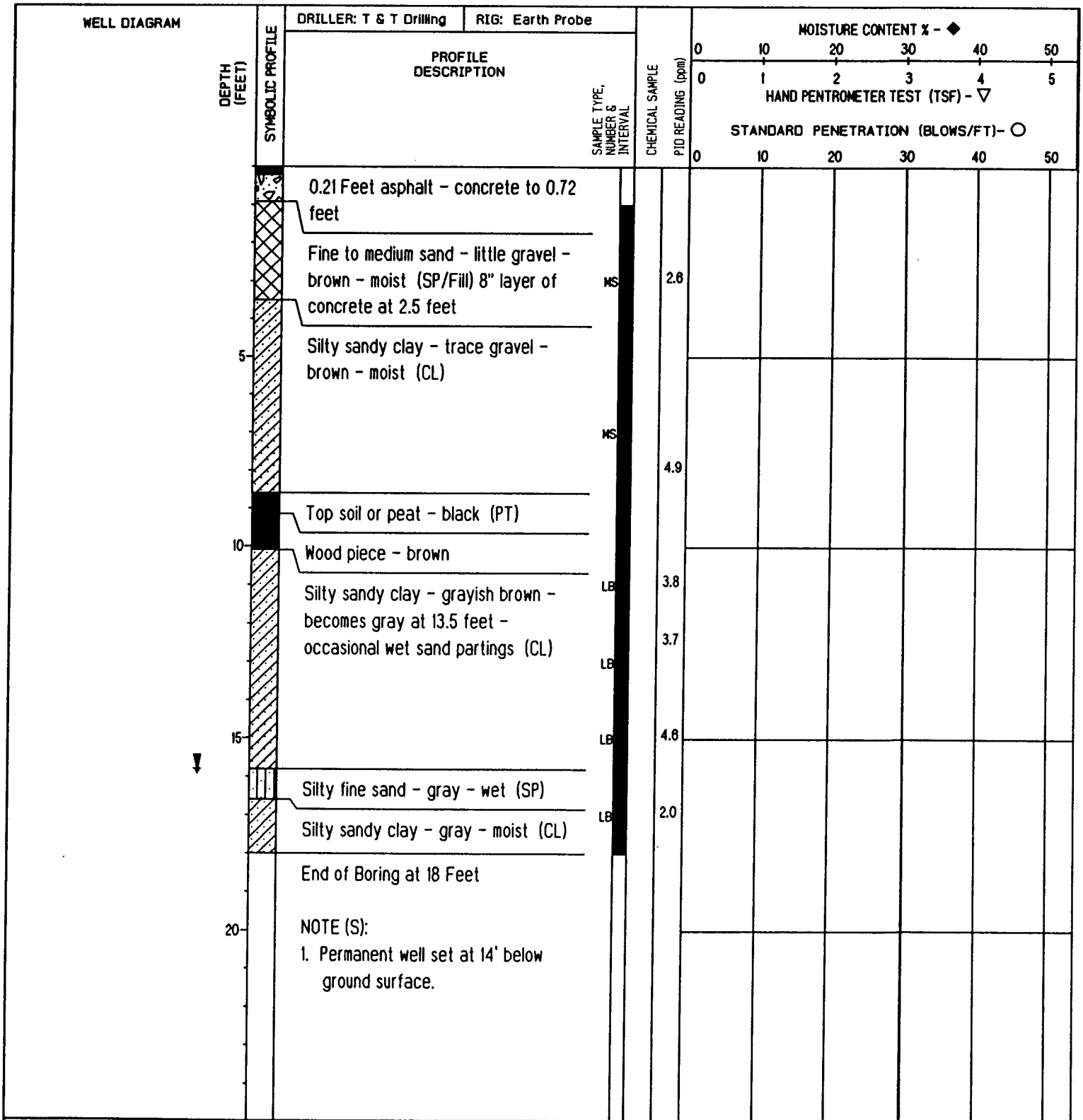
NOTES:
1. THE INDICATED STRATIFICATION LINES ARE APPROXIMATE IN SITU, THE TRANSITION BETWEEN MATERIALS MAY BE GRADUAL.
2. NR = NO RESPONSE FROM PID
3. NA = NOT ANALYZED

SOIL AND MATERIALS ENGINEERS, INC

JOB NAME: Gate 4 Gasoline Tank
JOB LOCATION: Lansing, Michigan
CLIENT: GM – SCG

GEO/ENG: KLC REVIEWED BY: KLC
DATE: 1-14-96
JOB NUMBER: LE-24815

BORING SB-4
SHEET: 1



WATER LEVEL OBSERVATIONS

▼ GROUNDWATER ENCOUNTERED DURING DRILLING
▽ GROUNDWATER AFTER DRILLING

NOTES:
1. THE INDICATED STRATIFICATION LINES ARE APPROXIMATE IN SITU, THE TRANSITION BETWEEN MATERIALS MAY BE GRADUAL.
2. NR = NO RESPONSE FROM PID
3. NA = NOT ANALYZED

SOIL AND MATERIALS ENGINEERS, INC

JOB NAME: Gate 4 Gasoline Tank
JOB LOCATION: Lansing, Michigan
CLIENT: GM – SCG

GEO/ENG: KLC REVIEWED BY: KLC
DATE: 1-14-96
JOB NUMBER: LE-24815

BORING SB-5
SHEET: 1

WELL DIAGRAM

DRILLER: T & T Drilling RIG: Earth Probe

DEPTH (FEET)	SYMBOLIC PROFILE	PROFILE DESCRIPTION	SAMPLE TYPE, NUMBER & INTERVAL	CHEMICAL SAMPLE	PID READING (ppm)
		0.16 Feet asphalt – concrete to 0.81 feet			
		Fine to medium sand – little gravel – brown – moist (SP/Fill)	MS		3.5
5			MS		3.2
		Rail Road ballast gravel (Fill)			
		Silty fine to medium sand – Brown – wet (SP/Fill)			
10			MS		3.8
		Silty sandy clay – Mottled brown and olive (CL)			
15			MS		3.1
		Silty organic clay (marl) – light gray – moist (OH)			
		Fine to medium Sand – little silt – wet (SP)	LB		NR
20		End of Boring at 19 Feet			

MOISTURE CONTENT % – ◆
0 10 20 30 40 50
HAND PENTROMETER TEST (TSF) – ▽
0 1 2 3 4 5
STANDARD PENETRATION (BLOWS/FT) – ○
0 10 20 30 40 50

WATER LEVEL OBSERVATIONS
▼ GROUNDWATER ENCOUNTERED DURING DRILLING
▽ GROUNDWATER AFTER DRILLING

NOTES:
1. THE INDICATED STRATIFICATION LINES ARE APPROXIMATE IN SITU, THE TRANSITION BETWEEN MATERIALS MAY BE GRADUAL.
2. NR = NO RESPONSE FROM PID
3. NA = NOT ANALYZED

BORING LOG / MONITORING WELL DIAGRAM

ABB ENVIRONMENTAL SERVICES, INC.

PROJECT NO.: 5698-86	PROJECT NAME: BODY PLANT WEST TANK FARM		BORING/WELL DESIGNATION: SS-1	BORING/WELL LOCATION:
DRILLING CONTRACTOR: ABB ENVIRONMENTAL SERVICES, INC.	DRILLING METHOD: HAND AUGER		BOREHOLE SIZE: 3 IN.	BOREHOLE DEPTH: 6 FT.
DATE STARTED: 01-11-92	DATE COMPLETED: 01-11-92	GROUND ELEV.: - - FT.	MEASURING POINT ELEV: - - FT.	WELL DEPTH: - - FT.
RIG: - -	DRILLER: J. WAMPUSYC	HELPER: C. KIELTY	LOGGED BY: J. WAMPUSYC	

DEPTH (FT.)	DESCRIPTION	SAMPLE NO.	SAMPLE TYPE	BLOW COUNTS(N)	P.I. METER (ppm)	COMMENTS	WELL DATA
0	CONCRETE					BOREHOLE FILLED TO THE SURFACE WITH CUTTINGS UPON COMPLETION	NO WELL INSTALLED
	SAND - brown, medium-coarse grained, trace-some fine gravel, trace clay, wet at 3 feet						
2.5					BG		
		SS-1 (3'-4')	HA-LAB		BG		
	SANDY CLAY - gray-brown, black organic material, fine grained				BG		
5	SAND - brown, fine-coarse grained, some fine gravel, wet				BG		
7.5							
10							
12.5							
15							
17.5							

NOTES: HA-LAB - HAND AUGER SAMPLE SENT TO LABORATORY FOR ANALYSIS
BG - BACKGROUND

BORING LOG / MONITORING WELL DIAGRAM

ABB ENVIRONMENTAL SERVICES, INC.

PROJECT NO.: 5698-86	PROJECT NAME: BODY PLANT WEST TANK FARM		BORING/WELL DESIGNATION: SS-2	BORING/WELL LOCATION:
DRILLING CONTRACTOR: ABB ENVIRONMENTAL SERVICES, INC.		DRILLING METHOD: HAND AUGER	BOREHOLE SIZE: 3 IN.	BOREHOLE DEPTH: 6 FT.
DATE STARTED: 01-11-92	DATE COMPLETED: 01-11-92	GROUND ELEV.: - - FT.	MEASURING POINT ELEV: - - FT.	WELL DEPTH: - - FT.
RIG: - -	DRILLER: J. WAMPUSYC	HELPER: C. KIELTY	LOGGED BY: J. WAMPUSYC	

DEPTH (FT.)	DESCRIPTION	SAMPLE NO.	SAMPLE TYPE	BLOW COUNTS(N)	P.I. METER (ppm)	COMMENTS	WELL DATA
0	CONCRETE					BOREHOLE FILLED TO THE SURFACE WITH CUTTINGS UPON COMPLETION	NO WELL INSTALLED
	SAND - brown, medium-coarse grained, trace-some fine grained, moist						
	SILTY CLAY - gray, plastic						
2.5	SAND - brown, fine-medium grained, some clay, moist, wet at 3 feet				BG		
	SAND - brown, fine-medium grained, wet	SS-2 (3'-4')	HA-LAB		BG		
	CLAY - gray/brown, plastic, some silt, some fine grained sand and gravel, moist-wet				BG		
5	CLAYEY SAND - brown, medium grained, some fine gravel, moist				BG		
7.5							
10							
12.5							
15							
17.5							

NOTES: HA-LAB - HAND AUGER SAMPLE SENT TO LABORATORY FOR ANALYSIS
BG - BACKGROUND

BORING LOG / MONITORING WELL DIAGRAM

ABB ENVIRONMENTAL SERVICES, INC.

PROJECT NO.: 5698-86	PROJECT NAME: BODY PLANT WEST TANK FARM	BORING/WELL DESIGNATION: SS-3	BORING/WELL LOCATION:
DRILLING CONTRACTOR: ABB ENVIRONMENTAL SERVICES, INC.	DRILLING METHOD: HAND AUGER	BOREHOLE SIZE: 3 IN.	BOREHOLE DEPTH: 6 FT.
DATE STARTED: 01-11-92	DATE COMPLETED: 01-11-92	GROUND ELEV.: - - FT.	MEASURING POINT ELEV: - - FT.
			WELL DEPTH: - - FT.
RIG: - -	DRILLER: J. WAMPUSYC	HELPER: C. KIELTY	LOGGED BY: J. WAMPUSYC

DEPTH (FT.)	DESCRIPTION	SAMPLE NO.	SAMPLE TYPE	BLOW COUNTS(N)	P.I. METER (ppm)	COMMENTS	WELL DATA
0	CONCRETE					BOREHOLE FILLED TO THE SURFACE WITH CUTTINGS UPON COMPLETION	NO WELL INSTALLED
	FILL - dark brown, gravel and sand						
	SANDY CLAY - brown, some fine gravel, plastic						
2.5	CLAYEY SAND - brown, fine-medium grained, trace-some fine gravel, moist				BG		
	CLAY - brown/gray, mottled, some fine sand, gravel, and silt, plastic				BG		
		SS-3 (4'-5')	HA-LAB		BG		
5	SANDY CLAY - brown, fine-meduim grained, trace-some fine gravel, moist						
		SS-3 (5'-6')	HA-LAB		BG	DUPLICATE SAMPLE COLLECTED	
	CLAYEY SAND - brown/gray, mottled, fine-medium grained, trace-some fine gravel, moist						
7.5							
10							
12.5							
15							
17.5							

NOTES: HA-LAB - HAND AUGER SAMPLE SENT TO LABORATORY FOR ANALYSIS
BG - BACKGROUND

Log of Well VEW-1

Plant #6 Tanks 1-4
Lansing, Michigan
Project Number: 4694-197

Client: *General Motors Coporation*	
Drilling Company: *ESE*	
Drilling Rig: *Hurricane*	**Drilling Method:** *Hollow Stem Auger*
Soil Sampling Device: *Split Spoon*	**Borehole Diameter (in.):** *8*
Date Started: *1/16/95* **Date Completed:** *1/16/95*	**Total Depth Drilled (ft.):** *12*
Apparent Depth to Saturation While Drilling (ft. bgl): *8*	**Ground Elevation (ft.):**

Completion Information

Screened Interval (ft. bgl): *7-12*	**Filter Pack Interval (ft. bgl):** *6-12*
Screen Length (ft.): *5*	**Filter Pack Type:** *Filter Sand*
Bottom Cap Length (ft.): *0.25*	**Upper Seal Interval (ft. bgl):** *0-1*
Screen Type: *PVC*	**Upper Seal Type:** *Cement*
Screen Slot Size/Dia. (in.): *0.010/4*	**Lower Seal Interval (ft. bgl):**
Total Casing (ft.): *6.5*	**Lower Seal Type:**
Casing Type/Dia. (in.): *PVC/4*	**Grout Interval (ft. bgl):** *1-6*
Top of Casing Elevation (ft.):	**Grout Type:** *Hydrated Granular Bentonite*
Survey Datum:	**Protective Casing Type:** *Flush Mount*

Explanation & Comments

Plant #6 Tanks 1-4

Log of Well VEW-1

Depth (feet bgl)	Blow Counts	Sample Recovery (%)	PID or FID (ppm) Values	PID or FID (ppm) Profile	Soil/Rock Description and Comments	USCS Classification	Lithologic Log	Well Construction	Elevation (ft.)
0					**Concrete**			flush mount; cement	
2	6 5 6 3 1	30%	0		**Sand** with some gravel, moist, brown, 10YR5/3	SM		4-inch PVC casing	
4	1 2 2 1 1	20%	0						
6	6 5 4 6 3	60%	23		**Clay** olive green color, moist, plastic	CL		hydrated granular bentonite	
8	3 5 6 5 3	30%	35		**Sand** blackish color, medium grained, saturated, some clay	SP		4-inch PVC screen; filter sand	
10	3 3 3 3 3	60%	10		**Clay** trace sand, wet, soft, plastic	CL			
12					End of Boring				
14									
16									
18									
20									

Environmental Science & Engineering, Inc.

Log of Well VEW-2

Plant #6 Tanks 1-4

Lansing, Michigan

Project Number: 4694-197

Client: *General Motors Coporation*	
Drilling Company: *ESE*	
Drilling Rig: *Hurricane*	**Drilling Method:** *Hollow Stem Auger*
Soil Sampling Device: *Split Spoon*	**Borehole Diameter (in.):** *13*
Date Started: *3/19/95* **Date Completed:** *3/19/95*	**Total Depth Drilled (ft.):** *12*
Apparent Depth to Saturation While Drilling (ft. bgl): *8*	**Ground Elevation (ft.):**

Completion Information

Screened Interval (ft. bgl): *7-12*	**Filter Pack Interval (ft. bgl):** *6-12*
Screen Length (ft.): *5*	**Filter Pack Type:** *Filter Sand*
Bottom Cap Length (ft.): *0.25*	**Upper Seal Interval (ft. bgl):** *0-1*
Screen Type: *PVC*	**Upper Seal Type:** *Cement*
Screen Slot Size/Dia. (in.): *0.010/4*	**Lower Seal Interval (ft. bgl):**
Total Casing (ft.): *6.5*	**Lower Seal Type:**
Casing Type/Dia. (in.): *PVC/4*	**Grout Interval (ft. bgl):** *1-6*
Top of Casing Elevation (ft.):	**Grout Type:** *Hydrated Granular Bentonite*
Survey Datum:	**Protective Casing Type:** *Flush Mount*

Explanation & Comments

Plant #6 Tanks 1-4

Log of Well VEW-2

Depth (feet bgl)	Blow Counts	Sample Recovery (%)	Soil/Rock Description	USCS Classification	Lithologic Log	Well Construction	Comments	Elevation (ft.)
0			**Concrete**			flush mount; cement		
2	22	60%	**Sand** with some gravel, moist, brown, loose	SM		4-inch PVC casing; hydrated granular bentonite		
4	19	60%						
6	20	50%	**Clay** gray, moist, plastic, trace sand	CL		4-inch PVC screen; filter sand		
8	22	60%						
10								
12			End of Boring					
14								
16								
18								
20								

Environmental Science & Engineering, Inc.

Log of Well VEW-3

Plant #6 Tanks 1-4

Lansing, Michigan

Project Number: 4694-197

Client: *General Motors Coporation*	
Drilling Company: *ESE*	
Drilling Rig: *Hurricane*	**Drilling Method:** *Hollow Stem Auger*
Soil Sampling Device: *Split Spoon*	**Borehole Diameter (in.):** *13*
Date Started: *3/19/95* **Date Completed:** *3/19/95*	**Total Depth Drilled (ft.):** *12*
Apparent Depth to Saturation While Drilling (ft. bgl): *8*	**Ground Elevation (ft.):**

Completion Information

Screened Interval (ft. bgl): *7-12*	**Filter Pack Interval (ft. bgl):** *6-12*
Screen Length (ft.): *5*	**Filter Pack Type:** *Filter Sand*
Bottom Cap Length (ft.): *0.25*	**Upper Seal Interval (ft. bgl):** *0-1*
Screen Type: *PVC*	**Upper Seal Type:** *Cement*
Screen Slot Size/Dia. (in.): *0.010/4*	**Lower Seal Interval (ft. bgl):**
Total Casing (ft.): *6.5*	**Lower Seal Type:**
Casing Type/Dia. (in.): *PVC/4*	**Grout Interval (ft. bgl):** *1-6*
Top of Casing Elevation (ft.):	**Grout Type:** *Hydrated Granular Bentonite*
Survey Datum:	**Protective Casing Type:** *Flush Mount*

Explanation & Comments

Environmental Science & Engineering, Inc.

Plant #6 Tanks 1-4

Log of Well VEW-3

Depth (feet bgl)	Blow Counts	Sample Recovery (%)	Soil/Rock Description	USCS Classification	Lithologic Log	Well Construction	Comments	Elevation (ft.)
0			**Concrete**			flush mount; cement		
2	20	60%	**Sand** with some gravel, moist, brown, loose	SM		4-inch PVC casing; hydrated granular bentonite		
4	27	60%						
6	14	30%	**Clay** gray, moist, plastic, trace sand	CL		4-inch PVC screen; filter sand		
8	14	70%						
10			End of Boring					
12								
14								
16								
18								
20								

Environmental Science & Engineering, Inc.

Log of Well VEW-4

Plant #6 Tanks 1-4
Lansing, Michigan
Project Number: 4694-197

Client: *General Motors Coporation*	
Drilling Company: *ESE*	
Drilling Rig: *Hurricane*	**Drilling Method:** *Hollow Stem Auger*
Soil Sampling Device: *Split Spoon*	**Borehole Diameter (in.):** *13*
Date Started: *3/19/95* **Date Completed:** *3/19/95*	**Total Depth Drilled (ft.):** *12*
Apparent Depth to Saturation While Drilling (ft. bgl): *8*	**Ground Elevation (ft.):**

Completion Information

Screened Interval (ft. bgl): *7-12*	**Filter Pack Interval (ft. bgl):** *6-12*
Screen Length (ft.): *5*	**Filter Pack Type:** *Filter Sand*
Bottom Cap Length (ft.): *0.25*	**Upper Seal Interval (ft. bgl):** *0-1*
Screen Type: *PVC*	**Upper Seal Type:** *Cement*
Screen Slot Size/Dia. (in.): *0.010/4*	**Lower Seal Interval (ft. bgl):**
Total Casing (ft.): *6.5*	**Lower Seal Type:**
Casing Type/Dia. (in.): *PVC/4*	**Grout Interval (ft. bgl):** *1-6*
Top of Casing Elevation (ft.):	**Grout Type:** *Hydrated Granular Bentonite*
Survey Datum:	**Protective Casing Type:** *Flush Mount*

Explanation & Comments

Plant #6 Tanks 1-4

Log of Well VEW-4

Depth (feet bgl)	Blow Counts	Sample Recovery (%)	Soil/Rock Description	USCS Classification	Lithologic Log	Well Construction	Comments	Elevation (ft.)
0			**Concrete**			flush mount; cement		
2	20	80%	**Sand** with some gravel, moist, brown, loose	SM		4-inch PVC casing; hydrated granular bentonite		
4	32	100%	**Clay** brown, moist, plastic, trace sand	CL				
6	18	40%	**Sand** brown, trace gravel, wet, trace clay	SM		4-inch PVC screen; filter sand		
8	18	85%						
10								
12			End of Boring					
14								
16								
18								
20								

Environmental Science & Engineering, Inc.

Log of Well VEW-5

Plant #6 Tanks 1-4
Lansing, Michigan
Project Number: 4694-197

Client: *General Motors Coporation*	
Drilling Company: *ESE*	
Drilling Rig: *Hurricane*	**Drilling Method:** *Hollow Stem Auger*
Soil Sampling Device: *Split Spoon*	**Borehole Diameter (in.):** *13*
Date Started: *3/19/95* **Date Completed:** *3/19/95*	**Total Depth Drilled (ft.):** *12*
Apparent Depth to Saturation While Drilling (ft. bgl): *8*	**Ground Elevation (ft.):**

Completion Information

Screened Interval (ft. bgl): *7-12*	**Filter Pack Interval (ft. bgl):** *6-12*
Screen Length (ft.): *5*	**Filter Pack Type:** *Filter Sand*
Bottom Cap Length (ft.): *0.25*	**Upper Seal Interval (ft. bgl):** *0-1*
Screen Type: *PVC*	**Upper Seal Type:** *Cement*
Screen Slot Size/Dia. (in.): *0.010/4*	**Lower Seal Interval (ft. bgl):**
Total Casing (ft.): *6.5*	**Lower Seal Type:**
Casing Type/Dia. (in.): *PVC/4*	**Grout Interval (ft. bgl):** *1-6*
Top of Casing Elevation (ft.):	**Grout Type:** *Hydrated Granular Bentonite*
Survey Datum:	**Protective Casing Type:** *Flush Mount*

Explanation & Comments

Plant #6 Tanks 1-4

Log of Well VEW-5

Depth (feet bgl)	Blow Counts	Sample Recovery (%)	Soil/Rock Description	USCS Classification	Lithologic Log	Well Construction	Comments	Elevation (ft.)
0			**Concrete**			flush mount; cement		
2	46	60%	**Sand** with some gravel, moist, brown to black, loose	SM		4-inch PVC casing		
4	32	100%	**Clay** brown, moist, plastic, some sand and gravel	CL		hydrated granular bentonite		
6			**Sand** brown, trace gravel, wet	SM				
8	17	90%	**Clay** black, moist, plastic, some sand small sand lens at 9.5 feet bgl	CL		filter sand		
10	16	90%				4-inch PVC screen		
12			End of Boring					
14								
16								
18								
20								

Environmental Science & Engineering, Inc.

Log of Well VEW-6

Plant #6 Tanks 1-4
Lansing, Michigan
Project Number: 4694-197

Client: *General Motors Coporation*	
Drilling Company: *ESE*	
Drilling Rig: *Hurricane*	**Drilling Method:** *Hollow Stem Auger*
Soil Sampling Device: *Split Spoon*	**Borehole Diameter (in.):** *13*
Date Started: *3/26/95* **Date Completed:** *3/26/95*	**Total Depth Drilled (ft.):** *12*
Apparent Depth to Saturation While Drilling (ft. bgl): *8*	**Ground Elevation (ft.):**

Completion Information

Screened Interval (ft. bgl): *7-12*	**Filter Pack Interval (ft. bgl):** *6-12*
Screen Length (ft.): *5*	**Filter Pack Type:** *Filter Sand*
Bottom Cap Length (ft.): *0.25*	**Upper Seal Interval (ft. bgl):** *0-1*
Screen Type: *PVC*	**Upper Seal Type:** *Cement*
Screen Slot Size/Dia. (in.): *0.010/4*	**Lower Seal Interval (ft. bgl):**
Total Casing (ft.): *6.5*	**Lower Seal Type:**
Casing Type/Dia. (in.): *PVC/4*	**Grout Interval (ft. bgl):** *1-6*
Top of Casing Elevation (ft.):	**Grout Type:** *Hydrated Granular Bentonite*
Survey Datum:	**Protective Casing Type:** *Flush Mount*

Explanation & Comments

Plant #6 Tanks 1-4

Log of Well VEW-6

Depth (feet bgl)	Blow Counts	Sample Recovery (%)	Soil/Rock Description	USCS Classification	Lithologic Log	Well Construction	Comments	Elevation (ft.)
0			**Concrete**			flush mount; cement	Storm Sewer 5 feet to the south	
2	16	50%	**Sand** with some gravel, moist, brown, loose	SM		4-inch PVC casing; hydrated granular bentonite		
4	19	60%	**Clay** brown, moist, plastic, some sand and gravel	CL				
6	13	30%						
8	9	80%	**Sand** gray, trace gravel, wet	SM		4-inch PVC screen; filter sand		
10	6	100%	**Clay** gray, moist, plastic, some sand	CL				
12			End of Boring					
14								
16								
18								
20								

Log of Well VEW-7

Plant #6 Tanks 1-4
Lansing, Michigan
Project Number: 4694-197

Client: *General Motors Coporation*	
Drilling Company: *ESE*	
Drilling Rig: *Hurricane*	**Drilling Method:** *Hollow Stem Auger*
Soil Sampling Device: *Split Spoon*	**Borehole Diameter (in.):** *13*
Date Started: *3/26/95* **Date Completed:** *3/26/95*	**Total Depth Drilled (ft.):** *12*
Apparent Depth to Saturation While Drilling (ft. bgl): *8*	**Ground Elevation (ft.):**

Completion Information

Screened Interval (ft. bgl): *7-12*	**Filter Pack Interval (ft. bgl):** *6-12*
Screen Length (ft.): *5*	**Filter Pack Type:** *Filter Sand*
Bottom Cap Length (ft.): *0.25*	**Upper Seal Interval (ft. bgl):** *0-1*
Screen Type: *PVC*	**Upper Seal Type:** *Cement*
Screen Slot Size/Dia. (in.): *0.010/4*	**Lower Seal Interval (ft. bgl):**
Total Casing (ft.): *6.5*	**Lower Seal Type:**
Casing Type/Dia. (in.): *PVC/4*	**Grout Interval (ft. bgl):** *1-6*
Top of Casing Elevation (ft.):	**Grout Type:** *Hydrated Granular Bentonite*
Survey Datum:	**Protective Casing Type:** *Flush Mount*

Explanation & Comments

Plant #6 Tanks 1-4

Log of Well VEW-7

Depth (feet bgl)	Blow Counts	Sample Recovery (%)	Soil/Rock Description	USCS Classification	Lithologic Log	Well Construction	Comments	Elevation (ft.)
0			**Concrete**			flush mount; cement		
2	27	60%	**Sand** with some gravel, dry, brown, loose	SM		4-inch PVC casing; hydrated granular bentonite	36" storm sewer pipe 3 feet to the east at 4 feet bgl	
4		40%						
6	13	40%	**Clay** brown, moist, plastic, some sand and gravel	CL				
8			**Sand** black, trace gravel, wet	SM		4-inch PVC screen; filter sand		
10	8	60%	**Clay** gray, wet, soft, plastic, trace sand	CL				
12	6	90%	End of Boring					
14								
16								
18								
20								

Log of Well VEW-8

Plant #6 Tanks 1-4
Lansing, Michigan
Project Number: 4694-197

Client: *General Motors Coporation*	
Drilling Company: *ESE*	
Drilling Rig: *Hurricane*	**Drilling Method:** *Hollow Stem Auger*
Soil Sampling Device: *Split Spoon*	**Borehole Diameter (in.):** *13*
Date Started: *3/26/95* **Date Completed:** *3/26/95*	**Total Depth Drilled (ft.):** *12*
Apparent Depth to Saturation While Drilling (ft. bgl): *8*	**Ground Elevation (ft.):**

Completion Information

Screened Interval (ft. bgl): *7-12*	**Filter Pack Interval (ft. bgl):** *6-12*
Screen Length (ft.): *5*	**Filter Pack Type:** *Filter Sand*
Bottom Cap Length (ft.): *0.25*	**Upper Seal Interval (ft. bgl):** *0-1*
Screen Type: *PVC*	**Upper Seal Type:** *Cement*
Screen Slot Size/Dia. (in.): *0.010/4*	**Lower Seal Interval (ft. bgl):**
Total Casing (ft.): *6.5*	**Lower Seal Type:**
Casing Type/Dia. (in.): *PVC/4*	**Grout Interval (ft. bgl):** *1-6*
Top of Casing Elevation (ft.):	**Grout Type:** *Hydrated Granular Bentonite*
Survey Datum:	**Protective Casing Type:** *Flush Mount*

Explanation & Comments

Plant #6 Tanks 1-4

Log of Well VEW-8

Depth (feet bgl)	Blow Counts	Sample Recovery (%)	Soil/Rock Description	USCS Classification	Lithologic Log	Well Construction	Comments	Elevation (ft.)
0			**Concrete**			flush mount; cement		
2			**Clay** brown, moist, plastic, some sand and gravel					
4	16	80%				4-inch PVC casing; hydrated granular bentonite		
6	13		Soil color is black from 6 to approximately 8 feet bgl Soil color after 8 feet is gray	CL				
8	6	70%						
10	9	80%				4-inch PVC screen; filter sand		
12			End of Boring					
14								
16								
18								
20								

Log of Well VEW-9

Plant #6 Tanks 1-4
Lansing, Michigan
Project Number: 4694-197

Client: *General Motors Coporation*	
Drilling Company: *ESE*	
Drilling Rig: *Hurricane*	**Drilling Method:** *Hollow Stem Auger*
Soil Sampling Device: *Split Spoon*	**Borehole Diameter (in.):** *13*
Date Started: *3/26/95* **Date Completed:** *3/26/95*	**Total Depth Drilled (ft.):** *12*
Apparent Depth to Saturation While Drilling (ft. bgl): *8*	**Ground Elevation (ft.):**

Completion Information

Screened Interval (ft. bgl): *7-12*	**Filter Pack Interval (ft. bgl):** *6-12*
Screen Length (ft.): *5*	**Filter Pack Type:** *Filter Sand*
Bottom Cap Length (ft.): *0.25*	**Upper Seal Interval (ft. bgl):** *0-1*
Screen Type: *PVC*	**Upper Seal Type:** *Cement*
Screen Slot Size/Dia. (in.): *0.010/4*	**Lower Seal Interval (ft. bgl):**
Total Casing (ft.): *6.5*	**Lower Seal Type:**
Casing Type/Dia. (in.): *PVC/4*	**Grout Interval (ft. bgl):** *1-6*
Top of Casing Elevation (ft.):	**Grout Type:** *Hydrated Granular Bentonite*
Survey Datum:	**Protective Casing Type:** *Flush Mount*

Explanation & Comments

Plant #6 Tanks 1-4

Log of Well VEW-9

Depth (feet bgl)	Blow Counts	Sample Recovery (%)	Soil/Rock Description	USCS Classification	Lithologic Log	Well Construction	Comments	Elevation (ft.)
0			**Concrete**			flush mount; 4-inch PVC casing; 4-inch PVC screen; hydrated granular bentonite cement; filter sand		
2	14		**Sand** brown, dry, loose, some gravel	SM				
4								
6	11							
8	20		**Clay** brown, moist, plastic, some sand and gravel	CL				
10	13		**Sand** black, wet	SM				
12	14		**Clay** brown to black, saturated, some sand, plastic	CL				
14			End of Boring					
16								
18								
20								

ARCADIS

Appendix K

Earth Metal Analytical Data Tables

Table K-1
GM Lansing Plant 3
Groundwater Earh Metal Analytical Results

Location ID: Sample Depth(ft BGS): Date Collected:	Units	DRAIN #1 04/10/90	DRAIN #1 07/31/90	DRAIN #1 08/22/90	DRAIN #1 10/02/90	DRAIN #1 11/16/90	DRAIN #1 12/18/90	DRAIN #1 01/15/91	DRAIN #1 04/19/91	DRAIN #1 05/01/91	DRAIN #1 05/29/91	DRAIN #1 06/06/91	DRAIN #1 06/20/91	DRAIN #1 07/10/91
Inorganics														
Aluminum	mg/L	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Calcium	mg/L	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Iron	mg/L	5.2	14	9.4	14	4.2	4.4	4.9	15	2.5	15	1.5	5.5	1.4
Magnesium	mg/L	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Potassium	mg/L	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Sodium	mg/L	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Inorganics-Filtered														
Aluminum (Dissolved)	mg/L	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Calcium (Dissolved)	mg/L	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Iron (Dissolved)	mg/L	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Magnesium (Dissolved)	mg/L	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Potassium (Dissolved)	mg/L	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Sodium (Dissolved)	mg/L	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA

Lab Qualifiers	Definition
J	Estimated Value
U	Not Detected

Table K-1
GM Lansing Plant 3
Groundwater Earh Metal Analytical Results

Location ID: / Sample Depth(ft BGS): / Date Collected:	Units	DRAIN #1 08/14/91	DRAIN #1 08/29/91	DRAIN #1 09/12/91	DRAIN #1 09/26/91	DRAIN #1 10/10/91	DRAIN #1 10/24/91	DRAIN #1 11/07/91	DRAIN #1 12/05/91	DRAIN #1 01/09/92	DRAIN #1 02/21/92	DRAIN #1 05/14/92	DRAIN #1 06/25/92	DRAIN #1 08/06/92
Inorganics														
Aluminum	mg/L	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Calcium	mg/L	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Iron	mg/L	7.4	1.6	13	6.8	26	4.6	4	3.7	3	0.26	0.39	6.5	0.87
Magnesium	mg/L	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Potassium	mg/L	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Sodium	mg/L	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Inorganics-Filtered														
Aluminum (Dissolved)	mg/L	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Calcium (Dissolved)	mg/L	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Iron (Dissolved)	mg/L	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Magnesium (Dissolved)	mg/L	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Potassium (Dissolved)	mg/L	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Sodium (Dissolved)	mg/L	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA

Lab Qualifiers	Definition
J	Estimated Value
U	Not Detected

Table K-1
GM Lansing Plant 3
Groundwater Earh Metal Analytical Results

Location ID: Sample Depth(ft BGS): Date Collected:	Units	DRAIN #1 09/03/92	DRAIN #1 10/08/92	DRAIN #1 11/05/92	DRAIN #1 12/01/92	DRAIN #1 01/06/93	DRAIN #1 02/04/93	DRAIN #1 03/04/93	DRAIN #1 04/13/93	DRAIN #1 05/06/93	DRAIN #1 06/02/93	DRAIN #1 07/14/93	DRAIN #1 08/13/93	DRAIN #1 09/16/93
Inorganics														
Aluminum	mg/L	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Calcium	mg/L	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Iron	mg/L	1.7	27	150	30	6.5	13	19	1	32	7.1	33	2	4
Magnesium	mg/L	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Potassium	mg/L	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Sodium	mg/L	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Inorganics-Filtered														
Aluminum (Dissolved)	mg/L	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Calcium (Dissolved)	mg/L	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Iron (Dissolved)	mg/L	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Magnesium (Dissolved)	mg/L	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Potassium (Dissolved)	mg/L	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Sodium (Dissolved)	mg/L	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA

Lab Qualifiers	Definition
J	Estimated Value
U	Not Detected

Table K-1
GM Lansing Plant 3
Groundwater Earh Metal Analytical Results

Location ID: / Sample Depth(ft BGS): / Date Collected:	Units	DRAIN #1 10/19/93	DRAIN #1 11/09/93	DRAIN #1 11/29/93	DRAIN #1 12/21/93	DRAIN #1 01/24/94	DRAIN #1 02/01/94	DRAIN #1 03/04/94	DRAIN #1 03/14/94	DRAIN #1 03/30/94	DRAIN #1 04/21/94	DRAIN #1 05/18/94	DRAIN #1 06/27/94	DRAIN #1 07/20/94
Inorganics														
Aluminum	mg/L	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Calcium	mg/L	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Iron	mg/L	5.6	6.4	1.1	1.5	0.66	6.4	4.5	31	1.6	1.4	1.5	1.2	5.2
Magnesium	mg/L	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Potassium	mg/L	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Sodium	mg/L	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Inorganics-Filtered														
Aluminum (Dissolved)	mg/L	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Calcium (Dissolved)	mg/L	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Iron (Dissolved)	mg/L	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Magnesium (Dissolved)	mg/L	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Potassium (Dissolved)	mg/L	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Sodium (Dissolved)	mg/L	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA

Lab Qualifiers	Definition
J	Estimated Value
U	Not Detected

Table K-1
GM Lansing Plant 3
Groundwater Earh Metal Analytical Results

Location ID: Sample Depth(ft BGS): Date Collected:	Units	DRAIN #1 08/10/94	DRAIN #1 09/25/94	DRAIN #1 10/19/94	DRAIN #1 11/10/94	DRAIN #1 12/07/94	DRAIN #1 01/10/95	DRAIN #1 02/10/95	DRAIN #1 03/22/95	DRAIN #1 04/20/95	DRAIN #1 05/04/95	DRAIN #1 06/02/95	DRAIN #1 07/12/95	DRAIN #1 08/04/95
Inorganics														
Aluminum	mg/L	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Calcium	mg/L	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Iron	mg/L	15.1	0.3	0.43	12	0.85	26	3.5	0.06	0.11	0.43	0.24	0.15	0.07
Magnesium	mg/L	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Potassium	mg/L	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Sodium	mg/L	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Inorganics-Filtered														
Aluminum (Dissolved)	mg/L	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Calcium (Dissolved)	mg/L	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Iron (Dissolved)	mg/L	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Magnesium (Dissolved)	mg/L	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Potassium (Dissolved)	mg/L	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Sodium (Dissolved)	mg/L	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA

Lab Qualifiers	Definition
J	Estimated Value
U	Not Detected

Table K-1
GM Lansing Plant 3
Groundwater Earh Metal Analytical Results

Location ID: Sample Depth(ft BGS): Date Collected:	Units	DRAIN #1 09/01/95	DRAIN #1 10/03/95	DRAIN #1 11/09/95	DRAIN #1 12/06/95	DRAIN #1 05/05/96	DRAIN #1 06/04/96	DRAIN #1 10/10/96	DRAIN #1 08/29/98	DRAIN #1 03/20/99
Inorganics										
Aluminum	mg/L	NA	NA	NA	NA	NA	NA	NA	NA	NA
Calcium	mg/L	NA	NA	NA	NA	NA	NA	NA	NA	NA
Iron	mg/L	0.56	0.1	0.12	0.27	0.34	0.09	3.8	0.34	0.42
Magnesium	mg/L	NA	NA	NA	NA	NA	NA	NA	NA	NA
Potassium	mg/L	NA	NA	NA	NA	NA	NA	NA	NA	NA
Sodium	mg/L	NA	NA	NA	NA	NA	NA	NA	NA	NA
Inorganics-Filtered										
Aluminum (Dissolved)	mg/L	NA	NA	NA	NA	NA	NA	NA	NA	NA
Calcium (Dissolved)	mg/L	NA	NA	NA	NA	NA	NA	NA	NA	NA
Iron (Dissolved)	mg/L	NA	NA	NA	NA	NA	NA	NA	NA	NA
Magnesium (Dissolved)	mg/L	NA	NA	NA	NA	NA	NA	NA	NA	NA
Potassium (Dissolved)	mg/L	NA	NA	NA	NA	NA	NA	NA	NA	NA
Sodium (Dissolved)	mg/L	NA	NA	NA	NA	NA	NA	NA	NA	NA

Lab Qualifiers	Definition
J	Estimated Value
U	Not Detected

Table K-1
GM Lansing Plant 3
Groundwater Earh Metal Analytical Results

Location ID: / Sample Depth(ft BGS): / Date Collected:	Units	DRAIN #1 06/25/99	DRAIN #1 08/14/99	DRAIN #1 09/11/99	DRAIN #1 10/30/99	DRAIN #1 12/04/99	DRAIN #1 01/29/00	DRAIN #1 03/18/00	DRAIN #1 04/29/00	DRAIN #1 05/20/00
Inorganics										
Aluminum	mg/L	NA	NA	NA	NA	NA	NA	NA	NA	NA
Calcium	mg/L	NA	NA	NA	NA	NA	NA	NA	NA	NA
Iron	mg/L	1.1	0.57	0.23	0.28	0.25	0.59	0.39 [0.36]	0.05	4.7
Magnesium	mg/L	NA	NA	NA	NA	NA	NA	NA	NA	NA
Potassium	mg/L	NA	NA	NA	NA	NA	NA	NA	NA	NA
Sodium	mg/L	NA	NA	NA	NA	NA	NA	NA	NA	NA
Inorganics-Filtered										
Aluminum (Dissolved)	mg/L	NA	NA	NA	NA	NA	NA	NA	NA	NA
Calcium (Dissolved)	mg/L	NA	NA	NA	NA	NA	NA	NA	NA	NA
Iron (Dissolved)	mg/L	NA	NA	NA	NA	NA	NA	0.34	NA	NA
Magnesium (Dissolved)	mg/L	NA	NA	NA	NA	NA	NA	NA	NA	NA
Potassium (Dissolved)	mg/L	NA	NA	NA	NA	NA	NA	NA	NA	NA
Sodium (Dissolved)	mg/L	NA	NA	NA	NA	NA	NA	NA	NA	NA

Lab Qualifiers	Definition
J	Estimated Value
U	Not Detected

Table K-1
GM Lansing Plant 3
Groundwater Earh Metal Analytical Results

Location ID: / Sample Depth(ft BGS): / Date Collected:	Units	DRAIN #1 06/24/00	DRAIN #1 07/29/00	DRAIN #1 09/09/00	DRAIN #1 10/07/00	DRAIN #1 11/13/00	DRAIN #1 12/09/00	DRAIN #1 01/20/01	DRAIN #1 03/24/01	DRAIN #1 05/25/01	DRAIN #1 06/18/01	DRAIN #1 07/26/01	DRAIN #1 08/27/01
Inorganics													
Aluminum	mg/L	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Calcium	mg/L	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Iron	mg/L	14	1.9	0.1	0.36	0.11	1.34	0.76	0.59	0.76	0.35	1.65	0.12
Magnesium	mg/L	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Potassium	mg/L	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Sodium	mg/L	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Inorganics-Filtered													
Aluminum (Dissolved)	mg/L	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Calcium (Dissolved)	mg/L	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Iron (Dissolved)	mg/L	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Magnesium (Dissolved)	mg/L	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Potassium (Dissolved)	mg/L	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Sodium (Dissolved)	mg/L	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA

Lab Qualifiers	Definition
J	Estimated Value
U	Not Detected

Table K-1
GM Lansing Plant 3
Groundwater Earh Metal Analytical Results

Location ID: / Sample Depth(ft BGS): / Date Collected:	Units	DRAIN #1 02/11/02	DRAIN #1 04/27/02	DRAIN #1 03/29/03	DRAIN #1 07/29/03	DRAIN #1 10/11/03	DRAIN #1 11/19/04	DRAIN #1 06/29/05	MW-02-01 11/25/02	MW-02-01 03/27/03	MW-02-01 07/29/03
Inorganics											
Aluminum	mg/L	NA	NA	NA	0.01 U	0.057	0.048	0.05 U	NA	NA	0.63
Calcium	mg/L	NA	NA	NA	308	282	271	465	NA	NA	105
Iron	mg/L	1.01	0.41	0.52	0.27	0.33	0.53	0.83	2.46 [3.4]	14.6 [24.9]	1.71
Magnesium	mg/L	NA	NA	NA	29.1	26	27.1	44.9	NA	NA	35.9
Potassium	mg/L	NA	NA	NA	24.5 J	22.2	24.5	29.7	NA	NA	1.73 J
Sodium	mg/L	NA	NA	NA	551	519	490	513	NA	NA	13.2
Inorganics-Filtered											
Aluminum (Dissolved)	mg/L	NA	NA	NA	NA	NA	0.055	0.05 U	NA	NA	NA
Calcium (Dissolved)	mg/L	NA	NA	NA	NA	NA	258	472	NA	NA	NA
Iron (Dissolved)	mg/L	NA	NA	NA	NA	NA	0.74	0.77	NA	NA	NA
Magnesium (Dissolved)	mg/L	NA	NA	NA	NA	NA	25.9	44.2	NA	NA	NA
Potassium (Dissolved)	mg/L	NA	NA	NA	NA	NA	22.7	29.6	NA	NA	NA
Sodium (Dissolved)	mg/L	NA	NA	NA	NA	NA	466	524	NA	NA	NA

Lab Qualifiers	Definition
J	Estimated Value
U	Not Detected

Table K-1
GM Lansing Plant 3
Groundwater Earh Metal Analytical Results

Location ID:		MW-02-01	MW-02-01	MW-02-01	MW-02-02	MW-02-02	MW-02-02	MW-02-02	MW-02-02	MW-02-03	MW-02-03
Sample Depth(ft BGS):											
Date Collected:	Units	10/09/03	10/26/04	06/15/05	11/25/02	03/27/03	10/08/03	10/28/04	06/22/05	11/25/02	03/27/03
Inorganics											
Aluminum	mg/L	0.846 [1.03]	8.98	0.273	NA	NA	1.25	2.56	0.36	NA	NA
Calcium	mg/L	111 [113]	187	87.4	NA	NA	274	404	301	NA	NA
Iron	mg/L	3.61 [4.28]	26.8	5.26	15.8	11.6	4.56	18.2	2.04	6.06	4.37
Magnesium	mg/L	37.1 [37.6]	67.5	30.8	NA	NA	96.4	141	104	NA	NA
Potassium	mg/L	1.67 [1.36]	4.77	8.47	NA	NA	3.95	7.61	5 U	NA	NA
Sodium	mg/L	11.2 [10.9]	10.7 U	17.3	NA	NA	163	196	175	NA	NA
Inorganics-Filtered											
Aluminum (Dissolved)	mg/L	0.005 U [0.005 U]	0.054	0.011	NA	NA	0.007	0.017 U	0.05 U	NA	NA
Calcium (Dissolved)	mg/L	98.4 [101]	99.5	83.3	NA	NA	258	331	301	NA	NA
Iron (Dissolved)	mg/L	0.79 [0.76]	0.49	1.63	NA	NA	0.76	1.02	1.44	NA	NA
Magnesium (Dissolved)	mg/L	32.4 [33.2]	34	30.4	NA	NA	88.6	115	104	NA	NA
Potassium (Dissolved)	mg/L	1.37 [1.05]	3.6	7.45	NA	NA	3.68	6.36	5 U	NA	NA
Sodium (Dissolved)	mg/L	10.5 [11]	10.4 U	16	NA	NA	161	193	175	NA	NA

Lab Qualifiers	Definition
J	Estimated Value
U	Not Detected

Table K-1
GM Lansing Plant 3
Groundwater Earh Metal Analytical Results

Location ID: / Sample Depth(ft BGS): / Date Collected:	Units	MW-02-03 07/28/03	MW-02-03 10/08/03	MW-02-03 11/01/04	MW-02-03 06/21/05	MW-02-04 11/25/02	MW-02-04 03/27/03	MW-02-04 07/28/03	MW-02-04 10/09/03	MW-02-04 11/01/04	MW-02-04 06/20/05	MW-04-01 10/25/04
Inorganics												
Aluminum	mg/L	0.49 [0.45]	0.144	0.46	0.074	NA	NA	0.9	0.408	0.105	0.102	0.058 U
Calcium	mg/L	236 [229]	235	271	260	NA	NA	380	390	320	325	128
Iron	mg/L	4.81 [4.82]	4.16	8.76	4.52	2.61	7.68	5.05	4	5.42	6.36	1.36
Magnesium	mg/L	87.8 [84.8]	84.8	103	100	NA	NA	135	139	117	121	44.2
Potassium	mg/L	1.97 J [1.88 J]	1.7	2.97	2.51	NA	NA	3.74 J	3.5	6.18	4.15	3.55
Sodium	mg/L	13.5 [13]	12.8	16.6 U	39.5	NA	NA	146	153	185	229	7.04 U
Inorganics-Filtered												
Aluminum (Dissolved)	mg/L	NA	0.005 U	0.011 U	0.01	NA	NA	NA	0.005	0.013 U	0.01 U	0.02 U
Calcium (Dissolved)	mg/L	NA	241	235	261	NA	NA	NA	375	319	320	127
Iron (Dissolved)	mg/L	NA	3.66	4.14	4.3	NA	NA	NA	1.49	2.93	4.26	1.23
Magnesium (Dissolved)	mg/L	NA	87.9	86.5	100	NA	NA	NA	134	117	118	44.4
Potassium (Dissolved)	mg/L	NA	1.77	2.75	2.71	NA	NA	NA	3.38	6.72	3.98	3.67
Sodium (Dissolved)	mg/L	NA	13.2	16.1	39.3	NA	NA	NA	147	183	223	7.16 U

Lab Qualifiers	Definition
J	Estimated Value
U	Not Detected

Table K-1
GM Lansing Plant 3
Groundwater Earh Metal Analytical Results

Location ID: / Sample Depth(ft BGS): / Date Collected:	Units	MW-04-01 06/15/05	MW-04-02 10/26/04	MW-04-02 06/22/05	MW-04-03 10/28/04	MW-04-03 06/21/05	MW-04-04 10/27/04	MW-04-04 06/13/05	MW-88-1 10/10/03	MW-88-1 10/27/04	MW-88-1 06/14/05	MW-91-1 03/21/00	MW-91-1 05/03/02
Inorganics													
Aluminum	mg/L	0.32	0.025 U	0.05 U	0.015 U	0.153	0.817 [0.186]	0.338	0.019	0.041 U	0.098	NA	NA
Calcium	mg/L	127	123	161	168	146	172 [166]	167	140	137	134	NA	NA
Iron	mg/L	1.76	4.16	2.96	5.14	6.59	11 [5.2]	5.41	1.49	1.8	1.39	0.92	0.37
Magnesium	mg/L	46.7	34.6	43.3	48.5	47.6	45.2 [42.8]	42.1	51.5	52.5	50.5	NA	NA
Potassium	mg/L	4.37	5.54	5 U	5.33	4.54	6.07 [5.8]	6.16	2.35	3.05	3.28	NA	NA
Sodium	mg/L	9.15	44.2	76.2	69	57.5	74.4 [73]	72.4	12.1	12.7 U	12.1	NA	NA
Inorganics-Filtered													
Aluminum (Dissolved)	mg/L	0.013	0.011 U	0.05 U	0.03 U	0.01 U	0.014 U [0.023 U]	0.01 U	NA	0.017 U	0.01 U	NA	NA
Calcium (Dissolved)	mg/L	125	124	161	165	149	167 [165]	167	NA	136	132	NA	NA
Iron (Dissolved)	mg/L	0.76	4.18	2.63	5.02	6.28	4.03 [3.95]	3.51	NA	1.39	0.56	NA	NA
Magnesium (Dissolved)	mg/L	44.6	35	43.3	48.1	46.8	42.2 [42.7]	42.1	NA	49.8	50.1	NA	NA
Potassium (Dissolved)	mg/L	4.09	5.45	5 U	5.09	4.36	5.84 [5.68]	6.72	NA	3.51	3.19	NA	NA
Sodium (Dissolved)	mg/L	8.98	43.9	76.2	69.2	57.6	73.6 [74.6]	73	NA	11.5 U	12.2	NA	NA

Lab Qualifiers	Definition
J	Estimated Value
U	Not Detected

Table K-1
GM Lansing Plant 3
Groundwater Earh Metal Analytical Results

Location ID: / Sample Depth(ft BGS): / Date Collected:	Units	MW-91-1 11/25/02	MW-91-1 03/28/03	MW-91-1 07/29/03	MW-91-1 10/08/03	MW-91-1 10/29/04	MW-91-1 06/20/05	MW-91-2 03/18/00	MW-91-2 05/03/02	MW-91-2 11/25/02	MW-91-2 03/28/03
Inorganics											
Aluminum	mg/L	NA	NA	0.28	0.069	0.911	0.109	NA	NA	NA	NA
Calcium	mg/L	NA	NA	163	115	120	65.2	NA	NA	NA	NA
Iron	mg/L	4.95	1.51	1.67	0.92	2.81	0.88	1.35	2.54 [0.4]	8.96	2.36
Magnesium	mg/L	NA	NA	57.9	38.3	39.8	15.7	NA	NA	NA	NA
Potassium	mg/L	NA	NA	2.61 J	2.98	2.87	4.8	NA	NA	NA	NA
Sodium	mg/L	NA	NA	20.5	16.4	15.3	17.5	NA	NA	NA	NA
Inorganics-Filtered											
Aluminum (Dissolved)	mg/L	NA	NA	NA	NA	0.025 U	0.01 U	NA	NA	NA	NA
Calcium (Dissolved)	mg/L	NA	NA	NA	NA	114	63.1	NA	NA	NA	NA
Iron (Dissolved)	mg/L	NA	NA	NA	NA	0.46	0.19	NA	NA	NA	NA
Magnesium (Dissolved)	mg/L	NA	NA	NA	NA	38	15.7	NA	NA	NA	NA
Potassium (Dissolved)	mg/L	NA	NA	NA	NA	2.83	4.32	NA	NA	NA	NA
Sodium (Dissolved)	mg/L	NA	NA	NA	NA	15.3 U	17.4	NA	NA	NA	NA

Lab Qualifiers	Definition
J	Estimated Value
U	Not Detected

Table K-1
GM Lansing Plant 3
Groundwater Earh Metal Analytical Results

Location ID: / Sample Depth(ft BGS): / Date Collected:	Units	MW-91-2 07/29/03	MW-91-2 10/08/03	MW-91-2 11/01/04	MW-91-2 06/24/05	MW-91-3 03/27/03	MW-91-3 10/09/03	MW-91-3 11/01/04	MW-91-3 06/22/05	MW-91-4 03/28/03	MW-91-4 10/10/03
Inorganics											
Aluminum	mg/L	0.01 U	0.047	0.384 [0.385]	0.05	NA	0.125	0.443	0.09 [0.08]	NA	0.182 [0.186]
Calcium	mg/L	164	165	170 [169]	164	NA	131	122	121 [118]	NA	191 [192]
Iron	mg/L	1.94	2.18	5.08 [5.2]	3	1.5	1.78	2.9	2.12 [1.98]	5.99 [6.31]	5.51 [5.4]
Magnesium	mg/L	59.2	56.9	58 [57.7]	52.3	NA	44.7	41.7	41.5 [41.7]	NA	49.3 [49.5]
Potassium	mg/L	2.33 J	2.04	3.04 [2.93]	5 U	NA	4.47	4.74	5 U [5 U]	NA	4.94 [4.89]
Sodium	mg/L	20.5	19.7	18.9 U [18.7 U]	19	NA	8.58	7.9 U	7.64 [7.81]	NA	77.3 [78.1]
Inorganics-Filtered											
Aluminum (Dissolved)	mg/L	NA	NA	0.012 U [0.016 U]	0.05 U	NA	NA	0.006 U	0.05 U [0.05 U]	NA	NA
Calcium (Dissolved)	mg/L	NA	NA	158 [158]	162	NA	NA	119	121 [118]	NA	NA
Iron (Dissolved)	mg/L	NA	NA	2.19 [2.08]	2.07	NA	NA	0.32	1.23 [1.2]	NA	NA
Magnesium (Dissolved)	mg/L	NA	NA	54.9 [54.8]	51.1	NA	NA	41.8	41.5 [41.7]	NA	NA
Potassium (Dissolved)	mg/L	NA	NA	2.88 [2.8]	5 U	NA	NA	4.5	5 U [5 U]	NA	NA
Sodium (Dissolved)	mg/L	NA	NA	19 [19.3]	18.8	NA	NA	8.65 U	7.64 [7.81]	NA	NA

Lab Qualifiers	Definition
J	Estimated Value
U	Not Detected

Table K-1
GM Lansing Plant 3
Groundwater Earh Metal Analytical Results

Location ID: / Sample Depth(ft BGS): / Date Collected:	Units	MW-91-4 10/27/04	MW-91-4 06/14/05	MW-91-5 03/28/03	MW-91-5 10/09/03	MW-91-5 10/26/04	MW-91-5 06/24/05	MW-91-6 03/29/03	MW-91-6 10/10/03	MW-91-6 10/28/04	MW-91-6 06/23/05	MW-93-2 03/18/00
Inorganics												
Aluminum	mg/L	0.328	0.217	NA	0.022	0.037 U	0.1 [0.11]	NA	0.028	0.666	0.05 U	NA
Calcium	mg/L	178	168	NA	116	131	127 [128]	NA	216	143	181	NA
Iron	mg/L	7.02	6.11	4.74	4.56	4.44	4.93 [4.74]	15.3	17.4	18.4	15.7	0.69 [0.77]
Magnesium	mg/L	48.6	45	NA	42.8	45.3	42.7 [43.3]	NA	67.3	53.3	59.2	NA
Potassium	mg/L	14.8	12.4	NA	3.24	2.68	5 U [5 U]	NA	1.93	2.61	5 U	NA
Sodium	mg/L	85.5	87.3	NA	32.4	33.4	31.4 [31.3]	NA	58.4	51.3	41.2	NA
Inorganics-Filtered												
Aluminum (Dissolved)	mg/L	0.022 U	0.087	NA	NA	0.015 U	0.05 U [0.05 U]	NA	NA	0.02 U	0.05 U	NA
Calcium (Dissolved)	mg/L	176	165	NA	NA	128	127 [128]	NA	NA	152	181	NA
Iron (Dissolved)	mg/L	5.83	5.62	NA	NA	3.7	2.82 [2.82]	NA	NA	11.1	14.1	NA
Magnesium (Dissolved)	mg/L	48.7	44.1	NA	NA	46	42.7 [43.3]	NA	NA	55.6	59.2	NA
Potassium (Dissolved)	mg/L	14.2	12.5	NA	NA	2.9	5 U [5 U]	NA	NA	2.8	5 U	NA
Sodium (Dissolved)	mg/L	84.9	84.9	NA	NA	34.8	31.4 [31.3]	NA	NA	51.1	41.2	NA

Lab Qualifiers	Definition
J	Estimated Value
U	Not Detected

Table K-2
GM Lansing Plant 6
Groundwater Earth Metal Analytical Results

Location ID:		MW-02-01	MW-02-01	MW-02-01	MW-02-02	MW-02-02	MW-02-02	MW-02-03	MW-02-03	MW-02-03
Sample Depth():										
Date Collected:	Units	08/19/03	09/15/03	11/11/04	08/19/03	09/16/03	11/11/04	08/19/03	09/17/03	11/11/04
Inorganics										
Aluminum	mg/L	NA	0.34	2.49 [2.11]	NA	1.59	4.82	NA	1.87 [0.95]	0.351
Calcium	mg/L	NA	164	236 [228]	NA	191	1,740	NA	363 [384]	898
Iron	mg/L	NA	1.27	10.2 [8.73]	NA	3.78	29.7	NA	11.4 [9.94]	4.7
Magnesium	mg/L	NA	88.7	104 [102]	NA	106	655	NA	148 [149]	232
Potassium	mg/L	NA	4.96	2.47 [2.47]	NA	3.7	8.21	NA	6.43 [6.14]	8.36
Sodium	mg/L	NA	194	139 [136]	NA	40.3	42	NA	170 [170]	214
Inorganics-Filtered										
Aluminum (Dissolved)	mg/L	0.01 U	0.01 U	0.039 [0.03]	0.01 J	0.01 U	0.036	0.01 J	0.01 U [0.01]	0.029
Calcium (Dissolved)	mg/L	162	131	149 [146]	185	168	203	350	326 [238]	437
Iron (Dissolved)	mg/L	0.33	0.28	0.37 [0.39]	1.26	0.32	0.47	5.05	0.65 [0.48]	3.87
Magnesium (Dissolved)	mg/L	87.8	85.4	74.3 [73.5]	97.6	103	108	137	142 [139]	174
Potassium (Dissolved)	mg/L	4.82	4.56	2.35 [1.06]	2.84	2.74	5.12	5.29	5.46 [5.86]	7.3
Sodium (Dissolved)	mg/L	190	189	126 [128]	31.8	39.9	40.9	165	166 [167]	221

Lab Qualifiers	Definition
J	Estimated Value
U	Not Detected

Table K-2
GM Lansing Plant 6
Groundwater Earth Metal Analytical Results

Location ID: / Sample Depth(): / Date Collected:	Units	MW-03-01 08/20/03	MW-03-01 09/16/03	MW-03-01 11/09/04	MW-03-02 08/20/03	MW-03-02 09/17/03	MW-03-02 11/09/04	MW-03-03 08/20/03	MW-03-03 09/16/03	MW-03-03 11/10/04
Inorganics										
Aluminum	mg/L	NA	4.75	2.2	NA	1.55	1.1	NA	0.58	1.61
Calcium	mg/L	NA	646	709	NA	403	391	NA	199	182
Iron	mg/L	NA	20.3	27.2	NA	11.6	5.5	NA	11.3	8.83
Magnesium	mg/L	NA	245	271	NA	164	154	NA	69.9	55.3
Potassium	mg/L	NA	8.24	6.83	NA	8.04	4.98	NA	14.7	4.78
Sodium	mg/L	NA	1,210	953	NA	294	334	NA	724	447
Inorganics-Filtered										
Aluminum (Dissolved)	mg/L	0.01 J [0.01 J]	0.05	0.017	0.01 U	0.01 U	0.019	0.01 U	0.01	0.029
Calcium (Dissolved)	mg/L	613 [611]	549	588	322	297	363	310	123	146
Iron (Dissolved)	mg/L	5.72 [5.67]	1.23	5.08	0.39	0.59	1.85	8.97	0.28	4.89
Magnesium (Dissolved)	mg/L	230 [232]	230	228	129	132	145	102	70.1	44.1
Potassium (Dissolved)	mg/L	6.72 [6.78]	6.78	7.1	8.51	7.7	4.92	13.7	10	4.41
Sodium (Dissolved)	mg/L	1,160 [1,160]	1,170	1,100	287	285	345	898	744	444

Lab Qualifiers	Definition
J	Estimated Value
U	Not Detected

Table K-2
GM Lansing Plant 6
Groundwater Earth Metal Analytical Results

Location ID: / Sample Depth(): / Date Collected:	Units	MW-03-04 08/19/03	MW-03-04 09/17/03	MW-03-04 11/10/04	MW-03-05 08/19/03	MW-03-05 09/16/03	MW-03-05 11/10/04	MW-03-06 08/19/03	MW-03-06 09/16/03	MW-03-06 11/11/04
Inorganics										
Aluminum	mg/L	NA	0.1	1.98 [1.92]	NA	0.48	1.58	NA	0.34	0.892
Calcium	mg/L	NA	160	225 [232]	NA	764	902	NA	339	604
Iron	mg/L	NA	4	9.63 [9.89]	NA	13.8	22.8	NA	4.99	3.69
Magnesium	mg/L	NA	62.8	92.1 [92]	NA	304	282	NA	151	224
Potassium	mg/L	NA	1.68	5.16 [5]	NA	8.8	10.3	NA	6.23	8.13
Sodium	mg/L	NA	23.9	31.4 [31.3]	NA	1,430	3,150	NA	581	1,220
Inorganics-Filtered										
Aluminum (Dissolved)	mg/L	0.01 J	0.01	0.022 [0.025]	0.01 U	0.04	0.018	0.01 J	0.07	0.028
Calcium (Dissolved)	mg/L	159	146	177 [181]	737	698	853	479	325	558
Iron (Dissolved)	mg/L	2.61	0.25	3.29 [3.25]	11.3	1.47	13.5	0.87	0.66	0.84
Magnesium (Dissolved)	mg/L	61.7	61.7	73.1 [73.1]	296	302	265	195	144	220
Potassium (Dissolved)	mg/L	1.81	1.39	4.82 [4.38]	8.31	10	10.5	8.13	5.95	8.49
Sodium (Dissolved)	mg/L	23.3	23.5	30.7 [31.2]	1,250 J	1,440	3,080	901	547	1,210

Lab Qualifiers	Definition
J	Estimated Value
U	Not Detected

Table K-2
GM Lansing Plant 6
Groundwater Earth Metal Analytical Results

Location ID: / Sample Depth(): / Date Collected:	Units	MW-03-07 08/19/03	MW-03-07 09/15/03	MW-03-07 11/09/04	MW-03-08 08/19/03	MW-03-08 09/15/03	MW-03-08 11/11/04	MW-04-01 11/09/04	MW-04-04 11/08/04
Inorganics									
Aluminum	mg/L	NA	0.37 [0.48]	1.63	NA	0.12	0.203	0.253	11.6
Calcium	mg/L	NA	101 [103]	158	NA	111	115	2,560	200
Iron	mg/L	NA	2.37 [2.82]	15.9	NA	2.65	0.92	3.19	215
Magnesium	mg/L	NA	44.8 [45.2]	63.6	NA	56.3	54.7	104	75.4
Potassium	mg/L	NA	2.36 [2.3]	3.46	NA	3.41	2.17	20.4	9.2
Sodium	mg/L	NA	28.3 [28.1]	31.6	NA	22	28.7	68.1	19.6
Inorganics-Filtered									
Aluminum (Dissolved)	mg/L	0.01 J [0.01 J]	0.01 U [0.01 U]	0.025	0.01 U	0.01 U	0.029	0.826	0.022
Calcium (Dissolved)	mg/L	103 [104]	101 [40.5]	108	114	115	116	116	127
Iron (Dissolved)	mg/L	0.85 [0.81]	0.19 [0.08]	0.29	0.53	0.24	0.27	2.77	0.21
Magnesium (Dissolved)	mg/L	44.1 [45]	43.9 [43.3]	46.9	55.4	57.1	54	50.1	54.5
Potassium (Dissolved)	mg/L	2.1 [2.11]	1.94 [1.93]	3.51	3.2	3.21	2.37	11	7.16
Sodium (Dissolved)	mg/L	26.5 [26.6]	28.2 [28.6]	32.4	21.7	22.7	27.8	57.6	19

Lab Qualifiers	Definition
J	Estimated Value
U	Not Detected

Table K-2
GM Lansing Plant 6
Groundwater Earth Metal Analytical Results

Location ID: / Sample Depth(): / Date Collected:	Units	MW-04-05 11/09/04	MW-04-06 11/09/04	SME-MW-1 03/21/96	SME-MW-1 08/19/03	SME-MW-1 09/17/03	SME-MW-2 03/21/96	SME-MW-2 08/19/03	SME-MW-2 09/16/03	SME-MW-2 11/11/04
Inorganics										
Aluminum	mg/L	11.7	1.67	NA	NA	3.7	NA	NA	5.63	9.61
Calcium	mg/L	1,020	129	NA	NA	539	NA	NA	199	1,040
Iron	mg/L	52.4	7.96	NA	NA	6.27	NA	NA	11.1	44.8
Magnesium	mg/L	351	16.8	235	NA	166	53.4	NA	85.4	415
Potassium	mg/L	12.9	387	25.8	NA	6.24	6.11	NA	4.95	6.9
Sodium	mg/L	2,510	928	1,530	NA	99.9	148	NA	30.9	26.9
Inorganics-Filtered										
Aluminum (Dissolved)	mg/L	0.019	0.319	NA	0.01 U	0.01 U	NA	0.01 U	0.01	0.032
Calcium (Dissolved)	mg/L	547	67.5	NA	293	242	NA	160	152	166
Iron (Dissolved)	mg/L	3.56	0.25	NA	6.94	0.46	NA	0.2	0.35	0.48
Magnesium (Dissolved)	mg/L	164	1 U	NA	99.7	100	NA	69	70.8	75.2
Potassium (Dissolved)	mg/L	11.4	397	NA	4.45	4.49	NA	2.65	2.9	4.16
Sodium (Dissolved)	mg/L	2,410	964	NA	96.7	95.7	NA	26.9	30	27.5

Lab Qualifiers	Definition
J	Estimated Value
U	Not Detected

Table K-2
GM Lansing Plant 6
Groundwater Earth Metal Analytical Results

Location ID: Sample Depth(): Date Collected:	Units	SME-MW-3 03/21/96	SME-MW-4 03/21/96	SME-MW-4 08/19/03	SME-MW-4 09/17/03	SME-MW-4 11/10/04
Inorganics						
Aluminum	mg/L	NA	NA	NA	1	17.6
Calcium	mg/L	NA	NA	NA	288	617
Iron	mg/L	NA	NA	NA	7.91	50.9
Magnesium	mg/L	58.4	58.4	NA	92	196
Potassium	mg/L	6.92	9.45	NA	4.05	6.14
Sodium	mg/L	146	324	NA	113	96.2
Inorganics-Filtered						
Aluminum (Dissolved)	mg/L	NA	NA	0.01 U	0.04	0.036
Calcium (Dissolved)	mg/L	NA	NA	275	240	261
Iron (Dissolved)	mg/L	NA	NA	4.14	0.48	4.46
Magnesium (Dissolved)	mg/L	NA	NA	84.8	87.1	83
Potassium (Dissolved)	mg/L	NA	NA	3.75	3.78	3.9
Sodium (Dissolved)	mg/L	NA	NA	111	110	98.7

Lab Qualifiers	Definition
J	Estimated Value
U	Not Detected