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GRAND HAVEN CHARTER TOWNSHIP

PLANNED UNIT DEVELOPMENT (PUD) APPLICATION

Application Type	Fee	Escrow*
Overlay Zone	$310	$2,500
Non-Overlay Zone	$300	$1,500

Sewer Escrow**	
Main Extension	$5,000
Lift Station	$2,000

Applicant Information

Name: Chad Bush

Phone: 616.607.6073 Fax:

Address: 18000 Cove Street, Spring Lake, MI 49417

Email Address: CBush@askpsp.com

Owner Information *(If different from applicant)*

Name:

Phone: Fax:

Address:

Property Information

Address/Location: 17114 Robbins Rd

Parcel Number: 70 - 03 - 33 - 200 - 035 Size *(acres)*: 13.6

Current Zoning: C1 & I1 +007,056,077,070 Zoning Requested: PUD - Mixed Use

Adjacent Zoning: *North*: SP *South*: PUD Res *East*: C-1&RR *West*: City of GH

Master-Planned Zoning: Robbins Sub Area Consistent with Master Plan? Yes

Other Information

Does Property Abut Township Border? Yes

Present Use of the Subject Property? Industrial

Number & Type of Existing Structures? Office, warehouse, salt storage, cell tower

Subject Property Located on a Paved Road? Yes

Municipal Water within 2,700 Feet of Subject Property? Yes

Municipal Sewer within 2,700 Feet of Subject Property? Yes

NOTE: The architect, engineer, planner, or designer shall be responsible for utilizing the Township Ordinance Books and following the procedures and requirements as specified in Chapters 17 and 23 (*and Chapter 15A if located in the Overlay Zone*), and any other applicable ordinances. Initially, submit five copies of the required information for staff review. Once staff has granted tentative approval, additional copies will be required as requested by staff.

I hereby attest the information on this application is, to the best of my knowledge, true and accurate.

Signature of applicant *Date* 1-15-18

Last Revised 2/8/2016

** To cover cost of legal and consulting fees, may be increased as necessary*

*** If approval of this application requires/includes the extension of a municipal sanitary sewer main, an additional $5,000.00 escrow fee shall be required, and an additional $2,000.00 escrow fee shall be required for the installation of a lift station.*

NOTICE

IF I PLAN TO SPLIT THE PARCEL(S) AFTER THE ZONING APPROVALS ARE GRANTED, I REALIZE THAT I MUST APPLY FOR A LAND DIVISION WITH THE ASSESSING DEPARTMENT. ALL LAND DIVISION REQUIREMENTS MUST BE CONFORMED TO BEFORE PROCEEDING WITH FURTHER DEVELOPMENT.

_____ 1-15-18

Signature of applicant *Date*

For Office Use Only

Date Received _____ Fee Paid? _____

Materials Received: Site Plans _____ Location Map _____

Survey _____ Legal Description _____

Dated copy of approved minutes sent to applicant? _____ Date Sent _____

PLANNING COMMISSION USE ONLY

Approval _____

Tabled _____

Denied _____

Conditional Approval _____

The following conditions shall be met for approval:

_____

_____

_____

_____

_____

_____

_____ _____

Signature of Planning Commission Chair *Date*

MEETING MINUTES
GRAND HAVEN CHARTER TOWNSHIP
PLANNING COMMISSION
JUNE 4, 2018

I. CALL TO ORDER

Cousins called the meeting of the Grand Haven Charter Township Planning Commission to order at 7:00 p.m.

II. ROLL CALL

Members present: Cousins, LaMourie, Taylor, Chalifoux, Wagenmaker, Kieft, Reenders, Wilson, and Hesselsweet
Members absent: None
Also present: Community Development Director Fedewa, Attorney Bultje, and Assistant Zoning Administrator Hoisington

Without objection, Cousins instructed Fedewa to record the minutes.

III. PLEDGE TO THE FLAG

IV. APPROVAL OF MINUTES

Without objection, the minutes of the May 21, 2018 meeting were approved.

V. CORRESPONDENCE

- Lakeshore Gardens PUD – Scott Klaassen
- Lakeshore Gardens PUD – Jolee Wennersten, DVM
- Lakeshore Gardens PUD – Ronda Ruscett, OD

VI. PUBLIC COMMENTS – None

VII. PUBLIC HEARING

A. PUD – Lakeshore Gardens – Multifamily Apartment Complex

Cousins opened the public hearing at 7:02pm.

Fedewa provided an overview through a memorandum dated May 31st.

Developers Ben Robbins and Terry Nash were present and available to answer questions as well as architect Mark Oppenhuizen and environmentalist Roger Bour.

- Another overview of the project was provided by the developer.
- Developer requested the Planning Commission strongly consider a motion for conditional approval and allow the environmental studies to be completed at a later date because it is typically outside the purview of the local municipality.
- Acknowledged the storage unit proposal was no longer part of the application.

- Detailed information regarding the universal design incorporated into some of the project such as pocket doors, zero-step entrances, extra handicap accessible parking spaces (*both surface and garage stalls*), and will comply with all other accessibility requirements under the building code.

Public Comments include:

- Jean Kocher – 15002 Madeleine Court – supports the application:
    - New resident of Grand Haven.
    - Has a daughter with special/unique abilities.
    - Previous location where daughter lived in Lansing was condemned.
    - Daughter has been independent and held a job for 20+ years and wants to continue.
    - This type of development, and non-profits such as Gracious Grounds make that possible.
- Sandy Baker – 1015 Moorings Court, North Muskegon – supports the application:
    - Executive Director of Gracious Grounds.
    - Has many people with unique abilities that want, and need, a place to live independently.
    - The greater Grand Haven community has been actively supporting Gracious Grounds and their mission.
    - Believes the proposed apartments are suitable "forever homes" for people with unique abilities because maintenance and other household obligations are completed by the apartment complex.
- Ted Fricano – 15081 168th Avenue – has questions and concerns:
    - Speaking on behalf of his mother, who is concerned that easements proposed within this development would encroach onto her land.
    - Believes 156-units will bring much more traffic and other intensities to the area.
    - Urged the Planning Commission to take their time, carefully consider all aspects of the application, and make an informed decision.

Cousins noted that correspondence was received in regard to the application. One in support, and the other two noting concerns with the impact to their adjacent businesses.

There being no further comments, Cousins closed the public hearing at 7:25pm.

VIII. OLD BUSINESS

A. PUD – Lakeshore Gardens – Multifamily Apartment Complex

The application was discussed by the Commissioners and focused on:

- Reviewed, considered, and discussed the proposed departure request to increase the width of the maneuvering lane from 24-feet to 35-feet to enable wheelchair accessible vans to have more maneuverability to enter/exit the garage stall.
    - Developer acknowledge it would be better to have a circulation plan that includes a wheelchair accessible van, but Auto-CAD does not have a model for that type of vehicle, and were unable to produce the requested illustration.
    - Inquired what the width of the accessible stalls are in the garage buildings. Uncertain if theirs is shown at 13-feet or 16-feet.
        - Developer is uncertain, but will review the matter and if needed make adjustments to garages accordingly to ensure compliance with accessibility parking requirements.
    - Recommended the developer reduce the length of the landscape islands adjacent to garage buildings to support their desire for safe maneuverability.
    - Commission provided verbal confirmation they would support this departure request at the width of 35-feet based on the safety arguments provided by the developer.
        - It is noted a verbal confirmation is not binding, but was merely provided in an effort to give the developer meaningful input for them to finalize their design concepts.
- Inquired how much open space is being proposed.
    - 20% is required, but developer is proposing 22%, or approximately 2.5-acres.
- An in-depth and lengthy discussion ensued about the recent environmental studies that were provided to the Township.
    - Fedewa explained a complaint was received from a former employee that alleged a variety of possible contamination. Including leaking equipment and unpermitted septic systems. Based on this complaint, staff requested the environmental study. Initially, the developer was unwilling to provide the studies, but assured staff there were no issues. After much back-and-forth between staff and the developer; and between the attorneys for the Township and developer the Phase 1 Environmental Site Assessment (ESA) was provided after meeting packets were distributed; and Phase 2 ESA was provided the day of this meeting. Due to the lack of time that staff, and the Commission, have to review the studies—staff is recommending the application be tabled.
        - Further, per Superintendent Cargo the Township must be aware of contamination for many reasons including—type of gaskets to use in utility installation; groundwater discharge procedure for dewatering; dust particles that could trespass onto adjacent property; contamination plumes within the groundwater, etc.

- Fedewa then had numerous inquiries for environmentalist Bour, which included:
    - Township does not have record of the site being connected to municipal sanitary sewer. The ESA's indicate part of the site is connected. Inquired if that would change how the testing and sampling was conducted.
        - Bour response: Yes, more sampling and testing would be conducted. Explained the property owner was provided a questionnaire about condition and use of the land. Simply relied upon the information given in the questionnaire, and did not follow-up to confirm accuracy of said information.
    - Samples were only taken around the Above-ground Storage Tanks (ASTs). Questioned if samples were taken from anywhere else on the site, and if not, why? It was an intense land use for nearly 60-years (*according to the ESA*) and the type of business would have, and use, numerous products that contain a variety of chemicals.
        - Bour response: Based on questionnaire information and Phase 1 ESA there was no need to perform further testing. Only contamination present is a 40' x 40' area around the ASTs.
    - Questioned if he believed a problem could arise if a municipal watermain were to traverse through the contaminated AST area. ESA's describe a common resolution is to leave contamination in place, not treat it, and simply record a restrictive covenant against the property prohibiting any structures from being built on the contaminated area. Then install monitoring wells to test for possible contamination over the next year. Noted that if persons with unique abilities from Gracious Grounds live onsite they may have enhanced sensitivities to the contamination and that should be a consideration within the scope of the ESA.
        - Bour response: Yes, installing municipal watermain through the contaminated area could be problematic, and cleaning the area would be the best method of resolving this concern.
    - Inquired why they ceased testing for diesel fuel after one sample returned a negative result?
        - Bour response: Followed protocol, and did not believe further testing of diesel fuel was warranted after the negative result.
    - Inquired when information and test results would become available for the deep boring test, which is intended to determine if the contamination has plumed, and if so, what direction.
        - Bour response: Waiting for test results, but do not anticipate a problem.

- Commissioners asked the following related to the environmental studies:
    - Would a common septic tank meet the threshold for sampling?
        - Bour response: No, not if only used for human waste. However, if a private septic system was used to discharge non-human waste such as petroleum based products then further testing would be needed.
    - Inquired if a baseline test or due care plan was created? It is common practice to do both.
        - Bour response: No, did not seem necessary and was not requested by property owner.
- The Commission, Fedewa, and Bultje did express to the developer and audience that while the discussion may seem concerning—the true scope of the contamination and cleanup is minimal. However, the Township received the information very late, and had many questions. Had the information been provided earlier, the inquiries about process and procedure would have occurred outside the public hearing process, and staff would have just reported the findings and solution.

- Glad to see the additional points of access to the adjacent D&W property. Inquired if the easements would be permanent.
    - Developer response: Yes, will be permanent, but if the adjacent property owner found the cross-connection was impeding their business then they would require the connection point to solely be maintained as an emergency access. However, that is not expected to occur and is merely a safeguard.
- Questioned the two commercial outlots noted as A-1 and A-2 on the plans; and why a driveway was being shown on Robbins Road. Commission would be opposed to this additional driveway when access can be provided via the entrance road for the apartments. Requested that driveway be removed from the site plan because the two outlots are not part of the PUD application.
- Agreed that two more dumpster enclosures are needed for the site.
- Affirmed the Fire/Rescue Department request to increase the width of the main entrance.
- Commissioners reviewed the departure request to reduce the minimum floor area for two of the apartment floor plans.
    - Developer provided compelling documentation of comparable apartment sizes.
    - Ottawa Housing Next providing support for an efficiency unit is also compelling.

- Commission provided verbal confirmation they would support this departure request to allow minimum floor areas of 496 sqft for 12-units, and 730 sqft for 39-units.
    - It is noted a verbal confirmation is not binding, but was merely provided in an effort to give the developer meaningful input for them to finalize their design concepts.

- Fedewa inquired about an idea that was discussed with the Ottawa County Water Resources Commissioner to improve the stormwater management plan and provide more resiliency.
    - If the landscape islands within the parking lot and the open space area east of the clubhouse were to be slightly depressed to allow stormwater to infiltrate onsite, would the Commission be agreeable to allowing that to occur within the open space. It would be unnoticeable to the users of the site, and the depression would be so shallow that after the rain event ended there would not be any pooling or ponding of excess stormwater within the open space areas.
        - Yes, the Commission expressed their verbal approval of this design.

Motion by Taylor, supported by Wagenmaker, to **table** the Lakeshore Gardens PUD application, and direct the applicant to address the following:

1. Provide written documentation from the City of Grand Haven DPW Director that conceptually approves the proposed access points onto Robbins Road.
2. Provide written documentation from the Ottawa County Water Resources Commissioner that conceptually approves the stormwater management system.
3. Increase the width of the main drive aisle to 30-feet from the boulevard to the curve adjacent to the clubhouse.
4. Add another dumpster enclosure near Building F.
5. Add another dumpster enclosure on the west side of Buildings A/B.
6. Shift the driveway stub to A-1 and A-2 to the south, or provide a circulation plan that shows a commercial vehicle can successfully complete the required turning movements.
7. Create, and provide a Due Care Plan for the environmental concerns.
8. Conduct additional sampling if it is determined the site is not connected to municipal sanitary sewer; and provide the updated environmental reports.
9. Remove proposed curb-cut on Robbins Road that would allow access to the A-1 and A-2 outlots that are not part of the PUD application.

10. Clarify if the width within the garage stalls is 16-feet and can accommodate a wheelchair accessible van.

Which motion carried unanimously.

IX. NEW BUSINESS

A. 2017 Planning Commission Report

Fedewa provided an overview of the report in a memorandum dated June 4th.

The Commissioners affirmed the findings and information provided in the report.

X. REPORTS

A. Attorney Report – None
B. Staff Report – None
C. Other

- Wilson noted the Special Land Use application for Fit Body Bootcamp is being withdrawn because they found another site that better suites their needs.
- Reenders noted his concerns over stormwater runoff and accountability to ensure construction is done according to the permitted plans.
- Reenders noted the Gardens Alive Farms at 16127 Winans Street is ceasing operations effective August 3rd. Considering its size, and location adjacent to existing industrial, and proposed industrial, the Township should review the various options available when the Future Land Use map is amended after the new zoning ordinance is adopted.

XI. EXTENDED PUBLIC COMMENTS

- Ryan Kilpatrick – 238 Bristol Ave – Ottawa Housing Next Executive Director.
  - Appreciates the Township's support to enable affordable housing opportunities.
  - Likely providing a smaller floor plan is the best long-term solution.
  - Expressed his thanks for their hard work and careful consideration.

XII. ADJOURNMENT

Without objection, the meeting adjourned at 8:43 pm.

Respectfully submitted,

Stacey Fedewa
Acting Recording Secretary

MEETING MINUTES
GRAND HAVEN CHARTER TOWNSHIP
PLANNING COMMISSION
JULY 16, 2018

I. CALL TO ORDER

Cousins called the meeting of the Grand Haven Charter Township Planning Commission to order at 7:00 p.m.

II. ROLL CALL

Members present: Cousins, LaMourie, Taylor, Chalifoux, Wagenmaker, Kieft, Reenders, Wilson, and Hesselsweet

Members absent: None

Also present: Community Development Director Fedewa, Assistant Zoning Administrator Hoisington, and Attorney Bultje

Without objection, Cousins instructed Fedewa to record the minutes.

III. PLEDGE TO THE FLAG

IV. APPROVAL OF MINUTES

Without objection, the minutes of the June 18, 2018 meeting were approved.

V. CORRESPONDENCE

VI. PUBLIC COMMENTS – None

VII. OLD BUSINESS

A. PUD – Lakeshore Gardens – Multifamily Apartment Complex

Fedewa provided an overview of the report in a memorandum dated July 12th.

Barbara Marczak, an engineer from Prein&Newhof provided a summary of her findings after reviewing the environmental studies produced by the applicant:

- A Phase 1 Environmental Study Assessment (ESA) is essentially a paperwork review on the history of the property, no testing is conducted. The major finding was the Above-ground Storage Tanks (AST).
- The Phase 2 ESA conducted testing, but it was limited to the AST area where some contamination was found.
- Based on Township feedback that indicated the site was not connected to sanitary sewer, the applicant conducted additional testing and provided a Floor Drain & Holding Tank report.
    - The discharge point of the floor drains was determined to be the storm water drain that discharges offsite.

    - The holding tank can, and will, be crushed onsite per the Ottawa County Environmental Health Department.

- Due Care Plan is sufficient, but does include various legal statements that the applicant did not cause the contamination and therefore is not responsible for remediation. Rather, are only responsible for protecting the public health and from exacerbating or making the contamination spread or become worse, and prevent the 'reasonably foreseeable acts of third parties.'

The application, and environmental findings, were discussed by the Commissioners:

- Inquired if a magnetometer was used to find the holding tank.
    - Per Roger Bour, the applicant's environmental engineer, no—a magnetometer was not used because the tank is concrete.
- Requested Marczak provided a review of her nine recommendations. Specifics explanations include:
    - No assessment of potential salt in the groundwater was performed, but salt does dissipate quickly.
    - No private water wells should be allowed, to prevent the groundwater from being used for irrigation or drinking.
    - Will be important to review the dewatering hydrogeological assessment that will become available after earthwork and dewatering begins for utility installation. This assessment, along with the groundwater monitoring wells, will determine if the contamination has entered the groundwater and how far it has migrated.
        - If these additional tests find additional contamination that is spreading then the Township will likely want to require the vapor-barrier.
- Bour was invited to respond to Marczak's findings:
    - Will review the salt pile after it is removed, and the concrete pad is removed. However, does not believe contamination will be an issue since the salt has been covered by a barn, and if any salt has leeched into the groundwater it does dissipate quickly. A comparison was provided that salt used for roads and sidewalks during winter has about the same potential for contamination.
    - Regarding the potential condition of approval that would require a petroleum-resistant vapor barrier on all buildings—the results of the volatilization to indoor air assessment has already been completed. No exposure pathway. Distance between the known contamination and the apartment buildings exceeds the distance requirements established by the DEQ.
        - Thus, the DEQ would not require any petroleum-resistant vapor barriers.
    - Additional testing for volatilization to indoor air will only be conducted if the dewatering hydrogeological assessment reveals the contamination plume has migrated, which is not expected.

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- Marczak affirmed Bour's findings and acknowledged that her review of the environmental studies took a conservative approach.
- Rather than using a vapor barrier for each building, which is costly; should a soil boring be taken under each building?
    - Bour explained he is confident in the horizontal extent of the known contamination—estimated to be approximately 25 yd^3 x 25 yd^3. DEQ & EPA only require a 6-foot isolation distance and the nearest apartment building is over 80-feet. If a problem was found in the future it can be addressed specific to the findings.
- Matthew D. Zimmerman, the applicants environmental law attorney indicated staff overstated the findings and breadth of the Township's legal authority in the July 12th memorandum.
- Inquiry was made about the petroleum testing and why the rest of the site was not included in the ESA's. Bour explained the following:
    - Typically, petroleum floats, but on rare occasions these compounds can sink quite deeply underground. Sinking usually only occurs with odd soil types. Additional testing will be completed as stated in the Due Care Plan. If any additional contaminants were found, it would not impact the volatilization to indoor air/vapor-barrier concerns.
    - Initial testing did not reveal any diesel fuel, and when that occurs the industry standard is to cease testing for that compound. This method also complies with DEQ standards.
    - Reviewed historical use of the property during the Phase 1 ESA. The scope of the Phase 2 ESA is based on the experience and professional judgment of the environmentalist; and did not find any justification to expand the scope of Phase 2.
        - Could perform random sampling, or grid pattern sampling, but both are expensive and rarely find any contaminants.

Motion by Wilson, supported by Reenders, to recommend the Township Board **conditionally approve** the proposed multi-family residential Lakeshore Gardens PUD application to construct 6 apartment buildings, with a total of 156-units ranging from 496-sqft to 1,070-sqft in floor area. This is based on the application meeting the requirements and standards set forth by the Grand Haven Charter Township Zoning Ordinance and Master Plan. The motion is subject to, and incorporates, the following report concerning the Planned Unit Development, including conditions of approval. **Which motion carried unanimously.**

REPORT – LAKESHORE GARDENS APARTMENTS – PUD

Pursuant to the provisions of the Grand Haven Charter Township (the "Township") Zoning Ordinance (the "Zoning Ordinance"), the following is the report of the Grand Haven Charter Township Planning Commission (the "Planning Commission") concerning an application by Chad Bush (the "Developer") for approval of a Lakeshore Gardens Planned Unit Development (the "Project" or the "PUD").

The Project will consist of a multi-family apartment complex. This 11.47-acre Project will consist of six three-story buildings, four buildings will contain 24-units, the remaining two will each contain 30-units. The floor areas of the 156-units range from 496-sqft to 1,070-sqft. It also includes 94-enclosed garage spaces, 224-surface parking spaces. It will also include 2.5-acres of designated open space. The Project as recommended for approval is shown on a final site plan (the "Final Site Plan"), last revised 6/8/2018, including landscaping (the "Final Landscape Plan") and elevation renderings (the "Final Elevations"), last revised 5/15/18; collectively referred to as the "Documentation," presently on file with the Township.

The purpose of this report is to state the decision of the Planning Commission concerning the Project, the basis for the Planning Commission's recommendation, and the Planning Commission's decision that the Lakeshore Gardens PUD be approved as outlined in this motion. The Developer shall comply with all the Documentation submitted to the Township for this Project. In granting the approval of the proposed PUD application, the Planning Commission makes the following findings pursuant to Section 17.04.3 of the Zoning Ordinance.

1. The Project meets the site plan review standards of Section 23.06 of the Zoning Ordinance. Specifically, pursuant to Section 23.06.7, the Planning Commission finds as follows:

    A. The uses proposed will not adversely affect the public health, safety, or welfare. Uses and structures located on the site take into account topography, size of the property, the uses on adjoining property and the relationship and size of buildings to the site. The site will be developed so as not to impede the normal and orderly development or improvement of surrounding property for uses permitted in this Ordinance.

    B. Safe, convenient, uncontested, and well defined vehicular and pedestrian circulation is provided for ingress/egress points and within the site. Drives, streets and other circulation routes are designed to promote safe and efficient traffic operations within the site and at ingress/egress points.

    C. The arrangement of public or private vehicular and pedestrian connections to existing or planned streets in the area are planned to provide a safe and efficient circulation system for traffic within the Township.

    D. Removal or alterations of significant natural features are restricted to those areas which are reasonably necessary to develop the site in accordance with the requirements of this Ordinance. The Planning Commission has required that landscaping, buffers, and/or greenbelts be preserved and/or provided to ensure that proposed uses will be adequately buffered from one another and from surrounding public and private property.

    E. Areas of natural drainage such as swales, wetlands, ponds, or swamps are protected and preserved insofar as practical in their natural state to provide areas for natural habitat, preserve drainage patterns and maintain the natural characteristics of the land.

    F. The site plan provides reasonable visual and sound privacy for all dwelling units located therein and adjacent thereto. Landscaping shall be used, as appropriate, to accomplish these purposes.

    G. All buildings and groups of buildings are arranged so as to permit necessary emergency vehicle access as requested by the Fire/Rescue Department.

    H. All streets and driveways are developed in accordance with the OCRC specifications, as appropriate. In addition, an internal sidewalk system has been included and an external sidewalk within the Robbins Road right-of-way.

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I. Appropriate measures have been taken to ensure that removal of surface waters will not adversely affect neighboring properties or the public storm drainage system. Provisions have been made to accommodate stormwater, prevent erosion and the formation of dust.

J. Exterior lighting is arranged so that it is deflected away from adjacent properties and so it does not interfere with the vision of motorists along adjacent streets, and consists of sharp cut-off fixtures to reduce light pollution and preserve the rural character of the Township.

K. All loading and unloading areas and outside storage areas, including areas for the storage of trash, which face or are visible from residential districts or public streets, are screened.

L. Entrances and exits are provided at appropriate locations so as to maximize the convenience and safety for persons entering or leaving the site.

M. The Documentation conforms to all applicable requirements of County, State, Federal, and Township statutes and ordinances.

N. As appropriate, fencing will be installed around the boundaries of the development if deemed necessary to preventing trespassing or other adverse effects on adjacent lands.

O. The general purposes and spirit of this Ordinance and the Master Plan of the Township are maintained.

2. The Planning Commission finds the Project meets the intent for a PUD, as described in Section 17.01.3 of the Zoning Ordinance. By approving this Project as a PUD, the Township has been able to negotiate various amenities and design characteristics as well as additional restrictions with the Developer, as described in this report, which the Township would not have been able to negotiate if the PUD Chapter of the Zoning Ordinance was not used.

3. Section 17.01.5, Section 17.02.1.B.1-4 of the Zoning Ordinance, as well as Section 503 of the Michigan Zoning Enabling Act, allow for departures from Zoning Ordinance requirements; these provisions are intended to result in land use development that is substantially consistent with the goals and objectives of the Township Master Plan and the Zoning Ordinance, and consistent with sound planning principles. The Developer requested two departures. The Planning Commission makes the following findings.

   A. Section 24.04.1 – allow a 35-foot maneuvering lane in front of the garage buildings.

      - The Planning Commission finds it acceptable to allow the increased width to enable easier, and safer, turning movements within the site. Particularly for the barrier-free spaces that can accommodate a wheelchair accessible van. Developer is only required to provide 8 barrier-free spaces + 1 van-accessible barrier-free space. In this case, the Developer is providing 22 barrier-free spaces, or 144% more than required.

   B. Section 21.02 – allow a reduced minimum floor area for 51-units; 12-units at 496-sqft and 39-units at 730 sqft.

      - The Planning Commission finds it acceptable to allow the reduced floor area because it will enable the Developer to provide some affordable housing to the community. In addition, the Developer provided compelling comparisons of other apartment sizes. The Executive Director of Housing Next supports the reduced floor area as well.

4. Compared to what could have been constructed by right, the Project has been designed to accomplish the following objectives from Section 17.01.4 of the Zoning Ordinance.

   A. The Project will encourage the use of land in accordance with its natural character and adaptability;

   B. The Project will promote the conservation of natural features and resources;

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C. The Project will promote innovation in land use planning and development;

D. The Project will promote the enhancement of housing for the residents of the Township;

E. The Project will promote greater compatibility of design and better use between neighboring properties;

F. The Project will promote more economical and efficient use of the land while providing a harmonious variety of housing choices and community facilities in the form of a clubhouse; and

G. The Project will promote the preservation of open space.

5. The Project meets the following qualification requirements of Section 17.02 of the Zoning Ordinance:

   A. The Project meets the minimum size of five acres of contiguous land.

   B. The Project site has distinct physical characteristics which makes compliances with the strict requirements of the ordinance impractical.

   C. The PUD design includes innovative development concepts that substantially forward the Intent and Objectives of Section 17.01, and permits an improved layout of land uses and other site features that could not otherwise be achieved under normal zoning.

6. The Planning Commission also finds the Project complies with the general PUD Design Considerations of Section 17.05 of the Zoning Ordinance.

   A. The stormwater management system for the Project and the drainage facilities will properly accommodate stormwater on the site, will prevent runoff to adjacent properties, and are consistent with the Township's groundwater protection strategies.

   B. The Project will not interfere with or unduly burden the water supply facilities, the sewage collection and disposal systems, or other public services such as school facilities, park and recreation facilities, etc.

   C. Utility services within the Project shall be underground. This includes but is not limited to electricity, gas lines, telephone, cable television, public water and sanitary sewer.

   D. The internal road system in the Project is designed to limit destruction of existing natural vegetation and to decrease the possibility of erosion.

   E. Vehicular circulation, traffic and parking areas have been planned and located to minimize effects on occupants and users of the Project and to minimize hazards to adjacent properties and roadways.

   F. Parking requirements for each use have been determined to be in accordance with Chapter 24 (Parking, Loading Space, and Signs).

   G. Street lighting will be installed in the same manner as required under the Township's Subdivision Control Ordinance.

   H. Buildings in the Project have been sited to protect natural resources. Natural features such as natural grade, trees, vegetation, water bodies and others have been incorporated into the Documentation.

   I. Landscaping, natural features, open space and other site amenities have been located in the Project to be convenient for occupants of, and visitors to, the PUD.

   J. The Project is reasonably compatible with the natural environment of the site and the adjacent premises.

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K. The Project will not unduly interfere with the provision of adequate light or air, nor will it overcrowd land or cause an unreasonably severe concentration of population.

L. Exterior lighting within the Project complies with Chapter 20A for an LZ 3 zone.

M. Outside storage of materials shall be screened from view.

N. Signage is compliant with Section 24.13 of the Zoning Ordinance.

O. The Project will not have a substantially detrimental effect upon or substantially impair the value of neighborhood property, as long as all of the standards and conditions of this approval of the Project are satisfied.

P. The Project is in compliance with all applicable Federal, State, County, and local laws and regulations. Any other permits for development that may be required by other agencies shall be available to the Township Board before construction is commenced.

Q. The Project satisfies the minimum open space of 20 percent required by the Zoning Ordinance.

R. The open space in the Project is large enough and properly dimensioned to contribute to the purpose and objectives of the PUD.

S. The open space in the Project consists of contiguous land area which is restricted to non-development uses.

T. The open space in the Project will remain under common ownership or control.

U. The open space in the Project is set aside by means of conveyance that satisfies the requirements of Section 17.05.5.G of the Zoning Ordinance.

V. The Project is consistent with the goals and objectives of the Master Land Use Plan. Specifically, it is consistent with the Master Plan designation of the property in question.

7. The Planning Commission finds that the Project complies with the uses permitted for a residential planned unit development, as described in Section 17.07.1.C of the Zoning Ordinance—Multiple Family Dwellings.

8. The Planning Commission also finds the Project shall comply with the below additional conditions as well.

A. Must obtain permits from all applicable agencies including, the Ottawa County Water Resources Commissioner and City of Grand Haven. Permits shall be obtained before building permits are issued.

B. The Developer shall enter into a PUD Contract with the Township, which will be drafted by the Township Attorney and executed by the Township Board prior to receiving an occupancy permit.

C. Extend the width of the main drive aisle to 30-feet farther south to the curve adjacent to the SW corner of the clubhouse.

D. Open Space Conveyance shall be recorded with the Ottawa County Register of Deeds and a copy provided to the Township.

E. The following conditions are imposed as a result of the Environmental Site Assessments and Due Care Plan:

i. Because utilities are proposed near a known area of impact, require a detailed plan for watermain and sanitary sewer construction including “petroleum resistant” gasket material.

DRAFT

ii. An assessment of salt spillage in soil and groundwater on utility construction. Salt can be corrosive to metal pipe.

iii. Prohibition on water wells (*except monitoring wells*) either through PUD approval or a restrictive covenant.

iv. Provide results of dewatering hydrogeological assessment.

v. Provide results of groundwater monitoring.

vi. Provide results of volatilization to indoor air assessment and whether engineering controls are needed based on groundwater monitoring.

vii. Provide location of remaining impacted soils or groundwater on final plan in form that can be permanently referenced in the future.

viii. Provide confirmation of holding tank removal or closure in place.

ix. Provide copy of final Due Care Plan at conclusion of construction. This is important for Township utility workers in case they must make a repair to utilities in the future, both for health and safety of workers during the repair and the need for addressing groundwater and/or soil contamination during dewatering and excavation.

x. Install a petroleum-resistant vapor barrier, or other alternative remedies on all buildings that comply with DEQ standards, if results of additional testing warrant the need. All results shall be shared with, and reviewed by, the Township's Engineering Firm Prein&Newhof.

VIII. NEW BUSINESS

A. Trial-Run for Open Discussion Format

Fedewa provided an overview of the report in a memorandum dated July 12th.

Motion by Wilson, supported by LaMourie, to begin the Open Discussion trial at the next meeting, will subsequently be placed on every other meeting agenda, will be limited to a total of 30-minutes, will be information only and not for action at that meeting, will be the last item on the agenda before adjournment, and the trial shall cease at the end of 2018. **Which motion carried unanimously.**

IX. REPORTS

A. Attorney Report – None

B. Staff Report

- Next regularly scheduled Planning Commission meeting is August 20th.
- Zoning Ordinance Update Committee has directed staff to fine-tune the current draft of the new zoning ordinance. When staff is satisfied, the draft will be forwarded to the Planning Commission for review.

C. Other

- Planning Commission, Township Attorney, and staff all expressed their happiness that Hesselsweet is recovering well and able to attend meetings again.

X. EXTENDED PUBLIC COMMENTS – None

DRAFT

XI. ADJOURNMENT

Without objection, the meeting adjourned at 8:10 pm.

Respectfully submitted,

Stacey Fedewa, AICP
Acting Recording Secretary

DRAFT

February 23, 2018

Atten: Stacey Fedewa
Community Development Director
Grand Haven Charter Township
13300 168th Ave.
Grand Haven, Michigan 49417

To Grand Haven Charter Township Planning Commission:

I would like to address the Board in reference to the upcoming public hearing for the mixed used development of the properties located at 17134 and 17114 Robbins Road, also known as the Tysman Properties.

As an owner of the neighboring properties I would like to go on record as saying that I support the development of the mixed use PUD. I believe the proposed project is a much better fit with existing neighborhood. For many years prior, and up to currently, the amount of trucking activity going on and off the property puts a lot wear and tear on the Robbins Road corridor, to and from US 31, as well as the surrounding supporting roadways. Also, the excessive noise level from heavy equipment, such as loaders and semis and dump trucks, sometimes operating around the clock in the winter when it snows, is disruptive to nearby homes, apartment, and senior housing developments. I would also point out; it is adjacent to the current Timber View Apartments and the proposed new development would tie in nicely with the existing usage in the surrounding area.

In regards to the mini storage on 172nd, I believe it would be in Grand Haven Township's best interest to have that "go away" from its highly visible current location, and be relocated. This proposed development may give Grand Haven Township the opportunity to make that happen.

Also, as a lifelong friend of Bill Tysman, I believe the project honor's Bill's Legacy to our communities to have such a project dedicate some of the units to low income and the disabled.

So again, I would be supportive of the new development and ask that the Board and Planning Commission continue to work with the developer to all this to move forward.

Thank You for your consideration,

Scott Klaassen, Managing member of Hanash LLC.

March 18,2018

Dr. JoLee Wennersten
Robbins Road Animal Clinic
17076 Robbins Road
Grand Haven, MI. 49417
Ph: 616-842-7610

ROBBINS ROAD ANIMAL CLINIC
17076 Robbins Road
Grand Haven, MI 49417
PHONE (616) 842-7610
FAX (616) 842-9971
rrac49417@yahoo.com

JOLEE WENNERSTEN, D.V.M.
THOMAS MUNRO, D.V.M.
CHAD ACKERMAN, D.V.M

Grand Haven Township Planning Commission
Grand Haven Township
13300 168th Ave.
Grand Haven, MI. 49417

Dear Commission Members,

As a long time business owner in the township, I am always excited to see the area grow and prosper. I know my business has in some small way helped with this growth. I realize the township is growing faster than the housing availability and understand the need for additional multiple dwellings. This leads to the reason for my letter. The plans for the area surrounding my property are more than a little concerning to me. I have two issues which I feel must be addressed.

First is the issue of attaching my parking lot to the ingress/egress traffic lanes for the proposed growth of the apartment complex. The area of my parking lot to the west (the proposed attachment area) is usually full during the day with parked cars from the employees and clients for the three businesses that share this parcel. The small greenbelt is also an area where clients of Robbins Road Animal Clinic are able to exercise their animals before and after their visit to my clinic. There is no way this portion of my property can be used as a service road and not destroy the way it is currently used.

The second issue is one of concern for the whole neighborhood, and that is the problem of security. Veterinarian clinics have increasingly become the targets of thieves in the past few years due to the nation's growing drug abuse problem. The back of my office is reasonably well lit, but it is not readily visible from the street. I feel that there could be a security problem with the close proximity of the proposed buildings. I would ask the committee to consider this in their moving forward with the current development and plan for the installation of a tall security fence around my property on the west and south sides. It would make additional sense to continue the fence across the south sides of the lots of my neighboring businesses to the east. I know it is impossible to stop all bad things from happening, but it would certainly make it more difficult for those who desire to break the law.

Thank you for taking the time to read about the items of my concern. I am available for discussion at the above phone number should you have any questions about this letter. I look forward to being a productive member of the Grand Haven Township community for many years to come.

Sincerely;

Jolee Wennersten, DVM
Robbins Road Animal Clinic

April 10th, 2018

Dr. Ronda V Ruscett
17088 Robbins Rd.
Grand Haven, MI 49417
Ph: 616-846-4200

Grand Haven Township Planning Commission
Grand Haven Township
13300 168th Ave.
Grand Haven, MI 49417

Dear Commission Members,

As Dr. Wennersten stated in her letter to the Commission, it is exciting to watch the township grow in a positive and aesthetic way.

But, I too am concerned about attatching our west parking lot to the ingress/egress traffic lanes for the proposed growth of the apartment complex. The proposed attatchment area is a very busy area, with patient cars coming and going, as well as staff parking. As it stands now, there is often not enough parking. Opening that area up to traffic would make it even busier and frankly unsafe, as many people are walking to our offices, walking their pets and walking to their cars. I am not in favor to any changes with our parking lot.

I, too, would like to see some kind of boundary for our parcel of property. Not only for security reasons, but for trespassing as well. I think an attractive fence or natural planting would enhance the area, while also protecting it.

Dr. Wennersten and I are available for discussion on these points and would be happy to meet with you as the project moves forward.

Sincerely,

Ronda V. Ruscett OD

Ronda V. Ruscett OD

Main Street Capital Group

18000 Cove Street, Suite 201
Spring Lake, Michigan 49456
(231) 780-2541
(231) 780-3891 fax

PROJECT SUMMARY:

Lakeshore Gardens will be a 156-unit apartment community developed by Main Street Capital Group and ideally located near Robbins Road and 172nd Avenue in Grand Haven, Michigan – a location that provides excellent proximity to shopping, schools, recreation, employment, healthcare, and transportation. This location is a natural extension of the surrounding multi-family and retail neighbors.

Main Street Capital Group has been working with the township since late last year to design a project that fits with the township's long-term goals for this corridor. We initially proposed a community that included a self-storage component, less expensive building materials and fewer access points that would have created a lower cost project. Through the design process we removed the storage buildings, added brick veneer to the exterior of the apartments, and added 2 additional access points to the site plan. These design components added to the overall cost of the project but created an apartment community that is congruent with the township's vision.

Main Street Capital Group is investing $20 Million into this real estate project that will offer a compelling mix of amenities, design features, and efficient design that make it unique among market rate multifamily communities in the area.

One of these differentiating features is a commitment to improved accessibility for residents with varying degrees of mobility. Local building code requires that we adhere to ADA requirements, but we consulted with Disability Advocates of Kent County during the design phase and incorporated some of their suggestions to make the project more user friendly. Lakeshore Gardens will incorporate pocket doors, low-profile door thresholds, accessible showers in all of its ground floor units, and accessible garage spaces. In addition, the drive aisles around garages will be wider than standard in order to provide improved maneuvering for wheelchair vans. These features are in excess of what is required under ADA and local building code standards and are unmatched by any other community in the area.

Secondly, Main Street is keenly aware of the difficulty for many in our area to find suitable housing options that are affordable. Based on previous recommendations, the Township encouraged us to collaborate with Housing Next on the unit design of our project. We had several meetings with the Executive Director, Ryan Kilpatrick, and discussed the most important points of affordable housing in the Grand Haven area and determined that sometimes the best option for efficient workforce housing is a smaller apartment. We discussed studio units as small as 350 square feet but settled on a design that has been used in other projects that is 496 square feet.

The design of our efficiency unit allows us to offer a very competitive apartment in Grand Haven and give the resident a new home with access to all our great amenities. This isn't a government sponsored or subsidized project so it's going to be a market rate project without any rental-rate restrictions. We're able to offer these lower priced units through efficient design that will continue as long as the project is around simply due to the efficient design.

Lakeshore Gardens will offer a variety of other amenities. Each apartment will have luxury vinyl flooring, dishwasher, microwave, in-unit laundry, and a private porch or balcony. A 3,400 square foot clubhouse will offer residents access to a pool, hot tub, community room, and 24/7 fitness center. Detached garages throughout the community will offer 94 garage spaces for out-of-the-weather parking. There are dedicated open spaces that will allow for a number of outdoor activities, and sidewalks will provide connectivity throughout the community with access to public sidewalks and the Grand Haven bike path network. The D&W grocery store is directly adjacent to Lakeshore Gardens with health care, restaurants and shopping on the corner of Robbins Road and 172nd Avenue within walking distance.

Lakeshore Gardens will consist of 4 – 24-unit buildings and 2 - 30-unit buildings with the following unit mix:
12 – 1 Bedroom Efficiency - 496sf
39 – 1 Bedroom 1 Bathroom - 730sf
12 – 2 Bedroom 2 Bathroom - 947sf
87 – 2 Bedroom 2 Bathroom - 1,035sf
6 – 2 Bedroom 2 Bathroom - 1,070sf

The project groundbreaking is anticipated for the summer of 2018 with the completion date of the first apartment building and the clubhouse during the middle of 2019. We anticipate completing the project toward the end of 2020.

Main Street Capital Group

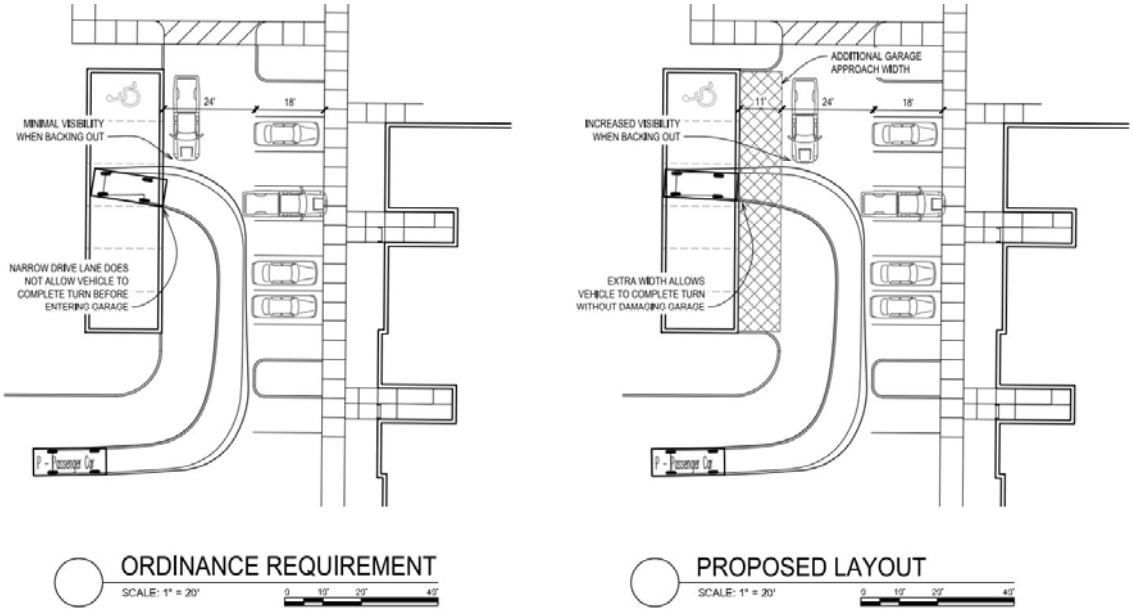
LIST OF PUD DEPARTURES:

REDUCED BUFFER TO ADJACENT RESIDENTIAL DISTRICTS

We are seeking approval for departure from Section 20.11.5 which requires a transitional screening for the rural residential property east of the development. In this case, the existing distance to the nearest use and the existing woodland provide this transition

INCREASED GARAGE APPROACH MANEUVERING LANES

We are seeking approval for a departure from Section 24.04.1. Section 24.04.1 states that maneuvering lanes of parking lots shall be 24 feet wide. When garage structures are providing the parking space, an expanded maneuvering lane width provides an appropriate turning movement to enter and exit the garage. One benefit of this is that it reduces the likelihood of a car scraping the garage as it attempts to enter or exit while turning. More importantly, the added width provides safety while backing out of a garage while another car is coming unseen. The added width provides time for the oncoming vehicle (or pedestrian / biker) to avoid the collision. See below and attached.



DECREASED DWELLING UNIT SIZE

Section 21.02 provides for a minimum apartment size of 884 sf. The proposed plan includes 1-bedroom 1-bath units that contain 730 sf of living area and an additional 135 sf of patio & mechanical area. At the township's recommendation, we consulted with Housing Next about the design of our units. Based on their recommendations, we eliminated the self-storage component of the project and added a new building that incorporates 12 'efficiency' units that are 496sf. This design has proven to be functional,

efficient, and accessible and provides a living option that's financially within reach of many people. Based on our research and market conditions, it's not financially feasible to build 1-bedroom units larger than 884 square feet while still offering competitive market rents.

There are other multi-family communities in Grand Haven Township and they all have living units smaller than 884 square feet. We reviewed the floor plans for 43 North, Timberview, and Piper Lakes. Each of these communities have apartment homes under 884 square feet. We also reviewed the approval for Village at Rosy Mound and they have been approved for a 685 square foot apartment unit.

The City of Grand Haven is also in our competitive market, so we reviewed their multi-family communities to make sure our apartment units are competitively sized. Williamsburg Court Apartments, Hawthorne Square Condominiums (converted apartments), The Haven at Grand Landing, and Woodland Ridge in Ferrysburg all have 1-bedroom units smaller than 884 square feet. Robbins Nest, which is very close to the subject property, has all of its units (including 2-bedroom units) smaller than 884 square feet.

We decided to look in other markets to see what they had for smaller apartment sizes. We looked at the areas that we thought would have the largest apartments, which included luxury apartments in and around East Grand Rapids, Ada, and Forrest Hills. The most well-known communities like The Ridges of Cascade, Stone Falls of Ada, The Brix at Midtown, and River's Edge all have apartments smaller than 884 square feet. Based on our research, it's very uncommon to develop an apartment community where every unit is larger than 884 square feet.

Market Sampling of Units Smaller than 884sf.

Main Street Capital Group

COMMUNITY	SF SIZE	NUMBER OF BEDROOMS
Hawthorne Square	500	1BR/1BA
Village at Rosy Mound	500	1BR/1BA
Village at Rosy Mound	584	1BR/1BA
Piper Lakes	605	1BR/1BA
Williamsburg Court Apartments	645	1BR/1BA
Piper Lakes	656	1BR/1BA
American House Loyd's Bayou	677	1BR/1BA
Village at Rosy Mound	685	1BR/1BA
Robbins Nest	710	1BR/1BA
Robbins Nest	710	2BR/1BA
The Elliott	727	2BR/1BA
Swiss Village	750	2BR/1BA
43 North	759	1BR/1BA
Haven at Grand Landing	760	1BR/1BA
43 North	810	1BR/1BA
Robbins Nest	810	2BR/1BA
Village at Rosy Mound	811	2BR/2BA
Mill Point Place	816	2BR/1.5BA
Timber View	830	1BR/1BA
Williamsburg Court Apartments	850	2BR/1BA
43 North	854	1BR/1BA
Woodland Ridge	880	1BR/1BA
Haven at Grand Landing	880	1BR/1BA

April 19th, 2018

Grand Haven Township
13300 168th Ave
Grand Haven, MI 49417

To the Planning Commission and Board of Grand Haven Charter Township;

This letter is regarding the proposed apartment development submitted by Main Street Capital in Grand Haven Township.

Housing Next is a nonprofit organization created to advance the goal of providing for more housing choice and affordability across Ottawa County. We were created in October of 2017 by a partnership between the Community Foundations of Grand Haven Area and the Holland/Zeeland Area and we work in partnership with the United Way, Lakeshore Advantage, both regional Chambers of Commerce, Ottawa County and the Lakeshore Non-Profit Alliance. Our mission to create an environment in which market-based solutions to housing affordability are available to the private sector. Main Street Capital is one of the first partners to help us work toward that goal.

Due to a significant shortage of new construction over the last 10 years, combined with a very limited set of housing options county-wide, the price of housing is no longer attainable for much of our workforce. As of 2017, more than 48% of the Ottawa County workforce travelled in from other communities, partly because our factory workers, teachers and public safety employees are unable to afford the housing that is available in the communities where they work. We have heard from numerous employers in the community who have cited housing affordability as one of their top three concerns related to their ability to attract new workers and grow in the future.

The proposal submitted by Main Street Capital includes several apartment units that fall below the minimum square footage requirements for a dwelling unit under Grand Haven Township zoning standards. As a former city planner and local zoning administrator, I fully understand the rationale and intention behind those regulations. At the same time, a minimum size requirement for an apartment will inevitably result in a minimum monthly rent that is higher than it would otherwise need to be. The cost of construction is directly tied to the number of square feet being built.

The average household size in Grand Haven and Spring Lake is 2.1 persons per home. Nearly 28% of all households are made up of a single adult without children. And yet, minimum dwelling sizes that are above industry standards demand that even single adults must have a home that is sometimes larger than necessary.

Housing Next is strongly in favor of allowing for smaller housing sizes and more housing choices in appropriate contexts across the County. Our understanding is that Main Street Capital is proposing units ranging from 496 square feet and up. This size unit is an industry-wide best practice for efficiency floor plans and is in very short supply in the Grand Haven / Spring Lake market. We are glad to support Main Street Capital in their request for a slightly smaller unit size than is normally permitted in order to achieve greater affordability and broader choice in the market. We hope that you will consider support for their request.

Sincerely,

Ryan Kilpatrick

Ryan Kilpatrick,
HOUSING NEXT, Executive Director
ryank@housingnext.org

GRACIOUS GROUNDS

May 25, 2018

Dear Ms. Fedewa,

Please accept this letter of support for the development of the 156-unit Apartment complex that Main Street Capital Group is proposing to build on Robbins Road in Grand Haven.

GRACIOUS GROUNDS is a non-profit organization that offers housing opportunities for its' residents – a comfortable, compassionate, environment that emphasizes life enriching activities and togetherness by promoting: Community Involvement and Service, Employability Skills, Daily Living Skills, Academic Learning and Spirituality.

Over the course of the past three years, **GRACIOUS GROUNDS** has developed a professional relationship with Chad Bush, Ben Robbins and Terry Nash from Main Street Capital Group. They have led our organization through several real estate transactions with included the purchase of 1515 Despelder, the purchase of 8.2 acres in Ferrysburg as well as developing a Master Lease with the owners of an 8-unit apartment building at 1028 Ohio Avenue. We are proud to say we presently house 15 individuals with unique abilities in our community.

We commend Main Street Capital Group for pursuing this development project. It will provide needed housing options for people looking to live, work and worship in the Tri- Cities area. We look forward to the future ground breaking ceremony!

Grateful,

Sandy Bal

Sandy Baker, Executive Director
Montana Florea, Assistant Director
Kevin Green, President
Dennis Swartout, Vice President
Lisa Ashcraft, Treasurer
Jennifer VanSkiver, Secretary
Gay Cole, Member
Katie Appold, Member
Lauren Reenders, Member
Jeff Troupe, Member
Ken Lampe, Member

PROPOSED SITE DEVELOPMENT SIGN
Lakeshore Gardens Apartments
17114 ROBBINS ROAD, GRAND HAVEN, MI

DATE 2/5/18
DESIGNED BY ATR

Main Street Capital Group

(sign area less than 18ft²)

Brian T. Sinnott

Subject: FW: Adjacent Property Connection and Ingress/Egress Easement

From: Bill Mast <bmast@visserbrothers.com>
Sent: Friday, April 20, 2018 3:48 PM
To: Ben Robbins <brobbins@main-streetpartners.com>
Subject: RE: Adjacent Property Connection and Ingress/Egress Easement

We approve of a permanent commercial connection at the north location, subject to review of any documents governing the connection. We will not unreasonably hold up our review or approval.

On the south location, we approve of a fire department emergency connection. We understand that it will initially be left open indefinitely, but may be gated and reduced to emergency-only if and when we request it to be so reduced if and when we (the property owner and/or Spartan Stores) determine, in our sole discretion (not to be unreasonably determined) that the non-emergency traffic there is a detriment to our property.

Lots of conditional statements, but we're attempting to help you while safeguarding our own property. We believe this solution gives you what you need, and as long as it doesn't adversely affect us, also what you want.

VISSER BROTHERS, INC.
William T. Mast, President
1946 Turner, NW
Grand Rapids, MI 49504
bmast@visserbrothers.com
616.363.3825 / 363.6477 fax
http://www.VisserBrothers.com

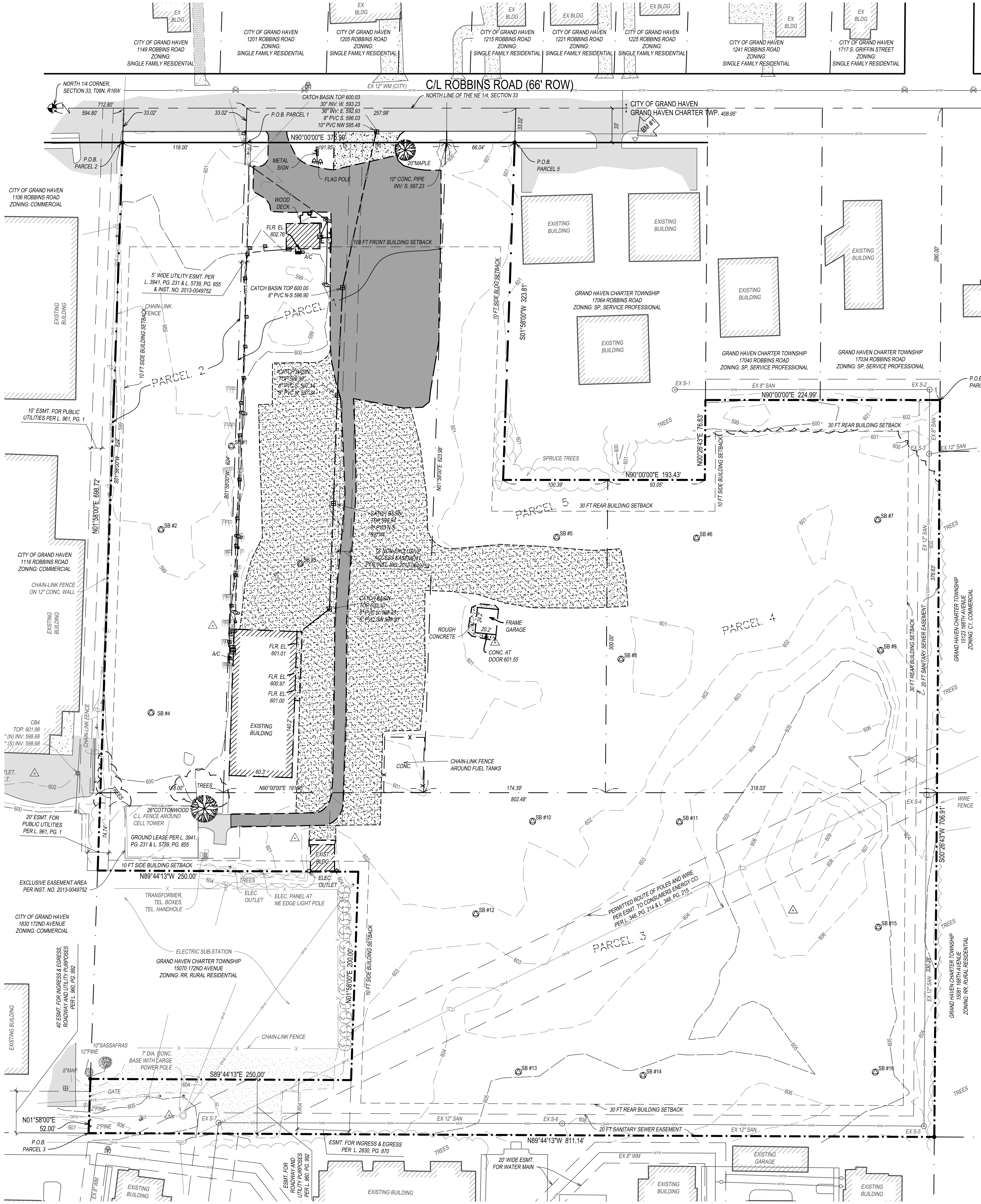
From: Ben Robbins <brobbins@main-streetpartners.com>
Sent: Thursday, April 19, 2018 11:03 AM
To: Bill Mast <bmast@visserbrothers.com>
Subject: Adjacent Property Connection and Ingress/Egress Easement

Mr. Mast,

Here is the current preliminary site plan for our apartment project that is directly to the east of D&W. We are proposing 2 connections from our property and would like your approval to proceed. As soon as we have approved legal descriptions of the access points we will prepare and easement for you to review and execute. Can you please confirm that you approve of these proposed access points?

Thanks,

Ben Robbins
Director
18000 Cove Street, Suite 201



Wednesday, August-01-2018 at 5:01pm \\PD-FILE1\Jobs$\1712151 Robbins Road Mixed-Use\Drawings - 1711151\Civil\151C-101.dwg jjp

LEGAL DESCRIPTION:

PARCEL 1:
THAT PART OF THE NORTHEAST 1/4 OF SECTION 33, TOWN 8 NORTH, RANGE 16 WEST, GRAND HAVEN TOWNSHIP, OTTAWA COUNTY, MICHIGAN, DESCRIBED AS COMMENCING AT A POINT DUE EAST ALONG THE NORTH LINE OF SAID SECTION 33, 712.8 FEET AND SOUTH 01 DEGREES 58 MINUTES 00 SECONDS WEST 33.00 FEET FROM THE NORTH 1/4 CORNER OF SAID SECTION 33, THENCE SOUTH 01 DEGREES 58 MINUTES 00 SECONDS WEST 624.0 FEET; THENCE DUE EAST 191.95 FEET, THENCE NORTH 01 DEGREES 58 MINUTES 00 SECONDS EAST 624.00 FEET, THENCE DUE WEST 191.95 FEET TO THE POINT OF BEGINNING.

PARCEL 2:
A PARCEL OF LAND IN SECTION 33, TOWN 8 NORTH, RANGE 16 WEST, GRAND HAVEN TOWNSHIP, OTTAWA COUNTY, MICHIGAN, DESCRIBED AS: BEGINNING 594.8 FEET EAST AND 33 FEET SOUTH OF THE NORTH 1/4 CORNER OF SAID SECTION 33; RUNNING THENCE SOUTH 1 DEGREES 58 MINUTES WEST 624 FEET; THENCE EAST AND PARALLEL TO THE NORTH LINE OF SAID SECTION 33, 118 FEET; THENCE NORTH 1 DEGREES 58 MINUTES EAST 624 FEET; THENCE WEST AND PARALLEL TO THE NORTH LINE OF SAID SECTION 33, 118 FEET TO THE PLACE OF BEGINNING.

PARCEL 3:
PART OF THE NORTH THEE-QUARTERS (N 3/4) OF THE NORTHWEST ONE-QUARTER (NW 1/4) OF THE NORTHEAST ONE-QUARTER (NE 1/4) OF SECTION 33, TOWN 8 NORTH, RANGE 16 WEST, GRAND HAVEN TOWNSHIP, OTTAWA COUNTY, MICHIGAN; COMMENCING SOUTH 980.61 FEET AND SOUTH 89 DEGREES 28 MINUTES 46 SECONDS EAST 556.54 FEET FROM THE NORTH ONE-QUARTER (N 1/4) CORNER; THENCE NORTH 02 DEGREES 13 MINUTES 27 SECONDS EAST 52.00 FEET; THENCE SOUTH 89 DEGREES 28 MINUTES 46 SECONDS EAST 250.00 FEET; THENCE NORTH 02 DEGREES 13 MINUTES 27 SECONDS EAST 00.00 FEET; THENCE NORTH 89 DEGREES 28 MINUTES 46 SECONDS WEST 250.00 FEET; THENCE NORTH 02 DEGREES 13 MINUTES 27 SECONDS EAST 74.74 FEET; THENCE SOUTH 89 DEGREES 44 MINUTES 33 SECONDS EAST 802.48 FEET; THENCE SOUTH 00 DEGREES 42 MINUTES 10 SECONDS WEST 330.28 FEET; THENCE NORTH 89 DEGREES 28 MINUTES 46 SECONDS WEST 811.14 FEET TO BEGINNING.
TOGETHER WITH AN EASEMENT FOR INGRESS AND EGRESS DESCRIBED AS: BEGINNING AT A POINT ON THE NORTH AND SOUTH 1/4 LINE OF SAID SECTION 33 WHICH IS SOUTH 00 DEGREES 00 MINUTES WEST 980.61 FEET FROM THE NORTH 1/4 CORNER OF SAID SECTION 33; THENCE SOUTH 89 DEGREES 28 MINUTES 46 SECONDS EAST 556.54 FEET; THENCE NORTH 02 DEGREES 13 MINUTES 27 SECONDS EAST 40.00 FEET; THENCE NORTH 89 DEGREES 28 MINUTES 46 SECONDS WEST 558.09 FEET; THENCE SOUTH 00 DEGREES 00 MINUTES 00 SECONDS WEST 40.00 FEET TO POINT OF BEGINNING.

PARCEL 4:
PART OF THE NORTH 3/4 OF THE NORTHWEST 1/4 OF THE NORTHEAST 1/4 OF SECTION 33, TOWN 8 NORTH, RANGE 16 WEST, GRAND HAVEN TOWNSHIP, OTTAWA COUNTY, MICHIGAN, DESCRIBED AS: COMMENCING SOUTH 89°44'33" EAST 1379.74 FEET AND SOUTH 00°42'10" WEST 280.00 FEET FROM THE NORTH 1/4 CORNER; THENCE NORTH 89°44'33" WEST 224.99 FEET; THENCE SOUTH 00°42'10" WEST 76.63 FEET; THENCE NORTH 89°44'33" WEST 93.05 FEET; THENCE SOUTH 00°42'10" WEST 300.00 FEET; THENCE SOUTH 89°44'33" EAST 318.04 FEET; THENCE NORTH 00°42'10" EAST 376.63 FEET TO BEGINNING.

PARCEL 5:
THAT PART OF THE NORTHWEST 1/4 OF THE NORTHEAST 1/4 OF SECTION 33, TOWN 8 NORTH, RANGE 16 WEST, GRAND HAVEN TOWNSHIP, OTTAWA COUNTY, MICHIGAN, DESCRIBED AS: COMMENCING AT A POINT ON THE SOUTHERLY RIGHT OF WAY LINE OF ROBBINS ROAD WHICH IS SOUTH 89°44'33" EAST ALONG THE NORTH LINE OF SAID SECTION 33, 970.79 FEET AND SOUTH 02°13'27" WEST 33.02 FEET FROM THE NORTHWEST CORNER THEREOF; THENCE SOUTH 02°13'27" WEST 323.81 FEET; THENCE SOUTH 89°44'33" EAST 100.39 FEET; THENCE SOUTH 00°42'10" WEST 300.00 FEET; THENCE NORTH 89°44'33" WEST 174.39 FEET; THENCE NORTH 02°13'27" EAST 623.98 FEET; THENCE SOUTH 89°44'33" EAST 66.04 FEET TO THE POINT OF BEGINNING.

SURVEY PROVIDED BY:

BOUNDARY & TOPOGRAPHIC SURVEY PROVIDED BY EXXEL ENGINEERING, INC ON A DRAWING TITLED WATER / SEWER PRELIMINARY MIXED USE PUD LAYOUT, DATED NOVEMBER 14, 2017.

BENCHMARKS:

BM #1: TOP OF SW FLANGE BOLT ON HYDRANT, LOCATED 8 FEET SOUTH OF EDGE OF BIT FOR ROBBINS ROAD AND 298 FEET WEST OF THE CENTERLINE OF S GRIFFIN STREET - 2.6 FEET ABOVE GROUND LEVEL. ELEVATION: 603.48 (NAVD 88 DATUM).

FLOODPLAIN DATA:

THE ENTIRE SITE IS DESIGNATED ZONE "X", "AREA DETERMINED TO BE OUTSIDE OF 0.2" ANNUAL CHANCE FLOODPLAIN" ACCORDING TO FEMA FLOOD INSURANCE RATE MAP COMMUNITY-PANEL NUMBER 26139C0087E , EFFECTIVE DATE: DECEMBER 16, 2011.

WETLAND DATA:

THERE ARE NO WETLANDS ON THE SUBJECT PROPERTY BASED ON MAPPING PUBLISHED BY THE U.S. FISH & WILDLIFE SERVICE NATIONAL WETLANDS INVENTORY MAPS.

EXISTING SANITARY STRUCTURES:

EX S-1
RIM: 600.5
8" (E) INV: 593.82

EX S-2
RIM: 602.6
8" (W) & (S) INV: 592.84

EX S-3
RIM: 601.0
8" (N) INV: 592.58
12" (E) INV: 592.25
12" (S) INV: 592.15

EX S-4
RIM: 603.8
12" (N) & (S) INV: 591.43

EX S-5
TOP 604.13
12" CHANNEL
(N) INV: 590.73
(W) INV: 590.63

EX S-6
TOP 605.96
12" CHANNEL (E-W) 589.96

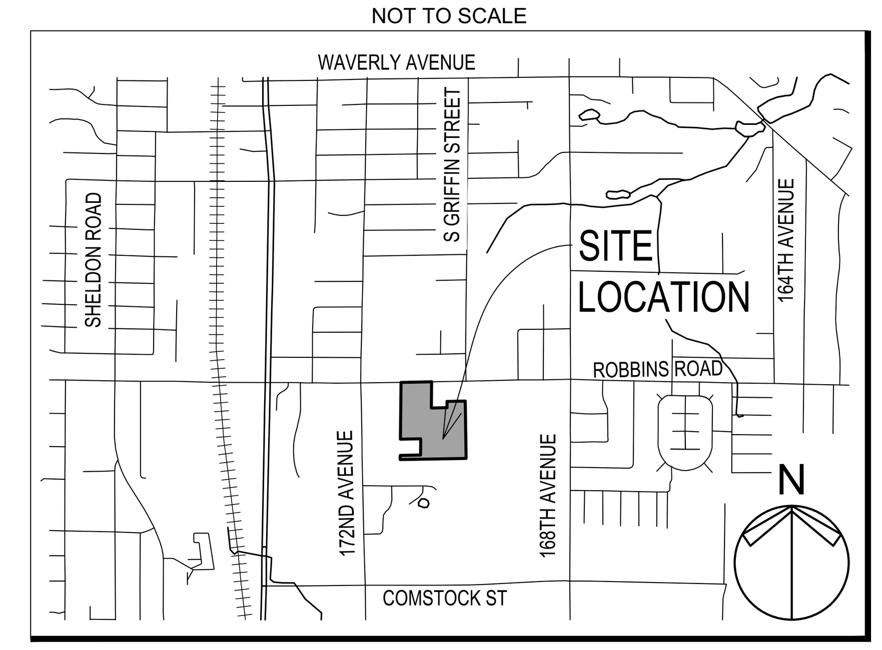
EX S-7
TOP 604.63
12" CHANNEL (E & S) 589.13

CIVIL SHEET INDEX:

C-101 CIVIL EXISTING CONDITIONS
C-102 CIVIL PARALLEL PLAN
C-103 CIVIL LAYOUT PLAN
C-111 CIVIL OVERALL UTILITY PLAN
C-121 CIVIL OVERALL GRADING & SESC PLAN
L-101 LANDSCAPE PLAN
L-102 LANDSCAPE PLAN

SITE LOCATION MAP

NOT TO SCALE



17114 ROBBINS ROAD
GRAND HAVEN TOWNSHIP
OTTAWA COUNTY, MICHIGAN

SECTION 33, TOWN 08 N, RANGE 16 W
42°02'41" N, 86°12'41" W
PARCEL #: 70-03-33-200-035
70-03-33-200-056
70-03-33-200-077

EXISTING LEGEND

BENCHMARK — PROPERTY IRON — MAILBOX
CONTROL POINT — SECTION CORNER — SOIL BORING
DECIDUOUS TREE — CONIFEROUS TREE — SIGN

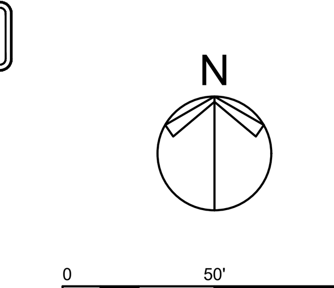
WATER: VALVE, HYDRANT, CURB STOP
STORM SEWER: SQUARE CATCH BASIN, CURB CATCH BASIN, PIPE INVERT
ELECTRICAL: UTILITY POLE, GUY WIRE, LIGHT POLE, GROUND LIGHT, METER, "MISS DIG" FLAG - ELECTRIC
SANITARY SEWER: MANHOLE
NATURAL GAS: METER, "MISS DIG" FLAG - GAS
TELEPHONE: PEDESTAL, PIT, "MISS DIG" FLAG - TELEPHONE
FIBER OPTIC: "MISS DIG" FLAG - FIBER OPTIC

CONCRETE PAVEMENT
ASPHALT
GRAVEL SURFACE
CURB & GUTTER
LANDSCAPE CURB
PROPERTY LINE
CONTOUR LINE
FENCE
TREE LINE
WATER MAIN
SANITARY SEWER
STORM SEWER
NATURAL GAS
OVERHEAD ELECTRIC

811 Know what's below. Call before you dig.

NOT FOR CONSTRUCTION

NOTE: ALL UTILITIES SHOWN ARE APPROXIMATE LOCATIONS FROM FIELD DATA AND AVAILABLE INFORMATION. THEY SHOULD NOT BE INTERPRETED AS EXACT LOCATIONS NOR SHOULD THEY BE ASSUMED TO BE THE ONLY UTILITIES IN THE AREA.



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TRAVERSE CITY 333 E. STATE STREET TRAVERSE CITY, MI 49684 (231) 346 - 3030
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BRIAN T. SINNOTT
MI REGISTRATION #6201052169
EXP. DATE 10/31/2019

PROJECT

LAKESHORE GARDENS APARTMENTS

A PLANNED UNIT DEVELOPMENT
17114 ROBBINS ROAD
GRAND HAVEN, MI 49417

DEVELOPER

MAIN STREET CAPITAL GROUP

18000 COVE STREET, STE 201
SPRING LAKE, MI 49456

RELEASE DATE

△	DATE	DESCRIPTION
	01-16-18	PUD APPLICATION
	02-07-18	PUD APPLICATION
	03-09-18	PUD APPLICATION
	04-27-18	PUD APPLICATION
	05-15-18	PUD APPLICATION
	08-01-18	PC RECOMMENDATION

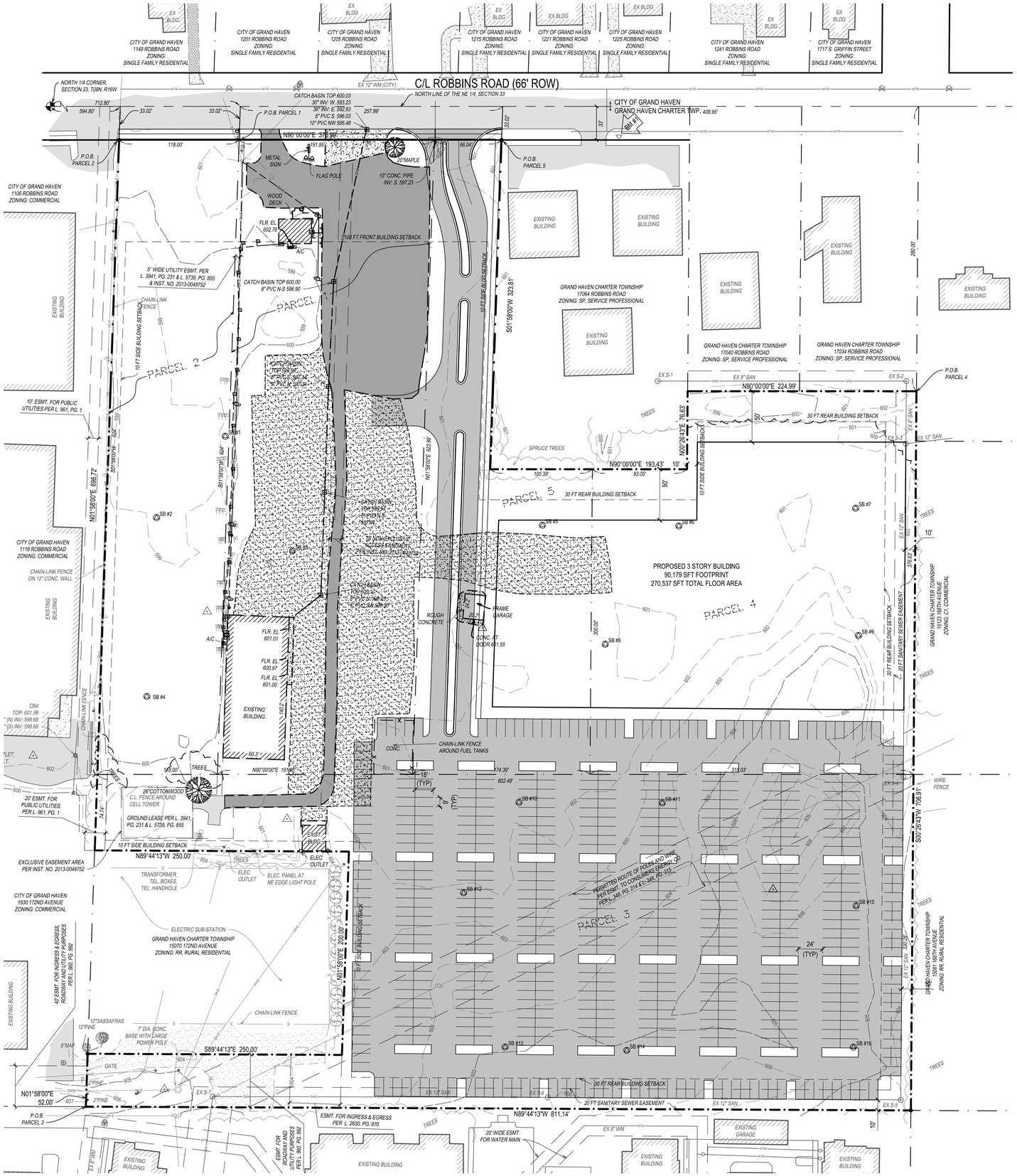
PROJECT

1712151

SHEET

CIVIL EXISTING CONDITIONS

C-101



SITE DATA:

SITE: 11.47 ACRES
ZONED: R-4 MULTI FAMILY RESIDENTIAL

MINIMUM LOT AREA:	3,000 SFT
MINIMUM LOT WIDTH:	100'
MAXIMUM BUILDING HEIGHT:	35' OR 3 STORIES
MINIMUM FLOOR AREA PER UNIT:	884 SFT
FRONT BUILDING SETBACK:	100'
SIDE BUILDING SETBACK:	10'
REAR BUILDING SETBACK:	30'
BUILDING FOOTPRINT:	90,179 SFT
BUILDING HEIGHT:	3 STORIES
TOTAL BUILDING FLOOR AREA:	270,537 SFT
TOTAL NUMBER OF UNITS:	306 @ 884 SFT EACH
TOTAL PARKING AREA:	185,466 SFT
PARKING SPACES REQUIRED:	612 @ 2 PER UNIT
PARKING SPACES PROVIDED:	612

NOT FOR CONSTRUCTION

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N

0 50' 100'

ARCHITECTS • ENGINEERS

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LAKESHORE GARDENS APARTMENTS

A PLANNED UNIT DEVELOPMENT

17114 ROBBINS ROAD
GRAND HAVEN, MI 49417

DEVELOPER

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	05-15-18	PUD APPLICATION
	08-01-18	PC RECOMMENDATION

PROJECT

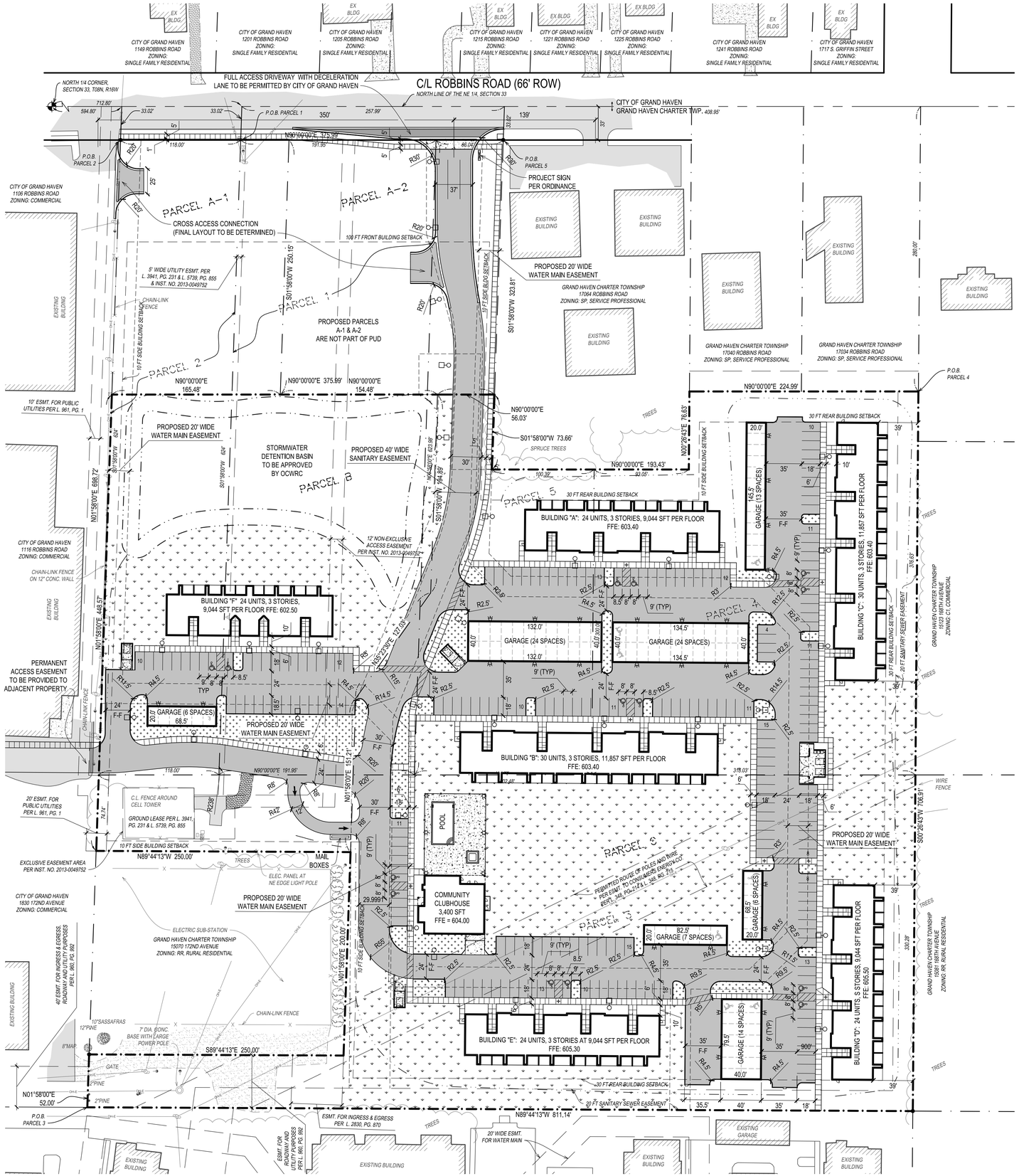
1712151

SHEET

CIVIL PARALLEL PLAN

C-102

Wednesday, August 01-2018 at 5:01pm \\PD-FILE1\Jobs\1712151 Robbins Road Mixed Use\Drawings - 1711151\Civil\151C-102.dwg



GENERAL NOTES:

REFER TO ARCHITECTURAL PLANS FOR DETAILS OF CONCRETE SIDEWALK AROUND BUILDING, AND CONCRETE DUMPSTER PAD.

REFER TO ARCHITECTURAL FOUNDATION PLAN FOR DETAILING OF BUILDING AND EXACT BUILDING DIMENSIONS.

REFER TO LANDSCAPE PLAN FOR FOR RESTORATION OF ALL NON PAVED SURFACES.

OWNER HAS SUBMITTED FOR AND OBTAINED THE FOLLOWING SITE RELATED PERMITS:

AGENCY	PERMIT #

OWNER HAS SUBMITTED FOR AND IS IN THE PROCESS OF OBTAINING THE FOLLOWING SITE RELATED PERMITS:

AGENCY	PERMIT
GRAND HAVEN TOWNSHIP	PLANNED UNIT DEVELOPMENT / SPA
OTTAWA COUNTY WATER RESOURCES COMMISSIONER	STORMWATER / DRAIN USE APPROVAL
CITY OF GRAND HAVEN	ROBBINS ROAD DRIVEWAYS

UPON AWARD OF CONTRACT, CONTRACTOR WILL BE RESPONSIBLE TO CHECK WITH ENGINEER AND JURISDICTION ON STATUS OF THE PERMIT(S) LISTED ABOVE.

CONTRACTOR IS RESPONSIBLE TO OBTAIN ALL SITE RELATED PERMITS NOT BEING OBTAINED BY THE OWNER. CONTRACTOR IS REQUIRED TO COMPLETE THE APPLICATION, AND SUBMIT NECESSARY DRAWINGS, FEES, ETC. TO THE APPROPRIATE JURISDICTION. CONTRACTOR SHALL PAY ALL FEES RELATED TO PERMIT(S) AND SECURE PERMIT(S) IN HIS NAME.

CONTRACTOR IS RESPONSIBLE TO COORDINATE ALL SITE UTILITY CONNECTIONS AND INSPECTIONS WITH THE PROPER JURISDICTION AND PAY ALL ASSOCIATED FEES.

THE CONTRACTOR SHALL FIELD VERIFY LOCATION AND ELEVATION OF EXISTING WATER, SANITARY SEWER, AND STORM SEWER CROSSINGS AND CONNECTION POINTS PRIOR TO CONSTRUCTION. CONTACT ENGINEER WITH ANY DISCREPANCIES.

ALL DIMENSIONS SHOWN TO CONCRETE CURB AND GUTTER ARE TO BACK OF CURB UNLESS OTHERWISE NOTED.

CONCRETE GUTTER PAN TO TIP IN THE DIRECTION OF THE ADJACENT PAVEMENT.

ALL PAVEMENT MARKINGS SHALL BE 4" WIDE. STANDARD PARKING SPACES SHALL BE MARKED IN YELLOW AND BARRIER FREE SPACES IN BLUE. EACH BARRIER FREE SPACE SHALL BE PROVIDED WITH A PAINTED PAVEMENT SYMBOL, A PRECAST CONCRETE BUMPER BLOCK, AND A SIGN PER THE MANUAL OF UNIFORM TRAFFIC CONTROLS.

REFERENCE SOILS REPORT FOR BORING LOGS AND PREPARATION AND CONSTRUCTION PROCEDURES FOR SUBBASE AND DESIGN SECTION OF ALL PAVED AREAS.

ALL MDOT REFERENCES ARE TO THE 2012 EDITION.

GENERAL NOTES:

DESCRIPTION OF PUD PARCEL (PARCELS B & C):
PART OF THE NE 1/4 OF SECTION 33, T8N, R16W, GRAND HAVEN TOWNSHIP, OTTAWA COUNTY, MICHIGAN, DESCRIBED AS: COMMENCING AT THE NORTH 1/4 CORNER OF SAID SECTION 33; THENCE N90°00'0E 594.80 FEET ALONG THE NORTH LINE OF SAID NE 1/4; THENCE S01°58'00"W 283.17 FEET TO THE PLACE OF BEGINNING OF THIS DESCRIPTION; THENCE N90°00'E 375.99 FEET; THENCE S01°58'00"W 73.66 FEET; THENCE N90°00'E 193.44 FEET; THENCE N00°26'43"E 76.63 FEET; THENCE N90°00'E 224.99 FEET; THENCE S00°26'43"W 706.91 FEET; THENCE N89°44'13"W 811.14 FEET; THENCE N01°58'00"E 52.00 FEET; THENCE S89°44'13"E 250.00 FEET; THENCE N01°58'00"E 200.00 FEET; THENCE N89°44'13"W 250.00 FEET; THENCE N01°58'00"E 448.57 FEET TO THE PLACE OF BEGINNING.
THIS PARCEL CONTAINS 11.47 ACRES.

DESCRIPTION OF OVERALL PARCEL (A-1, A-2, B & C):
PART OF THE NE 1/4 OF SECTION 33, T8N, R16W, GRAND HAVEN TOWNSHIP, OTTAWA COUNTY, MICHIGAN, DESCRIBED AS: COMMENCING AT THE NORTH 1/4 CORNER OF SAID SECTION 33; THENCE N90°00'E 594.80 FEET ALONG THE NORTH LINE OF SAID NE 1/4; THENCE S01°58'00"W 33.02 FEET TO THE SOUTHERLY LINE OF ROBBINS ROAD AND THE PLACE OF BEGINNING OF THIS DESCRIPTION; THENCE N90°00'E 375.99 FEET ALONG SAID SOUTHERLY LINE; THENCE S01°58'00"W 323.81 FEET; THENCE N90°00'E 193.44 FEET; THENCE N00°26'43"E 76.63 FEET; THENCE N90°00'E 224.99 FEET; THENCE S00°26'43"W 706.91 FEET; THENCE N89°44'13"W 811.14 FEET; THENCE N01°58'00"E 52.00 FEET; THENCE S89°44'13"E 250.00 FEET; THENCE N01°58'00"E 200.00 FEET; THENCE N89°44'13"W 250.00 FEET; THENCE N01°58'00"E 668.72 FEET TO THE PLACE OF BEGINNING.
THIS PARCEL CONTAINS 13.62 ACRES.

PROPOSED LAND USE SUMMARY:

PARCEL B	= 2.97 ACRES
CURRENT ZONING	= C-1 AND I-1
PROPOSED USE	= MULTIFAMILY (APARTMENTS)
PARCEL C	= 8.49 ACRES
CURRENT ZONING	= C-1 AND I-1
PROPOSED USE	= MULTIFAMILY (APARTMENTS)
TOTAL SITE AREA	= 11.47 ACRES

LANDSCAPING AND OPEN SPACE:

PARCEL B & C - PARKING LOT INTERIOR LANDSCAPING:
PARKING LOT AREA = 129,853 SFT (2.98 AC)
REQUIRED = 8,657 SFT (1 SFT PER 15 SFT)
PROVIDED = 18,116 SFT

PARCEL B & C - OPEN SPACE:
PARCEL B & C AREA = 499,423 SFT (11.47 AC)
REQUIRED OPEN SPACE = 99,885 SFT (20%)
PROVIDED OPEN SPACE = 107,727 SFT (22%)

RESIDENTIAL PUD DENSITY:

UNITS PROPOSED IN PARALLEL PLAN = 306 UNITS

BASE R-4 DENSITY ALLOWED PER ORDINANCE
1 DWELLING UNIT PER 3,000 SFT
499,423 SFT / 3000 SFT = 166 DWELLING UNITS

PUD DENSITY BONUS
20% OPEN SPACE = 8% DENSITY BONUS
COMMUNITY CLUBHOUSE = 5% DENSITY BONUS
TOTAL DENSITY BONUS = 13%
166 UNITS X 1.13 = 187 DWELLING UNITS

ALL UNITS ARE EITHER 1 OR 2 BEDROOM RANGING FROM 496 SFT TO 1,070 SFT

PARKING DATA:

APARTMENTS REQUIRE 2 SPACES PER DWELLING UNIT
156 DWELLING UNITS X 2 = 312 SPACES

CLUBHOUSE POOL IS ACCESSORY TO APARTMENTS HOWEVER 6 SPACES ARE ALLOCATED TO THE CLUBHOUSE AREA BEYOND THE REQUIRED AMOUNT

PROPOSED PARKING:
222 SURFACE PARKING SPACES
94 GARAGE SPACES
TOTAL 316 TOTAL SPACES

THE PROPOSED PARKING ABOVE INCLUDES BARRIER FREE SPACES AS FOLLOWS:

14 BARRIER FREE SURFACE SPACES
8 BARRIER FREE GARAGE SPACES

PARKING SPACE: 9' x 18'
DRIVE AISLE: 24' MINIMUM

PROPOSED LEGEND

SIGN
HYDRANT
WALL LIGHT (SEE ELECTRICAL DRAWINGS)
BUMP POST
BOLLARD LIGHT (SEE ELECTRICAL DRAWINGS)
LANDING AREA
LIGHT POLE (SEE ELECTRICAL DRAWINGS)
CONCRETE SIDEWALK
SIDEWALK RAMP
CONCRETE PAVEMENT
STANDARD DUTY BITUMINOUS
GRAVEL DRIVE
PUD OPEN SPACE
INTERIOR LANDSCAPING
STANDARD CURB & GUTTER
INVERTED CURB & GUTTER
LANDSCAPE CURB
FENCE

NOT FOR CONSTRUCTION

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N

0 50' 100'

ARCHITECTS • ENGINEERS
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BRIAN T. SINNOTT
REGISTRATION #6201052169
EXP. DATE 10/31/2019

PROJECT

LAKESHORE GARDENS APARTMENTS

A PLANNED UNIT DEVELOPMENT
17114 ROBBINS ROAD
GRAND HAVEN, MI 49417

DEVELOPER

MAIN STREET CAPITAL GROUP

18000 COVE STREET, STE 201
SPRING LAKE, MI 49456

RELEASE DATE

	DATE	DESCRIPTION
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	02-07-18	PUD APPLICATION
	03-09-18	PUD APPLICATION
	04-27-18	PUD APPLICATION
	05-15-18	PUD APPLICATION
	06-08-18	PER PC CONDITIONS
	08-01-18	PC RECOMMENDATION

PROJECT

1712151

SHEET

CIVIL LAYOUT PLAN

C-103

NOT FOR CONSTRUCTION

NOTE: ALL UTILITIES SHOWN ARE APPROXIMATE LOCATIONS FROM FIELD DATA AND AVAILABLE INFORMATION. THEY SHOULD NOT BE INTERPRETED AS EXACT LOCATIONS NOR SHOULD THEY BE ASSUMED TO BE THE ONLY UTILITIES IN THE AREA.

N

0 100' 200'

ARCHITECTS • ENGINEERS

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GRAND RAPIDS
550 3 MILE N.W. SUITE B
GRAND RAPIDS, MI 49544
(616) 785 - 5656

TRAVERSE CITY
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(231) 346 - 3030

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MI REGISTRATION #6201052169
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LAKESHORE GARDENS APARTMENTS

A PLANNED UNIT DEVELOPMENT

17114 ROBBINS ROAD
GRAND HAVEN, MI 49417

DEVELOPER

MAIN STREET CAPITAL GROUP

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SPRING LAKE, MI 49456

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05-15-18	PUD APPLICATION
08-01-18	PC RECOMMENDATION

PROJECT

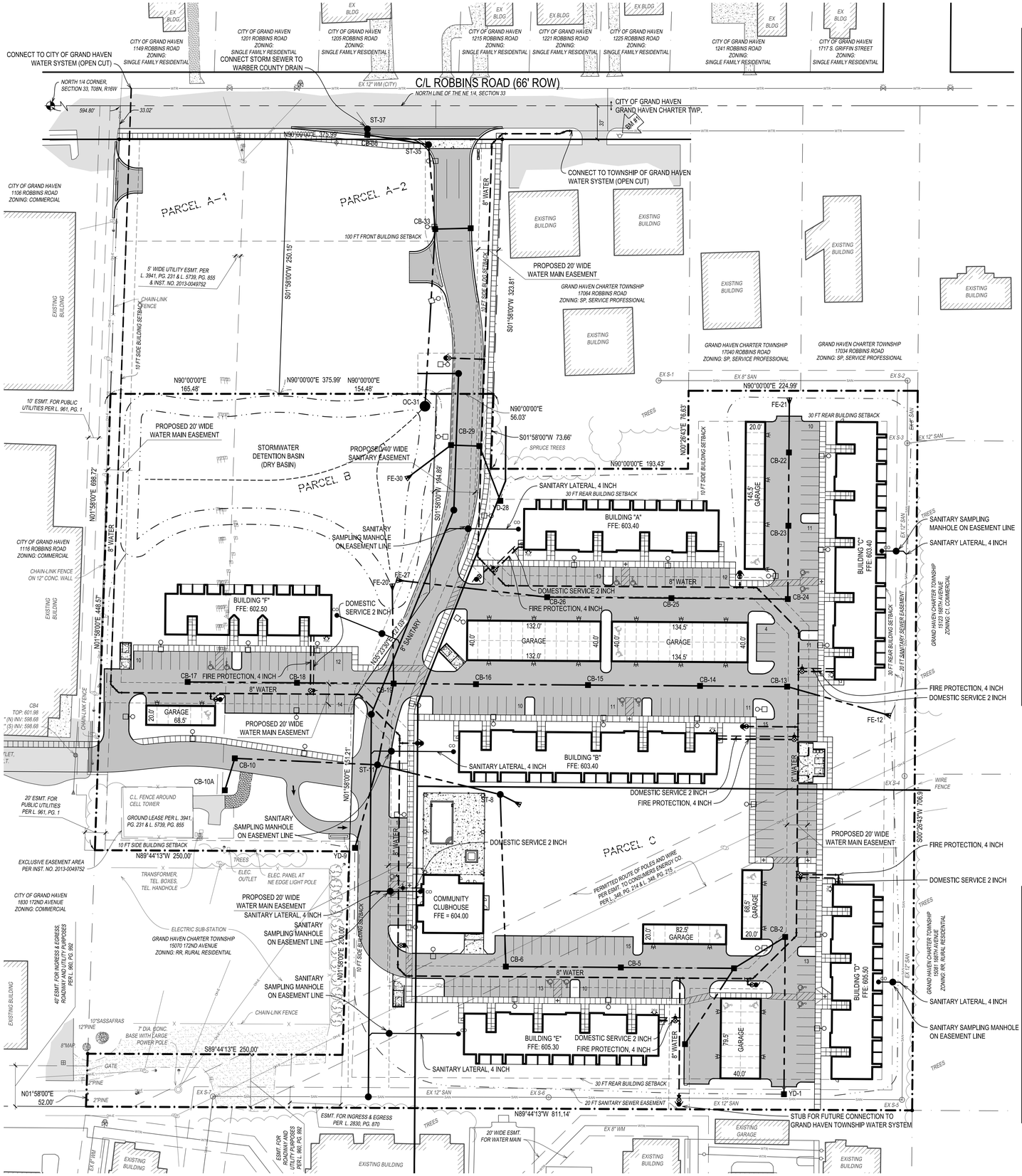
1712151

SHEET

CIVIL CIRCULATION PLAN

C-103A

Wednesday, August-01-2018 at 5:02pm O:\1712151 Robbins Road Mixed-Use\Drawings - 1711151\Civil\151C-103.dwg jjp



PROPOSED STORM SEWER STRUCTURE TABLE

STRUCTURE NUMBER	STRUCTURE TYPE & SIZE	RIM ELEV. CASTING TYPE	INVERT
1	YD 2' Ø STANDARD	RIM = 602.32 EJ 1040-N	12" (N) = 599.32
2	CB 5' Ø STANDARD	RIM = 603.47 EJ 1040-N	12" (S) = 598.55 12" (SW) = 598.55
3	CB 2' Ø STANDARD	RIM = 603.66 EJ 7045-M1-T1	12" (NE) = 600.66
4	CB 5' Ø STANDARD	RIM = 603.16 EJ 1040-M1	12" (NE) = 598.36 12" (SW) = 599.50 15" (W) = 598.36
5	CB 4' Ø STANDARD	RIM = 602.99 EJ 1040-M1	15" (E) = 598.04 18" (W) = 598.04
6	CB 4' Ø STANDARD	RIM = 603.08 EJ 1040-M1	18" (E) = 597.83 18" (N) = 597.83
8	ST 4' Ø STANDARD	RIM = 602.89 EJ 1040-B	18" (S) = 597.46 12" (SE) = 599.78 18" (W) = 597.46
9	YD 4' Ø STANDARD	RIM = 601.00 EJ 1040-N	12" (N) = 598.00
10	CB 4' Ø STANDARD	RIM = 600.97 EJ 1040-B	12" (S) = 597.47 12" (E) = 597.47
11	ST 5' Ø STANDARD	RIM = 601.50 EJ #1040-B	18" (E) = 596.94 12" (S) = 597.15 12" (W) = 596.77 24" (N) = 596.77
13	CB 4' Ø STANDARD	RIM = 601.54 EJ 1040-M1	12" (E) = 598.30 15" (W) = 598.05
14	CB 4' Ø STANDARD	RIM = 601.39 EJ 1040-M1	15" (E) = 597.67 15" (W) = 597.67
15	CB 4' Ø STANDARD	RIM = 601.39 EJ 1040-M1	15" (E) = 596.96 18" (W) = 596.96
16	CB 4' Ø STANDARD	RIM = 601.39 EJ 1040-M1	18" (E) = 596.58 18" (W) = 596.58
17	CB 2' Ø STANDARD	RIM = 600.53 EJ 1040-M1	12" (E) = 597.29
18	CB 4' Ø STANDARD	RIM = 600.53 EJ 1040-M1	12" (W) = 596.75 12" (E) = 596.74
19	CB 5' Ø STANDARD	RIM = 600.90 EJ 1040-M1	18" (E) = 596.42 12" (W) = 596.43 24" (S) = 596.66 30" (N) = 596.21
22	CB 4' Ø STANDARD	RIM = 601.63 EJ 1040-M1	12" (N) = 598.44 12" (S) = 598.44
23	CB 4' Ø STANDARD	RIM = 601.63 EJ 1040-M1	12" (N) = 598.21 12" (S) = 598.21
24	CB 4' Ø STANDARD	RIM = 601.53 EJ 1040-M1	12" (N) = 597.98 12" (W) = 597.98
25	CB 4' Ø STANDARD	RIM = 601.34 EJ 1040-M1	12" (E) = 597.61 12" (W) = 597.61
26	CB 4' Ø STANDARD	RIM = 601.39 EJ 1040-M1	12" (E) = 596.68 18" (W) = 596.68
28	YD 4' Ø STANDARD	RIM = 599.39 EJ 1040-N	12" (NW) = 596.49
29	CB 4' Ø STANDARD	RIM = 600.30 EJ 1040-M1	12" (SE) = 596.27 12" (SW) = 596.27
31	OC 7' Ø STANDARD	RIM = 599.45 STANDARD	4" (SW) = 595.00 36" (N) = 595.00
33	CB 5' Ø STANDARD	RIM = 600.17 EJ 7045-M1-T1	36" (S) = 594.06 12" (E) = 596.09 36" (N) = 594.06
35	ST 6' Ø STANDARD	RIM = 600.48 EJ 1040-B	36" (S) = 593.62 36" (W) = 593.62
36	CB 6' Ø STANDARD	RIM = 599.98 EJ 7030-M1-T1	36" (E) = 593.29 36" (N) = 593.29
37	ST 6' Ø STANDARD	RIM = 600.03 EJ 1040-M1	36" (S) = 593.25 36" (E) = 592.93 30" (W) = 593.23

PROPOSED STORM SEWER PIPE TABLE

UP STREAM STRUCTURE	DOWN STREAM STRUCTURE	SIZE	LENGTH	SLOPE
1	2	12"	154 FT	0.50%
2	4	12"	59 FT	0.32%
3	4	12"	89 FT	1.31%
4	5	15"	111 FT	0.29%
5	6	18"	113 FT	0.18%
6	8	18"	169 FT	0.22%
7	8	12"	22 FT	1.00%
8	11	18"	124 FT	0.42%
10	11	12"	140 FT	0.50%
12	13	12"	105 FT	1.52%
13	14	15"	85 FT	0.45%
14	15	15"	110 FT	0.65%
15	16	18"	110 FT	0.34%
16	19	18"	78 FT	0.20%
17	18	12"	107 FT	0.50%
18	19	12"	98 FT	0.32%

PROPOSED STORM SEWER PIPE TABLE

UP STREAM STRUCTURE	DOWN STREAM STRUCTURE	SIZE	LENGTH	SLOPE
19	20	30"	98 FT	0.21%
21	22	12"	54 FT	0.86%
22	23	12"	72 FT	0.32%
23	24	12"	72 FT	0.32%
24	25	12"	114 FT	0.32%
25	26	12"	122 FT	0.76%
26	27	18"	149 FT	0.20%
28	29	12"	68 FT	0.32%
29	30	12"	73 FT	0.32%
31	33	36"	176 FT	0.54%
33	35	36"	82 FT	0.54%
35	36	36"	61 FT	0.53%
36	37	36"	6 FT	0.76%

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GENERAL PRIVATE UTILITY NOTES:

PROPOSED PRIVATE UTILITY SERVICE AS SHOWN ARE SCHEMATIC ONLY. ACTUAL LOCATION TO BE COORDINATED WITH INDIVIDUAL UTILITY COMPANY AND APPROVED BY OWNER.

ALL PROPOSED UTILITIES WILL BE INSTALLED UNDERGROUND.

CONTRACTOR SHALL COORDINATE LOCATION OF ALL PRIVATE UTILITIES (GAS, ELECTRIC, PHONE, CABLE, ETC.) WITH THE LOCAL UTILITY COMPANIES AND THE MECHANICAL DRAWINGS. COORDINATE ALL PRIVATE UTILITY LOCATIONS WITH ALL SUB-SURFACE SITE UTILITIES SHOWN ON THIS PLAN.

GENERAL SANITARY SERVICE NOTES:

SITE CONTRACTOR TO END SANITARY LATERAL WITH A CLEAN-OUT AND TEMPORARY CAP AT 5' FROM BUILDING. COORDINATE CONNECTION WITH BUILDING PLUMBING CONTRACTOR.

SANITARY SEWER SERVICE LATERAL AND FITTINGS SHALL BE PVC PER ASTM D3034, SDR 26. JOINTS TO BE ELASTOMERIC SEALS IN ACCORDANCE WITH ASTM F477.

MATERIALS, INSTALLATION, AND TESTING OF SANITARY SEWER SERVICES SHALL CONFORM TO GRAND HAVEN CHARTER TOWNSHIP PUBLIC SERVICES DEPARTMENT WASTEWATER CONNECTION SPECIFICATIONS.

GENERAL STORM SEWER NOTES:

SITE CONTRACTOR TO END STORM CONNECTION 5' FROM BUILDING WITH A TEMPORARY CAP. COORDINATE CONNECTION WITH BUILDING PLUMBING CONTRACTOR.

STORM SEWER UNDERDRAIN (SPU) (12" - 60") SHALL BE SMOOTH INTERIOR CORRUGATED POLYETHYLENE PIPE PER AASHTO M294 TYPE SP, AND SHALL BE PERFORATED AND PRE-WRAPPED WITH A 3.5 OZ/SY GEOTEXTILE FILTER SOCK. JOINTS SHALL BE SOIL TIGHT. PAVEMENT SUBGRADE TO BE GRADED TO SLOPE TOWARDS THE PROPOSED SPU TRENCHES THROUGHOUT SITE.

UNDERDRAIN (4" - 10") SHALL BE SMOOTH INTERIOR CORRUGATED POLYETHYLENE PIPE TYPE S, PER AASHTO M252 AND PRE-WRAPPED WITH A GEOTEXTILE FILTER SOCK. PAVEMENT SUBGRADE TO BE GRADED TO SLOPE TOWARDS THE PROPOSED SPU TRENCHES THROUGHOUT SITE.

STORM SEWER PIPE FOR ROOF DRAIN CONNECTIONS OR WHERE INDICATED TO BE PVC SHALL MEET THE REQUIREMENTS OF ASTM D3034, SDR 26. JOINTS TO BE ELASTOMERIC SEALS IN ACCORDANCE WITH ASTM F477.

MATERIALS, INSTALLATION, AND TESTING OF THE STORM SEWER SYSTEM SHALL CONFORM TO GRAND HAVEN CHARTER TOWNSHIP PUBLIC SERVICES DEPARTMENT WASTEWATER CONNECTION SPECIFICATIONS STANDARDS.

GENERAL WATER SERVICE NOTES:

SITE CONTRACTOR TO END WATER SERVICE(S) AT 5' FROM BUILDING WITH TEMPORARY CAP(S). COORDINATE CONNECTION WITH BUILDING PLUMBING CONTRACTOR.

IRRIGATION WATER SERVICE TO BE TAPPED OFF WATER SERVICE INSIDE BUILDING UTILITY ROOM. COORDINATE WITH LANDSCAPER AND BUILDING PLUMBER.

FIRE PROTECTION LINE AND COMBINED SERVICE LINE SHALL BE DUCTILE IRON PER ANSI/AWWA C151/A21.51, THICKNESS CLASS PER ANSI/AWWA C110/A21.50. FITTINGS SHALL BE DUCTILE IRON PER ANSI/AWWA C110/A21.10, PRESSURE CLASS 350.

DOMESTIC SERVICE SHALL BE COPPER, TYPE K, ANNEALED AND SOFT TEMPER PER ASTM B-88. FITTINGS SHALL CONFORM TO ASTM B-88.

MINIMUM DEPTH OF BURY SHALL BE 60".

FIRE HYDRANT SHALL CONFORM TO ANSI / AWWA C-502 STANDARDS.

MATERIALS, INSTALLATION, AND TESTING OF WATER SERVICE LINES SHALL CONFORM TO GRAND HAVEN CHARTER TOWNSHIP PUBLIC SERVICES DEPARTMENT WASTEWATER CONNECTION SPECIFICATIONS AND THE STATE PLUMBING CODE.

PROPOSED LEGEND

- SIGN
- BUMP POST
- LANDING AREA
- WALL LIGHT (SEE ELECTRICAL DRAWINGS)
- BOLLARD LIGHT (SEE ELECTRICAL DRAWINGS)
- LIGHT POLE (SEE ELECTRICAL DRAWINGS)
- MANHOLE
- CATCH BASIN
- CLEAN OUT
- HYDRANT
- WATER VALVE
- CURB STOP
- FLARED END SECTION
- FIRE DEPARTMENT CONNECTION
- PIPE PLUG
- 90° BEND
- 45° BEND
- TEE
- CONCRETE SIDEWALK
- SIDEWALK RAMP
- CONCRETE PAVEMENT
- STANDARD DUTY BITUMINOUS
- GRAVEL DRIVE
- STANDARD CURB & GUTTER
- INVERTED CURB & GUTTER
- LANDSCAPE CURB
- FENCE
- WATER MAIN
- SANITARY SEWER
- STORM SEWER
- UNDERDRAIN

ARCHITECTS • ENGINEERS

paradigm design

GRAND RAPIDS: 550 3 MILE N.W. SUITE B, GRAND RAPIDS, MI 49544, (616) 785 - 5656

TRAVERSE CITY: 333 E. STATE STREET, TRAVERSE CITY, MI 49684, (231) 346 - 3030

WEB: ParadigmAE.com

NOTE: THIS DOCUMENT IS PRELIMINARY IN NATURE AND IS NOT A FINAL SIGNED AND SEALED DOCUMENT.

BRIAN T. SINNOTT
MI REGISTRATION #6201052169
EXP. DATE 10/31/2019

PROJECT

LAKESHORE GARDENS APARTMENTS

A PLANNED UNIT DEVELOPMENT

17114 ROBBINS ROAD
GRAND HAVEN, MI 49417

DEVELOPER

MAIN STREET CAPITAL GROUP

18000 COVE STREET, STE 201
SPRING LAKE, MI 49456

RELEASE DATE

	DATE	DESCRIPTION
	01-16-18	PUD APPLICATION
	02-07-18	PUD APPLICATION
	03-09-18	PUD APPLICATION
	04-27-18	PUD APPLICATION
	05-15-18	PUD APPLICATION
	08-01-18	PC RECOMMENDATION

NOT FOR CONSTRUCTION

PROJECT

1712151

SHEET

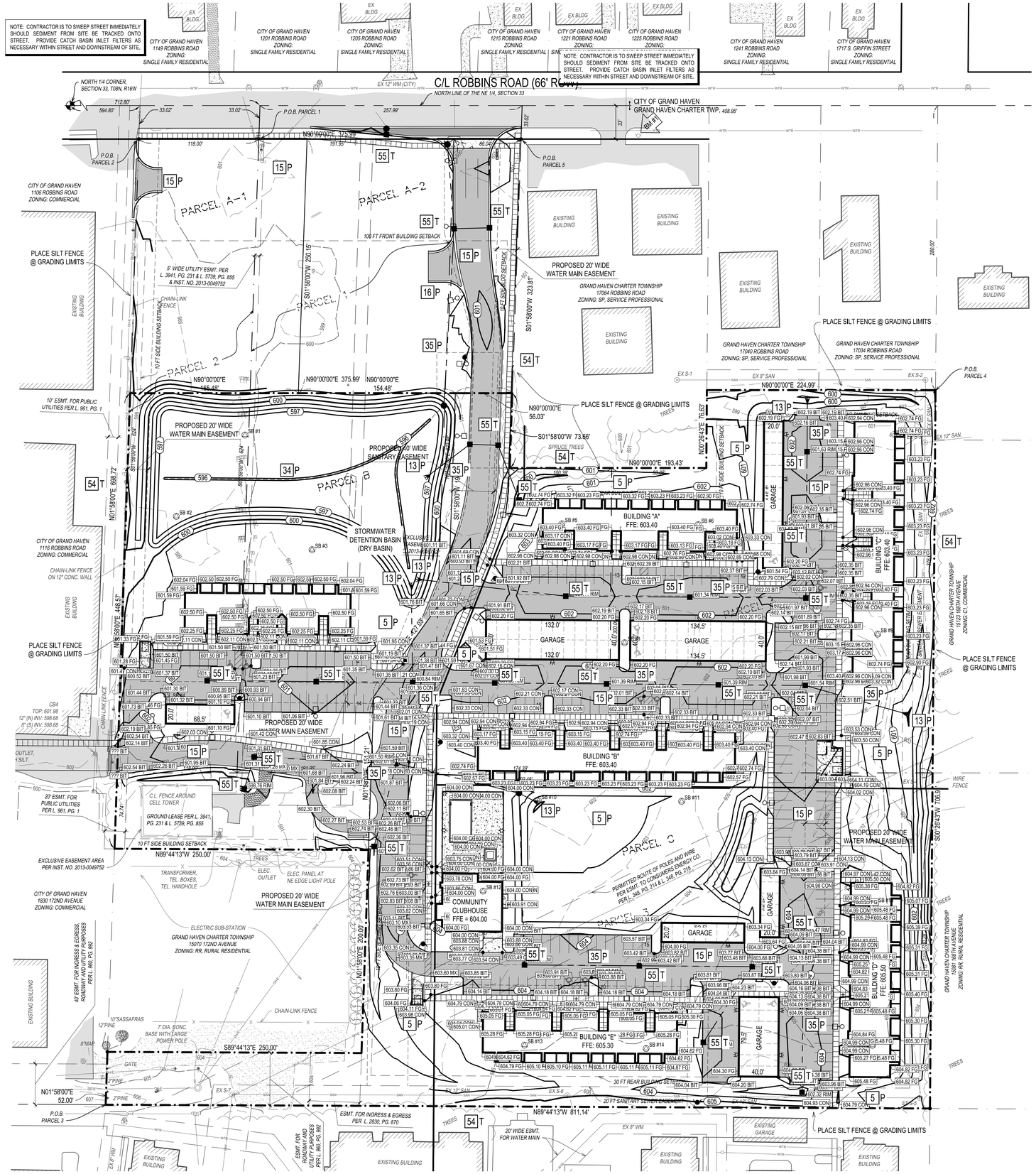
CIVIL OVERALL UTILITY PLAN

C-111

N

0 50' 100'

Wednesday, August-01-2018 at 5:02pm \\pd-fileh1\Jobs\1712151 Robbins Road Mixed-Use\Drawings - 1711151\Civil\15\C-111.dwg jjp



GENERAL SOIL EROSION AND SEDIMENTATION CONTROL NOTES:

IT IS THE OWNER'S RESPONSIBILITY TO OBTAIN THE SOIL EROSION PERMIT FROM THE PROPER GOVERNING AUTHORITY.

A CONTRACTOR / INSPECTOR SHALL INSPECT THE SOIL EROSION/SEDIMENT CONTROL DEVICES ONCE EACH WEEK AND/OR WITHIN 24 HOURS OF A PRECIPITATION EVENT WHICH RESULTS IN A STORM DISCHARGE FROM THE SITE.

ALL DISTURBED NON-PAVEMENT AREAS MUST BE RESTORED WITH TOPSOIL, SEED, FERTILIZER, AND MULCH UNLESS SODDED. (SEE LANDSCAPING PLAN)

ALL SLOPES STEEPER THAN 1V:3H SHALL USE AN EROSION CONTROL BLANKET ([NORTH AMERICAN GREEN S150BN] OR EQUAL). ALL SLOPES BETWEEN 1V:4H AND 1V:3H SHALL USE AN EROSION CONTROL BLANKET ([NORTH AMERICAN GREEN DS75] OR EQUAL). UNLESS INDICATED OTHERWISE ON PLANS.

SEEDING SHOULD BE PREPARED ACCORDING TO THE MANUFACTURER'S RECOMMENDATIONS. THE CONTRACTOR / INSPECTOR SHALL INSPECT THE AREA AFTER SEEDING IS COMPLETED. AREAS THAT ARE BARE OR NOT MULCHED PROPERLY WILL NEED TO BE SPOT SEEDED AND/OR RE-MULCHED.

SILT FENCE SHOULD BE TRENCHED IN, BACKFILLED, AND STAPLED OR STAKED ACCORDING TO THE MANUFACTURER'S SPECIFICATIONS. MAINTENANCE INCLUDES THE REMOVING OF BUILT-UP SEDIMENT WHEN THE SEDIMENT ACCUMULATES TO 1/3 TO 1/2 THE HEIGHT OF THE FENCE. CONTRACTOR WILL HAVE TO REMOVE, REPLACE, RETRENCH, OR REBACKFILL THE FENCE IF IT FAILS. IT WOULD ALSO BE NECESSARY TO REINSTALL IF ANY PORTION OF THE FENCING WAS DAMAGED BY CONSTRUCTION MACHINERY.

INLET FILTERS SHALL BE SILT SACKS, DANDY BAGS, OR APPROVED EQUAL. INLET FILTERS SHOULD BE INSPECTED FOR BUILDUP OF SILT AND OTHER DEBRIS. THIS IS EVIDENT IF STRUCTURE IS CAUSING FLOODING. MAINTENANCE WOULD CONSIST OF REMOVING OF SEDIMENTS OR REPLACING FILTER AS NECESSARY.

SOIL EROSION CONTROL METHODS SHOWN ARE A GUIDELINE AND DO NOT RELIEVE THE CONTRACTOR FROM ADDITIONAL METHODS THAT MAY BE REQUIRED BY THE SOIL EROSION CONTROL PERMIT.

DETENTION BASIN(S) SHALL BE ONE OF THE FIRST ITEMS CONSTRUCTED AND SHALL BE USED AS A TEMPORARY SEDIMENTATION BASIN UNTIL THE SITE IS STABILIZED. THE CONTRACTOR IS RESPONSIBLE FOR REMOVING ALL ACCUMULATED SEDIMENT AND RESTORATION OF THE BASIN PRIOR TO ACCEPTANCE BY THE [OWNER] [REGULATORY AGENCY].

THE CONTRACTOR WILL ENGAGE A CERTIFIED STORM WATER OPERATOR IN ACCORDANCE WITH EPA PHASE II RULES TO MEET REQUIREMENTS OF THE PERMIT. THIS OPERATOR WILL INSPECT THE JOB SITE AS REQUIRED BY RULE. NOTIFY JOB SITE SUPERINTENDENT OF ANY DEFICIENCIES, AND ENTER FINDINGS IN THE JOB SITE INSPECTION JOB BOOK.

TOTAL DISTURBED AREA = 13.12 ACRES. APPROXIMATELY 19,000 CUBIC YARDS OF FILL WILL BE REQUIRED TO ACHIEVE PROPOSED GRADERS, NOT INCLUDING PAVEMENT SECTION MATERIALS.

UNIFIED KEYING SYSTEM
SOIL EROSION AND SEDIMENTATION CONTROL MEASURES

5	SEEDING	34	SEDIMENT BASIN
13	RIP-RAP, RUBBLE, GABIONS	35	STORM SEWER CB CB
15	PAVING	54	GEOTEXTILE SILT FENCE
16	CURB & GUTTER	55	GEOTEXTILE INLET FILTER

CONSTRUCTION SEQUENCE	YEAR: 2018											
	JAN.	FEB.	MAR.	APR.	MAY	JUNE	JULY	AUG.	SEP.	OCT.	NOV.	DEC.
STRIPPING & STOCKPILING TOPSOIL												
ROUGH GRADING SEDIMENT CONTROL												
TEMPORARY CONTROL MEASURES												
STORM UTILITIES												
TEMPORARY CONSTRUCTION ROADS												
PERMANENT CONTROL MEASURES												
FOUNDATION / BUILDING CONSTRUCTION												
SITE CONSTRUCTION												
FINISH GRADING												
LANDSCAPING												

GENERAL CONTRACTOR SHALL COMPLETE CONSTRUCTION SEQUENCE SCHEDULE WHEN MAKING APPLICATION FOR SOIL EROSION CONTROL PERMIT.

PROPOSED LEGEND

- SIGN
- WALL LIGHT (SEE ELECTRICAL DRAWINGS)
- MANHOLE
- HYDRANT
- FLARED END SECTION
- BUMP POST
- BOLLARD LIGHT (SEE ELECTRICAL DRAWINGS)
- CATCH BASIN
- WATER VALVE
- FIRE DEPARTMENT CONNECTION
- LANDING AREA
- LIGHT POLE (SEE ELECTRICAL DRAWINGS)
- CLEAN OUT
- CURB STOP
- CONCRETE SIDEWALK
- SIDEWALK RAMP
- CONCRETE PAVEMENT
- STANDARD DUTY BITUMINOUS
- GRAVEL DRIVE
- STANDARD CURB & GUTTER
- INVERTED CURB & GUTTER
- LANDSCAPE CURB
- CONTOUR LINE
- FENCE
- WATER MAIN
- SANITARY SEWER
- STORM SEWER
- UNDERDRAIN
- SILT FENCE
- X T TEMPORARY SOIL EROSION & SEDIMENTATION CONTROL MEASURE
- X P PERMANENT SOIL EROSION & SEDIMENTATION CONTROL MEASURE

NOT FOR CONSTRUCTION

NOTE: ALL UTILITIES SHOWN ARE APPROXIMATE LOCATIONS FROM FIELD DATA AND AVAILABLE INFORMATION. THEY SHOULD NOT BE INTERPRETED AS EXACT LOCATIONS NOR SHOULD THEY BE ASSUMED TO BE THE ONLY UTILITIES IN THE AREA.

N

0 50' 100'

ARCHITECTS • ENGINEERS

paradigm design

GRAND RAPIDS: 550 3 MILE N.W. SUITE B, GRAND RAPIDS, MI 49544, (616) 785 - 5656

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PROJECT

LAKESHORE GARDENS APARTMENTS

A PLANNED UNIT DEVELOPMENT

17114 ROBBINS ROAD
GRAND HAVEN, MI 49417

DEVELOPER

MAIN STREET CAPITAL GROUP

18000 COVE STREET, STE 201
SPRING LAKE, MI 49456

RELEASE DATE

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05-15-18	PUD APPLICATION
08-01-18	PC RECOMMENDATION

PROJECT

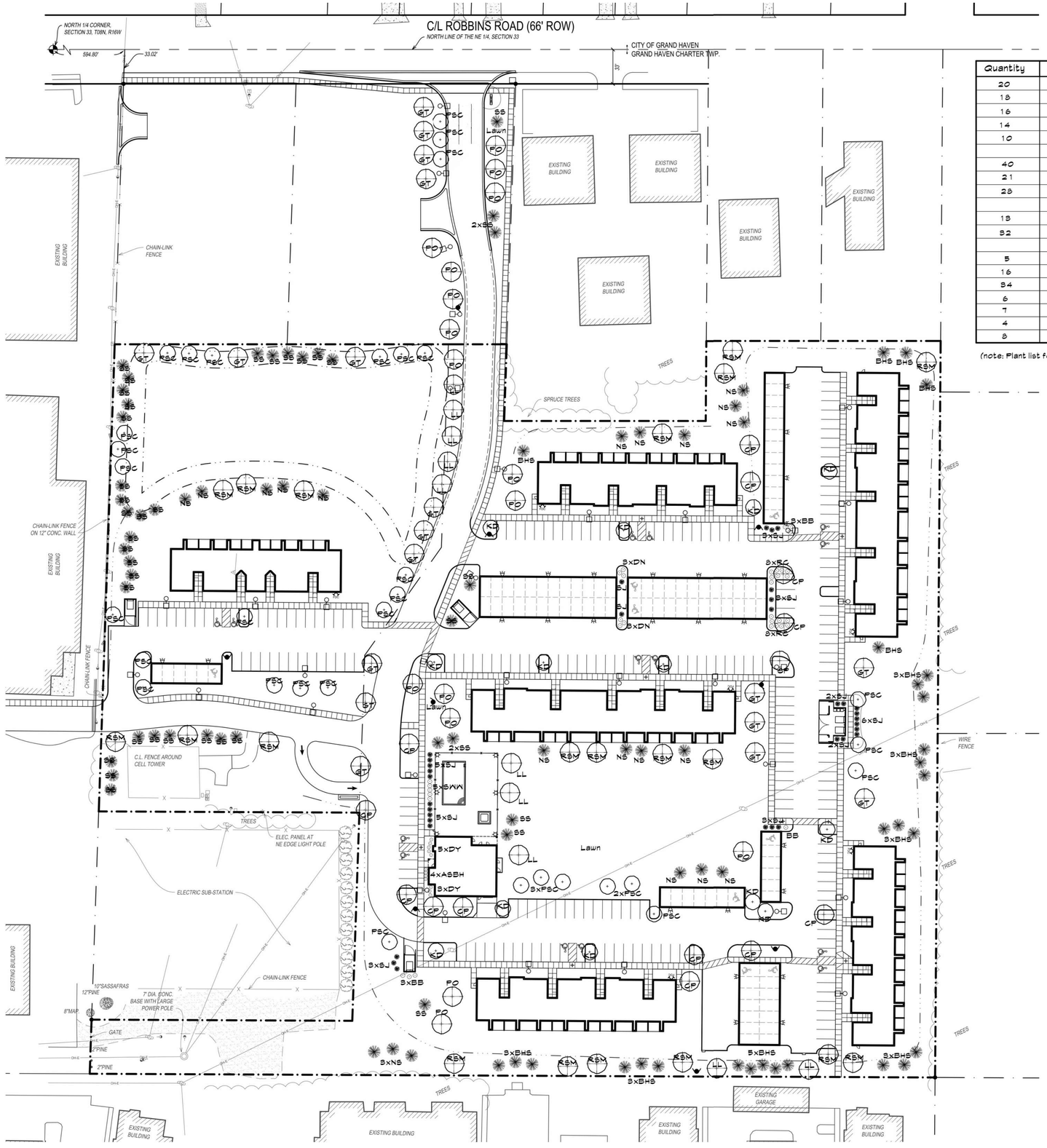
1712151

SHEET

CIVIL OVERALL GRADING & SESC PLAN

C-121

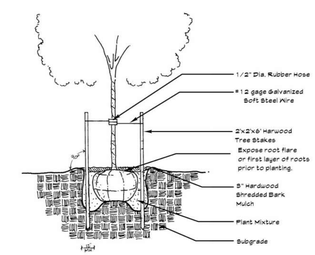
Wednesday, August 01, 2018 at 5:02pm \\pc-file1\Jobs\$\1712151\Cad\151C-121.dwg



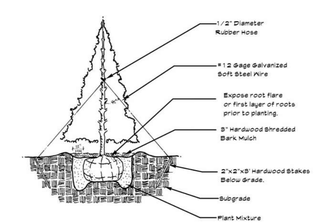
Plant List

Quantity	Common Name	Latin Name	Planted Size	Key
20	Red Sunset Maple	Acer rubrum 'Franksred'	3 1/2" cal.	RSM
18	Ginkgo Tree	Ginkgo biloba	3 1/2" cal.	GT
16	Pin Oak	Quercus palustris	3 1/2" cal.	PO
14	Capital Pear	Pyrus calleryana 'Capital'	3 1/2" cal.	CP
10	Little Leaf Linden	Tilia cordata	3 1/2" cal.	LL
40	Serbian Spruce	Picea omorika	6' ht.	SS
21	Norway Spruce	Picea abies	6' ht.	NS
28	Black Hills Spruce	Picea glauca var. densata	6' ht.	BHS
18	Kousa Dogwood	Cornus Kousa	3 " cal.	KD
32	Pink Spires Flowering Crab	Malus 'Pink Spires'	3 " cal.	PSC
5	Spilled Wine Weigela	Weigela florida 'Bokraspiwi'	3 gal.	SWW
16	Russian Cypress	Microbiota decussata	18-24" spd.	RC
34	Spartan Juniper	Juniperus chinensis 'Spartan'	6' ht.	SJ
6	Diablo Ninebark	Physocarpus opulifolious "Diablo"	24-30" ht.	DN
7	Dwarf Burning Bush	Euonymus alatus 'Compactus'	24-30" ht.	BB
4	All Summer Beauty Hydrangea	Hydrangea macrophylla 'All Summer Beauty'	3 gal.	ASBH
8	Dense Yew	Taxus densiformis	18-24" ht.	DY

(note: Plant list for ordinance purposes only, the landscape contractor is responsible for plant quantities shown on the landscape plan)



Deciduous Trees 3" Caliper and Smaller



Evergreen Planting Detail-5' and Taller

Notes:

1. All landscaping shall be installed by a qualified Landscape Contractor to the size specified on the landscape plan. Smaller sizes will be rejected.
2. All plantings shall be mulched with 3" shredded premium hardwood bark mulch. Trees in lawn areas shall receive a 6' diameter bark ring 3" deep.
3. The landscape contractor shall remove any twine that is wrapped around the trunk of a tree or shrub as well as the top third of any burlap. Remove excess soil on the top of the root ball to expose the root flare or first layer of roots prior to planting. Use a wire cutter to make 3–5 cuts in the wire basket to allow roots to grow through.
4. Planting areas shall be edged with a mechanical bed edger at a depth of 4" to define border for shredded bark mulch.
5. Parking Islands shall be back filled with at least 24" of topsoil. Amend the topsoil with composted manure and mix into the topsoil at a depth of 6–12". Any aggregate or stone from the construction of the parking lot shall be removed prior to backfill.
6. Lawn areas shall recieve at least 4" of topsoil and hydroseeded. Check with specifications for topsoil availability or contact project manager. Topsoil for lawns shall be appropriate for growing and sustaining a healthy lawn. All lawns, except the detention pond and cell tower, shall be hydroseeded with a seed blend consisting of 30% Kentucky Bluegrass, 20% Perennial Ryegrass, 10% Hard Fescue, 20% Creeping Red Fescue and 20% Chewings Fescue.
7. The detention pond shall be seeded with Stormwater Seed Mix & Economy Prairie Seed Mix by Cardno JFN. The cell tower lawn shall be seeded with Economy Prairie Seed Mix by Cardno JFN.
8. All lawn and shrub bed areas shall be watered by an automatic irrigation system. The irrigation system shall be designed and installed by the Landscape Contractor.
9. Maintenance of the landscape shall be provided for by the owner and include fertilizing of lawn and plant material, yearly pruning, top dressing of mulch areas every other year and provide 1" of water per week during the growing season.
10. Plant materials shall be chosen and installed in accordance with standards recommended by the County Cooperative Extension Service or American Nursery Association.

N

0 50' 100'

NOTE: ALL UTILITIES SHOWN ARE APPROXIMATE LOCATIONS FROM FIELD DATA AND AVAILABLE INFORMATION. THEY SHOULD NOT BE INTERPRETED AS EXACT LOCATIONS NOR SHOULD THEY BE ASSUMED TO BE THE ONLY UTILITIES IN THE AREA.

ARCHITECTS • ENGINEERS

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TRAVERSE CITY — 333 E. STATE STREET, TRAVERSE CITY, MI 49684, (231) 346 - 3030

WEB — PARADIGMAE.COM

STATE OF MICHIGAN — JOYCE E. WEISE, LANDSCAPE ARCHITECT, No. 1202 — LICENSED LANDSCAPE ARCHITECT

Landscape Plan Drawn By: Joyce E. Weise PLA, ASLA

PROJECT

LAKESHORE GARDENS APARTMENTS

A PLANNED UNIT DEVELOPMENT

17114 ROBBINS ROAD
GRAND HAVEN, MI 49417

DEVELOPER

MAIN STREET CAPITAL GROUP

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PROJECT

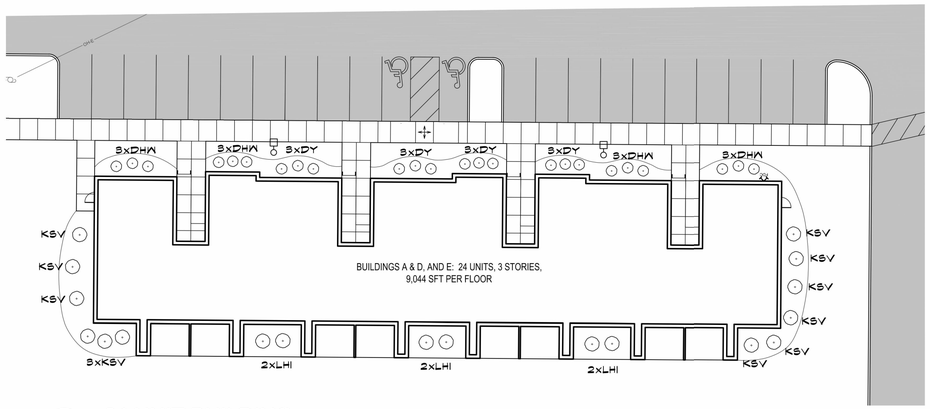
1712151

SHEET

LANDSCAPE PLAN

L-101

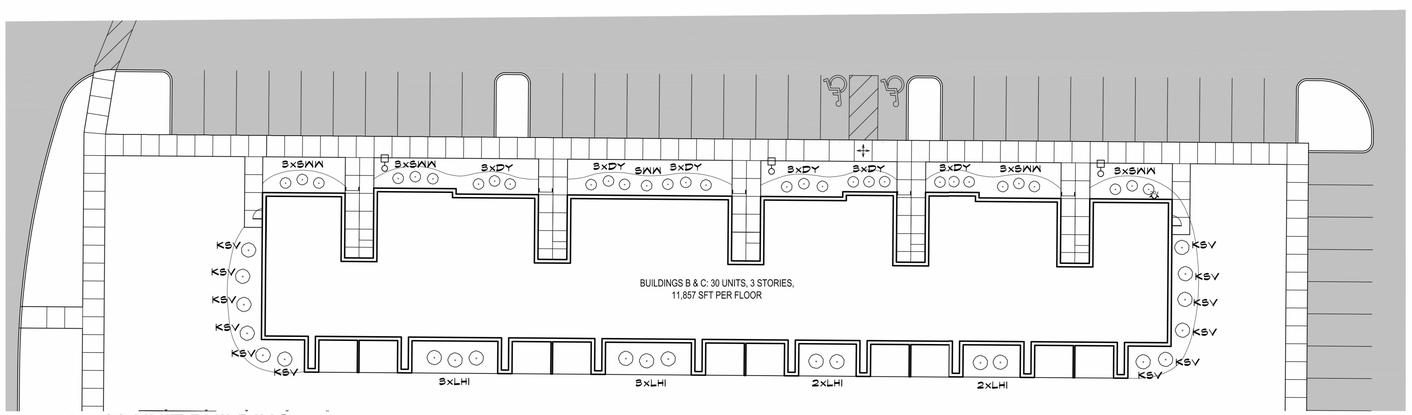
Wednesday, August-01-2018 at 5:02pm tpd-file:\Jobs\51712151 Robbins Road Mixed-Use\Drawings - 1711151Civil\151L-101.dwg jjp



1 24 UNIT BUILDING

SCALE: 1" = 20'

0 10' 20' 40'



2 30 UNIT BUILDING

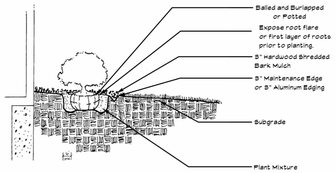
SCALE: 1" = 20'

0 10' 20' 40'

Plant List

Quantity	Common Name	Latin Name	Planted Size	Key
60	Korean Spice Viburnum	Viburnum carlesii	24-30" ht.	KSV
38	Little Henry Itea	Itea virginica 'Sprich'	18-24" ht.	LHI
26	Spilled Wine Weigela	Weigela florida 'Bokraspiwi'	3 gal.	SWW
72	Dense Yew	Taxus densiformis	18-24" ht.	DY
36	Dark Horse Weigela	Weigela florida 'Dark Horse'	3 gal.	DHW

(note: Plant list for ordinance purposes only, the landscape contractor is responsible for plant quantities shown on the landscape plan)



Shrub Planting Detail

Notes:

1. All landscaping shall be installed by a qualified Landscape Contractor to the size specified on the landscape plan. Smaller sizes will be rejected.
2. All plantings shall be mulched with 3" shredded premium hardwood bark mulch. Trees in lawn areas shall receive a 6' diameter bark ring 3" deep..
3. The landscape contractor shall remove any twine that is wrapped around the trunk of a tree or shrub as well as the top third of any burlap. Remove excess soil on the top of the root ball to expose the root flare or first layer of roots prior to planting. Use a wire cutter to make 3–5 cuts in the wire basket to allow roots to grow through.
4. Planting areas shall be edged with a mechanical bed edger at a depth of 4" to define border for shredded bark mulch.
5. Parking Islands shall be back filled with at least 24" of topsoil. Amend the topsoil with composted manure and mix into the topsoil at a depth of 6–12". Any aggregate or stone from the construction of the parking lot shall be removed prior to backfill.
6. Lawn areas shall recieve at least 4" of topsoil and hydroseeded. Check with specifications for topsoil availability or contact project manager. Topsoil for lawns shall be appropriate for growing and sustaining a healthy lawn. All lawns including the detention ponds shall be hydroseeded with a seed blend consisting of 30% Kentucky Bluegrass, 20% Perennial Ryegrass, 10% Hard Fescue, 20% Creeping Red Fescue and 20% Chewings Fescue.
7. All lawn and shrub bed areas shall be watered by an automatic irrigation system. The irrigation system shall be designed and installed by the Landscape Contractor.
8. Maintenance of the landscape shall be provided for by the owner and include fertilizing of lawn and plant material, yearly pruning, top dressing of mulch areas every other year and provide 1" of water per week during the growing season.
9. Plant materials shall be chosen and installed in accordance with standards recommended by the County Cooperative Extension Service or American Nursery Association.

ARCHITECTS • ENGINEERS

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WEB
ParadigmAE.com

STATE OF MICHIGAN
JOYCE E. WEISE
LANDSCAPE ARCHITECT
No. 1202
LICENSED LANDSCAPE ARCHITECT

Joyce E. Weise

Landscape Plan Drawn By:
Joyce E. Weise PLA, ASLA

PROJECT

LAKESHORE GARDENS APARTMENTS

A PLANNED UNIT DEVELOPMENT

17114 ROBBINS ROAD
GRAND HAVEN, MI 49417

DEVELOPER

MAIN STREET CAPITAL GROUP

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08-01-18	PC RECOMMENDATION

PROJECT

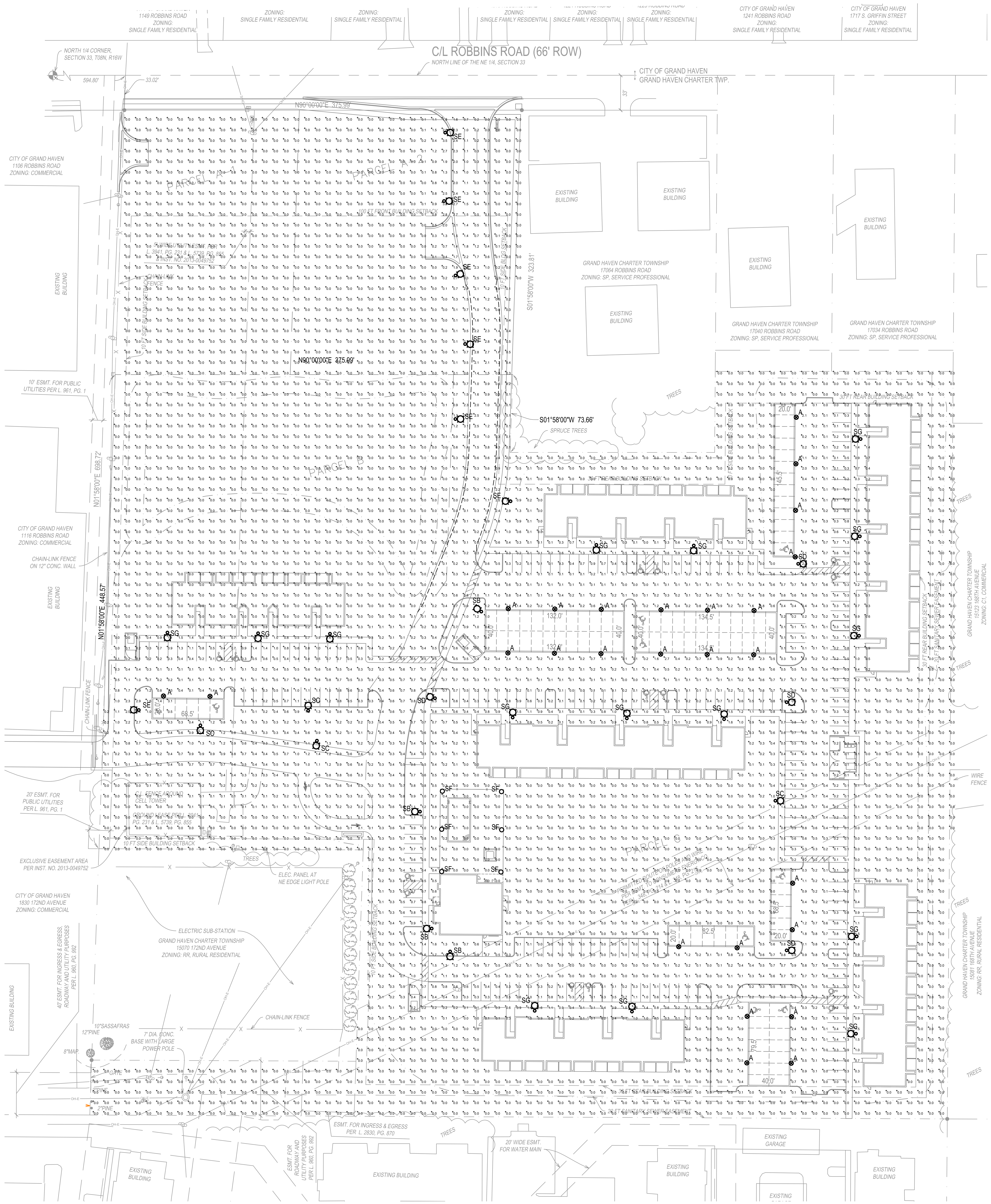
1712151

SHEET

LANDSCAPE PLAN

L-102

Thursday, August-02-2018 at 10:50am O:\1712151 Robbins Road Mixed-Use\Drawings - 1711151(Cv4)151L-101.dwg jjp



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LUMIÈRE®

Catalog #		Type
Project		
Comments		Date
Prepared by		

DESCRIPTION

Tahoe mini-bollards are petite, yet rugged low voltage beacons in three distinct styles. They utilize a 20-watt MR16 lamp source and are ideal for a variety of commercial and residential applications. Each model is available in three sizes and includes a cast zinc ground spike for fast, easy installation. Lumière's exclusive Siphon Protection System (S.P.S.) prevents water from siphoning into the fixture through its own lead wires.

SPECIFICATION FEATURES

A ... Material Housing is precision-machined from corrosion-resistant 6061-T6 aluminum extrusion.

B ... Finish Fixture is double protected by a chromate conversion undercoating and polyester powdercoat paint finish, surpassing the rigorous demands of the outdoor environment. Fixture housing is available in a variety of standard colors.

C ... Gasket Housing and mounting spike adaptor stem are sealed with a high temperature silicone o-ring gasket to prevent water intrusion.

D ... Lens Lens is machined from solid U.V. stabilized clear acrylic.

E ... Mounting Spike 6-3/4" corrosion-resistant cast zinc ground spike with 1/2" female threaded opening provided as standard (model GS01). It is sealed around the lead wires for rigidity and a watertight seal.

F ... Hardware Stainless steel hardware is standard to provide maximum corrosion-resistance.

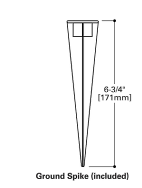
G ... Socket Ceramic socket with 250° C Teflon® coated lead wires and GU5.3 bi-pin base.

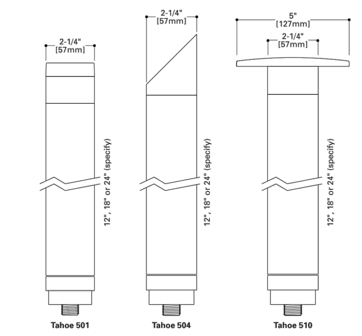
H ... Electrical Remote 12V transformer required (not included). Available from Lumière as an accessory - see the Accessories & Technical Data section of this catalog for details.

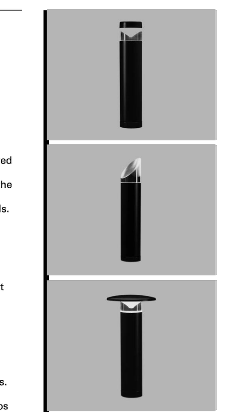
I ... Lamp Lamp is included as standard.

J ... Labels & Approvals UL and cUL listed, standard wet label. Manufactured to ISO 9001-2000 Quality Systems Standard. IBEW union made.

K ... Warranty Lumière warrants its fixtures against defects in materials & workmanship for three (3) years. Auxiliary equipment such as transformers, ballasts and lamps carry the original manufacturer's warranty.







TAHOE
501
504
510

20W (max.) MR16
Halogen
Low Voltage

Mini-Bollard

COOPER Lighting www.cooperlighting.com

Specifications and Dimensions subject to change without notice.
Consult your representative for additional options and finishes.

ADL032484

STREETWORKS™

Catalog #		Type
Project		
Comments		Date
Prepared by		

DESCRIPTION

The EPIC Collection delivers custom luminaire flexibility with high quality, yet availability expectations of standard specification grade product. The EPIC Collection can be dressed to suit any application. Recognizing evolving environmental and legislative trends, EPIC Collection delivers world class LED optical and performance solutions to the decorative luminaire marketplace.

SPECIFICATION FEATURES

Construction
TOP: Cast aluminum classical top housing maintains a nominal 1/8" sidewall thickness. Top attaches to cast aluminum mounting arm hub with four (4) stainless steel fasteners. One (1) piece silicone gasket between mounting hub and top casting seals out moisture and contaminants. MIDSECTION: Continuous silicone gaskets seal lens to top casting and shade. The mid-section options feature cast aluminum construction and stainless steel assembly hardware. SHADES: Heavy-gauge precision spun aluminum shades offer superior surface finish and consistency in form. DOORFRAME: Die-cast aluminum 1/8" thick door and doorframe seal to underside of shade with a thick wall continuous silicone gasket. Mounting hub ships attached to mounting arm.

Optics
DISTRIBUTION: Choice of thirteen (13) patented, high-efficiency AccuLED Optics™, that maximize light collection and directional distribution onto the application region. Each optical lens is precision manufactured via injection-molding, then precisely arranged and sealed on the board media. LEDs: High output LEDs, 50,000+ hours life at >70% lumen maintenance, offered standard in 4000° K (+/- 275K) CCT and nominal 70 CRI.

Electrical
ELECTRICAL TRAY: Driver and related electrical componentry are mounted to one-piece tray. Quick disconnect wiring plugs allow for tray removal during routine maintenance. DRIVER: LED drivers are potted and heat sunk for optimal performance and prolonged life. Standard drivers feature electronic universal voltage (120-277V/50-60hz), greater than 0.9 power factor, less than 20% harmonic distortion and feature ambient temperature range of +40°C (104°F) down to minimum starting temperature of -30°C (- 22°F). Shipped standard with Cooper Lighting proprietary circuit module designed to withstand 10kV of transient line surge. All LED LightBARs™ and drivers are mounted to dedicated mounting trays and are easily replaced by use of quick disconnects for ease of wiring.

Finish
Housing is finished in 5 stage Super TGIC polyester powder coat paint, 2.5 mil nominal thickness for superior protection against fade and wear. Standard colors include black, bronze, grey, white, dark platinum and graphite metallic. RAL and custom color matches available. Consult Outdoor Architectural Colors brochure for a complete selection. LightBAR™ cover plates are standard white and may be specified to match finish of luminaire housing.

Warranty
CEM LED features a five-year limited warranty.

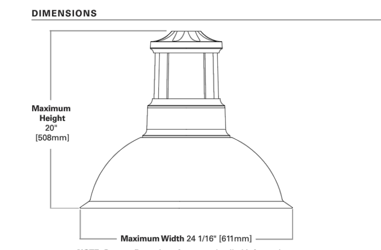
CEM
CLASSICAL EPIC
MEDIUM LED

1 - 4 LightBARs
Solid State LED

DECORATIVE AREA

DESIGNLIGHTS CONSORTIUM

DIMENSIONS



NOTE: See configurations for more detailed information.

COOPER Lighting www.cooperlighting.com

CERTIFICATION DATA
UL/cUL Listed
ISO 9001
IP66 LightBARs
ARRA Compliant
LM79 / LM80 Compliant
3.5G Vibration Tested

ENERGY DATA
Electronic LED Driver
>0.9 Power Factor
<20% Total Harmonic Distortion
120-277V/50 & 60hz, 347V/60hz, 480V/60hz
-30°C Minimum Temperature
40°C Ambient Temperature Rating

EPA
Effective Projected Area: (Sq. Ft.)
0.94

SHIPPING DATA
Approximate Net Weight:
45 lbs.

ADW111565
2013-02-21 17:48:14

LITHONIA LIGHTING

Catalog Number	
Notes	
Type	

Wafer LED Recessed Downlight
WF6
6" LED Module
IC/Non-IC
New Construction/Remodel

FEATURES & SPECIFICATIONS

INTENDED USE — The 6" Wafer-Thin LED recessed downlight with remote driver box combines high quality light output and efficiency while eliminating the pot light housing for competitive affordability. This innovative wafer-slim Type IC design allows easy installation for new construction or remodel from below the ceiling without the requirement of a pot light housing. The LED module maintains at least 70% light output for 36,000 hours. These LED Wafer downlights are intended for closets, attics, hallways, bathrooms, kitchens, basements, soffits, entry ways, porches, garages, stairwells, corridors, nursing/retirement homes, condos, elevators, apartments, and any other small areas.

CONSTRUCTION — Ideal for shallow ceiling plenum since a pot light housing is NOT required. IC rated driver and fixture - approved for direct contact with insulation. Aluminum die cast outer frame. Durable, powder coat paint to prevent rust. Round fixture with integral edge-lit LED's. Steel spring clip for easy installation. Plenum rated cable connector to connect from module to remote driver box. Isolated driver integrated inside steel remote box with four 7/8" knockouts with slots for pryout. Suitable for pulling wires with the 12 cubic-inch wiring compartment to accommodate up to (8) 14 gauge insulated conductors, or (6) 12 gauge insulated conductors; making the Wafer LED Downlights much easier to wire in 2in/2out (plus ground) daisy-chain applications and contractor friendly.

PATENT PENDING.

INSTALLATION — Ideal for shallow ceiling plenum; no housing required. Steel spring clip for easy installation. 6" cut out template is provided to ensure a correct sized hole is cut into ceiling for proper installation of the trim. Size of hole should not exceed 6 1/4 inches for this product. Suitable for installation in t-grid and drop ceiling applications. 2" plenum space required for installation of the remote driver box.

OPTICS — Wafer-Thin downlight edge-lit LED technology uses light guided plate to distribute light. Polycarbonate lens provides even illumination throughout the space. Utilized 2700K, 3000K, 3500K, 4000K, and 5000K color temperature LEDs.

ELECTRICAL — Connect directly to 120V power supply via provided UL recognized driver. High efficient driver with power factor > 0.9. Ambient operating temperature: -40°F (-40°C) to +104°F (+40°C). Dimming down to 10% (See page 2 for recommended dimmers). Standard input wattage is 13W, 79 lumens per watt. Replaces 75W incandescent for 865 lumens and 100W incandescent for 1020 lumens.

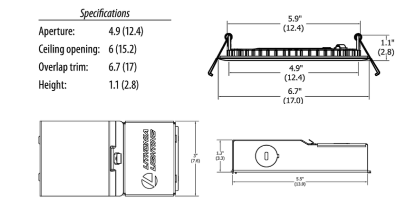
LISTINGS — CSA certified to US and Canadian safety standards. ENERGY STAR® certified product. Wet location. Air Tight certified in accordance with ASTM E283-2004. NOM Certified.

WARRANTY — 5-year limited warranty. Complete warranty terms located at: www.acuitybrands.com/CustomerResources/Terms_and_conditions.aspx

Note: Actual performance may differ as a result of end-user environment and application. All values are design or typical values, measured under laboratory conditions at 25 °C. Specifications subject to change without notice.

Specifications

Aperture:	4.9 (12.4)
Ceiling opening:	6 (15.2)
Overlap trim:	6.7 (17)
Height:	1.1 (2.8)



All dimensions are inches (centimeters) unless otherwise indicated.

DOWNLIGHTING WF6

LED OPTION													
		Fixture types											
Square footage		A	SA	SB	SC	SD	SE	SF	SG				
Wattage		12.9	51	51	51	51	51	10	27				
LUMENS		1020	4726	4553	4434	4726	4553	240	1873	TOTAL WATTAGE	W/FT^2	LZ3
DRIVEWAY AND PARKING	128315	26	0	4	4	4	7	6	15	1769.4	0.0138	0.080

Schedule					
Label	Manufacturer	Catalog Number	Lamp	Number Lamps	Wattage
A	PROGRESS	P8222-2830K LED DOWNLIGHT	40-Nichia 3000K LED's	1	12.9
SB	COOPER LIGHTING - - STREETWORKS	CEMB02LEDEUT3A MOUNTED ON STRAIGHT STEEL POLE AT 20' ABOVE FINISHED GRADE.	LED	1	51
SC	COOPER LIGHTING - - STREETWORKS	CEMB02LEDEUT4S MOUNTED ON STRAIGHT STEEL POLE AT 20' ABOVE FINISHED GRADE.	LED	1	51
SD	COOPER LIGHTING - - STREETWORKS	CEMB02LEDEU5MQ MOUNTED ON STRAIGHT STEEL POLE AT 20' ABOVE FINISHED GRADE.	LED	1	51
SE	COOPER LIGHTING - - STREETWORKS	CEMB02LEDEUT3A MOUNTED ON STRAIGHT STEEL POLE AT 12' ABOVE FINISHED GRADE.	LED	1	51
SF	EATON - LUMIERE (FORMER COOPER LIGHTING)	510-24-10LED3041-12-CS	10W 3000K, 41 Degree Wide, GU5.3 Base	1	10
SG	COOPER LIGHTING - - STREETWORKS	CEMC01LEDEUT2A MOUNTED ON STRAIGHT STEEL POLE AT 12' ABOVE FINISHED GRADE.		7	27

Statistics						
Description	Symbol	Avg	Max	Min	Max/Min	Avg/Min
SITE	+	0.2 fc	3.7 fc	0.0 fc	N/A	N/A

NOTE: ALL UTILITIES SHOWN ARE APPROXIMATE LOCATIONS FROM FIELD DATA AND AVAILABLE INFORMATION. THEY SHOULD NOT BE INTERPRETED AS EXACT LOCATIONS NOR SHOULD THEY BE ASSUMED TO BE THE ONLY UTILITIES IN THE AREA.

NOT FOR CONSTRUCTION

N

0 50' 100'

ARCHITECTS • ENGINEERS

paradigm design

GRAND RAPIDS — 550 3 MILE N.W. SUITE B, GRAND RAPIDS, MI 49544, (616) 785 - 5656

TRAVERSE CITY — 333 E. STATE STREET, TRAVERSE CITY, MI 49684, (231) 346 - 3030

WEB — PARADIGMAE.COM

NOTE: THIS DOCUMENT IS PRELIMINARY IN NATURE AND IS NOT A FINAL, SIGNED AND SEALED DOCUMENT.

PROJECT

LAKESHORE GARDENS APARTMENTS

A PLANNED UNIT DEVELOPMENT

17114 ROBBINS ROAD
GRAND HAVEN, MI 49417

DEVELOPER

MAIN STREET CAPITAL GROUP

18000 COVE STREET, STE 201
SPRING LAKE, MI 49456

RELEASE DATE

△	DATE	DESCRIPTION
	01-16-18	PUD APPLICATION
	02-07-18	PUD APPLICATION
	03-09-18	PUD APPLICATION
	04-27-18	SITE PLAN APPROVAL
	05-15-18	PUD APPLICATION
	8-1-17	PC RECOMMENDATION

PROJECT

1712151

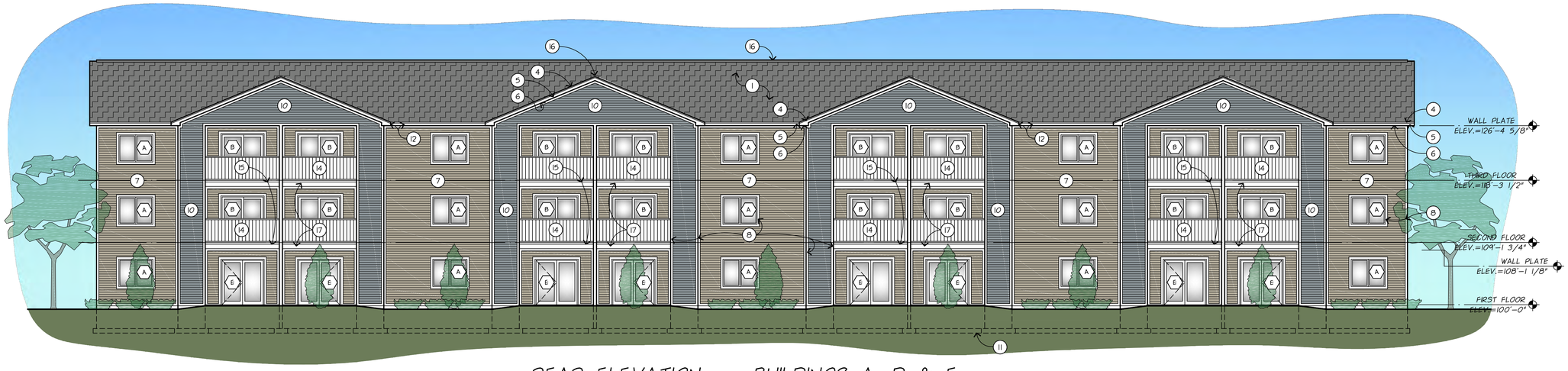
SHEET

ELECTRICAL SITE LIGHTING CALCULATIONS

ES.1

FRONT ELEVATION – BUILDINGS A, D & E

SCALE: 1/8"=1'-0" 24 UNIT



REAR ELEVATION – BUILDINGS A, D & E

SCALE: 1/8"=1'-0" 24 UNIT

ELEVATION MATERIAL KEY

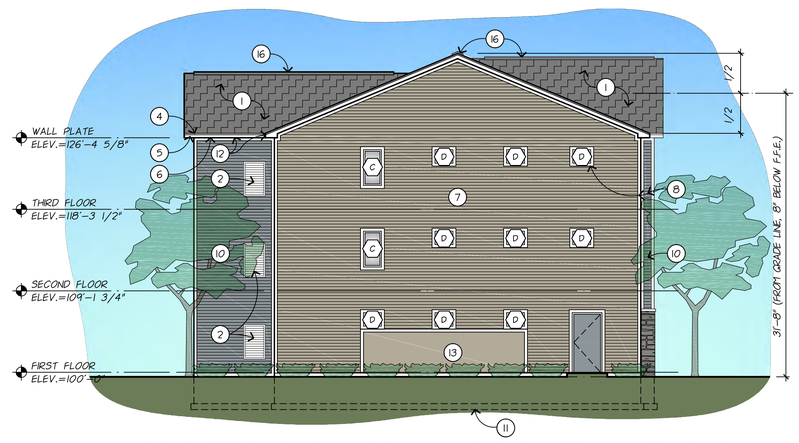
1. ASPHALT SHINGLES, CERTAINTEED LANDMARK OR EQUAL, COLOR SELECTION BY ARCHITECT.
2. HVAC UNIT GRILLE.
3. PVC TRIM ON GLU-LAM BEAM.
4. PRE-FINISHED METAL DRIP EDGE.
5. ALUMINUM FASCIA, COLOR SELECTION BY ARCHITECT.
6. RIBBED, PERFORATED (FOR VENTING) ALUMINUM SOFFIT.
7. 4" EXPOSURE, BEVELED VINYL SIDING, COLOR #1, SELECTION BY ARCHITECT.
8. 4" VINYL TRIM, COLOR SELECTION BY ARCHITECT.
9. VERSETTA STONE TIGHT CUT PATTERN, COLOR SELECTION BY ARCHITECT.
10. 4" EXPOSURE, BEVELED VINYL SIDING, COLOR #2, SELECTION BY ARCHITECT.
11. FOUNDATION, SEE FOUNDATION PLAN.
12. SEAMLESS VINYL GUTTER AND DOWNSPOUT WITH SPLASH BLOCK AT OUTLET. CONTRACTOR TO CALCULATE AND PROVIDE THE CORRECT # OF DOWNSPOUTS.
13. PVC PANEL W/ 4" PVC TRIM OVERALL SURROUND AS FLAT SURFACE AT METER LOCATIONS
14. POWDER COAT STEEL RAILING SYSTEM, PRICE ALUMINUM AND VINYL RAILING SYSTEM AS ALTERNATE.
15. 5/4"x6" PRESSURE TREATED WOOD DECKING.
16. "SHINGLE OVER" RIDGE VENT.
17. PVC TRIM OVER DECK JOIST FRAMING.
18. PVC PANEL + 4" PVC TRIM SIDING
19. LANDING WALL DETAIL, SEE DETAIL NO. 1/A2.0.
20. VERSETTA STONE, WAINSCOAT CAP, COLOR SELECTION BY ARCHITECT.

WINDOW KEY:

- (A) 5'-0"x4'-0" SLIDING WINDOW UNIT
- (B) 6'-0"x6'-8" SLIDING GLASS DOOR
- (C) 2'-0"x4'-0" CASEMENT WINDOW UNIT
- (D) 2'-0"x1'-6" FIXED WINDOW UNIT
- (E) 3'-0"x6'-8" FRENCH DOOR W/ TEMPERED GLASS AND 'ADA' LOW-PROFILE SILL w/ 3'-0"x6'-8" TEMPERED GLASS SIDELITE.

NOTES:

1. ALL ROOF OVERHANGS ARE 1'-0" UNLESS NOTED OTHERWISE.
2. GUARD RAIL HEIGHTS AT BALCONIES AND ENTRY BALCONIES ARE 3'-6" OFF FINISHED DECK. GUARDRAL TO RESIST LOADS IDENTIFIED IN 2015 M.B.C., SECTION 1607.8
3. WINDOWS ON THE FRONT ELEVATION TO HAVE GRILLES BETWEEN THE GLASS.
4. WINDOW AND DOOR HEIGHT IS 6'-8" A.F.F., UNLESS NOTED OTHERWISE.
5. PROVIDE A $1,000.00 ALLOWANCE FOR IDENTIFICATION SIGNAGE ON EACH BUILDING.
6. WINDOW TYPES (A) AND (C) ON THE SECOND AND THIRD FLOORS TO HAVE GUARDS COMPLYING WITH 2015 MBC, SECTION 1015.8.



LEFT SIDE ELEVATION – BUILDINGS A, D & E

SCALE: 1/8"=1'-0" 24 UNIT

NOTE: RIGHT SIDE SIMILAR – OPPOSITE HAND

Lakeshore Gardens Apartments - 24 Unit

(Buildings A, D and E)

17114 Robbins Road
Grand Haven Township, Michigan

PUD Submittal No. 2
5-15-13
PUD Submittal
4-23-13 . . . . . date

3017 . . . . . commission

A2.0 . . . . sheet

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49417

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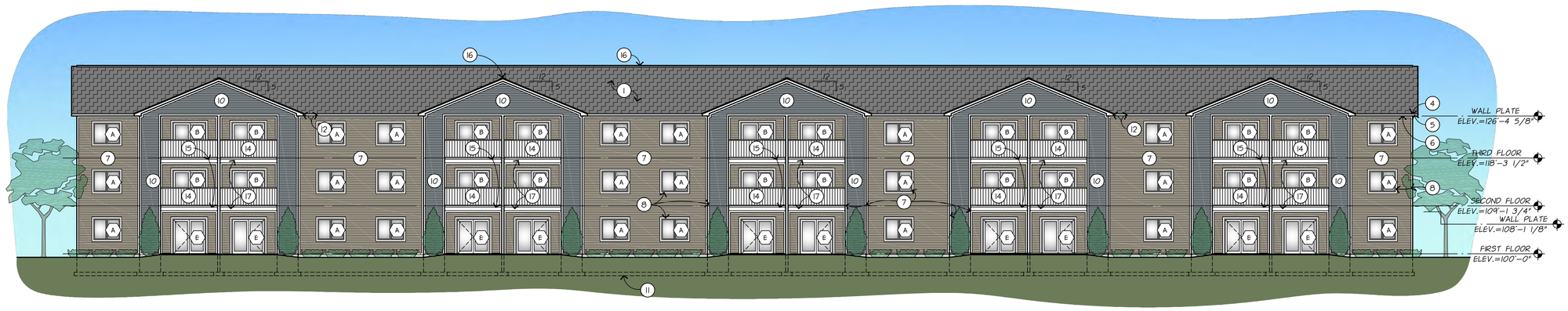
OppenhuizenArchitects

Mark A. Oppenhuizen AIA

FRONT ELEVATION – BUILDINGS B & C

SCALE: 3/32"=1'-0" 30 UNIT



REAR ELEVATION – BUILDINGS B & C

SCALE: 3/32"=1'-0" 30 UNIT

ELEVATION MATERIAL KEY

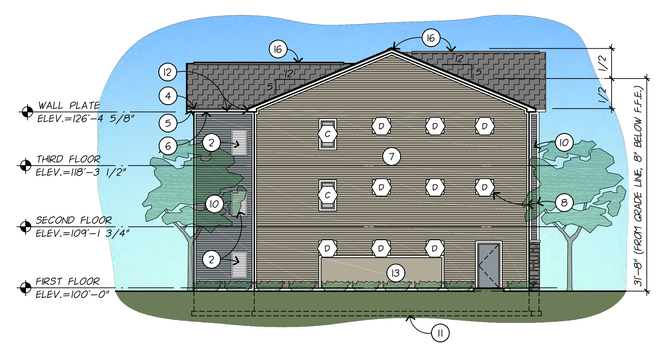
1. ASPHALT SHINGLES, CERTAINTEED LANDMARK OR EQUAL, COLOR SELECTION BY ARCHITECT.
2. HVAC UNIT GRILLE.
3. PVC TRIM ON GLU-LAM BEAM.
4. PRE-FINISHED METAL DRIP EDGE.
5. ALUMINUM FASCIA, COLOR SELECTION BY ARCHITECT.
6. RIBBED, PERFORATED (FOR VENTING) ALUMINUM SOFFIT.
7. 4" EXPOSURE, BEVELED VINYL SIDING, COLOR #1, SELECTION BY ARCHITECT.
8. 4" VINYL TRIM, COLOR SELECTION BY ARCHITECT.
9. VERSETTA STONE TIGHT CUT PATTERN, COLOR SELECTION BY ARCHITECT.
10. 4" EXPOSURE, BEVELED VINYL SIDING, COLOR #2, SELECTION BY ARCHITECT.
11. FOUNDATION, SEE FOUNDATION PLAN.
12. SEAMLESS VINYL GUTTER AND DOWNSPOUT WITH SPLASH BLOCK AT OUTLET. CONTRACTOR TO CALCULATE AND PROVIDE THE CORRECT # OF DOWNSPOUTS.
13. PVC PANEL W/ 4" PVC TRIM OVERALL SURROUND AS FLAT SURFACE AT METER LOCATIONS
14. POWDER COAT STEEL RAILING SYSTEM, PRICE ALUMINUM AND VINYL RAILING SYSTEM AS ALTERNATE.
15. 5/4"x6" PRESSURE TREATED WOOD DECKING.
16. "SHINGLE OVER" RIDGE VENT.
17. PVC TRIM OVER DECK JOIST FRAMING.
18. PVC PANEL + 4" PVC TRIM SIDING
19. LANDING WALL DETAIL, SEE DETAIL NO. 1/A2.0.
20. VERSETTA STONE, WAINSCOAT CAP, COLOR SELECTION BY ARCHITECT.

WINDOW KEY:

- (A) 5'-0"x4'-0" SLIDING WINDOW UNIT
- (B) 6'-0"x6'-8" SLIDING GLASS DOOR
- (C) 2'-0"x4'-0" CASEMENT WINDOW UNIT
- (D) 2'-0"x1'-6" FIXED WINDOW UNT
- (E) 3'-0"x6'-8" FRENCH DOOR W/ TEMPERED GLASS AND 'ADA' LOW-PROFILE SILL w/ 3'-0"x6'-8" TEMPERED GLASS SIDELITE.

NOTES:

1. ALL ROOF OVERHANGS ARE 1'-0" UNLESS NOTED OTHERWISE.
2. GUARD RAIL HEIGHTS AT BALCONIES AND ENTRY BALCONIES ARE 3'-6" OFF FINISHED DECK. GUARDRAIL TO RESIST LOADS IDENTIFIED IN 2015 M.B.C., SECTION 1607.8
3. WINDOWS ON THE FRONT ELEVATION TO HAVE GRILLES BETWEEN THE GLASS.
4. WINDOW AND DOOR HEIGHT IS 6'-8" A.F.F., UNLESS NOTED OTHERWISE.
5. PROVIDE A $1,000.00 ALLOWANCE FOR IDENTIFICATION SIGNAGE ON EACH BUILDING.
6. WINDOW TYPES (A) AND (C) ON THE SECOND AND THIRD FLOORS TO HAVE GUARDS COMPLYING WITH 2015 MBC, SECTION 1015.8.



LEFT SIDE ELEVATION – BUILDINGS B & C

SCALE: 3/32"=1'-0" 30 UNIT

NOTE: RIGHT SIDE SIMILAR – OPPOSITE HAND

Lakeshore Gardens Apartments - 30 Unit

(Buildings B and C)

17114 Robbins Road
Grand Haven Township, Michigan

PUD Submittal No. 2
5-15-18
PUD Submittal
4-23-18 . . . . . date

3017 . . . . . commission

A2.1 . . . . . sheet

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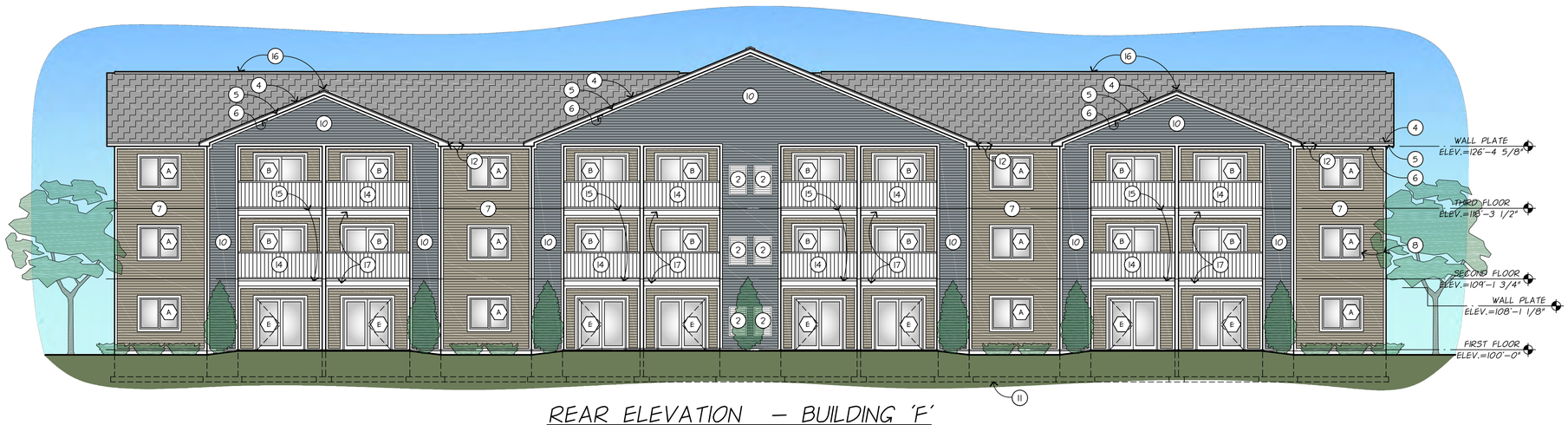
OppenhuizenArchitects

Mark A. Oppenhuizen AIA

FRONT ELEVATION – BUILDING 'F'

SCALE: 1/8"=1'-0" 24 UNIT



REAR ELEVATION – BUILDING 'F'

SCALE: 1/8"=1'-0" 24 UNIT

ELEVATION MATERIAL KEY

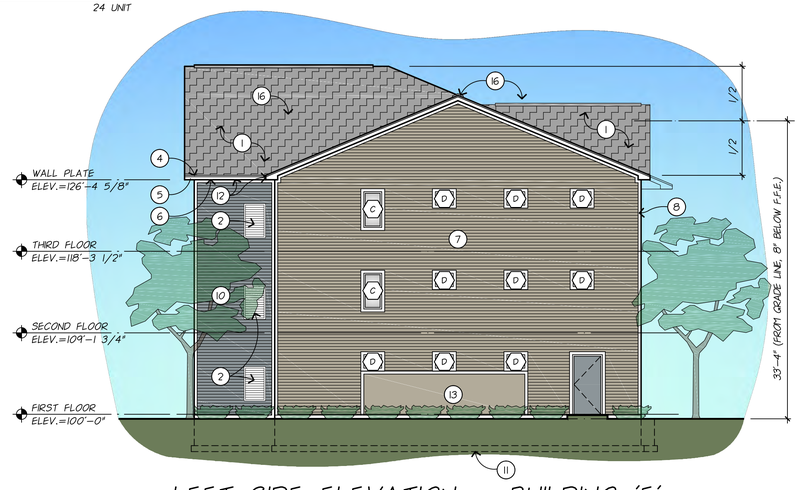
1. ASPHALT SHINGLES, CERTAINTEED LANDMARK OR EQUAL, COLOR SELECTION BY ARCHITECT.
2. HVAC UNIT GRILLE.
3. PVC TRIM ON GLU-LAM BEAM.
4. PRE-FINISHED METAL DRIP EDGE.
5. ALUMINUM FASCIA, COLOR SELECTION BY ARCHITECT.
6. RIBBED, PERFORATED (FOR VENTING) ALUMINUM SOFFIT.
7. 4" EXPOSURE, BEVELED VINYL SIDING, COLOR #1, SELECTION BY ARCHITECT.
8. 4" VINYL TRIM, COLOR SELECTION BY ARCHITECT.
9. VERSETTA STONE TIGHT CUT PATTERN, COLOR SELECTION BY ARCHITECT.
10. 4" EXPOSURE, BEVELED VINYL SIDING, COLOR #2, SELECTION BY ARCHITECT.
11. FOUNDATION, SEE FOUNDATION PLAN.
12. SEAMLESS VINYL GUTTER AND DOWNSPOUT WITH SPLASH BLOCK AT OUTLET. CONTRACTOR TO CALCULATE AND PROVIDE THE CORRECT # OF DOWNSPOUTS.
13. PVC PANEL W/ 4" PVC TRIM OVERALL SURROUND AS FLAT SURFACE AT METER LOCATIONS
14. POWDER COAT STEEL RAILING SYSTEM, PRICE ALUMINUM AND VINYL RAILING SYSTEM AS ALTERNATE.
15. 5/4"x6" PRESSURE TREATED WOOD DECKING.
16. "SHINGLE OVER" RIDGE VENT.
17. PVC TRIM OVER DECK JOIST FRAMING.
18. PVC PANEL + 4" PVC TRIM SIDING
19. LANDING WALL DETAIL, SEE DETAIL NO. 1/A2.0.
20. VERSETTA STONE, WAINSCOAT CAP, COLOR SELECTION BY ARCHITECT.

WINDOW KEY:

- (A) 5'-0"x4'-0" SLIDING WINDOW UNIT
- (B) 6'-0"x6'-8" SLIDING GLASS DOOR
- (C) 2'-0"x4'-0" CASEMENT WINDOW UNIT
- (D) 2'-0"x1'-6" FIXED WINDOW UNIT
- (E) 3'-0"x6'-8" FRENCH DOOR W/ TEMPERED GLASS AND 'ADA' LOW-PROFILE SILL w/ 3'-0"x6'-8" TEMPERED GLASS SIDELITE.

NOTES:

1. ALL ROOF OVERHANGS ARE 1'-0" UNLESS NOTED OTHERWISE.
2. GUARD RAIL HEIGHTS AT BALCONIES AND ENTRY BALCONIES ARE 3'-6" OFF FINISHED DECK. GUARDRAIL TO RESIST LOADS IDENTIFIED IN 2015 M.B.C., SECTION 1607.8
3. WINDOWS ON THE FRONT ELEVATION TO HAVE GRILLES BETWEEN THE GLASS.
4. WINDOW AND DOOR HEIGHT IS 6'-8" A.F.F., UNLESS NOTED OTHERWISE.
5. PROVIDE A $1,000.00 ALLOWANCE FOR IDENTIFICATION SIGNAGE ON EACH BUILDING.
6. WINDOW TYPES (A) AND (C) ON THE SECOND AND THIRD FLOORS TO HAVE GUARDS COMPLYING WITH 2015 MBC, SECTION 1015.8.



LEFT SIDE ELEVATION – BUILDING 'F'

SCALE: 1/8"=1'-0" 24 UNIT

NOTE: RIGHT SIDE SIMILAR – OPPOSITE HAND

Lakeshore Gardens Apartments - 24 Unit (Building F)

17114 Robbins Road
Grand Haven Township, Michigan

PUD Submittal No. 2
5-15-19
PUD Submittal
4-23-19 . . . . . date

3017 . . . . . commission

A2.2 . . . . sheet

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OppenhuizenArchitects

Mark A. Oppenhuizen AIA

ELEVATION MATERIAL KEY:

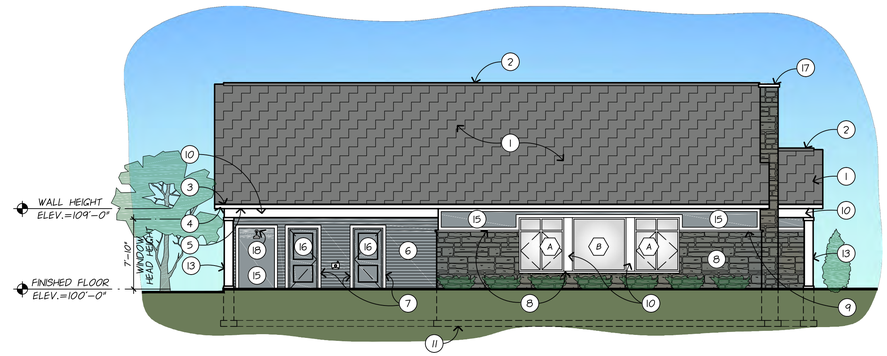
1. ASPHALT SHINGLES
2. SHINGLE OVER RIDGE VENT
3. PRE-FINISHED METAL DRIP EDGE
4. ALUMINUM FASCIA, COLOR SELECTION BY ARCHITECT
5. RIBBED, PERFORATED (FOR VENTING) ALUMINUM SOFFIT
6. 4" EXPOSURE MASTIC CARVED WOOD 44, BEVELED VINYL SIDING, COLOR SELECTION BY ARCHITECT FROM PREMIUM COLOR PALETTE
7. 4" VINYL TRIM
8. VERSETTA STONE, TIGHT CUT PATTERN, COLOR SELECTION BY ARCHITECT
9. VERSETTA STONE, WAINSCOAT CAP, COLOR SELECTION BY ARCHITECT
10. 12" AZEK TRIM
11. FOUNDATION, SEE FOUNDATION PLAN
12. CLAD WD. FRAME WINDOW W/ INSULATED GLASS
13. 12" DIAMETER "TUCSAN STYLE" HB&G FIBERGLASS COLUMN
14. 4" AZEK TRIM
15. AZEK FLUSH FLAT SHEET WITH 4" AZEK TRIM TO CREATE 'PANEL PATTERN' SHOWN
16. EXTERIOR DOOR, REFER TO DOOR SCHEDULE ON DRAWING SHEET A6.0
17. ONE PIECE PRE-FINISHED BLACK METAL CHIMNEY CAP OVER ICE + WATER UNDERLAYMENT, REFER TO ST1.1 ROOF PLAN FOR ADDITIONAL INFORMATION
18. OUTDOOR SHOWER
19. BLACK METAL GAS FIREPLACE EXHAUST HOUSING
20. EMBOSSED PANEL STEEL CLAD INSULTED CORE OVERHEAD DOOR

WINDOW KEY:

- (A) (2) 2'-6"x1'-6" FIXED OVER (2) 2'-6"x4'-6" CASEMENTS
- (B) 6'-0"x6'-0" FIXED
- (C) (3) 2'-6"x1'-6" FIXED OVER (3) 2'-6"x4'-6" CASEMENTS (FIXED CENTER UNIT)
- (D) 2'-6"x1'-6" FIXED

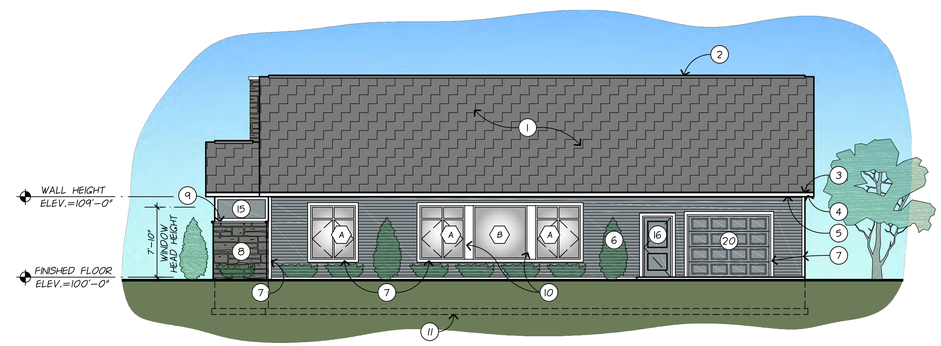
WINDOW KEY NOTES:

1.) * DENOTES TEMPERED GLASS



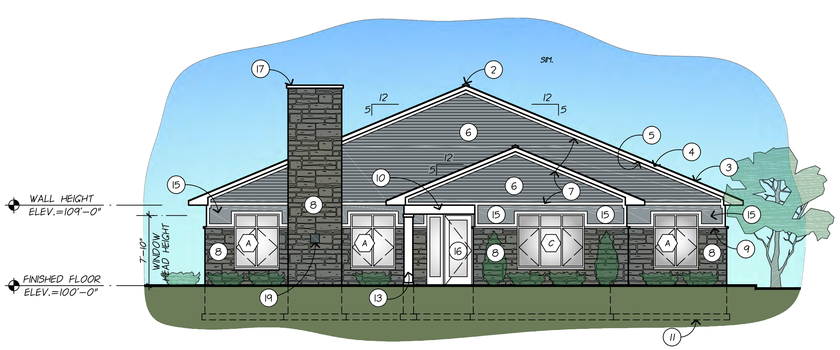
NORTH ELEVATION – COMMUNITY CENTER

SCALE: 1/8"=1'-0"



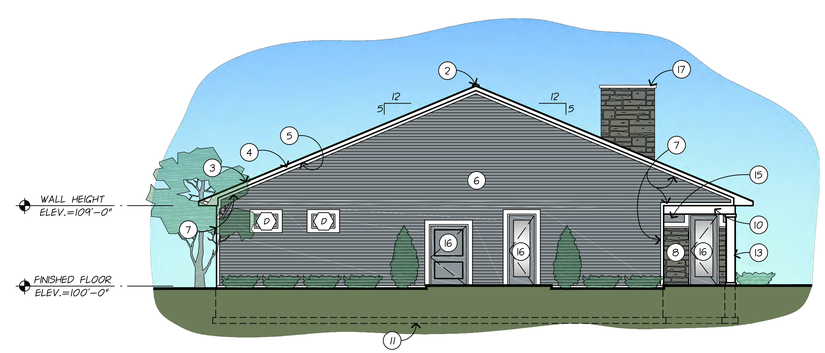
SOUTH ELEVATION – COMMUNITY CENTER

SCALE: 1/8"=1'-0"



WEST ELEVATION – COMMUNITY CENTER

SCALE: 1/8"=1'-0"



EAST ELEVATION – COMMUNITY CENTER

SCALE: 1/8"=1'-0"

Community Center for: Lakeshore Gardens Apartments

17114 Robbins Road
Grand Haven Township, Michigan

PUD Submittal No. 2 5-15-18
PUD Submittal 3-8-18 . . . . . date

3017 . . . . . commission

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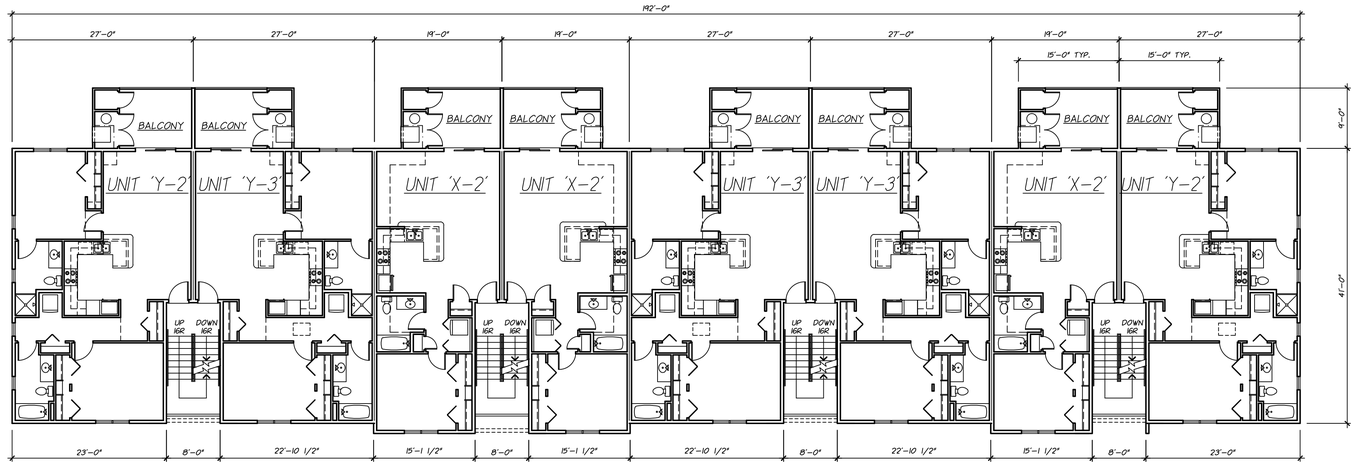
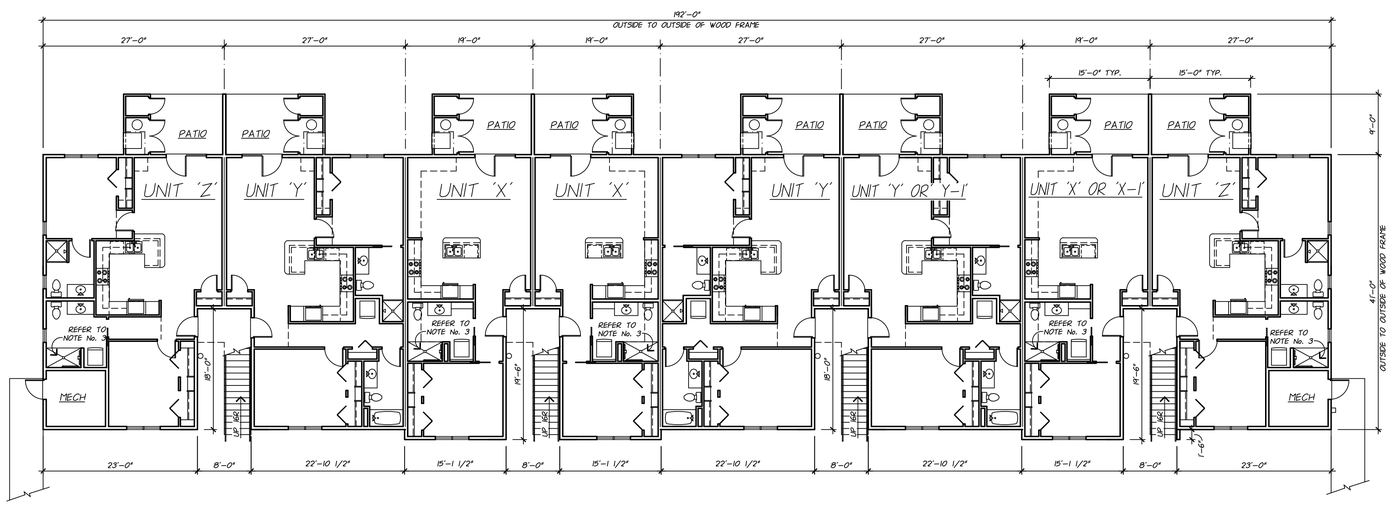


SECOND AND THIRD FLOOR OVERALL PLAN – BUILDINGS A, D & E

SCALE: 3/32"=1'-0" 24 UNIT



FIRST FLOOR OVERALL PLAN – BUILDINGS A, D & E

SCALE: 3/32"=1'-0" 24 UNIT

OVERALL FLOOR PLAN GENERAL NOTES:

1.) BUILDING AREA PER FLOOR:
- TOTAL DWELLING UNIT AREA = 7,189 S.F.
- TOTAL PATIO/BALCONY AREA = 1,080 S.F.
- TOTAL STAIRWELL AREA = 588 S.F.

TOTAL BUILDING AREA 8,857 S.F.

2.) PER 2015 MBC SECTION 1107.6.2.2.1 TWO PERCENT (2%) OR THREE (3) OF THE UNITS ARE REQUIRED TO BE TYPE 'A', ACCESSIBLE UNITS. ALL OF THE GROUND FLOOR UNITS EXCEPT FOR THE THREE (3) TYPE 'A' UNITS ARE TYPE 'B', ACCESSIBLE UNITS. THE TYPE 'A' AND 'B' UNITS ARE DESIGNED TO MEET THE REQUIREMENTS OF ANSI A117.1-2009, CHAPTER 10.

3.) ROLL-IN SHOWER PER ICC A117.1-2009, SECTION 608.3.2

PROJECT UNIT MIX

BLDG. I.D.	UNIT 'W' STU/1 BA 496 S.F.	UNIT 'X' 1 BR/1 BA 730 S.F.	UNIT 'Y' 2 BR/2 BA 1,035 S.F.	UNIT 'Z' 2 BR/2 BA 947 S.F.	TOTAL
A	–	9	13	2	24
B	–	6	22 *	2	30
C	–	6	22 *	2	30
D	–	9	13	2	24
E	–	9	13	2	24
F	12	–	10	2	24
TOTAL	12	39	93	12	156
%	8	25	59	8	100

* NOTE: THIS NUMBER INCLUDES (6) 1,070 S.F. 'Y-4' AND 'Y-5' UNITS IN THE 30 UNIT BUILDING

Lakeshore Gardens Apartments - 24 Unit
(Buildings A, D and E)

17114 Robbins Road
Grand Haven Township, Michigan

PUD Submittal No. 2
5-15-18
PUD Submittal
4-23-18 . . . . . date

3017 . . . . . commission

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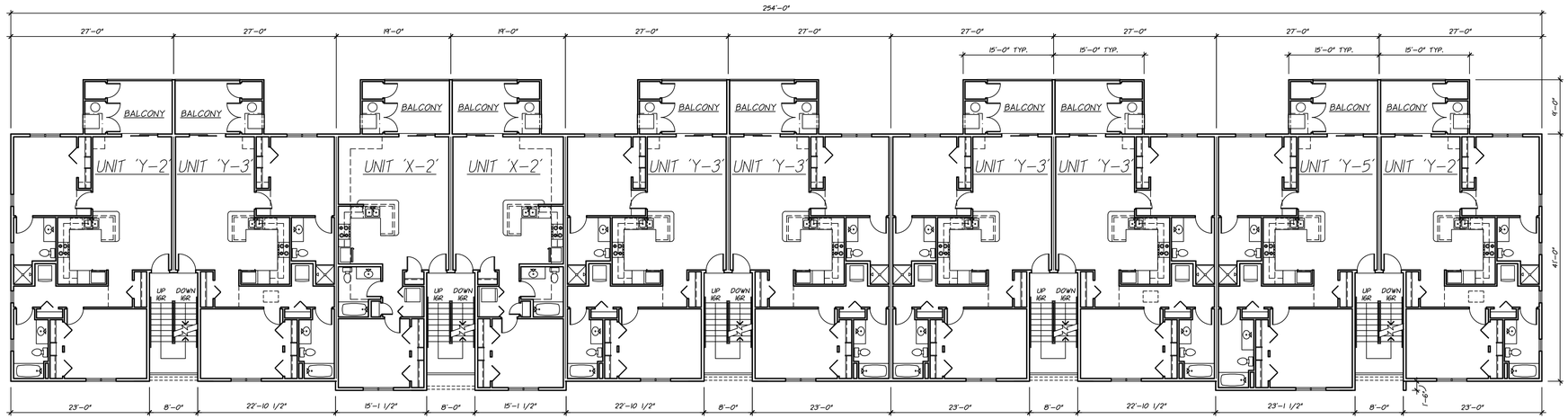
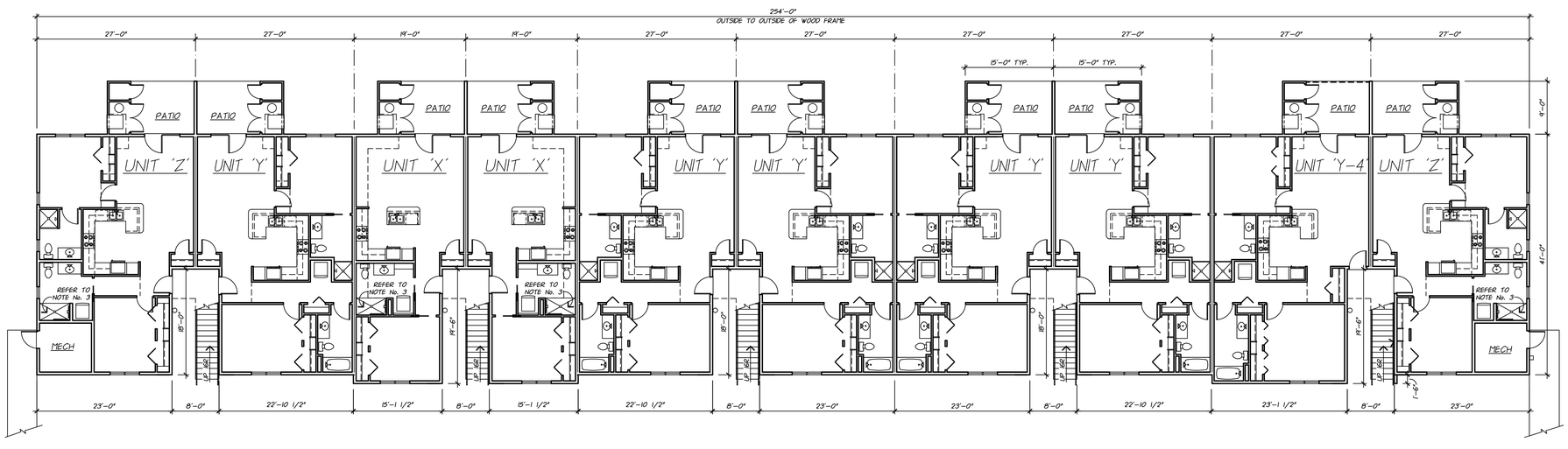


SECOND AND THIRD FLOOR OVERALL PLAN – BUILDINGS B & C

SCALE: 3/32"=1'-0" 30 UNIT



FIRST FLOOR OVERALL PLAN – BUILDINGS B & C

SCALE: 3/32"=1'-0" 30 UNIT

OVERALL FLOOR PLAN GENERAL NOTES:

1.) BUILDING AREA PER FLOOR:
- TOTAL DWELLING UNIT AREA = 9,599 S.F.
- TOTAL PATIO/BALCONY AREA = 1,350 S.F.
- TOTAL STAIRWELL AREA = 732 S.F.

TOTAL BUILDING AREA 11,681 S.F.

2.) PER 2015 MBC SECTION 1107.6.2.2.1 TWO PERCENT (2%) OR THREE (3) OF THE UNITS ARE REQUIRED TO BE TYPE 'A', ACCESSIBLE UNITS. ALL OF THE GROUND FLOOR UNITS EXCEPT FOR THE THREE (3) TYPE 'A' UNITS ARE TYPE 'B', ACCESSIBLE UNITS. THE TYPE 'A' AND 'B' UNITS ARE DESIGNED TO MEET THE REQUIREMENTS OF ANSI A117.1–2009, CHAPTER 10.

3.) ROLL–IN SHOWER PER ICC A117.1–2009, SECTION 608.3.2

PROJECT UNIT MIX

BLDG. I.D.	UNIT 'W' STU/1 BA 496 S.F.	UNIT 'X' 1 BR/1 BA 730 S.F.	UNIT 'Y' 2 BR/2 BA 1,035 S.F.	UNIT 'Z' 2 BR/2 BA 947 S.F.	TOTAL
A	–	9	13	2	24
B	–	6	22 *	2	30
C	–	6	22 *	2	30
D	–	9	13	2	24
E	–	9	13	2	24
F	12	–	10	2	24
TOTAL	12	39	93	12	156
%	8	25	59	8	100

* NOTE: THIS NUMBER INCLUDES (6) 1,070 S.F. 'Y-4' AND 'Y-5' UNITS IN THE 30 UNIT BUILDING

Lakeshore Gardens Apartments - 30 Unit
(Buildings B and C)

17114 Robbins Road
Grand Haven Township, Michigan

PUD Submittal No. 2
5-15-18
PUD Submittal
4-23-18 . . . . . date

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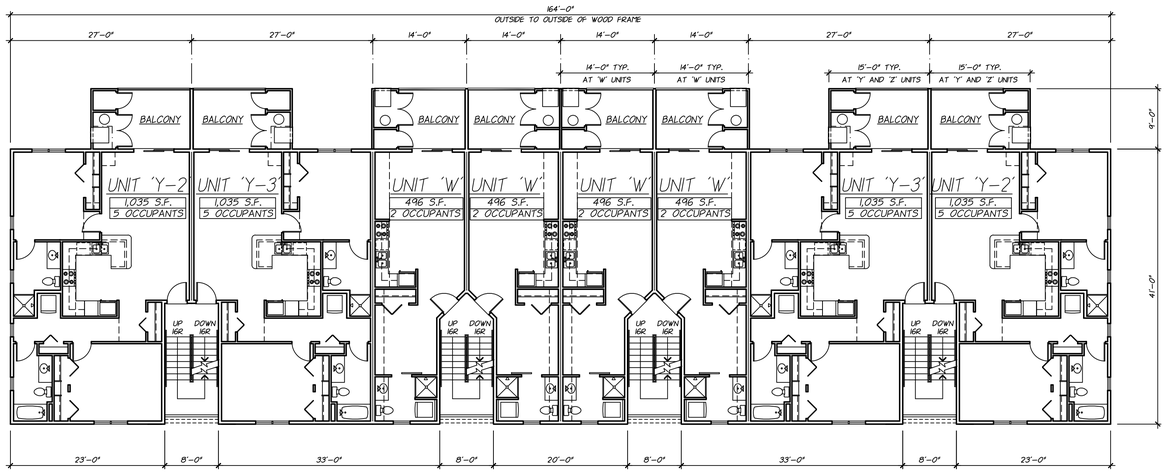
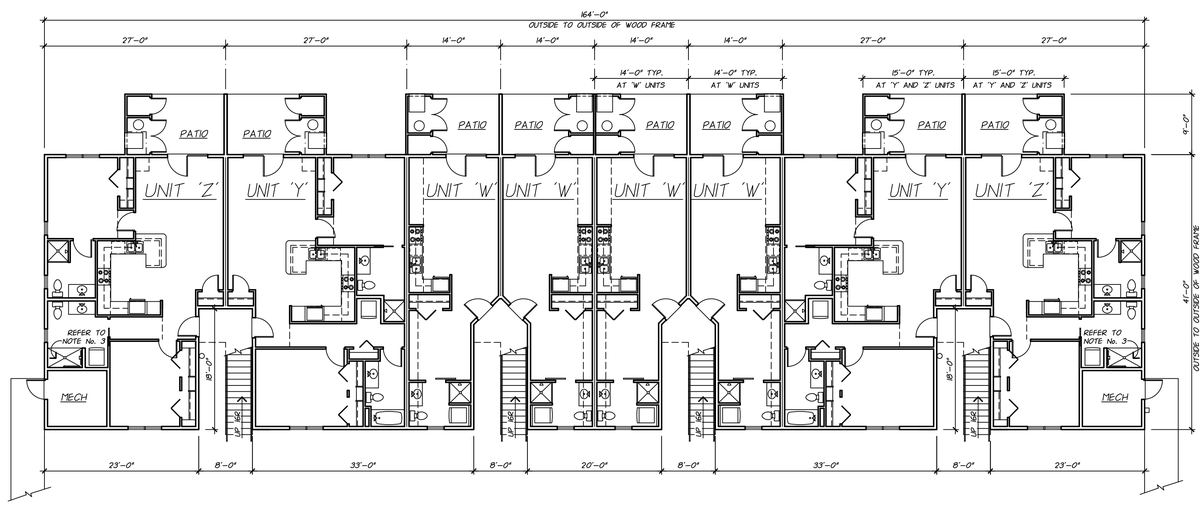


SECOND AND THIRD FLOOR OVERALL PLAN – BUILDING 'F'

SCALE: 3/32"=1'-0" 24 UNIT



FIRST FLOOR OVERALL PLAN – BUILDING 'F'

SCALE: 3/32"=1'-0" 24 UNIT

OVERALL FLOOR PLAN GENERAL NOTES:

1.) BUILDING AREA PER FLOOR:
- TOTAL DWELLING UNIT AREA = 6,154 S.F.
- TOTAL PATIO/BALCONY AREA = 1,048 S.F.
- TOTAL STAIRWELL AREA = 570 S.F.
- TOTAL BUILDING AREA 7,772 S.F.

2.) PER 2015 MBC SECTION 1107.6.2.2.1 TWO PERCENT (2%) OR THREE (3) OF THE UNITS ARE REQUIRED TO BE TYPE 'A', ACCESSIBLE UNITS. ALL OF THE GROUND FLOOR UNITS EXCEPT FOR THE THREE (3) TYPE 'A' UNITS ARE TYPE 'B', ACCESSIBLE UNITS. THE TYPE 'A' AND 'B' UNITS ARE DESIGNED TO MEET THE REQUIREMENTS OF ANSI A117.1-2009, CHAPTER 10.

3.) ROLL-IN SHOWER PER ICC A117.1-2009, SECTION 608.3.2

PROJECT UNIT MIX

BLDG. I.D.	UNIT 'W' STU/1 BA 496 S.F.	UNIT 'X' 1 BR/1 BA 730 S.F.	UNIT 'Y' 2 BR/2 BA 1,035 S.F.	UNIT 'Z' 2 BR/2 BA 947 S.F.	TOTAL
A	–	9	13	2	24
B	–	6	22 *	2	30
C	–	6	22 *	2	30
D	–	9	13	2	24
E	–	9	13	2	24
F	12	–	10	2	24
TOTAL	12	39	93	12	156
%	8	25	59	8	100

* NOTE: THIS NUMBER INCLUDES (6) 1,070 S.F. 'Y-4' AND 'Y-5' UNITS IN THE 30 UNIT BUILDING

Lakeshore Gardens Apartments - 24 Unit (Building F)

17114 Robbins Road
Grand Haven Township, Michigan

PUD Submittal No. 2
5-15-18
PUD Submittal
4-23-18 . . . . . date

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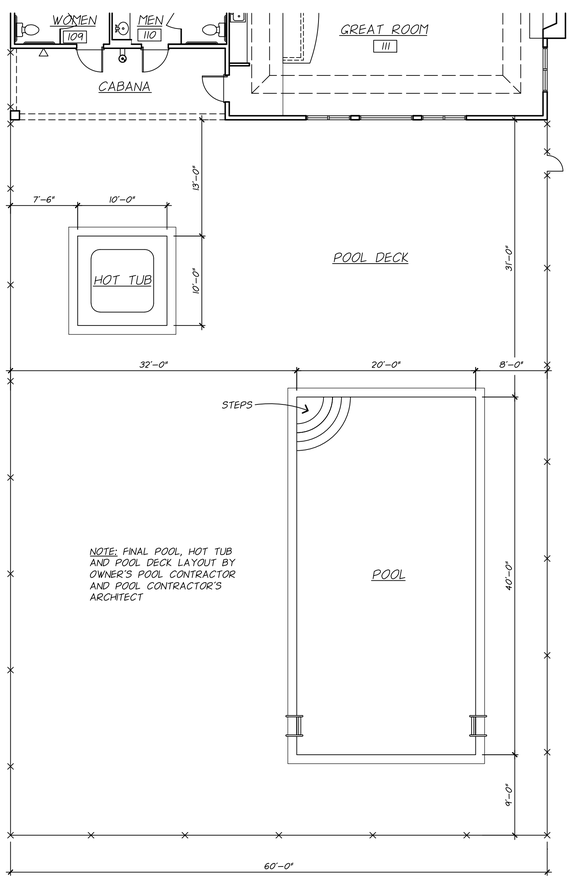
GENERAL NOTES:

1. EXTERIOR WALL THICKNESS IS 5 1/2" AND INTERIOR WALL THICKNESS IS 3 1/2" UNLESS NOTED OTHERWISE.
2. ALL DIMENSIONS ARE ROUGH FRAMING DIMENSION. FACE TO FACE OF WOOD STUDS, UNLESS NOTED OTHERWISE.
3. REFER TO POOL AND POOL DECK PLAN BY OTHERS FOR POOL, SPA AND POOL DECK DETAILS.
4. OCCUPANT LOAD DETERMINATION PER TABLE 1004.1.2

GREAT ROOM	818 SF / 15 SF	=	55 OCCUPANTS
CABANA	192 SF / 15 SF	=	13 OCCUPANTS
OFFICES	460 SF / 100 SF	=	5 OCCUPANTS
FITNESS CENTER	630 SF / 50 SF	=	13 OCCUPANTS
MAINTENANCE	423 SF / 300 SF	=	2 OCCUPANTS
MECHANICAL	93 SF / 300 SF	=	1 OCCUPANT
POOL EQUIPMENT	125 SF / 300 SF	=	1 OCCUPANT
TOTAL BUILDING OCCUPANCY		=	90 OCCUPANTS
POOL DECK	3900 SF / 30 SF	=	130 OCCUPANTS
TOTAL OCCUPANCY		=	220 OCCUPANTS

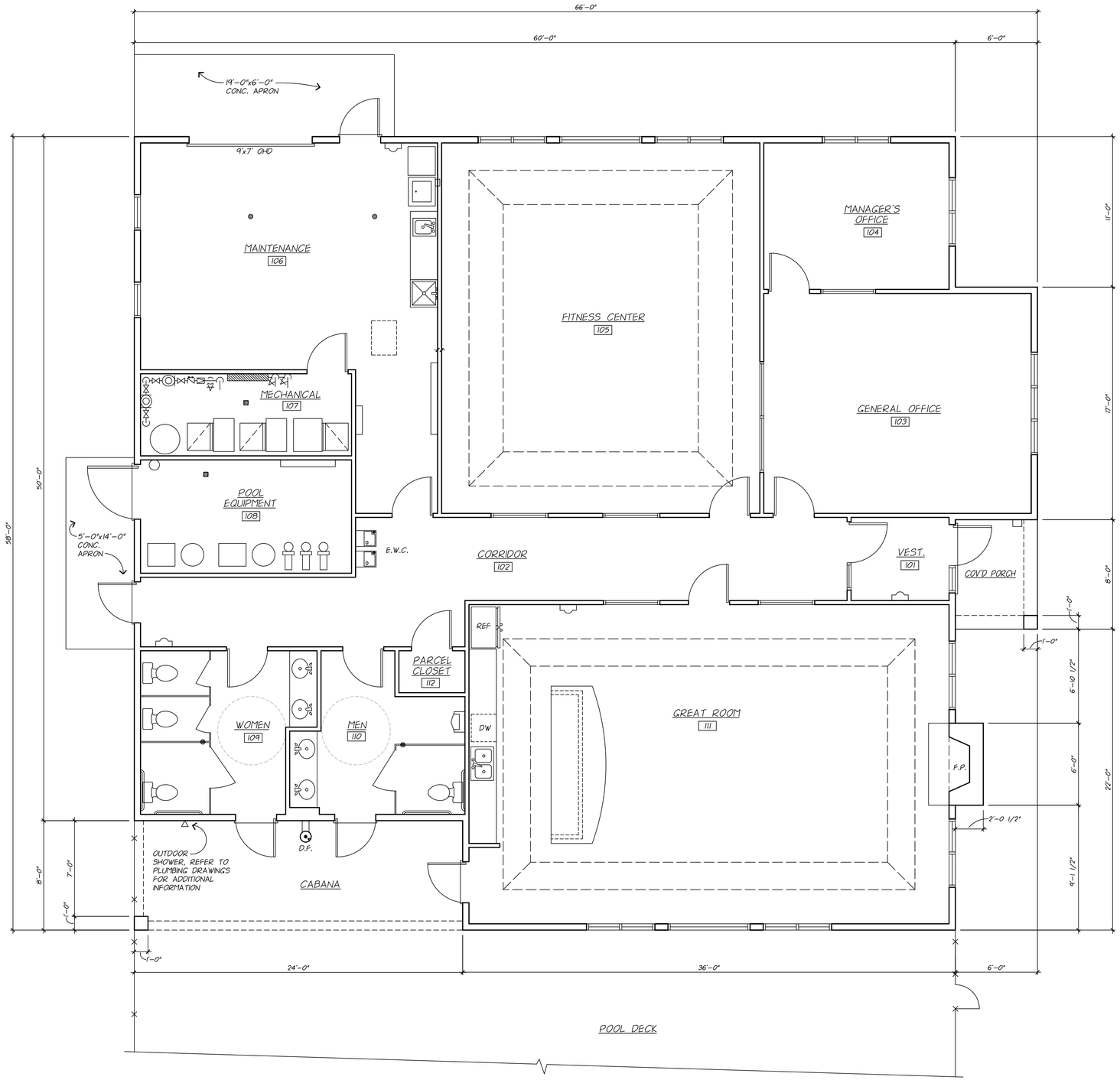
NOTE: TWO EXITS ARE REQUIRED AND PROVIDED FROM THE GREAT ROOM



POOL DECK PLAN

SCALE: 1/8"=1'-0"

N



FLOOR PLAN – COMMUNITY & FITNESS CENTER

SCALE: 1/4"=1'-0"

BUILDING AREA 3,390 SQ. FT.
POOL DECK AREA 4,992 SQ. FT.
(INCL. POOL AND CABANA AREA)

N

Community Center for:
Lakeshore Gardens Apartments
17114 Robbins Road
Grand Haven Township, Michigan

PUD Submittal No. 2
5-15-18
PUD Submittal
3-8-18 . . . . . date

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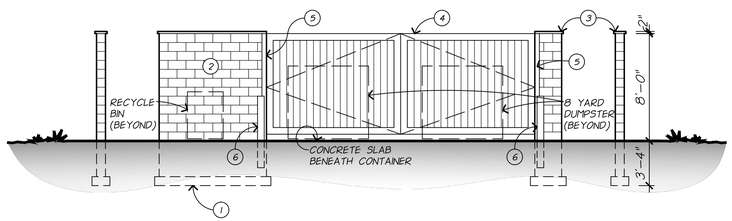
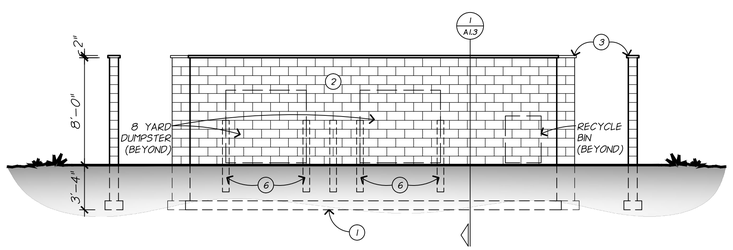


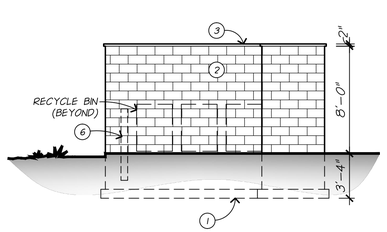
NORTH ELEVATION – REFUSE/RECYCLE STATION

SCALE: 3/16"=1'-0"



SOUTH ELEVATION – REFUSE/RECYCLE STATION

SCALE: 3/16"=1'-0"



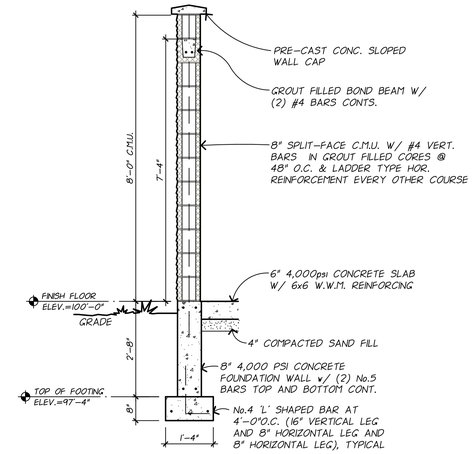
EAST ELEVATION – REFUSE/RECYCLE STATION

SCALE: 3/16"=1'-0"

(WEST ELEVATION SIMILAR – OPPOSITE HAND)

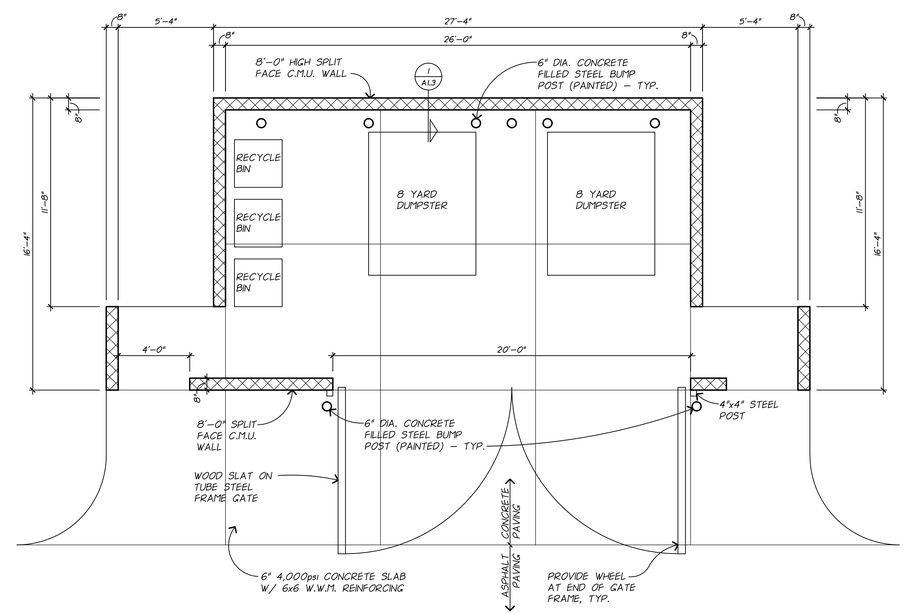
ELEVATION MATERIAL KEY:

1. FOUNDATION, SEE FOUNDATION PLAN
2. 8'-0" HIGH SPLIT-FACE C.M.U. WALL – PROVIDE INTEGRAL COLOR C.M.U. FROM MFGRS. STANDARD COLOR LINE – COLOR SELECTION BY ARCHITECT
3. 2" PRECAST CONCRETE WALL CAP
4. GATE – TRT. WOOD SLAT ON TUBE STEEL FRAME W/ (1) WHEEL PER PANEL
5. 4"x4" STEEL POST, MOUNT (4) TO POST
6. 6" DIA. CONCRETE FILLED STEEL BUMP POST, PAINT – YELLOW OR PROVIDE YELLOW ONE-PIECE PLASTIC COVERS



1 / A1.3 **WALL SECTION**

SCALE: 1/2"=1'-0"



FLOOR PLAN – REFUSE/RECYCLE STATION

SCALE: 1/4"=1'-0"

N

Dumpster Enclosure Details for:
Lakeshore Gardens Apartments
17114 Robbins Road
Grand Haven Township, Michigan

PUD Submittal No. 2
5-15-13
PUD Submittal
4-23-13 . . . . . date

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Robbins Road Apartments - Garages

Grand Haven, Michigan

Notes

1. APPLICABLE CODES:
THE GENERAL CONTRACTORS (G.C.) ATTENTION SHALL BE DIRECTED TO THE FACT ALL APPLICABLE LOCAL, STATE AND FEDERAL RULES, REGULATIONS, ORDINANCES AND CODES SHALL APPLY THROUGH-OUT THE PROJECT. ALL SUCH CODES AND COMPLIANCES ARE TO BE DEEMED AS PART OF THIS CONTRACT AND PART OF THE CONSTRUCTION DOCUMENTS AS IF THEY HAVE BEEN WRITTEN IN FULL.
2. DISCREPANCIES IN THE DRAWINGS AND/OR SPECIFICATIONS SHOULD BE IDENTIFIED IMMEDIATELY TO THE ARCHITECT FOR PROPER CLARIFICATION. IN THE EVENT THAT DISCREPANCIES ON MATERIALS OR METHODS ARISE, AND THAT CLARIFICATIONS CAN NOT BE MADE, THE MORE EXPENSIVE OF THE MATERIALS OR METHODS ARE TO BE USED AS PRICING GUIDELINES.
3. THE CONTRACTOR SHALL MAINTAIN A COPY OF THE APPROVED (BY THE GOVERNING AGENCY) DRAWINGS AND SPECIFICATIONS AT THE JOB SITE. THESE APPROVED DOCUMENTS SHALL GOVERN OVER ALL OTHER ISSUED DOCUMENTS.
4. THE CONTRACTOR IS RESPONSIBLE FOR ALL METHODS AND MEANS OF CONSTRUCTION AS WELL AS ALL JOB SITE SAFETY AND HEALTH PRECAUTIONS.
5. THE CONTRACTOR SHALL BE RESPONSIBLE FOR RECORDING AS-BUILT INFORMATION ON A SET OF RECORD DRAWINGS KEPT ON THE CONSTRUCTION SITE, AND AVAILABLE TO THE ARCHITECT AT ALL TIMES. UPON COMPLETION OF THE WORK, THE CONTRACTOR(S) SHALL SUBMIT RECORD DRAWINGS TO THE ARCHITECT TO BE USED BY THE ARCHITECT IN PREPARING A SET OF AS-BUILT DRAWINGS.
6. CODE ANALYSIS:

THE BUILDING IS DESIGNED UNDER THE 2015 MICHIGAN BUILDING CODE, ICC/ANSI A117.1-2009, 2015 INTERNATIONAL FIRE CODE, 2015 NATIONAL FIRE PROTECTION ASSOCIATION 101 AND 2014 NATIONAL ELECTRIC CODE (NEC) WITH MICHIGAN AMENDMENTS.

BUILDING USE GROUP IS: U (UTILITY - SECTION 312).

BUILDING CONSTRUCTION TYPE IS: 5B - SECTION 602.5.

BUILDING HEIGHT AND AREA LIMITATION FROM TABLES 504.3, 504.4 AND 506.2 IS: (40) FEET, (1) STORY AND 5,500s.f./FLOOR.

BUILDING I.D.	HEIGHT	AREA
24 STALL (BACK TO BACK)	17'-4"	5,380 S.F.
14 STALL (BACK TO BACK)	17'-4"	3,080 S.F.
14 STALL	13'-2"	3,130 S.F.
7 STALL	13'-2"	1,650 S.F.
6 STALL	13'-2"	1,370 S.F.

NOTE: ALL GARAGE STRUCTURES ARE ONE (1) STORY

7. REQUIRED THIRD PARTY INSPECTIONS

A.) FROM TABLE 1705.3

REQUIRED SPECIAL INSPECTIONS AND TESTS OF CONCRETE CONSTRUCTION		
VERIFICATION AND INSPECTION	CONTINUOUS	PERIODIC
1.) INSPECTION REINFORCEMENT, INCLUDING PRESTRESSING TENDONS, AND VERIFY PLACEMENT		X
2.) VERIFYING USE OF REQUIRED DESIGN MIX		X
3.) PRIOR TO CONCRETE PLACEMENT, FABRICATE SPECIMENS FOR STRENGTH TESTS, PERFORM SLUMP AND AIR CONTENT TESTS, AND DETERMINE THE TEMPERATURE OF THE CONCRETE	X	
4.) INSPECT CONCRETE AND SHOTCRETE PLACEMENT FOR PROPER APPLICATION TECHNIQUES	X	
5.) INSPECT FORMWORK FOR SHAPE, LOCATION AND DIMENSIONS OF THE CONCRETE MEMBER BEING FORMED		X

B.) FROM TABLE 1705.6

REQUIRED SPECIAL INSPECTIONS AND TESTS OF SOILS		
VERIFICATION AND INSPECTION	CONTINUOUS	PERIODIC
1.) VERIFY MATERIALS BELOW SHALLOW FOUNDATIONS ARE ADEQUATE TO ACHIEVE THE DESIGN BEARING CAPACITY		X
2.) VERIFY EXCAVATIONS ARE EXTENDED TO PROPER DEPTH AND HAVE REACHED PROPER MATERIAL		X
3.) PERFORM CLASSIFICATION AND TESTING OF COMPACTED FILL MATERIALS		X
4.) VERIFY USE OF PROPER MATERIALS, DENSITIES AND LIFT THICKNESSES DURING PLACEMENT AND COMPACTION OF COMPACTED FILL	X	
5.) PRIOR TO PLACEMENT OF COMPACTED FILL, INSPECT SUBGRADE AND VERIFY THAT SITE HAS BEEN PREPARED PROPERLY		X

8. SHOP DRAWING/ SUBMITTAL LIST
THE FOLLOWING ITEMS OR DIVISIONS OF THE WORK SPECIFIED REQUIRE SHOP DRAWINGS OR SUBMITTALS FROM THE APPROPRIATE TRADESMAN, SUBCONTRACTORS OR VENDORS.

DIVISION 3
CONCRETE MIXTURE DESIGN FOR POURED WALLS AND SLABS
CONCRETE TESTING FOR POURED WALLS AND SLABS
PRECAST CONCRETE STAIR TREADS

DIVISION 5
ORNAMENTAL METAL RAILING SYSTEM

DIVISION 6
WOOD FRAME STRUCTURAL COMPONENTS: FLOOR TRUSSES, ROOF TRUSSES, WOOD CONNECTORS FOR ROOF, SHEAR CONNECTIONS AND WALL PLATE ANCHORAGE. WOOD STUD FRAMING AND SHEATHING
SPEC DATA
FINISH CARPENTRY: INTERIOR TRIM WOOD SAMPLES

DIVISION 7
EXTERIOR WEATHER BARRIER (TYVEK OR TYPAR)
EXTERIOR CLADDING/ SIDING: VINYL SIDING, VINYL TRIM, SOFFIT AND AZEK TRIM.
SHINGLE ROOFING AND ACCESSORIES (RIDGE VENT, DRIP EDGE) INCLUDING SHINGLE SAMPLE BOARD.
CAULKING AND SEALANTS.
SHEET METAL: FLASHINGS, DRIP EDGES, GUTTERS, ETC.

DIVISION 8
DOORS AND FRAMES, BOTH INTERIOR AND EXTERIOR
WINDOWS
GARAGE DOORS
SPECIALTY DOORS AND ACCESS PANELS
DOOR HARDWARE

DIVISION 9
GYPSUM BOARD AND ACCESSORIES
INTERIOR PAINT
FLOORING: CARPET AND VINYL TILE

DIVISION 10
TOILET ROOM ACCESSORIES
SIGNAGE SYSTEMS
FIRE EXTINGUISHER CABINETS AND UNITS
BLINDS AND SHADES
POSTAL BOXES

DIVISION 11
MANUFACTURED CABINETS
APPLIANCES

DIVISION 21
FIRE SUPPRESSION SYSTEM: LAYOUT PLAN AND DESIGN CALCULATIONS SUITABLE FOR SUBMISSION TO LOCAL BUILDING DEPARTMENT

DIVISION 22
PLUMBING: FIXTURES, WATER HEATER, PUMPS, ETC.
RADON SYSTEM: DESIGN AND LAYOUT PLAN SUITABLE FOR SUBMISSION TO: OWNER, ARCHITECT, GENERAL CONTRACTOR, AND LOCAL BUILDING OFFICIAL

DIVISION 23
MECHANICAL: HVAC EQUIPMENT, FANS, EXHAUST FANS, CLOTHES DRYER VENT, ETC.

DIVISION 26
ELECTRICAL: SWITCH GEARS, PANELS, GENERATORS, LIGHTING FIXTURES, ETC.

NOTE: PROVIDE ELECTRONIC COPY OF ALL SHOP DRAWINGS/ SUBMITTALS TO ARCHITECT

9. ARCHITECT'S SEAL

Mark A. Oppenhuizen
Michigan Architects License
No. 29909

Contacts

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Chad Bush
18000 Cove Street, Suite 201
Spring Lake, Michigan 49456
ph. 616-780-2541
cell 616-706-3463
e-mail cbush@askpsp.com

Architect: Oppenhuizen Architects
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Brian Sinnott, P.E.
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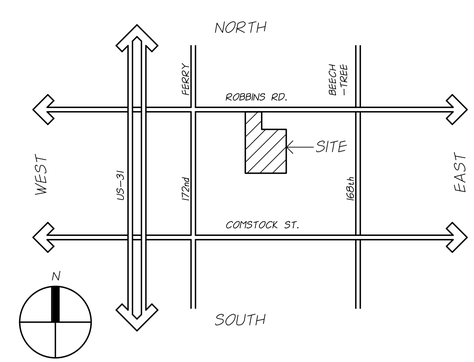
e-mail bsinnott@paradigmae.com

General Contractor: CopperRock Construction
Robb Constantine
608 6th Street NW, Suite 201
Grand Rapids, Michigan 49504
ph. 616-920-1655
cell 616-835-2532
e-mail robbc@copperrockconstruction.com

Location Map



Index

T1.0 Title Sheet

A1.0 24 Stall Garage - Back to Back
A1.1 14 Stall Garage - Back to Back
A1.2 13 Stall Garage
A1.3 7 Stall Garage
A1.4 6 Stall Garage

Revised 6-5-18
Bd + Permit
1-22-18 ..... date

3017 ..... commission

T1.0 ..... sheet

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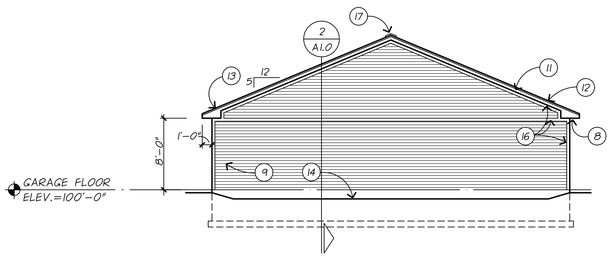
Mark A. Oppenhuizen AIA

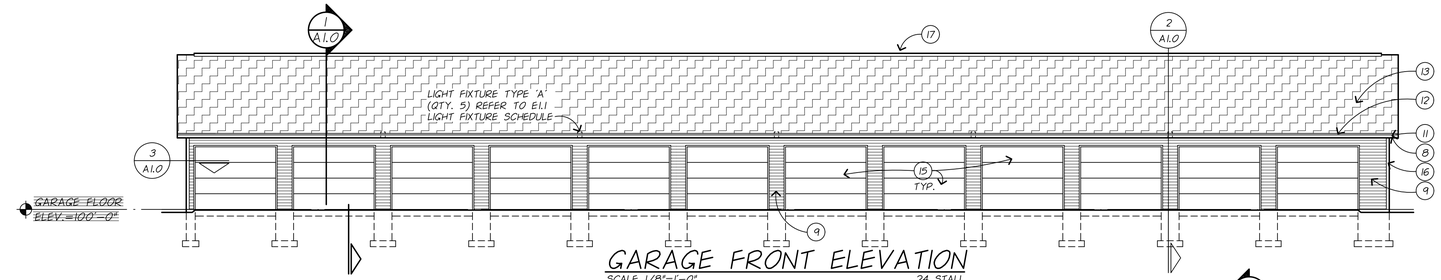
Robbins Road Apartments - Garages

17114 Robbins Road
Grand Haven Township, Michigan



GARAGE SIDE ELEVATION

SCALE 1/8"=1'-0" 24 STALL



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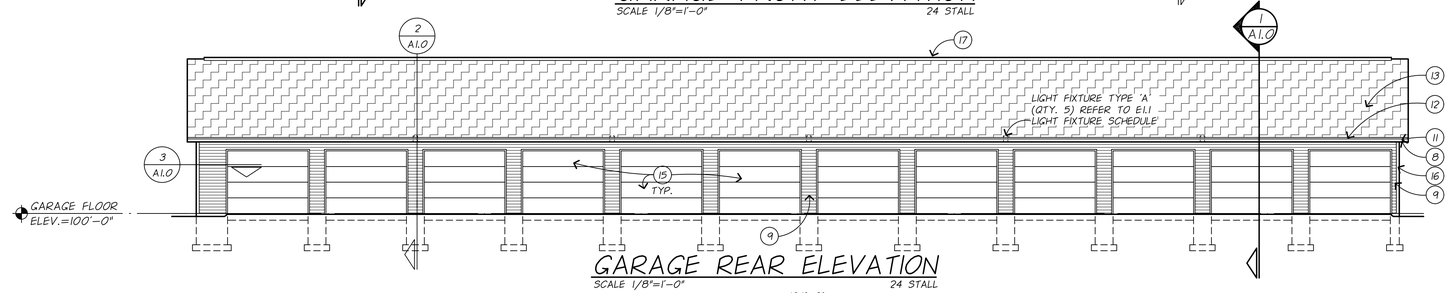

GARAGE REAR ELEVATION

SCALE 1/8"=1'-0" 24 STALL

GARAGE KEYED NOTES:

1. 6" 4,500p.s.i. CONCRETE FOUNDATION WALL W/ (2) No.5 BARS CONTINUOUS
2. 16"x8" 4,500psi CONCRETE FOOTING
3. 4" CONCRETE SLAB (4,000p.s.i. CONCRETE) ON MINIMUM 4" COMPACTED SAND BASE (95% DENSITY PER ASTM 1557)
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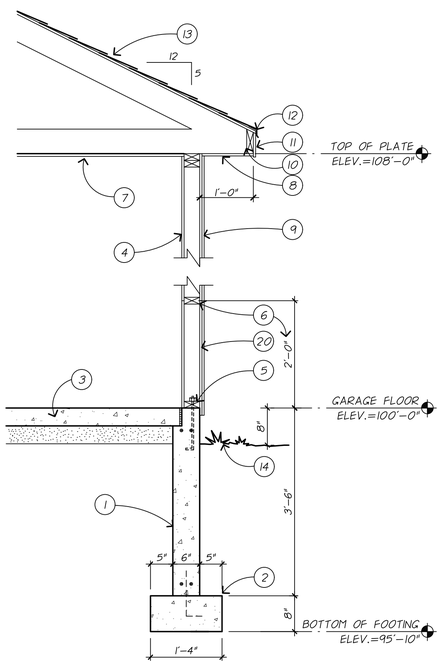

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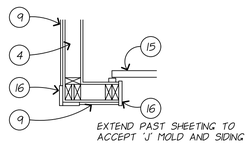
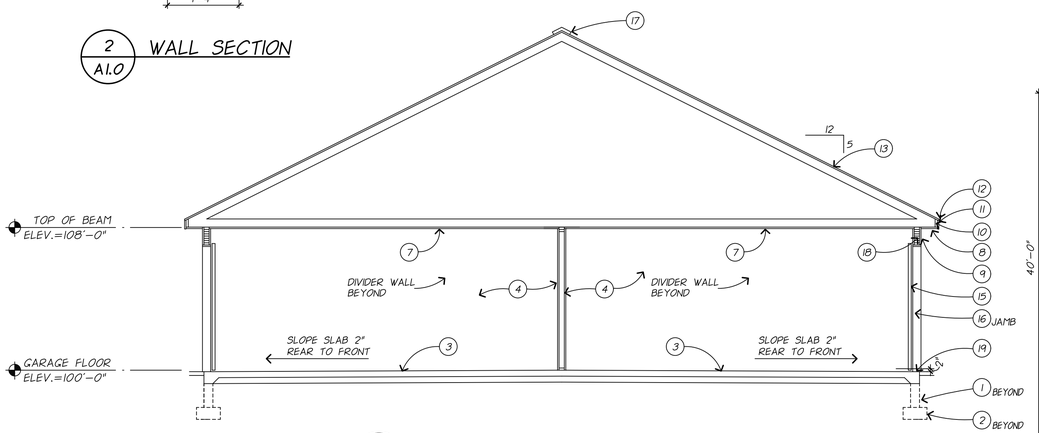


3 / A1.0 CORNER DETAIL

SCALE: 3/4"=1'-0"



1 / A1.0 GARAGE BUILDING SECTION

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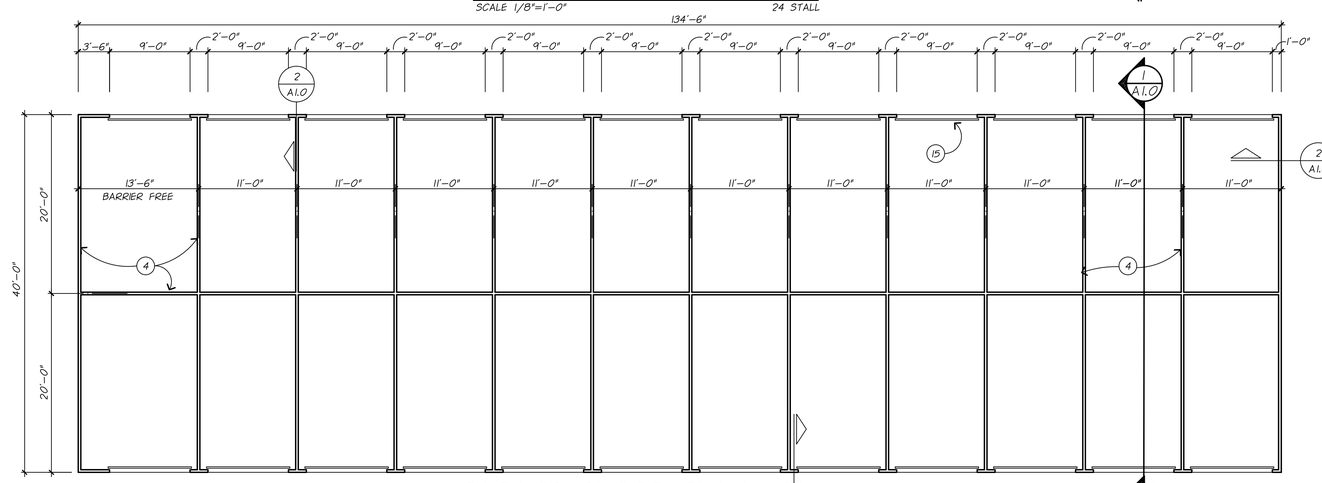
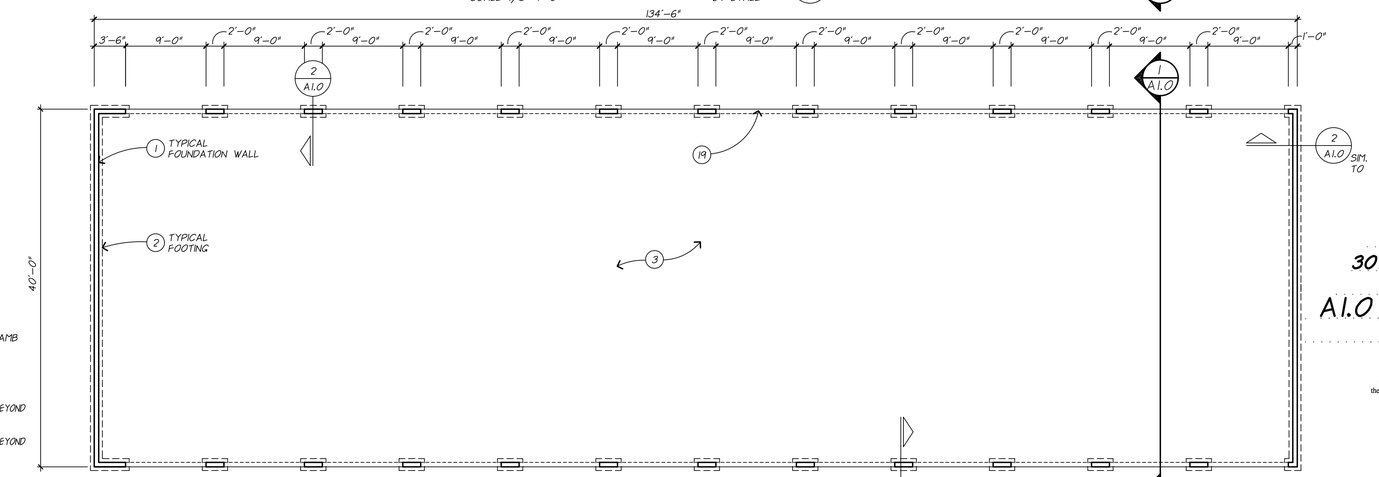


GARAGE FLOOR PLAN

SCALE 1/8"=1'-0" 24 STALL



GARAGE FOUNDATION PLAN

SCALE 1/8"=1'-0" 24 STALL

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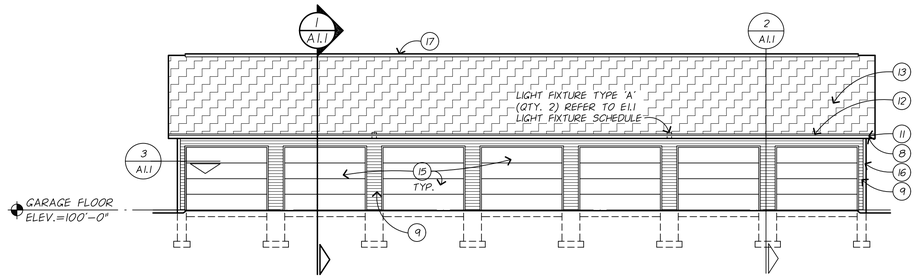
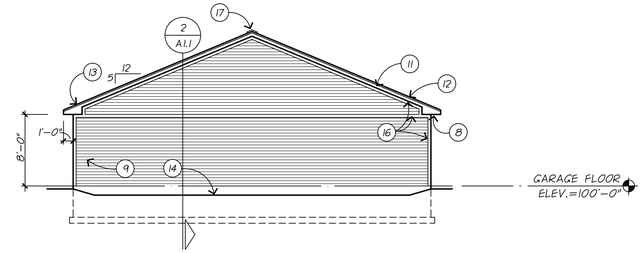
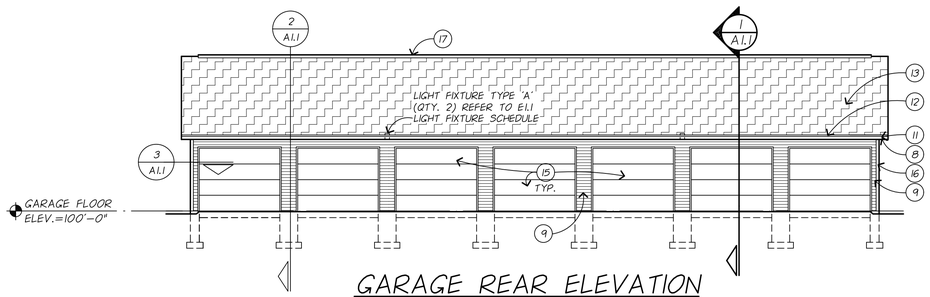


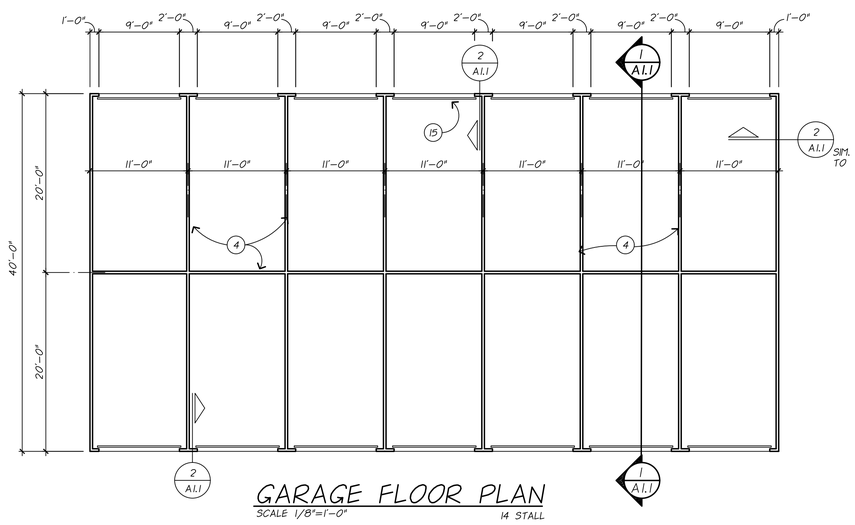
GARAGE FRONT ELEVATION
SCALE 1/8"=1'-0"
14 STALL



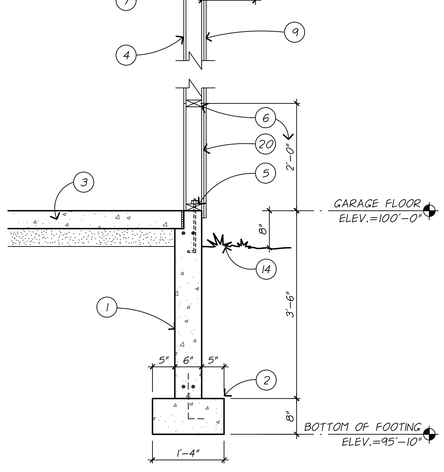
GARAGE SIDE ELEVATION
SCALE 1/8"=1'-0"
14 STALL



GARAGE REAR ELEVATION
SCALE 1/8"=1'-0"
14 STALL



GARAGE FLOOR PLAN
SCALE 1/8"=1'-0"
14 STALL



2 A1.1 WALL SECTION
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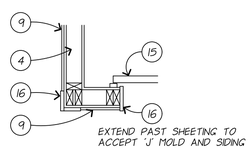

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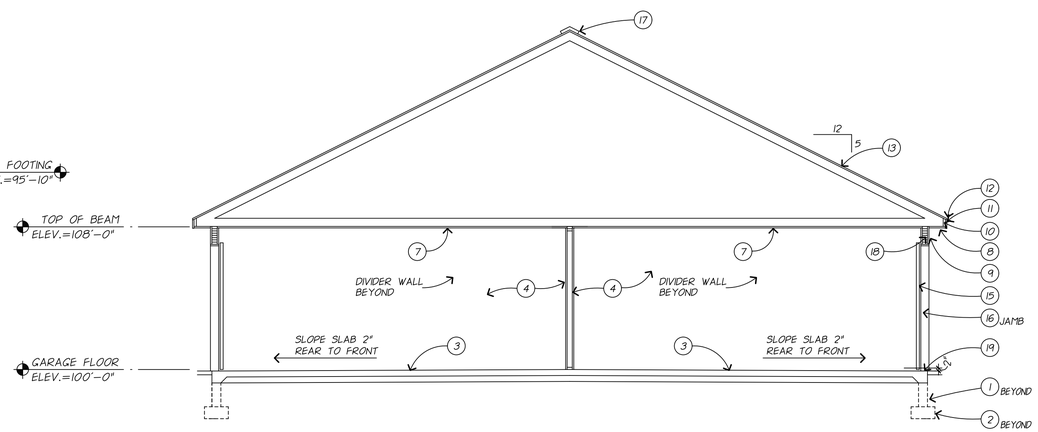

1 A1.1 GARAGE BUILDING SECTION
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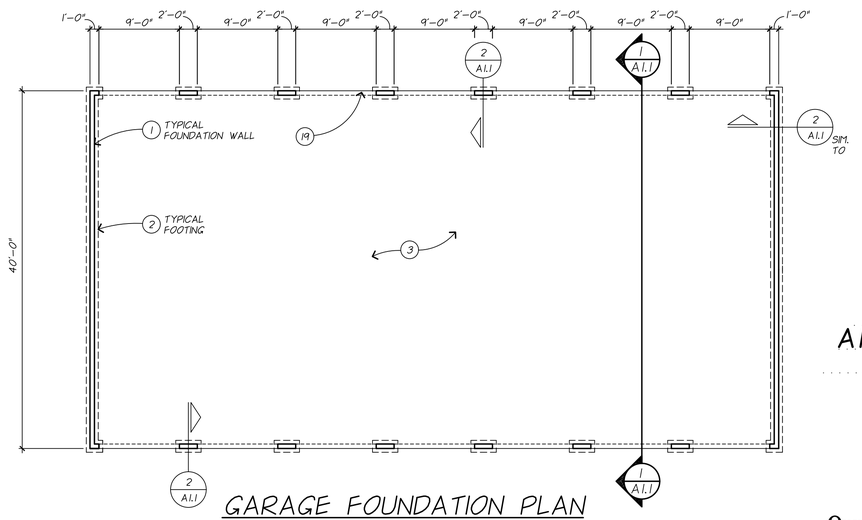

GARAGE FOUNDATION PLAN
SCALE 1/8"=1'-0"
14 STALL

Robbins Road Apartments - Garages

17114 Robbins Road
Grand Haven Township, Michigan

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1-22-18 . . . . . date

3017 . . . . . commission

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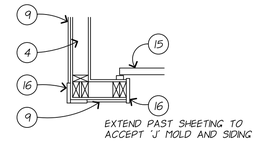

3 / A1.3 CORNER DETAIL
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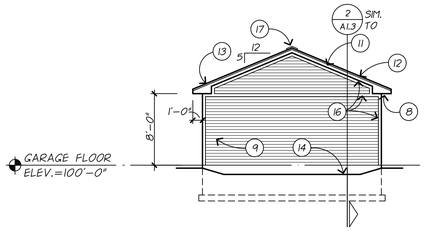
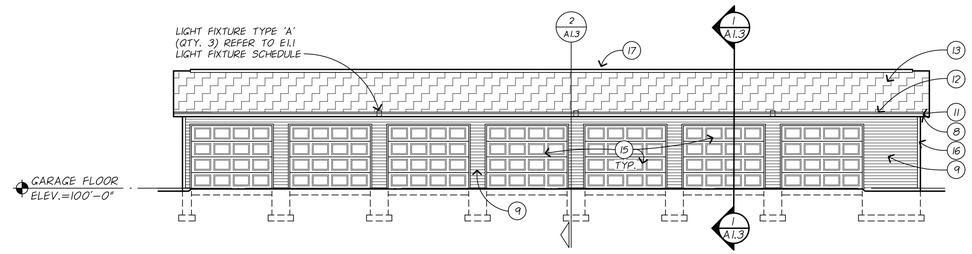
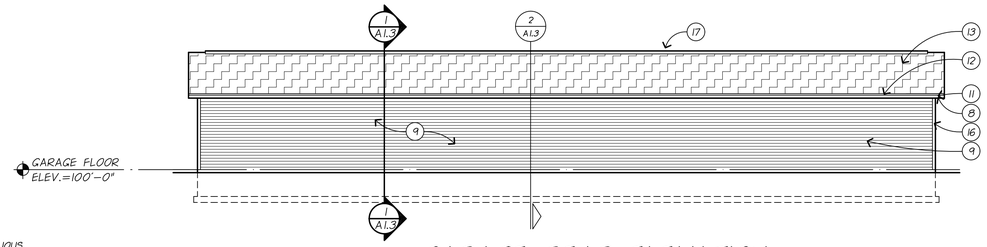


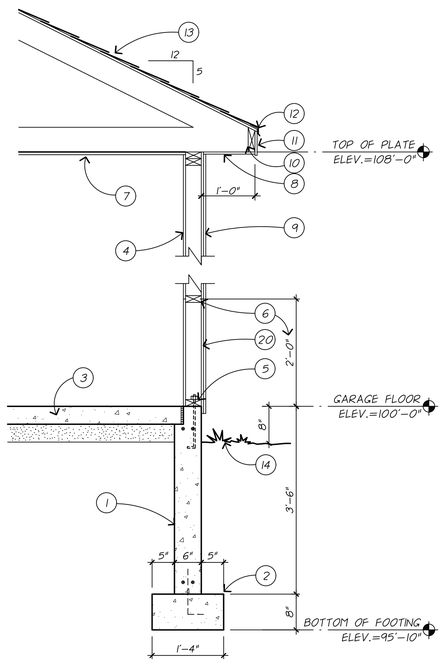
GARAGE SIDE ELEVATION
SCALE 1/8"=1'-0" 7 STALL



GARAGE FRONT ELEVATION
SCALE 1/8"=1'-0" 7 STALL



GARAGE REAR ELEVATION
SCALE 1/8"=1'-0" 7 STALL



2 / A1.3 WALL SECTION
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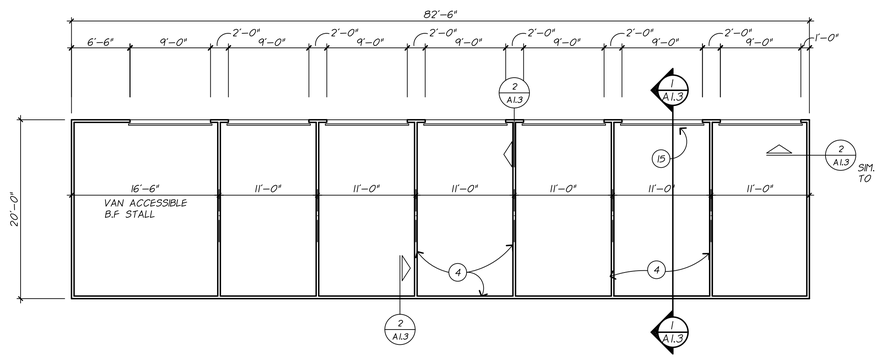
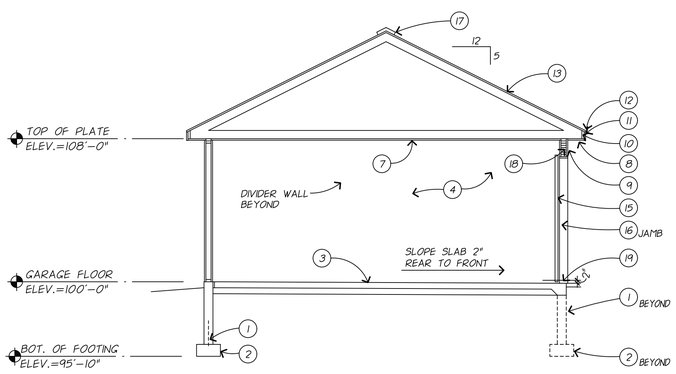


GARAGE FLOOR PLAN
SCALE 1/8"=1'-0" 7 STALL



GARAGE BUILDING SECTION
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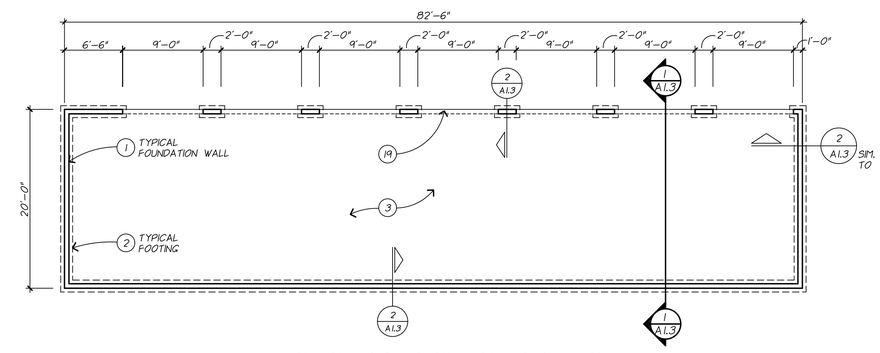

GARAGE FOUNDATION PLAN
SCALE 1/8"=1'-0" 7 STALL

Robbins Road Apartments - Garages

17114 Robbins Road
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1-22-18 . . . . . date

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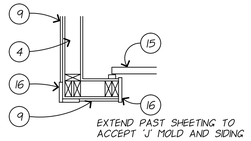
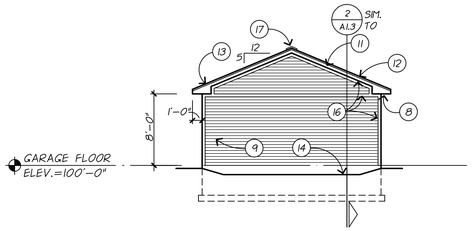
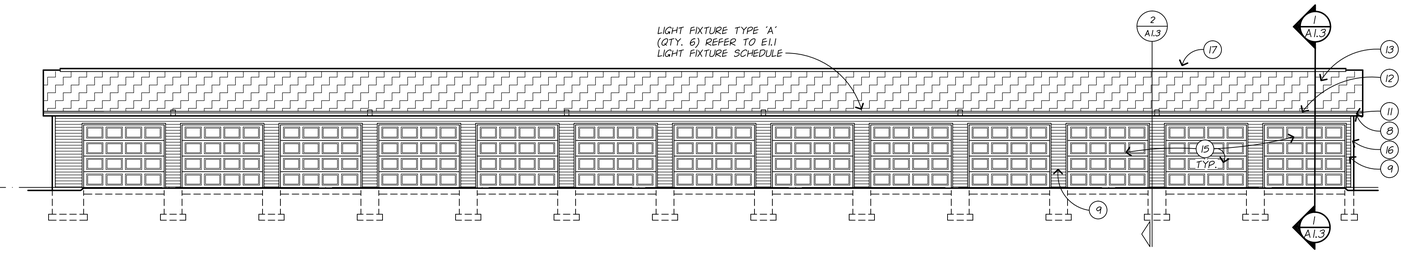


3 / A1.3 CORNER DETAIL
SCALE: 3/4"=1'-0"



GARAGE SIDE ELEVATION
SCALE 1/8"=1'-0" 13 STALL



GARAGE FRONT ELEVATION
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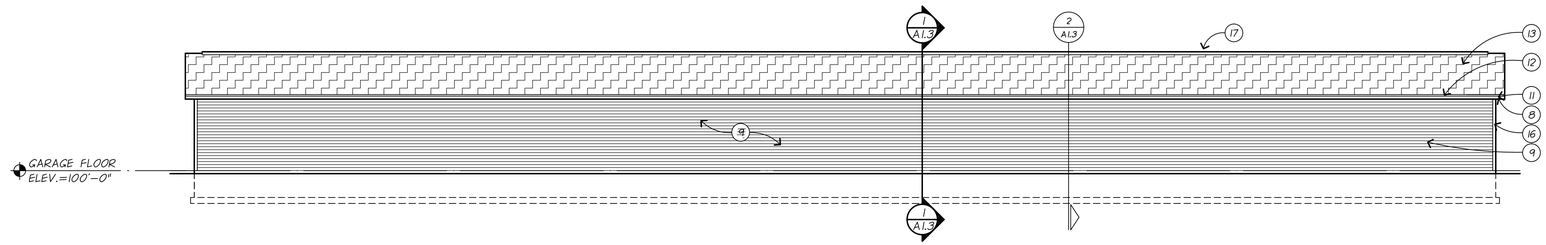

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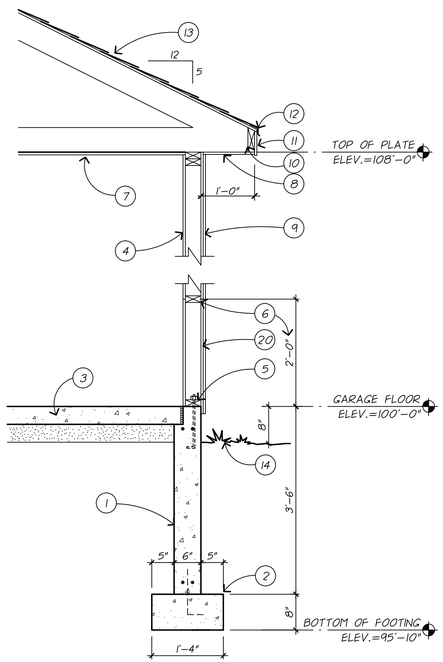

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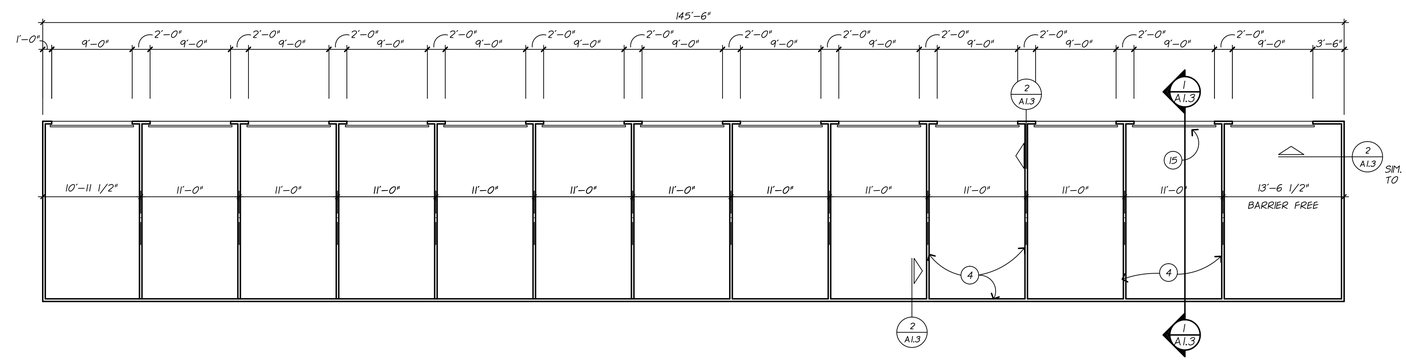
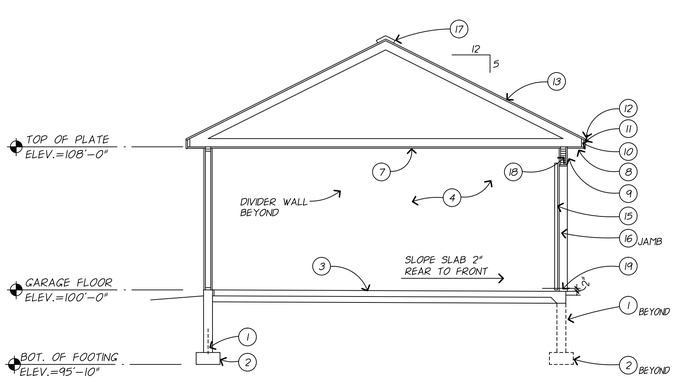


GARAGE FLOOR PLAN
SCALE 1/8"=1'-0" 13 STALL



GARAGE BUILDING SECTION
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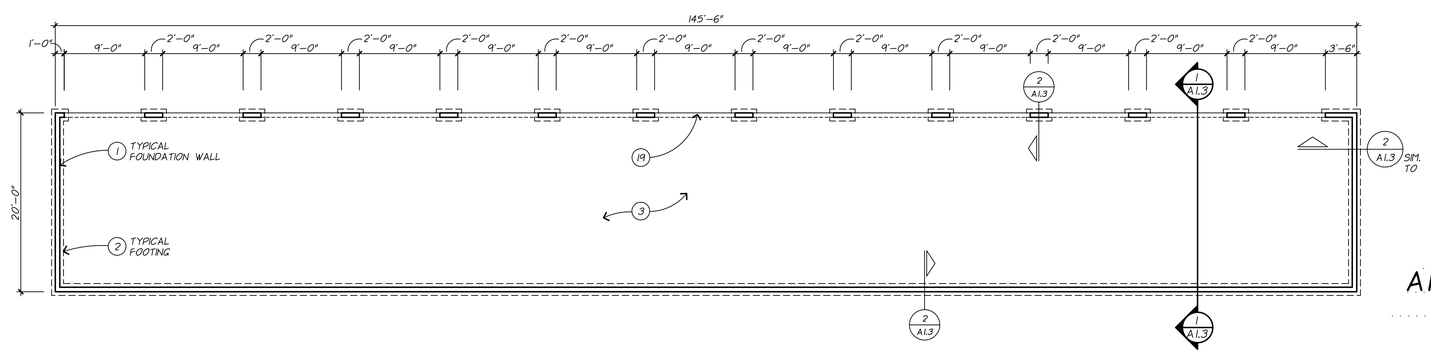

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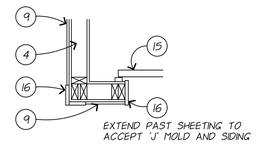
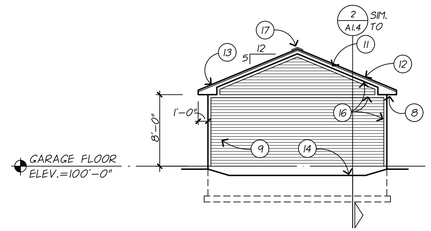
OppenhuizenArchitects

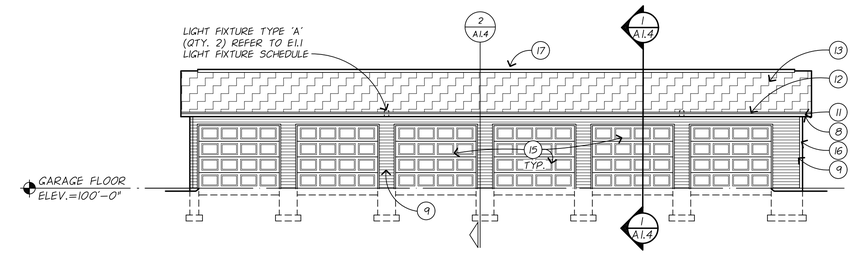
Mark A. Oppenhuizen AIA



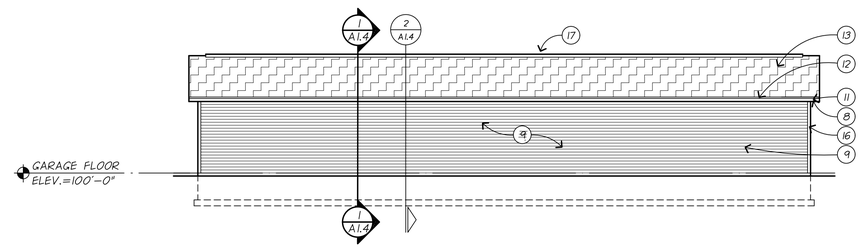
3 / A1.4 CORNER DETAIL
SCALE: 3/4"=1'-0"



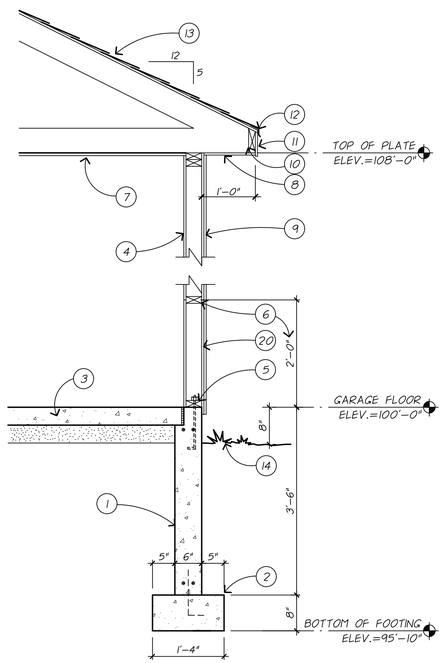
GARAGE SIDE ELEVATION
SCALE 1/8"=1'-0" 6 STALL



GARAGE FRONT ELEVATION
SCALE 1/8"=1'-0" 6 STALL



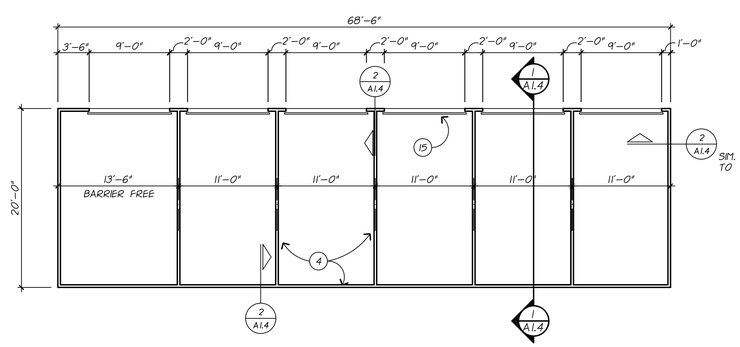
GARAGE REAR ELEVATION
SCALE 1/8"=1'-0" 6 STALL



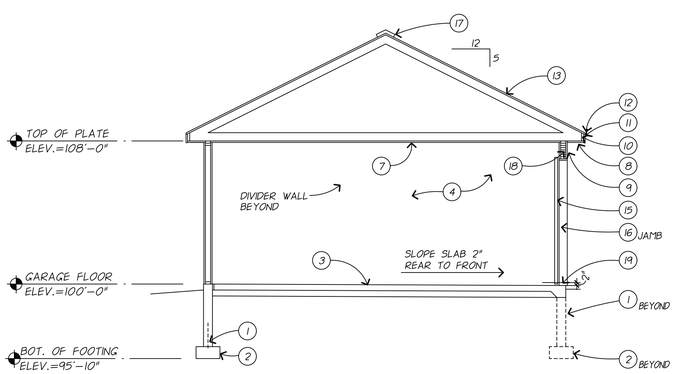
2 / A1.4 WALL SECTION
SCALE: 3/4"=1'-0"

GARAGE KEYED NOTES:

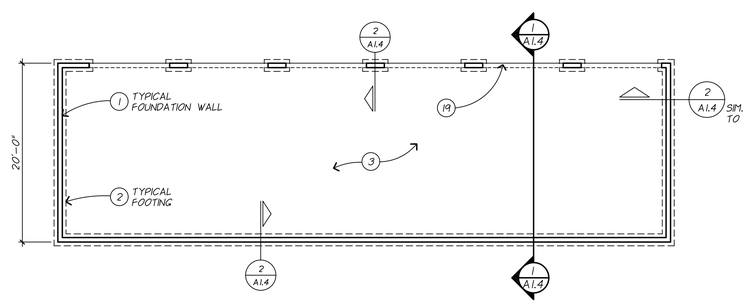
1. 6" 4,500p.s.i. CONCRETE FOUNDATION WALL W/ (2) No.5 BARS CONTINUOUS
2. 16"x8" 4,500psi CONCRETE FOOTING
3. 4" CONCRETE SLAB (4,000p.s.i. CONCRETE) ON MINIMUM 4" COMPACTED SAND BASE (95% DENSITY PER ASTM 1557)
4. 7/16" OSB SHEETING BOTH SIDES OF 2x4 STUDS AT 24"O.C.
5. P.T. 2x4 SILL PLATE WITH 1/2"DIA. x 12" ANCHOR BOLTS MAX. 4'-0" O.C. AND 1'-0" FROM CORNERS
6. 2x4 HORIZONTAL WOOD BLOCKING AT SHEATHING PANEL JOINT
7. 7/16" O.S.B.
8. PERFORATED (VENTING) ALUMINUM SOFFIT, COLOR SELECTION BY ARCHITECT.
9. 4" EXPOSURE, BEVELED VINYL SIDING, COLOR #1, SELECTION BY ARCHITECT.
10. 2x4 SUBFASCIA
11. PRE-FINISHED ALUMINUM FASCIA - COLOR SELECTION BY ARCHITECT.
12. PREFINISHED METAL DRIP EDGE
13. ASPHALT SHINGLES OVER 15# ROOF FELTS ON 1/2" OSB ROOF DECK ON PRE-ENGINEERED WOOD TRUSSES
14. GRADE LINE
15. 9'-0"x7'-0" EMBOSSED PANEL STEEL OVERHEAD DOOR
16. 4" VINYL TRIM, COLOR SELECTION BY ARCHITECT.
17. SHINGLE OVER RIDGE VENT
18. 3 1/2"x9 1/2" 2.0E LVL HEADER
19. TURN DOWN SLAB 8" AT OVERHEAD DOOR LOCATIONS
20. PROVIDE 1/2" P.T. PLYWOOD SHEATHING ON THE EXTERIOR FACE OF WALL AT THIS LOCATION. (NOT REQUIRED AT END WALLS)



GARAGE FLOOR PLAN
SCALE 1/8"=1'-0" 6 STALL



GARAGE BUILDING SECTION
SCALE 1/4"=1'-0"



GARAGE FOUNDATION PLAN
SCALE 1/8"=1'-0" 6 STALL

Robbins Road Apartments - Garages

17114 Robbins Road
Grand Haven Township, Michigan

Bid + Permit
1-22-18 . . . . . date

3017 . . . . . commission

A1.4 . . . . . sheet

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49417

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OppenhuizenArchitects

Mark A. Oppenhuizen AIA

From: Marczak, Barbara
To: Stacey Fedewa
Cc: Kieft, Kevin; Woodburne, Timothy
Subject: Lakeshore Gardens Apartments - Environmental Review
Date: Monday, June 11, 2018 8:48:31 AM

Hi Stacey:

We have reviewed the information that you sent and have the following comments:

1. Given that there is some petroleum contamination in the groundwater, and the proposed watermain goes very close to that area, we recommend that petroleum resistant gaskets, be used when the water main is constructed. Consideration may also be needed for the materials of construction for sanitary sewer.
2. Both water main and sanitary sewer installation will likely need dewatering to install because the water table is only two feet below ground. Further testing of groundwater may be required to determine whether groundwater should be discharged to a sanitary sewer or must be treated prior to discharge.
3. We recommend that the discharge point of the floor drains in the building be determined. Both the current and the historical discharge point(s) should be determined. The Phase I report has several documents from the Ottawa County Health Department indicating there was a holding tank for sanitary sewage only to the south of the building. A second one was added later to the north to serve an addition. It is not clear if there were floor drains at the time but the holding tanks were permitted only for sewage. So the question is where did and do the floor drains discharge. They could have discharged to the holding tanks or to the ground below the building. There was also a complaint made in 1996 indicating that sewage had been dumped on the ground for years. The copy in the report is difficult to read and appears to be incomplete so we are not sure what the resolution was. The Phase I ESA curiously indicated there were no concerns about the Health Department information.
4. As you pointed out there was very limited testing of soil and groundwater. Based on review of the report and history of the site as a trucking/truck maintenance facility, there may be other areas on the site affected by petroleum products that are not readily evident or visually observed.
5. We do have some concern that deeper testing was not conducted. At lower volume spill rates, petroleum can also dissolve into the groundwater and be present at deeper levels, although they generally tend to be at higher levels near the surface. It unfortunate that they dropped the compounds that were not detected in the first two samples.
6. Additional groundwater monitoring with permanent wells was proposed. This would allow a determination of direction of groundwater flow and a better evaluation of how to monitor the site.
7. Another concern is the salt storage area. Although covered, it is not clear how long this has been in place. With groundwater only two feet below ground, it could leach into the groundwater.
8. Based on the soil borings, it appears the site may have been filled over the years (sand over a dark layer). Testing may be warranted although this will all likely be moved around on site and covered over in the final development.

9. A Due Care Plan should be prepared to more clearly indicate how potential risk to human health and the environment will be managed. The proposed deed restriction on groundwater use should eliminate contact with the groundwater and protect human health. A prohibition on building in the area of the petroleum contamination has also been proposed. Based on comments above, further characterization may be needed to determine the extent that this should cover. Because groundwater is so shallow, a vapor barrier will likely be used for the buildings. The developer may want to consider putting a vapor barrier that is also resistant to petroleum as a precaution on all buildings. DEQ has some standards available of what they like to see in this regard.

If you have any questions or would like to discuss any of these comments further, please contact us.

Barbara E. Marczak, P.E.
Prein&Newhof
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c. 231-670-2497
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WESTSHORE
ENGINEERING & SURVEYING
ENVIRONMENTAL

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June 18, 2018

Grand Haven Charter Township
Planning Commission
c/o Stacey Fedewa
13300 168th Avenue
Grand Haven, MI 49417

Planning Commissioners:

On behalf of Lakeshore Gardens Apartments, LLC, and its application for Planned Unit Development approval for the proposed Lakeshore Gardens at 17114 Robbins Road in Grand Haven Charter Township (the "Property"), Westshore has addressed the issues you raised at your June 4, 2018, meeting and that were described in more detail by Prein & Newhof. The issues enumerated in Prein & Newof's June 11, 2018, e-mail to Stacey Fedewa are listed below, followed by a summary of our follow-up work on them.

A. Preliminary Environmental Overview:

As an initial matter, Westshore believes that it is important for the Planning Commission to understand what state environmental law (Part 201 of the Natural Resources and Environmental Protection Act) requires of owners and operators of property with historic environmental impacts. Both Prein & Newhof and the Township's attorney can confirm this, but we want to summarize these principals as they are the basis of many of our responses.

If the owner or operator of property with historic environmental impacts is responsible for an activity that lead to a release of hazardous substances in quantities that exceed the generic residential cleanup criteria established by the Michigan Department of Environmental Quality ("MDEQ"), then the owner or operator is required to remediate the environmental impacts. On the other hand, when a purchaser of property that has historic environmental impacts was not responsible for an activity that lead to a release of hazardous substances, then the new owner or operator of the property is **not** required to remediate the environmental impacts (if appropriate due diligence actions are taken). Instead, the new owner is required to follow what are known as due care requirements. These requirements are primarily designed to protect people who are expected to be present on the property from becoming exposed to the environmental impacts, and to prohibit the exacerbation of the environmental impacts.

Lakeshore Gardens Apartments, LLC, is not responsible for any activities that may have led to releases of hazardous substances on the Property[1]. It is in the process of taking appropriate due diligence in connection with its acquisition of the Property. Therefore, it will not be required to remediate the Property. Westshore has been hired to address the due care requirements for reuse

[1] The property was owned and operated by Bill Tysman until his death in 2015. Chad Bush became the owner thereafter by inheritance (Part 201 provides people inheriting property with an exemption from liability for historic environmental impacts on such property). Mr. Bush will sell the Property to Lakeshore Gardens Apartments, LLC, if the PUD application is approved.

of the Property. Westshore is drafting a Due Care Plan, which will summarize the actions that Lakeshore Gardens Apartments, LLC, needs to take in order to comply with its due care requirements. In some instances, the most efficient due care activity amounts to a partial remediation of an environmental impact. Nevertheless, Lakeshore Gardens Apartments, LLC, is only required under Part 201 to comply with due care requirements and not remediation. In doing so, Lakeshore Gardens Apartments, LLC, will protect people on the Property from exposure to hazardous substances, and will not exacerbate the environmental impacts. This will also logically protect owners, operators and occupants of adjoining property from exposure to hazardous substances to a much greater degree than presently exists.

B. Planning Commission/Prein & Newhof Issues:

1. **Given that there is some petroleum contamination in the groundwater, and the proposed water main goes very close to that area, we recommend that petroleum resistant gaskets, be used when the water main is constructed. Consideration may also be needed for the materials of construction for sanitary sewer.**

The current horizontal extent of the petroleum contamination has been defined. The possible future extent of the groundwater contamination is not yet defined. Groundwater monitoring will determine if the plume is expanding, stable, or shrinking, and the direction of groundwater flow. Westshore agrees that the above recommendation would be prudent regardless of the groundwater flow direction as groundwater dewatering will likely be required to install the water main and/or other utilities. Dewatering may or may not influence the plume hydraulically. The Due Care Plan will address this scenario as well as the concept of exacerbation of the groundwater plume (i.e., the dewatering must be conducted in a manner that does not significantly increase the horizontal or vertical extent of the groundwater plume). The Due Care Plan will be completed after all environmental impacts have been defined on the Property. This is discussed in more detail below.

2. **Both water main and sanitary sewer installation will likely need dewatering to install because the water table is only two feet below ground. Further testing of groundwater may be required to determine whether groundwater should be discharged to a sanitary sewer or must be treated prior to discharge.**

If dewatering is required in the immediate vicinity of the groundwater plume, a permit to discharge the groundwater will need to be procured from the City of Grand Haven Waste Water Authority. Pretreatment (carbon filtration) of the groundwater may be required as a condition of the permit. Other options are feasible (a NPDES permit, groundwater discharge permit, etc.); however, they would likely be more expensive in the long run and no more protective of the environment. A review by our chief hydrogeologist will be completed based on the location of the proposed water main and/or other utilities to determine the influence of the proposed dewatering on the groundwater plume. This study or assessment will be completed after all the environmental impacts on the Property have been defined, as other areas of environmental impacts may be identified. Rerouting the utility lines away from identified contamination may be more cost effective, and if so, that option will be deleted.

3. **We recommend that the discharge point of the floor drains in the building be determined. Both the current and the historical discharge point(s) should be determined. The Phase I report has several documents from the Ottawa County Health Department indicating there was a holding tank for sanitary sewage only to the south of the building. A second one was added later to the north to serve an**

addition. It is not clear if there were floor drains at the time but the holding tanks were permitted only for sewage. So the question is where did and do the floor drains discharge. They could have discharged to the holding tanks or to the ground below the building. There was also a complaint made in 1996 indicating that sewage had been dumped on the ground for years. The copy in the report is difficult to read and appears to be incomplete so we are not sure what the resolution was. The Phase I ESA curiously indicated there were no concerns about the Health Department information.

a. Holding Tanks

The Phase I Environmental Site Assessment completed for the Property documented the health department correspondence. In light of the fact that the maintenance building floor drains were reported to discharge to the municipal sanitary sewer, the holding tank was not determined to be a *Recognized Environmental Condition* (*REC*). According to the complaint provided to the Township, Mr. Tysman routinely pumped the holding tank out on his Property. However, the Health Department never instructed Mr. Tysman to discontinue the use of the holding tank. It indicated that he could use the tank until the municipal sewer became available. (See comments below regarding the exposure danger from the tank being pumped out or leaking.)

A second holding tank was never approved by the Health Department. An application to install a second tank was submitted. No record of the second tank being installed was included in the Health Department Files or found otherwise. There is no evidence on site that a second holding tank was constructed. Westshore's follow-up investigation of the Property confirmed that no second holding tank was installed on the northeast corner of the building. This was determined by magnetometer survey and visual inspection (i.e., no clean-out or pump out could be identified). See attached Floor Drain and Holding Tank Assessment report for additional detail.

The presence of a second holding tank will be verified upon demolition of the building, as well as the presence of any other piping leading to the holding tank on the south of the building. If a second holding tank is found, it will be removed in accordance with Part 201, and any impacts from it will be addressed in the Due Care Plan.

Westshore's follow-up investigation determined that the holding tank on the south side of the buildings is leaking. The fact that the holding tank on the south side of the building is leaking (i.e., is in hydraulic communication with the groundwater) is a minor concern from an environmental standpoint. Discontinuation of the discharge to the tank, pumping it out, crushing and removing the tank is all that is required. See attached e-mail message from Kimberly Wolters of the Ottawa County Health Department. The remaining impact from the holding tank, if any is even detectable, will biodegrade and naturally attenuate over time. The Due Care Plan will address any potential exposures associated with the holding tank area once it is removed during demolition.

b. Floor Drain Outlets

An investigation into the discharge points of the floor drains in the building was conducted on June 8, 2018. Follow-up work took place on June 12 and June 14, 2018. A written report of this work is attached. The findings of the investigation indicate that the floor drains in the building discharge to the municipal storm sewer not the holding tank located

on the south of the building (which receives sanitary waste from the maintenance building). This was determined by visual inspections of all of the floor drains and via flush testing each of the catch basin/floor drains in the building.

Westshore's investigation has led us to conclude that the historic discharge point of the floor drain is the same as the current discharge point. This is based on the following:

- No concrete cut out is visible at the south end of the building. No plugs or other piping are present in any of the catch basin/floor drains indicating that they somehow discharged in a different direction.
- The invert elevations of the piping in the catch basins/floor drains allow for flow to the municipal storm sewer not to the holding tank located at the south of the building.
- It was common practice in the 1980s to connect floor drains to storm water systems.
- There is nothing in the records indicating that the State, City, County Water Resource Commissioner, or Township ordered a disconnection of the floor drains from the storm water system.
- It is highly unlikely that Mr. Tysman would have incurred the expense of disconnecting the floor drains from the storm water system, and then connecting them to the holding tanks or elsewhere unless some governmental entity required it.

4. **As you pointed out there was very limited testing of soil and groundwater. Based on review of the report and history of the site as a trucking/truck maintenance facility, there may be other areas on the site affected by petroleum products that are not readily evident or visually observed.**

The Phase I ESA conducted for the Property was prepared in strict compliance with the current standards for Environmental Due Diligence as recognized by the US Environmental Protection Agency (US EPA), the MDEQ and the American Society for Testing Materials (ASTM). These contain protocols for investigating historical site usage and dictate that *RECs* discovered during the Phase I ESA are investigated, usually by soil and/or groundwater sampling. The Phase I ESA identified only one *REC*, and we conducted a Phase II ESA at that *REC*.

Furthermore, Westshore has over 33-years of experience conducting environmental investigations and Phase I ESAs in Grand Haven, several of them on Mr. Tysman's other properties, and on properties adjacent and nearby Mr. Tysman's other properties. We have no personal knowledge (i.e., evidence) of Mr. Tysman ever dumping waste on his Property. As many in the Township are likely aware, he formerly owned the Robbins Road Hardware property (now Love Inc. General Store) near the Southeast corner of US-31 and Robbins Road. That property is a site of known contamination. However, that resulted from an accidental fuel leak from an above ground storage tank (not from any illegal actions performed by Mr. Tysman). Unknown contamination potentially encountered during construction will be addressed according to the applicable and relevant regulations and will be addressed in the Due Care Plan.

5. **We do have some concern that deeper testing was not conducted. At lower volume spill rates, petroleum can also dissolve into the groundwater and be present at deeper levels, although they generally tend to be at higher levels near the surface. It unfortunate that they dropped the compounds that were not detected in the first two samples.**

Deeper testing in the source area of the petroleum release is discussed in the Phase II report and will be conducted as part of the groundwater plume monitoring outlined in the Due Care Plan. It is very unlikely we will discover a significant exposure concern (i.e., a due care obligation) as a result of monitoring the plume at deeper depths in the first water bearing unit or a deeper one. Westshore had already proposed a deep boring and groundwater sample in the source area as a conservative approach. Contamination at depth in the first water bearing unit has no bearing on potential exposure pathways at the planned development, except where previously discussed (dewatering). Petroleum contaminants at depth in the groundwater are less of vapor intrusion source than those near the surface, drinking water for the proposed development will be obtained from the municipal supply, and irrigation on the Property via any water wells in the area of the contamination will be addressed in the Due Care Plan (i.e., will be prohibited in any proximity to discovered contamination).

The initial samples collected in the former above ground storage tank area were analyzed for gasoline and diesel indicator parameters. The results determined that no evidence of a significant diesel fuel spill(s) or leak(s) was detected in either the soil or groundwater in the area where it is most likely to be present. Standard procedure for investigation of petroleum spills or leaks in such a scenario indicates that if no evidence exists of a constituent in the source area, no additional analyses for that constituent are necessary further away from a source area. It is not physically possible given the possible historic release dates and the nature of such releases for those constituents to be found farther away from the source area when they are not detected at the source area.

6. **Additional groundwater monitoring with permanent wells was proposed. This would allow a determination of direction of groundwater flow and a better evaluation of how to monitor the site.**

Additional groundwater monitoring was already proposed for the Phase II ESA. Permanent groundwater monitoring wells will be installed as soon as feasible. Standard groundwater monitoring procedure includes determining top of well casing elevations and measuring water level elevations during each monitoring event to determine/confirm groundwater flow direction. This will be conducted in conjunction with the proposed deep groundwater sampling, and the proposed monitoring plan will be described in the Due Care Plan.

7. **Another concern is the salt storage area. Although covered, it is not clear how long this has been in place. With groundwater only two feet below ground, it could leach into the groundwater.**

Westshore agrees the salt storage area could have been uncovered at some point in time, such as during its use. However, uncovering tends to be quite temporary as the owners of such salt piles learn quickly that their product disappears with exposure to precipitation. Work experience investigating such salt piles and the groundwater around them has indicated that the impact is typically insignificant, especially with a pile this size. This is why the salt pile was not listed as a *REC* in the Phase I ESA. It is correct that pile could leach to the ground and impact the soil and groundwater if left for long periods uncovered or around the loading area where salt may have been spilled on the ground. However, the actual impact in such areas is usually *de minimis*. The potential negative exposure to any such contamination on the Property is insignificant. Any remaining salt will be removed prior to construction. Any impact in the subsurface will not have a complete exposure pathway based on the future intended development at the Property, as the Due Care Plan will prohibit groundwater use as a potable source, and irrigation with

groundwater will be prohibited in the salt pile area. The presence of salt in soils or groundwater is thus not a due care concern.

8. **Based on the soil borings, it appears the site may have been filled over the years (sand over a dark layer). Testing may be warranted although this will all likely be moved around on site and covered over in the final development.**

The Property appears to either have received fill, or native soils on the site have been moved around. Sand was observed in the Phase II investigation. However; the sand observed in the Phase II investigation did not exhibit any characteristics of being foundry sand or other contaminated fill. The Phase I ESA did not discover any evidence of foundry sand or other waste materials being brought onto the Property. Westshore has not encountered any other documents or evidence of contaminated soil being used for fill on the Property. Mr. Tysman was in the business of selling aggregates of various natures and much of these materials are likely deposited in multiple layers on the Property at different locations across the Property. Unknown impacted soil that may be identified during construction activities will be addressed according to the applicable and relevant regulations and the Due Care Plan.

9. **A Due Care Plan should be prepared to more clearly indicate how potential risk to human health and the environment will be managed. The proposed deed restriction on groundwater use should eliminate contact with the groundwater and protect human health. A prohibition on building in the area of the petroleum contamination has also been proposed. Based on comments above, further characterization may be needed to determine the extent that this should cover. Because groundwater is so shallow, a vapor barrier will likely be used for the buildings. The developer may want to consider putting a vapor barrier that is also resistant to petroleum as a precaution on all buildings. DEQ has some standards available of what they like to see in this regard.**

As noted above, a Due Care Plan will be prepared to address the known contamination as well as any unidentified contamination that is discovered as a result of construction activities. The Due Care Plan will address required Due Care concerns such as exacerbation of known contamination, notifying potentially unknowing third parties, notifying local units of government, making notices to adjacent property owners if warranted, etc. If restrictive covenants are deemed to be useful Due Care precautions then they will be implemented. It should be noted that this would be more of a remedial action (clean-up) measure as opposed to Due Care activity. A complete assessment of all potential exposure pathways will be included in the Due Care Plan. Contact with the contaminated groundwater is not an exposure concern based on the known contaminant concentrations, only groundwater ingestion, discharge or venting to a surface water body, and vapor intrusion are potentially complete exposure pathways. If additional contamination is identified, those contaminants will be fully assessed.

The horizontal extent of the petroleum release in the upper water bearing unit has been determined. Proposed future groundwater monitoring will determine the groundwater flow direction and whether the plume is expanding, shrinking, or is stable. There is no reason to currently install petroleum vapor mitigation system in any buildings based on the current knowledge of the contamination location and the proposed building locations. If the groundwater plume is found to be moving towards a building, the plume will be monitored closely to ensure that no complete exposure pathways exist. The option to actively remediate the groundwater plume will remain and/or in a worst case scenario a vapor mitigation system will be

installed to protect the inhabitants of any building deemed to be in danger of having a completed vapor intrusion exposure pathway. The option to install a petroleum vapor mitigation system should be optional not required for the developer. Groundwater monitoring (i.e., groundwater flow direction determination) will lend information useful in making this decision. The groundwater monitoring plan will be detailed in the Due Care Plan.

C. Concluding Comments:

We hope that you see that by addressing its Part 201 obligations, Lakeshore Gardens Apartments, LLC, will also be addressing all of your concerns. Moreover, Lakeshore Garden Apartments, LLC's, due care compliance will provide much greater protection to neighbors than currently exists. Nevertheless, if you think it would help, you could impose a condition in your PUD approval that Lakeshore Gardens Apartments, LLC, stay in compliance with NREPA Part 201 and its Due Care Plan.

We look forward to discussing these issues with you at your next meeting.

Best Regards,

WESTSHORE CONSULTING

Roger A. Bour
Sr. Environmental Project Manager

RAB/jlg/03513-0017

Enclosure

cc: Lakeshore Gardens Apartments, LLC

From: Marczak, Barbara
To: Stacey Fedewa
Cc: Mark VerBerkmoes; Bill Cargo; Kieft, Kevin
Subject: Lakeshore Gardens Apartments - Environmental Review
Date: Tuesday, July 10, 2018 9:23:53 AM

Hi Stacey:

We have reviewed the Response Activity Plan/Due Care Plan prepared by Westshore Environmental dated July 2, 2018. As noted in the plan, the purpose is to satisfy Due Care Requirements under Section 7a or Part 201, PA 451, as amended, and rules promulgated thereunder. The purpose of a Due Care plan is generally to protect public health, prevent exacerbation of contamination and to prevent the "reasonably foreseeable acts of third parties." The plan does address these items in relation to the known contamination that has been identified. It is up to the owner to follow through with these items. There are a few response activities also proposed. A summary of the main components is provided below followed by some recommendations that you may want to consider during or after the project.

1. Groundwater Monitoring – A groundwater monitoring plan to further define the extent of contamination around the former above ground storage tank (AST) is proposed. It appears generally adequate for the contamination identified to date. One deeper well is proposed after the groundwater flow direction is identified but it does not explain how a depth will be chosen. Typically, samples are collected at two to five foot intervals and then a permanent well would be placed at the highest concentration. There is no plan to monitor for diesel fuel indicators. These were only tested for in a couple of the original samples, but none were detected.
2. Dewatering Hydrogeological Assessment – Prior to conducting any dewatering for construction of utility installation, an assessment is proposed to determine the impact on the existing contamination and how to handle the water that is pumped out. Although it does not specifically reference the impact to the utility material, it does note that petroleum resistant gaskets will be used for the watermain.
3. Wastewater holding tanks - One was found and the plan proposes to close it by removing or crushing in place. These are accepted methods by the Health Department. If the second referenced holding tank, which was not found during the investigation, is found during demolition, a groundwater sample may be collected if floor drains are found to be connected to it.
4. Salt Pile Removal – It was noted that the salt pile and spillage is to be removed from the site. There is no reference to testing to see if impacted soils have been removed. With groundwater so close to the surface, it may have been impacted as well. It is also unclear where on the site this occurs in relation to proposed utilities or buildings
5. Engineering Controls – Engineering controls consisting of a vapor mitigation system to eliminate exposure though volatilization to indoor air may be proposed depending on the results of groundwater monitoring and the dewatering assessment. Use of petroleum resistant gaskets for watermain is proposed. If the watermain location is changed, this may be modified.
6. Impacted soil – Impacted soil is only to be disturbed if it is excavated and moved off-site with

disposal at a landfill.

7. Notifications – Notifications are proposed to be made to contractors regarding on site contamination and limitations or prohibitions associated with it.
8. Irrigation wells - The plan says that no water wells, including irrigation wells will be allowed.

The plan generally addresses items brought up in previous reviews and recognizes the need to protect public health. However, the Due Care Plan can be changed at any time and they tend to be forgotten over time. The Township may want to consider the following during your approval process:

1. Because utilities are proposed near a known area of impact, require a detailed plan for watermain and sanitary sewer construction including "petroleum resistant" gasket material.
2. An assessment of salt spillage in soil and groundwater on utility construction. Salt can be corrosive to metal pipe.
3. Prohibition on water wells (except monitoring wells) either through PUD approval or a restrictive covenant.
4. Provide results of dewatering hydrogeological assessment.
5. Provide results of groundwater monitoring.
6. Provide results of volatilization to indoor air assessment and whether engineering controls are needed based on groundwater monitoring.
7. Provide location of remaining impacted soils or groundwater on final plan in form that can be permanently referenced in the future.
8. Provide confirmation of holding tank removal or closure in place.
9. Provide copy of final Due Care Plan at conclusion of construction. This is important for Township utility workers in case they must make a repair to utilities in the future, both for health and safety of workers during the repair and the need for addressing groundwater and/or soil contamination during dewatering and excavation.

If you have any questions, or would like to review this information in further detail, please contact us.

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WESTSHORE
ENGINEERING & SURVEYING
ENVIRONMENTAL

Phase I Environmental Site Assessment
5 parcels along Robbins Road
Grand Haven, Michigan 49417

Includes: 17114 Robbins Road (70-03-33-200-035)
17134 Robbins Road (70-03-33-200-007)
V/L Robbins Road (70-03-33-200-056)
V/L Robbins Road (70-03-33-200-070)
V/L Robbins Road (70-03-33-200-077)

(Located in NE 1/4 of Section 33, T08N, R16W,
Grand Haven Township, Ottawa County, Michigan)

Prepared for:

Tysman Companies, LLC
17114 Robbins Road ▪ Grand Haven, MI 49417

Community Shores Bank

Prepared by:

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June 5, 2017

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1.0 Executive Summary

Westshore Consulting (Westshore) performed a Phase I Environmental Site Assessment (ESA) of the following five parcels of land located along Robbins Road in Grand Haven Township, Ottawa County, Michigan 49417 (Subject Property). The five parcels are:

- 17114 Robbins Road (70-03-33-200-035)
- V/L Robbins Road (70-03-33-200-056)
- V/L Robbins Road (70-03-33-200-077)
- 17134 Robbins Road (70-03-33-200-007)
- V/L Robbins Road (70-03-33-200-070)

The Phase I ESA was completed for Tysman Companies, LLC, Community Shores Bank, and their assignees. The purpose of this study is to identify, to the extent feasible pursuant to the processes prescribed herein, *recognized environmental conditions* (*RECs*) in connection with the Subject Property.

Westshore has conducted *all appropriate inquiry* into the Subject Property.

The Subject Property parcels are located within Grand Haven Township in a commercial area that was developed in the late 1960s and early 1970s. Prior to that time the Subject Property parcels were hay and celery fields. The Subject Property is currently being utilized for outdoor storage of landscaping materials, and trucking. The Subject Property appears to have been utilized as such since the late 1960s and early 1970s.

The databases searched did not identify the Subject Property as an environmental concern or *REC*. The databases searched did identify 28 sites of environmental concern in the general vicinity of the Subject Property. Westshore reviewed these listings and determined that none of these listed sites present a significant potential for contaminant migration onto the Subject Property via groundwater flow or vapor encroachment; therefore, are not *RECs*. The distance and/or direction of the sites from the Subject Property, the listed status of sites, and the Environmental Professional's working knowledge of the Subject Property vicinity were all utilized to make these determinations.

Five steel, single-walled, aboveground storage tanks (ASTs) are located in the central portion of the Subject Property. The tanks are located on a concrete pad with a small discontinuous curb present along the edge of the pad. The area where vehicles fill up adjacent to the tanks is situated on gravel (i.e., no concrete pad). The pad and curb do not provide 100% containment for any one of the tanks in the event of a leak or breach from one of the tanks, and the fill or dispenser area allows spilled fuel direct contact with the soil. The tanks did not show any signs of leaking and/or spilling; however, the fact that the tanks are not in full or complete containment and the fill area is not on a containment pad determines that the tanks are a *REC*.

The floors in the maintenance building are significantly stained with oil, and floor drains are present in the buildings. The floor drains are reported to discharge to the municipal sanitary sewer and the concrete floor in the building is in excellent shape with no cracks, holes or fissures leading to the sub surface. Therefore, the oil staining and floor drains are not *RECs*.

This assessment has revealed no evidence of *recognized environmental conditions* in connection with the Subject Property, except for the following:

- Five steel, single-walled, aboveground storage tanks (ASTs) are located in the central portion of the Subject Property. The tanks are located on a concrete pad with a small

discontinuous curb present along the edge of the pad. The area where vehicles fill up adjacent to the tanks is situated on gravel (i.e., no concrete pad). The pad and curb do not provide 100% containment for any one of the tanks in the event of a leak or breach from one of the tanks. The tanks did not show any signs of leaking and/or spilling; however, the tanks are not in full or complete containment and the fill area is not on a containment pad.

Additional investigation as described in Section 7.2 to further define the environmental conditions at the Subject Property is warranted.

2.0 Introduction

2.1 Location and Legal Description

This document and the study completed to create it represent a Phase I Environmental Site Assessment (ESA) of the following five parcels of land located along Robbins Road in Grand Haven Township, Ottawa County, Michigan 49417 (Subject Property). The Subject Property is located on the south side of Robbins Road approximately 525 feet east of its intersection with 172nd Avenue.

The map coordinates are approximately the Northeast 1/4 of Section 33 of Grand Haven Township (T08N R16W), Ottawa County Michigan. The Subject Property is approximately 13.78-acres total, comprised of the following five tax parcel identification numbers:

Tax Parcel Identification #	Approx. Acres	Address
70-03-33-200-035	2.881	17114 Robbins Road
70-03-33-200-007	1.781	17134 Robbins Road
70-03-33-200-056	1.447	V/L Robbins Road
70-03-33-200-070	4.920	V/L Robbins Road
70-03-33-200-077	2.750	V/L Robbins Road

Figure 1 is a site location map, Figure 2 contains a 2014 aerial photograph and a street view image, and Figure 3 contains the local tax map. Appendix A contains photographs taken during the site inspection and Appendix B contains the legal descriptions.

2.2 Purpose

The objective of the Phase I ESA was to identify, to the extent feasible pursuant to the processes prescribed herein, indications of possible environmental contamination, known as *recognized environmental conditions* (*RECs*). It is intended to satisfy the "*all appropriate inquiry"* requirements established under the federal Superfund law, federal regulations in 40 CFR Part 312, and Part 201 of Michigan's NREPA, PA 451 of 1994. *Recognized environmental conditions* are generally defined as the presence, or likely presence, of any hazardous substances or petroleum products in, on, or at a property: due to any release to the environment; under conditions indicative of a release to the environment; or, under conditions that pose a material threat of a future release to the environment. *De minimis* conditions are not *recognized environmental conditions*.

2.3 Detailed Scope of Services

The scope of services was defined in accordance with the American Society for Testing and Materials Standard for Phase I ESAs (ASTM Standard E1527-13). Words or terms shown in italics in this document are defined in the ASTM Standard.

A records review, site reconnaissance, interviews and evaluation were conducted, and this document produced. Specific sources, records, and resources utilized in conducting and preparing this Phase I ESA are documented in Section 7.7 References.

2.4 General Limitations

Westshore's Phase I ESA of the Subject Property was performed in accordance with ASTM Standard E1527-13 and good commercial and customary practice in the fields of environmental engineering and science. This statement is in lieu of other statements either expressed or implied. Westshore is not responsible for independent conclusions, opinions, or recommendations made by others based on the information contained in this report.

During the performance of this Phase I ESA, no limiting conditions or exceptions which would be expected to materially affect the results of this Phase I ESA were encountered, unless otherwise expressly noted in this report. As is the case with any investigation of limited scope, site conditions may vary from those observed and witnessed on the date of the site reconnaissance/walk-through survey. The possibility of the discovery of the presence of hazardous substances that are not anticipated and/or were neither witnessed nor identified on the date of the site reconnaissance cannot be completely eliminated. Westshore cannot offer any form of warranty and/or guarantee that the Subject Property does not contain hazardous substances and/or conditions per the results of performing this ESA.

2.5 Significant Assumptions

In the course of our work, we assumed that the documents and interview information we obtained were true and correct. When using our professional judgment to discern more important items from less important items also involved making assumptions; such assumptions were based on our experience, training, and knowledge of ESA work.

2.6 Special Terms and Conditions

Westshore was not aware of special terms and/or conditions for this work.

2.7 Reliance

This work may be relied upon by Tysman Companies, LLC, Community Shores Bank, and their assignees. The scope of services performed in the execution of this evaluation may not be appropriate to satisfy the needs of other users, and use or re-use of this report or its evaluations are at the risk of said users. This report may not be used or relied upon by any other third party without the written consent of Westshore Consulting. Readers of this report are encouraged to call Westshore at (231) 777-3447 if they have any questions.

3.0 User Provided Information

Mr. Chad Bush, is a representative of the User of this Phase I ESA, and is also a representative of the Owner of the Subject Property. Mr. Bush was provided a questionnaire that listed a battery of questions designed to obtain any knowledge with regard to any past, present or suspected environmental contamination on the Subject Property and/or adjacent or nearby properties. Mr. Bush completed the questionnaire on Nay 11, 2017, and a copy is included in Appendix G.

3.1 Title Records

A copy of a Title Insurance Policy for the Subject Property was provided by the User (Appendix B). The provided title data for the Subject Property was reviewed. This record review should not be construed to be a title search or chain of title. The data referenced various deeds, mortgages, utilities and right-of-way easements, a and other typical real estate transactions for the Subject Property parcels. The provided title records did not identify any environmental liens filed or recorded against the Subject Property under federal, tribal, state, or local law.

3.2 Environmental Liens or Activity and Use Limitations

Mr. Bush did not indicate any knowledge of any existing environmental liens or activity use limitations the Subject Property parcels.

3.3 Specialized Knowledge

Mr. Bush did not have any specialized knowledge indicating environmental concerns with regard to the use of the Subject Property parcels. Mr. Bush did mention that there are several ASTs containing fuel on the Subject Property; however, he also stated in the questionnaire that he had no knowledge of leaks, spills, or environmental problems on the Subject Property.

3.4 Valuation Reduction for Environmental Issues

Mr. Bush reported no knowledge of a reduction in the value of the Subject Property parcels as a result of specific environmental issues.

3.5 Commonly Known or Reasonably Ascertainable Information

Mr. Bush did not have any knowledge of any commonly known or reasonably ascertainable environmental concerns regarding the Subject Property parcels.

3.6 Reason for Performing Phase I ESA

This Phase I ESA was completed in support of a refinancing of the Subject Property, by the User and the User's desire to soundly manage environmental risk. This Phase I ESA will be utilized to satisfy the due diligence qualification requirements for the innocent landowner, contiguous property owner or bona fide prospective purchaser defenses to liability under the federal Superfund law (the Comprehensive Environmental Response, Compensation, and Liability Act or CERCLA) as defined in 42 USC Section 9601(35)(B)) and Part 201 of Michigan's Natural Resources and Environmental Protection Act (NREPA) PA 451 of 1994.

3.7 Other User Provided Information

The User did not provide any other information.

4.0 Records Review

4.1 Standard Environmental Record Sources

On May 09, 2017, Westshore obtained a third party search of government databases containing information on sites of potential environmental concern in the vicinity of the Subject Property. This search met the requirements of the applicable Phase I ESA standard (ASTM E1527-13) and a copy of the report is provided in Appendix C.

The Subject Property was listed in only one of the databases searched, the Waste Data System (WDS) tracks activities at facilities regulated by the Solid Waste, Scrap Tire, Hazardous Waste, and Liquid Industrial Waste programs.

The database search identified 28 other sites of potential environmental concern with the specified search distances, some of which were duplicates. Westshore reviewed these listings and determined that none of these other listed sites are likely to have adverse impact upon the Subject Property from contaminant migration (i.e., groundwater migration and/or vapor encroachment). This assessment considered the distances and/or directions of each listed site from the Subject Property or the status of these listed sites, and the Environmental Professional's working knowledge of the Subject Property vicinity were all utilized to make these determinations.

The database report identified one (1) orphan site that could not be mapped with the available information by the database search company. Westshore also reviewed this listing and determined that this listed site is not likely to have adverse impact upon the Subject Property from contaminant migration (i.e., groundwater migration and/or vapor encroachment).

4.2 Additional Environmental Record Sources

The MDEQ, Office of Oil, Gas, and Minerals online interactive GeoWebFace mapping system was reviewed for oil and gas wells and mining sites, and associated geologic information including potable water well records. MDEQ online records for underground storage tanks (USTs), leaking underground storage tanks (LUSTs), and the inventory of Part 201 facilities were reviewed for the Subject Property and vicinity. MDEQ online records in the Wellogic statewide groundwater database, and the Office of Drinking Water and Municipal Assistance scanned water well record retrieval system were reviewed for the Subject Property and vicinity. Excerpts of the associated maps and records identified are included in Appendix D.

Based upon the review of oil and gas wells and mining sites, no oil, gas or brine wells were present within approximately 1.0 mile of the Subject Property.

The Subject Property was not listed in the UST and LUST databases. The Subject Property was not listed in the MDEQ inventory of Facilities (i.e., no BEAs have been prepared and submitted for the Subject Property). Five locations to the west along Robbins Road are listed as having Baseline Environmental Assessments (BEAs) completed and/or as being Part 201 facilities. These five locations were also listed in the database search conducted and discussed in Section 4.1 above.

The Subject Property did not have any wells listed in the Wellogic System or the scanned water well record retrieval system. No water wells were listed on adjacent properties. Some wells are located within approximately 0.25 miles of the Subject Property.

4.3 Physical Setting Sources

The USGS topographic map, Grand Haven Quadrangle, dated 1972 and photo-inspected 1980 (Figure 1), shows the Subject Property mainly as vacant undeveloped land with two residential dwellings in the northwest corner along Robbins Road. The Subject Property is located approximately 605 feet above mean sea level. The most notable surface water features observed on the map are the Grand River located approximately 1.35 miles northeast, an unnamed bayou of the Grand River located approximately 0.86 miles northeast, Pottawatomie Bayou located approximately 1.44 miles southeast, and Lake Michigan located approximately 1.31 miles west. Local topography and surface water features indicate the regional groundwater flow is likely east towards the river and the bayou.

4.4 Historical Use Information on the Subject Property

Information pertaining to the past uses of the Subject Property came from the sources discussed above, interviews discussed in Section 6.0, and a review of municipal files, city directories, and historical aerial photographs as discussed below.

Historical fire insurance maps were not available for the Subject Property or vicinity.

Local Municipal Files

The Ottawa County Equalization and the City of Grand Haven Assessor's Office internet database records were reviewed, portions of which are provided in Appendix B. Freedom of Information Act (FOIA) requests were sent to the Ottawa County Environmental Health Department and the City of Grand Haven Fire Department to obtain copies of any records or files they might have with regard to environmental concerns at the Subject Property or vicinity. The Grand Haven, Permits Department was visited in person to review any files they might have with regard to environmental concerns at the Subject Property or vicinity.

The Ottawa County Equalization online information indicated that all five parcels comprising the Subject Property are currently owned by the William J. Tysman Trust. The records indicated that all of the parcels are zoned C-1 (commercial) except the Parcel #70-03-33-200-070 which is zoned I-1 (industrial). Parcel 70-03-33-200-035 has a 768 square foot building listed on it, and Parcel #70-03-33-200-007 has a 480 square foot building listed on it; the remaining parcels are not listed as having any building currently or previously. No environmental liens or land use restrictions were listed on the reviewed records. The Ottawa County GIS online mapping system listed the current owner of all five parcels comprising the Subject Property as Chad D. Bush.

The Ottawa County Environmental Health Department had records regarding the on-site septic sewage system, however, did not have any files or records indicating any potential environmental concerns.

The City of Grand Haven Fire and Building Departments did not have any files or record indicating any potential environmental concerns.

City Directories

Polk's City Directories for 2016 through 1952 were reviewed at approximate five-year intervals at the Loutit Public Library in Grand Haven, Michigan (Appendix E). The Subject Property address at 17114 Robbins Road from 2016-1963 under William Tysman Trucking,

Snowplowing, and Mobile Storage Companies. Before 1963, the Subject Property was not listed.

Aerial Photographs

A total of eight (8) aerial photographs depicting the Subject Property were reviewed: 1938, 1981, 1994, 1997, 1999, 2004, 2008, and 2014 (Appendix F and Figure 2). Scale and quality varied and limited interpretation.

The 2014 aerial shows the Subject Property parcels as they appeared at the time of the Phase I ESA (i.e., four (4) buildings/structures: an office building, a shop building, a small garage building, and a salt barn, with stock piles of materials and semi-trailers and vehicles parked across the Subject Property.

The 2008 and 2004 aerials show the Subject Property similar to the 2014 aerial except there is a small shed present on the 2008 aerial on the northwest parcel that is not present on the 2014 aerial.

The 1999 through 1994 aerials are similar to 2004 aerial except there is a house present on the northwest parcel that is not present on the 2004 aerial.

The 1981 aerial was of poor quality, however, appeared to show the Subject Property as mainly undeveloped wooded land with some possible residential homes along Robbins Road.

The 1938 aerial depicts the Subject Property as undeveloped land with possible agricultural use; Robbins Road did not exist in this aerial.

4.5 Historical Use Information on Adjoining Property

City Directories

Historical city directories were reviewed as discussed above. The adjacent properties to the north and east of the Subject Property were listed as doctor offices and banks from 2016 to 1983, as residential dwellings from 2016 to 1963, and as a mobile home repair operation from 1993 to 1988. Further to the east an elementary school was listed from 2016 to 1973. The adjacent properties to the west were listed as a hair salon from 2007 to 2003, and as a store plaza with a grocery store from 1988 to 1983. Further to the west across 172nd Avenue a gas station and oil change operation was listed from 2016 to 1988 and a grocery store was listed in 1998. The adjacent property to the south was listed as residential from 2016 to 2003.

Aerial Photographs

Historical aerial photographs were reviewed as discussed above. The 2014 and 2008 aerials show the adjacent parcels to the Subject Property as they appeared at the time of the Phase I ESA (i.e., a shopping center west, multi-family housing south, undeveloped woodland east, commercial operations and residential dwellings north).

The 2004 through 1997 aerials show the adjacent parcels similar to the 2008 aerial except there is no multi-family dwellings located adjacent south.

The 1994 aerial is similar to the 1997 aerial except there is no commercial buildings located on the adjacent parcels north on the 1994 aerial.

The 1981 aerial shows the vicinity with residential homes and undeveloped wooded land.

The 1938 aerial depicts the adjacent parcels as undeveloped with agricultural use.

4.6 Previously Conducted Reports and/or Investigations

Two previously prepared/conducted reports or investigations for a portion of the Subject Property were provided by the User of this Phase I ESA or were discovered by checking standard sources, a Phase I ESA and Phase II ESA conducted in August 2014 for two parcels, one of which is now part of the Subject Property (i.e., Parcel # 70-03-33-200-070).

The Phase I ESA discovered one *REC* with respect to the two parcels (the Subject Property); the government databases reviewed listed three sites to the west of the Subject Property parcels:

The former Dake Press Corporation 724 Robbins Road, Grand Haven, MI 49417
The former Robbins Road Hardware 948 Robbins Road, Grand Haven, MI 49417
Brimarc, Inc. 947 Robbins Road, Grand Haven, MI 49417

Westshore believed these sites had the potential to adversely affect the Subject Property via contaminant migration (groundwater migration and/or vapor encroachment). The report recommended further investigation to define the environmental conditions of the Subject Property.

Subsequent to completing the Phase I ESA listed above, a limited Phase II ESA was conducted to investigate the three listed sites of concern located to the west of the Subject Property. The Phase II ESA involved conducting reviews of the Michigan Department of Environmental Quality files/records for each of the listed sites. The Phase II ESA concluded that none of the three (3) listed sites of concern had a significant potential to impact the Subject Property of the (August 2014) Phase I ESA via contaminant migration.

5.0 Site Reconnaissance

5.1 Methodology and Limiting Conditions

Mr. Roger Bour, Westshore Project Manager, inspected the Subject Property on May 11, 2017 by walking the grounds and making observations. Mr. Bour had full access to all of the parcels comprising the Subject Property as well as the four (4) structures located on the Subject Property.

The weather was partly clear and warm, with no impediment to observation of the ground surfaces for evidence of staining, stressed vegetation, stockpiled materials, and other indications of environmental concern. Select photographs taken during the inspection are included in Appendix A.

5.2 General Site Setting

The Subject Property is located to the south of Robbins Road and east of 172nd Avenue. The surrounding properties are mostly commercial and/or residential, with a large grocery store located adjacent west, residential dwellings located adjacent north and south, and commercial operations located northeast.

The topography of the Subject Property is flat with some low lying areas on the Subject Property that appear to be seasonal wetlands and/or regulated wetlands.

Several easements are located on the Subject Property to allow access to Consumers Power to service the sub-station located to the west of the Subject Property and a cell phone tower also located to the west of the Subject Property.

5.3 Current Use and Improvements of Subject Property

The Subject Property is currently utilized as an aggregate, road salt, landscaping materials sales and trucking operation. Various types of aggregate (gravel, sand, stone, and road salt) and landscaping materials (wood chips, shredded bark, top soil) are stockpiled on the property and are sold. Numerous empty semi-trailers are stored on the Subject Property also. The sold products are either loaded on to customer provided transportation or are delivered utilizing onsite supplied transportation (dump trucks and semi-trailers).

The four buildings/structures on the Subject Property can be described as an office building (former small residence), a shop or maintenance building, a small garage building utilized for general storage, and a salt barn.

5.4 Current Use of Adjoining Properties

The adjoining properties to the Subject Property include a shopping center to the west, commercial office type buildings and residential developments to the north, undeveloped woodland to the east, and a multi-family residential development to the south. An electrical substation and a mobile telecommunications tower/aerial are also present adjacent to the southwest.

5.5 Interior Observations

Office Building

The office building is a former residential type dwelling (house) that was converted or made into an office for the aggregate/landscaping business operation at the Subject Property. The interior of this building consists of a lobby/reception area, and several rooms made into offices. The interior of this building is non-remarkable from an environmental stand point.

Shop or Maintenance Building

The shop building is a (60'x150') one story steel frame building with concrete floor, three (3) overhead doors are located on the east side. The interior is divided into a main work area, an office area with a mezzanine above it, and a separate smaller work area or bay. The interior of the building has floor drains evenly spaced across the main work space area. The floors in the building were in good shape with no cracks, holes or fissures in it. However, the floor in the main work space area was heavily stained with oil around one of the floor drains. Several vehicles were stored in the main work area.

An air compressor, two 500-gallon above ground tanks holding motor oil, and several 55-gallon drums containing oil, were located in the small work area. None of the tanks were observed to be leaking or spilling. Smaller containers of lubricants and cleaners were noted in the small work area or bay. Two floor drains were located in the smaller work area or bay.

Garage Building

The garage building is a small approximately 24'x24' wooden, one story structure with a concrete floor. The interior contained several old vehicles, lawn implements, and miscellaneous debris (i.e., the interior was being utilized for general storage). No hazardous materials were noted in the interior of this building.

Salt Barn

The salt barn is a three sided structure with half height concrete walls and floor, and fabric canopy utilized to store road salt. The interior contained a stock pile of salt and was otherwise non-remarkable.

Subsequent to inspecting the interior areas of the structures and buildings, one of the Site personnel named Matt, indicated that the floor drains in the Shop building all are connected to the City or Municipal sewer.

5.6 Exterior Observations

The Subject Property is currently in use as an outdoor storage area for landscaping materials, road salt, various aggregates, and empty semi-trailers. Various stockpiles of materials were noted during the site inspection, including wood chips, sand, boulders, gravel, and stones, shredded bark, dyed wood chips, top soil, etc.

Numerous semi-trailers are located on the Subject Property. Several cargo containers were also located at various locations. The interior of trailers and containers were not inspected. None of the trailers or containers were observed to be leaking or spilling any contents to the ground surface or exterior.

Vegetation, weeds, small trees, and lawn areas are present around the Subject Property. A low lying area that contained water at the ground surface is located on the western margin of

the Subject Property, approximately northwest of the shop building. This low lying area appears to be a seasonal wetland, and potentially a regulated wetland.

Five steel, single-walled, ASTs are located in the central portion of the Subject Property. Each of these tanks is approximately 1,000 gallons in capacity. According to site personnel the tanks contain gasoline, diesel fuel, and off-road diesel fuel. The tanks are located on a concrete pad with a small discontinuous curb present along the edge of the pad. The area where vehicles fill up adjacent to the tanks is situated on gravel (i.e., no concrete pad). The pad and curb do not provide 100% containment for any one of the tanks in the event of a leak or breach from one of the tanks.

There were no signs of pits, ponds, lagoons, below ground storage tanks, monitoring wells, fill ports, vents, or signs of hazardous materials mismanagement on the Subject Property.

6.0 Interviews

6.1 Interview with Owner

Mr. Chad Bush is the representative of the User of this Phase I ESA and is also the Owner representative of the Subject Property. Mr. Bush's interview information is included in Section 3.0 of this Phase I ESA.

6.2 Interview with Key Site Manager

No other site managers were interviewed.

6.3 Interviews with Occupants

No other occupants were interviewed.

6.4 Interviews with Past Owners, Operators, and Occupants

No past owners, operators, or occupants were available for interview.

6.5 Interviews with State and/or Local Governmental Officials

No local government officials were interviewed for this Phase I ESA. The relevant State and Local government files and records were reviewed via FOIA and are discussed in Sections 4.2, 4.4 and 4.6 of this Phase I ESA.

6.6 Interviews with Others

No others were interviewed for this Phase I ESA.

7.0 Evaluation

7.1 Findings

The Subject Property parcels are located within Grand Haven Township in a commercial area that was developed in the late 1960s and early 1970s. Prior to that time the Subject Property parcels were hay and celery fields. The Subject Property is currently being utilized for outdoor storage for landscaping materials and trucking, and appears to have been utilized as such since the late 1960s and early 1970s.

The databases searched did not identify the Subject Property as an environmental concern or *REC*. The databases searched did identify 28 sites of environmental concern in the general vicinity of the Subject Property. Westshore reviewed these listings and determined that none of these listed sites present a significant potential for contaminant migration onto the Subject Property via groundwater flow or vapor encroachment; therefore, are not *RECs*. The distance and/or direction of the sites from the Subject Property, the listed status of sites, and the Environmental Professional's working knowledge of the Subject Property vicinity were all utilized to make these determinations.

Five steel, single-walled, ASTs are located in the central portion of the Subject Property. The tanks are located on a concrete pad with a small discontinuous curb present along the edge of the pad. The area where vehicles fill up adjacent to the tanks is situated on gravel (i.e., no concrete pad). The pad and curb do not provide 100% containment for any one of the tanks in the event of a leak or breach from one of the tanks. The tanks did not show any signs of leaking and/or spilling; however, the fact that the tanks are not in full or complete containment and the fill area is not on a containment pad determines that the tanks are a *REC*.

The floors in the maintenance building are significantly stained with oil, and floor drains are present in the buildings. The floor drains are reported to discharge to the municipal sanitary sewer and the concrete floor in the building is in excellent shape with no cracks, holes or fissures leading to the sub surface. Therefore, the oil staining and floor drains are not *RECs*.

No other *RECs* were identified with respect to the Subject Property.

7.2 Opinion

Westshore has conducted *all appropriate inquiry* into the environmental conditions of the Subject Property, by utilizing standard sources.

This assessment has revealed one *REC* in connection with the Subject Property which is the five (5) ASTs located in the central portion of the Subject Property. These storage tanks do not have complete secondary containment that would have prevented any leaks or spills from impacting the subsurface. Furthermore, the area where vehicles actually "fill-up" or dispense the fuel is located on bare soil. The tanks are required to have 100% secondary containment and the fill-up or dispensing area should be located on concrete at a minimum.

The presence of the five (5) ASTs with volumes totaling above 1320-gallons indicates that the Subject Property is subject to Federal and State Spill Pollution Prevention and Countermeasures Plan (SPCC) regulations and Pollution Incident Prevention Plan (PIPP) regulations, respectively.

Further investigation to determine the environmental status of the subsurface soil and/or groundwater around and/or adjacent to the ASTs is warranted. Phase II ESA soil and groundwater sampling is recommended to determine the absence or presence of contamination that may have occurred as a result of the existing AST fuel tanks and fuel dispensing from them.

Preparation of a SPCC plan is recommended and warranted as well as installation of appropriate spill containment devices or structure for the ASTs and fuel dispensing area.

7.3 Data Gaps

Reasonably ascertainable, standard historical sources were not adequate for fully delineating the complete history of developed use prior to 1938. This is a common occurrence and this *data failure* did not appear to present a *significant data gap* as information was adequate for meeting the Phase I ESA performance standard.

No other *data gaps* were noted for this Phase I ESA.

7.4 Conclusions

Westshore Consulting has performed a Phase I ESA in conformance with the scope and limitations of ASTM Practice E1527-13 of the following five parcels of land located along Robbins Road in Grand Haven Township, Ottawa County, Michigan 49417 (Subject Property). The five parcels are:

- 17114 Robbins Road (70-03-33-200-035)
- V/L Robbins Road (70-03-33-200-056)
- V/L Robbins Road (70-03-33-200-077)
- 17134 Robbins Road (70-03-33-200-007)
- V/L Robbins Road (70-03-33-200-070)

Any exceptions to, or deletions from this practice are described in Section 2.4 of this report.

This assessment has revealed no evidence of *recognized environmental conditions* in connection with the Subject Property, except for the following:

- Five steel, single-walled, aboveground storage tanks (ASTs) are located in the central portion of the Subject Property. The tanks are located on a concrete pad with a small discontinuous curb present along the edge of the pad. The area where vehicles fill up adjacent to the tanks is situated on gravel (i.e., no concrete pad). The pad and curb do not provide 100% containment for any one of the tanks in the event of a leak or breach from one of the tanks. The tanks did not show any signs of leaking and/or spilling; however, the tanks are not in full or complete containment and the fill area is not on a containment pad.

Additional investigation as described in Section 7.2 to further define the environmental conditions at the Subject Property is warranted.

7.5 Additional Services

No additional services, beyond general consulting on the work and findings of this Phase I ESA were performed. Westshore briefly addressed selected *business environmental risk* issues in Section 8.0.

7.6 Limiting Conditions/Deviations

Westshore is aware of no deviations from ASTM Practice E1527-13 in this Phase I ESA. Minor variations within the guidelines published by ASTM were made according to Westshore's professional judgment, the variation in available information, and any described limitations.

7.7 References

Aerial photographs, various years. Westshore Consulting, Ottawa County, and internet based sources. May 2017.

American Society of Testing and Materials, ASTM E1527-13, Standard Practice for Environmental Site Assessments: Phase I Environmental Site Assessment Process, November, 2013.

Bush Chad, Representative of the User and Owner. Questionnaire and Title Policy. May 2017.

City of Grand Haven/Grand Haven Township, Fire, Building/Permit Departments files, FOIA. May, 2017.

Environmental Data Resources, Inc. EDR Radius Map Report. May 9, 2017.

Michigan Department of Environmental Quality, GeoWebFace, interactive map viewer for oil and gas wells, surface mines, geologic information and water well records. May 2017.

Michigan Department of Environmental Quality, online databases for underground storage tanks and Part 201 facilities. May 2017.

Ottawa County Equalization and Health Department files, FOIA and online information, May, 2017.

Polk City Directories, 2016 through 1952, Loutit District Library, Grand Haven, Michigan. May 2017.

United States Geological Survey. Topographic Map, 7.5 Minute Quadrangle Series: Grand Haven Quadrangle, Michigan. Dated 1972, photo-inspected 1980.

7.8 Signatures of Environmental Professionals

This Phase I ESA was completed by Mr. Roger A. Bour and reviewed by Ms. Jenifer L. Garwood. We declare that, to the best of our professional knowledge and belief, we meet the definition of *Environmental Professional* as defined in Section 312.10 of 40 CFR 312. We have the specific qualifications based on education, training, and experience to assess a property of the nature, history, and setting of the Subject Property. We have developed and performed the *all appropriate inquiries* in conformance with the standards and practices set forth in 40 CFR Part 312.

Roger A. Bour Senior Project Manager	06/05/2017 Date
Jenifer L. Garwood Environmental Project Manager	06/05/2017 Date

7.9 Qualifications of Environmental Professionals

The qualifications of the Environmental Professionals for this Phase I ESA follow.

ROGER A. BOUR

Senior Environmental Project Manager

Education

B.S., Water Science, Northern Michigan University, 1985

Continuing Education, Business, Grand Valley State University, 1986-1990

YEARS IN PROFESSION - 32

Certifications and Training

- *ASTM Risk Based Corrective Action*
- *Brownfield Redevelopment & Environmental Due Diligence*
- *Contract and Project Management*
- *OSHA 40-Hour Personal Protection Safety Course 1997 and Refreshers 1998-2012 (Handling Hazardous Materials)*
- *Environmental Regulation and Groundwater Monitoring*
- *MDEQ Part 201 Cleanup Criteria Training*

Mr. Bour provides and oversees a wide range of Westshore services, including coordinating multiple technical services for complex property transactions and/or remedial actions. Mr. Bour meets the meet the definition of *Environmental Professional* as defined in Section 312.10 of 40 CFR 312. He has the specific qualifications based on education, training, and experience. He takes lead responsibility for Brownfield and Environmental Site Assessment services and has extensive experience and knowledge in Phase I, II and III Site Assessments, Baseline Environmental Assessments and Due Care Plans. Mr. Bour has a broad background in all types of regulatory compliance issues including air, stormwater, wastewater, groundwater, waste management, hazardous waste, spill contingency planning, OSHA, MIOSHA, MSHA, land and dredge. Mr. Bour also has extensive experience in regulatory compliance for mining, railroad, power generation, trucking/distribution, defense contractors, automotive parts manufacturing, food service, furniture manufacturing, chemical manufacturing, and other commercial/industrial operations.

Mr. Bour also has knowledge as a wet chemistry laboratory technician, sampling of groundwater, surface water, waste, and wastewater. He has conducted treatability studies of industrial and municipal wastewater, and is a certified commercial and industrial wastewater treatment plant operator (16 classifications).

Westshore Consulting, Muskegon, Michigan (2012-current) – *Senior Environmental Project Manager*

Trace Analytical Laboratories, Inc., Muskegon, Michigan. (2010-2012) – *Project Manager*

Lakeshore Environmental, Inc., Grand Haven, Michigan (1997-2010) – *Senior Project Manager*

WW Engineering and Science/Earth Tech, Grand Rapids, Michigan (1991-1997) – *Project Scientist*

Dell Engineering/Environmental Services, Inc., Holland, Michigan (1985-1991) – *Project Scientist/Lab+ Field Technician*

Areas of Expertise

- *Environmental Science and Management*
- *Regulatory Compliance and Environmental Laws and Policy*
- *Environmental Investigations and Site Assessments (Phase I, II, III, BEA, and Due Care Plans)*
- *Land Use, Development and Brownfield Redevelopment*
- *Surface Water, Stormwater and Watershed Management*
- *Environmental Sampling and Testing*
- *Environmental Liability Evaluation*
- *Hydrogeologic Investigations and Remedial Action Associated with Underground Storage Tank and Industrial Facilities*
- *Analysis of Environmental Samples for Contaminants using Volatile and Semi-Volatile EPA Methods*

JENIFER L. GARWOOD

Environmental Project Manager/Administrative Assistant

Education

A.A.S., Drafting, Muskegon Community College, 1992

YEARS IN ENVIRONMENTAL PROFESSION – 14

YEARS IN ADMINISTRATIVE PROFESSION – 29

Certifications and Training

- *Michigan Department of Environmental Quality, Environmental Compliance Conference, 2006*
- *Environmental Data Resources, All Appropriate Inquiries and Liability Rules*
- *Commonground University, Environmental Due Diligence 101, September 2009*
- *Eastern Michigan University, QS-9000 Internal Auditor Training*
- *Eastern Michigan University, Reliability and Maintainability Training*

Ms. Garwood's responsibilities include environmental site assessments and support of environmental due diligence activities. Ms. Garwood meets the meet the definition of *Environmental Professional* as defined in Section 312.10 of 40 CFR 312. She has the specific qualifications based on education, training, and experience. In addition, Jenifer is responsible for administrative assistant activities, and has a wide range of experience with a variety of computer programs. Jenifer's responsibilities are diverse, working with the preparation of client specific documents, specification documents, and marketing documents. She is responsible for maintaining project tracking databases, maintaining and researching state and municipal permits and forms, and environmental compliance support and research.

Prior to joining Westshore Consulting, Jenifer was a Management Representative responsible for establishing, implementing and maintaining the ISO-9001, QS-9000 with Tooling and Equipment Supplement quality systems for Hayes Lemmerz International – Equipment and Engineering. In addition, she was responsible for implementing and training personnel on the computer systems for tracking job progress, a drafting detailer utilizing AutoCAD and creating company standard product drawings. Other duties included support for engineering, accounting and management personnel, including specialized financial reports, maintaining company standards, and controlling customer drawings and specifications.

Westshore Consulting, Muskegon, Michigan (2002-current) – *Environmental Project Manager/Administrative Assistant*

Hayes Lemmerz International Equipment & Engineering, Montague, Michigan (1988-2002) – *Management Representative*

Areas of Expertise

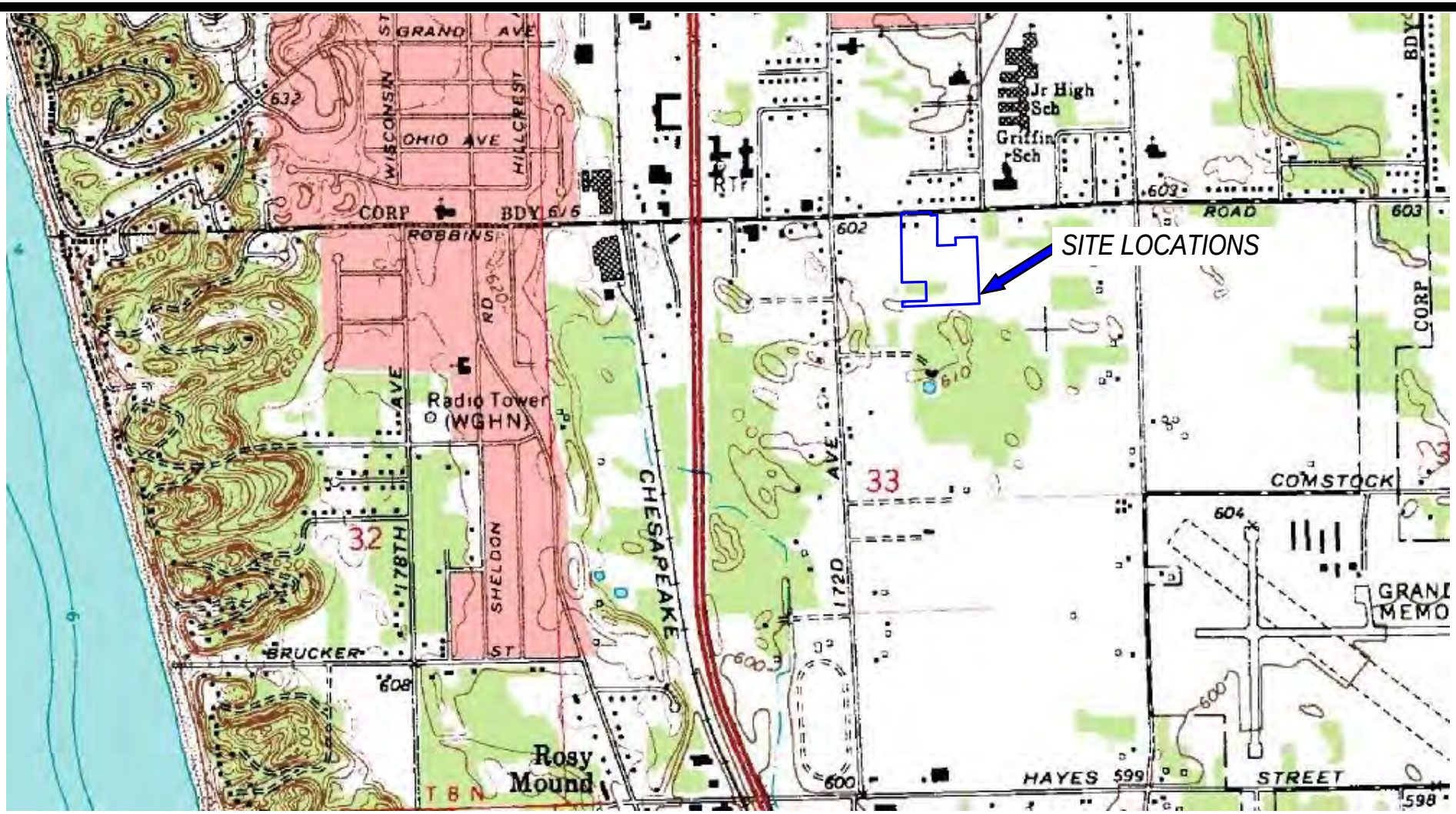
- *Environmental Database Management*
- *Phase I Environmental Site Assessments*
- *Environmental Due Diligence Research*
- *Environmental Report Preparation*
- *Project Tracking Databases*

8.0 Non-Scope Considerations

Beyond the ASTM Standard scope for Phase I ESAs, Westshore briefly addressed the following *business environmental risk* issues:

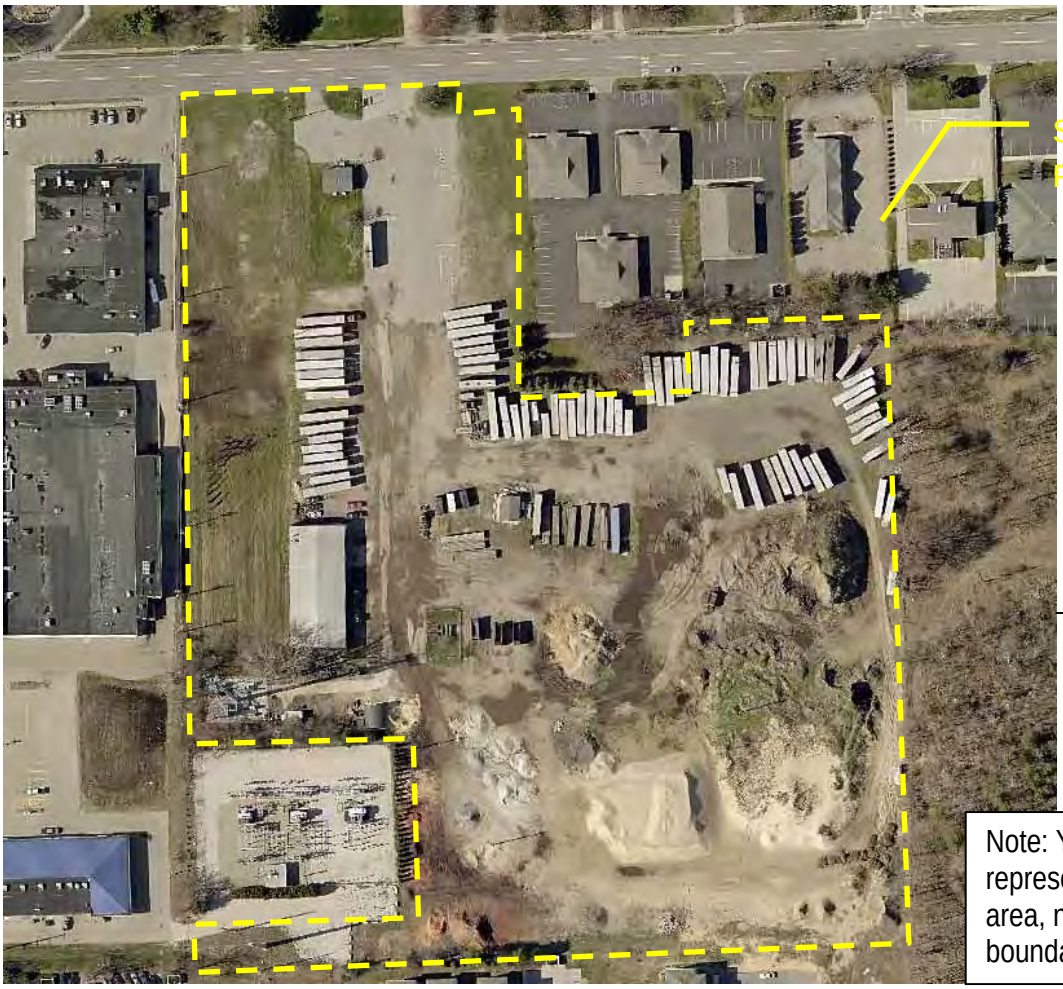
- **Wetlands:** Westshore did not complete a wetland survey or delineation of the Subject Property during this Phase I ESA. The MDEQ wetlands online map viewer was reviewed for any potential wetland records that relate to the Subject Property and the vicinity. Wetland soils are documented on the Subject Property, however, no regulated wetlands are depicted on the Subject Property. Wetland areas, possibly seasonal, were observed on the west margin of the Subject Property. Prior to conducting any construction or land disturbance in the area between the maintenance building and the west property boundary, it may be prudent to conduct a wetland survey or assessment.
- **Asbestos:** Westshore did not complete an asbestos survey or asbestos sampling of the buildings and their construction materials. Based on the ages of the buildings or parts thereof, asbestos may be present in the construction materials. No obvious potential asbestos containing materials were noted during the site inspection.

Figures



TOPOGRAPHIC BASE: UNITED STATES GEOLOGICAL SURVEY, 7.5 MINUTE QUADRANGLE SERIES; GRAND HAVEN QUADRANGLE, MICHIGAN 1972; REVISED PHOTOINSPECTED 1980

WESTSHORE ENGINEERING & SURVEYING ENVIRONMENTAL	Client: Tysman Companies	SITE LOCATION MAP	Checked: RAB
			Date: 05/17/17
			Drawn by: JLG
			Date: 05/17/17
www.WestshoreConsulting.com (800) 968-2864	Site: Robbins Road parcels, Grand Haven Township, Ottawa County, Michigan		File No.: 03513-0017
			Figure: 1

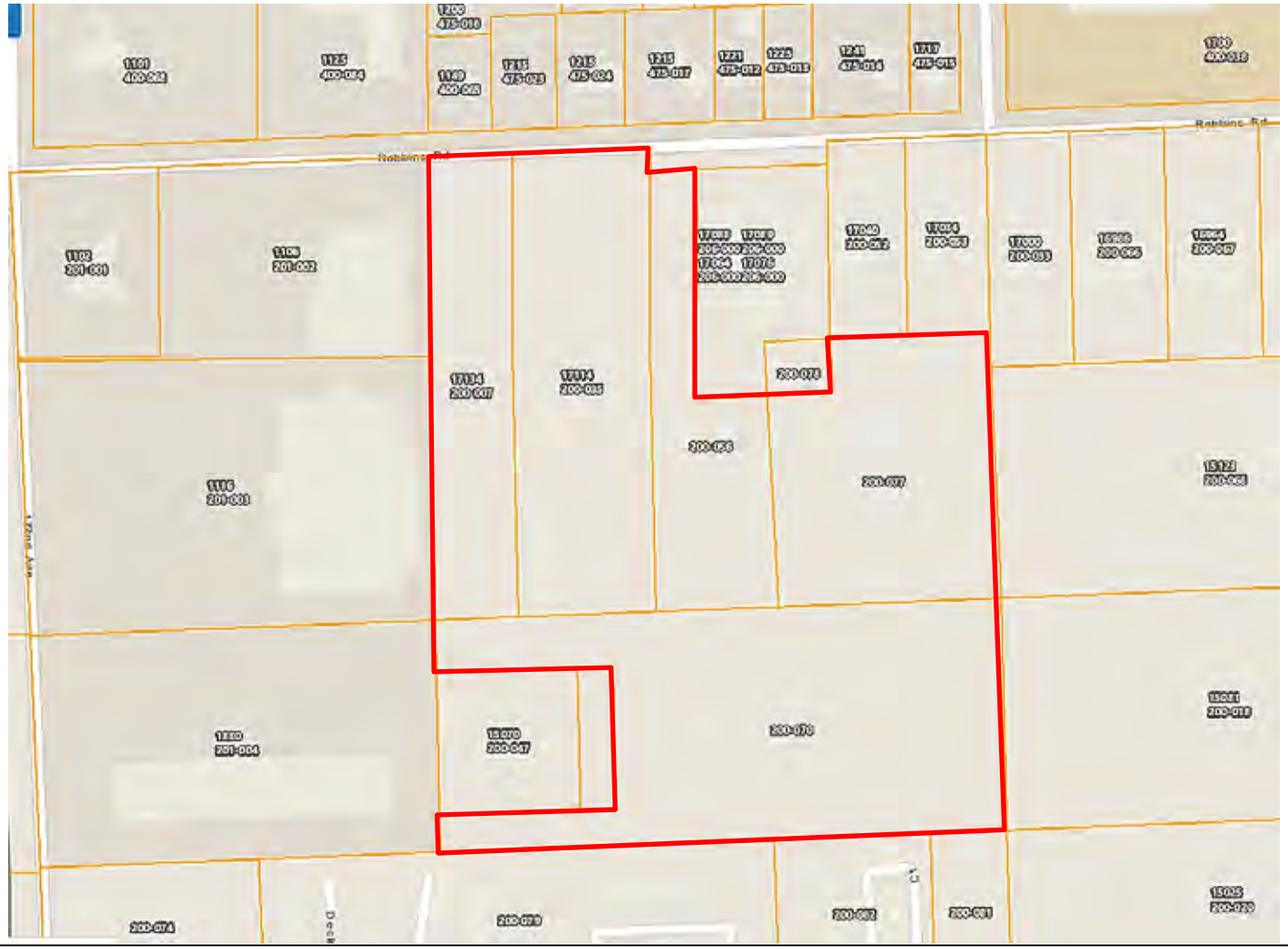


Looking North

Note: Yellow Dashed Outline represents general property area, not exact property boundaries.

Streetview Image
Looking Southeast from
Robbins Road

WESTSHORE ENGINEERING & SURVEYING ENVIRONMENTAL	*Client:* Tysman Companies	**2014 AERIAL PHOTO & STREETVIEW**	*Checked:* RAB
			Date: 05/17/17
			Drawn by: JLG
www.WestshoreConsulting.com	*Site:* Robbins Road parcels, Grand Haven Township, Ottawa County, Michigan		*Date:* 05/17/17
(800) 968-2864			*File No.:* 03513-0017
			Figure: **2**



COUNTY OF OTTAWA, GRAND HAVEN TOWNSHIP, NORTHEAST 1/4, SECTION 33, T08N, R16W

WESTSHORE ENGINEERING & SURVEYING ENVIRONMENTAL

www.WestshoreConsulting.com (800) 968-2864

Client: Tysman Companies

Site: Robbins Road parcels, Grand Haven Township, Ottawa County, Michigan

LOCAL TAX MAP

Checked:	RAB
Date:	05/17/17
Drawn by:	JLG
Date:	05/17/17
File No.:	03513-0017
Figure:	3

Appendix A

Photographs

View from Subject Property - looking West at Adjacent Properties | **1**

Wet Soil Area on West Margin of Subject Property | **2**

Southwest Adjacent Telecommunications Tower | **3**

Road Salt Barn on Subject Property | **4**

Aboveground Storage Tanks in Central Portion of Subject Property | **5**

Floor Staining in Shop/Maintenance Building | **6**

Site: Five Parcels along Robbins Road, Grand Haven Township, Ottawa County, Michigan

Client: Tysman Companies, LLC

File No.:	03513-0017
Photos By:	R. Bour
Date:	05/11/17

WESTSHORE CONSULTING
Engineers ▪ Scientists ▪ Surveyors

Muskegon, MI
(231) 777-3447

Grand Haven, MI
(800) 965-2864

Typical Floor Drain in Shop/Maintenance Building | **7**

Aboveground Storage Tanks in Shop/Maintenance Building | **8**

Soil/Aggregate Piles on Subject Property | **9**

South Adjacent Residential Apartments | **10**

Stockpile of Dyed Wood Chips on Subject Property | **11**

Southwest Adjacent Consumers Energy Electrical Substation | **12**

Site: Five Parcels along Robbins Road, Grand Haven Township, Ottawa County, Michigan

Client: Tysman Companies, LLC

File No.:	03513-0017
Photos By:	R. Bour
Date:	05/11/17

WESTSHORE CONSULTING
Engineers ▪ Scientists ▪ Surveyors

Muskegon, MI
(231) 777-3447

Grand Haven, MI
(800) 965-2864

Appendix B

Legal Description & Local Municipal Records

Real Property Search

New Search Refine Search

To view the property summary, **click on the parcel number.**

Owner's Name	Parcel #	Address	City / Township	Village
BUSH CHAD D	70-03-33-200-007	17134 ROBBINS RD	GRAND HAVEN TOWNSHIP	N/A
BUSH CHAD D	70-03-33-200-035	17114 ROBBINS RD	GRAND HAVEN TOWNSHIP	N/A
BUSH CHAD D	70-03-33-200-056	0 ROBBINS RD	GRAND HAVEN TOWNSHIP	N/A
BUSH CHAD D	70-03-33-200-070	0 ROBBINS RD	GRAND HAVEN TOWNSHIP	N/A
BUSH CHAD D	70-03-33-200-077	0 ROBBINS RD	GRAND HAVEN TOWNSHIP	N/A

« First < Prev Results 1 - 5 of 5 Next > Last »

ROBBINS RD GRAND HAVEN, MI 49417 (Property Address)

Parcel Number: 70-03-33-200-070

Item **1** of **1** 1 Image / 0 Sketches

Property Owner: TYSMAN WILLIAM J TRUST

Summary Information

> Assessed Value: $88,100 | Taxable Value: $37,858

> Property Tax information found

Owner and Taxpayer Information

Owner	TYSMAN WILLIAM J TRUST 17114 ROBBINS RD GRAND HAVEN, MI 49417	**Taxpayer**	SEE OWNER INFORMATION

General Information for Tax Year 2015

Property Class	INDUSTRIAL	**Unit**	16 GRAND HAVEN CHARTER TWNSP
School District	Grand Haven	**Assessed Value**	$88,100
MAP #	*Not Available*	**Taxable Value**	$37,858
LABEL SETUP	*Not Available*	**State Equalized Value**	$88,100
SAD'S	*Not Available*	**Date of Last Name Change**	*Not Available*
USER ALPHA 3	*Not Available*	**Notes**	*Not Available*
Historical District	*Not Available*	**Census Block Group**	*Not Available*
FOR SALE	*Not Available*	**Exemption**	*No Data to Display*

Principal Residence Exemption Information

Homestead Date *No Data to Display*

Principal Residence Exemption	June 1st	Final
2015	0.0000 %	0.0000 %

Previous Year Information

Year	MBOR Assessed	Final SEV	Final Taxable
2014	$88,100	$88,100	$37,262
2013	$88,100	$88,100	$36,676
2012	$98,400	$98,400	$35,817

Land Information

Zoning Code	I-1	**Total Acres**	4.920
Land Value	*Not Available*	**Land Improvements**	$0
Renaissance Zone	No	**Renaissance Zone Expiration Date**	*No Data to Display*
ECF Neighborhood	*Not Available*	**Mortgage Code**	*Not Available*
Lot Dimensions/Comments	*No Data to Display*	**Neighborhood Enterprise Zone**	No

Lot(s)	Frontage	Depth
No lots found.		
	Total Frontage: 0.00 ft	**Average Depth: 0.00 ft**

Legal Description

PART OF N 3/4 OF NW 1/4 OF NE 1/4 COM S 980.61 FT & S 89D 28M 46S E 556.54 FT FROM N 1/4 COR, TH N 02D 13M 27S E 52 FT,S 89D 28M 46S E 250 FT, N 02D 13M 27S E 200 FT, N 89D 28M 46S W 250 FT, N 02D 13M 27S E 74.74 FT, S 89D 44M 33S E 802.48 FT, S 0D 42M 10S W 330.28 FT, TH N 89D 28M 46S W 811.14 FT TO BEG. SEC 33 T8N R16W. BLL LOCATED ON THIS PARCEL 70-03-33-200-905, 70-03-33-200-906, 70-03-33-200-907

Land Division Act Information

Date of Last Split/Combine	*No Data to Display*	**Number of Splits Left**	2
Date Form Filed	*No Data to Display*	**Unallocated Div.s of Parent**	0
Date Created	*No Data to Display*	**Unallocated Div.s Transferred**	0
Acreage of Parent	0.00	**Rights Were Transferred**	*Not Available*
Split Number	0	**Courtesy Split**	*Not Available*
Parent Parcel	*No Data to Display*		

Sale History

Sale Date	Sale Price	Instrument	Grantor	Grantee	Terms of Sale	Liber/Page
06/16/2009	$0.00	WD	TYSMAN WILLIAM J-NANCY	TYSMAN WILLIAM J TRUST	INVALID	2009-0028388
12/02/1992	$90,000.00	WD		TYSMAN WILLIAM J	OLD SALE	1663 0712

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ROBBINS RD GRAND HAVEN, MI 49417 (Property Address)

Parcel Number: 70-03-33-200-077

No Images Found

Property Owner: TYSMAN WILLIAM J TRUST

Summary Information

> Assessed Value: $50,900 | Taxable Value: $35,196

> Property Tax information found

Owner and Taxpayer Information

Owner	TYSMAN WILLIAM J TRUST 17114 ROBBINS RD GRAND HAVEN, MI 49417	**Taxpayer**	SEE OWNER INFORMATION

General Information for Tax Year 2015

Property Class	COMMERCIAL	**Unit**	16 GRAND HAVEN CHARTER TWNSP
School District	Grand Haven	**Assessed Value**	$50,900
MAP #	*Not Available*	**Taxable Value**	$35,196
LABEL SETUP	*Not Available*	**State Equalized Value**	$50,900
SAD'S	*Not Available*	**Date of Last Name Change**	*Not Available*
USER ALPHA 3	*Not Available*	**Notes**	*Not Available*
Historical District	*Not Available*	**Census Block Group**	*Not Available*
FOR SALE	*Not Available*	**Exemption**	*No Data to Display*

Principal Residence Exemption Information

Homestead Date *No Data to Display*

Principal Residence Exemption	June 1st	Final
2015	0.0000 %	0.0000 %

Previous Year Information

Year	MBOR Assessed	Final SEV	Final Taxable
2014	$51,700	$51,700	$34,642
2013	$51,700	$51,700	$34,097
2012	$58,200	$58,200	$33,298

Land Information

Zoning Code	C-1	**Total Acres**	2.750
Land Value	*Not Available*	**Land Improvements**	$0
Renaissance Zone	No	**Renaissance Zone Expiration Date**	*No Data to Display*
ECF Neighborhood	*Not Available*	**Mortgage Code**	*Not Available*
Lot Dimensions/Comments	318.04 X 376.63	**Neighborhood Enterprise Zone**	No

Lot(s)	Frontage	Depth
No lots found.		
	Total Frontage: 0.00 ft	**Average Depth: 0.00 ft**

Legal Description

PART OF N 3/4 OF NW 1/4 OF NE 1/4 COM S 89D 44M 33S E 1379.74 FT & S 0D 42M 10S W 280 FT FROM N 1/4 COR, TH N 89D 44M 33S W 224.99 FT, S 0D 42M 10S W 76.63 FT N 89D 44M 33S W 93.05 FT, S 0D 42M 10S W 300 FT, S 89D 44M 33S E 318.04 FT, N 0D 42M 10S E 376.63 FT TO BEG. SEC 33 T8N R16W

Land Division Act Information

Date of Last Split/Combine	01/26/2008	**Number of Splits Left**	0

Date Form Filed	*No Data to Display*	**Unallocated Div.s of Parent**	0
Date Created	01/26/2008	**Unallocated Div.s Transferred**	0
Acreage of Parent	2.75	**Rights Were Transferred**	*Not Available*
Split Number	6	**Courtesy Split**	*Not Available*
Parent Parcel	70-03-33-200-060		

Sale History

Sale Date	Sale Price	Instrument	Grantor	Grantee	Terms of Sale	Liber/Page
06/16/2009	$0.00	WD	TYSMAN WILLIAM-NANCY	TYSMAN WILLIAM J TRUST	INVALID	2009-0028388
12/02/1992	$90,000.00	WD	0	TYSMAN WILLIAM J	OLD SALE	1663 0712

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ROBBINS RD GRAND HAVEN, MI 49417 (Property Address)

Parcel Number: 70-03-33-200-056

No Images Found

Property Owner: TYSMAN WILLIAM J TRUST

Summary Information

> Assessed Value: $67,000 | Taxable Value: $35,362

> Property Tax information found

Owner and Taxpayer Information

Owner	TYSMAN WILLIAM J TRUST 17114 ROBBINS RD GRAND HAVEN, MI 49417	**Taxpayer**	SEE OWNER INFORMATION

General Information for Tax Year 2015

Property Class	COMMERCIAL	**Unit**	16 GRAND HAVEN CHARTER TWNSP
School District	Grand Haven	**Assessed Value**	$67,000
MAP #	*Not Available*	**Taxable Value**	$35,362
LABEL SETUP	*Not Available*	**State Equalized Value**	$67,000
SAD'S	*Not Available*	**Date of Last Name Change**	*Not Available*
USER ALPHA 3	*Not Available*	**Notes**	*Not Available*
Historical District	*Not Available*	**Census Block Group**	*Not Available*
FOR SALE	*Not Available*	**Exemption**	*No Data to Display*

Principal Residence Exemption Information

Homestead Date *No Data to Display*

Principal Residence Exemption	June 1st	Final
2015	0.0000 %	0.0000 %

Previous Year Information

Year	MBOR Assessed	Final SEV	Final Taxable
2014	$67,600	$67,600	$34,806
2013	$67,600	$67,600	$34,258
2012	$76,100	$76,100	$33,456

Land Information

Zoning Code	C-1	**Total Acres**	1.447
Land Value	*Not Available*	**Land Improvements**	$0
Renaissance Zone	No	**Renaissance Zone Expiration Date**	*No Data to Display*
ECF Neighborhood	*Not Available*	**Mortgage Code**	*Not Available*
Lot Dimensions/Comments	*No Data to Display*	**Neighborhood Enterprise Zone**	No

Lot(s)	Frontage	Depth
Lot 1	66.04 ft	323.81 ft
Lot 2	174.39 ft	300.00 ft
	Total Frontage: 240.43 ft	**Average Depth: 311.90 ft**

Legal Description

PART OF NW 1/4 OF NE 1/4 COM S 89D 44M 33S E 904.75 FT & S02D 13M 27S W 33.02 FT FROM NW COR TH S 89D 44M 33S E 66.04 ALG S LI OF ROBBINS RD, S 02D 13M 27S W 323.81 FT, S 89D 44M 33S E 100.89 FT, S 300 FT, W 174.39 FT, N 02D 13M 27S E 623.98 FT TO BEG. SEC 33 T8N R16W 1.69 NA

Land Division Act Information

Date of Last Split/Combine	*No Data to Display*	**Number of Splits Left**	0
Date Form Filed	*No Data to Display*	**Unallocated Div.s of Parent**	0
Date Created	*No Data to Display*	**Unallocated Div.s Transferred**	0
Acreage of Parent	0.00	**Rights Were Transferred**	*Not Available*
Split Number	0	**Courtesy Split**	*Not Available*
Parent Parcel	*No Data to Display*		

Sale History

Sale Date	Sale Price	Instrument	Grantor	Grantee	Terms of Sale	Liber/Page
06/16/2009	$0.00	WD	TYSMAN WILLIAM J-NANCY	TYSMAN WILLIAM J TRUST	INVALID	2009-0028388
08/24/1990	$41,000.00	WD	0	TYSMAN WILLIAM J	OLD SALE	1430 0441

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17114 ROBBINS RD GRAND HAVEN, MI 49417 (Property Address)

Parcel Number: 70-03-33-200-035

No Images Found

Property Owner: TYSMAN WILLIAM J TRUST

Summary Information

> Residential Building Summary
- Year Built: N/A
- Full Baths: 1
- Acres: 2.881
- Bedrooms: 0
- Half Baths: 0

> Assessed Value: $181,800 | Taxable Value: $181,800

> Property Tax information found

Owner and Taxpayer Information

Owner	TYSMAN WILLIAM J TRUST 17114 ROBBINS RD GRAND HAVEN, MI 49417	**Taxpayer**	SEE OWNER INFORMATION

General Information for Tax Year 2015

Property Class	COMMERCIAL	**Unit**	16 GRAND HAVEN CHARTER TWNSP
School District	Grand Haven	**Assessed Value**	$181,800
MAP #	*Not Available*	**Taxable Value**	$181,800
LABEL SETUP	*Not Available*	**State Equalized Value**	$181,800
SAD'S	*Not Available*	**Date of Last Name Change**	*Not Available*
USER ALPHA 3	*Not Available*	**Notes**	*Not Available*
Historical District	*Not Available*	**Census Block Group**	*Not Available*
FOR SALE	*Not Available*	**Exemption**	*No Data to Display*

Principal Residence Exemption Information

Homestead Date *No Data to Display*

Principal Residence Exemption	June 1st	Final
2015	0.0000 %	0.0000 %

Previous Year Information

Year	MBOR Assessed	Final SEV	Final Taxable
2014	$183,500	$183,500	$183,500
2013	$185,500	$185,500	$185,500
2012	$206,000	$206,000	$206,000

Land Information

Zoning Code	C-1	**Total Acres**	2.881
Land Value	*Not Available*	**Land Improvements**	$27,704
Renaissance Zone	No	**Renaissance Zone Expiration Date**	*No Data to Display*
ECF Neighborhood	*Not Available*	**Mortgage Code**	*Not Available*
Lot Dimensions/Comments	*No Data to Display*	**Neighborhood Enterprise Zone**	No

Lot(s)	Frontage	Depth
Lot 1	191.95 ft	657.00 ft
	Total Frontage: 191.95 ft	**Average Depth: 657.00 ft**

Legal Description

E 191.95 FT OF W 904.75 FT OF N 657 FT OF NE 1/4 SEC 33 T8N R16W 3.5 A LOCATED ON THIS PARCEL BLL 70-03-33-200-904

Land Division Act Information

Date of Last Split/Combine	*No Data to Display*	**Number of Splits Left**	0
Date Form Filed	*No Data to Display*	**Unallocated Div.s of Parent**	0

Date Created	*No Data to Display*	**Unallocated Div.s Transferred**	0
Acreage of Parent	0.00	**Rights Were Transferred**	*Not Available*
Split Number	0	**Courtesy Split**	*Not Available*
Parent Parcel	*No Data to Display*		

Sale History

Sale Date	Sale Price	Instrument	Grantor	Grantee	Terms of Sale	Liber/Page
06/16/2009	$0.00	WD	TYSMAN WILLIAM JAY-NANCY	TYSMAN WILLIAM J. TRUST	INVALID	2009-0028388

Building Information - 768 sq ft RANCH (Residential)

General

Floor Area	768 sq ft	**Estimated TCV**	$36,744
Garage Area	0 sq ft	**Basement Area**	0 sq ft
Foundation Size	768 sq ft		
Year Built	*Not Available*	**Year Remodeled**	*Not Available*
Occupancy	*Not Available*	**Class**	CD
Effective Age	*Not Available*	**Tri-Level**	*Not Available*
Percent Complete	*Not Available*	**Heat**	Forced Heat & Cool
AC w/Separate Ducts	*Not Available*	**Wood Stove Add-on**	*Not Available*
Basement Rooms	*Not Available*	**Water**	*Not Available*
1st Floor Rooms	*Not Available*	**Sewer**	*Not Available*
2nd Floor Rooms	*Not Available*	**Style**	RANCH
Bedrooms	0		

Basement Finish

Recreation	0 sq ft	**Recreation % Good**	0%
Living Area	0 sq ft	**Living Area % Good**	0%
Walk Out Doors	0	**No Concrete Floor Area**	0 sq ft

Plumbing Information

3 Fixture Bath	1

Porch Information

WPP	80 sq ft	**Foundation**	Standard

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17134 ROBBINS RD GRAND HAVEN, MI 49417 (Property Address)

Parcel Number: 70-03-33-200-007

No Images Found

Property Owner: TYSMAN WILLIAM J TRUST

Summary Information

> Residential Building Summary
- Year Built: 1963
- Full Baths: 1
- Acres: 1.781
- Bedrooms: 0
- Half Baths: 0

> Assessed Value: $77,600 | Taxable Value: $77,600

> Property Tax information found

Owner and Taxpayer Information

Owner	TYSMAN WILLIAM J TRUST 17114 ROBBINS RD GRAND HAVEN, MI 49417	**Taxpayer**	SEE OWNER INFORMATION

General Information for Tax Year 2015

Property Class	COMMERCIAL	**Unit**	16 GRAND HAVEN CHARTER TWNSP
School District	Grand Haven	**Assessed Value**	$77,600
MAP #	*Not Available*	**Taxable Value**	$77,600
LABEL SETUP	*Not Available*	**State Equalized Value**	$77,600
SAD'S	*Not Available*	**Date of Last Name Change**	*Not Available*
USER ALPHA 3	*Not Available*	**Notes**	*Not Available*
Historical District	*Not Available*	**Census Block Group**	*Not Available*
FOR SALE	*Not Available*	**Exemption**	*No Data to Display*

Principal Residence Exemption Information

Homestead Date *No Data to Display*

Principal Residence Exemption	June 1st	Final
2015	0.0000 %	0.0000 %

Previous Year Information

Year	MBOR Assessed	Final SEV	Final Taxable
2014	$84,600	$84,600	$84,600
2013	$84,600	$84,600	$84,600
2012	$93,600	$93,600	$67,382

Land Information

Zoning Code	C-1	**Total Acres**	1.781
Land Value	*Not Available*	**Land Improvements**	$0
Renaissance Zone	No	**Renaissance Zone Expiration Date**	*No Data to Display*
ECF Neighborhood	*Not Available*	**Mortgage Code**	*Not Available*
Lot Dimensions/Comments	118 X 657	**Neighborhood Enterprise Zone**	No

Lot(s)	Frontage	Depth
Lot 1	118.00 ft	0.00 ft
Lot 2	0.00 ft	657.00 ft
	Total Frontage: 118.00 ft	**Average Depth: 328.50 ft**

Legal Description

E 118 FT OF THE W 712.8 FT OF THE N 657 FT OF NE 1/4 SEC 33 T8N R16W 1.75 A

Land Division Act Information

Date of Last Split/Combine	*No Data to Display*	**Number of Splits Left**	0

Date Form Filed	*No Data to Display*	**Unallocated Div.s of Parent**	0
Date Created	*No Data to Display*	**Unallocated Div.s Transferred**	0
Acreage of Parent	0.00	**Rights Were Transferred**	*Not Available*
Split Number	0	**Courtesy Split**	*Not Available*
Parent Parcel	*No Data to Display*		

Sale History

Sale Date	Sale Price	Instrument	Grantor	Grantee	Terms of Sale	Liber/Page
12/31/2015	$0.00	WD	TYSMAN WILLIAM J TRUST		INVALID	
03/26/2015	$0.00	WD	TYSMAN BILL	TYSMAN WILLIAM J TRUST	INVALID	15-0012857
03/02/2012	$80,000.00	WD	LEATHERMAN KAREN	TYSMAN BILL	VACANT LOT ONLY	12-0009501
02/24/2010	$0.00	WD	LEATHERMAN JACK W-KAREN	LEATHERMAN KAREN	INVALID	
03/23/1999	$230,000.00	WD	ASSINK HAROLD	LEATHERMAN JACK W-KAREN	OLD SALE	2612 752

Building Information - 0 sq ft 1+ STORY (Residential)

General

Floor Area	0 sq ft	**Estimated TCV**	*Not Available*
Garage Area	480 sq ft	**Basement Area**	0 sq ft
Foundation Size	0 sq ft		
Year Built	1963	**Year Remodeled**	*Not Available*
Occupancy	*Not Available*	**Class**	C
Effective Age	*Not Available*	**Tri-Level**	*Not Available*
Percent Complete	*Not Available*	**Heat**	Forced Air w/ Ducts
AC w/Separate Ducts	*Not Available*	**Wood Stove Add-on**	*Not Available*
Basement Rooms	*Not Available*	**Water**	*Not Available*
1st Floor Rooms	*Not Available*	**Sewer**	*Not Available*
2nd Floor Rooms	*Not Available*	**Style**	1+ STORY
Bedrooms	0		

Basement Finish

Recreation	0 sq ft	**Recreation % Good**	0%
Living Area	0 sq ft	**Living Area % Good**	0%
Walk Out Doors	0	**No Concrete Floor Area**	0 sq ft

Plumbing Information

3 Fixture Bath	1

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TRANSNATION
TITLE AGENCY

Contact Information:
570 Seminole Road, Suite 102
Muskegon, MI 49444
Suzanne Balcom 231-737-9111
sbalcom@transmi.com

SCHEDULE A

Title No.: 207208WMS

Ref: 17114 Robbins Road, Grand Haven, MI 49417; 17134 Robbins Road, Grand Haven, MI 49417; VL Robbins Road, Grand Haven, MI 49417; VL Robbins Road, Grand Haven, MI 49417; VL Robbins Road, Grand Haven, MI 49417

1. Effective Date: March 13, 2017 at 8:00 am

2. Policy or Policies to be issued:

   ALTA Loan Policy - 6/17/06 WITHOUT EXCEPTIONS
   Policy Amount: $500,000.00

   Proposed Insured: Community Shores Bank, its successors and/or assigns

3. The estate or interest in the land described or referred to in this Commitment is:
   Fee Simple

4. Title to the estate or interest in the land is at the Effective Date vested in:

   Chad D. Bush, subject to the interest of Security First Bank and Trust Company, as Trustee of The Eleanor R. Bigler Trust of August 18, 1970, as to an undivided 1/2 interest, grantee in deed recorded in Liber 737, Page 157 and Kenneth A. Bigler and Eleanor R. Bigler, husband and wife, grantee in deed recorded in Liber 1017, Page 657

5. The land referred to in this Commitment is described as follows:
   Located in the Township of Grand Haven, County of Ottawa, State of Michigan,

SEE ATTACHED EXHIBIT "A"

Countersigned by:

Sharlene Shineldecker

Sharlene Shineldecker

Exhibit "A"

PARCEL 1:

That part of the Northeast 1/4 of Section 33, Town 8 North, Range 16 West, Grand Haven Township, Ottawa County, Michigan, described as commencing at a point due East along the North line of said Section 33, 712.8 feet and South 01 degrees 58 minutes 00 seconds West 33.00 feet from the North 1/4 corner of said Section 33, thence South 01 degrees 58 minutes 00 seconds West 624.0 feet; thence due East 191.95 feet, thence North 01 degrees 58 minutes 00 seconds East 624.00 feet, thence due West 191.95 feet to the point of beginning.

PARCEL 2:

A parcel of land in Section 33, Town 8 North, Range 16 West, Grand Haven Township, Ottawa County, Michigan, described as: Beginning 594.8 feet East and 33 feet South of the North 1/4 corner of said Section 33; running thence South 1 degrees 58 minutes West 624 feet; thence East and parallel to the North line of said Section 33, 118 feet; thence North 1 degrees 58 minutes East 624 feet; thence West and parallel to the North line of said Section 33, 118 feet to the place of beginning.

PARCEL 3:

Part of the North thee-quarters (N 3/4) of the Northwest one-quarter (NW 1/4) of the Northeast one-quarter (NE 1/4) of Section 33, Town 8 North, Range 16 West, Grand Haven Township, Ottawa County, Michigan; Commencing South 980.61 feet and South 89 degrees 28 minutes 46 seconds East 556.54 feet from the North one-quarter (N 1/4) corner; thence North 02 degrees 13 minutes 27 seconds East 52.00 feet; thence South 89 degrees 28 minutes 46 seconds East 250.00 feet; thence North 02 degrees 13 minutes 27 seconds East 200.00 feet; thence North 89 degrees 28 minutes 46 seconds West 250.00 feet; thence North 02 degrees 13 minutes 27 seconds East 74.74 feet; thence South 89 degrees 44 minutes 33 seconds East 802.48 feet; thence South 00 degrees 42 minutes 10 seconds West 330.28 feet; thence North 89 degrees 28 minutes 46 seconds West 811.14 feet to beginning.

Together with an easement for ingress and egress described as: Beginning at a point on the North and South 1/4 line of said Section 33 which is South 00 degrees 00 minutes West 980.61 feet from the North 1/4 corner of said Section 33; thence South 89 degrees 28 minutes 46 seconds East 556.54 feet; thence North 02 degrees 13 minutes 27 seconds East 40.00 feet; thence North 89 degrees 28 minutes 46 seconds West 558.09 feet; thence South 00 degrees 00 minutes 00 seconds West 40.00 feet to point of beginning.

PARCEL 4:

Part of the North 3/4 of the Northwest 1/4 of the Northeast 1/4 of Section 33, Town 8 North, Range 16 West, Grand Haven Township, Ottawa County, Michigan, described as: Commencing South 89°44'33" East 1379.74 feet and South 00°42'10" West 280.00 feet from the North 1/4 corner; thence North 89°44'33" West 224.99 feet; thence South 00°42'10" West 76.63 feet; thence North 89°44'33" West 93.05 feet; thence South 00°42'10" West 300.00 feet; thence South 89°44'33" East 318.04 feet; thence North 00°42'10" East 376.63 feet to beginning.

PARCEL 5:

That part of the Northwest 1/4 of the Northeast 1/4 of Section 33, Town 8 North, Range 16 West, Grand Haven Township, Ottawa County, Michigan, described as: Commencing at a point on the Southerly right of way line of Robbins Road which is South 89°44'33" East along the North line of said Section 33, 970.79 feet and South 02°13'27" West 33.02 feet from the Northwest corner thereof; thence South 02°13'27" West 323.81 feet; thence South 89°44'33" East 100.39 feet; thence South 00°42'10" West 300.00 feet; thence North 89°44'33" West 174.39 feet; thence North 02°13'27" East 623.98 feet; thence South 89°44'33" East 66.04 feet to the point of beginning.

Title No: 207208WMS
SCHEDULE B - SECTION I
REQUIREMENTS

1. There appears to be a break in the chain of title in that the interest of Security First Bank and Trust Company, as Trustee of the Eleanor R. Bigler Trust of August 18, 1970, as to an undivided 1/2 interest, grantee in deed recorded in Liber 737, Page 157, has never been conveyed into the chain of title. Therefore, a proper conveyance must be recorded from said Security First Bank and Trust Company, as Trustee of the Eleanor R. Bigler Trust of August 18, 1970, as to an undivided 1/2 interest to William Tysman. (Parcels 3 and 4)

2. There appears to be a break in the chain of title in that the interest of Kenneth A. Bigler and Eleanor R. Bigler, husband and wife, grantee in deed recorded in Liber 1017, Page 657, has never been conveyed into the chain of title. Therefore, a proper conveyance must be recorded from said Kenneth A. Bigler and Eleanor R. Bigler, husband and wife to William Tysman. (Parcels 3 and 4)

3. Mortgage executed by Chad D. Bush to recited mortgagee in the amount indicated. The spouse(s), if any, of the proposed mortgagor(s) must join in execution of the mortgage.

   2016 Summer taxes are paid in the amount of $6,854.19.
   2016 Winter taxes are paid in the amount of $1,482.56.
   2016 State Equalized Value $185,600.00.
   2016 Taxable Value $182,345.00.
   Property located in Grand Haven Public School District.
   Principal Residence Status for 2016 is 0%.
   Permanent Property No. 70-03-33-200-035. (Parcel 1)

   2016 Summer taxes are paid in the amount of $3,646.14.
   2016 Winter taxes are paid in the amount of $788.61.
   2016 State Equalized Value $97,000.00.
   2016 Taxable Value $97,000.00.
   Property located in Grand Haven Public School District.
   Principal Residence Status for 2016 is 0%.
   Permanent Property No. 70-03-33-200-007. (Parcel 2)

   2016 Summer taxes are paid in the amount of $1,427.27.
   2016 Winter taxes are paid in the amount of $308.65.
   2016 State Equalized Value $100,400.00.
   2016 Taxable Value $37,971.00.
   Property located in Grand Haven Public School District.
   Principal Residence Status for 2016 is 0%.
   Permanent Property No. 70-03-33-200-070. (Parcel 3)

   2016 Summer taxes are paid in the amount of $1,326.90.
   2016 Winter taxes are paid in the amount of $286.95.
   2016 State Equalized Value $50,900.00.
   2016 Taxable Value $35,301.00.
   Property located in Grand Haven Public School District.
   Principal Residence Status for 2016 is 0%.
   Permanent Property No. 70-03-33-200-077. (Parcel 4)

2016 Summer taxes are paid in the amount of $1,333.17.
2016 Winter taxes are paid in the amount of $288.31.
2016 State Equalized Value $67,000.00.
2016 Taxable Value $35,468.00.
Property located in Grand Haven Public School District.
Principal Residence Status for 2016 is 0%.
Permanent Property No. 70-03-33-200-056. (Parcel 5)

2016 Summer taxes are paid in the amount of $248.08.
2016 Winter taxes are paid in the amount of $53.59.
2016 State Equalized Value $6,600.00.
2016 Taxable Value $6,600.00.
Property located in Grand Haven Public School District.
Principal Residence Status for 2016 is 0%.
Permanent Property No. 70-03-33-200-905. (Building on Leased Land / IPCS Wireless Inc)

2016 Summer taxes are paid in the amount of $7.50.
2016 Winter taxes are paid in the amount of $1.54.
2016 State Equalized Value $1,500.00.
2016 Taxable Value $200.00.
Property located in Grand Haven Public School District.
Principal Residence Status for 2016 is 0%.
Permanent Property No. 70-03-33-200-907. (Building on Leased Land / AT&T Mobility LLC)

NOTE: The policy to be issued does not insure against unpaid water, sewer, electric or gas charges, if any, that have not been levied as taxes against these lands. (Meter readings should be obtained and adjusted between appropriate parties.)

NOTE: In the event that the Commitment Jacket is not attached hereto, all of the terms, conditions and provisions contained in said Jacket are incorporated herein. The Commitment Jacket is available for inspection at any Company office.

SCHEDULE B - SECTION II

EXCEPTIONS

Schedule B of the policy or policies to be issued will contain exceptions to the following matters unless the same are disposed of to the satisfaction of the Company:

1. Defects, liens, encumbrances, adverse claims or other matters, if any, created, first appearing in the public records or attaching subsequent to the Effective Date but prior to the date the proposed Insured acquires for value of record the estate or interest or mortgage thereon covered by this Commitment.
2. Any facts, rights, interests or claims that are not shown in the Public Records but that could be ascertained by an inspection of the Land or by making inquiry of persons in possession of the Land.
3. Easements, claims of easements or encumbrances that are not shown in the Public Records.
4. Any encroachment, encumbrance, violation, variation, or adverse circumstance affecting the Title including discrepancies, conflicts in boundary lines, shortage in area, or any other facts that would be disclosed by an accurate and complete land survey of the Land, and that are not shown in the Public Records.
5. Any lien, or right to a lien, for services, labor or material theretofore or hereafter furnished, imposed by law and not shown in the Public Records.
6. Any and all oil, gas, mineral, mining rights and/or reservations thereof.
7. Taxes or special assessments which are not shown as existing liens by The Public Records.
8. Taxes and assessments which become due and payable or which become a lien against the property subsequent to the interest insured and deferred and/or installment payments of said taxes and assessments. The Company assumes no liability for tax increases occasioned by retroactive revaluation, changes in the land usage or loss of any principal residence exemption status for the insured premises.
9. Any provisions contained in any instruments of record which provisions pertain to the transfer of divisions under Section 109(3) of the Subdivision Control Act of 1967, as amended.
10. Rights of others for ingress and egress over the easement reflected in the legal description to be insured herein.
11. Easement granted to Consumers Energy Company recorded in Liber 348, Page 214.
12. Easement granted to Consumers Energy Company recorded in Liber 348, Page 215.
13. Easement for utility, ingress and egress in the instrument recorded in Liber 960, Page 992.
14. Easement for public utilities in the instrument recorded in Liber 961, Page 1.
15. Easement for ingress and egress in the instrument recorded in Liber 2830, Page 870.

16. Terms, conditions and provisions which are recited in the Grant of Easement recorded in Instrument No. 2013-0049752.

17. Easement for drain in the instrument recorded in Instrument No. 2012-0039189.

18. Lessee's interest of Nextel West Corp., a Delaware corporation, d/b/a Nextel Communications and the terms, conditions and provisions contained in the lease between William Jay Tysman, as lessor and Nextel West Corp., a Delaware corporation, d/b/a Nextel Communications, as lessee. Said lease being disclosed by the instrument recorded in Liber 3941, Page 231. Said Lessees interest in said lease is now held by TowerCo Assets LLC, a Delaware limited liability company. Said Lessors interest in said lease is now held by SBA 2012 TC Assets LLC, a Delaware limited liability company.

19. Lessee's interest of MetroPCS Michigan, Inc., a Delaware corporation and the terms, conditions and provisions contained in the lease between TowerCo Assets LLC, a Delaware limited liability company, as lessor and MetroPCS Michigan, Inc., a Delaware corporation, as lessee. Said lease being disclosed by the instrument recorded in Liber 5818, Page 306.

20. Terms, conditions and provisions which are recited in the instrument recorded in Instrument No. 2013-0049754.

LMD

County of Ottawa

Health Department – Environmental Health

miOttawa.org

Lisa Stefanovsky, M. Ed.
Health Officer

Paul Heidel, M.D., M.P.H.
Medical Director

FREEDOM OF INFORMATION ACT REQUEST

Date: 5/11/17

WESTSHORE CONSULTING
Business Firm

2534 BLACKCREEK ROAD
Address

MUSKEGON, MI 49444
City/Zip

231-777-3447
Telephone

Signature of Requester

I ROGER BOUR, request to view and/or obtain copies of the information
PLEASE PRINT NAME
contained in the following parcel number file folder(s).

1. 70- 03-33-200-007
2. 70- 03-33-200-035
3. 70- 03-33-200-056
4. 70- 03-33-200-007
5. 70- 03-33-200-070
6. 70-
7. 70-
8. 70-
9. 70-
10. 70-

$2.00 file search charge $ _____
(per each 5 parcel file increments)
Copying charge - $.25 per copy $ _____

Total Charge $ _____

Jenifer Garwood

Kristin Conrad <kconrad@miottawa.org>
Thursday, May 11, 2017 12:37 PM
Roger Bour
RE: FOIA Request
TYSMAN WILLIAM J. TRUST - 70-03-33-200-035 - 12-15-2014.pdf

Flag Status: Follow up
Flagged

Nothing on file for 70-03-33-200-007 or 70-03-33-200-056 or 70-03-33-200-070

Kris Conrad
Ottawa County Department of Public Health
Environmental Health Clerk
office: (616)393-5645
miOttawa Department of
Public Health

Your feedback on my work is appreciated! Please feel free to answer a short questionnaire and let us know if you were satisfied with my service at Ottawa County Employee Service Evaluation

Confidentiality notice: This message, including any attachments, is intended solely for the use of authorized recipient(s) and may contain confidential, privileged and/or Protected Health Information as such term is defined under the Health Insurance Portability and Accountability Act of 1996 (HIPAA). Any unauthorized review, use, disclosure or distribution of this communication(s) is expressly prohibited. If you are not an authorized recipient, please contact the sender by reply e-mail and destroy any and all copies of the original message.

From: Roger Bour [mailto:RBour@westshoreconsulting.com]
Sent: Thursday, May 11, 2017 10:16 AM
To: Environmental Health
Subject: FOIA Request

Please see attached FOIA, we are interested in getting copies or reviewing files for the listed parcels in Grand Haven MI, that might indicate environmental concerns, (i.e., any information regarding hazardous waste, spills, leaks, underground storage tanks, above ground storage tanks, contaminated drinking water, contaminated soil, etc.).

If you have questions please call me.

Best Regards

Roger A. Bour - RBour@WestshoreConsulting.com
Westshore Consulting · Sr. Environmental Project Manager
2534 Black Creek Road · Muskegon, MI 49444
p: (231) 777-3447, Ext. 36 · f: (231) 773-3453

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OTTAWA COUNTY HEALTH DEPARTMENT
ENVIRONMENTAL HEALTH DIVISION
COMPLAINT REPORT FORM

Complaint # 96-35

Date Received 5-9 Township G. H Parcel # 70-03-33-200-056 NF 35 60 61

Type of Complaint: Garbage-Refuse, Insects, Rodents, Air Pollution, Food, Sewage Disposal, Toxic-Hazardous Waste, Water Supply, Swimming Pool, Housing, Surface Water, Noise, Septage Application, Other.

Address Location 17114 Robbins Rd

City G.H Name of Owner Bill Tysman Trucking

(Address of owner or Responsible person if other than above)

Address _____ City _____

Phone Number 842-7586-H, 842-6450-W

Nature of Complaint: Pumping Sewage out of a Tank into the Ground - behind the building - been doing this for a long time

Results of Investigation: 5-10-96. Spoke to Bill Tysman - Inspected holding tank below. Lung Pump to Point in Tank - Hose or Pipe discharging West of Tank. Tank is leaking groundwater. Bill pulled pump out - Told him he must have tank emptied by septic pumper only - is considering public sewer connection

5-14-96 Found some soil along South Property line that is acceptable - 2-3' of fill & Tank & Hardpan

Bill is still looking on connecting ~~[illegible]~~ sewer to public sewer - OVR

Sanitarian: _____ Date: _____

MINUTES
Board of Appeals
Environmental Health Section
Board of Health
Ottawa County

May 21, 1984

Present to discuss an appeal of Mr. Bill Tysman of 1205 Robbins Road for property at 17120 Robbins Road were: Chairman, Daryl Tammen; members, Don Williams, Steve Karell, Gerald Doornbos, Herb Wybenga, and Jim Szejda. Missing was a representative of the local governmental unit, Grand Haven Township. Also present were the appelant and William Lamain of The Health Department.

At 3:35 P.M. the Chairman called the meeting to order by discussing the history of this appeal, planned, cancelled and on again. Mr. Szejda elaborated upon his letter of May 8, explaining the suitability of the presently planned system for the only presently scheduled use of the property, a truck storage and repair facility that might be used by 1 clerk/mechanic all day and by 16 drivers for about 1 hour/day. He added that a new D.N.R. policy allows the local health department to handle that decision and, through this appeals group, a system up to 1000 gal/day.

Then the issue became clear, the request for an appeal for a system up to 1000 gal/day for whatever other uses the property may be put to. The present system is suitable only for the 1 full-time person (and the brief visit of drivers) on a basis of about 10 gal. of wastewater/day/person. Such an appeal would maximize the flexibility of Mr. Tysman in his development of the former celery muck field. The applicable sections of the Environmental Code are on page 15, Section N numbers 1 and 2 requiring at least 6 inches of dry soil about the highest ground water. The present house on that site is extensively tiled. Much of the muck has been scrapped off and some fill has replaced it. Without a blanket appeal for a system up to 1000 gal/day, several individual appeals may be called for.

The discussion was friendly and frank. Everyone seemed to be open to all the options including use of city sewage lines running along one edge of the property and a change of governmental jurisdiction. The members of the Board were also sensitive to the precedent setting nature of a request of such a vague nature. On the motion of Steve Karell and with the second of Herb Wynbenga, the REQUEST WAS TABLED INDEFINITELY PENDING DEVELOPMENTS AND INFORMATION BY THE PROPERTY OWNER with a vote without any "nays".

That portion of the meeting ended at 4:35. The minutes of the last meeting, November 7, 1983 were approved as they had been distributed. Newest member, Mr. Doornbos was welcomed and Chairman Tammen and Secretary Williams were re-elected to their roles. The meeting adjourned at 4:45.

Respectfully submitted,

D. H. Williams

Donald H. Williams
May 25, 1984

To: Members
Board of Appeals
Environmental Health Section
Board of Health
Ottawa County

From: Don Williams
Secretary

Re: Meeting
There will be an appeal, after all, for Mr. Bill Tysman. We can, if we're lucky, make our traditional date, the 3rd Monday of the month.

3:30 PM Lower Level
Ottawa County Building
May 21, 1984

REQUEST FOR A HEARING WITH THE
OTTAWA COUNTY ENVIRONMENTAL HEALTH
CODE, BOARD OF APPEALS

DATE May 3, 1984

NAME OF APPELLANT Bill Tysman

ADDRESS OF APPELLANT 1205 Robbins Road

Grand Haven, Michigan 49417

PHONE NUMBER OF APPELLANT 842-6450

Property Owners name(if different from Appellant)

Property Owners address

Property description Please see enclosed survey.

Township Grand Haven Section 33

Size of property 191.95 wide by 624 deep (feet) 2.75 acres

Approximate address of property 17108 Robbins Road Grand Haven, Michigan 49417

Parcel Number 70-03-33-200-035

I, Bill Tysman am officially requesting an appeal hearing before the Ottawa County Environmental Health Code, Board of Appeals.

SEWAGE DISPOSAL SYSTEM APPEAL

I have proposed installing a conventional type of sewage disposal system on the parcel of property described above and was denied a permit for such installation by Les Toth (sanitarian) of the Environmental Health Division, Ottawa County Health Department on May 3, 1984 (date).

WATER WELL SYSTEM APPEAL

I have proposed installing and/or utilizing an on-site water well to serve the parcel of property described above and was denied a permit and the use of such installation by (sanitarian) of the Environmental Health Division, Ottawa County Health Department on (date).

I am enclosing the required $50.00 fee for this appeal and understand that I will be notified of the meeting time and date of this appeal within thirty (30) days of the date of the appeals board's receipt of this written request. I also understand that I am to provide all of the necessary supporting information including any technical and/or engineering data available which will substantiate the reasoning why the site should be reconsidered for an on-site sewage disposal and/or water well system. This submitted data must also include a scaled design sketch indicating the lot dimensions with the proposed location of all applicable structures including but not limited to driveway, well, sewage disposal system, and reserve sewage system area.

Sincerely,

Bill Tysman

Appellant

White - Secretary Bd. of Appeals
Pink - Environmental Health
Yellow - Appellant
Green - Clerk's Office

$50.00 Fee
Paid 5/4/84
Receipt # 3054
Clerk's Office
A.R.T.

HEALTH DEPARTMENT
ENVIRONMENTAL DIVISION
616/846-8350
414 WASHINGTON ST. GRAND HAVEN, MI 49417

May 8, 1984

Mr. William Tysman
1205 Robbins Rd.
Grand Haven, MI 49417

Re: Commercial Property on Robbins Rd. just East of 172nd Avenue, Section 33, Grand Haven Township

Dear Mr. Tysman:

This letter is being sent to you in confirmation of our discussion on May 3, 1984 concerning the sewage disposal system limitations of your property described above.

As per that discussion, the type of soils and high water table conditions present on the property severely limits the type, size and use of any system that could by approved by this department. Basically, a permit could be issued for either an on-site system on fill or a holding tank, if the only usage would consist of 16 truck drivers one hour of the day and one mechanic all day, as you have specified. Should you desire future development utilizing on-site sanitary facilities requiring additional sewage disposal system and/or holding tanks, no additional permits or approvals can be issued by this department.

If you desire therefore to develop your property to its full advantage and utmost use, I would suggest you appeal your situation to the Ottawa County Environmental Health Code Board of Appeals. You could then request the ability to install a larger septic system initially with future connections allowed as the property develops until the maximum limit is reached.

Should you have any questions regarding this letter or the procedures involved in appealing, please feel free to contact me.

Very truly yours,

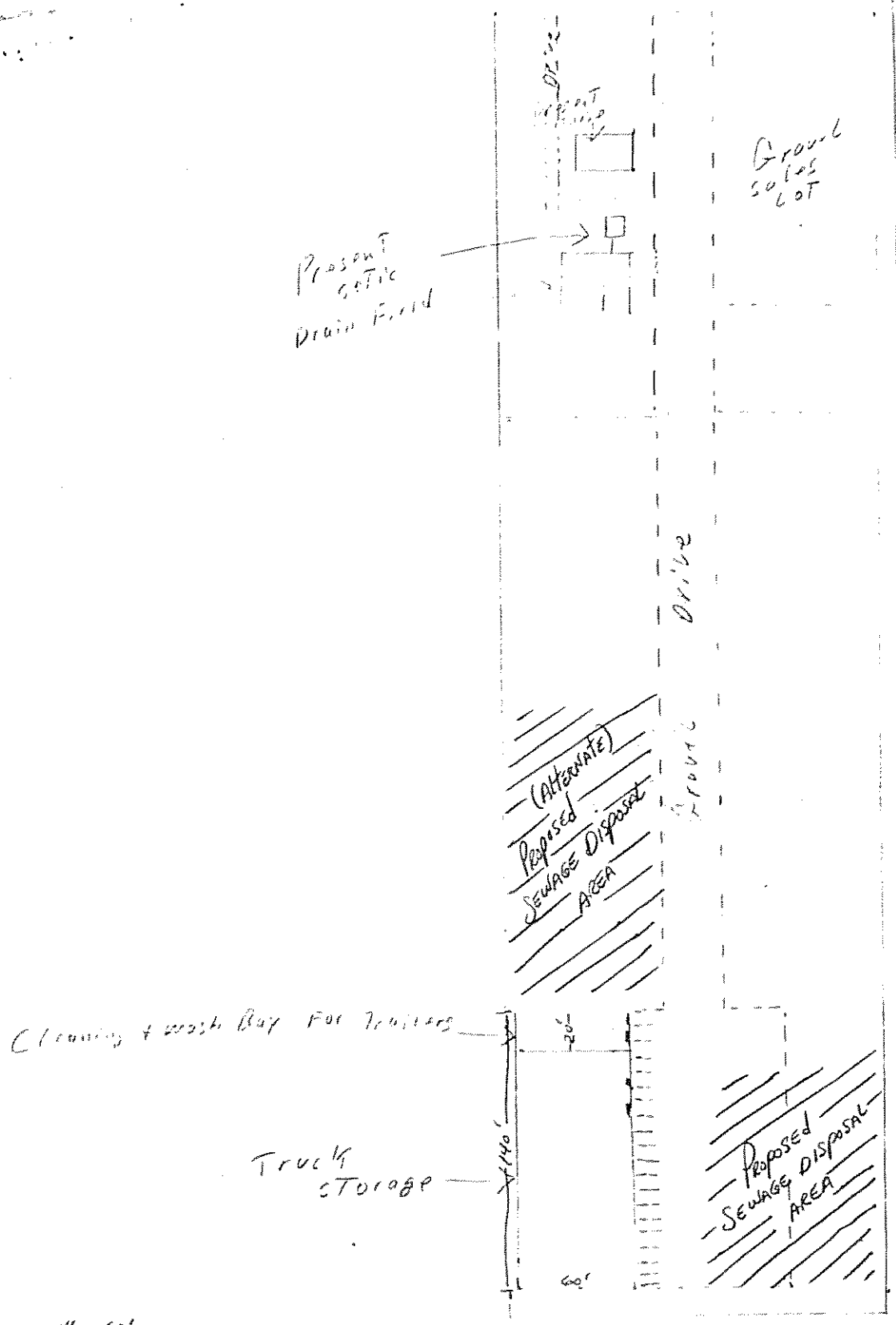
James J. Szejda, P.S.
Supervising Sanitarian

JJS:cp

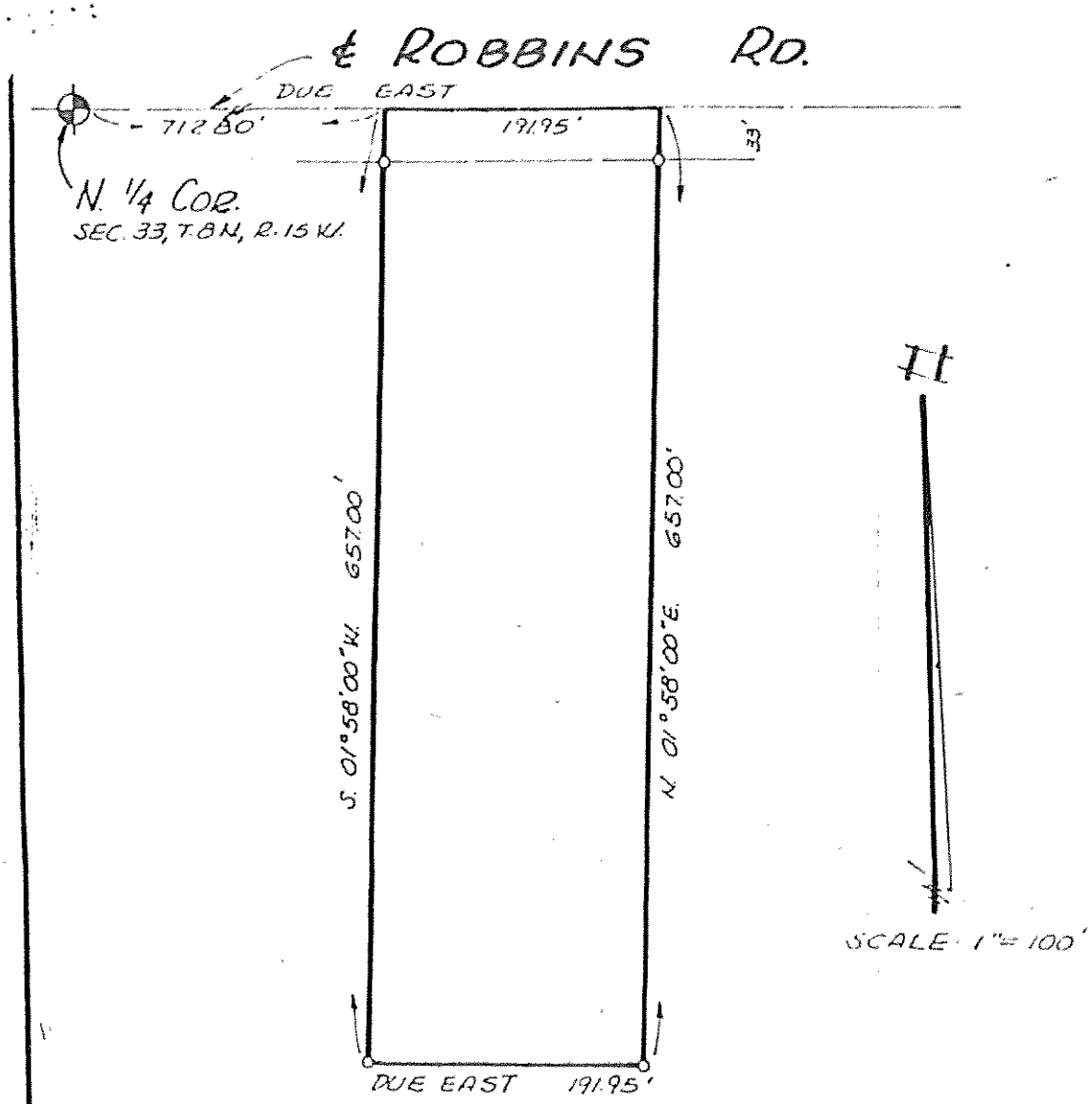
Branch Office
323 No. River Avenue
HOLLAND 49423
Phone 396-5266

Branch Office
1291 Randall Road
COOPERSVILLE 49404
Phone 837-8171

Branch Office
3100 Port Sheldon Road
HUDSONVILLE 49426
Phone 669-0040


Present Septic Drain Field
Gravel Sales Lot
Drive
(Alternate) Proposed Sewage Disposal Area
Gravel
Cleaning & wash Bay For Trailers
20'
Truck Storage
140'
60'
Proposed Sewage Disposal Area

Scale 1" = 60'



Description of Survey

That part of the Northeast ¼, Section 33, Town 8 North, Range 16 West, Grand Haven Township, Ottawa County, Michigan, described as commencing at a point due East along the North line of said Section 33, 712.80 feet and South 01 degrees 58 minutes 00 seconds West 33.00 feet from the North ¼ corner of said Section 33; thence South 01 degrees 58 minutes 00 seconds West 624.00 feet; thence due East 191.95 feet; thence North 01 degrees 58 minutes 00 seconds East 624.00 feet; thence due West 191.95 feet to the point of beginning.

Thomas E. Joiner

Thomas E. Joiner Registered Land Surveyor Nº 18435

The ratio of closure is within the accuracy of survey as required in Act Nº 288 of Public Acts of 1967. This survey complies with the requirements of Section 3 Public Act 132 of 1970

This survey was made from the legal description shown above. The description should be compared with the Abstract of Title or Title Insurance Policy for accuracy, easements and exceptions

LEGEND
- ☐ Set Conc. Mon.
- ■ Found Conc Mon.
- ○ Set Capped Iron
- ● Found Iron
- P. Platted
- M. Measured
- D. Described

joiner engineering, Inc.
113 west savidge st.
spring lake, michigan 49456
phone: 846-1960 or 392-4686

FOR Harm Bos

In NE ¼ of Section 33 T. 8 N., R. 16 W.

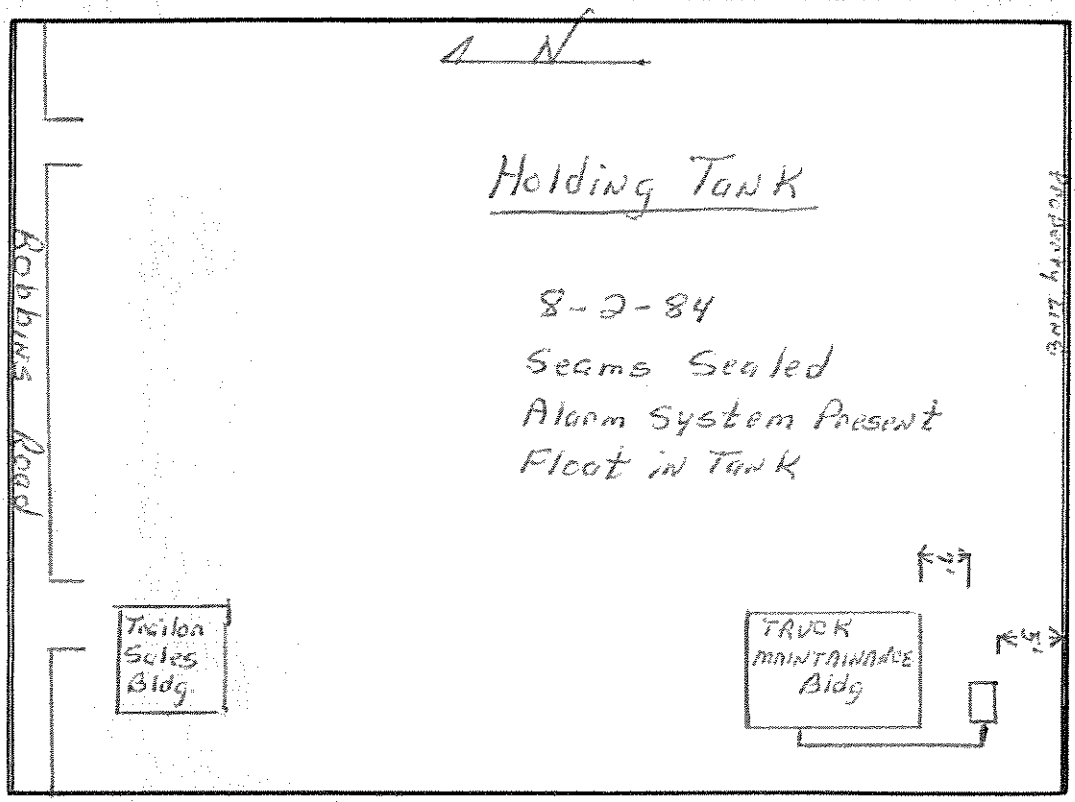
DATE 8-6-81 | DRAWN BY DAE

Sheet 1 of 1 | JOB Nº 3-797

Farm Rae

OTTAWA COUNTY HEALTH DEPARTMENT
Environmental Health, Ottawa County Building
Grand Haven, Michigan 49417 Telephone: 846-8350

RECORD OF FINAL INSPECTION
SEWAGE DISPOSAL SYSTEM



Parcel # 70-03-33-300-035

Owner or Builder: Bill Tysman
Township: Grand Haven Sec. 33
Location: 12108 Robbins Rd.
Plat: — Lot: —
Water System: Municipal
Installed by: —
Primary Treatment: 1-1000 GALLON HOLDING TANK
Secondary Treatment: NOT ALLOWED
Installed by: TEK Backhoe
Send Report to: Bill Tysman 1205 Robbins Rd. Grand Haven, Mi. 49417

APPROVED X DISAPPROVED ___
Inspected by: J. Szejda
Issuing Agency: Ottawa Co.
Date: 8-2-84

REMARKS:

This record is not a guarantee of performance. A septic system is not a municipal sewer. However, with proper maintenance and careful use of water it can give many years of trouble free service. Many problems with septic tanks are caused by flushing excessive amounts of paper, cloth and plastic materials down the drain, or by large amounts of water from leaky faucets or faulty fixtures.

The septic tank itself should be cleaned every two or three years depending on the habits of the family, the number of fixtures in the house, and the amount that a garbage disposal is used. Cleaning at the right time will avoid the risk of injuring or destroying the drainfield due to solids carrying over into the drainfield. Call the Ottawa County Health Department for a list of licensed septic tank cleaners in your area. The cleaner can serve you best if you show him this record when he comes.

Heavy trucks or equipment should never be driven over the tank or drainfield. Consult this record in case any buildings, driveways, swimming pools, or extensive grading or filling are later contemplated.

Shrubs or trees should not be planted close to the septic tank as they would interfere with cleaning of the tank. They can be planted in the drainfield area providing willows are not used. The yard grade in the disposal area should be such that surface water is not pocketed on the drainfield. Any settling of the ground over the trenches should be filled in with soil. Do not excessively water the lawn in the drainfield area.

Footing drainage and downspouts should not be connected into the septic system or discharged into the drainfield area.

MINUTES
Board of Appeals
Environmental Health Section
Board of Health
Ottawa County

May 21, 1984

Present to discuss an appeal of Mr. Bill Tysman of 1205 Robbins Road for property at 17120 Robbins Road were: Chairman, Daryl Tammen; members, Don Williams, Steve Karell, Gerald Doornbos, Herb Wybenga, and Jim Szejda. Missing was a representative of the local governmental unit, Grand Haven Township. Also present were the appelant and William Lamain of The Health Department.

At 3:35 P.M. the Chairman called the meeting to order by discussing the history of this appeal, planned, cancelled and on again. Mr. Szejda elaborated upon his letter of May 8, explaining the suitability of the presently planned system for the only presently scheduled use of the property, a truck storage and repair facility that might be used by 1 clerk/mechanic all day and by 16 drivers for about 1 hour/day. He added that a new D.N.R. policy allows the local health department to handle that decision and, through this appeals group, a system up to 1000 gal/day.

Then the issue became clear, the request for an appeal for a system up to 1000 gal/day for whatever other uses the property may be put to. The present system is suitable only for the 1 full-time person (and the brief visit of drivers) on a basis of about 10 gal. of wastewater/day/person. Such an appeal would maximize the flexibility of Mr. Tysman in his development of the former celery muck field. The applicable sections of the Environmental Code are on page 15, Section N numbers 1 and 2 requiring at least 6 inches of dry soil about the highest ground water. The present house on that site is extensively tiled. Much of the muck has been scrapped off and some fill has replaced it. Without a blanket appeal for a system up to 1000 gal/day, several individual appeals may be called for.

The discussion was friendly and frank. Everyone seemed to be open to all the options including use of city sewage lines running along one edge of the property and a change of governmental jurisdiction. The members of the Board were also sensitive to the precedent setting nature of a request of such a vague nature. On the motion of Steve Karell and with the second of Herb Wynbenga, the REQUEST WAS TABLED INDEFINITELY PENDING DEVELOPMENTS AND INFORMATION BY THE PROPERTY OWNER with a vote without any "nays".

That portion of the meeting ended at 4:35. The minutes of the last meeting, November 7, 1983 were approved as they had been distributed. Newest member, Mr. Doornbos was welcomed and Chairman Tammen and Secretary Williams were re-elected to their roles. The meeting adjourned at 4:45.

Respectfully submitted,

D. H. Williams

Donald H. Williams
May 25, 1984

Holding Tank Permit

Parcel # 70-03-33-200-035

Branch Offices:
Holland: 396-5266
Hudsonville: 669-0040
Cooperville: 837-8171

CONSTRUCTION PERMIT AND PLAN OF A SEWAGE DISPOSAL SYSTEM

Ottawa County Health Department, Environmental Health Section
Ottawa County Building, Grand Haven, Michigan 49417 — Telephone 846-8350

PERMIT # 5352

Dept. use only
Water Supply
☐ Private
☐ Municipal

Township: Grand Haven Lot: — Plat: —

Location: 17108 Robbins Road

City or Township: Grand Haven Sec. 33 House [ ] Duplex [ ] Apartment [ ] Commercial [✓] Industrial [ ] Other [ ]

Owner or Builder: Bill Tysman Address: 1205 Robbins Rd.

Telephone No. 842-6450 City: Grand Haven Zip Code: 49417

[✓] New [ ] Repair Designed for Bedrooms ____ Apartment Units: ____ Maximum Capacity: 1 Mechanic - Full Time
10 Drivers - Part Time

SOIL EVALUATION:
Soil Type: 0"-6" Topsoil, 6"-↓ Wet White Water Sand

Seasonal High Water Table Elevation: 0 feet below grade.

NOTE: A MINIMUM OF 2 FEET [4' FOR PUBLIC] OF ISOLATION IS REQUIRED BETWEEN THE HIGHEST INDICATED WATER TABLE AND THE BOTTOM OF THE ABSORPTION AREA.

CONSTRUCTION REQUIREMENTS: Holding Tank

☐ **SEPTIC TANK:**
Consists of 1 Septic Tank(s) 800 Gallons — Gallons

☐ **DRAINBED:**
Total effective absorption area in bottom: None sq. ft.
Linear Feet of 4" Distribution Conduit: None ft.

☐ **ABSORPTION TRENCH:**
Total effective absorption area in Bottom: — sq. ft.
Linear Feet of 4" Distribution Conduit: — ft.

☐ **BLOCK TRENCH:**
Width 3½ ft., Plus 1 Foot of Washed Stone Around Outer Perimeter to Height of 2nd Block
Total Length: — Ft.

☐ **DOSING SYSTEM:**
Dosing Tank Capacity: — Gallons
Dosing Rate: — Gallons

ISOLATION REQUIREMENTS FOR: Holding Tank

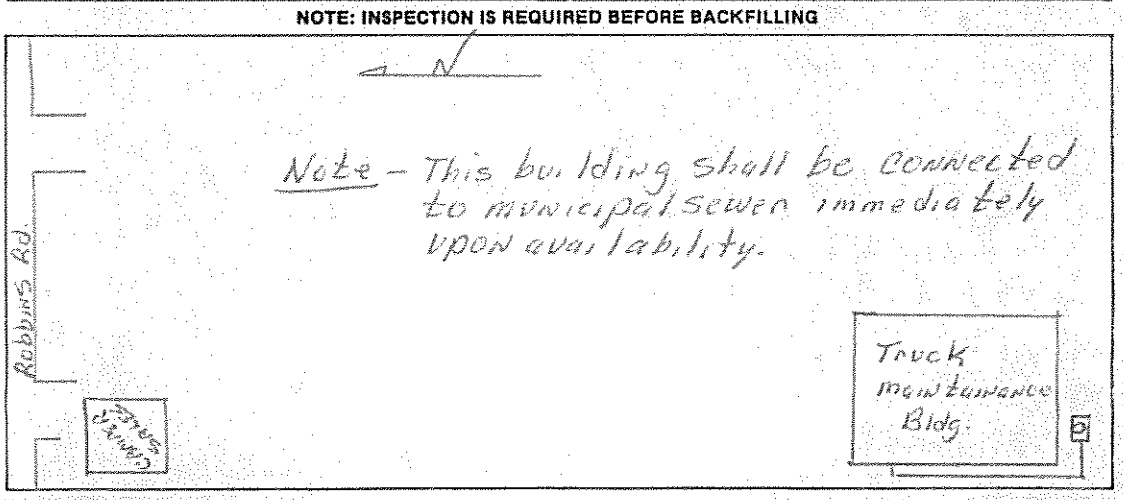
SEPTIC TANK
Distance From:
Well: N.A. Ft. Lot Line: 5 Ft.
Buried Water Line: 10 Ft. Watercourse: N.A. Ft.
Basement Wall: 10 Ft.

ABSORPTION SYSTEM
Distance From:
Well: N.A. Ft. Lot Line: N.A. Ft.
Buried Water Line: N.A. Ft. Watercourse: N.A. Ft.
Basement Wall: N.A. Ft. Embankment: N.A. Ft.
Footing Drain: N.A. Ft.

Note:
Since many factors contribute to the failure of a sewage disposal system, this department cannot guarantee any length of service from the sewage disposal system required by this permit.

☐ **OTHER SEWAGE DISPOSAL SYSTEM REQUIREMENTS:**
(1) Holding Tank shall be sealed watertight at the seam with caulk or other suitable substance to prevent ground water from entering the tank.
(2) Holding tank shall be equipped with an alarm system that indicates tank is 3/4's full. Light or buzzer shall be wired into building
(3) Holding tank shall have a manhole to ground surface
(4) Recommend pumping tank during dry months of year whenever possible
(5) This building shall be connected to municipal water

NOTE: INSPECTION IS REQUIRED BEFORE BACKFILLING



I hereby agree to install a sewage disposal system complying with the construction specifications of the above permit as well as all other applicable regulations pertaining thereto.

Bill Tysman
(Builder, Owner or Installer)

Date: 7-10-84 Fee: $30.00

Date Issued: ____ Fee Paid ☐

Sanitarian or Authorized Agent: T. Szejda

Issuing Agency: Ottawa County

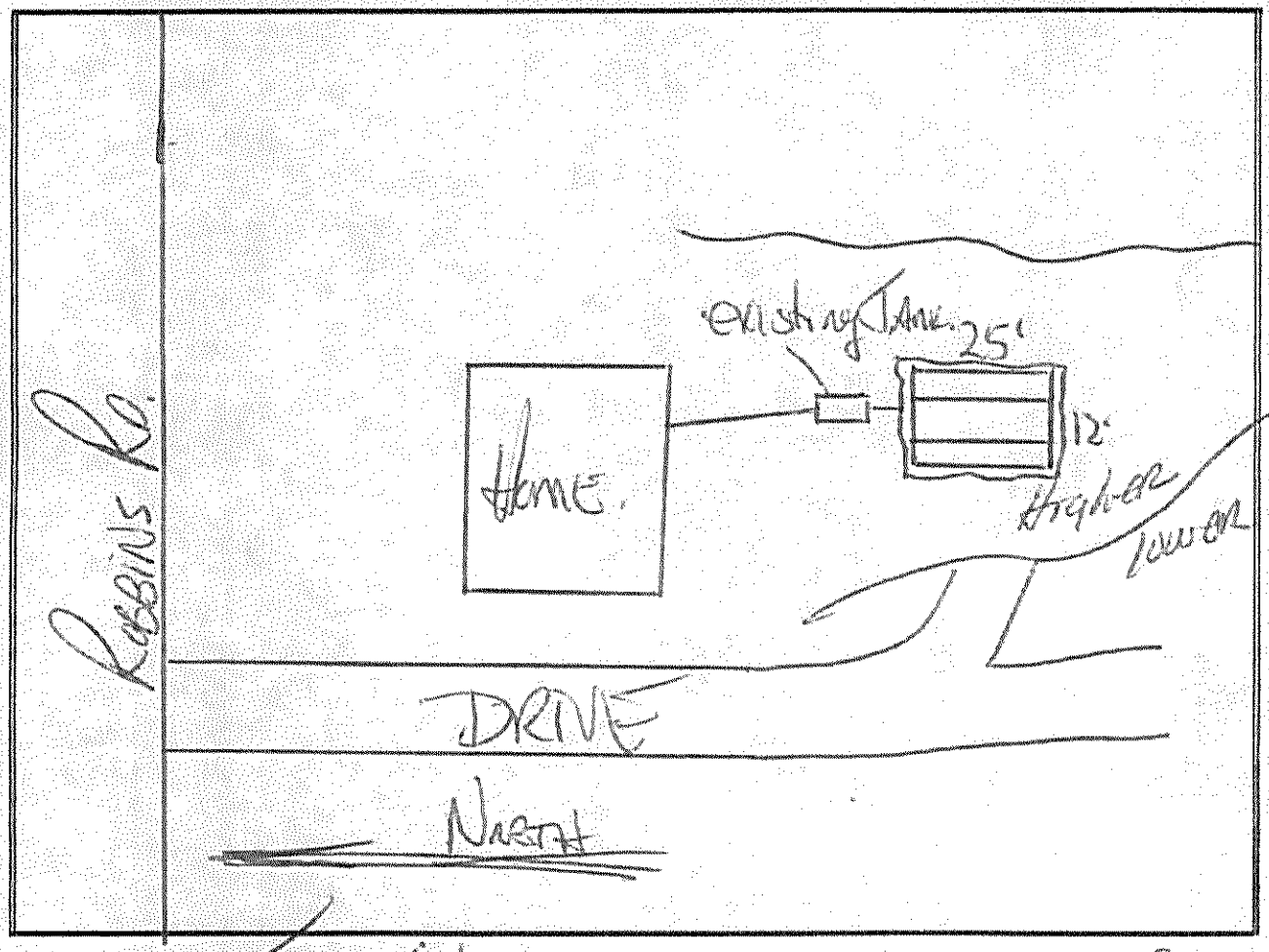
Should applicant desire additional information or have questions regarding this permit, contact this department for assistance.

THIS PERMIT EXPIRES 1 YEAR FROM DATE OF ISSUANCE.

70-03-33-200-035

FIELD REPORT

Ottawa County Health Department, Environmental Health Section
Ottawa County Building, Grand Haven, Michigan 49417 - Telephone: 842-4780



Owner or Builder: Haen Bros
Address: 17120 Robbins Road
Plat: Lot:
Township: Grand Haven Sec. 33
Location:
City:
Water System: well
Installed By:
Primary Treatment: existing
Secondary Treatment: 300 Hiflow
12'x25' 4 runs chamber.
Installed By: Peterson's
Dated Inspected: 7-15-76
Date of Permit: 7-16-76
APPROVED ☑ DISAPPROVED ☐
Sanitarian or Authorized Agent: Tom Olson
Issuing Agency: O.C.H.D.

REMARKS: Topsoil (2') shall be removed + replaced with clean coarse sand.

CONSTRUCTION PERMIT AND PLAN OF A SEWAGE DISPOSAL SYSTEM

Ottawa County Health Department, Environmental Health Section
Ottawa County Building, Grand Haven, Michigan 49417 - Telephone 842-4780

70-03-33-200-035

Political Jurisdiction: Grand Haven (S.L. Patrick) Lot _____ Plat _____
Location: 17120 Robbins Road
City or Township: Grand Haven Sec. 33 House [✓] Duplex [ ] Apartment [ ] Commercial [ ]
Owner or Builder: Harm Bos Address _____
Telephone No. 842-0984 City _____ Zip Code _____
[ ] New [✓] Repair Designed for 3 Bedrooms Apartment Units: _____ Maximum Capacity _____

SOIL
To 5' 0-2' Hardpan 2+ water
Sand

Percolation Rate ____ minutes per inch. High Water Table Elevation Below Grade 2 Ft.

NOTE: A MINIMUM OF 3 FEET (4' FOR PUBLIC) OF ISOLATION IS REQUIRED BETWEEN THE HIGH WATER TABLE AND THE BOTTOM OF THE ABSORPTION AREA.

☐ **TILE FIELD OR ABSORPTION TRENCH:**
Total Effective Absorption Area in Bottom 300 Sq. Ft.
Linear Feet of 4 Inch Tile 100

☐ **BLOCK TRENCH:**
Width 3½ Ft., Plus 1 Foot of Washed Stone Perimeter to Height of Second Block
Total Length _____ Ft.

☐ **DOSING SYSTEM:**
Dosing Tank Capacity _____ Gallons
Capacity/Dose _____ Gallons
Tile Bed Absorption Area: Bottom _____ Sq. Ft.
Linear Feet of Tile ____ 4" ____ 6"

☑ **OTHER ABSORPTION SYSTEM OR COMMENTS:**

1) BOTTOM OF DRAINFIELD SHALL BE NO DEEPER THAN 12-18" BELOW EXISTING GRADE.

2) ALL TOPSOIL SHALL BE REMOVED TO THE COARSE SAND & REPLACED WITH A CLEAN COARSE SAND.

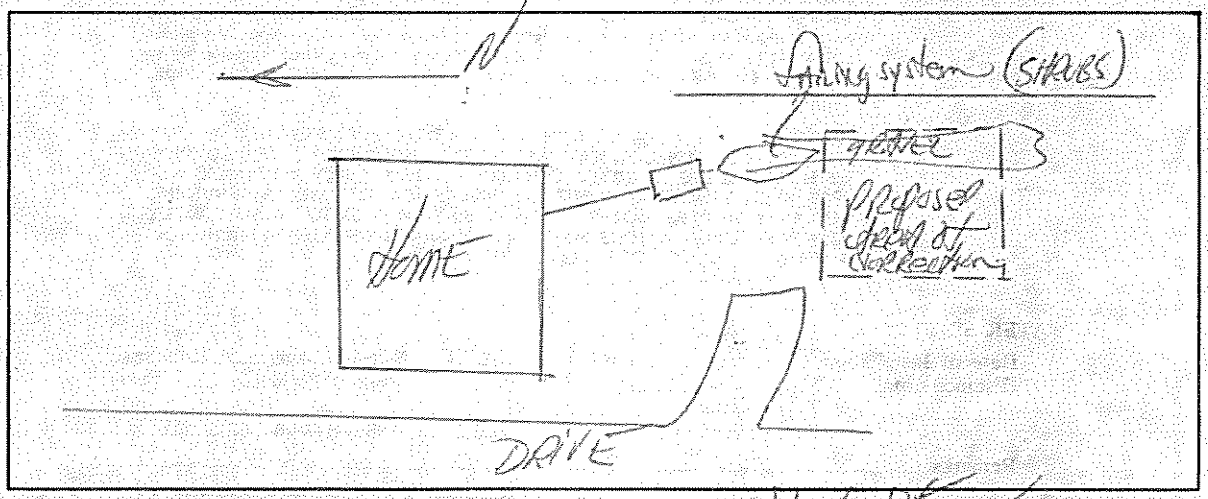
IF A WELL OF 25 FEET OR MORE (35' FOR PUBLIC) CANNOT BE ATTAINED, THIS PERMIT IS VOID IMMEDIATELY.

PRIMARY TREATMENT: existing
Consists of ____ Septic Tank(s) _____ Gallons _____ Gallons
Distance from:
Well _____ Ft. Buried Water Line _____ Ft.
Lot Line _____ Ft. Watercourse _____ Ft.
Foundation _____ Ft.

SECONDARY TREATMENT
Distance from:
Well _____ Ft. Buried Water Line _____ Ft.
Lot Line _____ Ft. Watercourse _____ Ft.
Foundation _____ Ft.

Please note that the numbers indicated in paranthesis ( ) on this Permit indicate the minimum requirements for duplexes and all other public buildings such as apartments, churches, factories and commercial buildings.

NOTE: INSPECTION IS REQUIRED BEFORE BACKFILLING.



I hereby agree to install such facilities to comply with restrictions in above permit and other applicable County Regulations.

Harm Bos
Builder, Owner or Installer

Date: 11-6-85 Fee Paid $ _____
Date Issued: 2-6-86
Sanitarian or Authorized Agent: [signature]
Issuing Agency: O.C.H.D.

Refer to Reverse Side for Additional Information

THIS PERMIT EXPIRES 1 YEAR FROM DATE OF ISSUANCE.

See EH Code
Board of Appeals
on Holding tank
file for additional
information

70-03-33-200-035

HEALTH DEPARTMENT
ENVIRONMENTAL DIVISION
616/846-8350
414 WASHINGTON ST. GRAND HAVEN, MI 49417

70-03-33-200-035

January 15, 1985

Mr. William Tysman
948 Robbins Rd.
Grand Haven, MI 49417

Re: Building Addition at ~~17334~~ 17120
Robbins Road, Grand Haven Twp.,
Ottawa Co., Mich.

Dear Mr. Tysman:

This letter is being sent in response to your application to install and utilize a second sewage holding tank for a building addition at your property described above.

After reviewing this situation in more detail, it has been decided that the total site will be evaluated according to the current Michigan Department of Natural Resources policy. This means that this approval may be granted only if your total sewage outflow is less than 100 gallons per day for the total site. This 100 gallon per day maximum outflow will also pertain to any future additions as well. Therefore, in order to determine if your existing facility discharges less than 100 gallons per day, I will need documentation to that effect. This documentation shall consist of all water meter readings since August 2, 1984 when the existing holding tank was installed, plus copies of all receipts for pumping the tank. I shall also need additional information from you (in writing) as to the projected water use for this new building addition. If the outflow of both the original building and the addition is less than this maximum 100 gallons/day/limitation, approval and a permit to install this tank will be granted.

This same policy will also be in effect for any future proposals for holding tank use. After this maximum flow has been reached, any future proposals will require Michigan Department of Natural Resources approval or the availability of municipal sewer.

I might also indicate that should Grand Haven Township continue to seek municipal sewer service and its availability be more certain (definite date of completion, and all referendums completed) alternate temporary

arrangements may then be possible.

Should you desire to proceed as originally desired, please obtain the above mentioned documentation and contact me.

Very truly yours,

James J. Szejda, R.S.
Supervising Sanitarian

JJS:ep

cc: Mr. James Beukema
Grand Haven Twp. Supervisor

HEALTH DEPARTMENT
ENVIRONMENTAL DIVISION
616 846-8350
414 WASHINGTON ST. GRAND HAVEN, MI 49417

Copy

December 27, 1984

Mr. James Beukema
Grand Haven Township Supervisor
Grand Haven Township Hall
13300 - 168th
Grand Haven, MI 49417

Re: William Tysman property, 17114 Robbins Road and Jack Vandenberg property, Robbins Road and 172nd Avenue

Dear Mr. Beukema:

Recently this department has been requested to consider a reduction in the requirements for two on-site septic systems to be located in Grand Haven Township. In both cases, the reason stated for the request was based on the potential for municipal sewer to be available from Grand Haven Township within three years. In the past, this department has agreed to such concessions but only when written documentation was available from the governing authority. Therefore, I am requesting a letter of intent from you which will substantiate this three year availability statement.

Please call me if you have any questions regarding my request.

Very truly yours,

James J. Szejda, R.S.
Supervising Sanitarian

JJS/gs

Branch Office
323 No. River Avenue
HOLLAND 49423
Phone: 396-5266

Branch Office
1291 Randall Road
COOPERSVILLE 49404
Phone: 837-8171

Branch Office
3100 Port Sheldon Road
HUDSONVILLE 49426
Phone: 669-0040

GRAND HAVEN TOWNSHIP

13300 168TH AVE., GRAND HAVEN, MI 49417
(616) 842-5988

SUPERVISOR
J.M. BEUKEMA
CLERK
J.R. GURD
TREASURER
E.D. KNOLL
TRUSTEES
S. BOELKINS
J. NORTIER
H. RADIKOPF
R. VAN OOSTERHOUT
BUILDING INSPECTOR & ZONING ADMINISTRATOR
W. KIEFT, JR.
ASSESSOR
C. DAHLMAN
WATER DEPARTMENT COORDINATOR
B. DAHLMAN

January 7, 1985

RECEIVED
JAN 9 1985
OTTAWA COUNTY
ENV. HEALTH DIV.

James J. Szejdea
R.P. Supervising Sanitarian
Health Department Environmental Division
414 Washington Street
Grand Haven, MI 49417

Subject: Septic Systems Requests received from William Tysman property 17114 Robbins Road and Jack Vanden Berg property Robbins Road and 172nd Ave.

Dear Mr. Szejdea:

In reponse to request from you for a letter of our intent regarding furture availability of sanitary sewer serving the Township, let me assure you that it is this Townships number one priority to provide this within the shortest period of time possible. As I am sure you are aware that obtaining this service for the Township is not going to be accomplished easily. However, we feel that by establishing it as our number one priority and working toward that goal we can and will be able to serve the north end of Grand Haven Township with Sanitary Sewer through the Grand Haven-Spring Lake Sewer Authority.

We thank you for past cooperation that your department has shown the Township of Grand Haven and if any questions in the future arise I am sure we can work together to find a mutual understanding.

Very truly yours

TOWNSHIP OF GRAND HAVEN

James M Beukema

James M. Beukema
Superviser

cc: J.Vandenberg
W.Tysman

Sewage Disposal Permit Application
Ottawa County Health Department
Environmental Health Division
County Building
Grand Haven, Michigan 49417
Phone: 846-8350

Permit No. _____

12-21-84
Date

Indicate Person Furnishing Information:

☑ Owner
☐ Installer (Name & Phone)
☐ Builder (Name & Phone)

Name Bill Tysman
Address 948 Robbins Rd.
City Grand Haven State Michi Zip 49417
Phone 842-6450

Structure Type:
☑ Commercial — proposed no. of employees 2
☐ Industrial — proposed no. of employees .....
☐ Residential — no. of bedrooms .....
☐ Duplex — no. of bedrooms .....
☐ Apartment — no. of units .....
☐ Other _____ (specify use), if other is checked, indicate estimated no. of persons (maximum) using facility: _____.

Proposed Site Address:
Street Address ~~17114~~ 17120 Robbins Rd.
Township Grand Haven Section _____

Directions to Site: Please Use Compass Directions

Other PERTINENT INFORMATION

Garbage Disposal	☑ No.	☐ Yes
Plumbing in Basement	☑ No	☐ Yes
Is Fill Proposed on Site	☑ No	☐ Yes, if yes height above existing grade _____ Ft.

Proposed Height of Top of Basement Wall Above Grade - _____ Ft.

Proposed Size of Structure:
1st Floor — 1440 Sq. Ft.
2nd Floor — _____ Sq. Ft.

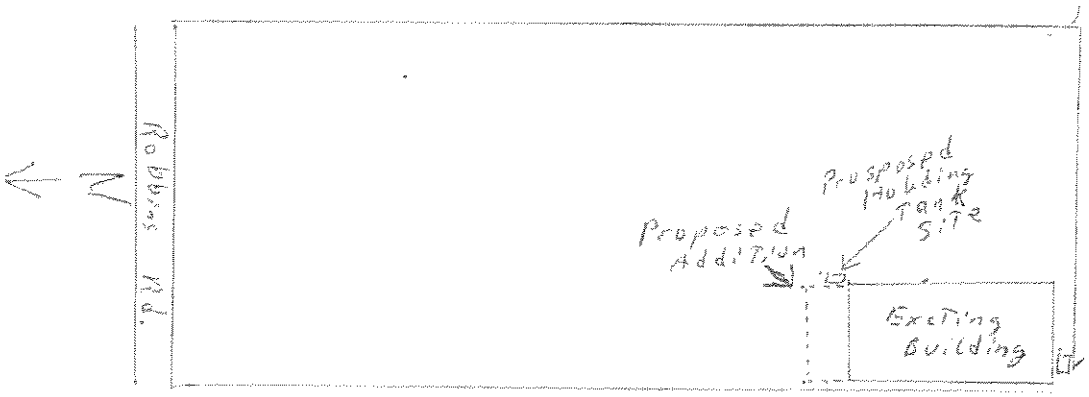
Lot Size:
624 Ft. x 191.95 Ft.
Road Frontage 191.95 Ft.

Proposed Location of System:
☑ Front Yard
☐ Side Yard
☐ Rear Yard

For Acreage:
Indicate No. of Acres 2.75

Intended Water Supply:
☑ Municipal Water
☐ Private Well, please indicate below anticipated depth:
☐ Less than 25 Ft. ☐ 25 Ft. - 50 Ft. ☐ 50 Ft. - 150 Ft. ☐ 150 Ft. - 300 Ft.

Proposed Site Plan:



NOTE: The 4 Corners of the Proposed Structure Shall be Staked Prior to Health Department Evaluation.

HEALTH DEPARTMENT
ENVIRONMENTAL DIVISION
616 846-8350
414 WASHINGTON ST. GRAND HAVEN, MI 49417

August 28, 1984

Checked with Clerks Office 10-25-84 - They returned $100.00 to me - Typmax approx 2 weeks ago - 9 Szejda

Mr. William Tysman
17108 Robbins Rd.
Grand Haven, MI 49417

Re: Commercial Property Located East of
17134 Robbins Rd., Grand Haven Twp.,
Ottawa County, MIch.

Dear Mr. Tysman:

This letter is in regards to our past conversations concerning the development of your property located at the site referenced above.

As per these conversations, this department, after originally reviewing the site, found it unacceptable for an on-site sewage disposal system. This decision was based upon the requirements of the Ottawa County Environmental Health Code for systems receiving 1,000 gallons of wastewater per day or less (as proposed by you). Also, as per that same Code, this department then advised you of the appeal process and your right to make application for an appeal hearing. After the Board had scheduled, heard your appeal and tabled any decision pending a more definite proposal, it was learned that your appeal should have been directed to the Michigan Department of Natural Resources. Therefore, at this time I must direct you to the Department of Natural Resources should you wish to pursue the development of this property without municipal sewer.

I apologize for any inconvenience caused by this error and am also requesting the return of your $50 appeal from the County Clerk.

Should you have any questions regarding this new development or should you desire any additional information, please feel free to contact me.

Very truly yours,

James J. Szjeda, R.S.
Supervising Sanitarian

JJS:ep

cc: Mr. Donald Williams, Sec.
O. C. Board of Appeals

WESTSHORE
ENVIRONMENTAL

Roger A. Bour
Senior Project Manager
Ph: (231) 777-3447 • Fx: (231) 773-3453
Cell: (231) 720-5261 • RBour@WestshoreConsulting.com
www.WestshoreConsulting.com
2534 Black Creek Road • Muskegon, MI 49444
Engineering | Surveying | Environmental

170081

N DEPARTMENT OF PUBLIC SAFETY
FREEDOM OF INFORMATION ACT
EST FOR PUBLIC RECORDS

GRAND HAVEN PUBLIC SAFETY

WESTSHORE
OUR, CONSULTING Today's date 5/11/17

Address 2534 BLACK CREEK ROAD City/state/zip MUSKEGON, MI, 49444

Phone 231-777-3447 Date of incident(s) NOT APPLICABLE

Name referred to in record

Date of birth or approximate age Relation to requestor

Reason for request
WE WOULD LIKE TO CHECK FIRE DEPARTMENT FILES FOR RECORDS OF ENVIRONMENTAL ISSUES AT THE PROPERTY AT 17114 ROBBINS ROAD (BILL TYSMAN TRUCKING YARD)

Signature of person requesting Roger Bour

GHDPS USE ONLY

Employee receiving request Date/Time

- ☐ Record(s) unavailable
- ☐ Release
- ☐ Partial denial**
- ☐ Full denial**

**Reason for denial

Notification to requestor date/time via ○ Phone ○ Mail

Signature of Director/designee Date

****

Number of pages x $5.00 for first page = copy cost

Number of pages x $2.00 for additional pages = copy cost

DVD duplication x $30.00 (includes in-car video) = copy cost

CD duplication x $20.00 (includes photos) = copy cost

TOTAL cost to requestor

GRAND HAVEN
DEPARTMENT OF PUBLIC SAFETY

525 Washington Avenue • Grand Haven, MI 49417
Office 616.842.3460 • Fax 616.847.6050

Jeff Hawke, *Chief, Director of Public Safety* | Joseph Boyle, *D/Lieutenant* | Clinton Holt, *Lieutenant* | Christopher Wright, *Lieutenant*

May 15, 2017

Westshore Environmental
2534 Black Creek Road
Muskegon, Michigan 49444

Subject: File Number 170081

Mr. Roger Bour:

The Grand Haven Department of Public Safety has received your request for public records and has processed it under the provisions of the Michigan Freedom of Information Act (FOIA), MCL15.231*et* seq.

Your request has been:

☐ Granted.

☐ Granted In part and denied in part. Portions of your request are exempt from disclosure based on provisions set forth in the Act. (See comments on the following page of this letter.) Under the FOIA, Section 10 (a copy of which is enclosed, you have the right to appeal to the head of this public body or to a judicial review of the denial.

☒ Denied. (See comments on the following page of this letter.) Under the FOIA, Section 10 (a copy of which is enclosed), you have the right to appeal to the head of this public body or to a judicial review of the denial.

☐ The documents you requested are enclosed. Please pay the amount of $-.-- Under the FOIA, Section 10a (a copy of which is enclosed), you have the right to appeal the fee *to* the head of this public body.

☐ Please *pay* the amount of $--.--. Once payment is received the documents will be mailed to you. Under the FOIA, Section 10a (a copy of which is enclosed), you have the right to appeal the fee *to* the head of this public body.

At this time, there are no costs for this request. If you have any questions concerning this matter, please feel free to contact our office at (616) 842-3460. You may also write to us at the address listed below and enclose a copy of this correspondence.

To review a copy of the Department's written public summary, procedures and guidelines, go to http://www.grandhaven.org/forms-permits/

Sincerely,

D/Lt. Joe D. Boyle
Investigations/Prevention Services

DENIAL OF RECORDS:

Denial is based on the following provision(s) of the Freedom of Information Act. MCL 15.243, Sec. 13(1). (All that apply will be checked)

☐ (a) Information of a personal nature where the public disclosure of the information would constitute a clearly unwarranted invasion of an individual's privacy
- ☐ Name(s)
- ☐ telephone number(s)
- ☐ address(es)
- ☐ physical characteristics
- ☐ driver license number(s)
- ☐ date(s) of birth
- ☐ other:

☐ (b) Investigating records compiled for law enforcement purposes, but only to the extent that disclosure would do any of the following:
- ☐ (i) Interfere with law enforcement proceedings
- ☐ (ii) Deprive a person of the right to a fair trial or impartial administrative adjudication.
- ☐ (iii) Constitute an unwarranted invasion of personal privacy.
- ☐ (iv) Disclose the identity of a confidential source, or if the record is compiled by a law enforcement agency in the course of a criminal investigation, disclose confidential information furnished only by a confidential source.
- ☐ (v) Disclose law enforcement investigative techniques or procedures.
- ☐ (vi) Endanger the life or physical safety of law enforcement personnel.

☐ (d) Records or information specifically described and exempted from disclosure by statute:
- ☐ MCL 780.758 William Van Regenmorter Crime Victim's Rights Act
- ☐ MCL 28.421b Firearms
- ☐ MCL 28.214 C.J.I.S. Policy Council Act (LEIN Information)
- ☐ Statute: Juvenile Information

☐ (m) Communications and notes within a public body or between public bodies of an advisory nature to the extent that they cover other than purely factual materials and are preliminary to a final agency determination of policy or action.

☐ (n) Records of law enforcement communication codes, or plans for deployment of law enforcement personnel, that if disclosed would prejudice a public body's ability to protect the public safety.

☐ (s) Unless the public interest in disclosure outweighs the public interest in nondisclosure in the particular instance, public records of a law enforcement agency, the release of which would do any of the following:
- ☐ (i) Identify or provide a means of identifying an informant.
- ☐ (ii) Identify or provide a means of identifying a law enforcement undercover officer or agent or a plain clothes officer as a law enforcement officer or agent.
- ☐ (v) Disclose operation instructions for law enforcement officer or agents.
- ☐ (vii) Endanger the life or safety of law enforcement officers or agents or their families, relatives, children, parents or those who furnish information to law enforcement departments or agencies.
- ☐ (viii) Identify or provide a manes of identifying a person as a law enforcement officer, agent, or informant.
- ☐ (ix) Disclose personnel records of law enforcement agencies.

☐ (w) Information or records that would disclose the social security number of any individual.

☒ To the best of the Department's knowledge, information, and belief, under the information provided by you or by any other description reasonably known to the Department, the public records do not exist within the Department.

☒ Based on the information you provided, we are unable to locate any records pertaining to the incident you described. Please resubmit a request with additional information. The following information, if available, is suggested.
- ☒ Specific locations (i.e. city, county.)
- ☒ GHDPS Incident number
- ☒ Name(s) of those involved in the incident
- ☒ Specific dates (i.e., date of incident)
- ☐ Name of driver and their birth date or driver license number
- ☐ Date of birth.

☐ The report you have requested has not yet been completed and filed. Please resubmit your request in 30 days.

Additional Comments:

This falls within the jurisdiction of the Grand Haven Township Fire/Rescue as this is the County of Ottawa.

Appendix C

Government Database Report

17144 Robbins Road
17144 Robbins Road
Grand Haven, MI 49417

Inquiry Number: 4931503.2s
May 09, 2017

The EDR Radius Map™ Report

6 Armstrong Road, 4th floor
Shelton, CT 06484
Toll Free: 800.352.0050
www.edrnet.com

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GEOCHECK ADDENDUM

GeoCheck - Not Requested

Thank you for your business.
Please contact EDR at 1-800-352-0050
with any questions or comments.

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This Report contains certain information obtained from a variety of public and other sources reasonably available to Environmental Data Resources, Inc. It cannot be concluded from this Report that coverage information for the target and surrounding properties does not exist from other sources. **NO WARRANTY EXPRESSED OR IMPLIED, IS MADE WHATSOEVER IN CONNECTION WITH THIS REPORT. ENVIRONMENTAL DATA RESOURCES, INC. SPECIFICALLY DISCLAIMS THE MAKING OF ANY SUCH WARRANTIES, INCLUDING WITHOUT LIMITATION, MERCHANTABILITY OR FITNESS FOR A PARTICULAR USE OR PURPOSE. ALL RISK IS ASSUMED BY THE USER. IN NO EVENT SHALL ENVIRONMENTAL DATA RESOURCES, INC. BE LIABLE TO ANYONE, WHETHER ARISING OUT OF ERRORS OR OMISSIONS, NEGLIGENCE, ACCIDENT OR ANY OTHER CAUSE, FOR ANY LOSS OF DAMAGE, INCLUDING, WITHOUT LIMITATION, SPECIAL, INCIDENTAL, CONSEQUENTIAL, OR EXEMPLARY DAMAGES. ANY LIABILITY ON THE PART OF ENVIRONMENTAL DATA RESOURCES, INC. IS STRICTLY LIMITED TO A REFUND OF THE AMOUNT PAID FOR THIS REPORT.** Purchaser accepts this Report "AS IS". Any analyses, estimates, ratings, environmental risk levels or risk codes provided in this Report are provided for illustrative purposes only, and are not intended to provide, nor should they be interpreted as providing any facts regarding, or prediction or forecast of, any environmental risk for any property. Only a Phase I Environmental Site Assessment performed by an environmental professional can provide information regarding the environmental risk for any property. Additionally, the information provided in this Report is not to be construed as legal advice.

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EXECUTIVE SUMMARY

A search of available environmental records was conducted by Environmental Data Resources, Inc (EDR). The report was designed to assist parties seeking to meet the search requirements of EPA's Standards and Practices for All Appropriate Inquiries (40 CFR Part 312), the ASTM Standard Practice for Environmental Site Assessments (E 1527-13) or custom requirements developed for the evaluation of environmental risk associated with a parcel of real estate.

TARGET PROPERTY INFORMATION

ADDRESS

17144 ROBBINS ROAD
GRAND HAVEN, MI 49417

COORDINATES

Latitude (North):	43.0431240 - 43˚ 2' 35.24''
Longitude (West):	86.2119810 - 86˚ 12' 43.13''
Universal Tranverse Mercator:	Zone 16
UTM X (Meters):	564187.1
UTM Y (Meters):	4765690.0
Elevation:	608 ft. above sea level

USGS TOPOGRAPHIC MAP ASSOCIATED WITH TARGET PROPERTY

Target Property Map:	6065996 GRAND HAVEN, MI
Version Date:	2014

AERIAL PHOTOGRAPHY IN THIS REPORT

Portions of Photo from:	20140721
Source:	USDA

MAPPED SITES SUMMARY

Target Property Address:
17144 ROBBINS ROAD
GRAND HAVEN, MI 49417

Click on Map ID to see full detail.

MAP ID	SITE NAME	ADDRESS	DATABASE ACRONYMS	RELATIVE ELEVATION	DIST (ft. & mi.) DIRECTION
1	BILL TYSMAN TRUCKING	17114 ROBBINS RD	WDS	Higher	1 ft.
A2	DR LUBE INC	15163 172ND AVE	RCRA NonGen / NLR	Higher	616, 0.117, WNW
A3		15163 172ND AVE	EDR Hist Auto	Higher	616, 0.117, WNW
A4	EXPRESS LANE # 2	17200 ROBBINS RD	UST	Higher	684, 0.130, WNW
B5	WALGREEN CO	1045 ROBBINS RD.	RCRA-CESQG, FINDS, ECHO	Lower	795, 0.151, WNW
6	1450 SOUTH FERRY STR	1450 SOUTH FERRY STR	INVENTORY, BEA	Lower	902, 0.171, NNW
B7	REPCOLITE PAINTS INC	17268 ROBBINS RD	RCRA-CESQG	Higher	951, 0.180, WNW
8	FITZPATRIC ELECTRIC	17276 ROBBINS RD	LUST, UST	Higher	994, 0.188, WNW
C9	ROBBINS ROAD HARDWAR	948 ROBBINS ROAD	INVENTORY, PART 201, BEA, WDS	Higher	1336, 0.253, WNW
C10	BRIMARC INC	947 ROBBINS RD	INVENTORY, WDS	Lower	1375, 0.260, WNW
11	GRAND HAVEN MICHIGAN	1622 S BEACON BLVD	LUST, UST, INVENTORY, WDS	Lower	1592, 0.302, WNW
D12	FORMER SUPERIOR OIL	1710 SOUTH BEACON BO	AUL	Lower	1594, 0.302, WNW
D13	BURGER KING	1710 S BEACON BLVD	LUST, INVENTORY	Lower	1594, 0.302, WNW
14	EDUCATION SERVICE CE	1415 S BEECHTREE ST	LUST, UST	Lower	1930, 0.366, NE
E15	1815 SOUTH BEACON BL	1815 SOUTH BEACON BL	BEA	Higher	2035, 0.385, West
E16	GAGE BUDGET LOT	1815 S BEACON BLVD	INVENTORY, WDS	Higher	2035, 0.385, West
17	SOUTH TOWN AUTO WASH	832 ROBBINS RD	LUST, UST, WDS	Higher	2068, 0.392, West
18	JERRY TIMMER CHEVROL	1701 S BEACON BLVD	LUST, UST, INVENTORY, WDS	Higher	2236, 0.423, WNW
19	BETTEN AUTO CENTER I	810 ROBBINS RD	LUST, UST, WDS	Higher	2307, 0.437, West
F20	REDEKER FORD	1401 SOUTH BEACON BO	BEA	Higher	2365, 0.448, NW
F21	PREFERRED AUTOMOTIVE	1401 S BEACON BLVD	INVENTORY, WDS	Higher	2365, 0.448, NW
22	GRAND HAVEN STAMPED	1250 S BEECHTREE ST	LUST, UST, SPILLS, WDS	Lower	2413, 0.457, NE
23	DAKE PRESS CORPORATI	724 ROBBINS ROAD	PART 201, INVENTORY, WDS	Higher	2636, 0.499, West
24	ATCO RUBBER PROD INC	1605 MARION	SEMS-ARCHIVE, AUL, BROWNFIELDS, PART 201,...	Lower	3867, 0.732, NNE
25	725 TAYLOR STREET	725 TAYLOR STREET	INVENTORY, PART 201, BEA, WDS	Higher	3963, 0.751, NW
26	OTTAWA STEEL PRODUCT	745 WOODLAWN	BROWNFIELDS, PART 201, INVENTORY, WDS	Higher	4319, 0.818, NNW
27	OTTAWA CORP	17365 HAYES ST	INVENTORY, PART 201, BEA, WDS	Lower	4417, 0.837, SSW
28	14374 172ND AVENUE	14374 172ND AVENUE	PART 201, BEA	Lower	4504, 0.853, South
29	NEIDLINGER OIL CO	815 VERHOEKS	SEMS-ARCHIVE, INVENTORY, PART 201, WDS	Higher	4620, 0.875, NNW

EXECUTIVE SUMMARY

TARGET PROPERTY SEARCH RESULTS

The target property was not listed in any of the databases searched by EDR.

DATABASES WITH NO MAPPED SITES

No mapped sites were found in EDR's search of available ("reasonably ascertainable ") government records either on the target property or within the search radius around the target property for the following databases:

STANDARD ENVIRONMENTAL RECORDS

Federal NPL site list

NPL ..... National Priority List
Proposed NPL ..... Proposed National Priority List Sites
NPL LIENS ..... Federal Superfund Liens

Federal Delisted NPL site list

Delisted NPL ..... National Priority List Deletions

Federal CERCLIS list

FEDERAL FACILITY ..... Federal Facility Site Information listing
SEMS ..... Superfund Enterprise Management System

Federal CERCLIS NFRAP site list

SEMS-ARCHIVE ..... Superfund Enterprise Management System Archive

Federal RCRA CORRACTS facilities list

CORRACTS ..... Corrective Action Report

Federal RCRA non-CORRACTS TSD facilities list

RCRA-TSDF ..... RCRA - Treatment, Storage and Disposal

Federal RCRA generators list

RCRA-LQG ..... RCRA - Large Quantity Generators
RCRA-SQG ..... RCRA - Small Quantity Generators

Federal institutional controls / engineering controls registries

LUCIS ..... Land Use Control Information System
US ENG CONTROLS ..... Engineering Controls Sites List
US INST CONTROL ..... Sites with Institutional Controls

EXECUTIVE SUMMARY

Federal ERNS list

ERNS..... Emergency Response Notification System

State- and tribal - equivalent CERCLIS

SHWS..... This state does not maintain a SHWS list. See the Federal CERCLIS list and Federal NPL list.

State and tribal landfill and/or solid waste disposal site lists

SWF/LF..... Solid Waste Facilities Database

State and tribal leaking storage tank lists

INDIAN LUST..... Leaking Underground Storage Tanks on Indian Land

State and tribal registered storage tank lists

FEMA UST..... Underground Storage Tank Listing
AST..... Aboveground Tanks
INDIAN UST..... Underground Storage Tanks on Indian Land

State and tribal voluntary cleanup sites

INDIAN VCP..... Voluntary Cleanup Priority Listing

State and tribal Brownfields sites

BROWNFIELDS..... Brownfields and UST Site Database

ADDITIONAL ENVIRONMENTAL RECORDS

Local Brownfield lists

US BROWNFIELDS..... A Listing of Brownfields Sites

Local Lists of Landfill / Solid Waste Disposal Sites

SWRCY..... Recycling Facilities
HIST LF..... Inactive Solid Waste Facilities
INDIAN ODI..... Report on the Status of Open Dumps on Indian Lands
DEBRIS REGION 9..... Torres Martinez Reservation Illegal Dump Site Locations
ODI..... Open Dump Inventory
IHS OPEN DUMPS..... Open Dumps on Indian Land

Local Lists of Hazardous waste / Contaminated Sites

US HIST CDL..... Delisted National Clandestine Laboratory Register
CDL..... Clandestine Drug Lab Listing
DEL PART 201..... Delisted List of Contaminated Sites
US CDL..... National Clandestine Laboratory Register

Local Land Records

LIENS..... Lien List

LIENS 2 ..... CERCLA Lien Information

Records of Emergency Release Reports

HMIRS ..... Hazardous Materials Information Reporting System
SPILLS ..... Pollution Emergency Alerting System

Other Ascertainable Records

FUDS ..... Formerly Used Defense Sites
DOD ..... Department of Defense Sites
SCRD DRYCLEANERS ..... State Coalition for Remediation of Drycleaners Listing
US FIN ASSUR ..... Financial Assurance Information
EPA WATCH LIST ..... EPA WATCH LIST
2020 COR ACTION ..... 2020 Corrective Action Program List
TSCA ..... Toxic Substances Control Act
TRIS ..... Toxic Chemical Release Inventory System
SSTS ..... Section 7 Tracking Systems
ROD ..... Records Of Decision
RMP ..... Risk Management Plans
RAATS ..... RCRA Administrative Action Tracking System
PRP ..... Potentially Responsible Parties
PADS ..... PCB Activity Database System
ICIS ..... Integrated Compliance Information System
FTTS ..... FIFRA/ TSCA Tracking System - FIFRA (Federal Insecticide, Fungicide, & Rodenticide Act)/TSCA (Toxic Substances Control Act)
MLTS ..... Material Licensing Tracking System
COAL ASH DOE ..... Steam-Electric Plant Operation Data
COAL ASH EPA ..... Coal Combustion Residues Surface Impoundments List
PCB TRANSFORMER ..... PCB Transformer Registration Database
RADINFO ..... Radiation Information Database
HIST FTTS ..... FIFRA/TSCA Tracking System Administrative Case Listing
DOT OPS ..... Incident and Accident Data
CONSENT ..... Superfund (CERCLA) Consent Decrees
INDIAN RESERV ..... Indian Reservations
FUSRAP ..... Formerly Utilized Sites Remedial Action Program
UMTRA ..... Uranium Mill Tailings Sites
LEAD SMELTERS ..... Lead Smelter Sites
US AIRS ..... Aerometric Information Retrieval System Facility Subsystem
US MINES ..... Mines Master Index File
ABANDONED MINES ..... Abandoned Mines
FINDS ..... Facility Index System/Facility Registry System
DOCKET HWC ..... Hazardous Waste Compliance Docket Listing
UXO ..... Unexploded Ordnance Sites
ECHO ..... Enforcement & Compliance History Information
FUELS PROGRAM ..... EPA Fuels Program Registered Listing
AIRS ..... Permit and Emissions Inventory Data
COAL ASH ..... Coal Ash Disposal Sites
DRYCLEANERS ..... Drycleaning Establishments
LEAD ..... Lead Safe Housing Registry
NPDES ..... List of Active NPDES Permits
UIC ..... Underground Injection Wells Database

EDR HIGH RISK HISTORICAL RECORDS

EDR Exclusive Records

EDR MGP ..... EDR Proprietary Manufactured Gas Plants

EXECUTIVE SUMMARY

EDR Hist Cleaner..... EDR Exclusive Historic Dry Cleaners

EDR RECOVERED GOVERNMENT ARCHIVES

Exclusive Recovered Govt. Archives

RGA PART 201..... Recovered Government Archive State Hazardous Waste Facilities List
RGA LF..... Recovered Government Archive Solid Waste Facilities List
RGA LUST..... Recovered Government Archive Leaking Underground Storage Tank

SURROUNDING SITES: SEARCH RESULTS

Surrounding sites were identified in the following databases.

Elevations have been determined from the USGS Digital Elevation Model and should be evaluated on a relative (not an absolute) basis. Relative elevation information between sites of close proximity should be field verified. Sites with an elevation equal to or higher than the target property have been differentiated below from sites with an elevation lower than the target property.
Page numbers and map identification numbers refer to the EDR Radius Map report where detailed data on individual sites can be reviewed.

Sites listed in ***bold italics*** are in multiple databases.

Unmappable (orphan) sites are not considered in the foregoing analysis.

STANDARD ENVIRONMENTAL RECORDS

Federal RCRA generators list

RCRA-CESQG: RCRAInfo is EPA's comprehensive information system, providing access to data supporting the Resource Conservation and Recovery Act (RCRA) of 1976 and the Hazardous and Solid Waste Amendments (HSWA) of 1984. The database includes selective information on sites which generate, transport, store, treat and/or dispose of hazardous waste as defined by the Resource Conservation and Recovery Act (RCRA). Conditionally exempt small quantity generators (CESQGs) generate less than 100 kg of hazardous waste, or less than 1 kg of acutely hazardous waste per month.

A review of the RCRA-CESQG list, as provided by EDR, and dated 12/12/2016 has revealed that there are 2 RCRA-CESQG sites within approximately 0.25 miles of the target property.

Equal/Higher Elevation	Address	Direction / Distance	Map ID	Page
REPCOLITE PAINTS INC	17268 ROBBINS RD	WNW 1/8 - 1/4 (0.180 mi.)	B7	14

Lower Elevation	Address	Direction / Distance	Map ID	Page
WALGREEN CO	***1045 ROBBINS RD.***	***WNW 1/8 - 1/4 (0.151 mi.)***	***B5***	***12***

State and tribal leaking storage tank lists

LUST: The Leaking Underground Storage Tank Incident Reports contain an inventory of reported leaking underground storage tank incidents. The data come from the Department of Environmental Quality's Leaking Underground Storage Tank (LUST) Database.

A review of the LUST list, as provided by EDR, and dated 01/05/2017 has revealed that there are 8

LUST sites within approximately 0.5 miles of the target property.

Equal/Higher Elevation	Address	Direction / Distance	Map ID	Page
FITZPATRIC ELECTRIC	***17276 ROBBINS RD***	***WNW 1/8 - 1/4 (0.188 mi.)***	***8***	***16***
Release Status: Closed Substance Release: Gasoline Facility Id: 00038002				
SOUTH TOWN AUTO WASH	***832 ROBBINS RD***	***W 1/4 - 1/2 (0.392 mi.)***	***17***	***25***
Release Status: Closed Substance Release: Gasoline,Gasoline,Gasoline Facility Id: 00020688				
JERRY TIMMER CHEVROL	***1701 S BEACON BLVD***	***WNW 1/4 - 1/2 (0.423 mi.)***	***18***	***27***
Release Status: Closed Facility Id: 00011813				
BETTEN AUTO CENTER I	***810 ROBBINS RD***	***W 1/4 - 1/2 (0.437 mi.)***	***19***	***29***
Release Status: Closed Substance Release: Unknown Facility Id: 00002653				

Lower Elevation	Address	Direction / Distance	Map ID	Page
GRAND HAVEN MICHIGAN	***1622 S BEACON BLVD***	***WNW 1/4 - 1/2 (0.302 mi.)***	***11***	***18***
Release Status: Open Substance Release: Gasoline Facility Id: 00009488				
BURGER KING	***1710 S BEACON BLVD***	***WNW 1/4 - 1/2 (0.302 mi.)***	***D13***	***21***
Release Status: Open Substance Release: Gasoline,Diesel Facility Id: 50001288				
EDUCATION SERVICE CE	***1415 S BEECHTREE ST***	***NE 1/4 - 1/2 (0.366 mi.)***	***14***	***22***
Release Status: Closed Substance Release: Unknown Substance Release: Diesel,Diesel Substance Release: Diesel Facility Id: 00006140				
GRAND HAVEN STAMPED	***1250 S BEECHTREE ST***	***NE 1/4 - 1/2 (0.457 mi.)***	***22***	***32***
Release Status: Closed Substance Release: Unknown Facility Id: 00017330				

State and tribal registered storage tank lists

UST: The Underground Storage Tank database contains registered USTs. USTs are regulated under Subtitle I of the Resource Conservation and Recovery Act (RCRA). The data come from the Department of Environmental Quality's Michigan UST database.

A review of the UST list, as provided by EDR, has revealed that there are 2 UST sites within approximately 0.25 miles of the target property.

Equal/Higher Elevation	Address	Direction / Distance	Map ID	Page
EXPRESS LANE # 2	17200 ROBBINS RD	WNW 1/8 - 1/4 (0.130 mi.)	A4	10
Database: UST, Date of Government Version: 10/21/2016				

Tank Status: Currently In Use
Tank Status: NON-Registered Tank
Facility Type: ACTIVE
Facility Id: 00003369

FITZPATRIC ELECTRIC	***17276 ROBBINS RD***	***WNW 1/8 - 1/4 (0.188 mi.)***	***8***	***16***

Database: UST, Date of Government Version: 10/21/2016
Tank Status: Removed from Ground
Facility Type: CLOSED
Facility Id: 00038002

State and tribal institutional control / engineering control registries

AUL: A listing of sites with institutional and/or engineering controls in place.

A review of the AUL list, as provided by EDR, and dated 02/28/2017 has revealed that there is 1 AUL site within approximately 0.5 miles of the target property.

Lower Elevation	Address	Direction / Distance	Map ID	Page
FORMER SUPERIOR OIL	1710 SOUTH BEACON BO	WNW 1/4 - 1/2 (0.302 mi.)	D12	20

Facility ID: 05001288

ADDITIONAL ENVIRONMENTAL RECORDS

Local Lists of Hazardous waste / Contaminated Sites

PART 201: A Part 201 Listed site is a location that has been evaluated and scored by the DEQ using the Part 201 scoring model. The location is or includes a "facility" as defined by Part 201, where there has been a release of a hazardous substance(s) in excess of the Part 201 residential criteria, and/or where corrective actions have not been completed under Part 201 to meet the applicable cleanup criteria for unrestricted residential use. The Part 201 List does not include all of the sites of contamination that are subject to regulation under Part 201 because owners are not required to inform the DEQ about the sites and can pursue cleanup independently. Sites of environmental contamination that are not known to DEQ are not on the list, nor are sites with releases that resulted in low environmental impact.

A review of the PART 201 list, as provided by EDR, and dated 10/01/2013 has revealed that there are 8 PART 201 sites within approximately 1 mile of the target property.

Equal/Higher Elevation	Address	Direction / Distance	Map ID	Page
ROBBINS ROAD HARDWAR	***948 ROBBINS ROAD***	***WNW 1/4 - 1/2 (0.253 mi.)***	***C9***	***17***

Facility Status: Interim Response conducted
Facility ID: 70000350

DAKE PRESS CORPORATI	***724 ROBBINS ROAD***	***W 1/4 - 1/2 (0.499 mi.)***	***23***	***34***

Facility Status: Interim Response in progress
Facility ID: 70000315

725 TAYLOR STREET	***725 TAYLOR STREET***	***NW 1/2 - 1 (0.751 mi.)***	***25***	***39***

Facility Status: Inactive - no actions taken to address contamination
Facility ID: 70000414

OTTAWA STEEL PRODUCT	***745 WOODLAWN***	***NNW 1/2 - 1 (0.818 mi.)***	***26***	***40***

Facility Status: Evaluation conducted
Facility ID: 70000043

NEIDLINGER OIL CO	***815 VERHOEKS***	***NNW 1/2 - 1 (0.875 mi.)***	***29***	***43***

Facility Status: Interim Response conducted - No further activities anticipated
Facility ID: 70000012

Lower Elevation	Address	Direction / Distance	Map ID	Page
ATCO RUBBER PROD INC	***1605 MARION***	***NNE 1/2 - 1 (0.732 mi.)***	***24***	***35***

Facility Status: Interim Response conducted - No further activities anticipated
Facility ID: 70000001

OTTAWA CORP	***17365 HAYES ST***	***SSW 1/2 - 1 (0.837 mi.)***	***27***	***41***

Facility Status: Interim Response conducted
Facility ID: 70000394

14374 172ND AVENUE	***14374 172ND AVENUE***	***S 1/2 - 1 (0.853 mi.)***	***28***	***43***

Facility Status: See Leaking Underground Storage Tank Site Database
Facility ID: 70000399

INVENTORY: The Inventory of Facilities has three data sources: Facilities under Part 201, Environmental Remediation, of the Natural Resources and Environmental Protection Act, 1994 PA 451, as amended (NREPA) identified through state funded or private party response activities (Projects); Facilities under Part 213, Leaking Underground Storage Tanks of the NREPA; and Facilities identified through submittals of Baseline Environmental Assessments (BEA) submitted pursuant to Part 201 or Part 213 of the NREPA. The Part 201 Projects Inventory does not include all of the facilities that are subject to regulation under Part 201 because owners are not required to inform the Department of Environmental Quality (DEQ) about the facilities and can pursue cleanup independently. Facilities that are not known to DEQ are not on the Inventory, nor are locations with releases that resulted in low environmental impact. Part 213 facilities listed here may have more than one release; a list of releases for which corrective actions have been completed and list of releases for which corrective action has not been completed is located on the Leaking Underground Storage Tanks Site Search webpage. The DEQ may or may not have reviewed and concurred with the conclusion that the corrective actions described in a closure report meets criteria. A BEA is a document that new or prospective property owners/operations disclose to the DEQ identifying the property as a facility pursuant to Part 201 and Part 213. The Inventory of BEA Facilities overlaps in part with the Part 201 Projects facilities and Part 213 facilities. There may be more than one BEA for each facility.

A review of the INVENTORY list, as provided by EDR, and dated 01/24/2017 has revealed that there are 9 INVENTORY sites within approximately 0.5 miles of the target property.

Equal/Higher Elevation	Address	Direction / Distance	Map ID	Page
ROBBINS ROAD HARDWAR	***948 ROBBINS ROAD***	***WNW 1/4 - 1/2 (0.253 mi.)***	***C9***	***17***

Facility ID: 70000350

GAGE BUDGET LOT	***1815 S BEACON BLVD***	***W 1/4 - 1/2 (0.385 mi.)***	***E16***	***25***
JERRY TIMMER CHEVROL	***1701 S BEACON BLVD***	***WNW 1/4 - 1/2 (0.423 mi.)***	***18***	***27***

Facility ID: 70000105

PREFERRED AUTOMOTIVE	***1401 S BEACON BLVD***	***NW 1/4 - 1/2 (0.448 mi.)***	***F21***	***31***
DAKE PRESS CORPORATI	***724 ROBBINS ROAD***	***W 1/4 - 1/2 (0.499 mi.)***	***23***	***34***

Facility ID: 70000315

Lower Elevation	Address	Direction / Distance	Map ID	Page
1450 SOUTH FERRY STR	***1450 SOUTH FERRY STR***	***NNW 1/8 - 1/4 (0.171 mi.)***	***6***	***14***
BRIMARC INC	***947 ROBBINS RD***	***WNW 1/4 - 1/2 (0.260 mi.)***	***C10***	***18***

Facility ID: 70000518				
GRAND HAVEN MICHIGAN	***1622 S BEACON BLVD***	***WNW 1/4 - 1/2 (0.302 mi.)***	***11***	***18***
Facility ID: 00009488				
BURGER KING	***1710 S BEACON BLVD***	***WNW 1/4 - 1/2 (0.302 mi.)***	***D13***	***21***
Facility ID: 50001288				

Other Ascertainable Records

RCRA NonGen / NLR: RCRAInfo is EPA's comprehensive information system, providing access to data supporting the Resource Conservation and Recovery Act (RCRA) of 1976 and the Hazardous and Solid Waste Amendments (HSWA) of 1984. The database includes selective information on sites which generate, transport, store, treat and/or dispose of hazardous waste as defined by the Resource Conservation and Recovery Act (RCRA). Non-Generators do not presently generate hazardous waste.

A review of the RCRA NonGen / NLR list, as provided by EDR, and dated 12/12/2016 has revealed that there is 1 RCRA NonGen / NLR site within approximately 0.25 miles of the target property.

Equal/Higher Elevation	Address	Direction / Distance	Map ID	Page
DR LUBE INC	15163 172ND AVE	WNW 0 - 1/8 (0.117 mi.)	A2	8

BEA: A BEA is a document that new or prospective property owners/operations disclose to the DEQ identifying the property as a facility pursuant to Part 201 and Part 213. The Inventory of BEA Facilities overlaps in part with the Part 201 Projects facilities and Part 213 facilities. There may be more than one BEA for each facility.

A review of the BEA list, as provided by EDR, and dated 08/21/2013 has revealed that there are 4 BEA sites within approximately 0.5 miles of the target property.

Equal/Higher Elevation	Address	Direction / Distance	Map ID	Page
ROBBINS ROAD HARDWAR	***948 ROBBINS ROAD***	***WNW 1/4 - 1/2 (0.253 mi.)***	***C9***	***17***
1815 SOUTH BEACON BL	1815 SOUTH BEACON BL	W 1/4 - 1/2 (0.385 mi.)	E15	24
REDEKER FORD	1401 SOUTH BEACON BO	NW 1/4 - 1/2 (0.448 mi.)	F20	31

Lower Elevation	Address	Direction / Distance	Map ID	Page
1450 SOUTH FERRY STR	***1450 SOUTH FERRY STR***	***NNW 1/8 - 1/4 (0.171 mi.)***	***6***	***14***

WDS: The Waste Data System (WDS) tracks activities at facilities regulated by the Solid Waste, Scrap Tire, Hazardous Waste, and Liquid Industrial Waste programs.

A review of the WDS list, as provided by EDR, and dated 02/01/2017 has revealed that there is 1 WDS site within approximately 0.001 miles of the target property.

Equal/Higher Elevation	Address	Direction / Distance	Map ID	Page
BILL TYSMAN TRUCKING WMD Id: 441061 Site Id: MIG000044691	17114 ROBBINS RD	0 - 1/8 (0.000 mi.)	1	8

EXECUTIVE SUMMARY

EDR HIGH RISK HISTORICAL RECORDS

EDR Exclusive Records

EDR Hist Auto: EDR has searched selected national collections of business directories and has collected listings of potential gas station/filling station/service station sites that were available to EDR researchers. EDR's review was limited to those categories of sources that might, in EDR's opinion, include gas station/filling station/service station establishments. The categories reviewed included, but were not limited to gas, gas station, gasoline station, filling station, auto, automobile repair, auto service station, service station, etc. This database falls within a category of information EDR classifies as "High Risk Historical Records", or HRHR. EDR's HRHR effort presents unique and sometimes proprietary data about past sites and operations that typically create environmental concerns, but may not show up in current government records searches.

A review of the EDR Hist Auto list, as provided by EDR, has revealed that there is 1 EDR Hist Auto site within approximately 0.125 miles of the target property.

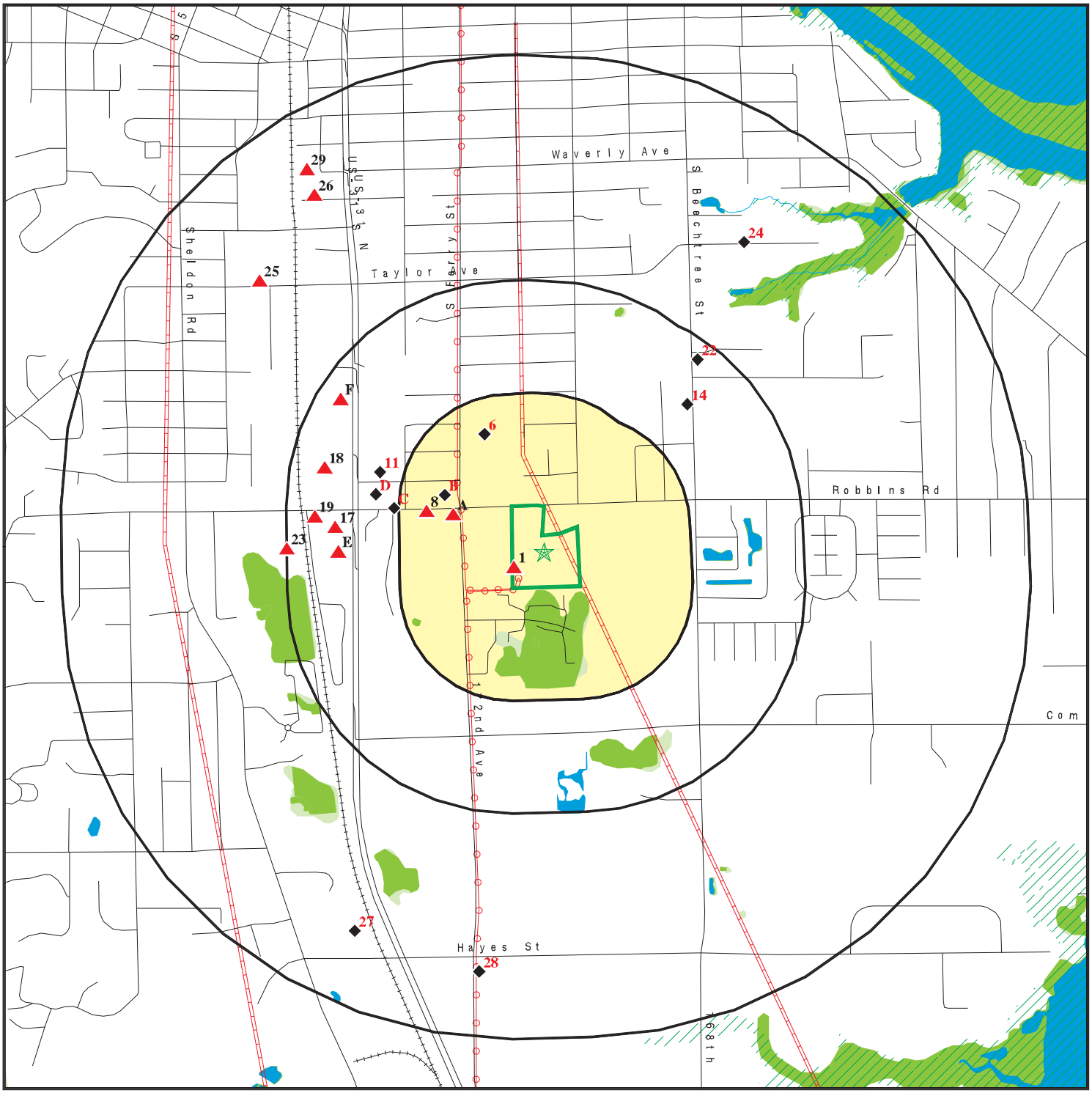
Equal/Higher Elevation	Address	Direction / Distance	Map ID	Page
Not reported	15163 172ND AVE	WNW 0 - 1/8 (0.117 mi.)	A3	10

EXECUTIVE SUMMARY

Due to poor or inadequate address information, the following sites were not mapped. Count: 1 records.

Site Name	Database(s)
715 ROBBINS ROAD	INVENTORY

OVERVIEW MAP - 4931503.2S



Target Property

Sites at elevations higher than or equal to the target property

Sites at elevations lower than the target property

Manufactured Gas Plants

National Priority List Sites

Dept. Defense Sites

Indian Reservations BIA

Power transmission lines

Pipelines

100-year flood zone

500-year flood zone

National Wetland Inventory

State Wetlands

0 1/4 1/2 1 Miles

This report includes Interactive Map Layers to display and/or hide map information. The legend includes only those icons for the default map view.

SITE NAME: 17144 Robbins Road	CLIENT: Westshore Engineering & Surv.
ADDRESS: 17144 Robbins Road Grand Haven MI 49417	CONTACT: Roger Bour INQUIRY #: 4931503.2s
LAT/LONG: 43.043124 / 86.211981	DATE: May 09, 2017 11:34 am

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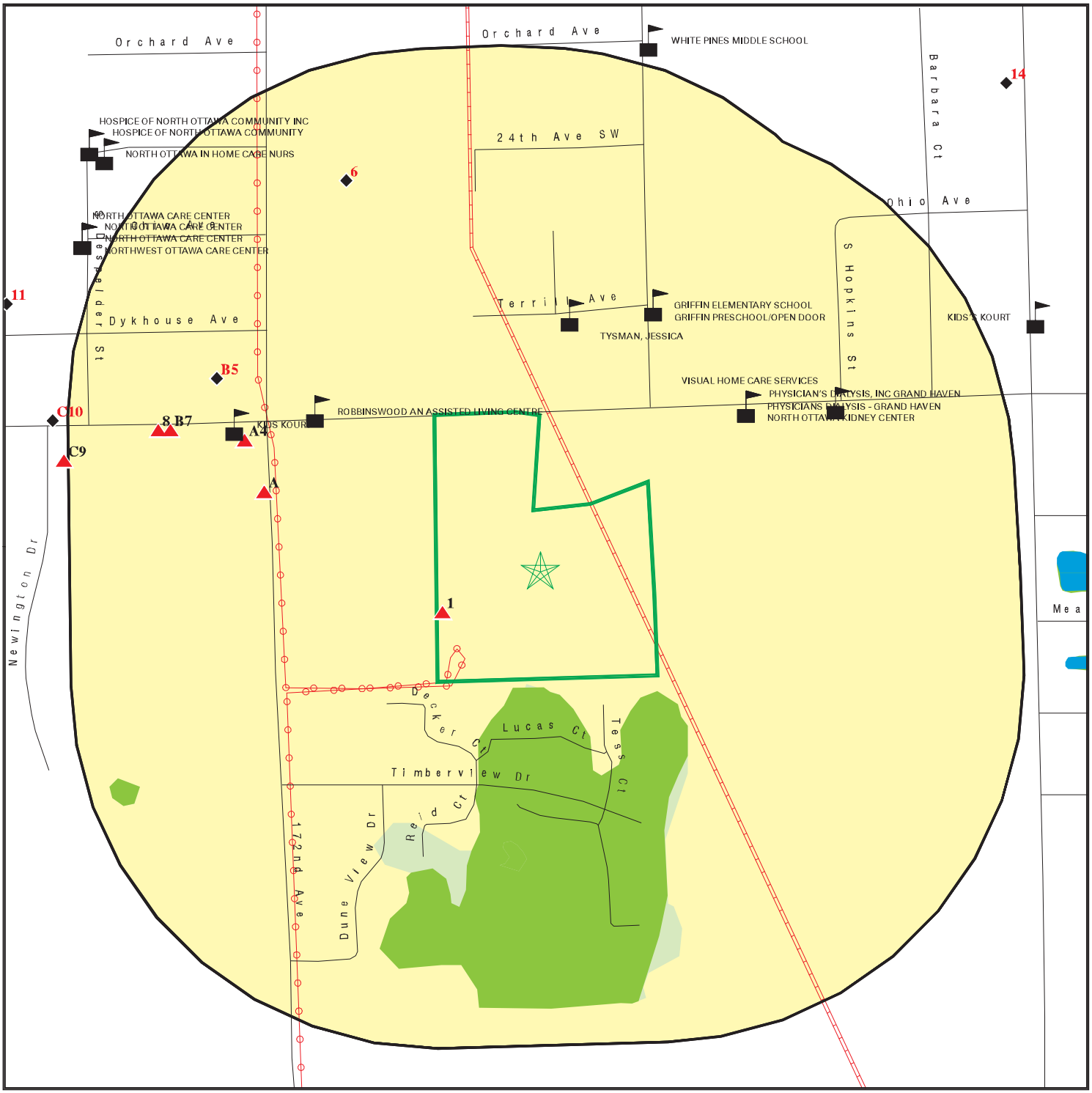
DETAIL MAP - 4931503.2S



- Target Property
- Sites at elevations higher than or equal to the target property
- Sites at elevations lower than the target property
- Manufactured Gas Plants
- Sensitive Receptors
- National Priority List Sites
- Dept. Defense Sites
- Indian Reservations BIA
- Power transmission lines
- Pipelines
- 100-year flood zone
- 500-year flood zone
- National Wetland Inventory
- State Wetlands

0 1/16 1/8 1/4 Miles

This report includes Interactive Map Layers to display and/or hide map information. The legend includes only those icons for the default map view.

SITE NAME: 17144 Robbins Road	CLIENT: Westshore Engineering & Surv.
ADDRESS: 17144 Robbins Road Grand Haven MI 49417	CONTACT: Roger Bour INQUIRY #: 4931503.2s
LAT/LONG: 43.043124 / 86.211981	DATE: May 09, 2017 11:35 am

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MAP FINDINGS SUMMARY

Database	Search Distance (Miles)	Target Property	< 1/8	1/8 - 1/4	1/4 - 1/2	1/2 - 1	> 1	Total Plotted
STANDARD ENVIRONMENTAL RECORDS								
Federal NPL site list								
NPL	1.000		0	0	0	0	NR	0
Proposed NPL	1.000		0	0	0	0	NR	0
NPL LIENS	0.001		0	NR	NR	NR	NR	0
Federal Delisted NPL site list								
Delisted NPL	1.000		0	0	0	0	NR	0
Federal CERCLIS list								
FEDERAL FACILITY	0.500		0	0	0	NR	NR	0
SEMS	0.500		0	0	0	NR	NR	0
Federal CERCLIS NFRAP site list								
SEMS-ARCHIVE	0.500		0	0	0	NR	NR	0
Federal RCRA CORRACTS facilities list								
CORRACTS	1.000		0	0	0	0	NR	0
Federal RCRA non-CORRACTS TSD facilities list								
RCRA-TSDF	0.500		0	0	0	NR	NR	0
Federal RCRA generators list								
RCRA-LQG	0.250		0	0	NR	NR	NR	0
RCRA-SQG	0.250		0	0	NR	NR	NR	0
RCRA-CESQG	0.250		0	2	NR	NR	NR	2
Federal institutional controls / engineering controls registries								
LUCIS	0.500		0	0	0	NR	NR	0
US ENG CONTROLS	0.500		0	0	0	NR	NR	0
US INST CONTROL	0.500		0	0	0	NR	NR	0
Federal ERNS list								
ERNS	0.001		0	NR	NR	NR	NR	0
State- and tribal - equivalent CERCLIS								
SHWS	1.000		0	0	0	0	NR	0
State and tribal landfill and/or solid waste disposal site lists								
SWF/LF	0.500		0	0	0	NR	NR	0
State and tribal leaking storage tank lists								
LUST	0.500		0	1	7	NR	NR	8
INDIAN LUST	0.500		0	0	0	NR	NR	0
State and tribal registered storage tank lists								
FEMA UST	0.250		0	0	NR	NR	NR	0

MAP FINDINGS SUMMARY

Database	Search Distance (Miles)	Target Property	< 1/8	1/8 - 1/4	1/4 - 1/2	1/2 - 1	> 1	Total Plotted
UST	0.250		0	2	NR	NR	NR	2
AST	0.250		0	0	NR	NR	NR	0
INDIAN UST	0.250		0	0	NR	NR	NR	0
State and tribal institutional control / engineering control registries								
AUL	0.500		0	0	1	NR	NR	1
State and tribal voluntary cleanup sites								
INDIAN VCP	0.500		0	0	0	NR	NR	0
State and tribal Brownfields sites								
BROWNFIELDS	0.500		0	0	0	NR	NR	0
ADDITIONAL ENVIRONMENTAL RECORDS								
Local Brownfield lists								
US BROWNFIELDS	0.500		0	0	0	NR	NR	0
Local Lists of Landfill / Solid Waste Disposal Sites								
SWRCY	0.500		0	0	0	NR	NR	0
HIST LF	0.500		0	0	0	NR	NR	0
INDIAN ODI	0.500		0	0	0	NR	NR	0
DEBRIS REGION 9	0.500		0	0	0	NR	NR	0
ODI	0.500		0	0	0	NR	NR	0
IHS OPEN DUMPS	0.500		0	0	0	NR	NR	0
Local Lists of Hazardous waste / Contaminated Sites								
US HIST CDL	0.001		0	NR	NR	NR	NR	0
PART 201	1.000		0	0	2	6	NR	8
INVENTORY	0.500		0	1	8	NR	NR	9
CDL	0.001		0	NR	NR	NR	NR	0
DEL PART 201	1.000		0	0	0	0	NR	0
US CDL	0.001		0	NR	NR	NR	NR	0
Local Land Records								
LIENS	0.001		0	NR	NR	NR	NR	0
LIENS 2	0.001		0	NR	NR	NR	NR	0
Records of Emergency Release Reports								
HMIRS	0.001		0	NR	NR	NR	NR	0
SPILLS	0.001		0	NR	NR	NR	NR	0
Other Ascertainable Records								
RCRA NonGen / NLR	0.250		1	0	NR	NR	NR	1
FUDS	1.000		0	0	0	0	NR	0
DOD	1.000		0	0	0	0	NR	0
SCRD DRYCLEANERS	0.500		0	0	0	NR	NR	0

MAP FINDINGS SUMMARY

Database	Search Distance (Miles)	Target Property	< 1/8	1/8 - 1/4	1/4 - 1/2	1/2 - 1	> 1	Total Plotted
US FIN ASSUR	0.001		0	NR	NR	NR	NR	0
EPA WATCH LIST	0.001		0	NR	NR	NR	NR	0
2020 COR ACTION	0.250		0	0	NR	NR	NR	0
TSCA	0.001		0	NR	NR	NR	NR	0
TRIS	0.001		0	NR	NR	NR	NR	0
SSTS	0.001		0	NR	NR	NR	NR	0
ROD	1.000		0	0	0	0	NR	0
RMP	0.001		0	NR	NR	NR	NR	0
RAATS	0.001		0	NR	NR	NR	NR	0
PRP	0.001		0	NR	NR	NR	NR	0
PADS	0.001		0	NR	NR	NR	NR	0
ICIS	0.001		0	NR	NR	NR	NR	0
FTTS	0.001		0	NR	NR	NR	NR	0
MLTS	0.001		0	NR	NR	NR	NR	0
COAL ASH DOE	0.001		0	NR	NR	NR	NR	0
COAL ASH EPA	0.500		0	0	0	NR	NR	0
PCB TRANSFORMER	0.001		0	NR	NR	NR	NR	0
RADINFO	0.001		0	NR	NR	NR	NR	0
HIST FTTS	0.001		0	NR	NR	NR	NR	0
DOT OPS	0.001		0	NR	NR	NR	NR	0
CONSENT	1.000		0	0	0	0	NR	0
INDIAN RESERV	0.001		0	NR	NR	NR	NR	0
FUSRAP	1.000		0	0	0	0	NR	0
UMTRA	0.500		0	0	0	NR	NR	0
LEAD SMELTERS	0.001		0	NR	NR	NR	NR	0
US AIRS	0.001		0	NR	NR	NR	NR	0
US MINES	0.250		0	0	NR	NR	NR	0
ABANDONED MINES	0.001		0	NR	NR	NR	NR	0
FINDS	0.001		0	NR	NR	NR	NR	0
DOCKET HWC	0.001		0	NR	NR	NR	NR	0
UXO	1.000		0	0	0	0	NR	0
ECHO	0.001		0	NR	NR	NR	NR	0
FUELS PROGRAM	0.250		0	0	NR	NR	NR	0
AIRS	0.001		0	NR	NR	NR	NR	0
BEA	0.500		0	1	3	NR	NR	4
COAL ASH	0.500		0	0	0	NR	NR	0
DRYCLEANERS	0.250		0	0	NR	NR	NR	0
LEAD	0.001		0	NR	NR	NR	NR	0
NPDES	0.001		0	NR	NR	NR	NR	0
UIC	0.001		0	NR	NR	NR	NR	0
WDS	0.001		1	NR	NR	NR	NR	1
EDR HIGH RISK HISTORICAL RECORDS								
EDR Exclusive Records								
EDR MGP	1.000		0	0	0	0	NR	0
EDR Hist Auto	0.125		1	NR	NR	NR	NR	1
EDR Hist Cleaner	0.125		0	NR	NR	NR	NR	0
EDR RECOVERED GOVERNMENT ARCHIVES								
Exclusive Recovered Govt. Archives								
RGA PART 201	0.001		0	NR	NR	NR	NR	0

MAP FINDINGS SUMMARY

Database	Search Distance (Miles)	Target Property	< 1/8	1/8 - 1/4	1/4 - 1/2	1/2 - 1	> 1	Total Plotted
RGA LF	0.001		0	NR	NR	NR	NR	0
RGA LUST	0.001		0	NR	NR	NR	NR	0
- Totals --		0	3	7	21	6	0	37

NOTES:

TP = Target Property

NR = Not Requested at this Search Distance

Sites may be listed in more than one database

1 **BILL TYSMAN TRUCKING** **WDS** **S111958329**
17114 ROBBINS RD **N/A**
< 1/8 **GRAND HAVEN, MI 49417**
1 ft.

Relative: Higher

Actual: 609 ft.

WDS:

Site Id:	MIG000044691
WMD Id:	441061
Site Specific Name:	BILL TYSMAN TRUCKING
Mailing Address:	17114 ROBBINS RD
Mailing City/State/Zip:	49417
Mailing County:	OTTAWA

A2 **DR LUBE INC** **RCRA NonGen / NLR** **1007099578**
WNW **15163 172ND AVE** **MIK692181936**
< 1/8 **GRAND HAVEN, MI 49417**
0.117 mi.
616 ft. **Site 1 of 3 in cluster A**

Relative: Higher

Actual: 609 ft.

RCRA NonGen / NLR:

Date form received by agency:	12/08/2003
Facility name:	DR LUBE INC
Facility address:	15163 172ND AVE GRAND HAVEN, MI 49417
EPA ID:	MIK692181936
Mailing address:	PO BOX 119 GRAND HAVEN, MI 49417
Contact:	STEVE KARELL
Contact address:	15163 172ND AVE GRAND HAVEN, MI 49417
Contact country:	US
Contact telephone:	(616) 846-1317
Contact email:	Not reported
EPA Region:	05
Land type:	Private
Classification:	Non-Generator
Description:	Handler: Non-Generators do not presently generate hazardous waste

Owner/Operator Summary:

Owner/operator name:	STEVE KARELL
Owner/operator address:	Not reported Not reported
Owner/operator country:	Not reported
Owner/operator telephone:	Not reported
Legal status:	Private
Owner/Operator Type:	Owner
Owner/Op start date:	09/01/1982
Owner/Op end date:	Not reported

Owner/operator name:	STEVE KARELL
Owner/operator address:	Not reported Not reported
Owner/operator country:	Not reported
Owner/operator telephone:	Not reported
Legal status:	Private
Owner/Operator Type:	Operator
Owner/Op start date:	09/01/1982
Owner/Op end date:	Not reported

DR LUBE INC (Continued) **1007099578**

Handler Activities Summary:

U.S. importer of hazardous waste:	No
Mixed waste (haz. and radioactive):	No
Recycler of hazardous waste:	No
Transporter of hazardous waste:	No
Treater, storer or disposer of HW:	No
Underground injection activity:	No
On-site burner exemption:	No
Furnace exemption:	No
Used oil fuel burner:	No
Used oil processor:	No
User oil refiner:	No
Used oil fuel marketer to burner:	No
Used oil Specification marketer:	No
Used oil transfer facility:	No
Used oil transporter:	No

. Waste code:	D001
. Waste name:	IGNITABLE WASTE

Facility Has Received Notices of Violations:

Regulation violated:	Not reported
Area of violation:	Used Oil - Generators
Date violation determined:	04/29/2015
Date achieved compliance:	04/29/2015
Violation lead agency:	State
Enforcement action:	WRITTEN INFORMAL
Enforcement action date:	04/29/2015
Enf. disposition status:	Not reported
Enf. disp. status date:	Not reported
Enforcement lead agency:	State
Proposed penalty amount:	Not reported
Final penalty amount:	Not reported
Paid penalty amount:	Not reported

Regulation violated:	Not reported
Area of violation:	State Statute or Regulation
Date violation determined:	03/18/2015
Date achieved compliance:	Not reported
Violation lead agency:	State
Enforcement action:	Not reported
Enforcement action date:	Not reported
Enf. disposition status:	Not reported
Enf. disp. status date:	Not reported
Enforcement lead agency:	Not reported
Proposed penalty amount:	Not reported
Final penalty amount:	Not reported
Paid penalty amount:	Not reported

Evaluation Action Summary:

Evaluation date:	03/18/2015
Evaluation:	COMPLIANCE EVALUATION INSPECTION ON-SITE
Area of violation:	State Statute or Regulation
Date achieved compliance:	Not reported
Evaluation lead agency:	State

DR LUBE INC (Continued) **1007099578**

Evaluation date: 03/18/2015
Evaluation: COMPLIANCE EVALUATION INSPECTION ON-SITE
Area of violation: Used Oil - Generators
Date achieved compliance: 04/29/2015
Evaluation lead agency: State

A3 **EDR Hist Auto** **1015241633**
WNW **15163 172ND AVE** **N/A**
< 1/8 **GRAND HAVEN, MI 49417**
0.117 mi.
616 ft. **Site 2 of 3 in cluster A**

Relative:
Higher

Actual:
609 ft.

EDR Historical Auto Stations:

Name: TRANSMISSION SERVICE
Year: 2001
Address: 15163 172ND AVE

Name: TRANSMISSION SERVICE
Year: 2002
Address: 15163 172ND AVE

Name: TRANSMISSION SERVICE
Year: 2003
Address: 15163 172ND AVE

Name: MOBILE 1 LUBE EXPRESS
Year: 2005
Address: 15163 172ND AVE

Name: DR LUBE INC
Year: 2007
Address: 15163 172ND AVE

Name: DR LUBE INC
Year: 2008
Address: 15163 172ND AVE

A4 **EXPRESS LANE # 2** **UST** **1004892329**
WNW **17200 ROBBINS RD** **N/A**
1/8-1/4 **GRAND HAVEN, MI 49417**
0.130 mi.
684 ft. **Site 3 of 3 in cluster A**

Relative:
Higher

Actual:
609 ft.

UST:

Facility ID: 00003369
Facility Type: ACTIVE
Owner Name: KENS SUPER SERVE INC
Owner Address: 812 W LAKETON AVE
Owner City,St,Zip: MUSKEGON, MI 49441-2928
Owner Country: USA
Owner Contact: Not reported
Owner Phone: 231- 755-4887
Contact: Patrick Kapenga
Contact Phone: (616) 292-6196
Date of Collection: 10/21/2003
Accuracy: 10
Accuracy Value Unit: METERS

EXPRESS LANE # 2 (Continued) **1004892329**

Horizontal Datum: NAD83
Source: STATE OF MICHIGAN
Point Line Area: POINT
Desc Category: Plant Entrance (Freight)
Method of Collection: GPS Code Meas. Standard Positioning Service SA Off
Latitude: 43.04416
Longitude: -86.21629

Tank ID: 1
Tank Status: **Currently In Use**
Capacity: 6000
Product: Gasoline
Install Date: 04/24/1985
Remove Date: Not reported
Tank Release Detection: Automatic Tank Gauging,Inter Monitoring/Second Containment,Inventory Control
Pipe Realease Detection: Automatic Line Leak Detectors,Line Tightness Testing
Piping Material: Double Walled,GEO-FLEX,Secondary Containment
Piping Type: Pressure
Construction Material: Cathodically Protected Steel
Impressed Device: Yes

Tank ID: 2
Tank Status: **Currently In Use**
Capacity: 6000
Product: Gasoline
Install Date: 04/24/1985
Remove Date: Not reported
Tank Release Detection: Inter Monitoring/Second Containment,Inventory Control,Tank Tightness Testing
Pipe Realease Detection: Automatic Line Leak Detectors,Line Tightness Testing
Piping Material: Double Walled,Galvanized Steel,Secondary Containment
Piping Type: Pressure
Construction Material: Cathodically Protected Steel
Impressed Device: Yes

Tank ID: 3
Tank Status: **Currently In Use**
Capacity: 6000
Product: Gasoline
Install Date: 04/24/1985
Remove Date: Not reported
Tank Release Detection: Automatic Tank Gauging,Inter Monitoring/Second Containment,Inventory Control
Pipe Realease Detection: Automatic Line Leak Detectors,Interstitial Monitoring Double Walled Piping,Line Tightness Testing
Piping Material: Double Walled,Galvanized Steel,GEO-FLEX,Secondary Containment
Piping Type: Pressure
Construction Material: Cathodically Protected Steel
Impressed Device: Yes

Tank ID: 4
Tank Status: **Currently In Use**
Capacity: 6000

EXPRESS LANE # 2 (Continued) **1004892329**

Product: Gasoline
Install Date: 04/24/1985
Remove Date: Not reported
Tank Release Detection: Inventory Control,Tank Tightness Testing
Pipe Realease Detection: Automatic Line Leak Detectors,Interstitial Monitoring Double Walled Piping,Interstitial Monitoring/Second Containment,Line Tightness Testing
Piping Material: Double Walled,Galvanized Steel,GEOFLEX,Secondary Containment
Piping Type: Pressure
Construction Material: Cathodically Protected Steel
Impressed Device: Yes

Tank ID: SA-01
Tank Status: NON-Registered Tank
Capacity: Not reported
Product: Not reported
Install Date: Not reported
Remove Date: Not reported
Tank Release Detection: Not reported
Pipe Realease Detection: Not reported
Piping Material: Not reported
Piping Type: Not reported
Construction Material: Not reported
Impressed Device: No

B5 WNW 1/8-1/4 0.151 mi. 795 ft. **WALGREEN CO** **RCRA-CESQG** **1016449245**
1045 ROBBINS RD. **FINDS** **MIK575159786**
GRAND HAVEN, MI 49417 **ECHO**

Site 1 of 2 in cluster B

Relative: Lower

Actual: 607 ft.

RCRA-CESQG:
Date form received by agency: 09/24/2013
Facility name: WALGREEN CO
Facility address: 1045 ROBBINS RD.
GRAND HAVEN, MI 49417
EPA ID: MIK575159786
Mailing address: 104 WILMONT RD., MS 1434
DEERFIELD, IL 60015
Contact: ANDREW J MARKS
Contact address: Not reported
Not reported
Contact country: US
Contact telephone: (847) 315-2602
Contact email: ANDREW.MARKS@WALGREENS.COM
EPA Region: 05
Classification: Conditionally Exempt Small Quantity Generator
Description: Handler: generates 100 kg or less of hazardous waste per calendar month, and accumulates 1000 kg or less of hazardous waste at any time; or generates 1 kg or less of acutely hazardous waste per calendar month, and accumulates at any time: 1 kg or less of acutely hazardous waste; or 100 kg or less of any residue or contaminated soil, waste or other debris resulting from the cleanup of a spill, into or on any land or water, of acutely hazardous waste; or generates 100 kg or less of any residue or contaminated soil, waste or other debris resulting from the cleanup of a spill, into or on any land or water, of acutely hazardous waste during any calendar month, and accumulates at any

WALGREEN CO (Continued) **1016449245**

time: 1 kg or less of acutely hazardous waste; or 100 kg or less of any residue or contaminated soil, waste or other debris resulting from the cleanup of a spill, into or on any land or water, of acutely hazardous waste

Owner/Operator Summary:
Owner/operator name: GDP PROPERTIES LLC
Owner/operator address: Not reported
Not reported
Owner/operator country: Not reported
Owner/operator telephone: Not reported
Legal status: Private
Owner/Operator Type: Owner
Owner/Op start date: 07/19/2013
Owner/Op end date: Not reported

Owner/operator name: WALGREEN CO.
Owner/operator address: Not reported
Not reported
Owner/operator country: Not reported
Owner/operator telephone: Not reported
Legal status: Private
Owner/Operator Type: Operator
Owner/Op start date: 07/19/2013
Owner/Op end date: Not reported

Handler Activities Summary:
U.S. importer of hazardous waste: No
Mixed waste (haz. and radioactive): No
Recycler of hazardous waste: No
Transporter of hazardous waste: No
Treater, storer or disposer of HW: No
Underground injection activity: No
On-site burner exemption: No
Furnace exemption: No
Used oil fuel burner: No
Used oil processor: No
User oil refiner: No
Used oil fuel marketer to burner: No
Used oil Specification marketer: No
Used oil transfer facility: No
Used oil transporter: No

. Waste code: D001
. Waste name: IGNITABLE WASTE

Violation Status: No violations found

FINDS:

Registry ID: 110056320477

Environmental Interest/Information System
RCRAInfo is a national information system that supports the Resource Conservation and Recovery Act (RCRA) program through the tracking of events and activities related to facilities that generate, transport, and treat, store, or dispose of hazardous waste. RCRAInfo allows RCRA

WALGREEN CO (Continued) **1016449245**

program staff to track the notification, permit, compliance, and corrective action activities required under RCRA.

ECHO:
Envid: 1016449245
Registry ID: 110056320477
DFR URL: http://echo.epa.gov/detailed_facility_report?fid=110056320477

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6 NNW 1/8-1/4 0.171 mi. 902 ft. **1450 SOUTH FERRY STREET** **INVENTORY** **S111333460**
1450 SOUTH FERRY STREET **BEA** **N/A**
GRAND HAVEN, MI 49417

Relative: Lower
Actual: 603 ft.

INVENTORY:
Bea Number: 201103018GR
Township: Grand Haven
District: Grand Rapids
Data Source: BEA
Latitude: Not reported
Longitude: Not reported

BEA:
Secondary Address: Not reported
BEA Number: 3018
District: Grand Rapids
Date Received: 09/30/2011
Submitter Name: Pinewood Place Phase II LDHALP
Petition Determination: No Request
Petition Disclosure: 0
Category: Not reported
Determination 20107A: No Request
Reviewer: monetd
Division Assigned: Environmental Response Division

B7 WNW 1/8-1/4 0.180 mi. 951 ft. **REPCOLITE PAINTS INC** **RCRA-CESQG** **1014923975**
17268 ROBBINS RD **MIK116974360**
GRAND HAVEN, MI 49417

Site 2 of 2 in cluster B

Relative: Higher
Actual: 609 ft.

RCRA-CESQG:
Date form received by agency: 04/15/2011
Facility name: REPCOLITE PAINTS INC
Facility address: 17268 ROBBINS RD
GRAND HAVEN, MI 49417
EPA ID: MIK116974360
Contact: DANIEL J ALTENA
Contact address: Not reported
Not reported
Contact country: US
Contact telephone: (616) 396-1275
Contact email: DAN@REPCOLITE.COM
EPA Region: 05

REPCOLITE PAINTS INC (Continued) **1014923975**

Classification: Conditionally Exempt Small Quantity Generator
Description: Handler: generates 100 kg or less of hazardous waste per calendar month, and accumulates 1000 kg or less of hazardous waste at any time; or generates 1 kg or less of acutely hazardous waste per calendar month, and accumulates at any time: 1 kg or less of acutely hazardous waste; or 100 kg or less of any residue or contaminated soil, waste or other debris resulting from the cleanup of a spill, into or on any land or water, of acutely hazardous waste; or generates 100 kg or less of any residue or contaminated soil, waste or other debris resulting from the cleanup of a spill, into or on any land or water, of acutely hazardous waste during any calendar month, and accumulates at any time: 1 kg or less of acutely hazardous waste; or 100 kg or less of any residue or contaminated soil, waste or other debris resulting from the cleanup of a spill, into or on any land or water, of acutely hazardous waste

Owner/Operator Summary:
Owner/operator name: REPCOLITE PAINTS INC
Owner/operator address: Not reported
Not reported
Owner/operator country: Not reported
Owner/operator telephone: Not reported
Legal status: Private
Owner/Operator Type: Operator
Owner/Op start date: 01/01/2007
Owner/Op end date: Not reported

Owner/operator name: REPCOLITE PAINTS INC
Owner/operator address: Not reported
Not reported
Owner/operator country: Not reported
Owner/operator telephone: Not reported
Legal status: Private
Owner/Operator Type: Owner
Owner/Op start date: 01/01/2007
Owner/Op end date: Not reported

Handler Activities Summary:
U.S. importer of hazardous waste: No
Mixed waste (haz. and radioactive): No
Recycler of hazardous waste: No
Transporter of hazardous waste: No
Treater, storer or disposer of HW: No
Underground injection activity: No
On-site burner exemption: No
Furnace exemption: No
Used oil fuel burner: No
Used oil processor: No
User oil refiner: No
Used oil fuel marketer to burner: No
Used oil Specification marketer: No
Used oil transfer facility: No
Used oil transporter: No

. Waste code: D001
. Waste name: IGNITABLE WASTE

REPCOLITE PAINTS INC (Continued) **1014923975**

Violation Status: No violations found

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8 WNW 1/8-1/4 0.188 mi. 994 ft. **FITZPATRIC ELECTRIC 17276 ROBBINS RD GRAND HAVEN, MI 49417** **LUST UST** **U002302943 N/A**

Relative: Higher

Actual: 609 ft.

LUST:

Facility ID:	00038002
Source:	STATE OF MICHIGAN
Owner Name:	Robbins Road Development
Owner Address:	15101 152nd Ave
Owner City,St,Zip:	Grand Haven, MI 49417-9568
Owner Contact:	Not reported
Owner Phone:	(616) 846-6178
Country:	USA
District:	Region 3 - Grand Rapids District Office
Site Name:	Fitzpatric Electric
Latitude:	43.04429
Longitude:	-86.21741
Date of Collection:	10/05/2004
Method of Collection:	Address Matching-House Number
Accuracy:	100
Accuracy Value Unit:	FEET
Horizontal Data:	NAD83
Point Line Area:	POINT
Desc Category:	Plant Entrance (Freight)
Leak Number:	C-0059-96
Release Date:	01/26/1996
Substance Released:	Gasoline
Release Status:	Closed
Release Closed Date:	11/01/1996

UST:

Facility ID:	00038002
Facility Type:	CLOSED
Owner Name:	ROBBINS ROAD DEVELOPMENT
Owner Address:	15101 152ND AVE
Owner City,St,Zip:	GRAND HAVEN, MI 49417-9568
Owner Country:	USA
Owner Contact:	Not reported
Owner Phone:	(616) 846-6178
Contact:	PAUL VANDENBERG
Contact Phone:	(616) 846-6178
Date of Collection:	10/05/2004
Accuracy:	100
Accuracy Value Unit:	FEET
Horizontal Datum:	NAD83
Source:	STATE OF MICHIGAN
Point Line Area:	POINT
Desc Category:	Plant Entrance (Freight)
Method of Collection:	Address Matching-House Number
Latitude:	43.04429
Longitude:	-86.21741
Tank ID:	1
Tank Status:	**Removed from Ground**

FITZPATRIC ELECTRIC (Continued) **U002302943**

Capacity:	1000
Product:	Gasoline
Install Date:	Not reported
Remove Date:	01/26/1996
Tank Release Detection:	Not reported
Pipe Realease Detection:	Not reported
Piping Material:	Galvanized Steel
Piping Type:	Suction: No Valve At Tank
Construction Material:	Asphalt Coated or Bare Steel
Impressed Device:	No

C9 WNW 1/4-1/2 0.253 mi. 1336 ft. **ROBBINS ROAD HARDWARE 948 ROBBINS ROAD GRAND HAVEN, MI 49417** **INVENTORY PART 201 BEA WDS** **S106787586 N/A**

Site 1 of 2 in cluster C

Relative: Higher

Actual: 608 ft.

INVENTORY:

Bea Number:	Not reported
Township:	Grand Haven
District:	Grand Rapids
Data Source:	Part 201
Latitude:	43.04445
Longitude:	-86.21905
Bea Number:	201203112GR
Township:	Grand Haven
District:	Grand Rapids
Data Source:	BEA
Latitude:	Not reported
Longitude:	Not reported

PART 201:

Facility ID:	70000350
Facility Status:	**Interim Response conducted**
Source:	Hardware Stores
SAM Score:	31
SAM Score Date:	10/22/2004
Township:	8N
Range:	16W
Section:	33
Quarter:	NW
Quarter/Quarter:	NE
Pollutants:	Benzene; Ethylbenzene

BEA:

Secondary Address:	Not reported
BEA Number:	3112
District:	Grand Rapids
Date Received:	02/01/2012
Submitter Name:	Love INC of the Tri-Cities
Petition Determination:	No Request
Petition Disclosure:	0
Category:	Not reported
Determination 20107A:	No Request
Reviewer:	stringed
Division Assigned:	Environmental Response Division

ROBBINS ROAD HARDWARE (Continued) **S106787586**

WDS:
Site Id: MIG000048453
WMD Id: 439089
Site Specific Name: ROBBINS ROAD HARDWARE
Mailing Address: 948 ROBBINS RD
Mailing City/State/Zip: 49417
Mailing County: OTTAWA

C10 WNW 1/4-1/2 0.260 mi. 1375 ft. — **BRIMARC INC**, **947 ROBBINS RD**, **GRAND HAVEN, MI 49417** — **INVENTORY WDS** — **S111935303 N/A**

Site 2 of 2 in cluster C

Relative: Lower

Actual: 607 ft.

INVENTORY:
Bea Number: Not reported
Township: Grand Haven
District: Grand Rapids
Data Source: Part 201
Latitude: Not reported
Longitude: Not reported

WDS:
Site Id: MID079282315
WMD Id: 397311
Site Specific Name: TOWN & COUNTRY LAUNDRY & DRYCLEANING
Mailing Address: 947 ROBBINS RD
Mailing City/State/Zip: 49417
Mailing County: OTTAWA

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11 WNW 1/4-1/2 0.302 mi. 1592 ft. — **GRAND HAVEN MICHIGAN STATE POLICE POST #64**, **1622 S BEACON BLVD**, **GRAND HAVEN, MI 49417** — **LUST UST INVENTORY WDS** — **U003328246 N/A**

Relative: Lower

Actual: 607 ft.

LUST:
Facility ID: 00009488
Source: STATE OF MICHIGAN
Owner Name: DTMB - Vehicle & Travel Services
Owner Address: 6951 Crowner Dr
Owner City,St,Zip: Lansing, MI 48909
Owner Contact: Mike Wonn/ Dave Ancell
Owner Phone: (517) 322-5000
Country: USA
District: Region 3 - Grand Rapids District Office
Site Name: Grand Haven State Police Post
Latitude: 43.04555
Longitude: -86.21923
Date of Collection: 10/21/2003
Method of Collection: GPS Code Meas. Standard Positioning Service SA Off
Accuracy: 100
Accuracy Value Unit: FEET
Horizontal Data: NAD83
Point Line Area: POINT

GRAND HAVEN MICHIGAN STATE POLICE POST #64 (Continued) **U003328246**

Desc Category: Plant Entrance (Freight)

Leak Number: C-0046-12
Release Date: 04/19/2012
Substance Released: Gasoline
Release Status: Open
Release Closed Date: Not reported

UST:
Facility ID: 00009488
Facility Type: CLOSED
Owner Name: DTMB - VEHICLE & TRAVEL SERVICES
Owner Address: 6951 CROWNER DR
Owner City,St,Zip: LANSING, MI 48909
Owner Country: USA
Owner Contact: Mike Wonn/ Dave Ancell
Owner Phone: (517) 322-5000
Contact: David Ancell
Contact Phone: (517) 322-5051
Date of Collection: 10/21/2003
Accuracy: 100
Accuracy Value Unit: FEET
Horizontal Datum: NAD83
Source: STATE OF MICHIGAN
Point Line Area: POINT
Desc Category: Plant Entrance (Freight)
Method of Collection: GPS Code Meas. Standard Positioning Service SA Off
Latitude: 43.04555
Longitude: -86.21923

Tank ID: 1
Tank Status: Removed from Ground
Capacity: 6000
Product: Gasoline
Install Date: 03/27/1949
Remove Date: 11/01/1988
Tank Release Detection: Not reported
Pipe Realease Detection: Not reported
Piping Material: Galvanized Steel
Piping Type: Not reported
Construction Material: Asphalt Coated or Bare Steel,Cathodically Protected Steel
Impressed Device: No

Tank ID: 2
Tank Status: Removed from Ground
Capacity: 6000
Product: Gasoline
Install Date: 03/27/1949
Remove Date: 11/01/1988
Tank Release Detection: Not reported
Pipe Realease Detection: Not reported
Piping Material: Galvanized Steel
Piping Type: Not reported
Construction Material: Asphalt Coated or Bare Steel,Cathodically Protected Steel
Impressed Device: No

GRAND HAVEN MICHIGAN STATE POLICE POST #64 (Continued) **U003328246**

Tank ID: 3
Tank Status: Removed from Ground
Capacity: 8000
Product: Gasoline
Install Date: 03/27/1985
Remove Date: 04/19/2012
Tank Release Detection: Automatic Tank Gauging
Pipe Realease Detection: Line Tightness Testing
Piping Material: Cathodically Protected
Piping Type: Not reported
Construction Material: Cathodically Protected Steel
Impressed Device: No

INVENTORY:
Bea Number: Not reported
Township: Not reported
District: Grand Rapids
Data Source: Part 213
Latitude: 43.04556
Longitude: -86.21923

WDS:
Site Id: MIK559754452
WMD Id: 484573
Site Specific Name: MI DEPT/STATE POLICE
Mailing Address: 1622 S BEACON BLVD
Mailing City/State/Zip: 49417
Mailing County: OTTAWA

D12 WNW 1/4-1/2 0.302 mi. 1594 ft. **Relative: Lower** **Actual: 607 ft.**

FORMER SUPERIOR OIL - GRAND HAVEN BURGER KING **AUL** **S109846143**
1710 SOUTH BEACON BOULEVARD **N/A**
GRAND HAVEN, MI 49417

Site 1 of 2 in cluster D

AUL:
Status: Recorded
Site Name: Not reported
Property: Former Superior Oil - Grand Haven Burger King
Land Use Restriction Type: NAI
Program Type: Part 213
Program Support Assigned User: Nicholas Ekel
Program Support Assigned Date: 09/08/2010
Legal Description Of Property: Migrated
Based On The Deq Ref #: 13121305002
MDEQ Reference Number: NAI-RRD-213-05-002
Property Or Description Restricted Area: Migrated
Lead Division: STD
File Name Of Hyperlinked Legal Doc: U:\\KERMIT\\13121305002.PDF
Mapped Polygons Area In Acres: 0.34210000000000002
Mapped Polygons Area In Square Miles: 5.0000000000000001E-4
Date Data Entry Started: 07/12/2011
Date Data Entry Finished: 07/12/2011
Individual Or Staff Assoc With The Mapping: Nicholas Ekel
Program Used To Map Restricted Features: ArcINFO 9.3 & IcoMAP 4.2
Date Legal Paperwork Stamped/Filed/Register Of Deeds: 04/07/2005
Commercial I Land Use Restriction: 0

FORMER SUPERIOR OIL - GRAND HAVEN BURGER KING (Continued) **S109846143**

Commercial Ii Land Use Restriction: 0
Commercial Iii Land Use Restriction: 0
Commercial Iv Land Use Restriction: 0
Industrial Land Use Restriction: 0
Residential Land Use Restriction: 0
Recreational Land Use Restriction: 0
Multiple Land-Use Restrictions: 0
Site Specific Restrictions: 1
Groundwater Consumption Restrictions: 1
Groundwater Contact Restrictions: 1
Special Well Construction Requirements: 0
Special Building Restrictions: 0
Excavation And Soil Movement Restrictions: 0
Soil Movement Requirements: 0
There Is A Restriction On All Construction: 0
Monitoring Well Protected, No Tampering Or Removal: 0
There Is An Exposure Barrier In Place: 0
There Is A Health And Safety Plan: 0
There Is A Permanent Marker On The Site: 0
Map Comments: 20100908 - LRUR is NOT mapped in KERMIT - Nick Ekel 20110712 - LRUR is mapped in KERMIT - Nick Ekel
Comment: Request received on 11/7/2005 Melissa Powell

D13 WNW 1/4-1/2 0.302 mi. 1594 ft. **Relative: Lower** **Actual: 607 ft.**

BURGER KING **LUST** **S102851834**
1710 S BEACON BLVD **INVENTORY** **N/A**
GRAND HAVEN, MI 49417

Site 2 of 2 in cluster D

LUST:
Facility ID: 50001288
Source: STATE OF MICHIGAN
Owner Name: Nrt Owner
Owner Address: Unknown
Owner City,St,Zip: Unknown, MI 99999
Owner Contact: Not reported
Owner Phone: Not reported
Country: USA
District: Region 3 - Grand Rapids District Office
Site Name: Burger King
Latitude: 43.04518
Longitude: -86.21984
Date of Collection: 01/11/2001
Method of Collection: Address Matching-House Number
Accuracy: 100
Accuracy Value Unit: FEET
Horizontal Data: NAD83
Point Line Area: POINT
Desc Category: Plant Entrance (Freight)

Leak Number: C-0471-94
Release Date: 08/06/1993
Substance Released: Gasoline,Diesel
Release Status: Open
Release Closed Date: Not reported

INVENTORY:
Bea Number: Not reported

BURGER KING (Continued) **S102851834**

Township: Not reported
District: Grand Rapids
Data Source: Part 213
Latitude: 43.04518
Longitude: -86.21984

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14 NE 1/4-1/2 0.366 mi. 1930 ft. **EDUCATION SERVICE CENTER** **LUST U003330518**
1415 S BEECHTREE ST **UST N/A**
GRAND HAVEN, MI 49417

Relative: Lower

Actual: 603 ft.

LUST:
Facility ID: 00006140
Source: STATE OF MICHIGAN
Owner Name: Grand Haven Area Public Schools
Owner Address: 1415 S Beechtree St
Owner City,St,Zip: Grand Haven, MI 49417-2843
Owner Contact: Not reported
Owner Phone: (616) 850-5150
Country: USA
District: Region 3 - Grand Rapids District Office
Site Name: Education Service Center
Latitude: 43.04823
Longitude: -86.20658
Date of Collection: 05/11/2001
Method of Collection: GPS Code Meas. Standard Positioning Service SA Off
Accuracy: 10
Accuracy Value Unit: METERS
Horizontal Data: NAD83
Point Line Area: POINT
Desc Category: Plant Entrance (Freight)

Leak Number: C-0128-07
Release Date: 06/20/2007
Substance Released: Diesel,Diesel
Release Status: Closed
Release Closed Date: 07/17/2009

Leak Number: C-0274-97
Release Date: 04/30/1997
Substance Released: Unknown
Release Status: Closed
Release Closed Date: 09/19/1997

Leak Number: C-0689-98
Release Date: 08/04/1998
Substance Released: Diesel
Release Status: Closed
Release Closed Date: 08/26/1999

UST:
Facility ID: 00006140
Facility Type: CLOSED
Owner Name: GRAND HAVEN AREA PUBLIC SCHOOLS
Owner Address: 1415 S BEECHTREE ST
Owner City,St,Zip: GRAND HAVEN, MI 49417-2843
Owner Country: USA

EDUCATION SERVICE CENTER (Continued) **U003330518**

Owner Contact: Not reported
Owner Phone: (616) 850-5150
Contact: Mr Ted Rescorla
Contact Phone: (616) 850-5120
Date of Collection: 05/11/2001
Accuracy: 10
Accuracy Value Unit: METERS
Horizontal Datum: NAD83
Source: STATE OF MICHIGAN
Point Line Area: POINT
Desc Category: Plant Entrance (Freight)
Method of Collection: GPS Code Meas. Standard Positioning Service SA Off
Latitude: 43.04823
Longitude: -86.20658

Tank ID: 1
Tank Status: Removed from Ground
Capacity: 8000
Product: Diesel
Install Date: 06/06/1980
Remove Date: 06/13/2007
Tank Release Detection: Automatic Tank Gauging
Pipe Realease Detection: Line Tightness Testing
Piping Material: Double Walled,ENVIROFLEX
Piping Type: Suction: No Valve At Tank
Construction Material: Cathodically Protected Steel
Impressed Device: No

Tank ID: 2
Tank Status: Removed from Ground
Capacity: 8000
Product: Diesel
Install Date: 06/06/1980
Remove Date: 06/13/2007
Tank Release Detection: Automatic Tank Gauging
Pipe Realease Detection: Line Tightness Testing
Piping Material: Double Walled,ENVIROFLEX
Piping Type: Suction: No Valve At Tank
Construction Material: Cathodically Protected Steel
Impressed Device: No

Tank ID: 3
Tank Status: Removed from Ground
Capacity: 4000
Product: Gasoline
Install Date: 06/06/1980
Remove Date: 06/13/2007
Tank Release Detection: Automatic Tank Gauging
Pipe Realease Detection: Line Tightness Testing
Piping Material: Double Walled,ENVROFLEX
Piping Type: Suction: No Valve At Tank
Construction Material: Cathodically Protected Steel
Impressed Device: No

EDUCATION SERVICE CENTER (Continued) **U003330518**

Tank ID: 4
Tank Status: Removed from Ground
Capacity: 8000
Product: Diesel
Install Date: 06/06/1978
Remove Date: 08/04/1998
Tank Release Detection: Automatic Tank Gauging
Pipe Realease Detection: Line Tightness Testing
Piping Material: Bare Steel
Piping Type: Suction: Valve at Tank
Construction Material: Asphalt Coated or Bare Steel
Impressed Device: No

Tank ID: 5
Tank Status: Removed from Ground
Capacity: 8000
Product: Diesel
Install Date: 06/06/1978
Remove Date: 08/04/1998
Tank Release Detection: Automatic Tank Gauging
Pipe Realease Detection: Line Tightness Testing
Piping Material: Bare Steel
Piping Type: Suction: Valve at Tank
Construction Material: Asphalt Coated or Bare Steel
Impressed Device: No

Tank ID: 6
Tank Status: Removed from Ground
Capacity: 2000
Product: Used Oil
Install Date: 06/06/1978
Remove Date: 04/09/1997
Tank Release Detection: Not reported
Pipe Realease Detection: Not reported
Piping Material: Galvanized Steel
Piping Type: Not reported
Construction Material: Asphalt Coated or Bare Steel
Impressed Device: No

E15 West 1/4-1/2 0.385 mi. 2035 ft. — **1815 SOUTH BEACON BLVD.** / **1815 SOUTH BEACON BLVD.** / **GRAND HAVEN, MI** — **BEA** **S104911129** / **N/A**

Site 1 of 2 in cluster E

Relative: Higher
Actual: 608 ft.

BEA:
Secondary Address: Not reported
BEA Number: 368
District: Grand Rapids
Date Received: 04/15/1998
Submitter Name: Gage Family Limited Partnership
Petition Determination: No Request
Petition Disclosure: 0
Category: Different Hazardous Substance(s)
Determination 20107A: No Request
Reviewer: moyerr

1815 SOUTH BEACON BLVD. (Continued) **S104911129**

Division Assigned: Environmental Response Division

E16 West 1/4-1/2 0.385 mi. 2035 ft. — **GAGE BUDGET LOT** / **1815 S BEACON BLVD** / **GRAND HAVEN, MI 49417** — **INVENTORY** **S111948894** / **WDS** **N/A**

Site 2 of 2 in cluster E

Relative: Higher
Actual: 608 ft.

INVENTORY:
Bea Number: 201303622GR
Township: Grand Haven
District: Grand Rapids
Data Source: BEA
Latitude: Not reported
Longitude: Not reported

Bea Number: 201303616GR
Township: Grand Haven
District: Grand Rapids
Data Source: BEA
Latitude: Not reported
Longitude: Not reported

WDS:
Site Id: MIG000055390
WMD Id: 419795
Site Specific Name: GAGE BUDGET LOT
Mailing Address: 1815 S BEACON BLVD
Mailing City/State/Zip: 49417
Mailing County: OTTAWA

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17 West 1/4-1/2 0.392 mi. 2068 ft. — **SOUTH TOWN AUTO WASH** / **832 ROBBINS RD** / **GRAND HAVEN, MI 49417** — **LUST** **U003867788** / **UST** **N/A** / **WDS**

Relative: Higher
Actual: 609 ft.

LUST:
Facility ID: 00020688
Source: STATE OF MICHIGAN
Owner Name: South Town Auto Wash
Owner Address: 832 Robbins Rd
Owner City,St,Zip: Grand Haven, MI 49417-2604
Owner Contact: Not reported
Owner Phone: (616) 842-5750
Country: USA
District: Region 3 - Grand Rapids District Office
Site Name: South Town Auto Wash
Latitude: 43.04404
Longitude: -86.22129
Date of Collection: 07/11/2001
Method of Collection: GPS Code Meas. Standard Positioning Service SA Off
Accuracy: 10
Accuracy Value Unit: METERS
Horizontal Data: NAD83
Point Line Area: POINT

SOUTH TOWN AUTO WASH (Continued) **U003867788**

Desc Category: Plant Entrance (Freight)

Leak Number: C-0012-11
Release Date: 02/03/2011
Substance Released: Gasoline,Gasoline,Gasoline
Release Status: Closed
Release Closed Date: 11/28/2012

UST:
Facility ID: 00020688
Facility Type: ACTIVE
Owner Name: SOUTH TOWN AUTO WASH
Owner Address: 832 ROBBINS RD
Owner City,St,Zip: GRAND HAVEN, MI 49417-2604
Owner Country: USA
Owner Contact: Not reported
Owner Phone: (616) 842-5750
Contact: Amy Betten
Contact Phone: (616) 446-3520
Date of Collection: 07/11/2001
Accuracy: 10
Accuracy Value Unit: METERS
Horizontal Datum: NAD83
Source: STATE OF MICHIGAN
Point Line Area: POINT
Desc Category: Plant Entrance (Freight)
Method of Collection: GPS Code Meas. Standard Positioning Service SA Off
Latitude: 43.04404
Longitude: -86.22129

Tank ID: 1
Tank Status: Currently In Use
Capacity: 10000
Product: Gasoline
Install Date: 10/27/1986
Remove Date: Not reported
Tank Release Detection: Automatic Tank Gauging
Pipe Realease Detection: Automatic Line Leak Detectors,Line Tightness Testing
Piping Material: Fiberglass reinforced plastic
Piping Type: Not reported
Construction Material: Cathodically Protected Steel,Lined Interier
Impressed Device: No

Tank ID: 2
Tank Status: Currently In Use
Capacity: 10000
Product: Gasoline
Install Date: 10/27/1986
Remove Date: Not reported
Tank Release Detection: Automatic Tank Gauging
Pipe Realease Detection: Automatic Line Leak Detectors,Line Tightness Testing
Piping Material: Fiberglass reinforced plastic
Piping Type: Not reported
Construction Material: Cathodically Protected Steel,Lined Interier
Impressed Device: No

SOUTH TOWN AUTO WASH (Continued) **U003867788**

Tank ID: 3
Tank Status: Currently In Use
Capacity: 10000
Product: Gasoline
Install Date: 10/27/1986
Remove Date: Not reported
Tank Release Detection: Automatic Tank Gauging
Pipe Realease Detection: Automatic Line Leak Detectors,Line Tightness Testing
Piping Material: Fiberglass reinforced plastic
Piping Type: Not reported
Construction Material: Cathodically Protected Steel,Lined Interier
Impressed Device: No

WDS:
Site Id: MIG000026280
WMD Id: 449980
Site Specific Name: SOUTHTOWN AUTO WASH
Mailing Address: 832 ROBBINS RD
Mailing City/State/Zip: 49417
Mailing County: OTTAWA

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18 WNW 1/4-1/2 0.423 mi. 2236 ft. | **JERRY TIMMER CHEVROLET** | **1701 S BEACON BLVD** | **GRAND HAVEN, MI 49417** | **LUST** | **UST** | **INVENTORY** | **WDS** | **U000263766** | **N/A**

Relative: Higher

Actual: 608 ft.

LUST:
Facility ID: 00011813
Source: STATE OF MICHIGAN
Owner Name: Jerry Timmer Chev Inc
Owner Address: PO Box 69
Owner City,St,Zip: Hudsonville, MI 49426-0069
Owner Contact: Not reported
Owner Phone: (616) 842-2250
Country: USA
District: Region 3 - Grand Rapids District Office
Site Name: Gage Motor Mall- #1
Latitude: 43.04524
Longitude: -86.22021
Date of Collection: 01/11/2001
Method of Collection: Address Matching-House Number
Accuracy: 100
Accuracy Value Unit: FEET
Horizontal Data: NAD83
Point Line Area: POINT
Desc Category: Plant Entrance (Freight)

Leak Number: C-0973-91
Release Date: 06/05/1991
Substance Released: Not reported
Release Status: Closed
Release Closed Date: 12/18/1992

Leak Number: C-0978-91
Release Date: 06/05/1991
Substance Released: Not reported

JERRY TIMMER CHEVROLET (Continued) **U000263766**

Release Status: Closed
Release Closed Date: 12/18/1992

UST:
Facility ID: 00011813
Facility Type: CLOSED
Owner Name: JERRY TIMMER CHEV INC
Owner Address: PO BOX 69
Owner City,St,Zip: HUDSONVILLE, MI 49426-0069
Owner Country: USA
Owner Contact: Not reported
Owner Phone: (616) 842-2250
Contact: MIKE BLATTNER
Contact Phone: (616) 842-2250
Date of Collection: 01/11/2001
Accuracy: 100
Accuracy Value Unit: FEET
Horizontal Datum: NAD83
Source: STATE OF MICHIGAN
Point Line Area: POINT
Desc Category: Plant Entrance (Freight)
Method of Collection: Address Matching-House Number
Latitude: 43.04524
Longitude: -86.22021

Tank ID: 1
Tank Status: Removed from Ground
Capacity: 500
Product: Gasoline
Install Date: 05/07/1971
Remove Date: 03/03/1993
Tank Release Detection: Not reported
Pipe Realease Detection: Not reported
Piping Material: Galvanized Steel
Piping Type: Not reported
Construction Material: Asphalt Coated or Bare Steel
Impressed Device: No

Tank ID: 2
Tank Status: Removed from Ground
Capacity: 500
Product: MOTOR OIL
Install Date: 05/07/1971
Remove Date: 03/03/1993
Tank Release Detection: Not reported
Pipe Realease Detection: Not reported
Piping Material: Galvanized Steel
Piping Type: Not reported
Construction Material: Asphalt Coated or Bare Steel
Impressed Device: No

Tank ID: 3
Tank Status: Removed from Ground
Capacity: 500
Product: Used Oil
Install Date: 05/07/1971

JERRY TIMMER CHEVROLET (Continued) **U000263766**

Remove Date: 03/03/1993
Tank Release Detection: Not reported
Pipe Realease Detection: Not reported
Piping Material: Galvanized Steel
Piping Type: Not reported
Construction Material: Asphalt Coated or Bare Steel
Impressed Device: No

INVENTORY:
Bea Number: 201303614GR
Township: Grand Haven
District: Grand Rapids
Data Source: BEA
Latitude: Not reported
Longitude: Not reported

Bea Number: 201303615GR
Township: Grand Haven
District: Grand Rapids
Data Source: BEA
Latitude: Not reported
Longitude: Not reported

Bea Number: Not reported
Township: Grand Haven
District: Grand Rapids
Data Source: Part 201
Latitude: Not reported
Longitude: Not reported

WDS:
Site Id: MID982068876
WMD Id: 400753
Site Specific Name: PREFERRED CHEVROLET BUICK GMC
Mailing Address: PO BOX 190
Mailing City/State/Zip: 49417
Mailing County: OTTAWA

---

19 West 1/4-1/2 0.437 mi. 2307 ft. | **BETTEN AUTO CENTER INC** / **810 ROBBINS RD** / **GRAND HAVEN, MI 49417** | **LUST** / **UST** / **WDS** | **U003327694** / **N/A**

Relative: Higher

Actual: 609 ft.

LUST:
Facility ID: 00002653
Source: STATE OF MICHIGAN
Owner Name: Betten Auto Ctr Inc
Owner Address: 810 Robbins Rd
Owner City,St,Zip: Grand Haven, MI 49417-2604
Owner Contact: Not reported
Owner Phone: (616) 842-5750
Country: USA
District: Region 3 - Grand Rapids District Office
Site Name: Betten Auto Center Inc
Latitude: 43.04436
Longitude: -86.22093

BETTEN AUTO CENTER INC (Continued) **U003327694**

Date of Collection: 10/05/2004
Method of Collection: Address Matching-House Number
Accuracy: 100
Accuracy Value Unit: FEET
Horizontal Data: NAD83
Point Line Area: POINT
Desc Category: Plant Entrance (Freight)

Leak Number: C-0762-99
Release Date: 07/26/1999
Substance Released: Unknown
Release Status: Closed
Release Closed Date: 01/31/2006

UST:
Facility ID: 00002653
Facility Type: CLOSED
Owner Name: BETTEN AUTO CTR INC
Owner Address: 810 ROBBINS RD
Owner City,St,Zip: GRAND HAVEN, MI 49417-2604
Owner Country: USA
Owner Contact: Not reported
Owner Phone: (616) 842-5750
Contact: TOMMY FUERST
Contact Phone: (616) 842-5750
Date of Collection: 10/05/2004
Accuracy: 100
Accuracy Value Unit: FEET
Horizontal Datum: NAD83
Source: STATE OF MICHIGAN
Point Line Area: POINT
Desc Category: Plant Entrance (Freight)
Method of Collection: Address Matching-House Number
Latitude: 43.04436
Longitude: -86.22093

Tank ID: 1
Tank Status: Removed from Ground
Capacity: 1000
Product: Used Oil
Install Date: 05/06/1981
Remove Date: 07/20/1999
Tank Release Detection: Not reported
Pipe Realease Detection: Not reported
Piping Material: Galvanized Steel
Piping Type: Gravity Fed?
Construction Material: Asphalt Coated or Bare Steel
Impressed Device: No

Tank ID: 2
Tank Status: Removed from Ground
Capacity: 500
Product: NEW/OIL
Install Date: 05/06/1981
Remove Date: 07/20/1999
Tank Release Detection: Not reported
Pipe Realease Detection: Not reported

BETTEN AUTO CENTER INC (Continued) **U003327694**

Piping Material: Galvanized Steel
Piping Type: Suction: Valve at Tank
Construction Material: Asphalt Coated or Bare Steel
Impressed Device: No

WDS:
Site Id: MID017068768
WMD Id: 394726
Site Specific Name: BETTEN AUTO CTR INC
Mailing Address: PO BOX 349
Mailing City/State/Zip: 49417
Mailing County: OTTAWA

F20 **REDEKER FORD** **BEA** **S109847385**
NW **1401 SOUTH BEACON BOULEVARD** **N/A**
1/4-1/2 **GRAND HAVEN, MI 49417**
0.448 mi.
2365 ft. **Site 1 of 2 in cluster F**

Relative: Higher

Actual: 608 ft.

BEA:
Secondary Address: Not reported
BEA Number: 2541
District: Grand Rapids
Date Received: 07/29/2009
Submitter Name: 1401 South Beacon Boulevard LLC
Petition Determination: No Request
Petition Disclosure: 0
Category: Same Hazardous Substance(s)
Determination 20107A: No Request
Reviewer: knoerrp
Division Assigned: Environmental Response Division

Secondary Address: Not reported
BEA Number: 2542
District: Grand Rapids
Date Received: 07/29/2009
Submitter Name: Preferred Automotive Group LLC
Petition Determination: No Request
Petition Disclosure: 0
Category: Same Hazardous Substance(s)
Determination 20107A: No Request
Reviewer: knoerrp
Division Assigned: Environmental Response Division

F21 **PREFERRED AUTOMOTIVE GROUP** **INVENTORY** **S111935083**
NW **1401 S BEACON BLVD** **WDS** **N/A**
1/4-1/2 **GRAND HAVEN, MI 49417**
0.448 mi.
2365 ft. **Site 2 of 2 in cluster F**

Relative: Higher

Actual: 608 ft.

INVENTORY:
Bea Number: 200902541GR
Township: Grand Haven
District: Grand Rapids
Data Source: BEA
Latitude: Not reported

PREFERRED AUTOMOTIVE GROUP (Continued) **S111935083**

Longitude: Not reported

Bea Number: 200902542GR
Township: Grand Haven
District: Grand Rapids
Data Source: BEA
Latitude: Not reported
Longitude: Not reported

WDS:
Site Id: MID065850935
WMD Id: 396818
Site Specific Name: PREFERRED FORD OF GRAND HAVEN
Mailing Address: 1401 S BEACON BLVD
Mailing City/State/Zip: 49417
Mailing County: OTTAWA

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22 NE 1/4-1/2 0.457 mi. 2413 ft. | **GRAND HAVEN STAMPED PROCESS CO** | **LUST UST SPILLS WDS** | **U003328815 N/A**

1250 S BEECHTREE ST
GRAND HAVEN, MI 49417

Relative: Lower

Actual: 602 ft.

LUST:
Facility ID: 00017330
Source: STATE OF MICHIGAN
Owner Name: Grand Haven Stamped Products Co
Owner Address: 1250 S Beechtree
Owner City,St,Zip: Grand Haven, MI 49417
Owner Contact: Kim Pelkey
Owner Phone: (616) 842-5500
Country: USA
District: Region 3 - Grand Rapids District Office
Site Name: Grand Haven Stamped Products Co
Latitude: 43.04978
Longitude: -86.20524
Date of Collection: 01/11/2001
Method of Collection: Address Matching-House Number
Accuracy: 100
Accuracy Value Unit: FEET
Horizontal Data: NAD83
Point Line Area: POINT
Desc Category: Plant Entrance (Freight)

Leak Number: C-1235-99
Release Date: 11/30/1999
Substance Released: Unknown
Release Status: Closed
Release Closed Date: 11/18/2004

UST:
Facility ID: 00017330
Facility Type: CLOSED
Owner Name: GRAND HAVEN STAMPED PRODUCTS CO
Owner Address: 1250 S BEECHTREE
Owner City,St,Zip: GRAND HAVEN, MI 49417
Owner Country: USA
Owner Contact: Kim Pelkey

GRAND HAVEN STAMPED PRODUCTS CO (Continued) **U003328815**

Owner Phone: (616) 842-5500
Contact: JOHN HAMMOND
Contact Phone: (616) 847-7410
Date of Collection: 01/11/2001
Accuracy: 100
Accuracy Value Unit: FEET
Horizontal Datum: NAD83
Source: STATE OF MICHIGAN
Point Line Area: POINT
Desc Category: Plant Entrance (Freight)
Method of Collection: Address Matching-House Number
Latitude: 43.04978
Longitude: -86.20524

Tank ID: 1
Tank Status: Removed from Ground
Capacity: 3000
Product: Used Oil
Install Date: 05/06/1976
Remove Date: 07/12/1990
Tank Release Detection: Not reported
Pipe Realease Detection: Not reported
Piping Material: Galvanized Steel
Piping Type: Not reported
Construction Material: Asphalt Coated or Bare Steel
Impressed Device: No

Tank ID: 2
Tank Status: Removed from Ground
Capacity: 1500
Product: Used Oil
Install Date: 03/16/1988
Remove Date: 11/30/1999
Tank Release Detection: Inter Monitoring Double Walled Tank
Pipe Realease Detection: Interstitial Monitoring Double Walled Piping
Piping Material: Secondary Containment
Piping Type: Gravity Fed?
Construction Material: Cathodically Protected Steel,Double Walled
Impressed Device: No

PEAS:
Incident Date: 12/01/2009
Office Status: Not reported
Initials of Incoming Operator: Not reported
Time Received by DNRE Staff: Not reported
Time Occur: Not reported
Date Of PEAS Call: Not reported
Complainant / Company: Not reported
Complainant Address: Not reported
Company Involved: Not reported
DEQ Division Involved: Not reported
Incident Description: THEY REMOVED AND DISCOVERED USED OIL FROM THE PIT AND SLOW LEAK OF APRESS PIT GOING INTO SOIL & GROUND WATER, GENERATOR ID#MI000000215NO INJURIES, NO RECOVERED MATERIALS YET, CONTINUING TO INVESTIGATEREMOVING METAL PRESSES AND THEY INVESTIGATED A PIT UNDERNEATH A PRESS

GRAND HAVEN STAMPED PRODUCTS CO (Continued) **U003328815**

Description: Not reported
Date Discovered: Not reported
Time Discovered: Not reported
Office/After Hours: Not reported
Party Involved - Phone 1: Not reported
Party Involved - Phone 2: Not reported
Ongoing?: Not reported
Release Secured: Not reported
Source: Not reported
Source decode: Not reported
Lead Division 2: Not reported

Incident Date: 12/01/2009
Office Status: Not reported
Initials of Incoming Operator: Not reported
Time Received by DNRE Staff: Not reported
Time Occur: Not reported
Date Of PEAS Call: Not reported
Complainant / Company: Not reported
Complainant Address: 1250 S BEECHTREE ST, GRAND HAVEN 49417
Company Involved: GHSP
DEQ Division Involved: Not reported
Incident Description: REMOVING METAL PRESSES AND THEY INVESTIGATED A PIT UNDERNEATH A PRESS& THEN CONTINUES TO NEIGHBOR'S PROPERTY. NEIGHBOR DIDN'T WANTWATER COMING ONTO HIS PROPERTY SO HE PULLED CULVERT OUT OF ROAD &REPLACED 2-3 FT. TOO HIGH; ALSO DUMPED 130 YDS. OF SOIL TO BLOCK H2O.
Description: Not reported
Date Discovered: 12/1/2009
Time Discovered: 14:00
Office/After Hours: Not reported
Party Involved - Phone 1: Not reported
Party Involved - Phone 2: Not reported
Ongoing?: Not reported
Release Secured: Not reported
Source: Not reported
Source decode: Not reported
Lead Division 2: Not reported

WDS:
Site Id: MIK146646391
WMD Id: 427128
Site Specific Name: GRAND HAVEN STAMPED PRODUCTS
Mailing Address: 1250 S BEECHTREE ST
Mailing City/State/Zip: 49417
Mailing County: OTTAWA

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23 West 1/4-1/2 0.499 mi. 2636 ft.

DAKE PRESS CORPORATION **PART 201** **S107696547**
724 ROBBINS ROAD **INVENTORY** **N/A**
GRAND HAVEN, MI 49417 **WDS**

Relative: Higher

Actual: 611 ft.

PART 201:
Facility ID: 70000315
Facility Status: Interim Response in progress
Source: Primary Metal Industries
SAM Score: 35

DAKE PRESS CORPORATION (Continued) **S107696547**

SAM Score Date: 10/08/2004
Township: 08N
Range: 16W
Section: 33
Quarter: NW
Quarter/Quarter: NW
Pollutants: TCE; VC

INVENTORY:
Bea Number: Not reported
Township: Grand Haven
District: Grand Rapids
Data Source: Part 201
Latitude: 43.04447
Longitude: -86.22354

WDS:
Site Id: MID020904892
WMD Id: 395230
Site Specific Name: DAKE-DIVISION OF JSJ CORPORATION
Mailing Address: 724 ROBBINS RD
Mailing City/State/Zip: 49417
Mailing County: OTTAWA

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24 NNE 1/2-1 0.732 mi. 3867 ft.

ATCO RUBBER PROD INC **SEMS-ARCHIVE** **1000865868**
1605 MARION **AUL** **MID980678551**
GRAND HAVEN, MI 49417 **BROWNFIELDS**
PART 201
INVENTORY
RCRA NonGen / NLR
FINDS
ECHO
BEA
WDS

Relative: Lower

Actual: 603 ft.

SEMS-ARCHIVE:
Site ID: 502927
EPA ID: MID980678551
Federal Facility: N
NPL: Not on the NPL
Non NPL Status: NFRAP-Site does not qualify for the NPL based on existing information

Following information was gathered from the prior CERCLIS update completed in 10/2013:
Site ID: 0502927
Federal Facility: Not a Federal Facility
NPL Status: Not on the NPL
Non NPL Status: NFRAP-Site does not qualify for the NPL based on existing information

Program Priority:
Description: Great Lakes

CERCLIS-NFRAP Assessment History:
Action: PRELIMINARY ASSESSMENT
Date Started: / /
Date Completed: 09/10/85
Priority Level: NFRAP-Site does not qualify for the NPL based on existing information

ATCO RUBBER PROD INC (Continued) **1000865868**

Action: ARCHIVE SITE
Date Started: / /
Date Completed: 09/10/85
Priority Level: Not reported

Action: DISCOVERY
Date Started: / /
Date Completed: 12/11/80
Priority Level: Not reported

AUL:
Status: Recorded
Site Name: Atco Rubber Products
Property: Atco Rubber Products
Land Use Restriction Type: RC
Program Type: Part 201
Program Support Assigned User: Nicholas Ekel
Program Support Assigned Date: 06/20/2013
Legal Description Of Property: Site Address
Based On The Deq Ref #: 11120104033
MDEQ Reference Number: RC-RRD-201-04-033
Property Or Description Restricted Area: Not reported
Lead Division: RD
File Name Of Hyperlinked Legal Doc: U:\\KERMIT\\11120104033.PDF
Mapped Polygons Area In Acres: 1.0225
Mapped Polygons Area In Square Miles: 0.0015
Date Data Entry Started: 06/21/2013
Date Data Entry Finished: 06/21/2013
Individual Or Staff Assoc With The Mapping: Nicholas Ekel
Program Used To Map Restricted Features: ArcGIS 10.1
Date Legal Paperwork Stamped/Filed/Register Of Deeds: 11/20/1997
Commercial I Land Use Restriction: 0
Commercial Ii Land Use Restriction: 0
Commercial Iii Land Use Restriction: 0
Commercial Iv Land Use Restriction: 0
Industrial Land Use Restriction: 1
Residential Land Use Restriction: 0
Recreational Land Use Restriction: 0
Multiple Land-Use Restrictions: 0
Site Specific Restrictions: 1
Groundwater Consumption Restrictions: 0
Groundwater Contact Restrictions: 0
Special Well Construction Requirements: 0
Special Building Restrictions: 0
Excavation And Soil Movement Restrictions: 0
Soil Movement Requirements: 1
There Is A Restriction On All Construction: 0
Monitoring Well Protected, No Tampering Or Removal: 0
There Is An Exposure Barrier In Place: 1
There Is A Health And Safety Plan: 0
There Is A Permanent Marker On The Site: 0
Map Comments: 20130620 - LRUR is NOT mapped in KERMIT - Nick Ekel 20130621 - LRUR is mapped in KERMIT - Nick Ekel
Comment: Not reported

BROWNFIELDS:

ATCO RUBBER PROD INC (Continued) **1000865868**

Facility ID: Not reported
Region: 1
Status: Not reported
Properry Use: Not reported
BEA: No
Ernie Id Number: 70000001

PART 201:
Facility ID: 70000001
Facility Status: Interim Response conducted - No further activities anticipated
Source: Fire Protection
SAM Score: 30
SAM Score Date: 08/02/2007
Township: 08N
Range: 16W
Section: 27
Quarter: NW
Quarter/Quarter: SW
Pollutants: PBB's

INVENTORY:
Bea Number: Not reported
Township: Grand Haven
District: Grand Rapids
Data Source: Part 201
Latitude: 43.05354
Longitude: -86.20303

RCRA NonGen / NLR:
Date form received by agency: 12/31/2001
Facility name: ATCO RUBBER PRODUCTS INC
Facility address: 1605 MARION AVE
GRAND HAVEN, MI 49417
EPA ID: MID980678551
Mailing address: 7101 ATCO DR
FT WORTH, TX 76118
Contact: STEVE BARNES
Contact address: 1605 MARION AVE
GRAND HAVEN, MI 49417
Contact country: US
Contact telephone: (817) 595-2894
Contact email: Not reported
EPA Region: 05
Classification: Non-Generator
Description: Handler: Non-Generators do not presently generate hazardous waste

Owner/Operator Summary:
Owner/operator name: NO ACTIVE O/OP AS NOT GENERATING WASTE
Owner/operator address: Not reported
Not reported
Owner/operator country: Not reported
Owner/operator telephone: Not reported
Legal status: Private
Owner/Operator Type: Operator
Owner/Op start date: 09/04/1997

ATCO RUBBER PROD INC (Continued) **1000865868**

Owner/Op end date: Not reported

Owner/operator name: NO ACTIVE O/OP AS NOT GENERATING WASTE
Owner/operator address: Not reported
Not reported
Owner/operator country: Not reported
Owner/operator telephone: Not reported
Legal status: Private
Owner/Operator Type: Owner
Owner/Op start date: 09/04/1997
Owner/Op end date: Not reported

Handler Activities Summary:
U.S. importer of hazardous waste: No
Mixed waste (haz. and radioactive): No
Recycler of hazardous waste: No
Transporter of hazardous waste: No
Treater, storer or disposer of HW: No
Underground injection activity: No
On-site burner exemption: No
Furnace exemption: No
Used oil fuel burner: No
Used oil processor: No
User oil refiner: No
Used oil fuel marketer to burner: No
Used oil Specification marketer: No
Used oil transfer facility: No
Used oil transporter: No

. Waste code: D001
. Waste name: IGNITABLE WASTE

Historical Generators:
Date form received by agency: 08/11/1993
Site name: ATCO RUBBER PRODUCTS INC
Classification: Small Quantity Generator

. Waste code: D001
. Waste name: IGNITABLE WASTE

Violation Status: No violations found

FINDS:

Registry ID: 110003616748

Environmental Interest/Information System
RCRAInfo is a national information system that supports the Resource Conservation and Recovery Act (RCRA) program through the tracking of events and activities related to facilities that generate, transport, and treat, store, or dispose of hazardous waste. RCRAInfo allows RCRA program staff to track the notification, permit, compliance, and corrective action activities required under RCRA.

ECHO:

ATCO RUBBER PROD INC (Continued) **1000865868**

Envid: 1000865868
Registry ID: 110003616748
DFR URL: http://echo.epa.gov/detailed_facility_report?fid=110003616748

BEA:
Secondary Address: Not reported
BEA Number: 250
District: Grand Rapids
Date Received: 08/20/1997
Submitter Name: Grand Haven Steel Products
Petition Determination: Affirmed
Petition Disclosure: 1
Category: Different Hazardous Substance(s)
Determination 20107A: Affirmed
Reviewer: whitebl
Division Assigned: Environmental Response Division

WDS:
Site Id: MID980678551
WMD Id: 399145
Site Specific Name: ATCO RUBBER PRODUCTS INC
Mailing Address: 7101 ATCO DR
Mailing City/State/Zip: 76118
Mailing County: Not reported

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25 NW 1/2-1 0.751 mi. 3963 ft.

Relative: Higher

Actual: 609 ft.

725 TAYLOR STREET **INVENTORY** **S104909591**
725 TAYLOR STREET **PART 201** **N/A**
GRAND HAVEN, MI 49417 **BEA**
WDS

INVENTORY:
Bea Number: Not reported
Township: Grand Haven
District: Grand Rapids
Data Source: Part 201
Latitude: 43.05247
Longitude: -86.2237

PART 201:
Facility ID: 70000414
Facility Status: **Inactive - no actions taken to address contamination**
Source: Not reported
SAM Score: 18
SAM Score Date: 05/21/2007
Township: 8N
Range: 16W
Section: 28
Quarter: NW
Quarter/Quarter: SE
Pollutants: Benzo(a)pyrene; Fluoranthene; Phenanthrene; PCE; Zn

BEA:
Secondary Address: Not reported
BEA Number: 24
District: Grand Rapids

725 TAYLOR STREET (Continued) **S104909591**

Date Received: 11/08/1995
Submitter Name: IDI
Petition Determination: No Request
Petition Disclosure: 0
Category: Same Hazardous Substance(s)
Determination 20107A: No Request
Reviewer: monetd
Division Assigned: Environmental Response Division

WDS:
Site Id: MID006022438
WMD Id: 394071
Site Specific Name: NATIONAL PRODUCTS DISPLAYS INC
Mailing Address: PO BOX 187
Mailing City/State/Zip: 49417
Mailing County: OTTAWA

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26 NNW 1/2-1 0.818 mi. 4319 ft.

Relative: Higher

Actual: 608 ft.

OTTAWA STEEL PRODUCTS AREA **BROWNFIELDS** **S105144626**
745 WOODLAWN **PART 201** **N/A**
GRAND HAVEN, MI 49417 **INVENTORY**
WDS

BROWNFIELDS:
Facility ID: Not reported
Region: 1
Status: Not reported
Properry Use: Not reported
BEA: No
Ernie Id Number: 70000043

PART 201:
Facility ID: 70000043
Facility Status: Evaluation conducted
Source: Misc Manufacturing Industries
SAM Score: 38
SAM Score Date: 06/23/2004
Township: 08N
Range: 16W
Section: 28
Quarter: NW
Quarter/Quarter: SW
Pollutants: Benzene; VC; cis-1,2 DCE; Waste oil

INVENTORY:
Bea Number: 201403820GR
Township: Grand Haven
District: Grand Rapids
Data Source: BEA
Latitude: 43.0545
Longitude: -86.22224

Bea Number: 201604351GR
Township: Grand Haven
District: Grand Rapids
Data Source: BEA

OTTAWA STEEL PRODUCTS AREA (Continued) **S105144626**

Latitude: 43.0545
Longitude: -86.22224

Bea Number: Not reported
Township: Grand Haven
District: Grand Rapids
Data Source: Part 201
Latitude: 43.0545
Longitude: -86.22224

WDS:
Site Id: MIK125127969
WMD Id: 439424
Site Specific Name: OTTAWA STEEL PRODUCTS
Mailing Address: 745 WOODLAWN AVE
Mailing City/State/Zip: 49417
Mailing County: OTTAWA

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27 SSW 1/2-1 0.837 mi. 4417 ft.

Relative: Lower

Actual: 600 ft.

OTTAWA CORP **INVENTORY** **S104911656**
17365 HAYES ST **PART 201** **N/A**
GRAND HAVEN, MI 49417 **BEA**
WDS

INVENTORY:
Bea Number: Not reported
Township: Grand Haven
District: Grand Rapids
Data Source: Part 201
Latitude: 43.03027
Longitude: -86.21997

PART 201:
Facility ID: 70000394
Facility Status: Interim Response conducted
Source: Misc Services
SAM Score: 39
SAM Score Date: 10/22/2004
Township: 8N
Range: 16W
Section: 33
Quarter: SW
Quarter/Quarter: SW
Pollutants: 1,1 DCE; Naphthalene; TCE; VC; cis-1,2 DCE

BEA:
Secondary Address: Not reported
BEA Number: 736
District: Grand Rapids
Date Received: 07/10/2000
Submitter Name: Papanoli, L.L.C.
Petition Determination: No Request
Petition Disclosure: 0
Category: Same Hazardous Substance(s)
Determination 20107A: No Request
Reviewer: stringed

OTTAWA CORP (Continued) **S104911656**

Division Assigned: Environmental Response Division

Secondary Address: Not reported
BEA Number: 577
District: Grand Rapids
Date Received: 08/23/1999
Submitter Name: Ottawa Corporation
Petition Determination: No Request
Petition Disclosure: 0
Category: Different Hazardous Substance(s)
Determination 20107A: No Request
Reviewer: stringed
Division Assigned: Environmental Response Division

Secondary Address: Not reported
BEA Number: 557
District: Grand Rapids
Date Received: 06/21/1999
Submitter Name: Papanoli, L.L.C.
Petition Determination: Not reported
Petition Disclosure: 1
Category: Different Hazardous Substance(s)
Determination 20107A: No Request
Reviewer: whitebl
Division Assigned: Environmental Response Division

Secondary Address: Not reported
BEA Number: 558
District: Grand Rapids
Date Received: 06/21/1999
Submitter Name: Ottawa Corporation
Petition Determination: No Request
Petition Disclosure: 0
Category: Different Hazardous Substance(s)
Determination 20107A: No Request
Reviewer: whitebl
Division Assigned: Environmental Response Division

WDS:
Site Id: MID006022305
WMD Id: 394070
Site Specific Name: C & M COATINGS INC
Mailing Address: 17365 HAYES ST
Mailing City/State/Zip: 49417
Mailing County: OTTAWA

Site Id: MIG000004371
WMD Id: 476112
Site Specific Name: OTTAWA CORP
Mailing Address: 17365 HAYES ST
Mailing City/State/Zip: 49417
Mailing County: OTTAWA

28 South 1/2-1 0.853 mi. 4504 ft. **14374 172ND AVENUE** **PART 201 S105966587**
14374 172ND AVENUE **BEA N/A**
GRAND HAVEN TOWNSHIP, MI 49417

Relative: Lower
Actual: 600 ft.

PART 201:
Facility ID: 70000399
Facility Status: See Leaking Underground Storage Tank Site Database
Source: Transportation Services
SAM Score: 25
SAM Score Date: 04/28/2006
Township: 07N
Range: 16W
Section: 4
Quarter: NE
Quarter/Quarter: NW
Pollutants: 1,2,4 TMB; 1,3,5 TMB; Ethylbenzene; Naphthalene; Xylenes

BEA:
Secondary Address: Not reported
BEA Number: 1268
District: Grand Rapids
Date Received: 08/19/2003
Submitter Name: Duthler Properties
Petition Determination: Affirmed
Petition Disclosure: 1
Category: Different Hazardous Substance(s)
Determination 20107A: No Request
Reviewer: vanleeuw
Division Assigned: Environmental Response Division

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29 NNW 1/2-1 0.875 mi. 4620 ft. **NEIDLINGER OIL CO** **SEMS-ARCHIVE 1003871501**
815 VERHOEKS **INVENTORY MID980992994**
GRAND HAVEN, MI 49417 **PART 201**
WDS

Relative: Higher
Actual: 608 ft.

SEMS-ARCHIVE:
Site ID: 503173
EPA ID: MID980992994
Federal Facility: N
NPL: Not on the NPL
Non NPL Status: NFRAP-Site does not qualify for the NPL based on existing information

Following information was gathered from the prior CERCLIS update completed in 10/2013:
Site ID: 0503173
Federal Facility: Not a Federal Facility
NPL Status: Not on the NPL
Non NPL Status: NFRAP-Site does not qualify for the NPL based on existing information

Program Priority:
Description: Great Lakes

CERCLIS-NFRAP Assessment History:
Action: DISCOVERY
Date Started: / /
Date Completed: 06/01/84

NEIDLINGER OIL CO (Continued) **1003871501**

Priority Level: Not reported

Action: ARCHIVE SITE
Date Started: / /
Date Completed: 07/29/86
Priority Level: Not reported

Action: PRELIMINARY ASSESSMENT
Date Started: / /
Date Completed: 07/29/86
Priority Level: NFRAP-Site does not qualify for the NPL based on existing information

INVENTORY:
Bea Number: Not reported
Township: Spring Lake
District: Grand Rapids
Data Source: Part 201
Latitude: 43.05579
Longitude: -86.22245

PART 201:
Facility ID: 70000012
Facility Status: Interim Response conducted - No further activities anticipated
Source: Petroleum Bulk Stations & Term
SAM Score: 32
SAM Score Date: 07/11/2005
Township: 08N
Range: 16W
Section: 28
Quarter: NW
Quarter/Quarter: NW
Pollutants: Benzene; Toluene; Xylenes

WDS:
Site Id: MIG000059054
WMD Id: 424721
Site Specific Name: MERLE BOES INC
Mailing Address: 815 VERHOEKS ST
Mailing City/State/Zip: 49417
Mailing County: OTTAWA

ORPHAN SUMMARY

Count: 1 records.

City	EDR ID	Site Name	Site Address	Zip	Database(s)
OTTAWA COUNTY	S114029870	715 ROBBINS ROAD	715 ROBBINS ROAD		INVENTORY

GOVERNMENT RECORDS SEARCHED / DATA CURRENCY TRACKING

To maintain currency of the following federal and state databases, EDR contacts the appropriate governmental agency on a monthly or quarterly basis, as required.

Number of Days to Update: Provides confirmation that EDR is reporting records that have been updated within 90 days from the date the government agency made the information available to the public.

STANDARD ENVIRONMENTAL RECORDS

Federal NPL site list

NPL: National Priority List
National Priorities List (Superfund). The NPL is a subset of CERCLIS and identifies over 1,200 sites for priority cleanup under the Superfund Program. NPL sites may encompass relatively large areas. As such, EDR provides polygon coverage for over 1,000 NPL site boundaries produced by EPA's Environmental Photographic Interpretation Center (EPIC) and regional EPA offices.

Date of Government Version: 12/05/2016
Date Data Arrived at EDR: 01/05/2017
Date Made Active in Reports: 02/03/2017
Number of Days to Update: 29

Source: EPA
Telephone: N/A
Last EDR Contact: 04/21/2017
Next Scheduled EDR Contact: 07/17/2017
Data Release Frequency: Quarterly

NPL Site Boundaries

Sources:

EPA's Environmental Photographic Interpretation Center (EPIC)
Telephone: 202-564-7333

EPA Region 1
Telephone 617-918-1143

EPA Region 6
Telephone: 214-655-6659

EPA Region 3
Telephone 215-814-5418

EPA Region 7
Telephone: 913-551-7247

EPA Region 4
Telephone 404-562-8033

EPA Region 8
Telephone: 303-312-6774

EPA Region 5
Telephone 312-886-6686

EPA Region 9
Telephone: 415-947-4246

EPA Region 10
Telephone 206-553-8665

Proposed NPL: Proposed National Priority List Sites
A site that has been proposed for listing on the National Priorities List through the issuance of a proposed rule in the Federal Register. EPA then accepts public comments on the site, responds to the comments, and places on the NPL those sites that continue to meet the requirements for listing.

Date of Government Version: 12/05/2016
Date Data Arrived at EDR: 01/05/2017
Date Made Active in Reports: 02/03/2017
Number of Days to Update: 29

Source: EPA
Telephone: N/A
Last EDR Contact: 04/21/2017
Next Scheduled EDR Contact: 07/17/2017
Data Release Frequency: Quarterly

NPL LIENS: Federal Superfund Liens
Federal Superfund Liens. Under the authority granted the USEPA by CERCLA of 1980, the USEPA has the authority to file liens against real property in order to recover remedial action expenditures or when the property owner received notification of potential liability. USEPA compiles a listing of filed notices of Superfund Liens.

Date of Government Version: 10/15/1991
Date Data Arrived at EDR: 02/02/1994
Date Made Active in Reports: 03/30/1994
Number of Days to Update: 56

Source: EPA
Telephone: 202-564-4267
Last EDR Contact: 08/15/2011
Next Scheduled EDR Contact: 11/28/2011
Data Release Frequency: No Update Planned

GOVERNMENT RECORDS SEARCHED / DATA CURRENCY TRACKING

Federal Delisted NPL site list

Delisted NPL: National Priority List Deletions
The National Oil and Hazardous Substances Pollution Contingency Plan (NCP) establishes the criteria that the EPA uses to delete sites from the NPL. In accordance with 40 CFR 300.425.(e), sites may be deleted from the NPL where no further response is appropriate.

Date of Government Version: 12/05/2016
Date Data Arrived at EDR: 01/05/2017
Date Made Active in Reports: 02/03/2017
Number of Days to Update: 29

Source: EPA
Telephone: N/A
Last EDR Contact: 04/21/2017
Next Scheduled EDR Contact: 07/17/2017
Data Release Frequency: Quarterly

Federal CERCLIS list

FEDERAL FACILITY: Federal Facility Site Information listing
A listing of National Priority List (NPL) and Base Realignment and Closure (BRAC) sites found in the Comprehensive Environmental Response, Compensation and Liability Information System (CERCLIS) Database where EPA Federal Facilities Restoration and Reuse Office is involved in cleanup activities.

Date of Government Version: 11/07/2016
Date Data Arrived at EDR: 01/05/2017
Date Made Active in Reports: 04/07/2017
Number of Days to Update: 92

Source: Environmental Protection Agency
Telephone: 703-603-8704
Last EDR Contact: 04/07/2017
Next Scheduled EDR Contact: 07/17/2017
Data Release Frequency: Varies

SEMS: Superfund Enterprise Management System
SEMS (Superfund Enterprise Management System) tracks hazardous waste sites, potentially hazardous waste sites, and remedial activities performed in support of EPA's Superfund Program across the United States. The list was formerly know as CERCLIS, renamed to SEMS by the EPA in 2015. The list contains data on potentially hazardous waste sites that have been reported to the USEPA by states, municipalities, private companies and private persons, pursuant to Section 103 of the Comprehensive Environmental Response, Compensation, and Liability Act (CERCLA). This dataset also contains sites which are either proposed to or on the National Priorities List (NPL) and the sites which are in the screening and assessment phase for possible inclusion on the NPL.

Date of Government Version: 02/07/2017
Date Data Arrived at EDR: 04/19/2017
Date Made Active in Reports: 05/05/2017
Number of Days to Update: 16

Source: EPA
Telephone: 800-424-9346
Last EDR Contact: 04/21/2017
Next Scheduled EDR Contact: 07/31/2017
Data Release Frequency: Quarterly

Federal CERCLIS NFRAP site list

SEMS-ARCHIVE: Superfund Enterprise Management System Archive

SEMS-ARCHIVE (Superfund Enterprise Management System Archive) tracks sites that have no further interest under the Federal Superfund Program based on available information. The list was formerly known as the CERCLIS-NFRAP, renamed to SEMS ARCHIVE by the EPA in 2015. EPA may perform a minimal level of assessment work at a site while it is archived if site conditions change and/or new information becomes available. Archived sites have been removed and archived from the inventory of SEMS sites. Archived status indicates that, to the best of EPA's knowledge, assessment at a site has been completed and that EPA has determined no further steps will be taken to list the site on the National Priorities List (NPL), unless information indicates this decision was not appropriate or other considerations require a recommendation for listing at a later time. The decision does not necessarily mean that there is no hazard associated with a given site; it only means that. based upon available information, the location is not judged to be potential NPL site.

Date of Government Version: 02/07/2017
Date Data Arrived at EDR: 04/19/2017
Date Made Active in Reports: 05/05/2017
Number of Days to Update: 16

Source: EPA
Telephone: 800-424-9346
Last EDR Contact: 04/25/2017
Next Scheduled EDR Contact: 07/31/2017
Data Release Frequency: Quarterly

Federal RCRA CORRACTS facilities list

CORRACTS: Corrective Action Report
CORRACTS identifies hazardous waste handlers with RCRA corrective action activity.

Date of Government Version: 12/12/2016
Date Data Arrived at EDR: 12/28/2016
Date Made Active in Reports: 02/10/2017
Number of Days to Update: 44

Source: EPA
Telephone: 800-424-9346
Last EDR Contact: 05/02/2017
Next Scheduled EDR Contact: 04/10/2017
Data Release Frequency: Quarterly

Federal RCRA non-CORRACTS TSD facilities list

RCRA-TSDF: RCRA - Treatment, Storage and Disposal
RCRAInfo is EPA's comprehensive information system, providing access to data supporting the Resource Conservation and Recovery Act (RCRA) of 1976 and the Hazardous and Solid Waste Amendments (HSWA) of 1984. The database includes selective information on sites which generate, transport, store, treat and/or dispose of hazardous waste as defined by the Resource Conservation and Recovery Act (RCRA). Transporters are individuals or entities that move hazardous waste from the generator offsite to a facility that can recycle, treat, store, or dispose of the waste. TSDFs treat, store, or dispose of the waste.

Date of Government Version: 12/12/2016
Date Data Arrived at EDR: 12/28/2016
Date Made Active in Reports: 02/10/2017
Number of Days to Update: 44

Source: Environmental Protection Agency
Telephone: 312-886-6186
Last EDR Contact: 05/02/2017
Next Scheduled EDR Contact: 04/10/2017
Data Release Frequency: Quarterly

Federal RCRA generators list

RCRA-LQG: RCRA - Large Quantity Generators
RCRAInfo is EPA's comprehensive information system, providing access to data supporting the Resource Conservation and Recovery Act (RCRA) of 1976 and the Hazardous and Solid Waste Amendments (HSWA) of 1984. The database includes selective information on sites which generate, transport, store, treat and/or dispose of hazardous waste as defined by the Resource Conservation and Recovery Act (RCRA). Large quantity generators (LQGs) generate over 1,000 kilograms (kg) of hazardous waste, or over 1 kg of acutely hazardous waste per month.

Date of Government Version: 12/12/2016
Date Data Arrived at EDR: 12/28/2016
Date Made Active in Reports: 02/10/2017
Number of Days to Update: 44

Source: Environmental Protection Agency
Telephone: 312-886-6186
Last EDR Contact: 05/02/2017
Next Scheduled EDR Contact: 04/10/2017
Data Release Frequency: Quarterly

RCRA-SQG: RCRA - Small Quantity Generators
RCRAInfo is EPA's comprehensive information system, providing access to data supporting the Resource Conservation and Recovery Act (RCRA) of 1976 and the Hazardous and Solid Waste Amendments (HSWA) of 1984. The database includes selective information on sites which generate, transport, store, treat and/or dispose of hazardous waste as defined by the Resource Conservation and Recovery Act (RCRA). Small quantity generators (SQGs) generate between 100 kg and 1,000 kg of hazardous waste per month.

Date of Government Version: 12/12/2016
Date Data Arrived at EDR: 12/28/2016
Date Made Active in Reports: 02/10/2017
Number of Days to Update: 44

Source: Environmental Protection Agency
Telephone: 312-886-6186
Last EDR Contact: 05/02/2017
Next Scheduled EDR Contact: 04/10/2017
Data Release Frequency: Quarterly

RCRA-CESQG: RCRA - Conditionally Exempt Small Quantity Generators
RCRAInfo is EPA's comprehensive information system, providing access to data supporting the Resource Conservation and Recovery Act (RCRA) of 1976 and the Hazardous and Solid Waste Amendments (HSWA) of 1984. The database includes selective information on sites which generate, transport, store, treat and/or dispose of hazardous waste as defined by the Resource Conservation and Recovery Act (RCRA). Conditionally exempt small quantity generators (CESQGs) generate less than 100 kg of hazardous waste, or less than 1 kg of acutely hazardous waste per month.

Date of Government Version: 12/12/2016
Date Data Arrived at EDR: 12/28/2016
Date Made Active in Reports: 02/10/2017
Number of Days to Update: 44

Source: Environmental Protection Agency
Telephone: 312-886-6186
Last EDR Contact: 05/02/2017
Next Scheduled EDR Contact: 04/10/2017
Data Release Frequency: Varies

Federal institutional controls / engineering controls registries

LUCIS: Land Use Control Information System
LUCIS contains records of land use control information pertaining to the former Navy Base Realignment and Closure properties.

Date of Government Version: 12/28/2016
Date Data Arrived at EDR: 01/04/2017
Date Made Active in Reports: 04/07/2017
Number of Days to Update: 93

Source: Department of the Navy
Telephone: 843-820-7326
Last EDR Contact: 02/13/2017
Next Scheduled EDR Contact: 05/29/2017
Data Release Frequency: Varies

US ENG CONTROLS: Engineering Controls Sites List
A listing of sites with engineering controls in place. Engineering controls include various forms of caps, building foundations, liners, and treatment methods to create pathway elimination for regulated substances to enter environmental media or effect human health.

Date of Government Version: 11/15/2016
Date Data Arrived at EDR: 11/29/2016
Date Made Active in Reports: 02/03/2017
Number of Days to Update: 66

Source: Environmental Protection Agency
Telephone: 703-603-0695
Last EDR Contact: 02/28/2017
Next Scheduled EDR Contact: 06/12/2017
Data Release Frequency: Varies

US INST CONTROL: Sites with Institutional Controls
A listing of sites with institutional controls in place. Institutional controls include administrative measures, such as groundwater use restrictions, construction restrictions, property use restrictions, and post remediation care requirements intended to prevent exposure to contaminants remaining on site. Deed restrictions are generally required as part of the institutional controls.

Date of Government Version: 11/15/2016
Date Data Arrived at EDR: 11/29/2016
Date Made Active in Reports: 02/03/2017
Number of Days to Update: 66

Source: Environmental Protection Agency
Telephone: 703-603-0695
Last EDR Contact: 02/28/2017
Next Scheduled EDR Contact: 06/12/2017
Data Release Frequency: Varies

Federal ERNS list

ERNS: Emergency Response Notification System
Emergency Response Notification System. ERNS records and stores information on reported releases of oil and hazardous substances.

Date of Government Version: 09/26/2016
Date Data Arrived at EDR: 09/29/2016
Date Made Active in Reports: 11/11/2016
Number of Days to Update: 43

Source: National Response Center, United States Coast Guard
Telephone: 202-267-2180
Last EDR Contact: 03/29/2017
Next Scheduled EDR Contact: 07/10/2017
Data Release Frequency: Annually

State- and tribal - equivalent CERCLIS

SHWS: This state does not maintain a SHWS list. See the Federal CERCLIS list and Federal NPL list.
This state does not maintain a SHWS list. See the Federal CERCLIS list and Federal NPL list.

Date of Government Version: N/A
Date Data Arrived at EDR: 10/31/2013
Date Made Active in Reports: 11/20/2013
Number of Days to Update: 20

Source: Dept of Environmental Quality
Telephone: 517-284-5103
Last EDR Contact: 04/21/2017
Next Scheduled EDR Contact: 08/07/2017
Data Release Frequency: No Update Planned

State and tribal landfill and/or solid waste disposal site lists

SWF/LF: Solid Waste Facilities Database
Solid Waste Facilities/Landfill Sites. SWF/LF type records typically contain an inventory of solid waste disposal facilities or landfills in a particular state. Depending on the state, these may be active or inactive facilities or open dumps that failed to meet RCRA Subtitle D Section 4004 criteria for solid waste landfills or disposal sites.

Date of Government Version: 12/28/2016
Date Data Arrived at EDR: 12/28/2016
Date Made Active in Reports: 01/30/2017
Number of Days to Update: 33

Source: Dept of Environmental Quality
Telephone: 517-335-4035
Last EDR Contact: 03/30/2017
Next Scheduled EDR Contact: 07/10/2017
Data Release Frequency: Semi-Annually

State and tribal leaking storage tank lists

LUST: Leaking Underground Storage Tank Sites
Leaking Underground Storage Tank Incident Reports. LUST records contain an inventory of reported leaking underground storage tank incidents. Not all states maintain these records, and the information stored varies by state.

Date of Government Version: 01/05/2017
Date Data Arrived at EDR: 02/16/2017
Date Made Active in Reports: 04/21/2017
Number of Days to Update: 64

Source: Dept of Environmental Quality
Telephone: 517-373-9837
Last EDR Contact: 02/16/2017
Next Scheduled EDR Contact: 05/29/2017
Data Release Frequency: Annually

INDIAN LUST R9: Leaking Underground Storage Tanks on Indian Land
LUSTs on Indian land in Arizona, California, New Mexico and Nevada

Date of Government Version: 10/06/2016
Date Data Arrived at EDR: 01/26/2017
Date Made Active in Reports: 05/05/2017
Number of Days to Update: 99

Source: Environmental Protection Agency
Telephone: 415-972-3372
Last EDR Contact: 04/28/2017
Next Scheduled EDR Contact: 08/07/2017
Data Release Frequency: Quarterly

INDIAN LUST R10: Leaking Underground Storage Tanks on Indian Land
LUSTs on Indian land in Alaska, Idaho, Oregon and Washington.

Date of Government Version: 10/07/2016
Date Data Arrived at EDR: 01/26/2017
Date Made Active in Reports: 05/05/2017
Number of Days to Update: 99

Source: EPA Region 10
Telephone: 206-553-2857
Last EDR Contact: 04/28/2017
Next Scheduled EDR Contact: 08/07/2017
Data Release Frequency: Quarterly

INDIAN LUST R6: Leaking Underground Storage Tanks on Indian Land
LUSTs on Indian land in New Mexico and Oklahoma.

Date of Government Version: 10/01/2016
Date Data Arrived at EDR: 01/26/2017
Date Made Active in Reports: 05/05/2017
Number of Days to Update: 99

Source: EPA Region 6
Telephone: 214-665-6597
Last EDR Contact: 04/28/2017
Next Scheduled EDR Contact: 08/07/2017
Data Release Frequency: Varies

INDIAN LUST R7: Leaking Underground Storage Tanks on Indian Land
LUSTs on Indian land in Iowa, Kansas, and Nebraska

Date of Government Version: 09/01/2016
Date Data Arrived at EDR: 01/26/2017
Date Made Active in Reports: 05/05/2017
Number of Days to Update: 99

Source: EPA Region 7
Telephone: 913-551-7003
Last EDR Contact: 04/28/2017
Next Scheduled EDR Contact: 08/07/2017
Data Release Frequency: Varies

INDIAN LUST R8: Leaking Underground Storage Tanks on Indian Land
LUSTs on Indian land in Colorado, Montana, North Dakota, South Dakota, Utah and Wyoming.

Date of Government Version: 10/17/2016
Date Data Arrived at EDR: 01/26/2017
Date Made Active in Reports: 05/05/2017
Number of Days to Update: 99

Source: EPA Region 8
Telephone: 303-312-6271
Last EDR Contact: 04/28/2017
Next Scheduled EDR Contact: 08/07/2017
Data Release Frequency: Quarterly

INDIAN LUST R5: Leaking Underground Storage Tanks on Indian Land
Leaking underground storage tanks located on Indian Land in Michigan, Minnesota and Wisconsin.

Date of Government Version: 11/14/2016
Date Data Arrived at EDR: 01/26/2017
Date Made Active in Reports: 05/05/2017
Number of Days to Update: 99

Source: EPA, Region 5
Telephone: 312-886-7439
Last EDR Contact: 04/28/2017
Next Scheduled EDR Contact: 08/07/2017
Data Release Frequency: Varies

INDIAN LUST R1: Leaking Underground Storage Tanks on Indian Land
A listing of leaking underground storage tank locations on Indian Land.

Date of Government Version: 11/14/2016
Date Data Arrived at EDR: 01/26/2017
Date Made Active in Reports: 05/05/2017
Number of Days to Update: 99

Source: EPA Region 1
Telephone: 617-918-1313
Last EDR Contact: 04/28/2017
Next Scheduled EDR Contact: 08/07/2017
Data Release Frequency: Varies

INDIAN LUST R4: Leaking Underground Storage Tanks on Indian Land
LUSTs on Indian land in Florida, Mississippi and North Carolina.

Date of Government Version: 10/14/2016
Date Data Arrived at EDR: 01/27/2017
Date Made Active in Reports: 05/05/2017
Number of Days to Update: 98

Source: EPA Region 4
Telephone: 404-562-8677
Last EDR Contact: 04/28/2017
Next Scheduled EDR Contact: 08/07/2017
Data Release Frequency: Semi-Annually

State and tribal registered storage tank lists

FEMA UST: Underground Storage Tank Listing
A listing of all FEMA owned underground storage tanks.

Date of Government Version: 01/01/2010
Date Data Arrived at EDR: 02/16/2010
Date Made Active in Reports: 04/12/2010
Number of Days to Update: 55
Source: FEMA
Telephone: 202-646-5797
Last EDR Contact: 04/11/2017
Next Scheduled EDR Contact: 07/24/2017
Data Release Frequency: Varies

UST: Underground Storage Tank Facility List
Registered Underground Storage Tanks. UST's are regulated under Subtitle I of the Resource Conservation and Recovery Act (RCRA) and must be registered with the state department responsible for administering the UST program. Available information varies by state program.

Date of Government Version: 10/21/2016
Date Data Arrived at EDR: 02/16/2017
Date Made Active in Reports: 05/03/2017
Number of Days to Update: 76
Source: Dept of Environmental Quality
Telephone: 517-241-8847
Last EDR Contact: 02/16/2017
Next Scheduled EDR Contact: 05/29/2017
Data Release Frequency: Annually

UST 2: Underground Storage Tank Listing
A listing of underground storage tank site locations that have unknown owner information.

Date of Government Version: 10/18/2016
Date Data Arrived at EDR: 10/21/2016
Date Made Active in Reports: 01/30/2017
Number of Days to Update: 101
Source: Dept of Environmental Quality
Telephone: 517-241-8847
Last EDR Contact: 04/17/2017
Next Scheduled EDR Contact: 07/31/2017
Data Release Frequency: Annually

AST: Aboveground Tanks
Registered Aboveground Storage Tanks.

Date of Government Version: 11/02/2016
Date Data Arrived at EDR: 11/18/2016
Date Made Active in Reports: 01/26/2017
Number of Days to Update: 69
Source: Dept of Environmental Quality
Telephone: 517-241-8847
Last EDR Contact: 02/13/2017
Next Scheduled EDR Contact: 05/29/2017
Data Release Frequency: No Update Planned

INDIAN UST R1: Underground Storage Tanks on Indian Land
The Indian Underground Storage Tank (UST) database provides information about underground storage tanks on Indian land in EPA Region 1 (Connecticut, Maine, Massachusetts, New Hampshire, Rhode Island, Vermont and ten Tribal Nations).

Date of Government Version: 11/14/2016
Date Data Arrived at EDR: 01/26/2017
Date Made Active in Reports: 05/05/2017
Number of Days to Update: 99
Source: EPA, Region 1
Telephone: 617-918-1313
Last EDR Contact: 04/28/2017
Next Scheduled EDR Contact: 08/07/2017
Data Release Frequency: Varies

INDIAN UST R4: Underground Storage Tanks on Indian Land
The Indian Underground Storage Tank (UST) database provides information about underground storage tanks on Indian land in EPA Region 4 (Alabama, Florida, Georgia, Kentucky, Mississippi, North Carolina, South Carolina, Tennessee and Tribal Nations)

Date of Government Version: 10/14/2016
Date Data Arrived at EDR: 01/27/2017
Date Made Active in Reports: 05/05/2017
Number of Days to Update: 98
Source: EPA Region 4
Telephone: 404-562-9424
Last EDR Contact: 04/28/2017
Next Scheduled EDR Contact: 08/07/2017
Data Release Frequency: Semi-Annually

INDIAN UST R5: Underground Storage Tanks on Indian Land
The Indian Underground Storage Tank (UST) database provides information about underground storage tanks on Indian land in EPA Region 5 (Michigan, Minnesota and Wisconsin and Tribal Nations).

Date of Government Version: 01/14/2017
Date Data Arrived at EDR: 01/26/2017
Date Made Active in Reports: 05/05/2017
Number of Days to Update: 99
Source: EPA Region 5
Telephone: 312-886-6136
Last EDR Contact: 04/28/2017
Next Scheduled EDR Contact: 08/07/2017
Data Release Frequency: Varies

INDIAN UST R6: Underground Storage Tanks on Indian Land
The Indian Underground Storage Tank (UST) database provides information about underground storage tanks on Indian land in EPA Region 6 (Louisiana, Arkansas, Oklahoma, New Mexico, Texas and 65 Tribes).

Date of Government Version: 10/01/2016
Date Data Arrived at EDR: 01/26/2017
Date Made Active in Reports: 05/05/2017
Number of Days to Update: 99
Source: EPA Region 6
Telephone: 214-665-7591
Last EDR Contact: 04/28/2017
Next Scheduled EDR Contact: 08/07/2017
Data Release Frequency: Semi-Annually

INDIAN UST R7: Underground Storage Tanks on Indian Land
The Indian Underground Storage Tank (UST) database provides information about underground storage tanks on Indian land in EPA Region 7 (Iowa, Kansas, Missouri, Nebraska, and 9 Tribal Nations).

Date of Government Version: 09/01/2016
Date Data Arrived at EDR: 01/26/2017
Date Made Active in Reports: 05/05/2017
Number of Days to Update: 99
Source: EPA Region 7
Telephone: 913-551-7003
Last EDR Contact: 04/28/2017
Next Scheduled EDR Contact: 08/07/2017
Data Release Frequency: Varies

INDIAN UST R8: Underground Storage Tanks on Indian Land
The Indian Underground Storage Tank (UST) database provides information about underground storage tanks on Indian land in EPA Region 8 (Colorado, Montana, North Dakota, South Dakota, Utah, Wyoming and 27 Tribal Nations).

Date of Government Version: 10/17/2016
Date Data Arrived at EDR: 01/26/2017
Date Made Active in Reports: 05/05/2017
Number of Days to Update: 99
Source: EPA Region 8
Telephone: 303-312-6137
Last EDR Contact: 04/28/2017
Next Scheduled EDR Contact: 08/07/2017
Data Release Frequency: Quarterly

INDIAN UST R9: Underground Storage Tanks on Indian Land
The Indian Underground Storage Tank (UST) database provides information about underground storage tanks on Indian land in EPA Region 9 (Arizona, California, Hawaii, Nevada, the Pacific Islands, and Tribal Nations).

Date of Government Version: 10/06/2016
Date Data Arrived at EDR: 01/26/2017
Date Made Active in Reports: 05/05/2017
Number of Days to Update: 99
Source: EPA Region 9
Telephone: 415-972-3368
Last EDR Contact: 04/28/2017
Next Scheduled EDR Contact: 08/07/2017
Data Release Frequency: Quarterly

INDIAN UST R10: Underground Storage Tanks on Indian Land
The Indian Underground Storage Tank (UST) database provides information about underground storage tanks on Indian land in EPA Region 10 (Alaska, Idaho, Oregon, Washington, and Tribal Nations).

Date of Government Version: 10/07/2016
Date Data Arrived at EDR: 01/26/2017
Date Made Active in Reports: 05/05/2017
Number of Days to Update: 99
Source: EPA Region 10
Telephone: 206-553-2857
Last EDR Contact: 04/28/2017
Next Scheduled EDR Contact: 08/07/2017
Data Release Frequency: Quarterly

State and tribal institutional control / engineering control registries

AUL: Engineering and Institutional Controls
A listing of sites with institutional and/or engineering controls in place.

Date of Government Version: 02/28/2017
Date Data Arrived at EDR: 03/01/2017
Date Made Active in Reports: 04/18/2017
Number of Days to Update: 48

Source: Dept of Environmental Quality
Telephone: 517-373-4828
Last EDR Contact: 02/27/2017
Next Scheduled EDR Contact: 06/12/2017
Data Release Frequency: Varies

State and tribal voluntary cleanup sites

INDIAN VCP R1: Voluntary Cleanup Priority Listing
A listing of voluntary cleanup priority sites located on Indian Land located in Region 1.

Date of Government Version: 07/27/2015
Date Data Arrived at EDR: 09/29/2015
Date Made Active in Reports: 02/18/2016
Number of Days to Update: 142

Source: EPA, Region 1
Telephone: 617-918-1102
Last EDR Contact: 03/27/2017
Next Scheduled EDR Contact: 07/10/2017
Data Release Frequency: Varies

INDIAN VCP R7: Voluntary Cleanup Priority Lisitng
A listing of voluntary cleanup priority sites located on Indian Land located in Region 7.

Date of Government Version: 03/20/2008
Date Data Arrived at EDR: 04/22/2008
Date Made Active in Reports: 05/19/2008
Number of Days to Update: 27

Source: EPA, Region 7
Telephone: 913-551-7365
Last EDR Contact: 04/20/2009
Next Scheduled EDR Contact: 07/20/2009
Data Release Frequency: Varies

State and tribal Brownfields sites

BROWNFIELDS: Brownfields and USTfield Site Database
All state funded Part 201 and 213 sites, as well as LUST sites that have been redeveloped by private entities using the BEA process. Be aware that this is not a list of all of the potential brownfield sites in Michigan.

Date of Government Version: 01/15/2016
Date Data Arrived at EDR: 02/02/2016
Date Made Active in Reports: 04/04/2016
Number of Days to Update: 62

Source: Dept of Environmental Quality
Telephone: 517-373-4805
Last EDR Contact: 04/24/2017
Next Scheduled EDR Contact: 08/07/2017
Data Release Frequency: Varies

BROWNFIELDS 2: Brownfields Building and Land Site Locations
A listing of brownfield building and land site locations. The listing is a collaborative effort of Michigan Economic Development Corporation, Michigan Economic Developers Association, Detrot Edison, Detroit Area Commercial Board of Realtors

Date of Government Version: 04/09/2007
Date Data Arrived at EDR: 04/10/2007
Date Made Active in Reports: 05/01/2007
Number of Days to Update: 21

Source: Economic Development Corporation
Telephone: 888-522-0103
Last EDR Contact: 02/27/2017
Next Scheduled EDR Contact: 06/12/2017
Data Release Frequency: Varies

ADDITIONAL ENVIRONMENTAL RECORDS

Local Brownfield lists

US BROWNFIELDS: A Listing of Brownfields Sites
Brownfields are real property, the expansion, redevelopment, or reuse of which may be complicated by the presence or potential presence of a hazardous substance, pollutant, or contaminant. Cleaning up and reinvesting in these properties takes development pressures off of undeveloped, open land, and both improves and protects the environment. Assessment, Cleanup and Redevelopment Exchange System (ACRES) stores information reported by EPA Brownfields grant recipients on brownfields properties assessed or cleaned up with grant funding as well as information on Targeted Brownfields Assessments performed by EPA Regions. A listing of ACRES Brownfield sites is obtained from Cleanups in My Community. Cleanups in My Community provides information on Brownfields properties for which information is reported back to EPA, as well as areas served by Brownfields grant programs.

Date of Government Version: 03/02/2017
Date Data Arrived at EDR: 03/02/2017
Date Made Active in Reports: 04/07/2017
Number of Days to Update: 36

Source: Environmental Protection Agency
Telephone: 202-566-2777
Last EDR Contact: 03/02/2017
Next Scheduled EDR Contact: 07/03/2017
Data Release Frequency: Semi-Annually

Local Lists of Landfill / Solid Waste Disposal Sites

SWRCY: Recycling Facilities
A listing of recycling center locations.

Date of Government Version: 11/28/2016
Date Data Arrived at EDR: 11/29/2016
Date Made Active in Reports: 01/30/2017
Number of Days to Update: 62

Source: Dept of Environmental Quality
Telephone: 517-241-5719
Last EDR Contact: 03/27/2017
Next Scheduled EDR Contact: 07/10/2017
Data Release Frequency: Varies

HIST LF: Inactive Solid Waste Facilities
The database contains historical information and is no longer updated.

Date of Government Version: 03/01/1997
Date Data Arrived at EDR: 02/28/2003
Date Made Active in Reports: 03/06/2003
Number of Days to Update: 6

Source: Dept of Environmental Quality
Telephone: 517-335-4034
Last EDR Contact: 02/28/2003
Next Scheduled EDR Contact: N/A
Data Release Frequency: No Update Planned

INDIAN ODI: Report on the Status of Open Dumps on Indian Lands
Location of open dumps on Indian land.

Date of Government Version: 12/31/1998
Date Data Arrived at EDR: 12/03/2007
Date Made Active in Reports: 01/24/2008
Number of Days to Update: 52

Source: Environmental Protection Agency
Telephone: 703-308-8245
Last EDR Contact: 05/01/2017
Next Scheduled EDR Contact: 08/14/2017
Data Release Frequency: Varies

ODI: Open Dump Inventory
An open dump is defined as a disposal facility that does not comply with one or more of the Part 257 or Part 258 Subtitle D Criteria.

Date of Government Version: 06/30/1985
Date Data Arrived at EDR: 08/09/2004
Date Made Active in Reports: 09/17/2004
Number of Days to Update: 39

Source: Environmental Protection Agency
Telephone: 800-424-9346
Last EDR Contact: 06/09/2004
Next Scheduled EDR Contact: N/A
Data Release Frequency: No Update Planned

DEBRIS REGION 9: Torres Martinez Reservation Illegal Dump Site Locations
A listing of illegal dump sites location on the Torres Martinez Indian Reservation located in eastern Riverside County and northern Imperial County, California.

Date of Government Version: 01/12/2009
Date Data Arrived at EDR: 05/07/2009
Date Made Active in Reports: 09/21/2009
Number of Days to Update: 137

Source: EPA, Region 9
Telephone: 415-947-4219
Last EDR Contact: 04/24/2017
Next Scheduled EDR Contact: 08/07/2017
Data Release Frequency: No Update Planned

IHS OPEN DUMPS: Open Dumps on Indian Land
A listing of all open dumps located on Indian Land in the United States.

Date of Government Version: 04/01/2014
Date Data Arrived at EDR: 08/06/2014
Date Made Active in Reports: 01/29/2015
Number of Days to Update: 176

Source: Department of Health & Human Serivces, Indian Health Service
Telephone: 301-443-1452
Last EDR Contact: 05/05/2017
Next Scheduled EDR Contact: 08/14/2017
Data Release Frequency: Varies

Local Lists of Hazardous waste / Contaminated Sites

US HIST CDL: National Clandestine Laboratory Register
A listing of clandestine drug lab locations that have been removed from the DEAs National Clandestine Laboratory Register.

Date of Government Version: 09/30/2016
Date Data Arrived at EDR: 01/05/2017
Date Made Active in Reports: 02/10/2017
Number of Days to Update: 36
Source: Drug Enforcement Administration
Telephone: 202-307-1000
Last EDR Contact: 02/28/2017
Next Scheduled EDR Contact: 06/12/2017
Data Release Frequency: No Update Planned

INVENTORY: Inventory of Facilities
The Inventory of Facilities has three data sources: Facilities under Part 201, Environmental Remediation, of the Natural Resources and Environmental Protection Act, 1994 PA 451, as amended (NREPA) identified through state funded or private party response activities (Projects); Facilities under Part 213, Leaking Underground Storage Tanks of the NREPA; and Facilities identified through submittals of Baseline Environmental Assessments (BEA) submitted pursuant to Part 201 or Part 213 of the NREPA. The Part 201 Projects Inventory does not include all of the facilities that are subject to regulation under Part 201 because owners are not required to inform the Department of Environmental Quality (DEQ) about the facilities and can pursue cleanup independently. Facilities that are not known to DEQ are not on the Inventory, nor are locations with releases that resulted in low environmental impact. Part 213 facilities listed here may have more than one release; a list of releases for which corrective actions have been completed and list of releases for which corrective action has not been completed is located on the Leaking Underground Storage Tanks Site Search webpage. The DEQ may or may not have reviewed and concurred with the conclusion that the corrective actions described in a closure report meets criteria. A BEA is a document that new or prospective property owners/operations disclose to the DEQ identifying the property as a facility pursuant to Part 201 and Part 213. The Inventory of BEA Facilities overlaps in part with the Part 201 Projects facilities and Part 213 facilities. There may be more than one BEA for each facility.

Date of Government Version: 01/24/2017
Date Data Arrived at EDR: 01/25/2017
Date Made Active in Reports: 04/20/2017
Number of Days to Update: 85
Source: Department of Environmental Quality
Telephone: 517-284-5136
Last EDR Contact: 04/26/2017
Next Scheduled EDR Contact: 08/07/2017
Data Release Frequency: Quarterly

PART 201: Part 201 Site List
A Part 201 Listed site is a location that has been evaluated and scored by the DEQ using the Part 201 scoring model. The location is or includes a "facility" as defined by Part 201, where there has been a release of a hazardous substance(s) in excess of the Part 201 residential criteria, and/or where corrective actions have not been completed under Part 201 to meet the applicable cleanup criteria for unrestricted residential use. The Part 201 List does not include all of the sites of contamination that are subject to regulation under Part 201 because owners are not required to inform the DEQ about the sites and can pursue cleanup independently. Sites of environmental contamination that are not known to DEQ are not on the list, nor are sites with releases that resulted in low environmental impact.

Date of Government Version: 10/01/2013
Date Data Arrived at EDR: 10/03/2014
Date Made Active in Reports: 10/03/2014
Number of Days to Update: 0
Source: Department of Environmental Quality
Telephone: 517-284-5103
Last EDR Contact: 04/21/2017
Next Scheduled EDR Contact: 08/07/2017
Data Release Frequency: No Update Planned

CDL: Clandestine Drug Lab Listing
A listing of clandestine drug lab locations.

Date of Government Version: 12/31/2016
Date Data Arrived at EDR: 02/17/2017
Date Made Active in Reports: 04/18/2017
Number of Days to Update: 60
Source: Department of Community Health
Telephone: 517-373-3740
Last EDR Contact: 04/24/2017
Next Scheduled EDR Contact: 08/07/2017
Data Release Frequency: Varies

DEL PART 201: Delisted List of Contaminated Sites
A deleted site has been removed from the Part 201 List because information known to the DEQ at the time of the evaluation does not support inclusion on the Part 201 List. This designation is often applied to sites where changes in cleanup criteria resulted in a determination that the site no longer exceeds any applicable cleanup criterion.
A delisted site has been removed from the Part 201 List because response actions have reduced the levels of contaminants to concentrations which meet or are below the criteria for unrestricted residential use.

Date of Government Version: 08/01/2013
Date Data Arrived at EDR: 08/01/2013
Date Made Active in Reports: 09/11/2013
Number of Days to Update: 41
Source: Dept of Environmental Quality
Telephone: 517-373-9541
Last EDR Contact: 04/21/2017
Next Scheduled EDR Contact: 08/07/2017
Data Release Frequency: Varies

US CDL: Clandestine Drug Labs
A listing of clandestine drug lab locations. The U.S. Department of Justice ("the Department") provides this web site as a public service. It contains addresses of some locations where law enforcement agencies reported they found chemicals or other items that indicated the presence of either clandestine drug laboratories or dumpsites. In most cases, the source of the entries is not the Department, and the Department has not verified the entry and does not guarantee its accuracy. Members of the public must verify the accuracy of all entries by, for example, contacting local law enforcement and local health departments.

Date of Government Version: 09/30/2016
Date Data Arrived at EDR: 12/05/2016
Date Made Active in Reports: 02/10/2017
Number of Days to Update: 67
Source: Drug Enforcement Administration
Telephone: 202-307-1000
Last EDR Contact: 02/28/2017
Next Scheduled EDR Contact: 06/12/2017
Data Release Frequency: Quarterly

Local Land Records

LIENS: Lien List
An Environmental Lien is a charge, security, or encumbrance upon title to a property to secure the payment of a cost, damage, debt, obligation, or duty arising out of response actions, cleanup, or other remediation of hazardous substances or petroleum products upon a property, including (but not limited to) liens imposed pursuant to CERCLA 42 USC * 9607(1) and similar state or local laws. In other words: a lien placed upon a property's title due to an environmental condition

Date of Government Version: 09/24/2015
Date Data Arrived at EDR: 10/26/2016
Date Made Active in Reports: 01/30/2017
Number of Days to Update: 96
Source: Dept of Environmental Quality
Telephone: 517-241-7603
Last EDR Contact: 04/21/2017
Next Scheduled EDR Contact: 07/31/2017
Data Release Frequency: Varies

LIENS 2: CERCLA Lien Information
A Federal CERCLA ('Superfund') lien can exist by operation of law at any site or property at which EPA has spent Superfund monies. These monies are spent to investigate and address releases and threatened releases of contamination. CERCLIS provides information as to the identity of these sites and properties.

Date of Government Version: 02/18/2014
Date Data Arrived at EDR: 03/18/2014
Date Made Active in Reports: 04/24/2014
Number of Days to Update: 37
Source: Environmental Protection Agency
Telephone: 202-564-6023
Last EDR Contact: 04/21/2017
Next Scheduled EDR Contact: 08/07/2017
Data Release Frequency: Varies

Records of Emergency Release Reports

HMIRS: Hazardous Materials Information Reporting System
Hazardous Materials Incident Report System. HMIRS contains hazardous material spill incidents reported to DOT.

Date of Government Version: 12/28/2016
Date Data Arrived at EDR: 12/28/2016
Date Made Active in Reports: 02/03/2017
Number of Days to Update: 37
Source: U.S. Department of Transportation
Telephone: 202-366-4555
Last EDR Contact: 03/29/2017
Next Scheduled EDR Contact: 07/10/2017
Data Release Frequency: Annually

PEAS: Pollution Emergency Alerting System
Environmental pollution emergencies reported to the Department of Environmental Quality such as tanker accidents, pipeline breaks, and release of reportable quantities of hazardous substances.

Date of Government Version: 02/23/2017
Date Data Arrived at EDR: 02/24/2017
Date Made Active in Reports: 04/20/2017
Number of Days to Update: 55
Source: Dept of Environmental Quality
Telephone: 517-373-8427
Last EDR Contact: 04/24/2017
Next Scheduled EDR Contact: 08/07/2017
Data Release Frequency: Quarterly

Other Ascertainable Records

RCRA NonGen / NLR: RCRA - Non Generators / No Longer Regulated
RCRAInfo is EPA's comprehensive information system, providing access to data supporting the Resource Conservation and Recovery Act (RCRA) of 1976 and the Hazardous and Solid Waste Amendments (HSWA) of 1984. The database includes selective information on sites which generate, transport, store, treat and/or dispose of hazardous waste as defined by the Resource Conservation and Recovery Act (RCRA). Non-Generators do not presently generate hazardous waste.

Date of Government Version: 12/12/2016
Date Data Arrived at EDR: 12/28/2016
Date Made Active in Reports: 02/10/2017
Number of Days to Update: 44
Source: Environmental Protection Agency
Telephone: 312-886-6186
Last EDR Contact: 05/02/2017
Next Scheduled EDR Contact: 04/10/2017
Data Release Frequency: Varies

FUDS: Formerly Used Defense Sites
The listing includes locations of Formerly Used Defense Sites properties where the US Army Corps of Engineers is actively working or will take necessary cleanup actions.

Date of Government Version: 01/31/2015
Date Data Arrived at EDR: 07/08/2015
Date Made Active in Reports: 10/13/2015
Number of Days to Update: 97
Source: U.S. Army Corps of Engineers
Telephone: 202-528-4285
Last EDR Contact: 02/24/2017
Next Scheduled EDR Contact: 06/05/2017
Data Release Frequency: Varies

DOD: Department of Defense Sites
This data set consists of federally owned or administered lands, administered by the Department of Defense, that have any area equal to or greater than 640 acres of the United States, Puerto Rico, and the U.S. Virgin Islands.

Date of Government Version: 12/31/2005
Date Data Arrived at EDR: 11/10/2006
Date Made Active in Reports: 01/11/2007
Number of Days to Update: 62
Source: USGS
Telephone: 888-275-8747
Last EDR Contact: 04/14/2017
Next Scheduled EDR Contact: 07/24/2017
Data Release Frequency: Semi-Annually

FEDLAND: Federal and Indian Lands
Federally and Indian administrated lands of the United States. Lands included are administrated by: Army Corps of Engineers, Bureau of Reclamation, National Wild and Scenic River, National Wildlife Refuge, Public Domain Land, Wilderness, Wilderness Study Area, Wildlife Management Area, Bureau of Indian Affairs, Bureau of Land Management, Department of Justice, Forest Service, Fish and Wildlife Service, National Park Service.

Date of Government Version: 12/31/2005
Date Data Arrived at EDR: 02/06/2006
Date Made Active in Reports: 01/11/2007
Number of Days to Update: 339
Source: U.S. Geological Survey
Telephone: 888-275-8747
Last EDR Contact: 04/14/2017
Next Scheduled EDR Contact: 07/24/2017
Data Release Frequency: N/A

SCRD DRYCLEANERS: State Coalition for Remediation of Drycleaners Listing
The State Coalition for Remediation of Drycleaners was established in 1998, with support from the U.S. EPA Office of Superfund Remediation and Technology Innovation. It is comprised of representatives of states with established drycleaner remediation programs. Currently the member states are Alabama, Connecticut, Florida, Illinois, Kansas, Minnesota, Missouri, North Carolina, Oregon, South Carolina, Tennessee, Texas, and Wisconsin.

Date of Government Version: 01/01/2017
Date Data Arrived at EDR: 02/03/2017
Date Made Active in Reports: 04/07/2017
Number of Days to Update: 63
Source: Environmental Protection Agency
Telephone: 615-532-8599
Last EDR Contact: 02/03/2017
Next Scheduled EDR Contact: 05/29/2017
Data Release Frequency: Varies

US FIN ASSUR: Financial Assurance Information
All owners and operators of facilities that treat, store, or dispose of hazardous waste are required to provide proof that they will have sufficient funds to pay for the clean up, closure, and post-closure care of their facilities.

Date of Government Version: 10/11/2016
Date Data Arrived at EDR: 11/16/2016
Date Made Active in Reports: 02/03/2017
Number of Days to Update: 79
Source: Environmental Protection Agency
Telephone: 202-566-1917
Last EDR Contact: 02/15/2017
Next Scheduled EDR Contact: 05/29/2017
Data Release Frequency: Quarterly

EPA WATCH LIST: EPA WATCH LIST
EPA maintains a "Watch List" to facilitate dialogue between EPA, state and local environmental agencies on enforcement matters relating to facilities with alleged violations identified as either significant or high priority. Being on the Watch List does not mean that the facility has actually violated the law only that an investigation by EPA or a state or local environmental agency has led those organizations to allege that an unproven violation has in fact occurred. Being on the Watch List does not represent a higher level of concern regarding the alleged violations that were detected, but instead indicates cases requiring additional dialogue between EPA, state and local agencies - primarily because of the length of time the alleged violation has gone unaddressed or unresolved.

Date of Government Version: 08/30/2013
Date Data Arrived at EDR: 03/21/2014
Date Made Active in Reports: 06/17/2014
Number of Days to Update: 88
Source: Environmental Protection Agency
Telephone: 617-520-3000
Last EDR Contact: 05/08/2017
Next Scheduled EDR Contact: 08/21/2017
Data Release Frequency: Quarterly

2020 COR ACTION: 2020 Corrective Action Program List
The EPA has set ambitious goals for the RCRA Corrective Action program by creating the 2020 Corrective Action Universe. This RCRA cleanup baseline includes facilities expected to need corrective action. The 2020 universe contains a wide variety of sites. Some properties are heavily contaminated while others were contaminated but have since been cleaned up. Still others have not been fully investigated yet, and may require little or no remediation. Inclusion in the 2020 Universe does not necessarily imply failure on the part of a facility to meet its RCRA obligations.

Date of Government Version: 04/22/2013
Date Data Arrived at EDR: 03/03/2015
Date Made Active in Reports: 03/09/2015
Number of Days to Update: 6
Source: Environmental Protection Agency
Telephone: 703-308-4044
Last EDR Contact: 05/05/2017
Next Scheduled EDR Contact: 08/21/2017
Data Release Frequency: Varies

TSCA: Toxic Substances Control Act
Toxic Substances Control Act. TSCA identifies manufacturers and importers of chemical substances included on the TSCA Chemical Substance Inventory list. It includes data on the production volume of these substances by plant site.

Date of Government Version: 12/31/2012
Date Data Arrived at EDR: 01/15/2015
Date Made Active in Reports: 01/29/2015
Number of Days to Update: 14
Source: EPA
Telephone: 202-260-5521
Last EDR Contact: 03/24/2017
Next Scheduled EDR Contact: 07/03/2017
Data Release Frequency: Every 4 Years

TRIS: Toxic Chemical Release Inventory System
Toxic Release Inventory System. TRIS identifies facilities which release toxic chemicals to the air, water and land in reportable quantities under SARA Title III Section 313.

Date of Government Version: 12/31/2014
Date Data Arrived at EDR: 11/24/2015
Date Made Active in Reports: 04/05/2016
Number of Days to Update: 133

Source: EPA
Telephone: 202-566-0250
Last EDR Contact: 02/24/2017
Next Scheduled EDR Contact: 06/05/2017
Data Release Frequency: Annually

SSTS: Section 7 Tracking Systems
Section 7 of the Federal Insecticide, Fungicide and Rodenticide Act, as amended (92 Stat. 829) requires all registered pesticide-producing establishments to submit a report to the Environmental Protection Agency by March 1st each year. Each establishment must report the types and amounts of pesticides, active ingredients and devices being produced, and those having been produced and sold or distributed in the past year.

Date of Government Version: 12/31/2009
Date Data Arrived at EDR: 12/10/2010
Date Made Active in Reports: 02/25/2011
Number of Days to Update: 77

Source: EPA
Telephone: 202-564-4203
Last EDR Contact: 04/26/2017
Next Scheduled EDR Contact: 08/07/2017
Data Release Frequency: Annually

ROD: Records Of Decision
Record of Decision. ROD documents mandate a permanent remedy at an NPL (Superfund) site containing technical and health information to aid in the cleanup.

Date of Government Version: 11/25/2013
Date Data Arrived at EDR: 12/12/2013
Date Made Active in Reports: 02/24/2014
Number of Days to Update: 74

Source: EPA
Telephone: 703-416-0223
Last EDR Contact: 03/06/2017
Next Scheduled EDR Contact: 06/19/2017
Data Release Frequency: Annually

RMP: Risk Management Plans
When Congress passed the Clean Air Act Amendments of 1990, it required EPA to publish regulations and guidance for chemical accident prevention at facilities using extremely hazardous substances. The Risk Management Program Rule (RMP Rule) was written to implement Section 112(r) of these amendments. The rule, which built upon existing industry codes and standards, requires companies of all sizes that use certain flammable and toxic substances to develop a Risk Management Program, which includes a(n): Hazard assessment that details the potential effects of an accidental release, an accident history of the last five years, and an evaluation of worst-case and alternative accidental releases; Prevention program that includes safety precautions and maintenance, monitoring, and employee training measures; and Emergency response program that spells out emergency health care, employee training measures and procedures for informing the public and response agencies (e.g the fire department) should an accident occur.

Date of Government Version: 02/01/2017
Date Data Arrived at EDR: 02/09/2017
Date Made Active in Reports: 04/07/2017
Number of Days to Update: 57

Source: Environmental Protection Agency
Telephone: 202-564-8600
Last EDR Contact: 04/21/2017
Next Scheduled EDR Contact: 08/07/2017
Data Release Frequency: Varies

RAATS: RCRA Administrative Action Tracking System
RCRA Administration Action Tracking System. RAATS contains records based on enforcement actions issued under RCRA pertaining to major violators and includes administrative and civil actions brought by the EPA. For administration actions after September 30, 1995, data entry in the RAATS database was discontinued. EPA will retain a copy of the database for historical records. It was necessary to terminate RAATS because a decrease in agency resources made it impossible to continue to update the information contained in the database.

Date of Government Version: 04/17/1995
Date Data Arrived at EDR: 07/03/1995
Date Made Active in Reports: 08/07/1995
Number of Days to Update: 35

Source: EPA
Telephone: 202-564-4104
Last EDR Contact: 06/02/2008
Next Scheduled EDR Contact: 09/01/2008
Data Release Frequency: No Update Planned

PRP: Potentially Responsible Parties
A listing of verified Potentially Responsible Parties

Date of Government Version: 10/25/2013
Date Data Arrived at EDR: 10/17/2014
Date Made Active in Reports: 10/20/2014
Number of Days to Update: 3

Source: EPA
Telephone: 202-564-6023
Last EDR Contact: 04/25/2017
Next Scheduled EDR Contact: 05/22/2017
Data Release Frequency: Quarterly

PADS: PCB Activity Database System
PCB Activity Database. PADS Identifies generators, transporters, commercial storers and/or brokers and disposers of PCB's who are required to notify the EPA of such activities.

Date of Government Version: 01/20/2016
Date Data Arrived at EDR: 04/28/2016
Date Made Active in Reports: 09/02/2016
Number of Days to Update: 127

Source: EPA
Telephone: 202-566-0500
Last EDR Contact: 04/10/2017
Next Scheduled EDR Contact: 07/24/2017
Data Release Frequency: Annually

ICIS: Integrated Compliance Information System
The Integrated Compliance Information System (ICIS) supports the information needs of the national enforcement and compliance program as well as the unique needs of the National Pollutant Discharge Elimination System (NPDES) program.

Date of Government Version: 11/18/2016
Date Data Arrived at EDR: 11/23/2016
Date Made Active in Reports: 02/10/2017
Number of Days to Update: 79

Source: Environmental Protection Agency
Telephone: 202-564-2501
Last EDR Contact: 04/10/2017
Next Scheduled EDR Contact: 07/24/2017
Data Release Frequency: Quarterly

FTTS: FIFRA/ TSCA Tracking System - FIFRA (Federal Insecticide, Fungicide, & Rodenticide Act)/TSCA (Toxic Substances Control Act)
FTTS tracks administrative cases and pesticide enforcement actions and compliance activities related to FIFRA, TSCA and EPCRA (Emergency Planning and Community Right-to-Know Act). To maintain currency, EDR contacts the Agency on a quarterly basis.

Date of Government Version: 04/09/2009
Date Data Arrived at EDR: 04/16/2009
Date Made Active in Reports: 05/11/2009
Number of Days to Update: 25

Source: EPA/Office of Prevention, Pesticides and Toxic Substances
Telephone: 202-566-1667
Last EDR Contact: 02/17/2017
Next Scheduled EDR Contact: 06/05/2017
Data Release Frequency: Quarterly

FTTS INSP: FIFRA/ TSCA Tracking System - FIFRA (Federal Insecticide, Fungicide, & Rodenticide Act)/TSCA (Toxic Substances Control Act)
A listing of FIFRA/TSCA Tracking System (FTTS) inspections and enforcements.

Date of Government Version: 04/09/2009
Date Data Arrived at EDR: 04/16/2009
Date Made Active in Reports: 05/11/2009
Number of Days to Update: 25

Source: EPA
Telephone: 202-566-1667
Last EDR Contact: 02/17/2017
Next Scheduled EDR Contact: 06/05/2017
Data Release Frequency: Quarterly

MLTS: Material Licensing Tracking System
MLTS is maintained by the Nuclear Regulatory Commission and contains a list of approximately 8,100 sites which possess or use radioactive materials and which are subject to NRC licensing requirements. To maintain currency, EDR contacts the Agency on a quarterly basis.

Date of Government Version: 08/30/2016
Date Data Arrived at EDR: 09/08/2016
Date Made Active in Reports: 10/21/2016
Number of Days to Update: 43

Source: Nuclear Regulatory Commission
Telephone: 301-415-7169
Last EDR Contact: 05/08/2017
Next Scheduled EDR Contact: 08/21/2017
Data Release Frequency: Quarterly

COAL ASH DOE: Steam-Electric Plant Operation Data
A listing of power plants that store ash in surface ponds.

Date of Government Version: 12/31/2005
Date Data Arrived at EDR: 08/07/2009
Date Made Active in Reports: 10/22/2009
Number of Days to Update: 76
Source: Department of Energy
Telephone: 202-586-8719
Last EDR Contact: 03/06/2017
Next Scheduled EDR Contact: 06/19/2017
Data Release Frequency: Varies

COAL ASH EPA: Coal Combustion Residues Surface Impoundments List
A listing of coal combustion residues surface impoundments with high hazard potential ratings.

Date of Government Version: 07/01/2014
Date Data Arrived at EDR: 09/10/2014
Date Made Active in Reports: 10/20/2014
Number of Days to Update: 40
Source: Environmental Protection Agency
Telephone: N/A
Last EDR Contact: 03/06/2017
Next Scheduled EDR Contact: 06/19/2017
Data Release Frequency: Varies

PCB TRANSFORMER: PCB Transformer Registration Database
The database of PCB transformer registrations that includes all PCB registration submittals.

Date of Government Version: 02/01/2011
Date Data Arrived at EDR: 10/19/2011
Date Made Active in Reports: 01/10/2012
Number of Days to Update: 83
Source: Environmental Protection Agency
Telephone: 202-566-0517
Last EDR Contact: 04/28/2017
Next Scheduled EDR Contact: 08/07/2017
Data Release Frequency: Varies

RADINFO: Radiation Information Database
The Radiation Information Database (RADINFO) contains information about facilities that are regulated by U.S. Environmental Protection Agency (EPA) regulations for radiation and radioactivity.

Date of Government Version: 01/04/2017
Date Data Arrived at EDR: 01/06/2017
Date Made Active in Reports: 02/10/2017
Number of Days to Update: 35
Source: Environmental Protection Agency
Telephone: 202-343-9775
Last EDR Contact: 04/06/2017
Next Scheduled EDR Contact: 07/17/2017
Data Release Frequency: Quarterly

HIST FTTS: FIFRA/TSCA Tracking System Administrative Case Listing
A complete administrative case listing from the FIFRA/TSCA Tracking System (FTTS) for all ten EPA regions. The information was obtained from the National Compliance Database (NCDB). NCDB supports the implementation of FIFRA (Federal Insecticide, Fungicide, and Rodenticide Act) and TSCA (Toxic Substances Control Act). Some EPA regions are now closing out records. Because of that, and the fact that some EPA regions are not providing EPA Headquarters with updated records, it was decided to create a HIST FTTS database. It included records that may not be included in the newer FTTS database updates. This database is no longer updated.

Date of Government Version: 10/19/2006
Date Data Arrived at EDR: 03/01/2007
Date Made Active in Reports: 04/10/2007
Number of Days to Update: 40
Source: Environmental Protection Agency
Telephone: 202-564-2501
Last EDR Contact: 12/17/2007
Next Scheduled EDR Contact: 03/17/2008
Data Release Frequency: No Update Planned

HIST FTTS INSP: FIFRA/TSCA Tracking System Inspection & Enforcement Case Listing
A complete inspection and enforcement case listing from the FIFRA/TSCA Tracking System (FTTS) for all ten EPA regions. The information was obtained from the National Compliance Database (NCDB). NCDB supports the implementation of FIFRA (Federal Insecticide, Fungicide, and Rodenticide Act) and TSCA (Toxic Substances Control Act). Some EPA regions are now closing out records. Because of that, and the fact that some EPA regions are not providing EPA Headquarters with updated records, it was decided to create a HIST FTTS database. It included records that may not be included in the newer FTTS database updates. This database is no longer updated.

Date of Government Version: 10/19/2006
Date Data Arrived at EDR: 03/01/2007
Date Made Active in Reports: 04/10/2007
Number of Days to Update: 40
Source: Environmental Protection Agency
Telephone: 202-564-2501
Last EDR Contact: 12/17/2008
Next Scheduled EDR Contact: 03/17/2008
Data Release Frequency: No Update Planned

DOT OPS: Incident and Accident Data
Department of Transporation, Office of Pipeline Safety Incident and Accident data.

Date of Government Version: 07/31/2012
Date Data Arrived at EDR: 08/07/2012
Date Made Active in Reports: 09/18/2012
Number of Days to Update: 42
Source: Department of Transporation, Office of Pipeline Safety
Telephone: 202-366-4595
Last EDR Contact: 05/02/2017
Next Scheduled EDR Contact: 08/14/2017
Data Release Frequency: Varies

CONSENT: Superfund (CERCLA) Consent Decrees
Major legal settlements that establish responsibility and standards for cleanup at NPL (Superfund) sites. Released periodically by United States District Courts after settlement by parties to litigation matters.

Date of Government Version: 09/30/2016
Date Data Arrived at EDR: 11/18/2016
Date Made Active in Reports: 02/03/2017
Number of Days to Update: 77
Source: Department of Justice, Consent Decree Library
Telephone: Varies
Last EDR Contact: 03/27/2017
Next Scheduled EDR Contact: 07/10/2017
Data Release Frequency: Varies

BRS: Biennial Reporting System
The Biennial Reporting System is a national system administered by the EPA that collects data on the generation and management of hazardous waste. BRS captures detailed data from two groups: Large Quantity Generators (LQG) and Treatment, Storage, and Disposal Facilities.

Date of Government Version: 12/31/2013
Date Data Arrived at EDR: 02/24/2015
Date Made Active in Reports: 09/30/2015
Number of Days to Update: 218
Source: EPA/NTIS
Telephone: 800-424-9346
Last EDR Contact: 02/22/2017
Next Scheduled EDR Contact: 06/05/2017
Data Release Frequency: Biennially

INDIAN RESERV: Indian Reservations
This map layer portrays Indian administered lands of the United States that have any area equal to or greater than 640 acres.

Date of Government Version: 12/31/2014
Date Data Arrived at EDR: 07/14/2015
Date Made Active in Reports: 01/10/2017
Number of Days to Update: 546
Source: USGS
Telephone: 202-208-3710
Last EDR Contact: 04/14/2017
Next Scheduled EDR Contact: 07/24/2017
Data Release Frequency: Semi-Annually

FUSRAP: Formerly Utilized Sites Remedial Action Program
DOE established the Formerly Utilized Sites Remedial Action Program (FUSRAP) in 1974 to remediate sites where radioactive contamination remained from Manhattan Project and early U.S. Atomic Energy Commission (AEC) operations.

Date of Government Version: 12/23/2016
Date Data Arrived at EDR: 12/27/2016
Date Made Active in Reports: 02/17/2017
Number of Days to Update: 52
Source: Department of Energy
Telephone: 202-586-3559
Last EDR Contact: 05/05/2017
Next Scheduled EDR Contact: 08/21/2017
Data Release Frequency: Varies

UMTRA: Uranium Mill Tailings Sites
Uranium ore was mined by private companies for federal government use in national defense programs. When the mills shut down, large piles of the sand-like material (mill tailings) remain after uranium has been extracted from the ore. Levels of human exposure to radioactive materials from the piles are low; however, in some cases tailings were used as construction materials before the potential health hazards of the tailings were recognized.

Date of Government Version: 09/14/2010
Date Data Arrived at EDR: 10/07/2011
Date Made Active in Reports: 03/01/2012
Number of Days to Update: 146

Source: Department of Energy
Telephone: 505-845-0011
Last EDR Contact: 02/21/2017
Next Scheduled EDR Contact: 06/05/2017
Data Release Frequency: Varies

LEAD SMELTER 1: Lead Smelter Sites
A listing of former lead smelter site locations.

Date of Government Version: 12/05/2016
Date Data Arrived at EDR: 01/05/2017
Date Made Active in Reports: 02/10/2017
Number of Days to Update: 36

Source: Environmental Protection Agency
Telephone: 703-603-8787
Last EDR Contact: 04/21/2017
Next Scheduled EDR Contact: 07/17/2017
Data Release Frequency: Varies

LEAD SMELTER 2: Lead Smelter Sites
A list of several hundred sites in the U.S. where secondary lead smelting was done from 1931and 1964. These sites may pose a threat to public health through ingestion or inhalation of contaminated soil or dust

Date of Government Version: 04/05/2001
Date Data Arrived at EDR: 10/27/2010
Date Made Active in Reports: 12/02/2010
Number of Days to Update: 36

Source: American Journal of Public Health
Telephone: 703-305-6451
Last EDR Contact: 12/02/2009
Next Scheduled EDR Contact: N/A
Data Release Frequency: No Update Planned

US AIRS (AFS): Aerometric Information Retrieval System Facility Subsystem (AFS)
The database is a sub-system of Aerometric Information Retrieval System (AIRS). AFS contains compliance data on air pollution point sources regulated by the U.S. EPA and/or state and local air regulatory agencies. This information comes from source reports by various stationary sources of air pollution, such as electric power plants, steel mills, factories, and universities, and provides information about the air pollutants they produce. Action, air program, air program pollutant, and general level plant data. It is used to track emissions and compliance data from industrial plants.

Date of Government Version: 10/12/2016
Date Data Arrived at EDR: 10/26/2016
Date Made Active in Reports: 02/03/2017
Number of Days to Update: 100

Source: EPA
Telephone: 202-564-2496
Last EDR Contact: 03/07/2017
Next Scheduled EDR Contact: 07/10/2017
Data Release Frequency: Annually

US AIRS MINOR: Air Facility System Data
A listing of minor source facilities.

Date of Government Version: 10/12/2016
Date Data Arrived at EDR: 10/26/2016
Date Made Active in Reports: 02/03/2017
Number of Days to Update: 100

Source: EPA
Telephone: 202-564-2496
Last EDR Contact: 03/07/2017
Next Scheduled EDR Contact: 04/10/2017
Data Release Frequency: Annually

US MINES: Mines Master Index File
Contains all mine identification numbers issued for mines active or opened since 1971. The data also includes violation information.

Date of Government Version: 02/08/2017
Date Data Arrived at EDR: 02/28/2017
Date Made Active in Reports: 04/07/2017
Number of Days to Update: 38

Source: Department of Labor, Mine Safety and Health Administration
Telephone: 303-231-5959
Last EDR Contact: 02/28/2017
Next Scheduled EDR Contact: 06/12/2017
Data Release Frequency: Semi-Annually

US MINES 2: Ferrous and Nonferrous Metal Mines Database Listing
This map layer includes ferrous (ferrous metal mines are facilities that extract ferrous metals, such as iron ore or molybdenum) and nonferrous (Nonferrous metal mines are facilities that extract nonferrous metals, such as gold, silver, copper, zinc, and lead) metal mines in the United States.

Date of Government Version: 12/05/2005
Date Data Arrived at EDR: 02/29/2008
Date Made Active in Reports: 04/18/2008
Number of Days to Update: 49

Source: USGS
Telephone: 703-648-7709
Last EDR Contact: 03/03/2017
Next Scheduled EDR Contact: 06/12/2017
Data Release Frequency: Varies

US MINES 3: Active Mines & Mineral Plants Database Listing
Active Mines and Mineral Processing Plant operations for commodities monitored by the Minerals Information Team of the USGS.

Date of Government Version: 04/14/2011
Date Data Arrived at EDR: 06/08/2011
Date Made Active in Reports: 09/13/2011
Number of Days to Update: 97

Source: USGS
Telephone: 703-648-7709
Last EDR Contact: 03/03/2017
Next Scheduled EDR Contact: 06/12/2017
Data Release Frequency: Varies

ABANDONED MINES: Abandoned Mines
An inventory of land and water impacted by past mining (primarily coal mining) is maintained by OSMRE to provide information needed to implement the Surface Mining Control and Reclamation Act of 1977 (SMCRA). The inventory contains information on the location, type, and extent of AML impacts, as well as, information on the cost associated with the reclamation of those problems. The inventory is based upon field surveys by State, Tribal, and OSMRE program officials. It is dynamic to the extent that it is modified as new problems are identified and existing problems are reclaimed.

Date of Government Version: 03/14/2017
Date Data Arrived at EDR: 03/17/2017
Date Made Active in Reports: 04/07/2017
Number of Days to Update: 21

Source: Department of Interior
Telephone: 202-208-2609
Last EDR Contact: 03/13/2017
Next Scheduled EDR Contact: 06/26/2017
Data Release Frequency: Quarterly

FINDS: Facility Index System/Facility Registry System
Facility Index System. FINDS contains both facility information and 'pointers' to other sources that contain more detail. EDR includes the following FINDS databases in this report: PCS (Permit Compliance System), AIRS (Aerometric Information Retrieval System), DOCKET (Enforcement Docket used to manage and track information on civil judicial enforcement cases for all environmental statutes), FURS (Federal Underground Injection Control), C-DOCKET (Criminal Docket System used to track criminal enforcement actions for all environmental statutes), FFIS (Federal Facilities Information System), STATE (State Environmental Laws and Statutes), and PADS (PCB Activity Data System).

Date of Government Version: 07/15/2016
Date Data Arrived at EDR: 09/07/2016
Date Made Active in Reports: 11/11/2016
Number of Days to Update: 65

Source: EPA
Telephone: (312) 353-2000
Last EDR Contact: 04/07/2017
Next Scheduled EDR Contact: 06/19/2017
Data Release Frequency: Quarterly

UXO: Unexploded Ordnance Sites
A listing of unexploded ordnance site locations

Date of Government Version: 10/25/2015
Date Data Arrived at EDR: 01/29/2016
Date Made Active in Reports: 04/05/2016
Number of Days to Update: 67

Source: Department of Defense
Telephone: 571-373-0407
Last EDR Contact: 04/17/2017
Next Scheduled EDR Contact: 07/31/2017
Data Release Frequency: Varies

ECHO: Enforcement & Compliance History Information
ECHO provides integrated compliance and enforcement information for about 800,000 regulated facilities nationwide.

Date of Government Version: 12/11/2016
Date Data Arrived at EDR: 12/20/2016
Date Made Active in Reports: 02/17/2017
Number of Days to Update: 59

Source: Environmental Protection Agency
Telephone: 202-564-2280
Last EDR Contact: 03/21/2017
Next Scheduled EDR Contact: 07/03/2017
Data Release Frequency: Quarterly

DOCKET HWC: Hazardous Waste Compliance Docket Listing
A complete list of the Federal Agency Hazardous Waste Compliance Docket Facilities.

Date of Government Version: 06/02/2016
Date Data Arrived at EDR: 06/03/2016
Date Made Active in Reports: 09/02/2016
Number of Days to Update: 91
Source: Environmental Protection Agency
Telephone: 202-564-0527
Last EDR Contact: 02/24/2017
Next Scheduled EDR Contact: 06/12/2017
Data Release Frequency: Varies

FUELS PROGRAM: EPA Fuels Program Registered Listing
This listing includes facilities that are registered under the Part 80 (Code of Federal Regulations) EPA Fuels Programs. All companies now are required to submit new and updated registrations.

Date of Government Version: 11/21/2016
Date Data Arrived at EDR: 11/22/2016
Date Made Active in Reports: 02/03/2017
Number of Days to Update: 73
Source: EPA
Telephone: 800-385-6164
Last EDR Contact: 02/22/2017
Next Scheduled EDR Contact: 06/05/2017
Data Release Frequency: Quarterly

AIRS: Permit and Emissions Inventory Data
Permit and emissions inventory data.

Date of Government Version: 03/21/2017
Date Data Arrived at EDR: 03/29/2017
Date Made Active in Reports: 04/18/2017
Number of Days to Update: 20
Source: Dept of Environmental Quality
Telephone: 517-373-7074
Last EDR Contact: 03/20/2017
Next Scheduled EDR Contact: 07/03/2017
Data Release Frequency: Varies

BEA: Baseline Environmental Assessment Database
A BEA is a document that new or prospective property owners/operations disclose to the DEQ identifying the property as a facility pursuant to Part 201 and Part 213. The Inventory of BEA Facilities overlaps in part with the Part 201 Projects facilities and Part 213 facilities. There may be more than one BEA for each facility.

Date of Government Version: 08/21/2013
Date Data Arrived at EDR: 08/23/2013
Date Made Active in Reports: 09/12/2013
Number of Days to Update: 20
Source: Dept of Environmental Quality
Telephone: 517-373-9541
Last EDR Contact: 02/13/2017
Next Scheduled EDR Contact: 05/29/2017
Data Release Frequency: No Update Planned

COAL ASH: Coal Ash Disposal Sites
Coal fired power plants in Southeast Michigan that have coal ash handling on site.

Date of Government Version: 10/20/2016
Date Data Arrived at EDR: 02/02/2017
Date Made Active in Reports: 04/20/2017
Number of Days to Update: 77
Source: Dept of Environmental Quality
Telephone: 586-753-3754
Last EDR Contact: 04/03/2017
Next Scheduled EDR Contact: 07/17/2017
Data Release Frequency: Varies

DRYCLEANERS: Drycleaning Establishments
A listing of drycleaning facilities in Michigan.

Date of Government Version: 01/20/2017
Date Data Arrived at EDR: 01/24/2017
Date Made Active in Reports: 04/20/2017
Number of Days to Update: 86
Source: Dept of Environmental Quality
Telephone: 517-335-4586
Last EDR Contact: 04/17/2017
Next Scheduled EDR Contact: 07/31/2017
Data Release Frequency: Annually

LEAD CERT: Lead Safe Housing Registry
A listing of Michigan properties included in the Lead Safe Housing Registry.

Date of Government Version: 09/15/2015
Date Data Arrived at EDR: 09/16/2015
Date Made Active in Reports: 09/30/2015
Number of Days to Update: 14
Source: Department of Community Health
Telephone: 517-335-9699
Last EDR Contact: 03/06/2017
Next Scheduled EDR Contact: 06/19/2017
Data Release Frequency: Quarterly

NPDES: List of Active NPDES Permits
General information regarding NPDES (National Pollutant Discharge Elimination System) permits and NPDES Storm Water permits.

Date of Government Version: 10/27/2016
Date Data Arrived at EDR: 01/06/2017
Date Made Active in Reports: 04/20/2017
Number of Days to Update: 104
Source: Dept of Environmental Quality
Telephone: 517-241-1300
Last EDR Contact: 04/07/2017
Next Scheduled EDR Contact: 07/17/2017
Data Release Frequency: Varies

UIC: Underground Injection Wells Database
A listing of underground injection well locations. The UIC Program is responsible for regulating the construction, operation, permitting, and closure of injection wells that place fluids underground for storage or disposal.

Date of Government Version: 11/07/2016
Date Data Arrived at EDR: 11/08/2016
Date Made Active in Reports: 01/30/2017
Number of Days to Update: 83
Source: Dept of Environmental Quality
Telephone: 517-241-1515
Last EDR Contact: 04/24/2017
Next Scheduled EDR Contact: 08/07/2017
Data Release Frequency: Varies

WDS: Waste Data System
The Waste Data System (WDS) tracks activities at facilities regulated by the Solid Waste, Scrap Tire, Hazardous Waste, and Liquid Industrial Waste programs.

Date of Government Version: 02/01/2017
Date Data Arrived at EDR: 02/03/2017
Date Made Active in Reports: 04/20/2017
Number of Days to Update: 76
Source: Dept of Environmental Quality
Telephone: 517-284-6562
Last EDR Contact: 02/21/2017
Next Scheduled EDR Contact: 06/05/2017
Data Release Frequency: Quarterly

EDR HIGH RISK HISTORICAL RECORDS

EDR Exclusive Records

EDR MGP: EDR Proprietary Manufactured Gas Plants
The EDR Proprietary Manufactured Gas Plant Database includes records of coal gas plants (manufactured gas plants) compiled by EDR's researchers. Manufactured gas sites were used in the United States from the 1800's to 1950's to produce a gas that could be distributed and used as fuel. These plants used whale oil, rosin, coal, or a mixture of coal, oil, and water that also produced a significant amount of waste. Many of the byproducts of the gas production, such as coal tar (oily waste containing volatile and non-volatile chemicals), sludges, oils and other compounds are potentially hazardous to human health and the environment. The byproduct from this process was frequently disposed of directly at the plant site and can remain or spread slowly, serving as a continuous source of soil and groundwater contamination.

Date of Government Version: N/A
Date Data Arrived at EDR: N/A
Date Made Active in Reports: N/A
Number of Days to Update: N/A
Source: EDR, Inc.
Telephone: N/A
Last EDR Contact: N/A
Next Scheduled EDR Contact: N/A
Data Release Frequency: No Update Planned

EDR Hist Auto: EDR Exclusive Historic Gas Stations
EDR has searched selected national collections of business directories and has collected listings of potential gas station/filling station/service station sites that were available to EDR researchers. EDR's review was limited to those categories of sources that might, in EDR's opinion, include gas station/filling station/service station establishments. The categories reviewed included, but were not limited to gas, gas station, gasoline station, filling station, auto, automobile repair, auto service station, service station, etc. This database falls within a category of information EDR classifies as "High Risk Historical Records", or HRHR. EDR's HRHR effort presents unique and sometimes proprietary data about past sites and operations that typically create environmental concerns, but may not show up in current government records searches.

Date of Government Version: N/A
Date Data Arrived at EDR: N/A
Date Made Active in Reports: N/A
Number of Days to Update: N/A

Source: EDR, Inc.
Telephone: N/A
Last EDR Contact: N/A
Next Scheduled EDR Contact: N/A
Data Release Frequency: Varies

EDR Hist Cleaner: EDR Exclusive Historic Dry Cleaners
EDR has searched selected national collections of business directories and has collected listings of potential dry cleaner sites that were available to EDR researchers. EDR's review was limited to those categories of sources that might, in EDR's opinion, include dry cleaning establishments. The categories reviewed included, but were not limited to dry cleaners, cleaners, laundry, laundromat, cleaning/laundry, wash & dry etc. This database falls within a category of information EDR classifies as "High Risk Historical Records", or HRHR. EDR's HRHR effort presents unique and sometimes proprietary data about past sites and operations that typically create environmental concerns, but may not show up in current government records searches.

Date of Government Version: N/A
Date Data Arrived at EDR: N/A
Date Made Active in Reports: N/A
Number of Days to Update: N/A

Source: EDR, Inc.
Telephone: N/A
Last EDR Contact: N/A
Next Scheduled EDR Contact: N/A
Data Release Frequency: Varies

EDR RECOVERED GOVERNMENT ARCHIVES

Exclusive Recovered Govt. Archives

RGA PART 201: Recovered Government Archive State Hazardous Waste Facilities List
The EDR Recovered Government Archive State Hazardous Waste database provides a list of SHWS incidents derived from historical databases and includes many records that no longer appear in current government lists. Compiled from Records formerly available from the Department of Environmental Quality in Michigan.

Date of Government Version: N/A
Date Data Arrived at EDR: 07/01/2013
Date Made Active in Reports: 12/24/2013
Number of Days to Update: 176

Source: Department of Environmental Quality
Telephone: N/A
Last EDR Contact: 06/01/2012
Next Scheduled EDR Contact: N/A
Data Release Frequency: Varies

RGA LF: Recovered Government Archive Solid Waste Facilities List
The EDR Recovered Government Archive Landfill database provides a list of landfills derived from historical databases and includes many records that no longer appear in current government lists. Compiled from Records formerly available from the Department of Environmental Quality in Michigan.

Date of Government Version: N/A
Date Data Arrived at EDR: 07/01/2013
Date Made Active in Reports: 01/13/2014
Number of Days to Update: 196

Source: Department of Environmental Quality
Telephone: N/A
Last EDR Contact: 06/01/2012
Next Scheduled EDR Contact: N/A
Data Release Frequency: Varies

RGA LUST: Recovered Government Archive Leaking Underground Storage Tank
The EDR Recovered Government Archive Leaking Underground Storage Tank database provides a list of LUST incidents derived from historical databases and includes many records that no longer appear in current government lists. Compiled from Records formerly available from the Department of Environmental Quality in Michigan.

Date of Government Version: N/A
Date Data Arrived at EDR: 07/01/2013
Date Made Active in Reports: 12/24/2013
Number of Days to Update: 176

Source: Department of Environmental Quality
Telephone: N/A
Last EDR Contact: 06/01/2012
Next Scheduled EDR Contact: N/A
Data Release Frequency: Varies

OTHER DATABASE(S)

Depending on the geographic area covered by this report, the data provided in these specialty databases may or may not be complete. For example, the existence of wetlands information data in a specific report does not mean that all wetlands in the area covered by the report are included. Moreover, the absence of any reported wetlands information does not necessarily mean that wetlands do not exist in the area covered by the report.

CT MANIFEST: Hazardous Waste Manifest Data
Facility and manifest data. Manifest is a document that lists and tracks hazardous waste from the generator through transporters to a tsd facility.

Date of Government Version: 07/30/2013
Date Data Arrived at EDR: 08/19/2013
Date Made Active in Reports: 10/03/2013
Number of Days to Update: 45

Source: Department of Energy & Environmental Protection
Telephone: 860-424-3375
Last EDR Contact: 11/11/2016
Next Scheduled EDR Contact: 02/27/2017
Data Release Frequency: No Update Planned

NJ MANIFEST: Manifest Information
Hazardous waste manifest information.

Date of Government Version: 12/31/2015
Date Data Arrived at EDR: 09/29/2016
Date Made Active in Reports: 01/03/2017
Number of Days to Update: 96

Source: Department of Environmental Protection
Telephone: N/A
Last EDR Contact: 04/11/2017
Next Scheduled EDR Contact: 07/24/2017
Data Release Frequency: Annually

NY MANIFEST: Facility and Manifest Data
Manifest is a document that lists and tracks hazardous waste from the generator through transporters to a TSD facility.

Date of Government Version: 01/30/2017
Date Data Arrived at EDR: 02/01/2017
Date Made Active in Reports: 02/13/2017
Number of Days to Update: 12

Source: Department of Environmental Conservation
Telephone: 518-402-8651
Last EDR Contact: 05/03/2017
Next Scheduled EDR Contact: 08/14/2017
Data Release Frequency: Annually

PA MANIFEST: Manifest Information
Hazardous waste manifest information.

Date of Government Version: 12/31/2015
Date Data Arrived at EDR: 07/22/2016
Date Made Active in Reports: 11/22/2016
Number of Days to Update: 123

Source: Department of Environmental Protection
Telephone: 717-783-8990
Last EDR Contact: 04/18/2017
Next Scheduled EDR Contact: 07/31/2017
Data Release Frequency: Annually

RI MANIFEST: Manifest information
Hazardous waste manifest information

Date of Government Version: 12/31/2013
Date Data Arrived at EDR: 06/19/2015
Date Made Active in Reports: 07/15/2015
Number of Days to Update: 26

Source: Department of Environmental Management
Telephone: 401-222-2797
Last EDR Contact: 02/21/2017
Next Scheduled EDR Contact: 06/05/2017
Data Release Frequency: Annually

WI MANIFEST: Manifest Information
Hazardous waste manifest information.

Date of Government Version: 12/31/2015
Date Data Arrived at EDR: 04/14/2016
Date Made Active in Reports: 06/03/2016
Number of Days to Update: 50

Source: Department of Natural Resources
Telephone: N/A
Last EDR Contact: 03/13/2017
Next Scheduled EDR Contact: 06/26/2017
Data Release Frequency: Annually

Oil/Gas Pipelines
Source: PennWell Corporation
Petroleum Bundle (Crude Oil, Refined Products, Petrochemicals, Gas Liquids (LPG/NGL), and Specialty Gases (Miscellaneous)) N = Natural Gas Bundle (Natural Gas, Gas Liquids (LPG/NGL), and Specialty Gases (Miscellaneous)). This map includes information copyrighted by PennWell Corporation. This information is provided on a best effort basis and PennWell Corporation does not guarantee its accuracy nor warrant its fitness for any particular purpose. Such information has been reprinted with the permission of PennWell.

Electric Power Transmission Line Data
Source: PennWell Corporation
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Sensitive Receptors: There are individuals deemed sensitive receptors due to their fragile immune systems and special sensitivity to environmental discharges. These sensitive receptors typically include the elderly, the sick, and children. While the location of all sensitive receptors cannot be determined, EDR indicates those buildings and facilities - schools, daycares, hospitals, medical centers, and nursing homes - where individuals who are sensitive receptors are likely to be located.

AHA Hospitals:
Source: American Hospital Association, Inc.
Telephone: 312-280-5991
The database includes a listing of hospitals based on the American Hospital Association's annual survey of hospitals.

Medical Centers: Provider of Services Listing
Source: Centers for Medicare & Medicaid Services
Telephone: 410-786-3000
A listing of hospitals with Medicare provider number, produced by Centers of Medicare & Medicaid Services, a federal agency within the U.S. Department of Health and Human Services.

Nursing Homes
Source: National Institutes of Health
Telephone: 301-594-6248
Information on Medicare and Medicaid certified nursing homes in the United States.

Public Schools
Source: National Center for Education Statistics
Telephone: 202-502-7300
The National Center for Education Statistics' primary database on elementary and secondary public education in the United States. It is a comprehensive, annual, national statistical database of all public elementary and secondary schools and school districts, which contains data that are comparable across all states.

Private Schools
Source: National Center for Education Statistics
Telephone: 202-502-7300
The National Center for Education Statistics' primary database on private school locations in the United States.

Daycare Centers: Day Care Centers, Group & Family Homes
Source: Bureau of REgulatory Services
Telephone: 517-373-8300

Flood Zone Data: This data was obtained from the Federal Emergency Management Agency (FEMA). It depicts 100-year and 500-year flood zones as defined by FEMA. It includes the National Flood Hazard Layer (NFHL) which incorporates Flood Insurance Rate Map (FIRM) data and Q3 data from FEMA in areas not covered by NFHL.
Source: FEMA
Telephone: 877-336-2627
Date of Government Version: 2003, 2015

NWI: National Wetlands Inventory. This data, available in select counties across the country, was obtained by EDR in 2002, 2005 and 2010 from the U.S. Fish and Wildlife Service.

State Wetlands Data: Wetlands Inventory
Source: Department of Natural Resources
Telephone: 517-241-2254

Current USGS 7.5 Minute Topographic Map
Source: U.S. Geological Survey

STREET AND ADDRESS INFORMATION

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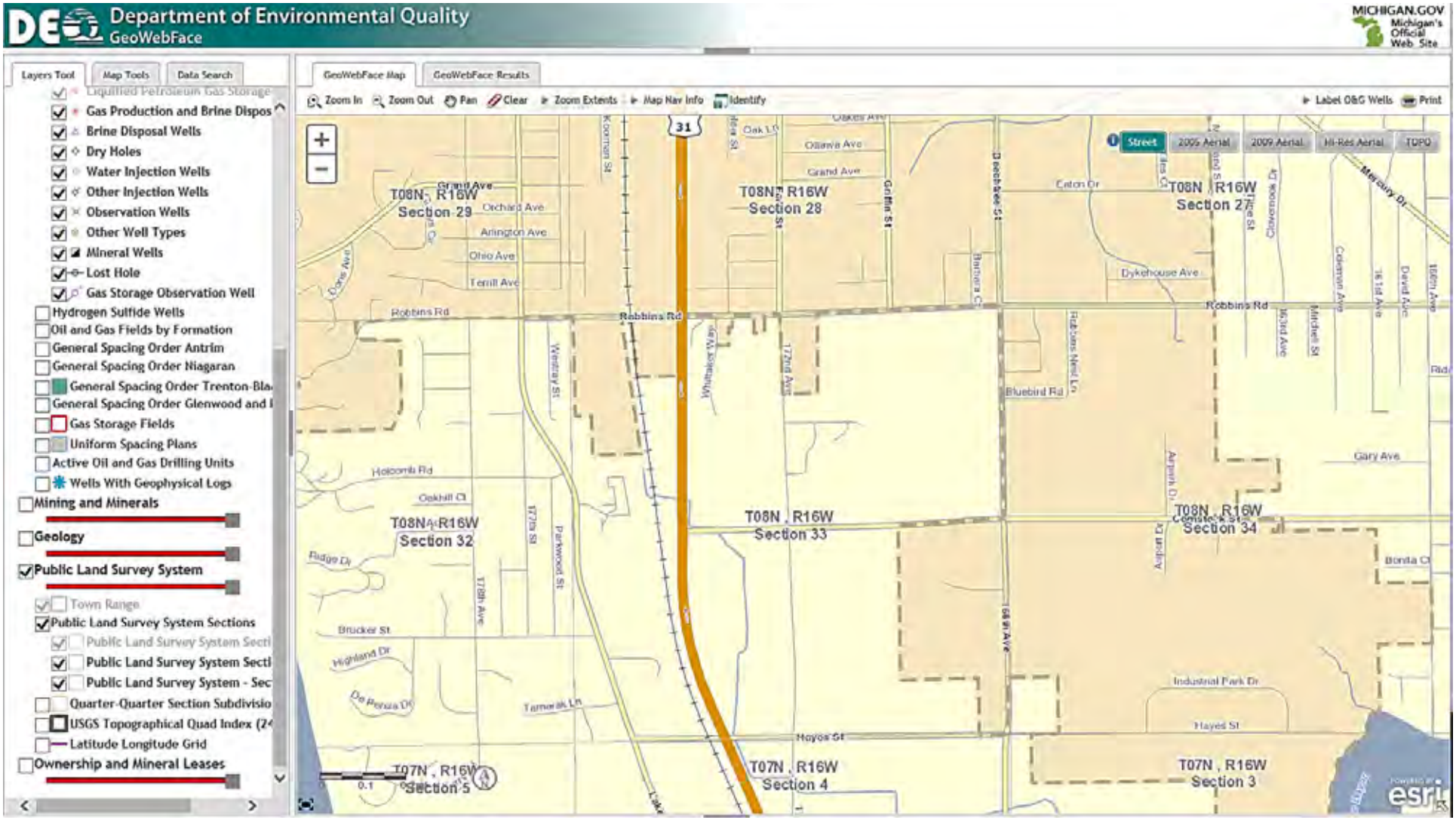
Appendix D

State Governmental Records

Robbins Road Parcels – NE 1/4, Section 33, T08N, R16W, Grand Haven Township, Ottawa County



Obtained online on 05/17/2017 at http://www.deq.state.mi.us/GeoWebFace/#

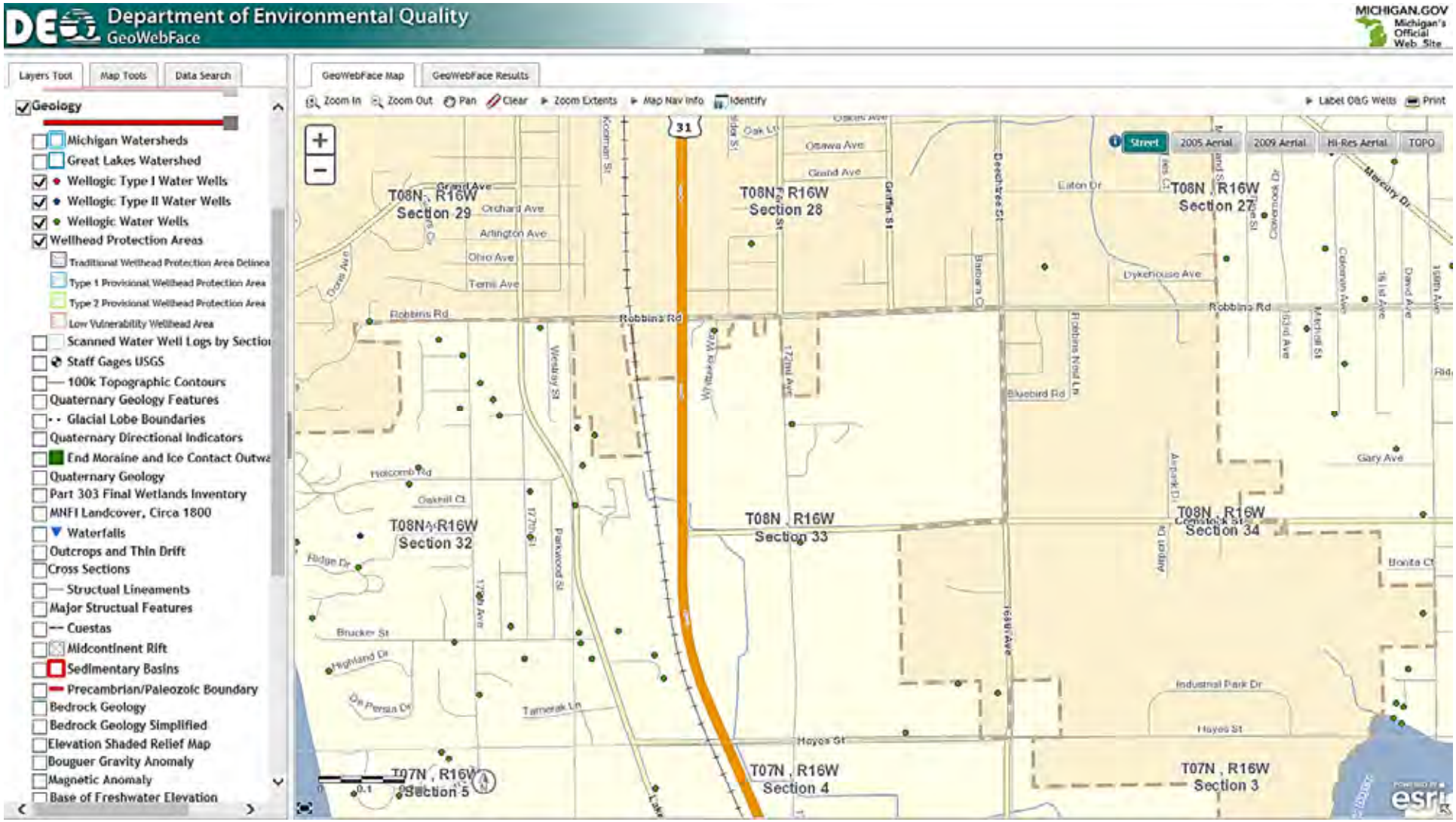
Oil & Gas Map – App. D

Department of Environmental Quality

Inventory of Facilities Search Results

District	Facility ID	BEA Number	Facility Name	Address	County	Township	City	Zip	Latitude	Longitude	Data Source
Grand Rapids		199700317GR	715 Robbins Road	715 Robbins Road	Ottawa	Grand Haven					BEA
Grand Rapids		199700318GR	715 Robbins Road	715 Robbins Road	Ottawa	Grand Haven					BEA
Grand Rapids		200100951GR	715 Robbins Road	715 Robbins Road	Ottawa	Grand Haven					BEA
Grand Rapids	70000518		947 Robbins Road	947 Robbins Road	Ottawa	Grand Haven	Grand Haven	49417			Part 201
Grand Rapids		201203112GR	948 Robbins Road	948 Robbins Road	Ottawa	Grand Haven		49417			BEA
Grand Rapids	70000315		Dake Press Corporation	724 Robbins Road	Ottawa	Grand Haven	Grand Haven	49417	43.04447	-86.22354	Part 201
Grand Rapids	70000350		Robbins Road Hardware	948 Robbins Road	Ottawa	Grand Haven	Grand Haven	49417	43.04445	-86.21905	Part 201

Robbins Road Parcels – NE 1/4, Section 33, T08N, R16W, Grand Haven Township, Ottawa County



Obtained online on 05/17/2017 at http://www.deq.state.mi.us/GeoWebFace/#

Water Well Map – App. D

Department of Environmental Quality
Wellogic System

Wellogic

Michigan.gov
The Official State of Michigan Website

Log In

User ID:
Password:

Log In

Request an Account
Forgot User ID
Forgot Password

Links

DEQ Well Construction Program
Download Wellogic Data
Get Adobe Reader
Get Firefox
DEQ Scanned Well Records (pre-2000)
DEQ Environmental Mapper
View Water Well Records on a Map (GeoWebFace)

Documents

Flowing Wells Handbook
Wellogic 2.0 Start Up Guide
Troubleshooting Guide
Wellogic FAQ
Water Wells Drilled by County & Year
Latitude & Longitude Websites

User Manuals & Training

LHD/SOM User Manual
Contractor User Manual

XML Documentation

XML Upload User Guide
XML Upload Schemas

Version 5059ded6e4a7-P

Welcome

Welcome to Wellogic, the State of Michigan's statewide groundwater database!
If you have any questions or experience problems using Wellogic, please email the Wellogic Help (wellogic@michigan.gov).

Search Water Wells

Basic Information

Search Type: Water Well Records
Well ID:
Permit No: Import ID:

Well Location

County: Ottawa
Township: Grand Haven
Town/Range: 08N 16W Section: 33

Well Address

Street Address:
For best match, enter street name only

Contractor

Registration Number:

Well Owner

Owner Name:
For best match, enter last name only

Well Details

Well Type: Well Use:
Constructed Between: and
Well Depth (ft.): and
Source ID/Well No: WSSN:
Pump Capacity (GPM): and
Plugged Between: and

Database

Created Between: and
Created By User ID:
Created By Group:

Search Reset

Select All

View/Print All Selected

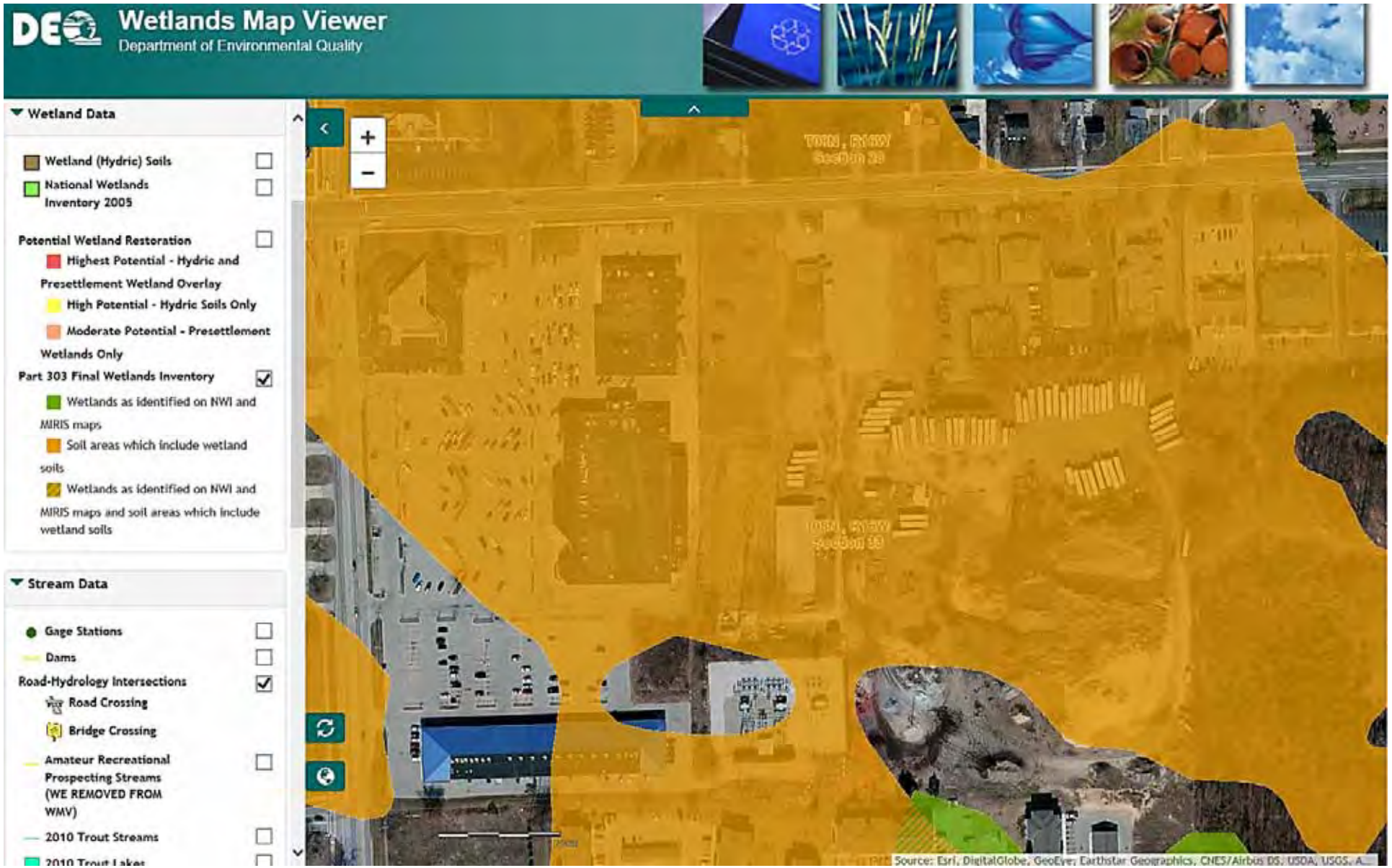
Search Results - 6 Records Returned

	Type	Well ID	County	Well Address	WSSN	Source ID/ Well No.	Township	Section	Well Depth	Static Water Level	Date Constructed	Entered By
☐	WW	70000003023	Ottawa	14525 LAKESHORE			Grand Haven	33	40.00	16.00	6/27/2000	State of Michigan
☐	WW	70000003802	Ottawa	16900 HAYES			Grand Haven	33	229.00	24.00	7/28/2001	State of Michigan
☐	WW	70000003886	Ottawa	16900 HAYES			Grand Haven	33	68.00	20.00	7/27/2001	State of Michigan
☐	WW	70000009722	Ottawa	"0" Westray			Grand Haven	33	60.00	30.00	1/31/2013	Contractor
☐	WW	70000009725	Ottawa	14952 Westray Dr.			Grand Haven	33	58.00	34.00	1/15/2013	Contractor
☐	WW	70000010647	Ottawa	17477 Serenity Ct			Grand Haven	33	41.00	20.00	12/11/2014	Contractor

Select All

View/Print All Selected

Robbins Road Parcels – NE 1/4, Section 33, T08N, R16W, Grand Haven Township, Ottawa County



Obtained online on 05/17/2017 at http://web2.mcgi.state.mi.us/wetlands/mcgiMap.html#

Wetlands Map – App. D

Appendix E

City Directory Search Data

1

City Directory Search Data

Job #	Subject Property Address	Researched By	Date
	17114 Robbins Rd	Kayla P	5/17/17

Prior Street Name	Cross Streets
1205 Robbins Rd	172nd, S. Perry, S Griffin
☒ Polk ☐ Bresser ☐ Other:	Library Lattit District Library GH.

17114 Robbins Rd Bill Tysman Trucking + Snowplowing + Sand + Gravel	2016, 2013, 2007, 2003, 1998, 1993, 1988,
Not Listed	1983, 1958, 1952
1205 Robbins Rd Tysman Residental	1978, 1973
Residental	1968, 1963
17200 Robbins Rd - Kens Super Service	2016, 2013, 2007
Gas + oil station	2003, 1993, 1988
Grocery Store	1998
Not Listed	1983
17222 Robbins Rd - Pizza Hut	2016, 2013, 2007, 2003, 1998, 1993, 1988
Not Listed	1983
17088 Robbins Rd - doc offices	2016, 2013, 2007 2003,
Not Listed	1998, 1993, 1988, 1983
17076 Robbins Rd - Animal doc	2016, 2013, 2007 2003, 1998
Not Listed	1993

2

City Directory Search Data

Job #	Subject Property Address	Researched By	Date
			5/17/17

Prior Street Name	Cross Streets
☐ Polk ☐ Bresser ☐ Other:	Library

17040, 17064 Robbins Rd DCCA Bank	2016, 2013, 2007 2003, 1998, 1993 1988, 1983
1700 Griffin - School	2016, 2013, 2007 2003, 1998, 1993 1988, 1983, 1978 1973
1705 + 1707 Griffin - Residential	2016, 2013, 2007 2003, 1998, 1993 1988, 1983, 1978 1973
17120 Robbins Rd Hair Cut Not Listed	2007, 2003 1998, 1993 1988 1983,
17008 Robbins Rd - True Value Homes - mobile Home repair Not Listed	1993, 1988 1983

3

City Directory Search Data

Job #	Subject Property Address	Researched By	Date
			5/17/17

Prior Street Name	Cross Streets

☐ Polk ☐ Bresser ☐ Other:

Library

17150 + 17170 Robbins Rd Store Plaza + Grocery Store	1988, 1983,
Robbins Rd- Renumbered between 1978 + 1983	
Residential dwellings around SP	1978, 1973, 1963
Nothing listed on Robbins	1958 + 1952
Timber View Apts	2016, 2013, 2007 2003

hours 9-5:45

407 Columbus Ave Grand Haven MI 49417

Pg 1

City Directory Search Data

Job #	Subject Property Address	Researched By	Date
	15133 172nd + 17114 Robbins	Kaufer	7/25/14

Prior Street Name	Cross Streets
	172nd Ave + Robbins Road
☒ Polk ☐ Bresser ☐ Other:	Library Loutit Library Grand Haven

SP	15133 172nd Avenue Storage Units	2013 - Not listed
	-properties on 172nd Gym, Fitness centers	2013, 2007
SP	17114 Robbins Road Bill Tysman Companies/Trucking/Snowplowing Sand	2013
	17200 Robbins Road Dish Network	2013
	17222 Pizza Hut	
	17088-17034 - Doctor office + Banks	2013
2007	15133 172nd Avenue - Not listed	
	17114 Robbins Road - Bill Tysman mobel Storage + Trucking + Snowplowing	
	17088-17034 Robbins Road - Bank, Doc offices, Vet	
	Robbins Road	
	17200 - Kens Super Service Inc - gastal	
	17222 - Pizza Hut	
	17250 - Painting Express	
	17256 - Lakeshore Auto Supply + Napa Auto Parts	
2003	15133 172nd Not listed Gym, Fitness Center	
	17114 Robbins Bill Tysman mobile Storage	
	17088-17034 Robbins - Res, Vet, DOC, Bank	
	17200 Robbins - Kens Super service Inc	
	17222 Robbins - Pizza Hut	
	17250 - Robbins Painting Express	
	17256 - Lake Shore Auto Supply + Napa Auto parts	
	17270 - Robbins Port city paint	

City Directory Search Data

Job #	Subject Property Address	Researched By	Date
	15133 172nd + 17114 Robbins	Kayla	7/25/14

Prior Street Name	Cross Streets

☒ Polk ☐ Bresser ☐ Other:

Library Lastit Lib. Grand Haven

1998
15133 172nd - Not listed
15163 172nd Dr. Lube Auto services
17114 Robbins Road - Tysman Snow plow
17076-17000 Robbins Road. Vet, Res. Docs
17200 Robbins Road - Cindys food mart
17222 Robbins Road Pizza Hut
17256 Robbins Road - Parts Plus Auto Supply
17268 Robbins Road Port City paint

1993
15133 172nd Not listed
- Nothing listed N or S of Robbins & Robbins not listed)
17114 Robbins & Bill Tysman Snowplowing + mobile Storage
17108-17000 - Comercial buildings + Res
17200 Robbins Road - Frontier Mart
17222 Robbins Rd - Pizza Hut
17268 Port City Paint

1988
15133 172nd - Not listed
Adjacant & See 1993
17114 Robbins - See 1993
17108-17000 Robbins - See 1993
17150 - S. Village Plaza → Various commercial
17170 - D+W
17200 - See 1993
17222 - See 1993
17256 - See 1993
17230 - Soil Conservation Serv.

1983
15133 - See 1993 for SP + Adjacent
17114 - Not listed
17150 - South Village Plaza - Commercial
17170 D+W
17000 - Robbins Ct. Professional → Doc + Dentists
17200 - See 1993
17222 - See 1993
17230 - Agriculture Stabilization
17268 - Port City paint

City Directory Search Data

Job #	Subject Property Address	Researched By	Date

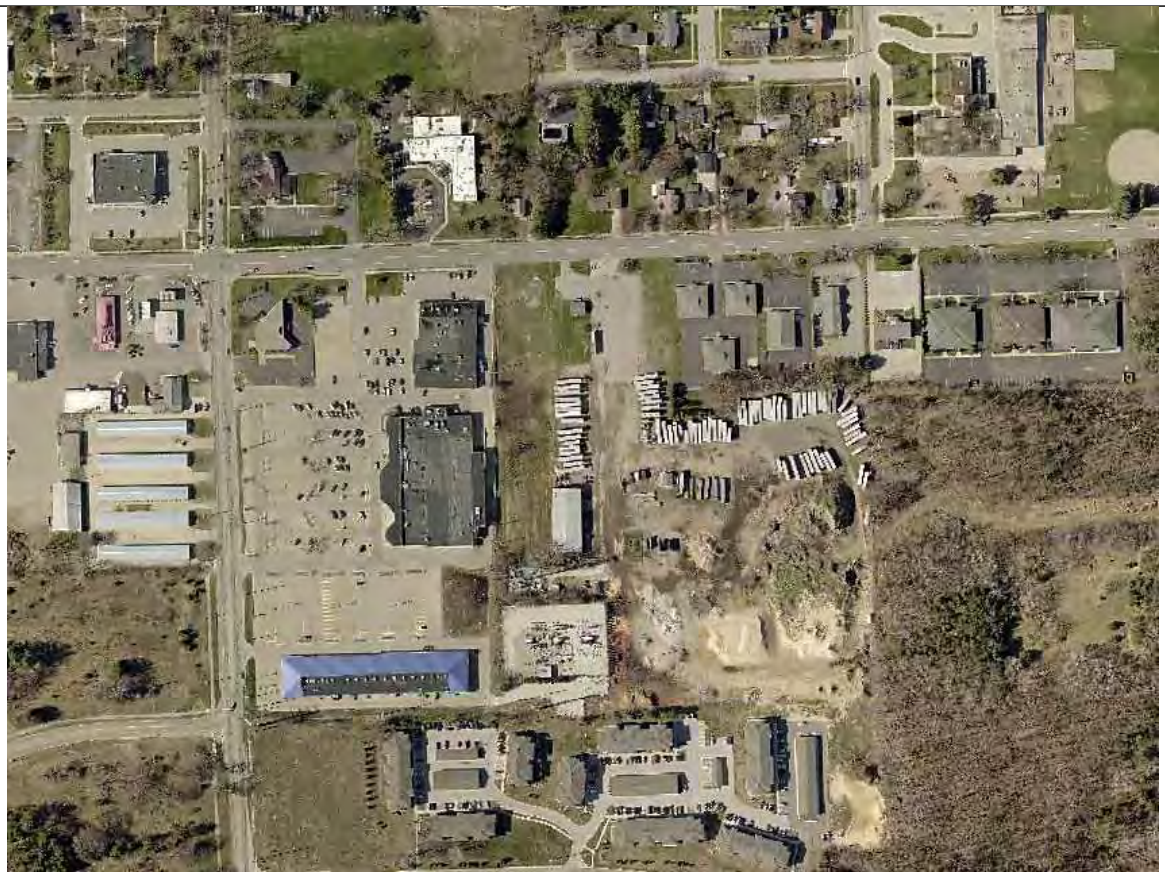
Prior Street Name	Cross Streets
☐ Polk ☐ Bresser ☐ Other:	Library

1978	172nd Avenue - Not listed 1205 - Robbins - Tysman (Wm J) - Residential Etc
1973	172nd see 1978 1205 Robbins - Tysman Wm J
1968	172nd Avenue - Not listed 1205 Robbins Road - Semeas 1978
1963	172nd Not listed 1205 - Robbins - see 1978
1958	172nd - Not listed No - William Tysman listed
1952	172nd Not listed see 1958 for Robbins

Appendix F

Historical Aerial Photographs

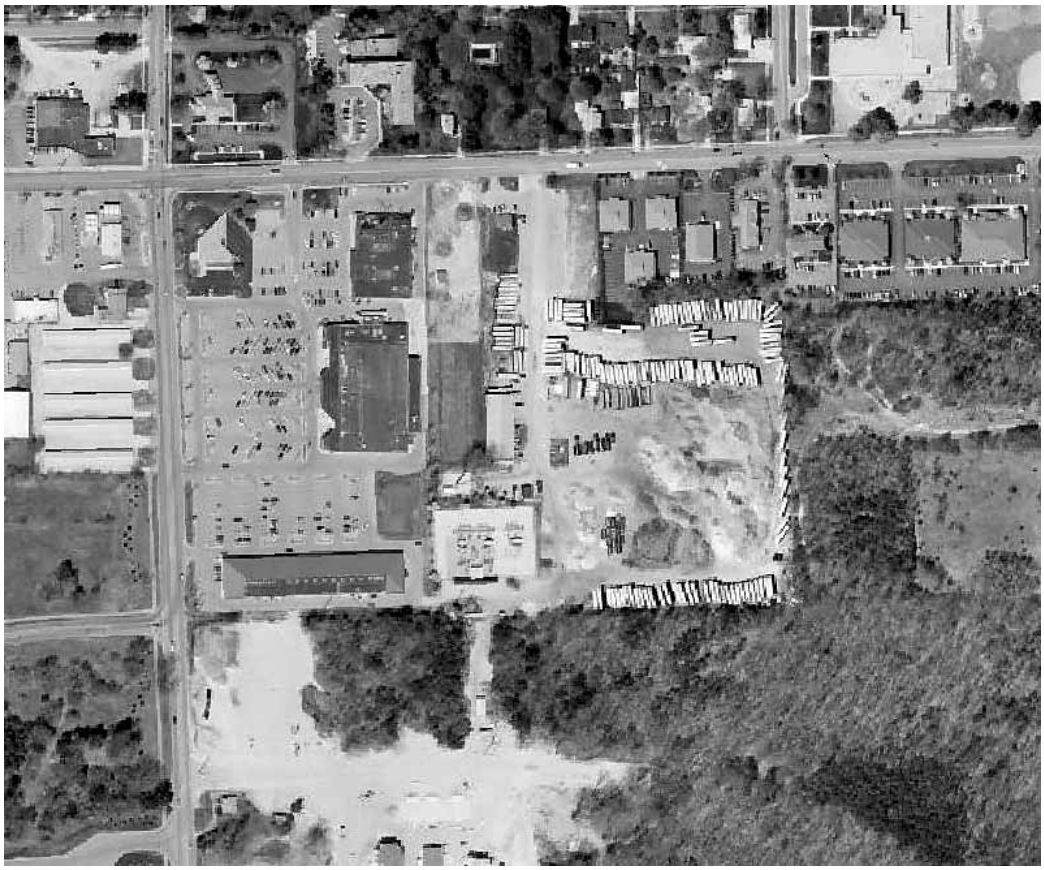
2014 Aerial – Ottawa County GIS online maps



2008 Aerial – Ottawa County GIS online maps

Section 33, T08N, R16W	Westshore Consulting – 05/17/2017

2004 Aerial – Ottawa County GIS online maps



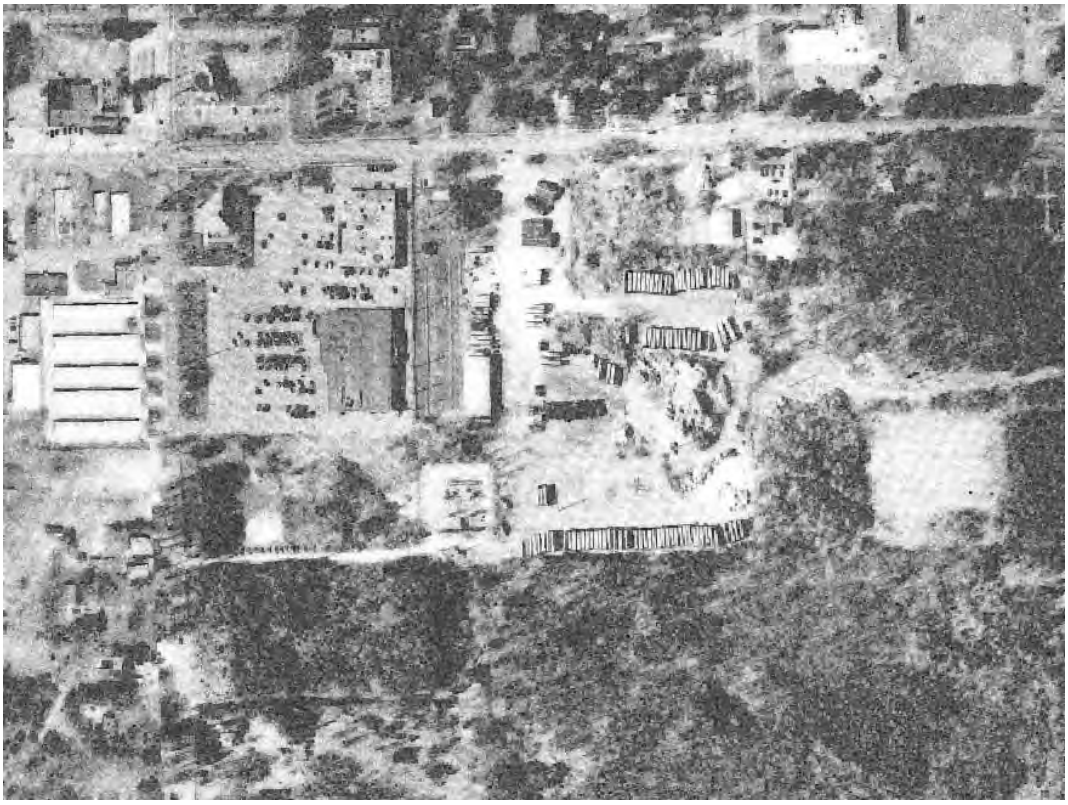
1999 Aerial – Ottawa County GIS online maps

Section 33, T08N, R16W

Westshore Consulting – 05/17/2017

1997 Aerial – Microsoft Terraserver online maps

1994 Aerial – Ottawa County GIS online maps



Section 33, T08N, R16W	Westshore Consulting – 05/17/2017

1981 Aerial – Westshore Consulting

1938 Aerial – Westshore Consulting

Section 33, T08N, R16W	Westshore Consulting – 05/17/2017

Appendix G

Interview Documentation

ENVIRONMENTAL ASSESSMENT QUESTIONNAIRE

BY: OWNER OR SELLER

Instructions: This questionnaire provides information relevant to the environmental site assessment Westshore is completing for a property. Please provide legible responses to the best of your ability, sign and date the last page, and return to Westshore. Do not hesitate to call 231-777-3447 if you need clarification or have any questions. Please be sure to complete all questions and do not leave any of them blank

Project Name: 17114 ROBBINS ROAD

Date: MAY 12, 2017

Name of Person completing questionnaire (please print): CHAD BUSH
Title: OWNER
Firm: TYSMAN COMPANIES, LLC
Phone No.: 616.842.6450
Address: 17114 ROBBINS ROAD
GRAND HAVEN, MI 49417

Relationship to the Subject Property: OWNER
Period of Acquaintance with the Subject Property: FEB 2016 – present

1. Is there an existing abstract of title available for the study site (Yes) No

   If yes, please attach copies. SEE ATTACHED

2. Under what type of instrument is the title recorded:

   TRUSTEE'S DEED

3. Please list all parties who have a proprietary interest in the Subject Property:

   CHAD D BUSH

4. Are there currently, or have there been previously, any environmental liens or governmental notifications relating to past or recurrent violations of environmental laws with respect to the Subject Property or any facility located on the Subject Property? Yes (No)

   If yes, please elaborate:

5. Has the Subject Property been split or divided within the last 10 years? Yes No NOT to my knowledge

If yes, please elaborate:

6. What is the current municipal zoning designation for the Subject Property?
C-1 (COMMERCIAL) 4 PARCELS: 200-007, 200-035, 200-056, 200-077
I-1 (INDUSTRIAL) ... 1 PARCEL: 200-070

7. Is the Subject Property or any adjoining property used for industrial use? Yes No

If yes, please elaborate:

Subject Property: OUTSIDE STORAGE OF SOIL, MULCH, AND OTHER LANDSCAPING MATERIALS PARKING TRUCK TRAILERS, TRUCKING

Adjoining Properties - North: N/A

South: N/A

East: N/A

West: ELECTRICAL SUBSTATION OWNED BY GRAND HAVEN BLP
ALSO, CELL TOWER OWNED BY TOWERCO, INC.

8. To the best of your knowledge, has the Subject Property or adjoining property been used for industrial purposes in the past? Yes No

If yes, please elaborate:
SEE ABOVE

9. Is the Subject Property or any adjoining property used as a gasoline station; motor repair facility; commercial printing facility; dry cleaners; photo developing laboratory; junkyard or landfill; or as a waste treatment, storage, disposal, processing, or recycling facility? Yes No ABOVE GROUND GAS TANK USED TO FUEL TRUCKS & LOADERS

If yes, please elaborate:

10. Has the owner or occupant of the Subject Property been informed of the past or current existence of hazardous substances, petroleum products, or environmental violations with respect to the Subject Property or any facility located on the Subject Property? Yes N/A EXISTING ABOVE GROUND FUEL TANK IN USE ON THE PROPERTY.

If yes, please elaborate:

11. Are there any easements known to exist in connection with the Subject Property? Yes No

If yes, please elaborate:
REFER TO TITLE WORK

12. Does the Subject Property lie within a designated flood plain as outlined by FEMA, HUD, or any other governmental agency? Yes No

13. Has any part of the Subject Property ever been flooded with more than one inch of water? Yes No

If yes, please elaborate:

14. Describe the present and previous use of the Subject Property as far back chronologically as possible. Use the reverse side of this questionnaire if necessary.

	Owner	Use	Dates
Present Use of Subject Property	CHAD D. BUSH	LANDSCAPE MATERIALS, TRUCKING,	FEB 2016 - PRESENT
Previous Use of Subject Property	BILL TYSMAN	+ STORAGE	1970 - 2016
Previous Use of Subject Property:			
Previous Use of Subject Property			

15. Are there any pesticides, automotive or industrial batteries, paints, or other chemicals stored or used on the Subject Property or at the facility, other than undamaged containers or consumer products of under five gallons in total volume? Yes ~~No~~ ABOVE GROUND FUEL TANK IN USE ON PROPERTY

If yes, please list them

16. Are there currently, or to the best of your knowledge have there previously been, any industrial drums (typically 55 gallons) or sacks of chemicals located on the Subject Property or any facility on the Subject Property?

Yes No

If yes, please elaborate:

17. Was there ever a chemical or petroleum spill or leak on the Subject Property? Yes No

If so, please elaborate and describe the cleanup results:

18. Has fill dirt ever been brought onto the Subject Property? Yes No

If yes, when was it brought on site? EVERY YEAR FOR THE LAST 50 YEARS

Why? RESALE

19. Have any construction debris, substances identified as hazardous, unidentified waste materials, tires, automotive or industrial batteries, or any other waste materials been dumped above grade, buried, and/or burned on the Subject Property? Yes No

If yes, please elaborate:

20. Are there any pits, ponds, or lagoons located on the Subject Property? Yes No

If yes, are any of these pits, ponds, or lagoons connected with waste treatment or waste disposal? Yes No

If yes, please elaborate:

21. Is there any obvious stained soil on the Subject Property? Yes No

If yes, please elaborate:

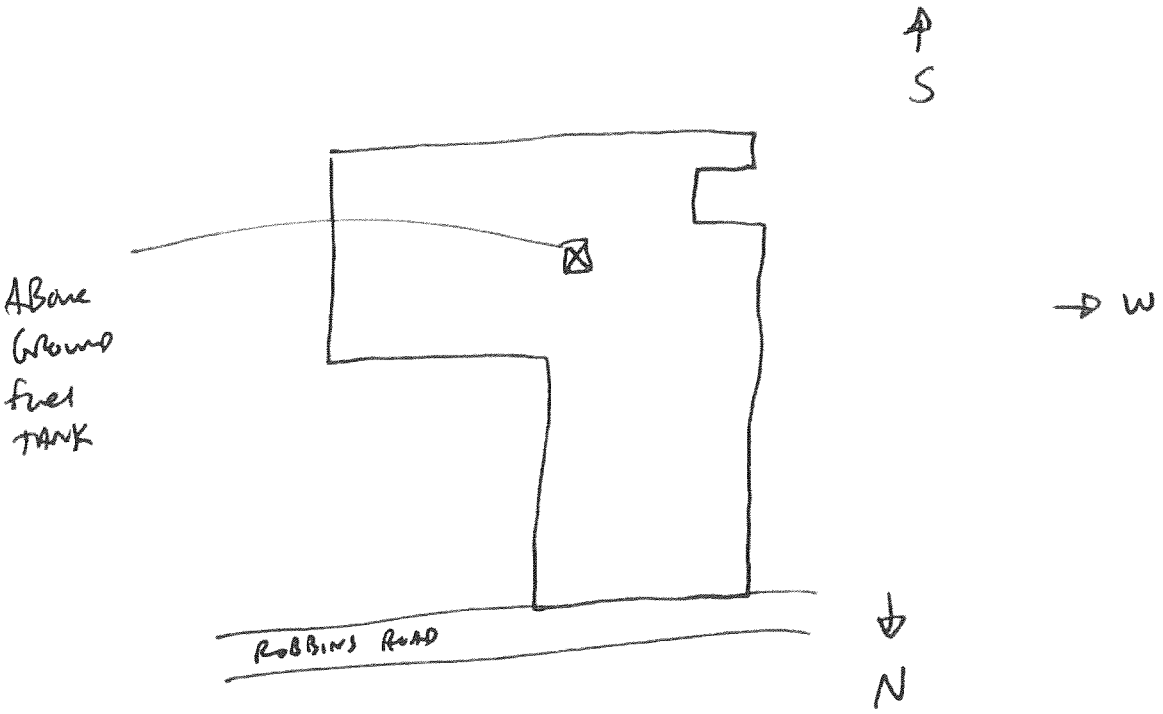
22. Is there any storage tanks (aboveground or underground) located on the Subject Property? Yes No

If yes, please describe contents, period of use, and current status: fuel tank Above Grade in use to fuel trucks & Loaders

23. Have any tanks ever been removed from the Subject Property? Yes No

If yes, please elaborate: Not to my knowledge

Please make a sketch of the location of any present or former tanks. Please include information on the size, contents, approximate age of tanks now or at the time of removal, and the condition of the tanks when removed.



24. Is there any vent pipes protruding from the ground at the Subject Property or adjacent to any structure located on the Subject Property? Yes No

If yes, please elaborate:

25. Are there, or were there, aboveground or underground storage tanks located on adjacent properties? Yes No

If yes, please describe contents, period of use, and current status: Not to my Knowledge

26. Has there ever been a fire on or at the Subject Property? Yes No Not to my Knowledge

If yes, please describe:

27. Are there any floors or walls located on the Subject Property that are stained by substances other than water? Yes ~~No~~

If yes, please explain: TRUCK oil leaks in INDUSTRIAL Storage Building

28. If the Subject Property or facility contains drains, where are they and where do they discharge?
Drain in center of property that discharges North - Do not have Confirmation of this, only what I was told by Prior owner.

29. Are there any opened or damaged containers labeled as containing hazardous substances, petroleum products, or unidentified materials or waste located on the Subject Property or at the facility? Yes No

If yes, please elaborate:

30. What type of fuel is used for heating purposes at the Subject Property? NATURAL GAS

31. Does the Subject Property use an on-site water well? Yes No

If yes, has the water ever been tested? Yes No

Are there any analytical records available? Yes No

32. If the Subject Property is served by a private well or non-public water system, have contaminants been identified in the well or system that exceed guidelines applicable to the water system or has the well been designated as contaminated by any government environmental/health agency? Yes No

If yes, please elaborate:

33. Does the Subject Property use an on-site septic system? Yes No Located Behind front office building

34. Does the Subject Property discharge waste water on or adjacent to the Subject Property? Yes No

If yes, please elaborate:

35. Is there an electrical transformer on the Subject Property? Yes No NOT ON THE SUBJECT Property But THE SUBSTATION IS Adjacent to THE SUBJECT.

If yes, where is it? CONSUMERS ENERGY ELECTRICAL LINES RUN ACROSS THE SOUTHERNMOST PARCEL

36. Were asbestos-containing materials ever used on the Subject Property? Yes No Not to my knowledge

If yes, has an asbestos survey been accomplished? Yes No Not to my knowledge

If yes, is there an asbestos survey report available for review? Yes No

37. Regarding on-site operations were any state, local, or federal permits required? Yes No

If yes, describe the permits:

38. Regarding on-site operations, were any environmental compliance records required, such as waste manifests, environmental reports, or communication with state or federal agencies involving hazardous waste? Yes No

If yes, please describe:

39. To the best of your knowledge, are any, or have there ever been any, chemical inventories maintained on the Subject Property or facility? Yes No

If yes, who was responsible for maintaining these inventories?

40. Are there any environmental problems that you are aware of or suspect on adjacent properties? Yes No

If yes, please describe:

41. To the best of your knowledge, have there ever been any environmental site assessments of the Subject Property or facility? Yes No

If yes, did any of the assessments indicate the presence of hazardous substances or petroleum products on, or contamination of, the Subject Property? Yes No

If yes, please elaborate: Report Completed on INDUSTRIAL PARCEL ON SOUTH END of property. NO ISSUES.

42. If any environmental assessments were conducted for the Subject Property, did any of the assessments recommend further action be taken? Yes No

If yes, please elaborate:

43. Are there any environmental problems that you are aware of or suspect at the Subject Property? Yes/No

If yes, please elaborate:

44. To the best of your knowledge, are there any past, threatened, or pending lawsuits or administrative proceedings concerning a release or threatened release of any hazardous substance or petroleum products involving the Subject Property? Yes/No

If yes, please elaborate:

Preparer's Certification

I represent that to the best of my knowledge, the above statements and facts are true and correct, and to the best of my knowledge, no material facts have been suppressed or misstated.

Preparer's Name (please print or type) CHAD BUSH

Preparer's Signature Date 5/11/2017

WESTSHORE
ENGINEERING & SURVEYING
ENVIRONMENTAL

2534 Black Creek Road · Muskegon, MI 49444
Ph: (231) 777-3447 · Fx: (231) 773-3453

June 4, 2018 ***Sent Via Email Only***

Mr. Ben Robbins
Tysman Companies, LLC
c/o Main Street Capital Group
18000 Cove Street, Suite 201
Spring Lake, MI 49456

Re: Phase II Environmental Site Assment for Lakeshore Gardens PUD – Former Tysman Trucking, 17114 Robbins Road, Grand Haven, Michigan

Dear Mr. Robbins:

Westshore completed Phase II Environmental Site Assessment (Phase II ESA) soil and groundwater sampling at the former aboveground storage tank (AST) area at the 17114 Robbins Road property in Grand Haven, Michigan (the "Subject Property"). Westshore has received the analytical results for the samples collected. The results of the sampling is summarized below.

Scope of Work

Westshore completed soil and groundwater sampling at the former AST area on May 2, 2018. The samples were collected in the former AST area. A total of four (4) borings were conducted via hand auger methodology to the depth of the water table. Soil samples were collected from each boring in the depth interval exhibiting the highest field screening results from a photo ionization detector (PID) or by visual or olfactory indication. The approximate sample locations are depicted on the attached Figure 1.

In each of two (2) of the soil borings, a temporary groundwater monitoring well was installed, and water samples were collected from each temporary monitoring well. The soil and groundwater samples were submitted to Trace Analytical Laboratories in Muskegon Michigan for analyses of gasoline and diesel fuel indicator parameters.

The groundwater table or the top of the first water bearing unit was located at approximately 2.0 feet below ground surface (bgs). The soils were comprised generally of medium sized brown sand, with a black organic matter layer detected in some of the borings.

The attached Table 1 and Table 2 depict the analytical results for each sample collected. As can be seen on the tables, one (1) soil sample (SB-3) and one groundwater sample (TMW-1/SB-1) had concentrations of volatile organic gasoline indicator parameters in them above Generic Residential Clean-up Criteria (GRCC) or the media specific volatilization to indoor air interim action screening levels. No diesel fuel semi-volatile organic indicator parameters were detected in any of the samples.

Based on the findings of the May 2, 2018, an additional eleven (11) borings were conducted on May 31, 2018 outward or away from the two (2) locations where contamination was identified (i.e., step out borings). This was conducted to attempt to define the approximate horizontal extent of both the soil and groundwater contamination. To expedite the approximate delineation

of the identified soil and groundwater contamination, additional step out borings were conducted at the customer's request as opposed to conducting a limited number of step out borings and waiting to obtain the analytical results.

Findings

The groundwater table or the top of the first water bearing unit is located at approximately 2.0 feet bgs. The soils were comprised generally of medium sized brown sand, with a black organic matter layer detected in some of the borings.

An area is depicted on Figure 1 west of the former AST area where samples could not be obtained utilizing hand methodology. This area had several layers of concrete and asphalt on it (i.e. former driveway). As can be seen on the diagram, borings were stepped out further west until no obstructions were encountered.

Table 1 and Table 2 depict the soil and groundwater analytical results, respectively, for each sample collected. As can be seen on the tables, one (1) soil sample (SB-3) and one groundwater sample (TMW-1/SB-1) collected during the initial Phase II ESA sampling had concentrations of volatile organic gasoline indicator parameters in them above GRCC or the media specific volatilization to indoor air interim action screening levels. No diesel fuel semi-volatile organic indicator parameters were detected in any of the samples. The soil and groundwater samples collected on May 31, 2018 all showed non-detectable concentrations of the gasoline indicator parameters.

Figure 1 depicts the approximate horizontal extents of the soil and groundwater impact. As can be seen on Figure 1 the area immediately west of the former AST area may be impacted. Based on the sampling results the dashed line traversing through this area is the approximation or interpolation of the horizontal impact.

Conclusions

Two rounds of soil and groundwater sampling were conducted, one on May 2, 2018 and one on May 31, 2018, to address the *recognized environmental condition* (*REC*) noted in the Phase I Environmental Site Assessment (Phase I ESA) conducted for the Subject Property on June 5, 2017 (i.e., the AST area).

This limited investigation followed accepted professional and industry standards, and the policies of the Michigan Department of Environmental Quality (MDEQ).

Subsequent to the June 5, 2017 Phase I ESA, the ASTs and concrete pad below them were removed by the operators of the Subject Property. The soil and groundwater samples described above were collected from the former AST area.

The soil and groundwater sampling detected gasoline impact to both the soil and groundwater in a very limited area. The sampling conducted delineated the approximate horizontal extent of contamination. The horizontal extents are depicted on Figure 1. The vertical extent of the soil contamination was defined (i.e., from approximately the ground surface to the top of the first water bearing unit).

The vertical extent of the groundwater impact was not defined; however, typically hydrocarbon releases only impact the upper portion of the first water bearing unit or aquifer (i.e., gasoline is lighter than water). Working knowledge of the geology and hydrogeology in the Subject Property area determines that the probability of this not being the case is unlikely.

The identified contamination is limited in mass and volume. No exposure pathways to humans and/or flora/fauna are currently complete and none are expected to be complete in the future based on future intended use of the Subject Property. The only exposure pathway that appears to be potentially complete would be the volatilization to indoor air pathway; if a building were to be built directly on top of the contamination or within 6.0 feet horizontally from the contaminated soil and/or groundwater. This appears unlikely due to the proposed site plan.

Additional sampling immediately west of the former AST area where obstructions were encountered will further define the horizontal extent (i.e., define it smaller). One groundwater sample collected from deeper in the first water bearing unit will be required to confirm that no impact extends deep.

The impacted soil can be excavated and disposed of in a landfill or can be left in place with proper institutional controls (i.e., a Declartion of Restrictive Covenant (DRC) placed on the deed of the Subject Property). The DRC would require that the soils be managed if excavated and would limit building above the soils or immediately adjacent (within 6.0 feet).

Although it appears unlikey, the groundwater will need to be monitored to determine that impact is not migrating via groundwater flow. This will require the installation of several permanent groundwater monitoring wells, with samples collected on a quarterly basis for approximately 1-year. Once the groundwater impact is confirmed to not be migrating, the impact can be left in place utilizing a DRC limiting the groundwater use in that area (i.e., no irrigating, and no drinking), and would limit building above that water or immediately adjacent. If groundwater contamination is determined to be migrating significantly then remedial actions would be warranted.

The DRC would allow for a building to be built on top or immediately adjacent (i.e., less than 6.0 feet) to the impacted areas if a vapor mitigation system is installed (i.e., sub slab ventilation and sealed floor).

Westshore appreciates the opportunity to assist you with this project, please call me at 231-777-3447 if you have any questions or wish to discuss this investigation further.

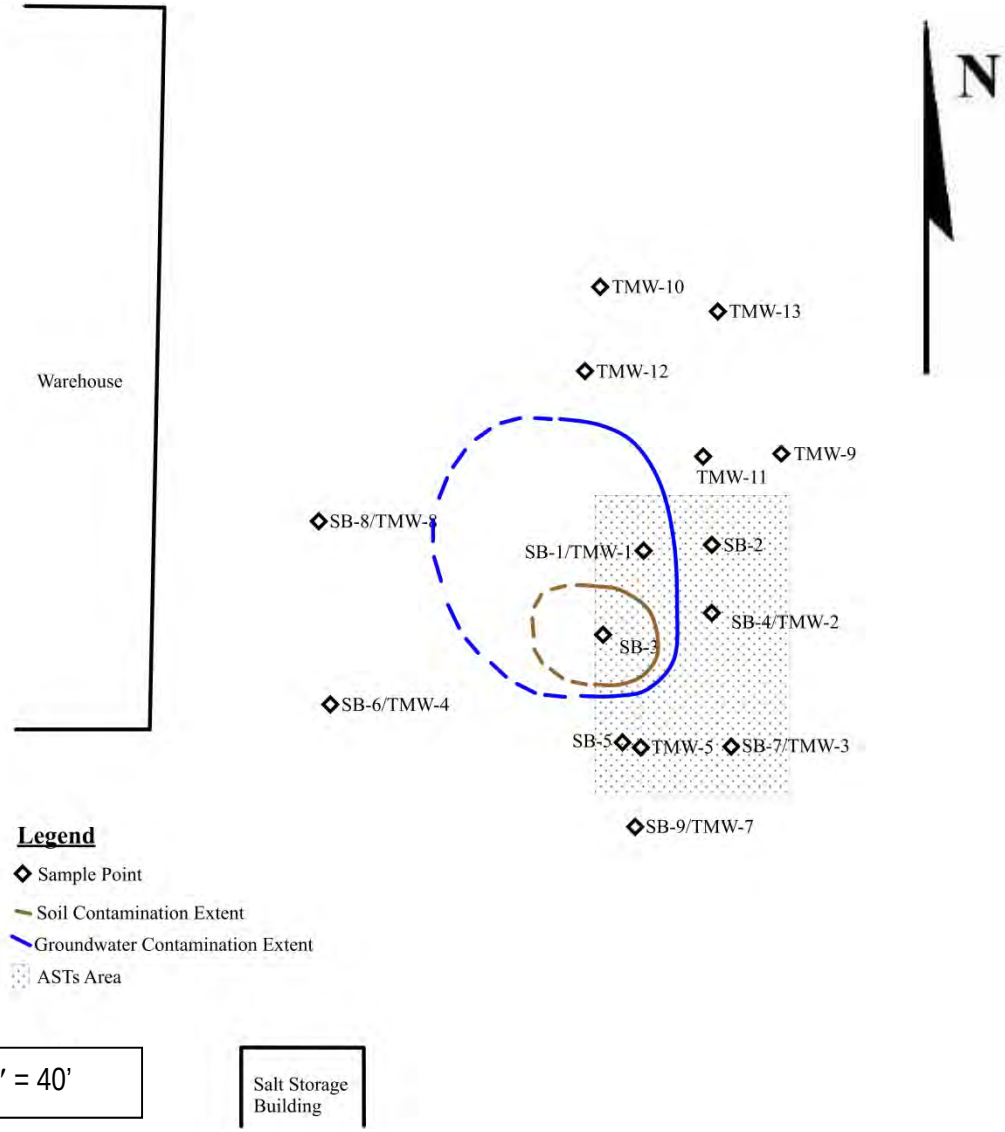
Sincerely,

WESTSHORE CONSULTING

Roger A. Bour
Senior Project Manager

RAB/jlg/03513-0017

Figure 1 – Sample Location Map
Table 1 – Soil Analytical Results
Table 2 – Groundwater Analytical Results
Laboratory Reports



Scale: 1″ = 40’

COUNTY OF OTTAWA, GRAND HAVEN TOWNSHIP, NORTHEAST 1/4, SECTION 33, T08N, R16W ~ GIS Aerial Photograph Parcel Map obtained from Ottawa County GIS online mapping

WESTSHORE ENGINEERING & SURVEYING ENVIRONMENTAL	*Client:* Tysman Companies	**SAMPLE LOCATION MAP**	*Checked:* RAB
			Date: 06/04/18
			Drawn by: JLG
	Site: Sampling at 17114 Robbins Road, Grand Haven Township, Ottawa County, Michigan		*Date:* 06/04/18
www.WestshoreConsulting.com *(800) 968-2864*			*File No.:* 03513-0017
			Figure: **1**

Table 1 ~ Soil Analytical Results
Five Parcels of land located along Robbins Road in Grand Haven Township, Ottawa County, Michigan

Constituent	Chemical Abstract Service Number (CAS #)	Statewide Default Background Levels	Residential - Part 201 Generic Cleanup Criteria								Media-Specific Volatilization to Indoor Air Interim Action Screening Levels		SB-1	SB-2	SB-3	SB-4	SB-5
			Drinking Water Protection Criteria	Groundwater Surface Water Interface Protection Criteria	Soil Volatilization to Indoor Air Inhalation	Infinite Source Volatile Soil Inhalation Criteria (VSIC)	Finite VSIC for 2 Meter Source Thickness	Particulate Soil Inhalation Criteria	Direct Contact Criteria	Soil Saturation Concentration Screening Levels (Csat)	Soil Residential RIASL	Soil Nonresidential RIASL	1.5-2.0'	1.7-2.2'	1.5-2.0'	1.3-1.8'	1.5-2.0'
													05/02/18	05/02/18	05/02/18	05/02/18	05/31/18
Volatile Organic Compounds (VOCs)																	
VOC Analysis Date													05/05/18	05/05/18	05/08/18	05/08/18	05/31/18
VOC Analysis Method													8260C	8260C	8260C	8260C	8260C
Dichlorodifluoromethane	75718	NA	95,000	ID	900,000	53,000,000	1,400,000,000	3,300,000,000,000	52,000,000	1,000,000	NC	NC	<250	<250	<250	<250	*NT*
Chloromethane	74873	NA	5,200	ID	2,300	40,000	1,000,000	4,900,000,000	1,600,000	1,100,000	6.9 (M)	31 (M)	<250	<250	<250	<250	*NT*
Vinyl Chloride	75014	NA	40	260 {X}	270	4,200	73,000	350,000,000	3,800	490,000	0.082 (M)	2.0 (M)	<40	<40	<46	<40	*NT*
Bromomethane	74839	NA	200	700	860	11,000	140,000	330,000,000	320,000	2,200,000	NC	NC	<200	<200	<200	<200	*NT*
Chloroethane	75003	NA	8,600	22,000 {X}	2,900,000	30,000,000	280,000,000	670,000,000,000	2,600,000	950,000	330	1,500	<250	<250	<250	<250	*NT*
Trichlorofluoromethane	75694	NA	52,000	NA	2,800,000	92,000,000	1,500,000,000	3,800,000,000,000	79,000,000	560,000	NC	NC	<100	<100	<100	<100	*NT*
Diethyl ether	60297	NA	200	ID	28,000,000	85,000,000	340,000,000	800,000,000,000	110,000,000	7,400,000	NC	NC	<200	<200	<230	<200	*NT*
Tert-butyl alcohol	75650	NA	78,000	NA	310,000,000	97,000,000	200,000,000	130,000,000,000	120,000,000	110,000,000	NC	NC	<2,500	<2,500	<2,900	<2,500	*NT*
1,1-Dichloroethylene	75354	NA	140	2,600	62	1,100	13,000	62,000,000	200,000	570,000	12 (M)	54	<50	<50	<58	<50	*NT*
Acetone	67641	NA	15,000	34,000	290,000,000	130,000,000	190,000,000	390,000,000,000	23,000,000	110,000,000	260,000	780,000	<1,000	<1,000	<1,000	<1,000	*NT*
Iodomethane	74884	NA	NC	NC	NC	NC	NC	NC	NC	NC	NC	NC	<100	<100	<100	<100	*NT*
Carbon disulfide	75150	NA	16,000	ID	76,000	1,300,000	19,000,000	47,000,000,000	7,200,000	280,000	NC	NC	<250	<250	<290	<250	*NT*
Methyl t-butyl ether (MTBE)	1634044	NA	800	140,000 {X}	9,900,000	25,000,000	87,000,000	200,000,000,000	1,500,000	5,900,000	74 (M)	520	<250	<250	<290	<250	<250
Methylene chloride	75092	NA	100	30,000 {X}	45,000	210,000	1,400,000	6,600,000,000	1,300,000	2,300,000	130	570	<250	<250	<250	<250	*NT*
Acrylonitrile	107131	NA	100	100	6,600	5,000	10,000	46,000,000	16,000	8,300,000	NC	NC	<100	<100	<120	<100	*NT*
trans-1,2-Dichloroethene	156605	NA	2,000	30,000 {X}	23,000	280,000	2,000,000	4,700,000,000	3,800,000	1,400,000	39 (M)	340	<50	<50	<58	<50	*NT*
1,1-Dichloroethane	75343	NA	18,000	15,000	230,000	2,100,000	14,000,000	33,000,000,000	27,000,000	890,000	2.6 (M)	19 (M)	<50	<50	<58	<50	*NT*
Diisopropyl Ether	108203	NA	600	ID	670,000	340,000	1,800,000	4,100,000,000	920,000	1,300	NC	NC	<250	<250	<290	<250	*NT*
2-Butanone (MEK)	78933	NA	260,000	44,000	54,000,000	29,000,000	35,000,000	67,000,000,000	120,000,000	27,000,000	NC	NC	<750	<750	<870	<750	*NT*
cis-1,2-Dichloroethene	156592	NA	1,400	12,000	22,000	180,000	990,000	2,300,000,000	2,500,000	640,000	2.1 (M)	9.2 (M)	<50	<50	<58	<50	*NT*
t-Butyl Ethyl Ether (ETBE)	637923	NA	980	ID	540,000	1,900,000	11,000,000	25,000,000,000	ID	650,000	NC	NC	<250	<250	<290	<250	*NT*
Bromochloromethane	74975	NA	NC	NC	NC	NC	NC	NC	NC	NC	NC	NC	<100	<100	<100	<100	*NT*
Tetrahydrofuran	109999	NA	1,900	220,000 {X}	1,300,000	13,000,000	160,000,000	390,000,000,000	2,900,000	120,000,000	NC	NC	<1,000	<1,000	<1,200	<1,000	*NT*
Chloroform	67663	NA	1,600	7,000	7,200	45,000	270,000	1,300,000,000	1,200,000	1,500,000	0.26 (M)	1.9 (M)	<50	<50	<58	<50	*NT*
1,1,1-Trichloroethane	71556	NA	4,000	1,800	250,000	3,800,000	28,000,000	67,000,000,000	500,000,000	460,000	450	1,900	<50	<50	<58	<50	*NT*
Carbon tetrachloride	56235	NA	100	900 {X}	190	3,500	28,000	130,000,000	96,000	390,000	NC	NC	<50	<50	<58	<50	*NT*
Benzene	71432	NA	100	4,000 {X}	1,600	13,000	79,000	380,000,000	180,000	400,000	1.7 (M)	12 (M)	<50	<50	**81**	<50	<50
t-Amyl Methyl Ether (TAME)	994058	NA	3,900	NA	58,000	340,000	1,800,000	4,100,000,000	29,000,000	440,000	NC	NC	<250	<250	<290	<250	*NT*
1,2-Dichloroethane	107062	NA	100	7,200 {X}	2,100	6,200	26,000	120,000,000	91,000	1,200,000	NC	NC	<50	<50	<58	<50	<50
Cyclohexane	108941	NA	5,200,000	NA	17,000	1,000,000	27,000,000	67,000,000,000	1,000,000,000	220,000,000	NC	NC	<250	<250	<290	<250	*NT*
Trichloroethene	79016	NA	100	4,000 {X}	1,000	11,000	57,000	130,000,000	110,000	500,000	0.33 (M)	1.0 (M)	<50	<50	<58	<50	*NT*
1,2-Dichloropropane	78875	NA	100	4,600 {X}	4,000	25,000	110,000	270,000,000	140,000	550,000	NC	NC	<50	<50	<58	<50	*NT*
Dibromomethane	74953	NA	1,600	NA	ID	ID	ID	ID	2,500,000	2,000,000	NC	NC	<250	<250	<250	<250	*NT*
Bromodichloromethane	75274	NA	1,600	ID	1,200	9,100	19,000	84,000,000	110,000	1,500,000	NC	NC	<100	<100	<100	<100	*NT*
1,3-Dichloropropene	542756	NA	170	180 {X}	1,000	18,000	160,000	780,000,000	10,000	620,000	NC	NC	<50	<50	<58	<50	*NT*
4-Methyl-2-pentanone (MIBK)	108101	NA	36,000	ID	37,000,000	45,000,000	67,000,000	140,000,000,000	56,000,000	2,700,000	NC	NC	<2,500	<2,500	<2,900	<2,500	*NT*
Toluene	108883	NA	16,000	5,400	330,000	2,800,000	12,000,000	27,000,000,000	50,000,000	250,000	3,700	16,000	<100	<100	430	<100	<100
1,1,2-Trichloroethane	79005	NA	100	6,600 {X}	4,600	17,000	44,000	190,000,000	180,000	920,000	NC	NC	<50	<50	<58	<50	*NT*
Tetrachloroethene	127184	NA	100	1,200 {X}	11,000	170,000	1,100,000	2,700,000,000	200,000	88,000	6.2 (M)	19 (M)	<50	<50	<58	<50	*NT*
2-Hexanone	591786	NA	20,000	ID	990,000	1,100,000	1,400,000	2,700,000,000	32,000,000	2,500,000	NC	NC	<2,500	<2,500	<2,900	<2,500	*NT*
Dibromochloromethane	124481	NA	1,600	ID	3,900	24,000	33,000	130,000,000	110,000	610,000	NC	NC	<100	<100	<100	<100	*NT*
1,2-Dibromoethane	106934	NA	20	110 {X}	670	1,700	3,300	14,000,000	92	890,000	NC	NC	<50	<50	<58	<50	<50
Chlorobenzene	108907	NA	2,000	500	120,000	770,000	2,100,000	4,700,000,000	4,300,000	260,000	82	360	<50	<50	<58	<50	*NT*
1,1,1,2-Tetrachloroethane	630206	NA	1,500	ID	6,200	36,000	100,000	420,000,000	480,000	440,000	NC	NC	<100	<100	<100	<100	*NT*
Ethyl benzene	100414	NA	1,500	360	87,000	720,000	2,200,000	10,000,000,000	22,000,000	140,000	12 (M)	86	<50	<50	**65**	<50	<50
Xylenes	1330207	NA	5,600	820	6,300,000	46,000,000	130,000,000	290,000,000,000	410,000,000	150,000	280	1,200	<150	<150	**720**	<150	<150
Styrene	100425	NA	2,700	2,100 {X}	250,000	970,000	1,400,000	5,500,000,000	400,000	520,000	NC	NC	<50	<50	<58	<50	*NT*
Bromoform	75252	NA	1,600	ID	150,000	900,000	900,000	2,800,000,000	820,000	870,000	NC	NC	<100	<100	<100	<100	*NT*
Isopropylbenzene	98828	NA	91,000	3,200	400,000	1,700,000	2,800,000	5,800,000,000	25,000,000	390,000	NC	NC	<250	<250	<250	<250	*NT*
1,1,2,2-Tetrachloroethane	79345	NA	170	1,600 {X}	4,300	10,000	14,000	54,000,000	53,000	870,000	NC	NC	<50	<50	<58	<50	*NT*
1,2,3-Trichloropropane	96184	NA	840	NA	4,000	9,200	11,000	20,000,000	1,300,000	830,000	NC	NC	<100	<100	<100	<100	*NT*
trans-1,4-Dichloro-2-butene	110576	NC	NC	NC	NC	NC	NC	NC	NC	NC	NC	NC	<50	<50	<58	<50	*NT*
Bromobenzene	108861	NA	550	NA	310,000	450,000	450,000	530,000,000	540,000	760,000	NC	NC	<100	<100	<100	<100	*NT*
n-Propylbenzene	103651	NA	1,600	ID	ID	ID	ID	1,300,000,000	2,500,000	10,000,000	NC	NC	<100	<100	<100	<100	*NT*
1,3,5-Trimethylbenzene	108678	NA	1,800	1,100	2,600,000	16,000,000	380,000,000	82,000,000,000	32,000,000	94,000	100	450	<100	<100	<100	<100	<100
tert-Butylbenzene	98066	NA	1,600	ID	ID	ID	ID	670,000,000	2,500,000	10,000,000	NC	NC	<50	<50	<58	<50	*NT*
1,2,4-Trimethylbenzene	95636	NA	2,100	570	4,300,000	21,000,000	500,000,000	82,000,000,000	32,000,000	110,000	150	650	<100	<100	**220**	<100	<100
sec-Butylbenzene	135988	NA	1,600	ID	ID	ID	ID	400,000,000	2,500,000	10,000,000	NC	NC	<50	<50	<58	<50	*NT*
p-Isopropyltoluene	99876	NA	NC	NC	NC	NC	NC	NC	NC	NC	NC	NC	<100	<100	<100	<100	*NT*
1,3-Dichlorobenzene	541731	NA	170	680	26,000	79,000	110,000	200,000,000	200,000	170,000	10 (M)	45 (M)	<100	<100	<100	<100	*NT*
1,4-Dichlorobenzene	106467	NA	1,700	360	19,000	77,000	110,000	450,000,000	400,000	NA	23 (M)	160	<100	<100	<100	<100	*NT*
n-Butylbenzene	104518	NA	1,600	ID	ID	ID	ID	2,000,000,000	2,500,000	10,000,000	NC	NC	<50	<50	<58	<50	*NT*
1,2,3-Trimethylbenzene	526738	NC	NC	NC	NC	NC	NC	NC	NC	NC	270	1,200	<50	<50	80	<50	*NT*
1,2-Dichlorobenzene	95501	NA	14,000	280	11,000,000	39,000,000	52,000,000	100,000,000,000	19,000,000	210,000	NC	NC	<100	<100	<100	<100	*NT*
1,2-Dibromo-3-chloropropane	96128	NA	10	ID	220	260	260	560,000	4,400	1,200	NC	NC	<100	<100	<120	<100	*NT*
Hexachloroethane	67721	NA	430	1,800 {X}	40,000	550,000	930,000	230,000,000	230,000	NA	NC	NC	<100	<100	<100	<100	*NT*
1,2,4-Trichlorobenzene	120821	NA	4,200	5,900 {X}	9,600,000	28,000,000	28,000,000	25,000,000,000	990,000	1,100,000	53 (M)	230 (M)	<330	<330	<330	<330	*NT*
Naphthalene	91203	NA	35,000	730	250,000	300,000	300,000	200,000,000	16,000,000	NA	NC	NC	<330	<330	<330	<330	<330
1,2,3-Trichlorobenzene	87616	NA	NC	NC	NC	NC	NC	NC	NC	NC	NC	NC	<250	<250	<250	<250	*NT*
2-Methylnaphthalene	91576	NA	57,000	4,200	2,700,000	1,500,000	1,500,000	670,000,000	8,100,000	NA	NC	NC	<330	<330	<330	<330	<330
Polynuclear Aromatic Hydrocarbons (PNAs)																	
PNA Extract Date													05/03/18	05/03/18	05/03/18	05/03/18	
PNA Analysis Date													05/04/18	05/04/18	05/04/18	05/04/18	
PNA Analysis Method													8270C	8270C	8270C	8270C	
Naphthalene	91203	NA	35,000	730	250,000	300,000	300,000	200,000,000	16,000,000	NA	NC	NC	<330	<330	<330	<330	*NT*
2-Methylnaphthalene	91576	NA	57,000	4,200	2,700,000	1,500,000	1,500,000	670,000,000	8,100,000	NA	NC	NC	<330	<330	<330	<330	*NT*
Acenaphthylene	208968	NA	5,900	ID	1,600,000	2,200,000	2,200,000	2,300,000,000	1,600,000	NA	NC	NC	<330	<330	<330	<330	*NT*
Acenaphthene	83329	NA	300,000	8,700	190,000,000	81,000,000	81,000,000	14,000,000,000	41,000,000	NA	NC	NC	<330	<330	<330	<330	*NT*
Fluorene	86737	NA	390,000	5,300	580,000,000	130,000,000	130,000,000	9,300,000,000	27,000,000	NA	NC	NC	<330	<330	<330	<330	*NT*
Phenanthrene	85018	NA	56,000	2,100	2,800,000	160,000	160,000	6,700,000	1,600,000	NA	NC	NC	<330	<330	<330	<330	*NT*
Anthracene	120127	NA	41,000	ID	1,000,000,000	1,400,000,000	1,400,000,000	67,000,000,000	230,000,000	NA	NC	NC	<330	<330	<330	<330	*NT*
Fluoranthene	206440	NA	730,000	5,500	1,000,000,000	740,000,000	740,000,000	9,300,000,000	46,000,000	NA	NC	NC	<330	<330	<330	<330	*NT*
Pyrene	129000	NA	480,000	ID	1,000,000,000	650,000,000	650,000,000	6,700,000,000	29,000,000	NA	NC	NC	<330	<330	<330	<330	*NT*
Benzo[a]anthracene	56553	NA	NLL	NLL	NLV	NLV	NLV	ID	20,000	NA	NC	NC	<330	<330	<330	<330	*NT*
Chrysene	218019	NA	NLL	NLL	ID	ID	ID	ID	2,000,000	NA	NC	NC	<330	<330	<330	<330	*NT*
Benzo[b]fluoranthene	205992	NA	NLL	NLL	ID	ID	ID	ID	20,000	NA	NC	NC	<330	<330	<330	<330	*NT*
Benzo[k]fluoranthene	207089	NA	NLL	NLL	NLV	NLV	NLV	ID	200,000	NA	NC	NC	<330	<330	<330	<330	*NT*
Benzo[a]pyrene	50328	NA	NLL	NLL	NLV	NLV	NLV	1,500,000	2,000	NA	NC	NC	<330	<330	<330	<330	*NT*
Indeno[1,2,3-cd]pyrene	193395	NA	NLL	NLL	NLV	NLV	NLV	ID	20,000	NA	NC	NC	<330	<330	<330	<330	*NT*
Dibenzo[a,h]anthracene	53703	NA	NLL	NLL	NLV	NLV	NLV	ID	2,000	NA	NC	NC	<330	<330	<330	<330	*NT*
Benzo[g,h,i]perylene	191242	NA	NLL	NLL	NLV	NLV	NLV	800,000,000	2,500,000	NA	NC	NC	<330	<330	<330	<330	*NT*

Notes:

- Results are reported in micrograms per kilogram (µg/Kg); equivalent to parts per billion (ppb).
- MDEQ Criteria are from Table 2, R299.46 Generic Soil Cleanup Criteria for Residential Category found on RRD website Rule 299.1 to 299.50 Environmental Contamination Response Activity Rules, effective December 30, 2013.
- ID - Inadequate Data to develop criterion. - NA - Not Available.
- NLL - Hazardous substance is Not Likely to Leach under most soil conditions. - NLV - Not Likely to Volatilize.
- {X} - Criteria not established based on surface water use for drinking water.
- Bolded values indicate detection of constituent, shaded values indicate an exceedance of at least one criteria.

- *NT* - Not Tested. - NC - MDEQ has published no criteria for this constituent.

- MDEQ Media-Specific Volatilization to Indoor Air Interim Action Screening Levels, August 2017.
- RIASL: Recommended Interim Action Screening Levels. Nonresidential RIASL is based on a former residential structure that is now nonresidential use that has an unoccupied basement.
- (M): Site-specific criterion may be below target detection limits (TDL).
- Bolded box indicate an exceedance of of at least one RIASL.

Table 1 ~ Soil Analytical Results
Five Parcels of land located along Robbins Road in Grand Haven Township, Ottawa County, Michigan

Constituent	Chemical Abstract Service Number (CAS #)	Statewide Default Background Levels	Residential - Part 201 Generic Cleanup Criteria								Media-Specific Volatilization to Indoor Air Interim Action Screening Levels		SB-6	SB-7	SB-8	SB-9
			Drinking Water Protection Criteria	Groundwater Surface Water Interface Protection Criteria	Soil Volatilization to Indoor Air Inhalation	Infinite Source Volatile Soil Inhalation Criteria (VSIC)	Finite VSIC for 2 Meter Source Thickness	Particulate Soil Inhalation Criteria	Direct Contact Criteria	Soil Saturation Concentration Screening Levels (Csat)	Soil Residential RIASL	Soil Nonresidential RIASL	1.5-2.0'	1.5-2.0'	1.5-2.0'	2.5-3.0'
													05/31/18	05/31/18	05/31/18	05/31/18
Volatile Organic Compounds (VOCs)																
VOC Analysis Date													05/31/18	05/31/18	05/31/18	05/31/18
VOC Analysis Method													8260C	8260C	8260C	8260C
Dichlorodifluoromethane	75718	NA	95,000	ID	900,000	53,000,000	1,400,000,000	3,300,000,000,000	52,000,000	1,000,000	NC	NC	NT	NT	NT	NT
Chloromethane	74873	NA	5,200	ID	2,300	40,000	1,000,000	4,900,000,000	1,600,000	1,100,000	6.9 (M)	31 (M)	NT	NT	NT	NT
Vinyl Chloride	75014	NA	40	260 {X}	270	4,200	73,000	350,000,000	3,800	490,000	0.082 (M)	2.0 (M)	NT	NT	NT	NT
Bromomethane	74839	NA	200	700	860	11,000	140,000	330,000,000	320,000	2,200,000	NC	NC	NT	NT	NT	NT
Chloroethane	75003	NA	8,600	22,000 {X}	2,900,000	30,000,000	280,000,000	670,000,000,000	2,600,000	950,000	330	1,500	NT	NT	NT	NT
Trichlorofluoromethane	75694	NA	52,000	NA	2,800,000	92,000,000	1,500,000,000	3,800,000,000,000	79,000,000	560,000	NC	NC	NT	NT	NT	NT
Diethyl ether	60297	NA	200	ID	28,000,000	85,000,000	340,000,000	800,000,000,000	110,000,000	7,400,000	NC	NC	NT	NT	NT	NT
Tert-butyl alcohol	75650	NA	78,000	NA	310,000,000	97,000,000	200,000,000	130,000,000,000	120,000,000	110,000,000	NC	NC	NT	NT	NT	NT
1,1-Dichloroethylene	75354	NA	140	2,600	62	1,100	13,000	62,000,000	200,000	570,000	12 (M)	54	NT	NT	NT	NT
Acetone	67641	NA	15,000	34,000	290,000,000	130,000,000	190,000,000	390,000,000,000	23,000,000	110,000,000	260,000	780,000	NT	NT	NT	NT
Iodomethane	74884	NA	NC	NC	NC	NC	NC	NC	NC	NC	NC	NC	NT	NT	NT	NT
Carbon disulfide	75150	NA	16,000	ID	76,000	1,300,000	19,000,000	47,000,000,000	7,200,000	280,000	NC	NC	NT	NT	NT	NT
Methyl t-butyl ether (MTBE)	1634044	NA	800	140,000 {X}	9,900,000	25,000,000	87,000,000	200,000,000,000	1,500,000	5,900,000	74 (M)	520	<250	<250	<260	<260
Methylene chloride	75092	NA	100	30,000 {X}	45,000	210,000	1,400,000	6,600,000,000	1,300,000	2,300,000	130	570	NT	NT	NT	NT
Acrylonitrile	107131	NA	100	100	6,600	5,000	10,000	46,000,000	16,000	8,300,000	NC	NC	NT	NT	NT	NT
trans-1,2-Dichloroethene	156605	NA	2,000	30,000 {X}	23,000	280,000	2,000,000	4,700,000,000	3,800,000	1,400,000	39 (M)	340	NT	NT	NT	NT
1,1-Dichloroethane	75343	NA	18,000	15,000	230,000	2,100,000	14,000,000	33,000,000,000	27,000,000	890,000	2.6 (M)	19 (M)	NT	NT	NT	NT
Diisopropyl Ether	108203	NA	600	ID	670,000	340,000	1,800,000	4,100,000,000	920,000	1,300	NC	NC	NT	NT	NT	NT
2-Butanone (MEK)	78933	NA	260,000	44,000	54,000,000	29,000,000	35,000,000	67,000,000,000	120,000,000	27,000,000	NC	NC	NT	NT	NT	NT
cis-1,2-Dichloroethene	156592	NA	1,400	12,000	22,000	180,000	990,000	2,300,000,000	2,500,000	640,000	2.1 (M)	9.2 (M)	NT	NT	NT	NT
t-Butyl Ethyl Ether (ETBE)	637923	NA	980	ID	540,000	1,900,000	11,000,000	25,000,000,000	ID	650,000	NC	NC	NT	NT	NT	NT
Bromochloromethane	74975	NA	NC	NC	NC	NC	NC	NC	NC	NC	NC	NC	NT	NT	NT	NT
Tetrahydrofuran	109999	NA	1,900	220,000 {X}	1,300,000	13,000,000	160,000,000	390,000,000,000	2,900,000	120,000,000	NC	NC	NT	NT	NT	NT
Chloroform	67663	NA	1,600	7,000	7,200	45,000	270,000	1,300,000,000	1,200,000	1,500,000	0.26 (M)	1.9 (M)	NT	NT	NT	NT
1,1,1-Trichloroethane	71556	NA	4,000	1,800	250,000	3,800,000	28,000,000	67,000,000,000	500,000,000	460,000	450	1,900	NT	NT	NT	NT
Carbon tetrachloride	56235	NA	100	900 {X}	190	3,500	28,000	130,000,000	96,000	390,000	NC	NC	NT	NT	NT	NT
Benzene	71432	NA	100	4,000 {X}	1,600	13,000	79,000	380,000,000	180,000	400,000	1.7 (M)	12 (M)	<50	<50	<51	<53
t-Amyl Methyl Ether (TAME)	994058	NA	3,900	NA	58,000	340,000	1,800,000	4,100,000,000	29,000,000	440,000	NC	NC	NT	NT	NT	NT
1,2-Dichloroethane	107062	NA	100	7,200 {X}	2,100	6,200	26,000	120,000,000	91,000	1,200,000	NC	NC	<50	<50	<51	<53
Cyclohexane	108941	NA	5,200,000	NA	17,000	1,000,000	27,000,000	67,000,000,000	1,000,000,000	220,000,000	NC	NC	NT	NT	NT	NT
Trichloroethene	79016	NA	100	4,000 {X}	1,000	11,000	57,000	130,000,000	110,000	500,000	0.33 (M)	1.0 (M)	NT	NT	NT	NT
1,2-Dichloropropane	78875	NA	100	4,600 {X}	4,000	25,000	110,000	270,000,000	140,000	550,000	NC	NC	NT	NT	NT	NT
Dibromomethane	74953	NA	1,600	NA	ID	ID	ID	ID	2,500,000	2,000,000	NC	NC	NT	NT	NT	NT
Bromodichloromethane	75274	NA	1,600	ID	1,200	9,100	19,000	84,000,000	110,000	1,500,000	NC	NC	NT	NT	NT	NT
1,3-Dichloropropene	542756	NA	170	180 {X}	1,000	18,000	160,000	780,000,000	10,000	620,000	NC	NC	NT	NT	NT	NT
4-Methyl-2-pentanone (MIBK)	108101	NA	36,000	ID	37,000,000	45,000,000	67,000,000	140,000,000,000	56,000,000	2,700,000	NC	NC	NT	NT	NT	NT
Toluene	108883	NA	16,000	5,400	330,000	2,800,000	12,000,000	27,000,000,000	50,000,000	250,000	3,700	16,000	<100	<100	<100	<100
1,1,2-Trichloroethane	79005	NA	100	6,600 {X}	4,600	17,000	44,000	190,000,000	180,000	920,000	NC	NC	NT	NT	NT	NT
Tetrachloroethene	127184	NA	100	1,200 {X}	11,000	170,000	1,100,000	2,700,000,000	200,000	88,000	6.2 (M)	19 (M)	NT	NT	NT	NT
2-Hexanone	591786	NA	20,000	ID	990,000	1,100,000	1,400,000	2,700,000,000	32,000,000	2,500,000	NC	NC	NT	NT	NT	NT
Dibromochloromethane	124481	NA	1,600	ID	3,900	24,000	33,000	130,000,000	110,000	610,000	NC	NC	NT	NT	NT	NT
1,2-Dibromoethane	106934	NA	20	110 {X}	670	1,700	3,300	14,000,000	92	890,000	NC	NC	<50	<50	<51	<53
Chlorobenzene	108907	NA	2,000	500	120,000	770,000	2,100,000	4,700,000,000	4,300,000	260,000	82	360	NT	NT	NT	NT
1,1,1,2-Tetrachloroethane	630206	NA	1,500	ID	6,200	36,000	100,000	420,000,000	480,000	440,000	NC	NC	NT	NT	NT	NT
Ethyl benzene	100414	NA	1,500	360	87,000	720,000	2,200,000	10,000,000,000	22,000,000	140,000	12 (M)	86	<50	<50	<51	<53
Xylenes	1330207	NA	5,600	820	6,300,000	46,000,000	130,000,000	290,000,000,000	410,000,000	150,000	280	1,200	<150	<150	<150	<160
Styrene	100425	NA	2,700	2,100 {X}	250,000	970,000	1,400,000	5,500,000,000	400,000	520,000	NC	NC	NT	NT	NT	NT
Bromoform	75252	NA	1,600	ID	150,000	900,000	900,000	2,800,000,000	820,000	870,000	NC	NC	NT	NT	NT	NT
Isopropylbenzene	98828	NA	91,000	3,200	400,000	1,700,000	2,800,000	5,800,000,000	25,000,000	390,000	NC	NC	NT	NT	NT	NT
1,1,2,2-Tetrachloroethane	79345	NA	170	1,600 {X}	4,300	10,000	14,000	54,000,000	53,000	870,000	NC	NC	NT	NT	NT	NT
1,2,3-Trichloropropane	96184	NA	840	NA	4,000	9,200	11,000	20,000,000	1,300,000	830,000	NC	NC	NT	NT	NT	NT
trans-1,4-Dichloro-2-butene	110576	NC	NC	NC	NC	NC	NC	NC	NC	NC	NC	NC	NT	NT	NT	NT
Bromobenzene	108861	NA	550	NA	310,000	450,000	450,000	530,000,000	540,000	760,000	NC	NC	NT	NT	NT	NT
n-Propylbenzene	103651	NA	1,600	ID	ID	ID	ID	1,300,000,000	2,500,000	10,000,000	NC	NC	NT	NT	NT	NT
1,3,5-Trimethylbenzene	108678	NA	1,800	1,100	2,600,000	16,000,000	380,000,000	82,000,000,000	32,000,000	94,000	100	450	<100	<100	<100	<100
tert-Butylbenzene	98066	NA	1,600	ID	ID	ID	ID	670,000,000	2,500,000	10,000,000	NC	NC	NT	NT	NT	NT
1,2,4-Trimethylbenzene	95636	NA	2,100	570	4,300,000	21,000,000	500,000,000	82,000,000,000	32,000,000	110,000	150	650	<100	<100	<100	<100
sec-Butylbenzene	135988	NA	1,600	ID	ID	ID	ID	400,000,000	2,500,000	10,000,000	NC	NC	NT	NT	NT	NT
p-Isopropyltoluene	99876	NA	NC	NC	NC	NC	NC	NC	NC	NC	NC	NC	NT	NT	NT	NT
1,3-Dichlorobenzene	541731	NA	170	680	26,000	79,000	110,000	200,000,000	200,000	170,000	10 (M)	45 (M)	NT	NT	NT	NT
1,4-Dichlorobenzene	106467	NA	1,700	360	19,000	77,000	110,000	450,000,000	400,000	NA	23 (M)	160	NT	NT	NT	NT
n-Butylbenzene	104518	NA	1,600	ID	ID	ID	ID	2,000,000,000	2,500,000	10,000,000	NC	NC	NT	NT	NT	NT
1,2,3-Trimethylbenzene	526738	NC	NC	NC	NC	NC	NC	NC	NC	NC	270	1,200	NT	NT	NT	NT
1,2-Dichlorobenzene	95501	NA	14,000	280	11,000,000	39,000,000	52,000,000	100,000,000,000	19,000,000	210,000	NC	NC	NT	NT	NT	NT
1,2-Dibromo-3-chloropropane	96128	NA	10	ID	220	260	260	560,000	4,400	1,200	NC	NC	NT	NT	NT	NT
Hexachloroethane	67721	NA	430	1,800 {X}	40,000	550,000	930,000	230,000,000	230,000	NA	NC	NC	NT	NT	NT	NT
1,2,4-Trichlorobenzene	120821	NA	4,200	5,900 {X}	9,600,000	28,000,000	28,000,000	25,000,000,000	990,000	1,100,000	53 (M)	230 (M)	NT	NT	NT	NT
Naphthalene	91203	NA	35,000	730	250,000	300,000	300,000	200,000,000	16,000,000	NA	NC	NC	<330	<330	<330	<330
1,2,3-Trichlorobenzene	87616	NA	NC	NC	NC	NC	NC	NC	NC	NC	NC	NC	NT	NT	NT	NT
2-Methylnaphthalene	91576	NA	57,000	4,200	2,700,000	1,500,000	1,500,000	670,000,000	8,100,000	NA	NC	NC	<330	<330	<330	<330
Polynuclear Aromatic Hydrocarbons (PNAs)																
PNA Extract Date																
PNA Analysis Date																
PNA Analysis Method																
Naphthalene	91203	NA	35,000	730	250,000	300,000	300,000	200,000,000	16,000,000	NA	NC	NC	NT	NT	NT	NT
2-Methylnaphthalene	91576	NA	57,000	4,200	2,700,000	1,500,000	1,500,000	670,000,000	8,100,000	NA	NC	NC	NT	NT	NT	NT
Acenaphthylene	208968	NA	5,900	ID	1,600,000	2,200,000	2,200,000	2,300,000,000	1,600,000	NA	NC	NC	NT	NT	NT	NT
Acenaphthene	83329	NA	300,000	8,700	190,000,000	81,000,000	81,000,000	14,000,000,000	41,000,000	NA	NC	NC	NT	NT	NT	NT
Fluorene	86737	NA	390,000	5,300	580,000,000	130,000,000	130,000,000	9,300,000,000	27,000,000	NA	NC	NC	NT	NT	NT	NT
Phenanthrene	85018	NA	56,000	2,100	2,800,000	160,000	160,000	6,700,000	1,600,000	NA	NC	NC	NT	NT	NT	NT
Anthracene	120127	NA	41,000	ID	1,000,000,000	1,400,000,000	1,400,000,000	67,000,000,000	230,000,000	NA	NC	NC	NT	NT	NT	NT
Fluoranthene	206440	NA	730,000	5,500	1,000,000,000	740,000,000	740,000,000	9,300,000,000	46,000,000	NA	NC	NC	NT	NT	NT	NT
Pyrene	129000	NA	480,000	ID	1,000,000,000	650,000,000	650,000,000	6,700,000,000	29,000,000	NA	NC	NC	NT	NT	NT	NT
Benzo[a]anthracene	56553	NA	NLL	NLL	NLV	NLV	NLV	ID	20,000	NA	NC	NC	NT	NT	NT	NT
Chrysene	218019	NA	NLL	NLL	ID	ID	ID	ID	2,000,000	NA	NC	NC	NT	NT	NT	NT
Benzo[b]fluoranthene	205992	NA	NLL	NLL	ID	ID	ID	ID	20,000	NA	NC	NC	NT	NT	NT	NT
Benzo[k]fluoranthene	207089	NA	NLL	NLL	NLV	NLV	NLV	ID	200,000	NA	NC	NC	NT	NT	NT	NT
Benzo[a]pyrene	50328	NA	NLL	NLL	NLV	NLV	NLV	1,500,000	2,000	NA	NC	NC	NT	NT	NT	NT
Indeno[1,2,3-cd]pyrene	193395	NA	NLL	NLL	NLV	NLV	NLV	ID	20,000	NA	NC	NC	NT	NT	NT	NT
Dibenzo[a,h]anthracene	53703	NA	NLL	NLL	NLV	NLV	NLV	ID	2,000	NA	NC	NC	NT	NT	NT	NT
Benzo[g,h,i]perylene	191242	NA	NLL	NLL	NLV	NLV	NLV	800,000,000	2,500,000	NA	NC	NC	NT	NT	NT	NT

Notes:

- Results are reported in micrograms per kilogram (µg/Kg); equivalent to parts per billion (ppb).
- MDEQ Criteria are from Table 2, R299.46 Generic Soil Cleanup Criteria for Residential Category found on RRD website Rule 299.1 to 299.50 Environmental Contamination Response Activity Rules, effective December 30, 2013.
- ID - Inadequate Data to develop criterion. - NA - Not Available.
- NLL - Hazardous substance is Not Likely to Leach under most soil conditions. - NLV - Not Likely to Volatilize.
- {X} - Criteria not established based on surface water use for drinking water.
- Bolded values indicate detection of constituent, shaded values indicate an exceedance of at least one criteria.

- *NT* - Not Tested. - NC - MDEQ has published no criteria for this constituent.

- MDEQ Media-Specific Volatilization to Indoor Air Interim Action Screening Levels, August 2017.
- RIASL: Recommended Interim Action Screening Levels. Nonresidential RIASL is based on a former residential structure that is now nonresidential use that has an unoccupied basement.
- (M): Site-specific criterion may be below target detection limits (TDL).
- Bolded box indicate an exceedance of of at least one RIASL.

Table 2 ~ Groundwater Analytical Results
Five Parcels of land located along Robbins Road in Grand Haven Township, Ottawa County, Michigan

Constituent	Chemical Abstract Service Number (CAS #)	Part 201 Generic Cleanup Criteria					Media-Specific Volatilization to Indoor Air Interim Action Screening Levels							TMW-1 / SB-1	TMW-2 / SB-4	TMW-3	TMW-4
		Residential Drinking Water	Nonresidential Drinking Water	Groundwater Surface Water Interface	Residential Groundwater Volatilization to Indoor Air Inhalation	Nonresidential Groundwater Volatilization to Indoor Air Inhalation	Shallow Groundwater Residential RIASL	Shallow Groundwater Nonresidential RIASL	Groundwater Residential RIASL	Groundwater Residential TSRIASL	Groundwater Nonresidential RIASL	Groundwater Nonresidential $RIASL_{12}$	Groundwater Nonresidential $TSRIASL_{12}$	05/02/18	05/02/18	05/31/18	05/31/18
Volatile Organic Compounds (VOCs)																	
VOC Analysis Date														05/08/18	05/09/18	05/31/18	05/31/18
VOC Analysis Method														8260C	8260C	8260C	8260C
Dichlorodifluoromethane	75718	1,700	4,800	ID	220,000	300,000	NC	NC	NC	NC	NC	NC	NC	<5.0	<5.0	*NT*	*NT*
Chloromethane	74873	260	1,100	ID	8,600	45,000	15	30	160	470	810	1,600	8,000	<5.0	<5.0	*NT*	*NT*
Vinyl Chloride	75014	2.0	2.0	13 {X}	1,100	13,000	0.12 (M)	1.8	0.96 (M)	9.6	28	56	1,800	<1.0	<1.0	*NT*	*NT*
Bromomethane	74839	10	29	35	4,000	9,000	NC	NC	NC	NC	NC	NC	NC	<5.0	<5.0	*NT*	*NT*
Chloroethane	75003	430	1,700	1,100 {X}	5,700,000	5,700,000	620	1,300	6,700	20,000	35,000	69,000	670,000	<5.0	<5.0	*NT*	*NT*
Trichlorofluoromethane	75694	2,600	7,300	NA	1,100,000	1,100,000	NC	NC	NC	NC	NC	NC	NC	<1.0	<1.0	*NT*	*NT*
Diethyl ether	60297	10 {E} 3,700	10 {E} 10,000	ID	61,000,000	61,000,000	NC	NC	NC	NC	NC	NC	NC	<10	<10	*NT*	*NT*
Tert-butyl alcohol	75650	3,900	11,000	NA	1,000,000,000	1,000,000,000	NC	NC	NC	NC	NC	NC	NC	<50	<50	*NT*	*NT*
1,1-Dichloroethene	75354	7.0	7.0	130	200	1,300	18	45	170	510	860	1,700	16,000	<1.0	<1.0	*NT*	*NT*
Acetone	67641	730	2,100	1,700	1,000,000,000	1,000,000,000	50,000	62,000	12,000,000	12,000,000	47,000,000	47,000,000	160,000,000	<50	<50	*NT*	*NT*
Iodomethane	74884	NC	NC	NC	NC	NC	NC	NC	NC	NC	NC	NC	NC	<1.0	<1.0	*NT*	*NT*
Carbon disulfide	75150	800	2,300	ID	250,000	550,000	NC	NC	NC	NC	NC	NC	NC	<5.0	<5.0	*NT*	*NT*
Methyl t-butyl ether (MTBE)	1634044	40 {E} 240	40 {E} 690	7,100 {X}	47,000,000	47,000,000	250	610	4,000	40,000	32,000	65,000	2,000,000	<5.0	<5.0	<5.0	<5.0
Methylene chloride	75092	5.0	5.0	1,500 {X}	220,000	1,400,000	79	490	3,900	6,200	20,000	40,000	200,000	<5.0	<5.0	*NT*	*NT*
Acrylonitrile	107131	2.6	11	2.0	34,000	190,000	NC	NC	NC	NC	NC	NC	NC	<2.0	<2.0	*NT*	*NT*
trans-1,2-Dichloroethene	156605	100	100	1,500 {X}	85,000	200,000	27	78	650	1,900	6,500	6,500	21,000	<1.0	<1.0	*NT*	*NT*
1,1-Dichloroethane	75343	880	2,500	740	1,000,000	2,300,000	4.7	14	67	670	540	1,100	34,000	<1.0	<1.0	*NT*	*NT*
Diisopropyl Ether	108203	30	86	ID	8,000	8,000	NC	NC	NC	NC	NC	NC	NC	<5.0	<5.0	*NT*	*NT*
2-Butanone (MEK)	78933	13,000	38,000	2,200	240,000,000	240,000,000	NC	NC	NC	NC	NC	NC	NC	<25	<25	*NT*	*NT*
cis-1,2-Dichloroethene	156592	70	70	620	93,000	210,000	3.4	5.8	48	140	240	490	4,600	<1.0	<1.0	*NT*	*NT*
t-Butyl Ethyl Ether (ETBE)	637923	49 {E}	49 {E}	ID	2,900,000	5,600,000	NC	NC	NC	NC	NC	NC	NC	<5.0	<5.0	*NT*	*NT*
Bromochloromethane	74975	NC	NC	NC	NC	NC	NC	NC	NC	NC	NC	NC	NC	<1.0	<1.0	*NT*	*NT*
Tetrahydrofuran	109999	95	270	11,000 {X}	6,900,000	16,000,000	NC	NC	NC	NC	NC	NC	NC	<90	<90	*NT*	*NT*
Chloroform	67663	80	80	350	28,000	180,000	0.49 (M)	1.3	7.6	76	61	120	3,800	<1.0	<1.0	*NT*	*NT*
1,1,1-Trichloroethane	71556	200	200	89	660,000	1,300,000	180	750	8,600	8,600	41,000	41,000	120,000	<1.0	<1.0	*NT*	*NT*
Carbon tetrachloride	56235	5.0	5.0	45 {X}	370	2,400	NC	NC	NC	NC	NC	NC	NC	<1.0	<1.0	*NT*	*NT*
Benzene	71432	5.0	5.0	200 {X}	5,600	35,000	1.0	3.0	14	82	120	230	2,600	**36**	<1.0	<1.0	<1.0
t-Amyl Methyl Ether	994058	190 {E} 910	190 {E} 2,600	NA	260,000	570,000	NC	NC	NC	NC	NC	NC	NC	<5.0	<5.0	*NT*	*NT*
1,2-Dichloroethane	107062	5.0	5.0	360 {X}	9,600	59,000	NC	NC	NC	NC	NC	NC	NC	<1.0	<1.0	<1.0	<1.0
Cyclohexane	108941	33,000	94,000	NA	1,500	3,300	NC	NC	NC	NC	NC	NC	NC	13	<5.0	*NT*	*NT*
Trichloroethene	79016	5.0	5.0	200 {X}	2,200	4,900	0.073 (M)	0.21 (M)	6.1	18	21	41	380	<1.0	<1.0	*NT*	*NT*
1,2-Dichloropropane	78875	5.0	5.0	230 {X}	16,000	36,000	NC	NC	NC	NC	NC	NC	NC	<1.0	<1.0	*NT*	*NT*
Dibromomethane	74953	80	230	NA	ID	ID	NC	NC	NC	NC	NC	NC	NC	<5.0	<5.0	*NT*	*NT*
Bromodichloromethane	75274	80	80	ID	4,800	37,000	NC	NC	NC	NC	NC	NC	NC	<1.0	<1.0	*NT*	*NT*
1,3-Dichloropropene	542756	8.5	35	9.0 {X}	3,900	26,000	NC	NC	NC	NC	NC	NC	NC	<1.0	<1.0	*NT*	*NT*
4-Methyl-2-pentanone (MIBK)	108101	1,800	5,200	ID	20,000,000	20,000,000	NC	NC	NC	NC	NC	NC	NC	<50	<50	*NT*	*NT*
Toluene	108883	790 {E} 1,000	790 {E} 1,000	270	530,000	530,000	300	850	23,000	33,000	110,000	110,000	350,000	2.6	<1.0	<1.0	<1.0
1,1,2-Trichloroethane	79005	5.0	5.0	330 {X}	17,000	110,000	NC	NC	NC	NC	NC	NC	NC	<1.0	<1.0	*NT*	*NT*
Tetrachloroethene	127184	5.0	5.0	60 {X}	25,000	170,000	1.5	4.4	96	96	320	640	1,900	<1.0	<1.0	*NT*	*NT*
2-Hexanone	591786	1,000	2,900	ID	4,200,000	8,700,000	NC	NC	NC	NC	NC	NC	NC	<50	<50	*NT*	*NT*
Dibromochloromethane	124481	80	80	ID	14,000	110,000	NC	NC	NC	NC	NC	NC	NC	<5.0	<5.0	*NT*	*NT*
1,2-Dibromoethane	106934	0.05	0.05	5.7 {X}	2,400	15,000	NC	NC	NC	NC	NC	NC	NC	<1.0	<1.0	<1.0	<1.0
Chlorobenzene	108907	100	100	25	210,000	470,000	33	54	540	1,600	2,700	5,400	50,000	<1.0	<1.0	*NT*	*NT*
1,1,1,2-Tetrachloroethane	630206	77	320	ID	15,000	96,000	NC	NC	NC	NC	NC	NC	NC	<1.0	<1.0	*NT*	*NT*
Ethyl benzene	100414	74 {E} 700	74 {E} 700	18	110,000	170,000	2.8	8.5	45	450	360	710	22,000	**92**	<1.0	<1.0	<1.0
Xylenes	1330207	280 {E} 10,000	280 {E} 10,000	41	190,000	190,000	75	140	1,200	3,600	6,000	12,000	110,000 (S)	**75**	<3.0	<3.0	<3.0
Styrene	100425	100	100	80 {X}	170,000	310,000	NC	NC	NC	NC	NC	NC	NC	<1.0	<1.0	*NT*	*NT*
Bromoform	75252	80	80	ID	470,000	3,100,000	NC	NC	NC	NC	NC	NC	NC	<1.0	<1.0	*NT*	*NT*
Isopropylbenzene	98828	800	2,300	28	56,000	56,000	NC	NC	NC	NC	NC	NC	NC	<5.0	<5.0	*NT*	*NT*
1,1,2,2-Tetrachloroethane	79345	8.5	35	78 {X}	12,000	77,000	NC	NC	NC	NC	NC	NC	NC	<1.0	<1.0	*NT*	*NT*
1,2,3-Trichloropropane	96184	42	120	NA	8,300	18,000	NC	NC	NC	NC	NC	NC	NC	<1.0	<1.0	*NT*	*NT*
trans-1,4-Dichloro-2-butene	110576	NC	NC	NC	NC	NC	NC	NC	NC	NC	NC	NC	NC	<1.0	<1.0	*NT*	*NT*
Bromobenzene	108861	18	50	NA	180,000	390,000	NC	NC	NC	NC	NC	NC	NC	<1.0	<1.0	*NT*	*NT*
n-Propylbenzene	103651	80	230	ID	ID	ID	NC	NC	NC	NC	NC	NC	NC	<1.0	<1.0	*NT*	*NT*
1,3,5-Trimethylbenzene	108678	72 {E} 1,000	72 {E} 2,900	45	61,000	61,000	18	34	310	940	1,500	3,100	28,000	3.5	<1.0	<1.0	<1.0
tert-Butylbenzene	98066	80	230	ID	ID	ID	NC	NC	NC	NC	NC	NC	NC	<1.0	<1.0	*NT*	*NT*
1,2,4-Trimethylbenzene	95636	63 {E} 1,000	63 {E} 2,900	17	56,000	56,000	25	44	440	1,300	2,200	4,400	40,000	**48**	<1.0	<1.0	<1.0
sec-Butylbenzene	135988	80	230	ID	ID	ID	NC	NC	NC	NC	NC	NC	NC	<1.0	<1.0	*NT*	*NT*
p-Isopropyltoluene	99876	NC	NC	NC	NC	NC	NC	NC	NC	NC	NC	NC	NC	<5.0	<5.0	*NT*	*NT*
1,3-Dichlorobenzene	541731	6.6	19	28	18,000	41,000	2.6	4.2	52	150	250	510	4,600	<1.0	<1.0	*NT*	*NT*
1,4-Dichlorobenzene	106467	75	75	17	16,000	74,000	5.9	15	120	1,200	930	1,900	57,000	<1.0	<1.0	*NT*	*NT*
n-Butylbenzene	104518	80	230	ID	ID	ID	NC	NC	NC	NC	NC	NC	NC	<1.0	<1.0	*NT*	*NT*
1,2,3-Trimethylbenzene	526738	NC	NC	NC	NC	NC	43	71	800	2,400	3,900	7,900	72,000	19	<1.0	*NT*	*NT*
1,2-Dichlorobenzene	95501	600	600	13	160,000	160,000	NC	NC	NC	NC	NC	NC	NC	<1.0	<1.0	*NT*	*NT*
1,2-Dibromo-3-chloropropane	96128	0.2	0.2	ID	220	1,200	NC	NC	NC	NC	NC	NC	NC	<1.0	<1.0	*NT*	*NT*
Hexachloroethane	67721	7.3	21	6.7 {X}	27,000	50,000	NC	NC	NC	NC	NC	NC	NC	<5.0	<5.0	*NT*	*NT*
1,2,4-Trichlorobenzene	120821	70	70	99 {X}	300,000	300,000	3.8 (M)	5.8	95	290	460	920	8,100	<5.0	<5.0	*NT*	*NT*
Naphthalene	91203	520	1,500	11	31,000	31,000	NC	NC	NC	NC	NC	NC	NC	6.2	<5.0	<5.0	<5.0
1,2,3-Trichlorobenzene	87616	NC	NC	NC	NC	NC	NC	NC	NC	NC	NC	NC	NC	<5.0	<5.0	*NT*	*NT*
2-Methylnaphthalene	91576	260	750	19	25,000	25,000	NC	NC	NC	NC	NC	NC	NC	<5.0	<5.0	<5.0	<5.0
Polynuclear Aromatic Hydrocarbons (PNAs)																	
PNA Extract Date														05/09/18	05/08/18		
PNA Analysis Date														05/10/18	05/08/18		
PNA Analysis Method														8270C	8270C		
Naphthalene	91203	520	1,500	11	31,000	31,000	NC	NC	NC	NC	NC	NC	NC	<5.0	<5.0	*NT*	*NT*
2-Methylnaphthalene	91576	260	750	19	25,000	25,000	NC	NC	NC	NC	NC	NC	NC	<5.0	<5.0	*NT*	*NT*
Acenaphthylene	208968	52	150	ID	3,900	3,900	NC	NC	NC	NC	NC	NC	NC	<5.0	<5.0	*NT*	*NT*
Acenaphthene	83329	1,300	3,800	38	4,200	4,200	NC	NC	NC	NC	NC	NC	NC	<5.0	<5.0	*NT*	*NT*
Fluorene	86737	880	2,000	12	2,000	2,000	NC	NC	NC	NC	NC	NC	NC	<5.0	<5.0	*NT*	*NT*
Phenanthrene	85018	52	150	2.0	1,000	1,000	NC	NC	NC	NC	NC	NC	NC	<2.0	<2.0	*NT*	*NT*
Anthracene	120127	43	43	ID	43	43	NC	NC	NC	NC	NC	NC	NC	<5.0	<5.0	*NT*	*NT*
Fluoranthene	206440	210	210	1.6	210	210	NC	NC	NC	NC	NC	NC	NC	<1.0	<1.0	*NT*	*NT*
Pyrene	129000	140	140	ID	140	140	NC	NC	NC	NC	NC	NC	NC	<5.0	<5.0	*NT*	*NT*
Benzo[a]anthracene	56553	2.1	8.5	ID	NLV	NLV	NC	NC	NC	NC	NC	NC	NC	<1.0	<1.0	*NT*	*NT*
Chrysene	218019	1.6	1.6	ID	ID	ID	NC	NC	NC	NC	NC	NC	NC	<1.0	<1.0	*NT*	*NT*
Benzo[b]fluoranthene	205992	1.5	1.5	ID	ID	ID	NC	NC	NC	NC	NC	NC	NC	<1.0	<1.0	*NT*	*NT*
Benzo[k]fluoranthene	207089	1.0	1.0	NA	NLV	NLV	NC	NC	NC	NC	NC	NC	NC	<1.0	<1.0	*NT*	*NT*
Benzo[a]pyrene	50328	5.0	5.0	ID	NLV	NLV	NC	NC	NC	NC	NC	NC	NC	<1.0	<1.0	*NT*	*NT*
Indeno[1,2,3-cd]pyrene	193395	2.0	2.0	ID	NLV	NLV	NC	NC	NC	NC	NC	NC	NC	<2.0	<2.0	*NT*	*NT*
Dibenzo[a,h]anthracene	53703	2.0	2.0	ID	NLV	NLV	NC	NC	NC	NC	NC	NC	NC	<2.0	<2.0	*NT*	*NT*
Benzo[g,h,i]perylene	191242	1.0	1.0	ID	NLV	NLV	NC	NC	NC	NC	NC	NC	NC	<1.0	<1.0	*NT*	*NT*

Notes:

- Results are reported in micrograms per liter (µg/L); equivalent to parts per billion (ppb).
- MDEQ Criteria are from Table 1, R299.44 Generic Groundwater Cleanup Criteria found on RRD website Rule 299.1 to 299.50 Environmental Contamination Response Activity Rules, effective December 30, 2013.
- ID - Inadequate Data to develop criterion. - NLV - Not Likely to Volatilize.
- NA - Not Available.
- {X} - Criteria not established based on surface water use for drinking water.
- {E} - Criterion is the aesthetic drinking water value. Second value is Health-Based Drinking Water value.
- Bolded values indicate detection of constituent, shaded values indicate an exceedance of at least one criteria.

- *NT* - Not Tested. - NC - MDEQ has published no criteria for this constituent.

- MDEQ Media-Specific Volatilization to Indoor Air Interim Action Screening Levels, August 2017.
- RIASL: Recommended Interim Action Screening Levels. Nonresidential RIASL is based on a former residential structure that is now nonresidential use that has an unoccupied basement.
- $RIASL_{12}$: Nonresidential RIASL appropriate for exposures less than 12 hours.
- TSRIASL: Time-Sensitive Recommended Interim Action Screening Levels.
- $TSRIASL_{12}$: Time-Sensitive RIASL appropriate for exposures less than 12 hours for structures that were not formerly residential houses. It may be appropriate to take expedited response actions at former residential structures when concentrations are less than those identified.
- (M): Site-specific criterion may be below target detection limits (TDL).
- Bolded box indicate an exceedance of of at least one RIASL.

Table 2 ~ Groundwater Analytical Results
Five Parcels of land located along Robbins Road in Grand Haven Township, Ottawa County, Michigan

Constituent	Chemical Abstract Service Number (CAS #)	Part 201 Generic Cleanup Criteria					Media-Specific Volatilization to Indoor Air Interim Action Screening Levels							TMW-5	TMW-7	TMW-8	TMW-9
		Residential Drinking Water	Nonresidential Drinking Water	Groundwater Surface Water Interface	Residential Groundwater Volatilization to Indoor Air Inhalation	Nonresidential Groundwater Volatilization to Indoor Air Inhalation	Shallow Groundwater Residential RIASL	Shallow Groundwater Nonresidential RIASL	Groundwater Residential RIASL	Groundwater Residential TSRIASL	Groundwater Nonresidential RIASL	Groundwater Nonresidential $RIASL_{12}$	Groundwater Nonresidential $TSRIASL_{12}$	05/31/18	05/31/18	05/31/18	05/31/18
Volatile Organic Compounds (VOCs)																	
VOC Analysis Date														05/31/18	05/31/18	05/31/18	05/31/18
VOC Analysis Method														8260C	8260C	8260C	8260C
Dichlorodifluoromethane	75718	1,700	4,800	ID	220,000	300,000	NC	NC	NC	NC	NC	NC	NC	*NT*	*NT*	*NT*	*NT*
Chloromethane	74873	260	1,100	ID	8,600	45,000	15	30	160	470	810	1,600	8,000	*NT*	*NT*	*NT*	*NT*
Vinyl Chloride	75014	2.0	2.0	13 {X}	1,100	13,000	0.12 (M)	1.8	0.96 (M)	9.6	28	56	1,800	*NT*	*NT*	*NT*	*NT*
Bromomethane	74839	10	29	35	4,000	9,000	NC	NC	NC	NC	NC	NC	NC	*NT*	*NT*	*NT*	*NT*
Chloroethane	75003	430	1,700	1,100 {X}	5,700,000	5,700,000	620	1,300	6,700	20,000	35,000	69,000	670,000	*NT*	*NT*	*NT*	*NT*
Trichlorofluoromethane	75694	2,600	7,300	NA	1,100,000	1,100,000	NC	NC	NC	NC	NC	NC	NC	*NT*	*NT*	*NT*	*NT*
Diethyl ether	60297	10 {E} 3,700	10 {E} 10,000	ID	61,000,000	61,000,000	NC	NC	NC	NC	NC	NC	NC	*NT*	*NT*	*NT*	*NT*
Tert-butyl alcohol	75650	3,900	11,000	NA	1,000,000,000	1,000,000,000	NC	NC	NC	NC	NC	NC	NC	*NT*	*NT*	*NT*	*NT*
1,1-Dichloroethene	75354	7.0	7.0	130	200	1,300	18	45	170	510	860	1,700	16,000	*NT*	*NT*	*NT*	*NT*
Acetone	67641	730	2,100	1,700	1,000,000,000	1,000,000,000	50,000	62,000	12,000,000	12,000,000	47,000,000	47,000,000	160,000,000	*NT*	*NT*	*NT*	*NT*
Iodomethane	74884	NC	NC	NC	NC	NC	NC	NC	NC	NC	NC	NC	NC	*NT*	*NT*	*NT*	*NT*
Carbon disulfide	75150	800	2,300	ID	250,000	550,000	NC	NC	NC	NC	NC	NC	NC	*NT*	*NT*	*NT*	*NT*
Methyl t-butyl ether (MTBE)	1634044	40 {E} 240	40 {E} 690	7,100 {X}	47,000,000	47,000,000	250	610	4,000	40,000	32,000	65,000	2,000,000	<5.0	<5.0	<5.0	<5.0
Methylene chloride	75092	5.0	5.0	1,500 {X}	220,000	1,400,000	79	490	3,900	6,200	20,000	40,000	200,000	*NT*	*NT*	*NT*	*NT*
Acrylonitrile	107131	2.6	11	2.0	34,000	190,000	NC	NC	NC	NC	NC	NC	NC	*NT*	*NT*	*NT*	*NT*
trans-1,2-Dichloroethene	156605	100	100	1,500 {X}	85,000	200,000	27	78	650	1,900	6,500	6,500	21,000	*NT*	*NT*	*NT*	*NT*
1,1-Dichloroethane	75343	880	2,500	740	1,000,000	2,300,000	4.7	14	67	670	540	1,100	34,000	*NT*	*NT*	*NT*	*NT*
Diisopropyl Ether	108203	30	86	ID	8,000	8,000	NC	NC	NC	NC	NC	NC	NC	*NT*	*NT*	*NT*	*NT*
2-Butanone (MEK)	78933	13,000	38,000	2,200	240,000,000	240,000,000	NC	NC	NC	NC	NC	NC	NC	*NT*	*NT*	*NT*	*NT*
cis-1,2-Dichloroethene	156592	70	70	620	93,000	210,000	3.4	5.8	48	140	240	490	4,600	*NT*	*NT*	*NT*	*NT*
t-Butyl Ethyl Ether (ETBE)	637923	49 {E}	49 {E}	ID	2,900,000	5,600,000	NC	NC	NC	NC	NC	NC	NC	*NT*	*NT*	*NT*	*NT*
Bromochloromethane	74975	NC	NC	NC	NC	NC	NC	NC	NC	NC	NC	NC	NC	*NT*	*NT*	*NT*	*NT*
Tetrahydrofuran	109999	95	270	11,000 {X}	6,900,000	16,000,000	NC	NC	NC	NC	NC	NC	NC	*NT*	*NT*	*NT*	*NT*
Chloroform	67663	80	80	350	28,000	180,000	0.49 (M)	1.3	7.6	76	61	120	3,800	*NT*	*NT*	*NT*	*NT*
1,1,1-Trichloroethane	71556	200	200	89	660,000	1,300,000	180	750	8,600	8,600	41,000	41,000	120,000	*NT*	*NT*	*NT*	*NT*
Carbon tetrachloride	56235	5.0	5.0	45 {X}	370	2,400	NC	NC	NC	NC	NC	NC	NC	*NT*	*NT*	*NT*	*NT*
Benzene	71432	5.0	5.0	200 {X}	5,600	35,000	1.0	3.0	14	82	120	230	2,600	<1.0	<1.0	<1.0	<1.0
t-Amyl Methyl Ether	994058	190 {E} 910	190 {E} 2,600	NA	260,000	570,000	NC	NC	NC	NC	NC	NC	NC	*NT*	*NT*	*NT*	*NT*
1,2-Dichloroethane	107062	5.0	5.0	360 {X}	9,600	59,000	NC	NC	NC	NC	NC	NC	NC	<1.0	<1.0	<1.0	<1.0
Cyclohexane	108941	33,000	94,000	NA	1,500	3,300	NC	NC	NC	NC	NC	NC	NC	*NT*	*NT*	*NT*	*NT*
Trichloroethene	79016	5.0	5.0	200 {X}	2,200	4,900	0.073 (M)	0.21 (M)	6.1	18	21	41	380	*NT*	*NT*	*NT*	*NT*
1,2-Dichloropropane	78875	5.0	5.0	230 {X}	16,000	36,000	NC	NC	NC	NC	NC	NC	NC	*NT*	*NT*	*NT*	*NT*
Dibromomethane	74953	80	230	NA	ID	ID	NC	NC	NC	NC	NC	NC	NC	*NT*	*NT*	*NT*	*NT*
Bromodichloromethane	75274	80	80	ID	4,800	37,000	NC	NC	NC	NC	NC	NC	NC	*NT*	*NT*	*NT*	*NT*
1,3-Dichloropropene	542756	8.5	35	9.0 {X}	3,900	26,000	NC	NC	NC	NC	NC	NC	NC	*NT*	*NT*	*NT*	*NT*
4-Methyl-2-pentanone (MIBK)	108101	1,800	5,200	ID	20,000,000	20,000,000	NC	NC	NC	NC	NC	NC	NC	*NT*	*NT*	*NT*	*NT*
Toluene	108883	790 {E} 1,000	790 {E} 1,000	270	530,000	530,000	300	850	23,000	33,000	110,000	110,000	350,000	<1.0	<1.0	<1.0	<1.0
1,1,2-Trichloroethane	79005	5.0	5.0	330 {X}	17,000	110,000	NC	NC	NC	NC	NC	NC	NC	*NT*	*NT*	*NT*	*NT*
Tetrachloroethene	127184	5.0	5.0	60 {X}	25,000	170,000	1.5	4.4	96	96	320	640	1,900	*NT*	*NT*	*NT*	*NT*
2-Hexanone	591786	1,000	2,900	ID	4,200,000	8,700,000	NC	NC	NC	NC	NC	NC	NC	*NT*	*NT*	*NT*	*NT*
Dibromochloromethane	124481	80	80	ID	14,000	110,000	NC	NC	NC	NC	NC	NC	NC	*NT*	*NT*	*NT*	*NT*
1,2-Dibromoethane	106934	0.05	0.05	5.7 {X}	2,400	15,000	NC	NC	NC	NC	NC	NC	NC	<1.0	<1.0	<1.0	<1.0
Chlorobenzene	108907	100	100	25	210,000	470,000	33	54	540	1,600	2,700	5,400	50,000	*NT*	*NT*	*NT*	*NT*
1,1,1,2-Tetrachloroethane	630206	77	320	ID	15,000	96,000	NC	NC	NC	NC	NC	NC	NC	*NT*	*NT*	*NT*	*NT*
Ethyl benzene	100414	74 {E} 700	74 {E} 700	18	110,000	170,000	2.8	8.5	45	450	360	710	22,000	<1.0	<1.0	<1.0	<1.0
Xylenes	1330207	280 {E} 10,000	280 {E} 10,000	41	190,000	190,000	75	140	1,200	3,600	6,000	12,000	110,000 (S)	<3.0	<3.0	<3.0	<3.0
Styrene	100425	100	100	80 {X}	170,000	310,000	NC	NC	NC	NC	NC	NC	NC	*NT*	*NT*	*NT*	*NT*
Bromoform	75252	80	80	ID	470,000	3,100,000	NC	NC	NC	NC	NC	NC	NC	*NT*	*NT*	*NT*	*NT*
Isopropylbenzene	98828	800	2,300	28	56,000	56,000	NC	NC	NC	NC	NC	NC	NC	*NT*	*NT*	*NT*	*NT*
1,1,2,2-Tetrachloroethane	79345	8.5	35	78 {X}	12,000	77,000	NC	NC	NC	NC	NC	NC	NC	*NT*	*NT*	*NT*	*NT*
1,2,3-Trichloropropane	96184	42	120	NA	8,300	18,000	NC	NC	NC	NC	NC	NC	NC	*NT*	*NT*	*NT*	*NT*
trans-1,4-Dichloro-2-butene	110576	NC	NC	NC	NC	NC	NC	NC	NC	NC	NC	NC	NC	*NT*	*NT*	*NT*	*NT*
Bromobenzene	108861	18	50	NA	180,000	390,000	NC	NC	NC	NC	NC	NC	NC	*NT*	*NT*	*NT*	*NT*
n-Propylbenzene	103651	80	230	ID	ID	ID	NC	NC	NC	NC	NC	NC	NC	*NT*	*NT*	*NT*	*NT*
1,3,5-Trimethylbenzene	108678	72 {E} 1,000	72 {E} 2,900	45	61,000	61,000	18	34	310	940	1,500	3,100	28,000	<1.0	<1.0	<1.0	<1.0
tert-Butylbenzene	98066	80	230	ID	ID	ID	NC	NC	NC	NC	NC	NC	NC	*NT*	*NT*	*NT*	*NT*
1,2,4-Trimethylbenzene	95636	63 {E} 1,000	63 {E} 2,900	17	56,000	56,000	25	44	440	1,300	2,200	4,400	40,000	<1.0	<1.0	<1.0	<1.0
sec-Butylbenzene	135988	80	230	ID	ID	ID	NC	NC	NC	NC	NC	NC	NC	*NT*	*NT*	*NT*	*NT*
p-Isopropyltoluene	99876	NC	NC	NC	NC	NC	NC	NC	NC	NC	NC	NC	NC	*NT*	*NT*	*NT*	*NT*
1,3-Dichlorobenzene	541731	6.6	19	28	18,000	41,000	2.6	4.2	52	150	250	510	4,600	*NT*	*NT*	*NT*	*NT*
1,4-Dichlorobenzene	106467	75	75	17	16,000	74,000	5.9	15	120	1,200	930	1,900	57,000	*NT*	*NT*	*NT*	*NT*
n-Butylbenzene	104518	80	230	ID	ID	ID	NC	NC	NC	NC	NC	NC	NC	*NT*	*NT*	*NT*	*NT*
1,2,3-Trimethylbenzene	526738	NC	NC	NC	NC	NC	43	71	800	2,400	3,900	7,900	72,000	*NT*	*NT*	*NT*	*NT*
1,2-Dichlorobenzene	95501	600	600	13	160,000	160,000	NC	NC	NC	NC	NC	NC	NC	*NT*	*NT*	*NT*	*NT*
1,2-Dibromo-3-chloropropane	96128	0.2	0.2	ID	220	1,200	NC	NC	NC	NC	NC	NC	NC	*NT*	*NT*	*NT*	*NT*
Hexachloroethane	67721	7.3	21	6.7 {X}	27,000	50,000	NC	NC	NC	NC	NC	NC	NC	*NT*	*NT*	*NT*	*NT*
1,2,4-Trichlorobenzene	120821	70	70	99 {X}	300,000	300,000	3.8 (M)	5.8	95	290	460	920	8,100	*NT*	*NT*	*NT*	*NT*
Naphthalene	91203	520	1,500	11	31,000	31,000	NC	NC	NC	NC	NC	NC	NC	<5.0	<5.0	<5.0	<5.0
1,2,3-Trichlorobenzene	87616	NC	NC	NC	NC	NC	NC	NC	NC	NC	NC	NC	NC	*NT*	*NT*	*NT*	*NT*
2-Methylnaphthalene	91576	260	750	19	25,000	25,000	NC	NC	NC	NC	NC	NC	NC	<5.0	<5.0	<5.0	<5.0
Polynuclear Aromatic Hydrocarbons (PNAs)																	
PNA Extract Date																	
PNA Analysis Date																	
PNA Analysis Method																	
Naphthalene	91203	520	1,500	11	31,000	31,000	NC	NC	NC	NC	NC	NC	NC	*NT*	*NT*	*NT*	*NT*
2-Methylnaphthalene	91576	260	750	19	25,000	25,000	NC	NC	NC	NC	NC	NC	NC	*NT*	*NT*	*NT*	*NT*
Acenaphthylene	208968	52	150	ID	3,900	3,900	NC	NC	NC	NC	NC	NC	NC	*NT*	*NT*	*NT*	*NT*
Acenaphthene	83329	1,300	3,800	38	4,200	4,200	NC	NC	NC	NC	NC	NC	NC	*NT*	*NT*	*NT*	*NT*
Fluorene	86737	880	2,000	12	2,000	2,000	NC	NC	NC	NC	NC	NC	NC	*NT*	*NT*	*NT*	*NT*
Phenanthrene	85018	52	150	2.0	1,000	1,000	NC	NC	NC	NC	NC	NC	NC	*NT*	*NT*	*NT*	*NT*
Anthracene	120127	43	43	ID	43	43	NC	NC	NC	NC	NC	NC	NC	*NT*	*NT*	*NT*	*NT*
Fluoranthene	206440	210	210	1.6	210	210	NC	NC	NC	NC	NC	NC	NC	*NT*	*NT*	*NT*	*NT*
Pyrene	129000	140	140	ID	140	140	NC	NC	NC	NC	NC	NC	NC	*NT*	*NT*	*NT*	*NT*
Benzo[a]anthracene	56553	2.1	8.5	ID	NLV	NLV	NC	NC	NC	NC	NC	NC	NC	*NT*	*NT*	*NT*	*NT*
Chrysene	218019	1.6	1.6	ID	ID	ID	NC	NC	NC	NC	NC	NC	NC	*NT*	*NT*	*NT*	*NT*
Benzo[b]fluoranthene	205992	1.5	1.5	ID	ID	ID	NC	NC	NC	NC	NC	NC	NC	*NT*	*NT*	*NT*	*NT*
Benzo[k]fluoranthene	207089	1.0	1.0	NA	NLV	NLV	NC	NC	NC	NC	NC	NC	NC	*NT*	*NT*	*NT*	*NT*
Benzo[a]pyrene	50328	5.0	5.0	ID	NLV	NLV	NC	NC	NC	NC	NC	NC	NC	*NT*	*NT*	*NT*	*NT*
Indeno[1,2,3-cd]pyrene	193395	2.0	2.0	ID	NLV	NLV	NC	NC	NC	NC	NC	NC	NC	*NT*	*NT*	*NT*	*NT*
Dibenzo[a,h]anthracene	53703	2.0	2.0	ID	NLV	NLV	NC	NC	NC	NC	NC	NC	NC	*NT*	*NT*	*NT*	*NT*
Benzo[g,h,i]perylene	191242	1.0	1.0	ID	NLV	NLV	NC	NC	NC	NC	NC	NC	NC	*NT*	*NT*	*NT*	*NT*

Notes:

- Results are reported in micrograms per liter (µg/L); equivalent to parts per billion (ppb).
- MDEQ Criteria are from Table 1, R299.44 Generic Groundwater Cleanup Criteria found on RRD website Rule 299.1 to 299.50 Environmental Contamination Response Activity Rules, effective December 30, 2013.
- ID - Inadequate Data to develop criterion. - NLV - Not Likely to Volatilize.
- NA - Not Available.
- {X} - Criteria not established based on surface water use for drinking water.
- {E} - Criterion is the aesthetic drinking water value. Second value is Health-Based Drinking Water value.
- Bolded values indicate detection of constituent, shaded values indicate an exceedance of at least one criteria.

- *NT* - Not Tested. - NC - MDEQ has published no criteria for this constituent.

- MDEQ Media-Specific Volatilization to Indoor Air Interim Action Screening Levels, August 2017.
- RIASL: Recommended Interim Action Screening Levels. Nonresidential RIASL is based on a former residential structure that is now nonresidential use that has an unoccupied basement.
- $RIASL_{12}$: Nonresidential RIASL appropriate for exposures less than 12 hours.
- TSRIASL: Time-Sensitive Recommended Interim Action Screening Levels.
- $TSRIASL_{12}$: Time-Sensitive RIASL appropriate for exposures less than 12 hours for structures that were not formerly residential houses. It may be appropriate to take expedited response actions at former residential structures when concentrations are less than those identified.
- (M): Site-specific criterion may be below target detection limits (TDL).
- Bolded box indicate an exceedance of of at least one RIASL.

Table 2 ~ Groundwater Analytical Results
Five Parcels of land located along Robbins Road in Grand Haven Township, Ottawa County, Michigan

Constituent	Chemical Abstract Service Number (CAS #)	Part 201 Generic Cleanup Criteria					Media-Specific Volatilization to Indoor Air Interim Action Screening Levels							TMW-10	TMW-11	TMW-12	TMW-13
		Residential Drinking Water	Nonresidential Drinking Water	Groundwater Surface Water Interface	Residential Groundwater Volatilization to Indoor Air Inhalation	Nonresidential Groundwater Volatilization to Indoor Air Inhalation	Shallow Groundwater Residential RIASL	Shallow Groundwater Nonresidential RIASL	Groundwater Residential RIASL	Groundwater Residential TSRIASL	Groundwater Nonresidential RIASL	Groundwater Nonresidential $RIASL_{12}$	Groundwater Nonresidential $TSRIASL_{12}$	05/31/18	05/31/18	05/31/18	05/31/18
Volatile Organic Compounds (VOCs)																	
VOC Analysis Date														05/31/18	05/31/18	05/31/18	05/31/18
VOC Analysis Method														8260C	8260C	8260C	8260C
Dichlorodifluoromethane	75718	1,700	4,800	ID	220,000	300,000	NC	NC	NC	NC	NC	NC	NC	*NT*	*NT*	*NT*	*NT*
Chloromethane	74873	260	1,100	ID	8,600	45,000	15	30	160	470	810	1,600	8,000	*NT*	*NT*	*NT*	*NT*
Vinyl Chloride	75014	2.0	2.0	13 {X}	1,100	13,000	0.12 (M)	1.8	0.96 (M)	9.6	28	56	1,800	*NT*	*NT*	*NT*	*NT*
Bromomethane	74839	10	29	35	4,000	9,000	NC	NC	NC	NC	NC	NC	NC	*NT*	*NT*	*NT*	*NT*
Chloroethane	75003	430	1,700	1,100 {X}	5,700,000	5,700,000	620	1,300	6,700	20,000	35,000	69,000	670,000	*NT*	*NT*	*NT*	*NT*
Trichlorofluoromethane	75694	2,600	7,300	NA	1,100,000	1,100,000	NC	NC	NC	NC	NC	NC	NC	*NT*	*NT*	*NT*	*NT*
Diethyl ether	60297	10 {E} 3,700	10 {E} 10,000	ID	61,000,000	61,000,000	NC	NC	NC	NC	NC	NC	NC	*NT*	*NT*	*NT*	*NT*
Tert-butyl alcohol	75650	3,900	11,000	NA	1,000,000,000	1,000,000,000	NC	NC	NC	NC	NC	NC	NC	*NT*	*NT*	*NT*	*NT*
1,1-Dichloroethene	75354	7.0	7.0	130	200	1,300	18	45	170	510	860	1,700	16,000	*NT*	*NT*	*NT*	*NT*
Acetone	67641	730	2,100	1,700	1,000,000,000	1,000,000,000	50,000	62,000	12,000,000	12,000,000	47,000,000	47,000,000	160,000,000	*NT*	*NT*	*NT*	*NT*
Iodomethane	74884	NC	NC	NC	NC	NC	NC	NC	NC	NC	NC	NC	NC	*NT*	*NT*	*NT*	*NT*
Carbon disulfide	75150	800	2,300	ID	250,000	550,000	NC	NC	NC	NC	NC	NC	NC	*NT*	*NT*	*NT*	*NT*
Methyl t-butyl ether (MTBE)	1634044	40 {E} 240	40 {E} 690	7,100 {X}	47,000,000	47,000,000	250	610	4,000	40,000	32,000	65,000	2,000,000	<5.0	<5.0	<5.0	<5.0
Methylene chloride	75092	5.0	5.0	1,500 {X}	220,000	1,400,000	79	490	3,900	6,200	20,000	40,000	200,000	*NT*	*NT*	*NT*	*NT*
Acrylonitrile	107131	2.6	11	2.0	34,000	190,000	NC	NC	NC	NC	NC	NC	NC	*NT*	*NT*	*NT*	*NT*
trans-1,2-Dichloroethene	156605	100	100	1,500 {X}	85,000	200,000	27	78	650	1,900	6,500	6,500	21,000	*NT*	*NT*	*NT*	*NT*
1,1-Dichloroethane	75343	880	2,500	740	1,000,000	2,300,000	4.7	14	67	670	540	1,100	34,000	*NT*	*NT*	*NT*	*NT*
Diisopropyl Ether	108203	30	86	ID	8,000	8,000	NC	NC	NC	NC	NC	NC	NC	*NT*	*NT*	*NT*	*NT*
2-Butanone (MEK)	78933	13,000	38,000	2,200	240,000,000	240,000,000	NC	NC	NC	NC	NC	NC	NC	*NT*	*NT*	*NT*	*NT*
cis-1,2-Dichloroethene	156592	70	70	620	93,000	210,000	3.4	5.8	48	140	240	490	4,600	*NT*	*NT*	*NT*	*NT*
t-Butyl Ethyl Ether (ETBE)	637923	49 {E}	49 {E}	ID	2,900,000	5,600,000	NC	NC	NC	NC	NC	NC	NC	*NT*	*NT*	*NT*	*NT*
Bromochloromethane	74975	NC	NC	NC	NC	NC	NC	NC	NC	NC	NC	NC	NC	*NT*	*NT*	*NT*	*NT*
Tetrahydrofuran	109999	95	270	11,000 {X}	6,900,000	16,000,000	NC	NC	NC	NC	NC	NC	NC	*NT*	*NT*	*NT*	*NT*
Chloroform	67663	80	80	350	28,000	180,000	0.49 (M)	1.3	7.6	76	61	120	3,800	*NT*	*NT*	*NT*	*NT*
1,1,1-Trichloroethane	71556	200	200	89	660,000	1,300,000	180	750	8,600	8,600	41,000	41,000	120,000	*NT*	*NT*	*NT*	*NT*
Carbon tetrachloride	56235	5.0	5.0	45 {X}	370	2,400	NC	NC	NC	NC	NC	NC	NC	*NT*	*NT*	*NT*	*NT*
Benzene	71432	5.0	5.0	200 {X}	5,600	35,000	1.0	3.0	14	82	120	230	2,600	<1.0	<1.0	<1.0	<1.0
t-Amyl Methyl Ether	994058	190 {E} 910	190 {E} 2,600	NA	260,000	570,000	NC	NC	NC	NC	NC	NC	NC	*NT*	*NT*	*NT*	*NT*
1,2-Dichloroethane	107062	5.0	5.0	360 {X}	9,600	59,000	NC	NC	NC	NC	NC	NC	NC	<1.0	<1.0	<1.0	<1.0
Cyclohexane	108941	33,000	94,000	NA	1,500	3,300	NC	NC	NC	NC	NC	NC	NC	*NT*	*NT*	*NT*	*NT*
Trichloroethene	79016	5.0	5.0	200 {X}	2,200	4,900	0.073 (M)	0.21 (M)	6.1	18	21	41	380	*NT*	*NT*	*NT*	*NT*
1,2-Dichloropropane	78875	5.0	5.0	230 {X}	16,000	36,000	NC	NC	NC	NC	NC	NC	NC	*NT*	*NT*	*NT*	*NT*
Dibromomethane	74953	80	230	NA	ID	ID	NC	NC	NC	NC	NC	NC	NC	*NT*	*NT*	*NT*	*NT*
Bromodichloromethane	75274	80	80	ID	4,800	37,000	NC	NC	NC	NC	NC	NC	NC	*NT*	*NT*	*NT*	*NT*
1,3-Dichloropropene	542756	8.5	35	9.0 {X}	3,900	26,000	NC	NC	NC	NC	NC	NC	NC	*NT*	*NT*	*NT*	*NT*
4-Methyl-2-pentanone (MIBK)	108101	1,800	5,200	ID	20,000,000	20,000,000	NC	NC	NC	NC	NC	NC	NC	*NT*	*NT*	*NT*	*NT*
Toluene	108883	790 {E} 1,000	790 {E} 1,000	270	530,000	530,000	300	850	23,000	33,000	110,000	110,000	350,000	<1.0	<1.0	<1.0	<1.0
1,1,2-Trichloroethane	79005	5.0	5.0	330 {X}	17,000	110,000	NC	NC	NC	NC	NC	NC	NC	*NT*	*NT*	*NT*	*NT*
Tetrachloroethene	127184	5.0	5.0	60 {X}	25,000	170,000	1.5	4.4	96	96	320	640	1,900	*NT*	*NT*	*NT*	*NT*
2-Hexanone	591786	1,000	2,900	ID	4,200,000	8,700,000	NC	NC	NC	NC	NC	NC	NC	*NT*	*NT*	*NT*	*NT*
Dibromochloromethane	124481	80	80	ID	14,000	110,000	NC	NC	NC	NC	NC	NC	NC	*NT*	*NT*	*NT*	*NT*
1,2-Dibromoethane	106934	0.05	0.05	5.7 {X}	2,400	15,000	NC	NC	NC	NC	NC	NC	NC	<1.0	<1.0	<1.0	<1.0
Chlorobenzene	108907	100	100	25	210,000	470,000	33	54	540	1,600	2,700	5,400	50,000	*NT*	*NT*	*NT*	*NT*
1,1,1,2-Tetrachloroethane	630206	77	320	ID	15,000	96,000	NC	NC	NC	NC	NC	NC	NC	*NT*	*NT*	*NT*	*NT*
Ethyl benzene	100414	74 {E} 700	74 {E} 700	18	110,000	170,000	2.8	8.5	45	450	360	710	22,000	<1.0	<1.0	<1.0	<1.0
Xylenes	1330207	280 {E} 10,000	280 {E} 10,000	41	190,000	190,000	75	140	1,200	3,600	6,000	12,000	110,000 (S)	<3.0	<3.0	<3.0	<3.0
Styrene	100425	100	100	80 {X}	170,000	310,000	NC	NC	NC	NC	NC	NC	NC	*NT*	*NT*	*NT*	*NT*
Bromoform	75252	80	80	ID	470,000	3,100,000	NC	NC	NC	NC	NC	NC	NC	*NT*	*NT*	*NT*	*NT*
Isopropylbenzene	98828	800	2,300	28	56,000	56,000	NC	NC	NC	NC	NC	NC	NC	*NT*	*NT*	*NT*	*NT*
1,1,2,2-Tetrachloroethane	79345	8.5	35	78 {X}	12,000	77,000	NC	NC	NC	NC	NC	NC	NC	*NT*	*NT*	*NT*	*NT*
1,2,3-Trichloropropane	96184	42	120	NA	8,300	18,000	NC	NC	NC	NC	NC	NC	NC	*NT*	*NT*	*NT*	*NT*
trans-1,4-Dichloro-2-butene	110576	NC	NC	NC	NC	NC	NC	NC	NC	NC	NC	NC	NC	*NT*	*NT*	*NT*	*NT*
Bromobenzene	108861	18	50	NA	180,000	390,000	NC	NC	NC	NC	NC	NC	NC	*NT*	*NT*	*NT*	*NT*
n-Propylbenzene	103651	80	230	ID	ID	ID	NC	NC	NC	NC	NC	NC	NC	*NT*	*NT*	*NT*	*NT*
1,3,5-Trimethylbenzene	108678	72 {E} 1,000	72 {E} 2,900	45	61,000	61,000	18	34	310	940	1,500	3,100	28,000	<1.0	<1.0	<1.0	<1.0
tert-Butylbenzene	98066	80	230	ID	ID	ID	NC	NC	NC	NC	NC	NC	NC	*NT*	*NT*	*NT*	*NT*
1,2,4-Trimethylbenzene	95636	63 {E} 1,000	63 {E} 2,900	17	56,000	56,000	25	44	440	1,300	2,200	4,400	40,000	<1.0	<1.0	<1.0	<1.0
sec-Butylbenzene	135988	80	230	ID	ID	ID	NC	NC	NC	NC	NC	NC	NC	*NT*	*NT*	*NT*	*NT*
p-Isopropyltoluene	99876	NC	NC	NC	NC	NC	NC	NC	NC	NC	NC	NC	NC	*NT*	*NT*	*NT*	*NT*
1,3-Dichlorobenzene	541731	6.6	19	28	18,000	41,000	2.6	4.2	52	150	250	510	4,600	*NT*	*NT*	*NT*	*NT*
1,4-Dichlorobenzene	106467	75	75	17	16,000	74,000	5.9	15	120	1,200	930	1,900	57,000	*NT*	*NT*	*NT*	*NT*
n-Butylbenzene	104518	80	230	ID	ID	ID	NC	NC	NC	NC	NC	NC	NC	*NT*	*NT*	*NT*	*NT*
1,2,3-Trimethylbenzene	526738	NC	NC	NC	NC	NC	43	71	800	2,400	3,900	7,900	72,000	*NT*	*NT*	*NT*	*NT*
1,2-Dichlorobenzene	95501	600	600	13	160,000	160,000	NC	NC	NC	NC	NC	NC	NC	*NT*	*NT*	*NT*	*NT*
1,2-Dibromo-3-chloropropane	96128	0.2	0.2	ID	220	1,200	NC	NC	NC	NC	NC	NC	NC	*NT*	*NT*	*NT*	*NT*
Hexachloroethane	67721	7.3	21	6.7 {X}	27,000	50,000	NC	NC	NC	NC	NC	NC	NC	*NT*	*NT*	*NT*	*NT*
1,2,4-Trichlorobenzene	120821	70	70	99 {X}	300,000	300,000	3.8 (M)	5.8	95	290	460	920	8,100	*NT*	*NT*	*NT*	*NT*
Naphthalene	91203	520	1,500	11	31,000	31,000	NC	NC	NC	NC	NC	NC	NC	<5.0	<5.0	<5.0	<5.0
1,2,3-Trichlorobenzene	87616	NC	NC	NC	NC	NC	NC	NC	NC	NC	NC	NC	NC	*NT*	*NT*	*NT*	*NT*
2-Methylnaphthalene	91576	260	750	19	25,000	25,000	NC	NC	NC	NC	NC	NC	NC	<5.0	<5.0	<5.0	<5.0
Polynuclear Aromatic Hydrocarbons (PNAs)																	
PNA Extract Date																	
PNA Analysis Date																	
PNA Analysis Method																	
Naphthalene	91203	520	1,500	11	31,000	31,000	NC	NC	NC	NC	NC	NC	NC	*NT*	*NT*	*NT*	*NT*
2-Methylnaphthalene	91576	260	750	19	25,000	25,000	NC	NC	NC	NC	NC	NC	NC	*NT*	*NT*	*NT*	*NT*
Acenaphthylene	208968	52	150	ID	3,900	3,900	NC	NC	NC	NC	NC	NC	NC	*NT*	*NT*	*NT*	*NT*
Acenaphthene	83329	1,300	3,800	38	4,200	4,200	NC	NC	NC	NC	NC	NC	NC	*NT*	*NT*	*NT*	*NT*
Fluorene	86737	880	2,000	12	2,000	2,000	NC	NC	NC	NC	NC	NC	NC	*NT*	*NT*	*NT*	*NT*
Phenanthrene	85018	52	150	2.0	1,000	1,000	NC	NC	NC	NC	NC	NC	NC	*NT*	*NT*	*NT*	*NT*
Anthracene	120127	43	43	ID	43	43	NC	NC	NC	NC	NC	NC	NC	*NT*	*NT*	*NT*	*NT*
Fluoranthene	206440	210	210	1.6	210	210	NC	NC	NC	NC	NC	NC	NC	*NT*	*NT*	*NT*	*NT*
Pyrene	129000	140	140	ID	140	140	NC	NC	NC	NC	NC	NC	NC	*NT*	*NT*	*NT*	*NT*
Benzo[a]anthracene	56553	2.1	8.5	ID	NLV	NLV	NC	NC	NC	NC	NC	NC	NC	*NT*	*NT*	*NT*	*NT*
Chrysene	218019	1.6	1.6	ID	ID	ID	NC	NC	NC	NC	NC	NC	NC	*NT*	*NT*	*NT*	*NT*
Benzo[b]fluoranthene	205992	1.5	1.5	ID	ID	ID	NC	NC	NC	NC	NC	NC	NC	*NT*	*NT*	*NT*	*NT*
Benzo[k]fluoranthene	207089	1.0	1.0	NA	NLV	NLV	NC	NC	NC	NC	NC	NC	NC	*NT*	*NT*	*NT*	*NT*
Benzo[a]pyrene	50328	5.0	5.0	ID	NLV	NLV	NC	NC	NC	NC	NC	NC	NC	*NT*	*NT*	*NT*	*NT*
Indeno[1,2,3-cd]pyrene	193395	2.0	2.0	ID	NLV	NLV	NC	NC	NC	NC	NC	NC	NC	*NT*	*NT*	*NT*	*NT*
Dibenzo[a,h]anthracene	53703	2.0	2.0	ID	NLV	NLV	NC	NC	NC	NC	NC	NC	NC	*NT*	*NT*	*NT*	*NT*
Benzo[g,h,i]perylene	191242	1.0	1.0	ID	NLV	NLV	NC	NC	NC	NC	NC	NC	NC	*NT*	*NT*	*NT*	*NT*

Notes:

- Results are reported in micrograms per liter (µg/L); equivalent to parts per billion (ppb).
- MDEQ Criteria are from Table 1, R299.44 Generic Groundwater Cleanup Criteria found on RRD website Rule 299.1 to 299.50 Environmental Contamination Response Activity Rules, effective December 30, 2013.
- ID - Inadequate Data to develop criterion. - NLV - Not Likely to Volatilize.
- NA - Not Available.
- {X} - Criteria not established based on surface water use for drinking water.
- {E} - Criterion is the aesthetic drinking water value. Second value is Health-Based Drinking Water value.
- Bolded values indicate detection of constituent, shaded values indicate an exceedance of at least one criteria.

- *NT* - Not Tested. - NC - MDEQ has published no criteria for this constituent.

- MDEQ Media-Specific Volatilization to Indoor Air Interim Action Screening Levels, August 2017.
- RIASL: Recommended Interim Action Screening Levels. Nonresidential RIASL is based on a former residential structure that is now nonresidential use that has an unoccupied basement.
- $RIASL_{12}$: Nonresidential RIASL appropriate for exposures less than 12 hours.
- TSRIASL: Time-Sensitive Recommended Interim Action Screening Levels.
- $TSRIASL_{12}$: Time-Sensitive RIASL appropriate for exposures less than 12 hours for structures that were not formerly residential houses. It may be appropriate to take expedited response actions at former residential structures when concentrations are less than those identified.
- (M): Site-specific criterion may be below target detection limits (TDL).
- Bolded box indicate an exceedance of of at least one RIASL.

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May 11, 2018

Mr. Roger Bour
Westshore Consulting
2534 Black Creek Road
Muskegon, MI 49444

Phone: (231) 777-3447
Fax: (231) 773-3453

RE: Trace Project T18E062
Client Project Tysman Companies Phase II

Dear Mr. Bour:

Enclosed are your analytical results. The results of this report relate only to the samples listed in the body of this report.

All reports were examined through Trace's validation process to ensure that requirements for quality and completeness were satisfied. All reported analytical results were obtained in accordance with the methods referenced on the reports. Every practical effort was made to meet the reporting limit specifications for this work, however, some results may have raised reporting limits to correct for percent solids.

For clients that require NELAC Accreditation, Trace certifies that these test results meet all requirements of the NELAC Standard, except for those analytes with a "N" notation. These analytes have not been evaluated by NELAC at Trace's discretion and will not be reported unless requested by client.

If you have questions concerning this report, please contact me at 231.773.5998 or by email at jmink@trace-labs.com.

Sincerely,

Jon Mink
Senior Project Manager
Enclosures

ACCREDITED IN ACCORDANCE WITH nelac

NJDEP Accreditation No. MI008

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SAMPLE SUMMARY

Trace Project ID: T18E062
Client Project ID: Tysman Companies Phase II

Trace ID	Sample ID	Matrix	Collected By	Date Collected	Date Received
T18E062-01	SB-1	Soil	adm	05/02/18 10:56	05/02/18 15:21
T18E062-02	SB-2	Soil	adm	05/02/18 11:12	05/02/18 15:21
T18E062-03	SB-4	Soil	adm	05/02/18 12:26	05/02/18 15:21
T18E062-04	SB-3	Soil	adm	05/02/18 12:54	05/02/18 15:21
T18E062-05	SB-1 / TMW-1	Water	adm	05/02/18 14:06	05/02/18 15:21
T18E062-06	SB-4/ TMW-2	Water	adm	05/02/18 13:37	05/02/18 15:21

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AN EXPLANATION OF TERMS AND SYMBOLS WHICH MAY OCCUR IN THIS REPORT

DEFINITIONS

LCS	Laboratory Control Sample
LCSD	Laboratory Control Sample Duplicate
MS	Matrix Spike
MSD	Matrix Spike Duplicate
RPD	Relative Percent Difference
DUP	Matrix Duplicate
RDL	Reporting Detection Limit
MCL	Maximum Contamination Limit
TIC	Tentatively Identified Compound
<, ND or U	Indicates the compound was analyzed for but not detected
*	Indicates a result that exceeds its associated MCL or Surrogate control limits
N	Indicates that the compound has not been evaluated by NELAC
NA	Indicates that the compound is not available.

NOTE: Samples for volatiles that have been extracted with a water miscible solvent were corrected for the total volume of the solvent/water mixture.
Solid matrices Method Blanks are at 100% solids as such results are the same wet or dry.

DATA QUALIFIERS

Trace ID: T18E062-05RE1

Analysis: EPA 8270C

2-Fluorobiphenyl	Note 319.1 : The surrogate was out of control low when compared to the control limits in the initial extraction and the re-extraction.
Terphenyl-d14	Note 319.1 : The surrogate was out of control low when compared to the control limits in the initial extraction and the re-extraction.

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ANALYTICAL RESULTS

Trace Project ID: T18E062
Client Project ID: Tysman Companies Phase II

Trace ID: T18E062-01 | Date Collected: 05/02/18 10:56 | Matrix: Soil
Sample ID: SB-1 | Date Received: 05/02/18 15:21

PARAMETERS	RESULTS	UNITS	RDL	DILUTION	PREPARED	BY	ANALYZED	BY	NOTES	MCL
SEMI-VOLATILE ORGANIC COMPOUNDS BY GC-MS										
Analysis Method: EPA 8270C										
Batch: T076771										
Naphthalene	<330	ug/kg dry	330	1	05/03/18	kbc	05/04/18	avl		
2-Methylnaphthalene	<330	ug/kg dry	330	1	05/03/18	kbc	05/04/18	avl		
Acenaphthylene	<330	ug/kg dry	330	1	05/03/18	kbc	05/04/18	avl		
Acenaphthene	<330	ug/kg dry	330	1	05/03/18	kbc	05/04/18	avl		
Fluorene	<330	ug/kg dry	330	1	05/03/18	kbc	05/04/18	avl		
Phenanthrene	<330	ug/kg dry	330	1	05/03/18	kbc	05/04/18	avl		
Anthracene	<330	ug/kg dry	330	1	05/03/18	kbc	05/04/18	avl		
Fluoranthene	<330	ug/kg dry	330	1	05/03/18	kbc	05/04/18	avl		
Pyrene	<330	ug/kg dry	330	1	05/03/18	kbc	05/04/18	avl		
Benzo (a) anthracene	<330	ug/kg dry	330	1	05/03/18	kbc	05/04/18	avl		
Chrysene	<330	ug/kg dry	330	1	05/03/18	kbc	05/04/18	avl		
Benzo (b) fluoranthene	<330	ug/kg dry	330	1	05/03/18	kbc	05/04/18	avl		
Benzo (k) fluoranthene	<330	ug/kg dry	330	1	05/03/18	kbc	05/04/18	avl		
Benzo (a) pyrene	<330	ug/kg dry	330	1	05/03/18	kbc	05/04/18	avl		
Indeno (1,2,3-cd) pyrene	<330	ug/kg dry	330	1	05/03/18	kbc	05/04/18	avl		
Dibenz (a,h) anthracene	<330	ug/kg dry	330	1	05/03/18	kbc	05/04/18	avl		
Benzo (g,h,i) perylene	<330	ug/kg dry	330	1	05/03/18	kbc	05/04/18	avl		
Surrogates:										
Nitrobenzene-d5	70	%	36-98	1	05/03/18	kbc	05/04/18	avl		
2-Fluorobiphenyl	62	%	44-105	1	05/03/18	kbc	05/04/18	avl		
Terphenyl-d14	57	%	46-109	1	05/03/18	kbc	05/04/18	avl		
VOLATILE ORGANIC COMPOUNDS BY GC-MS										
Analysis Method: EPA 8260C										
Batch: T076853										
Dichlorodifluoromethane	<250	ug/kg dry	250	50	05/04/18	kcs	05/05/18	kcs		
Chloromethane	<250	ug/kg dry	250	50	05/04/18	kcs	05/05/18	kcs		
Vinyl chloride	<40	ug/kg dry	40	50	05/04/18	kcs	05/05/18	kcs	N	
Bromomethane	<200	ug/kg dry	200	50	05/04/18	kcs	05/05/18	kcs		
Chloroethane	<250	ug/kg dry	250	50	05/04/18	kcs	05/05/18	kcs		
Trichlorofluoromethane	<100	ug/kg dry	100	50	05/04/18	kcs	05/05/18	kcs		
Diethyl ether	<200	ug/kg dry	200	50	05/04/18	kcs	05/05/18	kcs	N	

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ANALYTICAL RESULTS

Trace Project ID: T18E062
Client Project ID: Tysman Companies Phase II

Trace ID: T18E062-01 | Date Collected: 05/02/18 10:56 | Matrix: Soil
Sample ID: SB-1 | Date Received: 05/02/18 15:21

PARAMETERS	RESULTS UNITS	RDL	DILUTION	PREPARED	BY	ANALYZED	BY	NOTES	MCL
VOLATILE ORGANIC COMPOUNDS BY GC-MS									
Tert-butyl alcohol	<2500 ug/kg dry	2500	50	05/04/18	kcs	05/05/18	kcs	N	
1,1-Dichloroethene	<50 ug/kg dry	50	50	05/04/18	kcs	05/05/18	kcs		
Acetone	<1000 ug/kg dry	1000	50	05/04/18	kcs	05/05/18	kcs		
Iodomethane	<100 ug/kg dry	100	50	05/04/18	kcs	05/05/18	kcs	N	
Carbon disulfide	<250 ug/kg dry	250	50	05/04/18	kcs	05/05/18	kcs		
Methyl-tert-butyl ether	<250 ug/kg dry	250	50	05/04/18	kcs	05/05/18	kcs		
Methylene chloride	<250 ug/kg dry	250	50	05/04/18	kcs	05/05/18	kcs		
Acrylonitrile	<100 ug/kg dry	100	50	05/04/18	kcs	05/05/18	kcs	N	
trans-1,2-Dichloroethene	<50 ug/kg dry	50	50	05/04/18	kcs	05/05/18	kcs		
1,1-Dichloroethane	<50 ug/kg dry	50	50	05/04/18	kcs	05/05/18	kcs		
Diisopropyl Ether	<250 ug/kg dry	250	50	05/04/18	kcs	05/05/18	kcs	N	
2-Butanone	<750 ug/kg dry	750	50	05/04/18	kcs	05/05/18	kcs		
cis-1,2-Dichloroethene	<50 ug/kg dry	50	50	05/04/18	kcs	05/05/18	kcs		
t-Butyl Ethyl Ether	<250 ug/kg dry	250	50	05/04/18	kcs	05/05/18	kcs	N	
Bromochloromethane	<100 ug/kg dry	100	50	05/04/18	kcs	05/05/18	kcs		
Tetrahydrofuran	<1000 ug/kg dry	1000	50	05/04/18	kcs	05/05/18	kcs	N	
Chloroform	<50 ug/kg dry	50	50	05/04/18	kcs	05/05/18	kcs		
1,1,1-Trichloroethane	<50 ug/kg dry	50	50	05/04/18	kcs	05/05/18	kcs		
Carbon tetrachloride	<50 ug/kg dry	50	50	05/04/18	kcs	05/05/18	kcs		
Benzene	<50 ug/kg dry	50	50	05/04/18	kcs	05/05/18	kcs		
t-Amyl Methyl Ether	<250 ug/kg dry	250	50	05/04/18	kcs	05/05/18	kcs	N	
1,2-Dichloroethane	<50 ug/kg dry	50	50	05/04/18	kcs	05/05/18	kcs		
Cyclohexane	<250 ug/kg dry	250	50	05/04/18	kcs	05/05/18	kcs	N	
Trichloroethene	<50 ug/kg dry	50	50	05/04/18	kcs	05/05/18	kcs		
1,2-Dichloropropane	<50 ug/kg dry	50	50	05/04/18	kcs	05/05/18	kcs		
Dibromomethane	<250 ug/kg dry	250	50	05/04/18	kcs	05/05/18	kcs		
Bromodichloromethane	<100 ug/kg dry	100	50	05/04/18	kcs	05/05/18	kcs		
cis-1,3-Dichloropropene	<50 ug/kg dry	50	50	05/04/18	kcs	05/05/18	kcs		
4-Methyl-2-pentanone	<2500 ug/kg dry	2500	50	05/04/18	kcs	05/05/18	kcs		
Toluene	<100 ug/kg dry	100	50	05/04/18	kcs	05/05/18	kcs		
trans-1,3-Dichloropropene	<50 ug/kg dry	50	50	05/04/18	kcs	05/05/18	kcs		
1,1,2-Trichloroethane	<50 ug/kg dry	50	50	05/04/18	kcs	05/05/18	kcs		
Tetrachloroethene	<50 ug/kg dry	50	50	05/04/18	kcs	05/05/18	kcs		

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ANALYTICAL RESULTS

Trace Project ID: T18E062
Client Project ID: Tysman Companies Phase II

Trace ID: T18E062-01 | Date Collected: 05/02/18 10:56 | Matrix: Soil
Sample ID: SB-1 | Date Received: 05/02/18 15:21

PARAMETERS	RESULTS UNITS	RDL	DILUTION	PREPARED	BY	ANALYZED	BY	NOTES	MCL
VOLATILE ORGANIC COMPOUNDS BY GC-MS									
2-Hexanone	<2500 ug/kg dry	2500	50	05/04/18	kcs	05/05/18	kcs		
Dibromochloromethane	<100 ug/kg dry	100	50	05/04/18	kcs	05/05/18	kcs		
1,2-Dibromoethane (EDB)	<50 ug/kg dry	50	50	05/04/18	kcs	05/05/18	kcs		
Chlorobenzene	<50 ug/kg dry	50	50	05/04/18	kcs	05/05/18	kcs		
1,1,1,2-Tetrachloroethane	<100 ug/kg dry	100	50	05/04/18	kcs	05/05/18	kcs		
Ethylbenzene	<50 ug/kg dry	50	50	05/04/18	kcs	05/05/18	kcs		
m,p-Xylene	<100 ug/kg dry	100	50	05/04/18	kcs	05/05/18	kcs	N	
o-Xylene	<50 ug/kg dry	50	50	05/04/18	kcs	05/05/18	kcs	N	
Xylenes, total	<150 ug/kg dry	150	50	05/04/18	kcs	05/05/18	kcs	N	
Styrene	<50 ug/kg dry	50	50	05/04/18	kcs	05/05/18	kcs		
Bromoform	<100 ug/kg dry	100	50	05/04/18	kcs	05/05/18	kcs		
Isopropylbenzene	<250 ug/kg dry	250	50	05/04/18	kcs	05/05/18	kcs		
1,1,2,2-Tetrachloroethane	<50 ug/kg dry	50	50	05/04/18	kcs	05/05/18	kcs		
1,2,3-Trichloropropane	<100 ug/kg dry	100	50	05/04/18	kcs	05/05/18	kcs		
trans-1,4-Dichloro-2-butene	<50 ug/kg dry	50	50	05/04/18	kcs	05/05/18	kcs		
Bromobenzene	<100 ug/kg dry	100	50	05/04/18	kcs	05/05/18	kcs		
n-Propylbenzene	<100 ug/kg dry	100	50	05/04/18	kcs	05/05/18	kcs		
1,3,5-Trimethylbenzene	<100 ug/kg dry	100	50	05/04/18	kcs	05/05/18	kcs		
t-Butyl Benzene	<50 ug/kg dry	50	50	05/04/18	kcs	05/05/18	kcs		
1,2,4-Trimethylbenzene	<100 ug/kg dry	100	50	05/04/18	kcs	05/05/18	kcs		
sec-Butylbenzene	<50 ug/kg dry	50	50	05/04/18	kcs	05/05/18	kcs		
p-Isopropyltoluene	<100 ug/kg dry	100	50	05/04/18	kcs	05/05/18	kcs		
1,3-Dichlorobenzene	<100 ug/kg dry	100	50	05/04/18	kcs	05/05/18	kcs		
1,4-Dichlorobenzene	<100 ug/kg dry	100	50	05/04/18	kcs	05/05/18	kcs		
n-Butylbenzene	<50 ug/kg dry	50	50	05/04/18	kcs	05/05/18	kcs		
1,2,3-Trimethylbenzene	<50 ug/kg dry	50	50	05/04/18	kcs	05/05/18	kcs	N	
1,2-Dichlorobenzene	<100 ug/kg dry	100	50	05/04/18	kcs	05/05/18	kcs		
1,2-Dibromo-3-chloropropane	<100 ug/kg dry	100	50	05/04/18	kcs	05/05/18	kcs		
Hexachloroethane	<100 ug/kg dry	100	50	05/04/18	kcs	05/05/18	kcs	N	
1,2,4-Trichlorobenzene	<330 ug/kg dry	330	50	05/04/18	kcs	05/05/18	kcs		
Naphthalene	<330 ug/kg dry	330	50	05/04/18	kcs	05/05/18	kcs	N	
1,2,3-Trichlorobenzene	<250 ug/kg dry	250	50	05/04/18	kcs	05/05/18	kcs		
2-Methylnaphthalene	<330 ug/kg dry	330	50	05/04/18	kcs	05/05/18	kcs	N	
Surrogates:									

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ANALYTICAL RESULTS

Trace Project ID: T18E062
Client Project ID: Tysman Companies Phase II

Trace ID: T18E062-01 | Date Collected: 05/02/18 10:56 | Matrix: Soil
Sample ID: SB-1 | Date Received: 05/02/18 15:21

PARAMETERS	RESULTS	UNITS	RDL	DILUTION	PREPARED	BY	ANALYZED	BY	NOTES	MCL
VOLATILE ORGANIC COMPOUNDS BY GC-MS										
1,2-Dichloroethane-d4	106	%	68-133	50	05/04/18	kcs	05/05/18	kcs		
Toluene-d8	99	%	75-120	50	05/04/18	kcs	05/05/18	kcs		
4-Bromofluorobenzene	97	%	69-119	50	05/04/18	kcs	05/05/18	kcs		
1,2-Dichlorobenzene-d4	97	%	72-127	50	05/04/18	kcs	05/05/18	kcs		
WET CHEMISTRY										
Analysis Method: ASTM D2974-87										
Batch: T076783										
% Solids	**82**	**% by Wt.**	**0.10**	**1**	**05/03/18**	**nm**	**05/04/18**	**nm**	**N**	

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ANALYTICAL RESULTS

Trace Project ID: T18E062
Client Project ID: Tysman Companies Phase II

Trace ID: T18E062-02 | Date Collected: 05/02/18 11:12 | Matrix: Soil
Sample ID: SB-2 | Date Received: 05/02/18 15:21

PARAMETERS	RESULTS	UNITS	RDL	DILUTION	PREPARED	BY	ANALYZED	BY	NOTES	MCL
SEMI-VOLATILE ORGANIC COMPOUNDS BY GC-MS										
Analysis Method: EPA 8270C										
Batch: T076771										
Naphthalene	<330	ug/kg dry	330	2	05/03/18	kbc	05/04/18	avl		
2-Methylnaphthalene	<330	ug/kg dry	330	2	05/03/18	kbc	05/04/18	avl		
Acenaphthylene	<330	ug/kg dry	330	2	05/03/18	kbc	05/04/18	avl		
Acenaphthene	<330	ug/kg dry	330	2	05/03/18	kbc	05/04/18	avl		
Fluorene	<330	ug/kg dry	330	2	05/03/18	kbc	05/04/18	avl		
Phenanthrene	<330	ug/kg dry	330	2	05/03/18	kbc	05/04/18	avl		
Anthracene	<330	ug/kg dry	330	2	05/03/18	kbc	05/04/18	avl		
Fluoranthene	<330	ug/kg dry	330	2	05/03/18	kbc	05/04/18	avl		
Pyrene	<330	ug/kg dry	330	2	05/03/18	kbc	05/04/18	avl		
Benzo (a) anthracene	<330	ug/kg dry	330	2	05/03/18	kbc	05/04/18	avl		
Chrysene	<330	ug/kg dry	330	2	05/03/18	kbc	05/04/18	avl		
Benzo (b) fluoranthene	<330	ug/kg dry	330	2	05/03/18	kbc	05/04/18	avl		
Benzo (k) fluoranthene	<330	ug/kg dry	330	2	05/03/18	kbc	05/04/18	avl		
Benzo (a) pyrene	<330	ug/kg dry	330	2	05/03/18	kbc	05/04/18	avl		
Indeno (1,2,3-cd) pyrene	<330	ug/kg dry	330	2	05/03/18	kbc	05/04/18	avl		
Dibenz (a,h) anthracene	<330	ug/kg dry	330	2	05/03/18	kbc	05/04/18	avl		
Benzo (g,h,i) perylene	<330	ug/kg dry	330	2	05/03/18	kbc	05/04/18	avl		
Surrogates:										
Nitrobenzene-d5	77	%	36-98	2	05/03/18	kbc	05/04/18	avl		
2-Fluorobiphenyl	66	%	44-105	2	05/03/18	kbc	05/04/18	avl		
Terphenyl-d14	69	%	46-109	2	05/03/18	kbc	05/04/18	avl		
VOLATILE ORGANIC COMPOUNDS BY GC-MS										
Analysis Method: EPA 8260C										
Batch: T076919										
Dichlorodifluoromethane	<250	ug/kg dry	250	50	05/08/18	kcs	05/08/18	was		
Chloromethane	<250	ug/kg dry	250	50	05/08/18	kcs	05/08/18	was		
Vinyl chloride	<40	ug/kg dry	40	50	05/08/18	kcs	05/08/18	was	N	
Bromomethane	<200	ug/kg dry	200	50	05/08/18	kcs	05/08/18	was		
Chloroethane	<250	ug/kg dry	250	50	05/08/18	kcs	05/08/18	was		
Trichlorofluoromethane	<100	ug/kg dry	100	50	05/08/18	kcs	05/08/18	was		
Diethyl ether	<200	ug/kg dry	200	50	05/08/18	kcs	05/08/18	was	N	

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ANALYTICAL RESULTS

Trace Project ID: T18E062
Client Project ID: Tysman Companies Phase II

Trace ID: T18E062-02 | Date Collected: 05/02/18 11:12 | Matrix: Soil
Sample ID: SB-2 | Date Received: 05/02/18 15:21

PARAMETERS	RESULTS UNITS	RDL	DILUTION	PREPARED	BY	ANALYZED	BY	NOTES	MCL
VOLATILE ORGANIC COMPOUNDS BY GC-MS									
Tert-butyl alcohol	<2500 ug/kg dry	2500	50	05/08/18	kcs	05/08/18	was	N	
1,1-Dichloroethene	<50 ug/kg dry	50	50	05/08/18	kcs	05/08/18	was		
Acetone	<1000 ug/kg dry	1000	50	05/08/18	kcs	05/08/18	was		
Iodomethane	<100 ug/kg dry	100	50	05/08/18	kcs	05/08/18	was	N	
Carbon disulfide	<250 ug/kg dry	250	50	05/08/18	kcs	05/08/18	was		
Methyl-tert-butyl ether	<250 ug/kg dry	250	50	05/08/18	kcs	05/08/18	was		
Methylene chloride	<250 ug/kg dry	250	50	05/08/18	kcs	05/08/18	was		
Acrylonitrile	<100 ug/kg dry	100	50	05/08/18	kcs	05/08/18	was	N	
trans-1,2-Dichloroethene	<50 ug/kg dry	50	50	05/08/18	kcs	05/08/18	was		
1,1-Dichloroethane	<50 ug/kg dry	50	50	05/08/18	kcs	05/08/18	was		
Diisopropyl Ether	<250 ug/kg dry	250	50	05/08/18	kcs	05/08/18	was	N	
2-Butanone	<750 ug/kg dry	750	50	05/08/18	kcs	05/08/18	was		
cis-1,2-Dichloroethene	<50 ug/kg dry	50	50	05/08/18	kcs	05/08/18	was		
t-Butyl Ethyl Ether	<250 ug/kg dry	250	50	05/08/18	kcs	05/08/18	was	N	
Bromochloromethane	<100 ug/kg dry	100	50	05/08/18	kcs	05/08/18	was		
Tetrahydrofuran	<1000 ug/kg dry	1000	50	05/08/18	kcs	05/08/18	was	N	
Chloroform	<50 ug/kg dry	50	50	05/08/18	kcs	05/08/18	was		
1,1,1-Trichloroethane	<50 ug/kg dry	50	50	05/08/18	kcs	05/08/18	was		
Carbon tetrachloride	<50 ug/kg dry	50	50	05/08/18	kcs	05/08/18	was		
Benzene	<50 ug/kg dry	50	50	05/08/18	kcs	05/08/18	was		
t-Amyl Methyl Ether	<250 ug/kg dry	250	50	05/08/18	kcs	05/08/18	was	N	
1,2-Dichloroethane	<50 ug/kg dry	50	50	05/08/18	kcs	05/08/18	was		
Cyclohexane	<250 ug/kg dry	250	50	05/08/18	kcs	05/08/18	was	N	
Trichloroethene	<50 ug/kg dry	50	50	05/08/18	kcs	05/08/18	was		
1,2-Dichloropropane	<50 ug/kg dry	50	50	05/08/18	kcs	05/08/18	was		
Dibromomethane	<250 ug/kg dry	250	50	05/08/18	kcs	05/08/18	was		
Bromodichloromethane	<100 ug/kg dry	100	50	05/08/18	kcs	05/08/18	was		
cis-1,3-Dichloropropene	<50 ug/kg dry	50	50	05/08/18	kcs	05/08/18	was		
4-Methyl-2-pentanone	<2500 ug/kg dry	2500	50	05/08/18	kcs	05/08/18	was		
Toluene	<100 ug/kg dry	100	50	05/08/18	kcs	05/08/18	was		
trans-1,3-Dichloropropene	<50 ug/kg dry	50	50	05/08/18	kcs	05/08/18	was		
1,1,2-Trichloroethane	<50 ug/kg dry	50	50	05/08/18	kcs	05/08/18	was		
Tetrachloroethene	<50 ug/kg dry	50	50	05/08/18	kcs	05/08/18	was		

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ANALYTICAL RESULTS

Trace Project ID: T18E062
Client Project ID: Tysman Companies Phase II

Trace ID: T18E062-02 | Date Collected: 05/02/18 11:12 | Matrix: Soil
Sample ID: SB-2 | Date Received: 05/02/18 15:21

PARAMETERS	RESULTS UNITS	RDL	DILUTION	PREPARED	BY	ANALYZED	BY	NOTES	MCL
VOLATILE ORGANIC COMPOUNDS BY GC-MS									
2-Hexanone	<2500 ug/kg dry	2500	50	05/08/18	kcs	05/08/18	was		
Dibromochloromethane	<100 ug/kg dry	100	50	05/08/18	kcs	05/08/18	was		
1,2-Dibromoethane (EDB)	<50 ug/kg dry	50	50	05/08/18	kcs	05/08/18	was		
Chlorobenzene	<50 ug/kg dry	50	50	05/08/18	kcs	05/08/18	was		
1,1,1,2-Tetrachloroethane	<100 ug/kg dry	100	50	05/08/18	kcs	05/08/18	was		
Ethylbenzene	<50 ug/kg dry	50	50	05/08/18	kcs	05/08/18	was		
m,p-Xylene	<100 ug/kg dry	100	50	05/08/18	kcs	05/08/18	was	N	
o-Xylene	<50 ug/kg dry	50	50	05/08/18	kcs	05/08/18	was	N	
Xylenes, total	<150 ug/kg dry	150	50	05/08/18	kcs	05/08/18	was	N	
Styrene	<50 ug/kg dry	50	50	05/08/18	kcs	05/08/18	was		
Bromoform	<100 ug/kg dry	100	50	05/08/18	kcs	05/08/18	was		
Isopropylbenzene	<250 ug/kg dry	250	50	05/08/18	kcs	05/08/18	was		
1,1,2,2-Tetrachloroethane	<50 ug/kg dry	50	50	05/08/18	kcs	05/08/18	was		
1,2,3-Trichloropropane	<100 ug/kg dry	100	50	05/08/18	kcs	05/08/18	was		
trans-1,4-Dichloro-2-butene	<50 ug/kg dry	50	50	05/08/18	kcs	05/08/18	was		
Bromobenzene	<100 ug/kg dry	100	50	05/08/18	kcs	05/08/18	was		
n-Propylbenzene	<100 ug/kg dry	100	50	05/08/18	kcs	05/08/18	was		
1,3,5-Trimethylbenzene	<100 ug/kg dry	100	50	05/08/18	kcs	05/08/18	was		
t-Butyl Benzene	<50 ug/kg dry	50	50	05/08/18	kcs	05/08/18	was		
1,2,4-Trimethylbenzene	<100 ug/kg dry	100	50	05/08/18	kcs	05/08/18	was		
sec-Butylbenzene	<50 ug/kg dry	50	50	05/08/18	kcs	05/08/18	was		
p-Isopropyltoluene	<100 ug/kg dry	100	50	05/08/18	kcs	05/08/18	was		
1,3-Dichlorobenzene	<100 ug/kg dry	100	50	05/08/18	kcs	05/08/18	was		
1,4-Dichlorobenzene	<100 ug/kg dry	100	50	05/08/18	kcs	05/08/18	was		
n-Butylbenzene	<50 ug/kg dry	50	50	05/08/18	kcs	05/08/18	was		
1,2,3-Trimethylbenzene	<50 ug/kg dry	50	50	05/08/18	kcs	05/08/18	was	N	
1,2-Dichlorobenzene	<100 ug/kg dry	100	50	05/08/18	kcs	05/08/18	was		
1,2-Dibromo-3-chloropropane	<100 ug/kg dry	100	50	05/08/18	kcs	05/08/18	was		
Hexachloroethane	<100 ug/kg dry	100	50	05/08/18	kcs	05/08/18	was	N	
1,2,4-Trichlorobenzene	<330 ug/kg dry	330	50	05/08/18	kcs	05/08/18	was		
Naphthalene	<330 ug/kg dry	330	50	05/08/18	kcs	05/08/18	was	N	
1,2,3-Trichlorobenzene	<250 ug/kg dry	250	50	05/08/18	kcs	05/08/18	was		
2-Methylnaphthalene	<330 ug/kg dry	330	50	05/08/18	kcs	05/08/18	was	N	
Surrogates:									

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ANALYTICAL RESULTS

Trace Project ID: T18E062
Client Project ID: Tysman Companies Phase II

Trace ID: T18E062-02 | Date Collected: 05/02/18 11:12 | Matrix: Soil
Sample ID: SB-2 | Date Received: 05/02/18 15:21

PARAMETERS	RESULTS	UNITS	RDL	DILUTION	PREPARED	BY	ANALYZED	BY	NOTES	MCL
VOLATILE ORGANIC COMPOUNDS BY GC-MS										
1,2-Dichloroethane-d4	99	%	68-133	50	05/08/18	kcs	05/08/18	was		
Toluene-d8	97	%	75-120	50	05/08/18	kcs	05/08/18	was		
4-Bromofluorobenzene	100	%	69-119	50	05/08/18	kcs	05/08/18	was		
1,2-Dichlorobenzene-d4	97	%	72-127	50	05/08/18	kcs	05/08/18	was		
WET CHEMISTRY										
Analysis Method: ASTM D2974-87										
Batch: T076783										
% Solids	**86**	**% by Wt.**	**0.10**	**1**	**05/03/18**	**nm**	**05/04/18**	**nm**	**N**	

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ANALYTICAL RESULTS

Trace Project ID: T18E062
Client Project ID: Tysman Companies Phase II

Trace ID: T18E062-03 | Date Collected: 05/02/18 12:26 | Matrix: Soil
Sample ID: SB-4 | Date Received: 05/02/18 15:21

PARAMETERS	RESULTS	UNITS	RDL	DILUTION	PREPARED	BY	ANALYZED	BY	NOTES	MCL
SEMI-VOLATILE ORGANIC COMPOUNDS BY GC-MS										
Analysis Method: EPA 8270C										
Batch: T076771										
Naphthalene	<330	ug/kg dry	330	1	05/03/18	kbc	05/04/18	avl		
2-Methylnaphthalene	<330	ug/kg dry	330	1	05/03/18	kbc	05/04/18	avl		
Acenaphthylene	<330	ug/kg dry	330	1	05/03/18	kbc	05/04/18	avl		
Acenaphthene	<330	ug/kg dry	330	1	05/03/18	kbc	05/04/18	avl		
Fluorene	<330	ug/kg dry	330	1	05/03/18	kbc	05/04/18	avl		
Phenanthrene	<330	ug/kg dry	330	1	05/03/18	kbc	05/04/18	avl		
Anthracene	<330	ug/kg dry	330	1	05/03/18	kbc	05/04/18	avl		
Fluoranthene	<330	ug/kg dry	330	1	05/03/18	kbc	05/04/18	avl		
Pyrene	<330	ug/kg dry	330	1	05/03/18	kbc	05/04/18	avl		
Benzo (a) anthracene	<330	ug/kg dry	330	1	05/03/18	kbc	05/04/18	avl		
Chrysene	<330	ug/kg dry	330	1	05/03/18	kbc	05/04/18	avl		
Benzo (b) fluoranthene	<330	ug/kg dry	330	1	05/03/18	kbc	05/04/18	avl		
Benzo (k) fluoranthene	<330	ug/kg dry	330	1	05/03/18	kbc	05/04/18	avl		
Benzo (a) pyrene	<330	ug/kg dry	330	1	05/03/18	kbc	05/04/18	avl		
Indeno (1,2,3-cd) pyrene	<330	ug/kg dry	330	1	05/03/18	kbc	05/04/18	avl		
Dibenz (a,h) anthracene	<330	ug/kg dry	330	1	05/03/18	kbc	05/04/18	avl		
Benzo (g,h,i) perylene	<330	ug/kg dry	330	1	05/03/18	kbc	05/04/18	avl		
Surrogates:										
Nitrobenzene-d5	71	%	36-98	1	05/03/18	kbc	05/04/18	avl		
2-Fluorobiphenyl	61	%	44-105	1	05/03/18	kbc	05/04/18	avl		
Terphenyl-d14	53	%	46-109	1	05/03/18	kbc	05/04/18	avl		
VOLATILE ORGANIC COMPOUNDS BY GC-MS										
Analysis Method: EPA 8260C										
Batch: T076919										
Dichlorodifluoromethane	<250	ug/kg dry	250	50	05/08/18	kcs	05/08/18	was		
Chloromethane	<250	ug/kg dry	250	50	05/08/18	kcs	05/08/18	was		
Vinyl chloride	<40	ug/kg dry	40	50	05/08/18	kcs	05/08/18	was	N	
Bromomethane	<200	ug/kg dry	200	50	05/08/18	kcs	05/08/18	was		
Chloroethane	<250	ug/kg dry	250	50	05/08/18	kcs	05/08/18	was		
Trichlorofluoromethane	<100	ug/kg dry	100	50	05/08/18	kcs	05/08/18	was		
Diethyl ether	<200	ug/kg dry	200	50	05/08/18	kcs	05/08/18	was	N	

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ANALYTICAL RESULTS

Trace Project ID: T18E062
Client Project ID: Tysman Companies Phase II

Trace ID: T18E062-03 | Date Collected: 05/02/18 12:26 | Matrix: Soil
Sample ID: SB-4 | Date Received: 05/02/18 15:21

PARAMETERS	RESULTS UNITS	RDL	DILUTION	PREPARED	BY	ANALYZED	BY	NOTES	MCL
VOLATILE ORGANIC COMPOUNDS BY GC-MS									
Tert-butyl alcohol	<2500 ug/kg dry	2500	50	05/08/18	kcs	05/08/18	was	N	
1,1-Dichloroethene	<50 ug/kg dry	50	50	05/08/18	kcs	05/08/18	was		
Acetone	<1000 ug/kg dry	1000	50	05/08/18	kcs	05/08/18	was		
Iodomethane	<100 ug/kg dry	100	50	05/08/18	kcs	05/08/18	was	N	
Carbon disulfide	<250 ug/kg dry	250	50	05/08/18	kcs	05/08/18	was		
Methyl-tert-butyl ether	<250 ug/kg dry	250	50	05/08/18	kcs	05/08/18	was		
Methylene chloride	<250 ug/kg dry	250	50	05/08/18	kcs	05/08/18	was		
Acrylonitrile	<100 ug/kg dry	100	50	05/08/18	kcs	05/08/18	was	N	
trans-1,2-Dichloroethene	<50 ug/kg dry	50	50	05/08/18	kcs	05/08/18	was		
1,1-Dichloroethane	<50 ug/kg dry	50	50	05/08/18	kcs	05/08/18	was		
Diisopropyl Ether	<250 ug/kg dry	250	50	05/08/18	kcs	05/08/18	was	N	
2-Butanone	<750 ug/kg dry	750	50	05/08/18	kcs	05/08/18	was		
cis-1,2-Dichloroethene	<50 ug/kg dry	50	50	05/08/18	kcs	05/08/18	was		
t-Butyl Ethyl Ether	<250 ug/kg dry	250	50	05/08/18	kcs	05/08/18	was	N	
Bromochloromethane	<100 ug/kg dry	100	50	05/08/18	kcs	05/08/18	was		
Tetrahydrofuran	<1000 ug/kg dry	1000	50	05/08/18	kcs	05/08/18	was	N	
Chloroform	<50 ug/kg dry	50	50	05/08/18	kcs	05/08/18	was		
1,1,1-Trichloroethane	<50 ug/kg dry	50	50	05/08/18	kcs	05/08/18	was		
Carbon tetrachloride	<50 ug/kg dry	50	50	05/08/18	kcs	05/08/18	was		
Benzene	<50 ug/kg dry	50	50	05/08/18	kcs	05/08/18	was		
t-Amyl Methyl Ether	<250 ug/kg dry	250	50	05/08/18	kcs	05/08/18	was	N	
1,2-Dichloroethane	<50 ug/kg dry	50	50	05/08/18	kcs	05/08/18	was		
Cyclohexane	<250 ug/kg dry	250	50	05/08/18	kcs	05/08/18	was	N	
Trichloroethene	<50 ug/kg dry	50	50	05/08/18	kcs	05/08/18	was		
1,2-Dichloropropane	<50 ug/kg dry	50	50	05/08/18	kcs	05/08/18	was		
Dibromomethane	<250 ug/kg dry	250	50	05/08/18	kcs	05/08/18	was		
Bromodichloromethane	<100 ug/kg dry	100	50	05/08/18	kcs	05/08/18	was		
cis-1,3-Dichloropropene	<50 ug/kg dry	50	50	05/08/18	kcs	05/08/18	was		
4-Methyl-2-pentanone	<2500 ug/kg dry	2500	50	05/08/18	kcs	05/08/18	was		
Toluene	<100 ug/kg dry	100	50	05/08/18	kcs	05/08/18	was		
trans-1,3-Dichloropropene	<50 ug/kg dry	50	50	05/08/18	kcs	05/08/18	was		
1,1,2-Trichloroethane	<50 ug/kg dry	50	50	05/08/18	kcs	05/08/18	was		
Tetrachloroethene	<50 ug/kg dry	50	50	05/08/18	kcs	05/08/18	was		

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ANALYTICAL RESULTS

Trace Project ID: T18E062
Client Project ID: Tysman Companies Phase II

Trace ID: T18E062-03 | Date Collected: 05/02/18 12:26 | Matrix: Soil
Sample ID: SB-4 | Date Received: 05/02/18 15:21

PARAMETERS	RESULTS UNITS	RDL	DILUTION	PREPARED	BY	ANALYZED	BY	NOTES	MCL
VOLATILE ORGANIC COMPOUNDS BY GC-MS									
2-Hexanone	<2500 ug/kg dry	2500	50	05/08/18	kcs	05/08/18	was		
Dibromochloromethane	<100 ug/kg dry	100	50	05/08/18	kcs	05/08/18	was		
1,2-Dibromoethane (EDB)	<50 ug/kg dry	50	50	05/08/18	kcs	05/08/18	was		
Chlorobenzene	<50 ug/kg dry	50	50	05/08/18	kcs	05/08/18	was		
1,1,1,2-Tetrachloroethane	<100 ug/kg dry	100	50	05/08/18	kcs	05/08/18	was		
Ethylbenzene	<50 ug/kg dry	50	50	05/08/18	kcs	05/08/18	was		
m,p-Xylene	<100 ug/kg dry	100	50	05/08/18	kcs	05/08/18	was	N	
o-Xylene	<50 ug/kg dry	50	50	05/08/18	kcs	05/08/18	was	N	
Xylenes, total	<150 ug/kg dry	150	50	05/08/18	kcs	05/08/18	was	N	
Styrene	<50 ug/kg dry	50	50	05/08/18	kcs	05/08/18	was		
Bromoform	<100 ug/kg dry	100	50	05/08/18	kcs	05/08/18	was		
Isopropylbenzene	<250 ug/kg dry	250	50	05/08/18	kcs	05/08/18	was		
1,1,2,2-Tetrachloroethane	<50 ug/kg dry	50	50	05/08/18	kcs	05/08/18	was		
1,2,3-Trichloropropane	<100 ug/kg dry	100	50	05/08/18	kcs	05/08/18	was		
trans-1,4-Dichloro-2-butene	<50 ug/kg dry	50	50	05/08/18	kcs	05/08/18	was		
Bromobenzene	<100 ug/kg dry	100	50	05/08/18	kcs	05/08/18	was		
n-Propylbenzene	<100 ug/kg dry	100	50	05/08/18	kcs	05/08/18	was		
1,3,5-Trimethylbenzene	<100 ug/kg dry	100	50	05/08/18	kcs	05/08/18	was		
t-Butyl Benzene	<50 ug/kg dry	50	50	05/08/18	kcs	05/08/18	was		
1,2,4-Trimethylbenzene	<100 ug/kg dry	100	50	05/08/18	kcs	05/08/18	was		
sec-Butylbenzene	<50 ug/kg dry	50	50	05/08/18	kcs	05/08/18	was		
p-Isopropyltoluene	<100 ug/kg dry	100	50	05/08/18	kcs	05/08/18	was		
1,3-Dichlorobenzene	<100 ug/kg dry	100	50	05/08/18	kcs	05/08/18	was		
1,4-Dichlorobenzene	<100 ug/kg dry	100	50	05/08/18	kcs	05/08/18	was		
n-Butylbenzene	<50 ug/kg dry	50	50	05/08/18	kcs	05/08/18	was		
1,2,3-Trimethylbenzene	<50 ug/kg dry	50	50	05/08/18	kcs	05/08/18	was	N	
1,2-Dichlorobenzene	<100 ug/kg dry	100	50	05/08/18	kcs	05/08/18	was		
1,2-Dibromo-3-chloropropane	<100 ug/kg dry	100	50	05/08/18	kcs	05/08/18	was		
Hexachloroethane	<100 ug/kg dry	100	50	05/08/18	kcs	05/08/18	was	N	
1,2,4-Trichlorobenzene	<330 ug/kg dry	330	50	05/08/18	kcs	05/08/18	was		
Naphthalene	<330 ug/kg dry	330	50	05/08/18	kcs	05/08/18	was	N	
1,2,3-Trichlorobenzene	<250 ug/kg dry	250	50	05/08/18	kcs	05/08/18	was		
2-Methylnaphthalene	<330 ug/kg dry	330	50	05/08/18	kcs	05/08/18	was	N	
Surrogates:									

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ANALYTICAL RESULTS

Trace Project ID: T18E062
Client Project ID: Tysman Companies Phase II

Trace ID: T18E062-03 | Date Collected: 05/02/18 12:26 | Matrix: Soil
Sample ID: SB-4 | Date Received: 05/02/18 15:21

PARAMETERS	RESULTS	UNITS	RDL	DILUTION	PREPARED	BY	ANALYZED	BY	NOTES	MCL
VOLATILE ORGANIC COMPOUNDS BY GC-MS										
1,2-Dichloroethane-d4	100	%	68-133	50	05/08/18	kcs	05/08/18	was		
Toluene-d8	102	%	75-120	50	05/08/18	kcs	05/08/18	was		
4-Bromofluorobenzene	98	%	69-119	50	05/08/18	kcs	05/08/18	was		
1,2-Dichlorobenzene-d4	98	%	72-127	50	05/08/18	kcs	05/08/18	was		
WET CHEMISTRY										
Analysis Method: ASTM D2974-87										
Batch: T076783										
% Solids	**86**	**% by Wt.**	**0.10**	**1**	**05/03/18**	**nm**	**05/04/18**	**nm**	**N**	

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ANALYTICAL RESULTS

Trace Project ID: T18E062
Client Project ID: Tysman Companies Phase II

Trace ID: T18E062-04 | Date Collected: 05/02/18 12:54 | Matrix: Soil
Sample ID: SB-3 | Date Received: 05/02/18 15:21

PARAMETERS	RESULTS UNITS	RDL	DILUTION	PREPARED	BY	ANALYZED	BY	NOTES	MCL
SEMI-VOLATILE ORGANIC COMPOUNDS BY GC-MS									
Analysis Method: EPA 8270C									
Batch: T076771									
Naphthalene	<330 ug/kg dry	330	2	05/03/18	kbc	05/04/18	avl		
2-Methylnaphthalene	<330 ug/kg dry	330	2	05/03/18	kbc	05/04/18	avl		
Acenaphthylene	<330 ug/kg dry	330	2	05/03/18	kbc	05/04/18	avl		
Acenaphthene	<330 ug/kg dry	330	2	05/03/18	kbc	05/04/18	avl		
Fluorene	<330 ug/kg dry	330	2	05/03/18	kbc	05/04/18	avl		
Phenanthrene	<330 ug/kg dry	330	2	05/03/18	kbc	05/04/18	avl		
Anthracene	<330 ug/kg dry	330	2	05/03/18	kbc	05/04/18	avl		
Fluoranthene	<330 ug/kg dry	330	2	05/03/18	kbc	05/04/18	avl		
Pyrene	<330 ug/kg dry	330	2	05/03/18	kbc	05/04/18	avl		
Benzo (a) anthracene	<330 ug/kg dry	330	2	05/03/18	kbc	05/04/18	avl		
Chrysene	<330 ug/kg dry	330	2	05/03/18	kbc	05/04/18	avl		
Benzo (b) fluoranthene	<330 ug/kg dry	330	2	05/03/18	kbc	05/04/18	avl		
Benzo (k) fluoranthene	<330 ug/kg dry	330	2	05/03/18	kbc	05/04/18	avl		
Benzo (a) pyrene	<330 ug/kg dry	330	2	05/03/18	kbc	05/04/18	avl		
Indeno (1,2,3-cd) pyrene	<330 ug/kg dry	330	2	05/03/18	kbc	05/04/18	avl		
Dibenz (a,h) anthracene	<330 ug/kg dry	330	2	05/03/18	kbc	05/04/18	avl		
Benzo (g,h,i) perylene	<330 ug/kg dry	330	2	05/03/18	kbc	05/04/18	avl		
Surrogates:									
Nitrobenzene-d5	71 %	36-98	2	05/03/18	kbc	05/04/18	avl		
2-Fluorobiphenyl	71 %	44-105	2	05/03/18	kbc	05/04/18	avl		
Terphenyl-d14	83 %	46-109	2	05/03/18	kbc	05/04/18	avl		
VOLATILE ORGANIC COMPOUNDS BY GC-MS									
Analysis Method: EPA 8260C									
Batch: T076919									
Dichlorodifluoromethane	<250 ug/kg dry	250	50	05/08/18	kcs	05/08/18	was		
Chloromethane	<250 ug/kg dry	250	50	05/08/18	kcs	05/08/18	was		
Vinyl chloride	<46 ug/kg dry	46	50	05/08/18	kcs	05/08/18	was	N	
Bromomethane	<200 ug/kg dry	200	50	05/08/18	kcs	05/08/18	was		
Chloroethane	<250 ug/kg dry	250	50	05/08/18	kcs	05/08/18	was		
Trichlorofluoromethane	<100 ug/kg dry	100	50	05/08/18	kcs	05/08/18	was		
Diethyl ether	<230 ug/kg dry	230	50	05/08/18	kcs	05/08/18	was	N	

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ANALYTICAL RESULTS

Trace Project ID: T18E062
Client Project ID: Tysman Companies Phase II

Trace ID: T18E062-04 | Date Collected: 05/02/18 12:54 | Matrix: Soil
Sample ID: SB-3 | Date Received: 05/02/18 15:21

PARAMETERS	RESULTS UNITS	RDL	DILUTION	PREPARED	BY	ANALYZED	BY	NOTES	MCL
VOLATILE ORGANIC COMPOUNDS BY GC-MS									
Tert-butyl alcohol	<2900 ug/kg dry	2900	50	05/08/18	kcs	05/08/18	was	N	
1,1-Dichloroethene	<58 ug/kg dry	58	50	05/08/18	kcs	05/08/18	was		
Acetone	<1000 ug/kg dry	1000	50	05/08/18	kcs	05/08/18	was		
Iodomethane	<100 ug/kg dry	100	50	05/08/18	kcs	05/08/18	was	N	
Carbon disulfide	<290 ug/kg dry	290	50	05/08/18	kcs	05/08/18	was		
Methyl-tert-butyl ether	<290 ug/kg dry	290	50	05/08/18	kcs	05/08/18	was		
Methylene chloride	<250 ug/kg dry	250	50	05/08/18	kcs	05/08/18	was		
Acrylonitrile	<120 ug/kg dry	120	50	05/08/18	kcs	05/08/18	was	N	
trans-1,2-Dichloroethene	<58 ug/kg dry	58	50	05/08/18	kcs	05/08/18	was		
1,1-Dichloroethane	<58 ug/kg dry	58	50	05/08/18	kcs	05/08/18	was		
Diisopropyl Ether	<290 ug/kg dry	290	50	05/08/18	kcs	05/08/18	was	N	
2-Butanone	<870 ug/kg dry	870	50	05/08/18	kcs	05/08/18	was		
cis-1,2-Dichloroethene	<58 ug/kg dry	58	50	05/08/18	kcs	05/08/18	was		
t-Butyl Ethyl Ether	<290 ug/kg dry	290	50	05/08/18	kcs	05/08/18	was	N	
Bromochloromethane	<100 ug/kg dry	100	50	05/08/18	kcs	05/08/18	was		
Tetrahydrofuran	<1200 ug/kg dry	1200	50	05/08/18	kcs	05/08/18	was	N	
Chloroform	<58 ug/kg dry	58	50	05/08/18	kcs	05/08/18	was		
1,1,1-Trichloroethane	<58 ug/kg dry	58	50	05/08/18	kcs	05/08/18	was		
Carbon tetrachloride	<58 ug/kg dry	58	50	05/08/18	kcs	05/08/18	was		
Benzene	**81 ug/kg dry**	**58**	**50**	**05/08/18**	**kcs**	**05/08/18**	**was**		
t-Amyl Methyl Ether	<290 ug/kg dry	290	50	05/08/18	kcs	05/08/18	was	N	
1,2-Dichloroethane	<58 ug/kg dry	58	50	05/08/18	kcs	05/08/18	was		
Cyclohexane	<290 ug/kg dry	290	50	05/08/18	kcs	05/08/18	was	N	
Trichloroethene	<58 ug/kg dry	58	50	05/08/18	kcs	05/08/18	was		
1,2-Dichloropropane	<58 ug/kg dry	58	50	05/08/18	kcs	05/08/18	was		
Dibromomethane	<250 ug/kg dry	250	50	05/08/18	kcs	05/08/18	was		
Bromodichloromethane	<100 ug/kg dry	100	50	05/08/18	kcs	05/08/18	was		
cis-1,3-Dichloropropene	<58 ug/kg dry	58	50	05/08/18	kcs	05/08/18	was		
4-Methyl-2-pentanone	<2900 ug/kg dry	2900	50	05/08/18	kcs	05/08/18	was		
Toluene	**430 ug/kg dry**	**100**	**50**	**05/08/18**	**kcs**	**05/08/18**	**was**		
trans-1,3-Dichloropropene	<58 ug/kg dry	58	50	05/08/18	kcs	05/08/18	was		
1,1,2-Trichloroethane	<58 ug/kg dry	58	50	05/08/18	kcs	05/08/18	was		
Tetrachloroethene	<58 ug/kg dry	58	50	05/08/18	kcs	05/08/18	was		

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ANALYTICAL RESULTS

Trace Project ID: T18E062
Client Project ID: Tysman Companies Phase II

Trace ID: T18E062-04 | Date Collected: 05/02/18 12:54 | Matrix: Soil
Sample ID: SB-3 | Date Received: 05/02/18 15:21

PARAMETERS	RESULTS UNITS	RDL	DILUTION	PREPARED	BY	ANALYZED	BY	NOTES	MCL
VOLATILE ORGANIC COMPOUNDS BY GC-MS									
2-Hexanone	<2900 ug/kg dry	2900	50	05/08/18	kcs	05/08/18	was		
Dibromochloromethane	<100 ug/kg dry	100	50	05/08/18	kcs	05/08/18	was		
1,2-Dibromoethane (EDB)	<58 ug/kg dry	58	50	05/08/18	kcs	05/08/18	was		
Chlorobenzene	<58 ug/kg dry	58	50	05/08/18	kcs	05/08/18	was		
1,1,1,2-Tetrachloroethane	<100 ug/kg dry	100	50	05/08/18	kcs	05/08/18	was		
Ethylbenzene	**65 ug/kg dry**	**58**	**50**	**05/08/18**	**kcs**	**05/08/18**	**was**		
m,p-Xylene	**540 ug/kg dry**	**120**	**50**	**05/08/18**	**kcs**	**05/08/18**	**was**	**N**	
o-Xylene	**180 ug/kg dry**	**58**	**50**	**05/08/18**	**kcs**	**05/08/18**	**was**	**N**	
Xylenes, total	**720 ug/kg dry**	**170**	**50**	**05/08/18**	**kcs**	**05/08/18**	**was**	**N**	
Styrene	<58 ug/kg dry	58	50	05/08/18	kcs	05/08/18	was		
Bromoform	<100 ug/kg dry	100	50	05/08/18	kcs	05/08/18	was		
Isopropylbenzene	<250 ug/kg dry	250	50	05/08/18	kcs	05/08/18	was		
1,1,2,2-Tetrachloroethane	<58 ug/kg dry	58	50	05/08/18	kcs	05/08/18	was		
1,2,3-Trichloropropane	<100 ug/kg dry	100	50	05/08/18	kcs	05/08/18	was		
trans-1,4-Dichloro-2-butene	<58 ug/kg dry	58	50	05/08/18	kcs	05/08/18	was		
Bromobenzene	<100 ug/kg dry	100	50	05/08/18	kcs	05/08/18	was		
n-Propylbenzene	<100 ug/kg dry	100	50	05/08/18	kcs	05/08/18	was		
1,3,5-Trimethylbenzene	<100 ug/kg dry	100	50	05/08/18	kcs	05/08/18	was		
t-Butyl Benzene	<58 ug/kg dry	58	50	05/08/18	kcs	05/08/18	was		
1,2,4-Trimethylbenzene	**220 ug/kg dry**	**100**	**50**	**05/08/18**	**kcs**	**05/08/18**	**was**		
sec-Butylbenzene	<58 ug/kg dry	58	50	05/08/18	kcs	05/08/18	was		
p-Isopropyltoluene	<100 ug/kg dry	100	50	05/08/18	kcs	05/08/18	was		
1,3-Dichlorobenzene	<100 ug/kg dry	100	50	05/08/18	kcs	05/08/18	was		
1,4-Dichlorobenzene	<100 ug/kg dry	100	50	05/08/18	kcs	05/08/18	was		
n-Butylbenzene	<58 ug/kg dry	58	50	05/08/18	kcs	05/08/18	was		
1,2,3-Trimethylbenzene	**80 ug/kg dry**	**58**	**50**	**05/08/18**	**kcs**	**05/08/18**	**was**	**N**	
1,2-Dichlorobenzene	<100 ug/kg dry	100	50	05/08/18	kcs	05/08/18	was		
1,2-Dibromo-3-chloropropane	<120 ug/kg dry	120	50	05/08/18	kcs	05/08/18	was		
Hexachloroethane	<100 ug/kg dry	100	50	05/08/18	kcs	05/08/18	was	N	
1,2,4-Trichlorobenzene	<330 ug/kg dry	330	50	05/08/18	kcs	05/08/18	was		
Naphthalene	<330 ug/kg dry	330	50	05/08/18	kcs	05/08/18	was	N	
1,2,3-Trichlorobenzene	<250 ug/kg dry	250	50	05/08/18	kcs	05/08/18	was		
2-Methylnaphthalene	<330 ug/kg dry	330	50	05/08/18	kcs	05/08/18	was	N	
Surrogates:									

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ANALYTICAL RESULTS

Trace Project ID: T18E062
Client Project ID: Tysman Companies Phase II

Trace ID: T18E062-04 | Date Collected: 05/02/18 12:54 | Matrix: Soil
Sample ID: SB-3 | Date Received: 05/02/18 15:21

PARAMETERS	RESULTS	UNITS	RDL	DILUTION	PREPARED	BY	ANALYZED	BY	NOTES	MCL
VOLATILE ORGANIC COMPOUNDS BY GC-MS										
1,2-Dichloroethane-d4	101	%	68-133	50	05/08/18	kcs	05/08/18	was		
Toluene-d8	99	%	75-120	50	05/08/18	kcs	05/08/18	was		
4-Bromofluorobenzene	98	%	69-119	50	05/08/18	kcs	05/08/18	was		
1,2-Dichlorobenzene-d4	96	%	72-127	50	05/08/18	kcs	05/08/18	was		
WET CHEMISTRY										
Analysis Method: ASTM D2974-87										
Batch: T076783										
% Solids	**87**	**% by Wt.**	**0.10**	**1**	**05/03/18**	**nm**	**05/04/18**	**nm**	**N**	

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ANALYTICAL RESULTS

Trace Project ID: T18E062
Client Project ID: Tysman Companies Phase II

Trace ID: T18E062-05 | Date Collected: 05/02/18 14:06 | Matrix: Water
Sample ID: SB-1 / TMW-1 | Date Received: 05/02/18 15:21

PARAMETERS		RESULTS	UNITS	RDL	DILUTION	PREPARED	BY	ANALYZED	BY	NOTES	MCL
SEMI-VOLATILE ORGANIC COMPOUNDS BY GC-MS											
Analysis Method: EPA 8270C											
Batch: T076925											
Naphthalene		<5.0	ug/L	5.0	1	05/09/18	kbc	05/10/18	avl		
2-Methylnaphthalene		<5.0	ug/L	5.0	1	05/09/18	kbc	05/10/18	avl		
Acenaphthylene		<5.0	ug/L	5.0	1	05/09/18	kbc	05/10/18	avl		
Acenaphthene		<5.0	ug/L	5.0	1	05/09/18	kbc	05/10/18	avl		
Fluorene		<5.0	ug/L	5.0	1	05/09/18	kbc	05/10/18	avl		
Phenanthrene		<2.0	ug/L	2.0	1	05/09/18	kbc	05/10/18	avl		
Anthracene		<5.0	ug/L	5.0	1	05/09/18	kbc	05/10/18	avl		
Fluoranthene		<1.0	ug/L	1.0	1	05/09/18	kbc	05/10/18	avl		
Pyrene		<5.0	ug/L	5.0	1	05/09/18	kbc	05/10/18	avl		
Benzo (a) anthracene		<1.0	ug/L	1.0	1	05/09/18	kbc	05/10/18	avl		
Chrysene		<1.0	ug/L	1.0	1	05/09/18	kbc	05/10/18	avl		
Benzo (b) fluoranthene		<1.0	ug/L	1.0	1	05/09/18	kbc	05/10/18	avl		
Benzo (k) fluoranthene		<1.0	ug/L	1.0	1	05/09/18	kbc	05/10/18	avl		
Benzo (a) pyrene		<1.0	ug/L	1.0	1	05/09/18	kbc	05/10/18	avl		
Indeno (1,2,3-cd) pyrene		<2.0	ug/L	2.0	1	05/09/18	kbc	05/10/18	avl		
Dibenz (a,h) anthracene		<2.0	ug/L	2.0	1	05/09/18	kbc	05/10/18	avl		
Benzo (g,h,i) perylene		<1.0	ug/L	1.0	1	05/09/18	kbc	05/10/18	avl		
Surrogates:											
Nitrobenzene-d5		41	%	36-103	1	05/09/18	kbc	05/10/18	avl		
2-Fluorobiphenyl	*	**32**	%	36-119	1	05/09/18	kbc	05/10/18	avl	319.1	
Terphenyl-d14	*	**23**	%	37-109	1	05/09/18	kbc	05/10/18	avl	319.1	
VOLATILE ORGANIC COMPOUNDS BY GC-MS											
Analysis Method: EPA 8260C											
Batch: T076920											
Dichlorodifluoromethane		<5.0	ug/L	5.0	1	05/08/18	kcs	05/08/18	was		
Chloromethane		<5.0	ug/L	5.0	1	05/08/18	kcs	05/08/18	was		
Vinyl chloride		<1.0	ug/L	1.0	1	05/08/18	kcs	05/08/18	was		
Bromomethane		<5.0	ug/L	5.0	1	05/08/18	kcs	05/08/18	was		
Chloroethane		<5.0	ug/L	5.0	1	05/08/18	kcs	05/08/18	was		
Trichlorofluoromethane		<1.0	ug/L	1.0	1	05/08/18	kcs	05/08/18	was		
Diethyl ether		<10	ug/L	10	1	05/08/18	kcs	05/08/18	was	N	

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ANALYTICAL RESULTS

Trace Project ID: T18E062
Client Project ID: Tysman Companies Phase II

Trace ID: T18E062-05 | Date Collected: 05/02/18 14:06 | Matrix: Water
Sample ID: SB-1 / TMW-1 | Date Received: 05/02/18 15:21

PARAMETERS	RESULTS UNITS	RDL	DILUTION	PREPARED	BY	ANALYZED	BY	NOTES	MCL
VOLATILE ORGANIC COMPOUNDS BY GC-MS									
Tert-butyl alcohol	<50 ug/L	50	1	05/08/18	kcs	05/08/18	was	N	
1,1-Dichloroethene	<1.0 ug/L	1.0	1	05/08/18	kcs	05/08/18	was		
Acetone	<50 ug/L	50	1	05/08/18	kcs	05/08/18	was		
Iodomethane	<1.0 ug/L	1.0	1	05/08/18	kcs	05/08/18	was	N	
Carbon disulfide	<5.0 ug/L	5.0	1	05/08/18	kcs	05/08/18	was		
Methyl-tert-butyl ether	<5.0 ug/L	5.0	1	05/08/18	kcs	05/08/18	was		
Methylene chloride	<5.0 ug/L	5.0	1	05/08/18	kcs	05/08/18	was		
Acrylonitrile	<2.0 ug/L	2.0	1	05/08/18	kcs	05/08/18	was		
trans-1,2-Dichloroethene	<1.0 ug/L	1.0	1	05/08/18	kcs	05/08/18	was		
1,1-Dichloroethane	<1.0 ug/L	1.0	1	05/08/18	kcs	05/08/18	was		
Diisopropyl Ether	<5.0 ug/L	5.0	1	05/08/18	kcs	05/08/18	was	N	
2-Butanone	<25 ug/L	25	1	05/08/18	kcs	05/08/18	was		
cis-1,2-Dichloroethene	<1.0 ug/L	1.0	1	05/08/18	kcs	05/08/18	was		
t-Butyl Ethyl Ether	<5.0 ug/L	5.0	1	05/08/18	kcs	05/08/18	was	N	
Bromochloromethane	<1.0 ug/L	1.0	1	05/08/18	kcs	05/08/18	was		
Tetrahydrofuran	<90 ug/L	90	1	05/08/18	kcs	05/08/18	was	N	
Chloroform	<1.0 ug/L	1.0	1	05/08/18	kcs	05/08/18	was		
1,1,1-Trichloroethane	<1.0 ug/L	1.0	1	05/08/18	kcs	05/08/18	was		
Carbon tetrachloride	<1.0 ug/L	1.0	1	05/08/18	kcs	05/08/18	was		
Benzene	**36 ug/L**	**1.0**	**1**	**05/08/18**	**kcs**	**05/08/18**	**was**		
t-Amyl Methyl Ether	<5.0 ug/L	5.0	1	05/08/18	kcs	05/08/18	was	N	
1,2-Dichloroethane	<1.0 ug/L	1.0	1	05/08/18	kcs	05/08/18	was		
Cyclohexane	**13 ug/L**	**5.0**	**1**	**05/08/18**	**kcs**	**05/08/18**	**was**	**N**	
Trichloroethene	<1.0 ug/L	1.0	1	05/08/18	kcs	05/08/18	was		
1,2-Dichloropropane	<1.0 ug/L	1.0	1	05/08/18	kcs	05/08/18	was		
Dibromomethane	<5.0 ug/L	5.0	1	05/08/18	kcs	05/08/18	was		
Bromodichloromethane	<1.0 ug/L	1.0	1	05/08/18	kcs	05/08/18	was		
cis-1,3-Dichloropropene	<1.0 ug/L	1.0	1	05/08/18	kcs	05/08/18	was		
4-Methyl-2-pentanone	<50 ug/L	50	1	05/08/18	kcs	05/08/18	was		
Toluene	**2.6 ug/L**	**1.0**	**1**	**05/08/18**	**kcs**	**05/08/18**	**was**		
trans-1,3-Dichloropropene	<1.0 ug/L	1.0	1	05/08/18	kcs	05/08/18	was		
1,1,2-Trichloroethane	<1.0 ug/L	1.0	1	05/08/18	kcs	05/08/18	was		
Tetrachloroethene	<1.0 ug/L	1.0	1	05/08/18	kcs	05/08/18	was		

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ANALYTICAL RESULTS

Trace Project ID: T18E062
Client Project ID: Tysman Companies Phase II

Trace ID: T18E062-05 | Date Collected: 05/02/18 14:06 | Matrix: Water
Sample ID: SB-1 / TMW-1 | Date Received: 05/02/18 15:21

PARAMETERS	RESULTS UNITS	RDL	DILUTION	PREPARED	BY	ANALYZED	BY	NOTES	MCL
VOLATILE ORGANIC COMPOUNDS BY GC-MS									
2-Hexanone	<50 ug/L	50	1	05/08/18	kcs	05/08/18	was		
Dibromochloromethane	<5.0 ug/L	5.0	1	05/08/18	kcs	05/08/18	was		
1,2-Dibromoethane (EDB)	<1.0 ug/L	1.0	1	05/08/18	kcs	05/08/18	was		
Chlorobenzene	<1.0 ug/L	1.0	1	05/08/18	kcs	05/08/18	was		
1,1,1,2-Tetrachloroethane	<1.0 ug/L	1.0	1	05/08/18	kcs	05/08/18	was		
Ethylbenzene	**92 ug/L**	**1.0**	**1**	**05/08/18**	**kcs**	**05/08/18**	**was**		
m,p-Xylene	**70 ug/L**	**2.0**	**1**	**05/08/18**	**kcs**	**05/08/18**	**was**	**N**	
o-Xylene	**5.1 ug/L**	**1.0**	**1**	**05/08/18**	**kcs**	**05/08/18**	**was**	**N**	
Xylenes, total	**75 ug/L**	**3.0**	**1**	**05/08/18**	**kcs**	**05/08/18**	**was**	**N**	
Styrene	<1.0 ug/L	1.0	1	05/08/18	kcs	05/08/18	was		
Bromoform	<1.0 ug/L	1.0	1	05/08/18	kcs	05/08/18	was		
Isopropylbenzene	<5.0 ug/L	5.0	1	05/08/18	kcs	05/08/18	was		
1,1,2,2-Tetrachloroethane	<1.0 ug/L	1.0	1	05/08/18	kcs	05/08/18	was		
1,2,3-Trichloropropane	<1.0 ug/L	1.0	1	05/08/18	kcs	05/08/18	was		
trans-1,4-Dichloro-2-butene	<1.0 ug/L	1.0	1	05/08/18	kcs	05/08/18	was		
Bromobenzene	<1.0 ug/L	1.0	1	05/08/18	kcs	05/08/18	was		
n-Propylbenzene	<1.0 ug/L	1.0	1	05/08/18	kcs	05/08/18	was		
1,3,5-Trimethylbenzene	**3.5 ug/L**	**1.0**	**1**	**05/08/18**	**kcs**	**05/08/18**	**was**		
t-Butyl Benzene	<1.0 ug/L	1.0	1	05/08/18	kcs	05/08/18	was		
1,2,4-Trimethylbenzene	**48 ug/L**	**1.0**	**1**	**05/08/18**	**kcs**	**05/08/18**	**was**		
sec-Butylbenzene	<1.0 ug/L	1.0	1	05/08/18	kcs	05/08/18	was		
p-Isopropyltoluene	<5.0 ug/L	5.0	1	05/08/18	kcs	05/08/18	was		
1,3-Dichlorobenzene	<1.0 ug/L	1.0	1	05/08/18	kcs	05/08/18	was		
1,4-Dichlorobenzene	<1.0 ug/L	1.0	1	05/08/18	kcs	05/08/18	was		
n-Butylbenzene	<1.0 ug/L	1.0	1	05/08/18	kcs	05/08/18	was		
1,2,3-Trimethylbenzene	**19 ug/L**	**1.0**	**1**	**05/08/18**	**kcs**	**05/08/18**	**was**	**N**	
1,2-Dichlorobenzene	<1.0 ug/L	1.0	1	05/08/18	kcs	05/08/18	was		
1,2-Dibromo-3-chloropropane	<1.0 ug/L	1.0	1	05/08/18	kcs	05/08/18	was		
Hexachloroethane	<5.0 ug/L	5.0	1	05/08/18	kcs	05/08/18	was	N	
1,2,4-Trichlorobenzene	<5.0 ug/L	5.0	1	05/08/18	kcs	05/08/18	was		
Naphthalene	**6.2 ug/L**	**5.0**	**1**	**05/08/18**	**kcs**	**05/08/18**	**was**	**N**	
1,2,3-Trichlorobenzene	<5.0 ug/L	5.0	1	05/08/18	kcs	05/08/18	was		
2-Methylnaphthalene	<5.0 ug/L	5.0	1	05/08/18	kcs	05/08/18	was	N	
Surrogates:									

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ANALYTICAL RESULTS

Trace Project ID: T18E062
Client Project ID: Tysman Companies Phase II

Trace ID: T18E062-05 | Date Collected: 05/02/18 14:06 | Matrix: Water
Sample ID: SB-1 / TMW-1 | Date Received: 05/02/18 15:21

PARAMETERS	RESULTS	UNITS	RDL	DILUTION	PREPARED	BY	ANALYZED	BY	NOTES	MCL
VOLATILE ORGANIC COMPOUNDS BY GC-MS										
1,2-Dichloroethane-d4	103	%	68-133	1	05/08/18	kcs	05/08/18	was		
Toluene-d8	107	%	75-120	1	05/08/18	kcs	05/08/18	was		
4-Bromofluorobenzene	101	%	69-119	1	05/08/18	kcs	05/08/18	was		
1,2-Dichlorobenzene-d4	97	%	72-127	1	05/08/18	kcs	05/08/18	was		

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ANALYTICAL RESULTS

Trace Project ID: T18E062
Client Project ID: Tysman Companies Phase II

Trace ID: T18E062-06 | Date Collected: 05/02/18 13:37 | Matrix: Water
Sample ID: SB-4/ TMW-2 | Date Received: 05/02/18 15:21

PARAMETERS	RESULTS UNITS	RDL	DILUTION	PREPARED	BY	ANALYZED	BY	NOTES	MCL
SEMI-VOLATILE ORGANIC COMPOUNDS BY GC-MS									
Analysis Method: EPA 8270C									
Batch: T076876									
Naphthalene	<5.0 ug/L	5.0	1	05/08/18	kbc	05/08/18	avl		
2-Methylnaphthalene	<5.0 ug/L	5.0	1	05/08/18	kbc	05/08/18	avl		
Acenaphthylene	<5.0 ug/L	5.0	1	05/08/18	kbc	05/08/18	avl		
Acenaphthene	<5.0 ug/L	5.0	1	05/08/18	kbc	05/08/18	avl		
Fluorene	<5.0 ug/L	5.0	1	05/08/18	kbc	05/08/18	avl		
Phenanthrene	<2.0 ug/L	2.0	1	05/08/18	kbc	05/08/18	avl		
Anthracene	<5.0 ug/L	5.0	1	05/08/18	kbc	05/08/18	avl		
Fluoranthene	<1.0 ug/L	1.0	1	05/08/18	kbc	05/08/18	avl		
Pyrene	<5.0 ug/L	5.0	1	05/08/18	kbc	05/08/18	avl		
Benzo (a) anthracene	<1.0 ug/L	1.0	1	05/08/18	kbc	05/08/18	avl		
Chrysene	<1.0 ug/L	1.0	1	05/08/18	kbc	05/08/18	avl		
Benzo (b) fluoranthene	<1.0 ug/L	1.0	1	05/08/18	kbc	05/08/18	avl		
Benzo (k) fluoranthene	<1.0 ug/L	1.0	1	05/08/18	kbc	05/08/18	avl		
Benzo (a) pyrene	<1.0 ug/L	1.0	1	05/08/18	kbc	05/08/18	avl		
Indeno (1,2,3-cd) pyrene	<2.0 ug/L	2.0	1	05/08/18	kbc	05/08/18	avl		
Dibenz (a,h) anthracene	<2.0 ug/L	2.0	1	05/08/18	kbc	05/08/18	avl		
Benzo (g,h,i) perylene	<1.0 ug/L	1.0	1	05/08/18	kbc	05/08/18	avl		
Surrogates:									
Nitrobenzene-d5	85 %	36-103	1	05/08/18	kbc	05/08/18	avl		
2-Fluorobiphenyl	74 %	36-119	1	05/08/18	kbc	05/08/18	avl		
Terphenyl-d14	78 %	37-109	1	05/08/18	kbc	05/08/18	avl		
VOLATILE ORGANIC COMPOUNDS BY GC-MS									
Analysis Method: EPA 8260C									
Batch: T076974									
Dichlorodifluoromethane	<5.0 ug/L	5.0	1	05/09/18	kcs	05/09/18	was		
Chloromethane	<5.0 ug/L	5.0	1	05/09/18	kcs	05/09/18	was		
Vinyl chloride	<1.0 ug/L	1.0	1	05/09/18	kcs	05/09/18	was		
Bromomethane	<5.0 ug/L	5.0	1	05/09/18	kcs	05/09/18	was		
Chloroethane	<5.0 ug/L	5.0	1	05/09/18	kcs	05/09/18	was		
Trichlorofluoromethane	<1.0 ug/L	1.0	1	05/09/18	kcs	05/09/18	was		
Diethyl ether	<10 ug/L	10	1	05/09/18	kcs	05/09/18	was	N	

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ANALYTICAL RESULTS

Trace Project ID: T18E062
Client Project ID: Tysman Companies Phase II

Trace ID: T18E062-06 | Date Collected: 05/02/18 13:37 | Matrix: Water
Sample ID: SB-4/ TMW-2 | Date Received: 05/02/18 15:21

PARAMETERS	RESULTS	UNITS	RDL	DILUTION	PREPARED	BY	ANALYZED	BY	NOTES	MCL
VOLATILE ORGANIC COMPOUNDS BY GC-MS										
Tert-butyl alcohol	<50	ug/L	50	1	05/09/18	kcs	05/09/18	was	N	
1,1-Dichloroethene	<1.0	ug/L	1.0	1	05/09/18	kcs	05/09/18	was		
Acetone	<50	ug/L	50	1	05/09/18	kcs	05/09/18	was		
Iodomethane	<1.0	ug/L	1.0	1	05/09/18	kcs	05/09/18	was	N	
Carbon disulfide	<5.0	ug/L	5.0	1	05/09/18	kcs	05/09/18	was		
Methyl-tert-butyl ether	<5.0	ug/L	5.0	1	05/09/18	kcs	05/09/18	was		
Methylene chloride	<5.0	ug/L	5.0	1	05/09/18	kcs	05/09/18	was		
Acrylonitrile	<2.0	ug/L	2.0	1	05/09/18	kcs	05/09/18	was		
trans-1,2-Dichloroethene	<1.0	ug/L	1.0	1	05/09/18	kcs	05/09/18	was		
1,1-Dichloroethane	<1.0	ug/L	1.0	1	05/09/18	kcs	05/09/18	was		
Diisopropyl Ether	<5.0	ug/L	5.0	1	05/09/18	kcs	05/09/18	was	N	
2-Butanone	<25	ug/L	25	1	05/09/18	kcs	05/09/18	was		
cis-1,2-Dichloroethene	<1.0	ug/L	1.0	1	05/09/18	kcs	05/09/18	was		
t-Butyl Ethyl Ether	<5.0	ug/L	5.0	1	05/09/18	kcs	05/09/18	was	N	
Bromochloromethane	<1.0	ug/L	1.0	1	05/09/18	kcs	05/09/18	was		
Tetrahydrofuran	<90	ug/L	90	1	05/09/18	kcs	05/09/18	was	N	
Chloroform	<1.0	ug/L	1.0	1	05/09/18	kcs	05/09/18	was		
1,1,1-Trichloroethane	<1.0	ug/L	1.0	1	05/09/18	kcs	05/09/18	was		
Carbon tetrachloride	<1.0	ug/L	1.0	1	05/09/18	kcs	05/09/18	was		
Benzene	<1.0	ug/L	1.0	1	05/09/18	kcs	05/09/18	was		
t-Amyl Methyl Ether	<5.0	ug/L	5.0	1	05/09/18	kcs	05/09/18	was	N	
1,2-Dichloroethane	<1.0	ug/L	1.0	1	05/09/18	kcs	05/09/18	was		
Cyclohexane	<5.0	ug/L	5.0	1	05/09/18	kcs	05/09/18	was	N	
Trichloroethene	<1.0	ug/L	1.0	1	05/09/18	kcs	05/09/18	was		
1,2-Dichloropropane	<1.0	ug/L	1.0	1	05/09/18	kcs	05/09/18	was		
Dibromomethane	<5.0	ug/L	5.0	1	05/09/18	kcs	05/09/18	was		
Bromodichloromethane	<1.0	ug/L	1.0	1	05/09/18	kcs	05/09/18	was		
cis-1,3-Dichloropropene	<1.0	ug/L	1.0	1	05/09/18	kcs	05/09/18	was		
4-Methyl-2-pentanone	<50	ug/L	50	1	05/09/18	kcs	05/09/18	was		
Toluene	<1.0	ug/L	1.0	1	05/09/18	kcs	05/09/18	was		
trans-1,3-Dichloropropene	<1.0	ug/L	1.0	1	05/09/18	kcs	05/09/18	was		
1,1,2-Trichloroethane	<1.0	ug/L	1.0	1	05/09/18	kcs	05/09/18	was		
Tetrachloroethene	<1.0	ug/L	1.0	1	05/09/18	kcs	05/09/18	was		

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ANALYTICAL RESULTS

Trace Project ID: T18E062
Client Project ID: Tysman Companies Phase II

Trace ID: T18E062-06 | Date Collected: 05/02/18 13:37 | Matrix: Water
Sample ID: SB-4/ TMW-2 | Date Received: 05/02/18 15:21

PARAMETERS	RESULTS UNITS	RDL	DILUTION	PREPARED	BY	ANALYZED	BY	NOTES	MCL
VOLATILE ORGANIC COMPOUNDS BY GC-MS									
2-Hexanone	<50 ug/L	50	1	05/09/18	kcs	05/09/18	was		
Dibromochloromethane	<5.0 ug/L	5.0	1	05/09/18	kcs	05/09/18	was		
1,2-Dibromoethane (EDB)	<1.0 ug/L	1.0	1	05/09/18	kcs	05/09/18	was		
Chlorobenzene	<1.0 ug/L	1.0	1	05/09/18	kcs	05/09/18	was		
1,1,1,2-Tetrachloroethane	<1.0 ug/L	1.0	1	05/09/18	kcs	05/09/18	was		
Ethylbenzene	<1.0 ug/L	1.0	1	05/09/18	kcs	05/09/18	was		
m,p-Xylene	<2.0 ug/L	2.0	1	05/09/18	kcs	05/09/18	was	N	
o-Xylene	<1.0 ug/L	1.0	1	05/09/18	kcs	05/09/18	was	N	
Xylenes, total	<3.0 ug/L	3.0	1	05/09/18	kcs	05/09/18	was	N	
Styrene	<1.0 ug/L	1.0	1	05/09/18	kcs	05/09/18	was		
Bromoform	<1.0 ug/L	1.0	1	05/09/18	kcs	05/09/18	was		
Isopropylbenzene	<5.0 ug/L	5.0	1	05/09/18	kcs	05/09/18	was		
1,1,2,2-Tetrachloroethane	<1.0 ug/L	1.0	1	05/09/18	kcs	05/09/18	was		
1,2,3-Trichloropropane	<1.0 ug/L	1.0	1	05/09/18	kcs	05/09/18	was		
trans-1,4-Dichloro-2-butene	<1.0 ug/L	1.0	1	05/09/18	kcs	05/09/18	was		
Bromobenzene	<1.0 ug/L	1.0	1	05/09/18	kcs	05/09/18	was		
n-Propylbenzene	<1.0 ug/L	1.0	1	05/09/18	kcs	05/09/18	was		
1,3,5-Trimethylbenzene	<1.0 ug/L	1.0	1	05/09/18	kcs	05/09/18	was		
t-Butyl Benzene	<1.0 ug/L	1.0	1	05/09/18	kcs	05/09/18	was		
1,2,4-Trimethylbenzene	<1.0 ug/L	1.0	1	05/09/18	kcs	05/09/18	was		
sec-Butylbenzene	<1.0 ug/L	1.0	1	05/09/18	kcs	05/09/18	was		
p-Isopropyltoluene	<5.0 ug/L	5.0	1	05/09/18	kcs	05/09/18	was		
1,3-Dichlorobenzene	<1.0 ug/L	1.0	1	05/09/18	kcs	05/09/18	was		
1,4-Dichlorobenzene	<1.0 ug/L	1.0	1	05/09/18	kcs	05/09/18	was		
n-Butylbenzene	<1.0 ug/L	1.0	1	05/09/18	kcs	05/09/18	was		
1,2,3-Trimethylbenzene	<1.0 ug/L	1.0	1	05/09/18	kcs	05/09/18	was	N	
1,2-Dichlorobenzene	<1.0 ug/L	1.0	1	05/09/18	kcs	05/09/18	was		
1,2-Dibromo-3-chloropropane	<1.0 ug/L	1.0	1	05/09/18	kcs	05/09/18	was		
Hexachloroethane	<5.0 ug/L	5.0	1	05/09/18	kcs	05/09/18	was	N	
1,2,4-Trichlorobenzene	<5.0 ug/L	5.0	1	05/09/18	kcs	05/09/18	was		
Naphthalene	<5.0 ug/L	5.0	1	05/09/18	kcs	05/09/18	was	N	
1,2,3-Trichlorobenzene	<5.0 ug/L	5.0	1	05/09/18	kcs	05/09/18	was		
2-Methylnaphthalene	<5.0 ug/L	5.0	1	05/09/18	kcs	05/09/18	was	N	
Surrogates:									

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ANALYTICAL RESULTS

Trace Project ID: T18E062
Client Project ID: Tysman Companies Phase II

Trace ID: T18E062-06 | Date Collected: 05/02/18 13:37 | Matrix: Water
Sample ID: SB-4/ TMW-2 | Date Received: 05/02/18 15:21

PARAMETERS	RESULTS	UNITS	RDL	DILUTION	PREPARED	BY	ANALYZED	BY	NOTES	MCL
VOLATILE ORGANIC COMPOUNDS BY GC-MS										
1,2-Dichloroethane-d4	102	%	68-133	1	05/09/18	kcs	05/09/18	was		
Toluene-d8	103	%	75-120	1	05/09/18	kcs	05/09/18	was		
4-Bromofluorobenzene	101	%	69-119	1	05/09/18	kcs	05/09/18	was		
1,2-Dichlorobenzene-d4	98	%	72-127	1	05/09/18	kcs	05/09/18	was		

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QUALITY CONTROL RESULTS

Trace Project ID: T18E062
Client Project ID: Tysman Companies Phase II

QC Batch: T076771
QC Batch Method: EPA 3550B Ultrasonic Extraction
Analysis Description: PNAs
Analysis Method: EPA 8270C

METHOD BLANK: T076771-BLK1

Parameter	Units	Blank Result	Reporting Limit	Notes
Naphthalene	ug/kg wet	<330	330	
2-Methylnaphthalene	ug/kg wet	<330	330	
Acenaphthylene	ug/kg wet	<330	330	
Acenaphthene	ug/kg wet	<330	330	
Fluorene	ug/kg wet	<330	330	
Phenanthrene	ug/kg wet	<330	330	
Anthracene	ug/kg wet	<330	330	
Fluoranthene	ug/kg wet	<330	330	
Pyrene	ug/kg wet	<330	330	
Benzo (a) anthracene	ug/kg wet	<330	330	
Chrysene	ug/kg wet	<330	330	
Benzo (b) fluoranthene	ug/kg wet	<330	330	
Benzo (k) fluoranthene	ug/kg wet	<330	330	
Benzo (a) pyrene	ug/kg wet	<330	330	
Indeno (1,2,3-cd) pyrene	ug/kg wet	<330	330	
Dibenz (a,h) anthracene	ug/kg wet	<330	330	
Benzo (g,h,i) perylene	ug/kg wet	<330	330	
Nitrobenzene-d5 (S)	%	67	36-98	
2-Fluorobiphenyl (S)	%	60	44-105	
Terphenyl-d14 (S)	%	65	46-109	

LABORATORY CONTROL SAMPLE: T076771-BS1

Parameter	Units	Spike Conc.	LCS Result	LCS % Rec	% Rec Limit	Notes
Acenaphthene	ug/kg wet	1730	1070	62	52-105	
Pyrene	ug/kg wet	1680	1080	64	47-114	
Nitrobenzene-d5 (S)	%	3330	2470	74	36-98	
2-Fluorobiphenyl (S)	%	3330	2300	69	44-105	
Terphenyl-d14 (S)	%	3330	2470	74	46-109	

Trace Project ID: T18E062
Client Project ID: Tysman Companies Phase II

QC Batch: T076876
QC Batch Method: EPA 3510C Separatory Funnel Liquid-Liquid Extr.
Analysis Description: PNAs
Analysis Method: EPA 8270C

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METHOD BLANK: T076876-BLK1

Parameter	Units	Blank Result	Reporting Limit	Notes
Naphthalene	ug/L	<5.0	5.0	
2-Methylnaphthalene	ug/L	<5.0	5.0	
Acenaphthylene	ug/L	<5.0	5.0	
Acenaphthene	ug/L	<5.0	5.0	
Fluorene	ug/L	<5.0	5.0	
Phenanthrene	ug/L	<2.0	2.0	
Anthracene	ug/L	<5.0	5.0	
Fluoranthene	ug/L	<1.0	1.0	
Pyrene	ug/L	<5.0	5.0	
Benzo (a) anthracene	ug/L	<1.0	1.0	
Chrysene	ug/L	<1.0	1.0	
Benzo (b) fluoranthene	ug/L	<1.0	1.0	
Benzo (k) fluoranthene	ug/L	<1.0	1.0	
Benzo (a) pyrene	ug/L	<1.0	1.0	
Indeno (1,2,3-cd) pyrene	ug/L	<2.0	2.0	
Dibenz (a,h) anthracene	ug/L	<2.0	2.0	
Benzo (g,h,i) perylene	ug/L	<1.0	1.0	
Nitrobenzene-d5 (S)	%	60	36-103	
2-Fluorobiphenyl (S)	%	61	36-119	
Terphenyl-d14 (S)	%	70	37-109	

LABORATORY CONTROL SAMPLE: T076876-BS1

Parameter	Units	Spike Conc.	LCS Result	LCS % Rec	% Rec Limit	Notes
Acenaphthene	ug/L	52.0	29.7	57	42-105	
Pyrene	ug/L	50.5	31.2	62	47-116	
Nitrobenzene-d5 (S)	%	100	54.3	54	36-103	
2-Fluorobiphenyl (S)	%	100	58.5	58	36-119	
Terphenyl-d14 (S)	%	100	60.6	61	37-109	

Trace Project ID: T18E062
Client Project ID: Tysman Companies Phase II

QC Batch: T076925
QC Batch Method: EPA 3510C Separatory Funnel Liquid-Liquid Extr.
Analysis Description: PNAs
Analysis Method: EPA 8270C

Trace Project ID: T18E062
Client Project ID: Tysman Companies Phase II

QC Batch: T076853
QC Batch Method: EPA 8260C
Analysis Description: Volatiles, Full MDEQ+ List
Analysis Method: EPA 8260C

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METHOD BLANK: T076853-BLK1

Parameter	Units	Blank Result	Reporting Limit	Notes
Dichlorodifluoromethane	ug/kg wet	<250	250	
Chloromethane	ug/kg wet	<250	250	
Vinyl chloride	ug/kg wet	<40	40	
Bromomethane	ug/kg wet	<200	200	
Chloroethane	ug/kg wet	<250	250	
Trichlorofluoromethane	ug/kg wet	<100	100	
Diethyl ether	ug/kg wet	<200	200	
Tert-butyl alcohol	ug/kg wet	<2500	2500	
1,1-Dichloroethene	ug/kg wet	<50	50	
Acetone	ug/kg wet	<1000	1000	
Iodomethane	ug/kg wet	<100	100	
Carbon disulfide	ug/kg wet	<250	250	
Methyl-tert-butyl ether	ug/kg wet	<250	250	
Methylene chloride	ug/kg wet	<250	250	
Acrylonitrile	ug/kg wet	<100	100	
trans-1,2-Dichloroethene	ug/kg wet	<50	50	
1,1-Dichloroethane	ug/kg wet	<50	50	
Diisopropyl Ether	ug/kg wet	<250	250	
2-Butanone	ug/kg wet	<750	750	
cis-1,2-Dichloroethene	ug/kg wet	<50	50	
t-Butyl Ethyl Ether	ug/kg wet	<250	250	
Bromochloromethane	ug/kg wet	<100	100	
Tetrahydrofuran	ug/kg wet	<1000	1000	
Chloroform	ug/kg wet	<50	50	
1,1,1-Trichloroethane	ug/kg wet	<50	50	
Carbon tetrachloride	ug/kg wet	<50	50	
Benzene	ug/kg wet	<50	50	
t-Amyl Methyl Ether	ug/kg wet	<250	250	
1,2-Dichloroethane	ug/kg wet	<50	50	
Cyclohexane	ug/kg wet	<250	250	
Trichloroethene	ug/kg wet	<50	50	
1,2-Dichloropropane	ug/kg wet	<50	50	
Dibromomethane	ug/kg wet	<250	250	
Bromodichloromethane	ug/kg wet	<100	100	
cis-1,3-Dichloropropene	ug/kg wet	<50	50	
4-Methyl-2-pentanone	ug/kg wet	<2500	2500	
Toluene	ug/kg wet	<100	100	
trans-1,3-Dichloropropene	ug/kg wet	<50	50	
1,1,2-Trichloroethane	ug/kg wet	<50	50	
Tetrachloroethene	ug/kg wet	<50	50	
2-Hexanone	ug/kg wet	<2500	2500	
Dibromochloromethane	ug/kg wet	<100	100	
1,2-Dibromoethane (EDB)	ug/kg wet	<50	50	
Chlorobenzene	ug/kg wet	<50	50	

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METHOD BLANK: T076853-BLK1

Parameter	Units	Blank Result	Reporting Limit	Notes
1,1,1,2-Tetrachloroethane	ug/kg wet	<100	100	
Ethylbenzene	ug/kg wet	<50	50	
m,p-Xylene	ug/kg wet	<100	100	
o-Xylene	ug/kg wet	<50	50	
Xylenes, total	ug/kg wet	<150	150	
Styrene	ug/kg wet	<50	50	
Bromoform	ug/kg wet	<100	100	
Isopropylbenzene	ug/kg wet	<250	250	
1,1,2,2-Tetrachloroethane	ug/kg wet	<50	50	
1,2,3-Trichloropropane	ug/kg wet	<100	100	
trans-1,4-Dichloro-2-butene	ug/kg wet	<50	50	
Bromobenzene	ug/kg wet	<100	100	
n-Propylbenzene	ug/kg wet	<100	100	
1,3,5-Trimethylbenzene	ug/kg wet	<100	100	
t-Butyl Benzene	ug/kg wet	<50	50	
1,2,4-Trimethylbenzene	ug/kg wet	<100	100	
sec-Butylbenzene	ug/kg wet	<50	50	
p-Isopropyltoluene	ug/kg wet	<100	100	
1,3-Dichlorobenzene	ug/kg wet	<100	100	
1,4-Dichlorobenzene	ug/kg wet	<100	100	
n-Butylbenzene	ug/kg wet	<50	50	
1,2,3-Trimethylbenzene	ug/kg wet	<50	50	
1,2-Dichlorobenzene	ug/kg wet	<100	100	
1,2-Dibromo-3-chloropropane	ug/kg wet	<100	100	
Hexachloroethane	ug/kg wet	<100	100	
1,2,4-Trichlorobenzene	ug/kg wet	<330	330	
Naphthalene	ug/kg wet	<330	330	
1,2,3-Trichlorobenzene	ug/kg wet	<250	250	
2-Methylnaphthalene	ug/kg wet	<330	330	
1,2-Dichloroethane-d4 (S)	%	102	68-133	
Toluene-d8 (S)	%	103	75-120	
4-Bromofluorobenzene (S)	%	103	69-119	
1,2-Dichlorobenzene-d4 (S)	%	98	72-127	

LABORATORY CONTROL SAMPLE: T076853-BS1

Parameter	Units	Spike Conc.	LCS Result	LCS % Rec	% Rec Limit	Notes
1,1-Dichloroethene	ug/kg wet	1000	1060	106	64-156	
Benzene	ug/kg wet	1000	1030	103	80-120	
Trichloroethene	ug/kg wet	1000	1010	101	69-133	
Toluene	ug/kg wet	1000	997	100	80-120	
Chlorobenzene	ug/kg wet	1000	1000	100	80-120	
1,2-Dichloroethane-d4 (S)	%	30.0	31.6	105	68-133	

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LABORATORY CONTROL SAMPLE: T076853-BS1

Parameter	Units	Spike Conc.	LCS Result	LCS % Rec	% Rec Limit	Notes
Toluene-d8 (S)	%	30.0	31.5	105	75-120	
4-Bromofluorobenzene (S)	%	30.0	30.0	100	69-119	
1,2-Dichlorobenzene-d4 (S)	%	30.0	32.6	108	72-127	

MATRIX SPIKE / MATRIX SPIKE DUPLICATE: T076853-MSD1 Original: **T18E062-01**

Parameter	Units	Original Result	Spike Conc.	MS Result	MSD Result	MS % Rec	MSD % Rec	% Rec Limit	RPD	Max RPD	Notes
1,1-Dichloroethene	ug/kg dry	0	757	823	810	109	107	60-146	2	15	
Benzene	ug/kg dry	0	757	769	793	102	105	78-114	3	11	
Trichloroethene	ug/kg dry	0	757	795	785	105	104	70-117	1	14	
Toluene	ug/kg dry	0	757	760	771	100	102	77-118	1	10	
Chlorobenzene	ug/kg dry	0	757	770	797	102	105	75-116	3	12	
1,2-Dichloroethane-d4 (S)	%		30.0	31.0	30.5	103	102	68-133			
Toluene-d8 (S)	%		30.0	30.6	30.2	102	100	75-120			
4-Bromofluorobenzene (S)	%		30.0	29.5	29.8	98	99	69-119			
1,2-Dichlorobenzene-d4 (S)	%		30.0	32.6	33.4	109	111	72-127			

Trace Project ID: T18E062
Client Project ID: Tysman Companies Phase II

QC Batch: T076919
QC Batch Method: EPA 8260C
Analysis Description: Volatiles, Full MDEQ+ List
Analysis Method: EPA 8260C

METHOD BLANK: T076919-BLK1

Parameter	Units	Blank Result	Reporting Limit	Notes
Dichlorodifluoromethane	ug/kg wet	<250	250	
Chloromethane	ug/kg wet	<250	250	
Vinyl chloride	ug/kg wet	<40	40	
Bromomethane	ug/kg wet	<200	200	
Chloroethane	ug/kg wet	<250	250	
Trichlorofluoromethane	ug/kg wet	<100	100	
Diethyl ether	ug/kg wet	<200	200	
Tert-butyl alcohol	ug/kg wet	<2500	2500	
1,1-Dichloroethene	ug/kg wet	<50	50	
Acetone	ug/kg wet	<1000	1000	
Iodomethane	ug/kg wet	<100	100	
Carbon disulfide	ug/kg wet	<250	250	
Methyl-tert-butyl ether	ug/kg wet	<250	250	
Methylene chloride	ug/kg wet	<250	250	
Acrylonitrile	ug/kg wet	<100	100	
trans-1,2-Dichloroethene	ug/kg wet	<50	50	

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METHOD BLANK: T076919-BLK1

Parameter	Units	Blank Result	Reporting Limit	Notes
1,1-Dichloroethane	ug/kg wet	<50	50	
Diisopropyl Ether	ug/kg wet	<250	250	
2-Butanone	ug/kg wet	<750	750	
cis-1,2-Dichloroethene	ug/kg wet	<50	50	
t-Butyl Ethyl Ether	ug/kg wet	<250	250	
Bromochloromethane	ug/kg wet	<100	100	
Tetrahydrofuran	ug/kg wet	<1000	1000	
Chloroform	ug/kg wet	<50	50	
1,1,1-Trichloroethane	ug/kg wet	<50	50	
Carbon tetrachloride	ug/kg wet	<50	50	
Benzene	ug/kg wet	<50	50	
t-Amyl Methyl Ether	ug/kg wet	<250	250	
1,2-Dichloroethane	ug/kg wet	<50	50	
Cyclohexane	ug/kg wet	<250	250	
Trichloroethene	ug/kg wet	<50	50	
1,2-Dichloropropane	ug/kg wet	<50	50	
Dibromomethane	ug/kg wet	<250	250	
Bromodichloromethane	ug/kg wet	<100	100	
cis-1,3-Dichloropropene	ug/kg wet	<50	50	
4-Methyl-2-pentanone	ug/kg wet	<2500	2500	
Toluene	ug/kg wet	<100	100	
trans-1,3-Dichloropropene	ug/kg wet	<50	50	
1,1,2-Trichloroethane	ug/kg wet	<50	50	
Tetrachloroethene	ug/kg wet	<50	50	
2-Hexanone	ug/kg wet	<2500	2500	
Dibromochloromethane	ug/kg wet	<100	100	
1,2-Dibromoethane (EDB)	ug/kg wet	<50	50	
Chlorobenzene	ug/kg wet	<50	50	
1,1,1,2-Tetrachloroethane	ug/kg wet	<100	100	
Ethylbenzene	ug/kg wet	<50	50	
m,p-Xylene	ug/kg wet	<100	100	
o-Xylene	ug/kg wet	<50	50	
Xylenes, total	ug/kg wet	<150	150	
Styrene	ug/kg wet	<50	50	
Bromoform	ug/kg wet	<100	100	
Isopropylbenzene	ug/kg wet	<250	250	
1,1,2,2-Tetrachloroethane	ug/kg wet	<50	50	
1,2,3-Trichloropropane	ug/kg wet	<100	100	
trans-1,4-Dichloro-2-butene	ug/kg wet	<50	50	
Bromobenzene	ug/kg wet	<100	100	
n-Propylbenzene	ug/kg wet	<100	100	
1,3,5-Trimethylbenzene	ug/kg wet	<100	100	
t-Butyl Benzene	ug/kg wet	<50	50	
1,2,4-Trimethylbenzene	ug/kg wet	<100	100	

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METHOD BLANK: T076919-BLK1

Parameter	Units	Blank Result	Reporting Limit	Notes
sec-Butylbenzene	ug/kg wet	<50	50	
p-Isopropyltoluene	ug/kg wet	<100	100	
1,3-Dichlorobenzene	ug/kg wet	<100	100	
1,4-Dichlorobenzene	ug/kg wet	<100	100	
n-Butylbenzene	ug/kg wet	<50	50	
1,2,3-Trimethylbenzene	ug/kg wet	<50	50	
1,2-Dichlorobenzene	ug/kg wet	<100	100	
1,2-Dibromo-3-chloropropane	ug/kg wet	<100	100	
Hexachloroethane	ug/kg wet	<100	100	
1,2,4-Trichlorobenzene	ug/kg wet	<330	330	
Naphthalene	ug/kg wet	<330	330	
1,2,3-Trichlorobenzene	ug/kg wet	<250	250	
2-Methylnaphthalene	ug/kg wet	<330	330	
1,2-Dichloroethane-d4 (S)	%	102	68-133	
Toluene-d8 (S)	%	104	75-120	
4-Bromofluorobenzene (S)	%	100	69-119	
1,2-Dichlorobenzene-d4 (S)	%	97	72-127	

LABORATORY CONTROL SAMPLE: T076919-BS1

Parameter	Units	Spike Conc.	LCS Result	LCS % Rec	% Rec Limit	Notes
1,1-Dichloroethene	ug/kg wet	1000	1010	101	64-156	
Benzene	ug/kg wet	1000	932	93	80-120	
Trichloroethene	ug/kg wet	1000	962	96	69-133	
Toluene	ug/kg wet	1000	871	87	80-120	
Chlorobenzene	ug/kg wet	1000	864	86	80-120	
1,2-Dichloroethane-d4 (S)	%	30.0	29.5	98	68-133	
Toluene-d8 (S)	%	30.0	30.9	103	75-120	
4-Bromofluorobenzene (S)	%	30.0	30.3	101	69-119	
1,2-Dichlorobenzene-d4 (S)	%	30.0	32.0	106	72-127	

Trace Project ID: T18E062
Client Project ID: Tysman Companies Phase II

QC Batch: T076920
QC Batch Method: EPA 8260C
Analysis Description: Volatiles, Full MDEQ+ List
Analysis Method: EPA 8260C

METHOD BLANK: T076920-BLK1

Parameter	Units	Blank Result	Reporting Limit	Notes
Dichlorodifluoromethane	ug/L	<5.0	5.0	
Chloromethane	ug/L	<5.0	5.0	
Vinyl chloride	ug/L	<1.0	1.0	

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METHOD BLANK: T076920-BLK1

Parameter	Units	Blank Result	Reporting Limit	Notes
Bromomethane	ug/L	<5.0	5.0	
Chloroethane	ug/L	<5.0	5.0	
Trichlorofluoromethane	ug/L	<1.0	1.0	
Diethyl ether	ug/L	<10	10	
Tert-butyl alcohol	ug/L	<50	50	
1,1-Dichloroethene	ug/L	<1.0	1.0	
Acetone	ug/L	<50	50	
Iodomethane	ug/L	<1.0	1.0	
Carbon disulfide	ug/L	<5.0	5.0	
Methyl-tert-butyl ether	ug/L	<5.0	5.0	
Methylene chloride	ug/L	<5.0	5.0	
Acrylonitrile	ug/L	<2.0	2.0	
trans-1,2-Dichloroethene	ug/L	<1.0	1.0	
1,1-Dichloroethane	ug/L	<1.0	1.0	
Diisopropyl Ether	ug/L	<5.0	5.0	
2-Butanone	ug/L	<25	25	
cis-1,2-Dichloroethene	ug/L	<1.0	1.0	
t-Butyl Ethyl Ether	ug/L	<5.0	5.0	
Bromochloromethane	ug/L	<1.0	1.0	
Tetrahydrofuran	ug/L	<90	90	
Chloroform	ug/L	<1.0	1.0	
1,1,1-Trichloroethane	ug/L	<1.0	1.0	
Carbon tetrachloride	ug/L	<1.0	1.0	
Benzene	ug/L	<1.0	1.0	
t-Amyl Methyl Ether	ug/L	<5.0	5.0	
1,2-Dichloroethane	ug/L	<1.0	1.0	
Cyclohexane	ug/L	<5.0	5.0	
Trichloroethene	ug/L	<1.0	1.0	
1,2-Dichloropropane	ug/L	<1.0	1.0	
Dibromomethane	ug/L	<5.0	5.0	
Bromodichloromethane	ug/L	<1.0	1.0	
cis-1,3-Dichloropropene	ug/L	<1.0	1.0	
4-Methyl-2-pentanone	ug/L	<50	50	
Toluene	ug/L	<1.0	1.0	
trans-1,3-Dichloropropene	ug/L	<1.0	1.0	
1,1,2-Trichloroethane	ug/L	<1.0	1.0	
Tetrachloroethene	ug/L	<1.0	1.0	
2-Hexanone	ug/L	<50	50	
Dibromochloromethane	ug/L	<5.0	5.0	
1,2-Dibromoethane (EDB)	ug/L	<1.0	1.0	
Chlorobenzene	ug/L	<1.0	1.0	
1,1,1,2-Tetrachloroethane	ug/L	<1.0	1.0	
Ethylbenzene	ug/L	<1.0	1.0	
m,p-Xylene	ug/L	<2.0	2.0	

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METHOD BLANK: T076920-BLK1

Parameter	Units	Blank Result	Reporting Limit	Notes
o-Xylene	ug/L	<1.0	1.0	
Xylenes, total	ug/L	<3.0	3.0	
Styrene	ug/L	<1.0	1.0	
Bromoform	ug/L	<1.0	1.0	
Isopropylbenzene	ug/L	<5.0	5.0	
1,1,2,2-Tetrachloroethane	ug/L	<1.0	1.0	
1,2,3-Trichloropropane	ug/L	<1.0	1.0	
trans-1,4-Dichloro-2-butene	ug/L	<1.0	1.0	
Bromobenzene	ug/L	<1.0	1.0	
n-Propylbenzene	ug/L	<1.0	1.0	
1,3,5-Trimethylbenzene	ug/L	<1.0	1.0	
t-Butyl Benzene	ug/L	<1.0	1.0	
1,2,4-Trimethylbenzene	ug/L	<1.0	1.0	
sec-Butylbenzene	ug/L	<1.0	1.0	
p-Isopropyltoluene	ug/L	<5.0	5.0	
1,3-Dichlorobenzene	ug/L	<1.0	1.0	
1,4-Dichlorobenzene	ug/L	<1.0	1.0	
n-Butylbenzene	ug/L	<1.0	1.0	
1,2,3-Trimethylbenzene	ug/L	<1.0	1.0	
1,2-Dichlorobenzene	ug/L	<1.0	1.0	
1,2-Dibromo-3-chloropropane	ug/L	<1.0	1.0	
Hexachloroethane	ug/L	<5.0	5.0	
1,2,4-Trichlorobenzene	ug/L	<5.0	5.0	
Naphthalene	ug/L	<5.0	5.0	
1,2,3-Trichlorobenzene	ug/L	<5.0	5.0	
2-Methylnaphthalene	ug/L	<5.0	5.0	
1,2-Dichloroethane-d4 (S)	%	102	68-133	
Toluene-d8 (S)	%	104	75-120	
4-Bromofluorobenzene (S)	%	100	69-119	
1,2-Dichlorobenzene-d4 (S)	%	97	72-127	

LABORATORY CONTROL SAMPLE: T076920-BS1

Parameter	Units	Spike Conc.	LCS Result	LCS % Rec	% Rec Limit	Notes
1,1-Dichloroethene	ug/L	20.0	20.3	101	64-156	
Benzene	ug/L	20.0	18.6	93	80-120	
Trichloroethene	ug/L	20.0	19.2	96	69-133	
Toluene	ug/L	20.0	17.4	87	80-120	
Chlorobenzene	ug/L	20.0	17.3	86	80-120	
1,2-Dichloroethane-d4 (S)	%	30.0	29.5	98	68-133	
Toluene-d8 (S)	%	30.0	30.9	103	75-120	
4-Bromofluorobenzene (S)	%	30.0	30.3	101	69-119	
1,2-Dichlorobenzene-d4 (S)	%	30.0	32.0	106	72-127	

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Trace Project ID: T18E062
Client Project ID: Tysman Companies Phase II

QC Batch: T076974
QC Batch Method: EPA 8260C

Analysis Description: Volatiles, Full MDEQ+ List
Analysis Method: EPA 8260C

METHOD BLANK: T076974-BLK1

Parameter	Units	Blank Result	Reporting Limit	Notes
Dichlorodifluoromethane	ug/L	<5.0	5.0	
Chloromethane	ug/L	<5.0	5.0	
Vinyl chloride	ug/L	<1.0	1.0	
Bromomethane	ug/L	<5.0	5.0	
Chloroethane	ug/L	<5.0	5.0	
Trichlorofluoromethane	ug/L	<1.0	1.0	
Diethyl ether	ug/L	<10	10	
Tert-butyl alcohol	ug/L	<50	50	
1,1-Dichloroethene	ug/L	<1.0	1.0	
Acetone	ug/L	<50	50	
Iodomethane	ug/L	<1.0	1.0	
Carbon disulfide	ug/L	<5.0	5.0	
Methyl-tert-butyl ether	ug/L	<5.0	5.0	
Methylene chloride	ug/L	<5.0	5.0	
Acrylonitrile	ug/L	<2.0	2.0	
trans-1,2-Dichloroethene	ug/L	<1.0	1.0	
1,1-Dichloroethane	ug/L	<1.0	1.0	
Diisopropyl Ether	ug/L	<5.0	5.0	
2-Butanone	ug/L	<25	25	
cis-1,2-Dichloroethene	ug/L	<1.0	1.0	
t-Butyl Ethyl Ether	ug/L	<5.0	5.0	
Bromochloromethane	ug/L	<1.0	1.0	
Tetrahydrofuran	ug/L	<90	90	
Chloroform	ug/L	<1.0	1.0	
1,1,1-Trichloroethane	ug/L	<1.0	1.0	
Carbon tetrachloride	ug/L	<1.0	1.0	
Benzene	ug/L	<1.0	1.0	
t-Amyl Methyl Ether	ug/L	<5.0	5.0	
1,2-Dichloroethane	ug/L	<1.0	1.0	
Cyclohexane	ug/L	<5.0	5.0	
Trichloroethene	ug/L	<1.0	1.0	
1,2-Dichloropropane	ug/L	<1.0	1.0	
Dibromomethane	ug/L	<5.0	5.0	
Bromodichloromethane	ug/L	<1.0	1.0	
cis-1,3-Dichloropropene	ug/L	<1.0	1.0	
4-Methyl-2-pentanone	ug/L	<50	50	
Toluene	ug/L	<1.0	1.0	
trans-1,3-Dichloropropene	ug/L	<1.0	1.0	

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METHOD BLANK: T076974-BLK1

Parameter	Units	Blank Result	Reporting Limit	Notes
1,1,2-Trichloroethane	ug/L	<1.0	1.0	
Tetrachloroethene	ug/L	<1.0	1.0	
2-Hexanone	ug/L	<50	50	
Dibromochloromethane	ug/L	<5.0	5.0	
1,2-Dibromoethane (EDB)	ug/L	<1.0	1.0	
Chlorobenzene	ug/L	<1.0	1.0	
1,1,1,2-Tetrachloroethane	ug/L	<1.0	1.0	
Ethylbenzene	ug/L	<1.0	1.0	
m,p-Xylene	ug/L	<2.0	2.0	
o-Xylene	ug/L	<1.0	1.0	
Xylenes, total	ug/L	<3.0	3.0	
Styrene	ug/L	<1.0	1.0	
Bromoform	ug/L	<1.0	1.0	
Isopropylbenzene	ug/L	<5.0	5.0	
1,1,2,2-Tetrachloroethane	ug/L	<1.0	1.0	
1,2,3-Trichloropropane	ug/L	<1.0	1.0	
trans-1,4-Dichloro-2-butene	ug/L	<1.0	1.0	
Bromobenzene	ug/L	<1.0	1.0	
n-Propylbenzene	ug/L	<1.0	1.0	
1,3,5-Trimethylbenzene	ug/L	<1.0	1.0	
t-Butyl Benzene	ug/L	<1.0	1.0	
1,2,4-Trimethylbenzene	ug/L	<1.0	1.0	
sec-Butylbenzene	ug/L	<1.0	1.0	
p-Isopropyltoluene	ug/L	<5.0	5.0	
1,3-Dichlorobenzene	ug/L	<1.0	1.0	
1,4-Dichlorobenzene	ug/L	<1.0	1.0	
n-Butylbenzene	ug/L	<1.0	1.0	
1,2,3-Trimethylbenzene	ug/L	<1.0	1.0	
1,2-Dichlorobenzene	ug/L	<1.0	1.0	
1,2-Dibromo-3-chloropropane	ug/L	<1.0	1.0	
Hexachloroethane	ug/L	<5.0	5.0	
1,2,4-Trichlorobenzene	ug/L	<5.0	5.0	
Naphthalene	ug/L	<5.0	5.0	
1,2,3-Trichlorobenzene	ug/L	<5.0	5.0	
2-Methylnaphthalene	ug/L	<5.0	5.0	
1,2-Dichloroethane-d4 (S)	%	100	68-133	
Toluene-d8 (S)	%	105	75-120	
4-Bromofluorobenzene (S)	%	103	69-119	
1,2-Dichlorobenzene-d4 (S)	%	98	72-127	

LABORATORY CONTROL SAMPLE: T076974-BS1

Parameter	Units	Spike Conc.	LCS Result	LCS % Rec	% Rec Limit	Notes
1,1-Dichloroethene	ug/L	20.0	20.9	104	64-156	

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LABORATORY CONTROL SAMPLE: T076974-BS1

Parameter	Units	Spike Conc.	LCS Result	LCS % Rec	% Rec Limit	Notes
Benzene	ug/L	20.0	18.3	91	80-120	
Trichloroethene	ug/L	20.0	18.7	94	69-133	
Toluene	ug/L	20.0	18.4	92	80-120	
Chlorobenzene	ug/L	20.0	18.7	94	80-120	
1,2-Dichloroethane-d4 (S)	%	30.0	29.5	98	68-133	
Toluene-d8 (S)	%	30.0	31.1	104	75-120	
4-Bromofluorobenzene (S)	%	30.0	30.4	101	69-119	
1,2-Dichlorobenzene-d4 (S)	%	30.0	32.0	107	72-127	

Trace Project ID: T18E062
Client Project ID: Tysman Companies Phase II

QC Batch: T076783
QC Batch Method: % Solids
Analysis Description: Solids, Dry Weight
Analysis Method: ASTM D2974-87

SAMPLE DUPLICATE: T076783-DUP3 Original: **T18E062-01**

Parameter	Units	Original Result	DUP Result	RPD	Max RPD	Notes
% Solids	% by Wt.	82.2	82.5	0.3	20	

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CHAIN-OF-CUSTODY RECORD

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Page 1 of 1

Trace ID No. T18E062

Report Results To:

Company Name: Westshore Consulting
Report To: Roger Baur
Mailing Address: 2534 Black Creek Rd.
City, State, Zip Code: Muskegon, MI 49444
Office Phone: (231) 777-3447 Cell Phone:
Email Address: Rbaur@WestshoreConsulting.com

Bill To:

PO #: 0315-0017
Contact Name: Jenifer Garwood
Billing Address (if different):
City, State, Zip Code:
Phone Number:
Billing Email Address:

Trace Use:

Logged By: JS
Checked By: MB
Soil Volatiles Preserved (circle if applicable): MeOH Low Level Lab
Sampling Time:

Turnaround Requirements:

- [x] Standard
- [ ] 4 Day*
- [ ] 3 Day*
- [ ] 48 Hour*
- [ ] 24 Hour*

* Requires Prior Approval

Matrix Key:

S = Soil / Solid, W = Water, SL = Sludge, OI = Oil, WI = Wipes, LW = Liquid Waste, A = Air, D = Drinking Water

Project Name: Tysman Companies Phase II
Sampled By: ADM

Trace No.	Date Collected	Time Collected	Client Sample ID	Metals Field Filtered (Y / N)	Matrix	Number of Containers	Preservation: Cool	HCl	HNO_3	H_2SO_4	NaOH	Other	VOCs	PNAs	Remarks	Possible Health Hazards?
1	5/2	10:56	SB-1	/	S	2							X	X		
2	5/2	11:12	SB-2	/	S	2							X	X		
3	5/2	12:26	SB-4	/	S	2							X	X		
4	5/2	12:54	SB-3	/	S	2							X	X		
5	5/2	2:06	SB-1/TMW-1	/	W	4							X	X		
6	5/2	1:37	SB-4/TMW-2	/	W	4							X	X		

Please Sign

Released By	Received By	Date	Time	Released By	Received By	Date	Time
1) [signature]	[signature]	5-2-18	15:21	2)			
3)				4)			

In executing this Chain of Custody, the client acknowledges the terms as set forth at www.trace-labs.com/terms-of-agreement.

Check this box if you would not like your samples analyzed if received outside of the conditions outlined in the Trace Sample Acceptance Policy at www.trace-labs.com/downloads.

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SAMPLE LOG IN CHECKLIST

Trace ID #: T18E062 Date: 5/2/18 Package Description: Cooler Temperature: -1.8
Client Name: Weathers Consulting Time: 15:21 Logged in by: JS

Cooler Receipt

Cooler/samples delivered by: Trace courier [ ] Hand delivered [X] Name of delivery person: _____
Commercial courier [ ] UPS [ ] FED EX [ ] US Mail [ ]

Tracking Number: [X] Not Applicable
Tracking #: _____

COC Seals present and intact on cooler? [X] Not Applicable [ ] No [ ] Yes
Custody seals signed by Client? [ ] No [ ] Yes Client custody seal # (if applicable): _____

Coolant and Temperature

Type of Coolant Used

Slurry w/ crushed, cubed, or chip ice? [X]
Multiple bags of ice around samples? [X]
Ice Packs/ Blue Ice : [ ]
No Coolant Present: [ ]

Ice still present upon receipt (circle one): Yes No N/A

Cooler Temperature

Correction Factors: •Digital Stick Thermometer CF = -1.0°C
•IR Thermometer CF = -0.3°C

Representative Sample Temperature: 15.4 °C (check one below)
[X] Temp Blank (Stick Thermometer)
[ ] Client Sample (IR Thermometer)

Melt Water: none °C (Use Digital Stick Thermometer)

General

	Yes	No	NA	Comments
All bottles arrived unbroken with labels in good condition?	X			
Each sample point is in a sealed plastic bag?	X			
Labels filled out completely?	X			
All bottle labels agree with Chain of Custody (COC)?	X			
Sufficient sample to run tests requested?	X			
pH checked and samples at correct pH?			X	See Below*
Correct preservative added to samples?			X	
Air bubbles absent from VOAs?			X	
COC filled out properly and signed by client?	X			
COC signed in by TRACE sample custodian?	X			
Was project manager called and samples discussed?		X		

Notes:

*EMD pH Test Strips Used:
[ ] pH 0-2.5 Lot: HC606169 [ ] pH 11.0-13.0 Lot: HC600691
[ ] Other: _____

Form 70-A.24
Effective 4/17/18

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June 01, 2018

Mr. Roger Bour
Westshore Consulting
2534 Black Creek Road
Muskegon, MI 49444

Phone: (231) 777-3447
Fax: (231) 773-3453

RE: Trace Project T18E686
Client Project Tysman Phase III

Dear Mr. Bour:

Enclosed are your analytical results. The results of this report relate only to the samples listed in the body of this report.

All reports were examined through Trace's validation process to ensure that requirements for quality and completeness were satisfied. All reported analytical results were obtained in accordance with the methods referenced on the reports. Every practical effort was made to meet the reporting limit specifications for this work, however, some results may have raised reporting limits to correct for percent solids.

For clients that require NELAC Accreditation, Trace certifies that these test results meet all requirements of the NELAC Standard, except for those analytes with a "N" notation. These analytes have not been evaluated by NELAC at Trace's discretion and will not be reported unless requested by client.

If you have questions concerning this report, please contact me at 231.773.5998 or by email at jmink@trace-labs.com.

Sincerely,

Jon Mink
Senior Project Manager
Enclosures

ACCREDITED IN ACCORDANCE WITH nelac

NJDEP Accreditation No. MI008

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SAMPLE SUMMARY

Trace Project ID: T18E686
Client Project ID: Tysman Phase III

Trace ID	Sample ID	Matrix	Collected By	Date Collected	Date Received
T18E686-01	SB-5	Soil	adm	05/31/18 09:34	05/31/18 13:52
T18E686-02	SB-7	Soil	adm	05/31/18 09:50	05/31/18 13:52
T18E686-03	SB-6	Soil	adm	05/31/18 09:55	05/31/18 13:52
T18E686-04	TMW-4	Water	adm	05/31/18 10:20	05/31/18 13:52
T18E686-05	TMW-3	Water	adm	05/31/18 10:15	05/31/18 13:52
T18E686-06	TMW-5	Water	adm	05/31/18 10:24	05/31/18 13:52
T18E686-07	SB-9	Soil	adm	05/31/18 10:41	05/31/18 13:52
T18E686-08	TMW-7	Water	adm	05/31/18 11:03	05/31/18 13:52
T18E686-09	TMW-8	Water	adm	05/31/18 11:20	05/31/18 13:52
T18E686-10	SB-8	Soil	adm	05/31/18 10:50	05/31/18 13:52
T18E686-11	TMW-9	Water	adm	05/31/18 11:37	05/31/18 13:52
T18E686-12	TMW-10	Water	adm	05/31/18 11:55	05/31/18 13:52
T18E686-13	TMW-11	Water	adm	05/31/18 12:10	05/31/18 13:52
T18E686-14	TMW-12	Water	adm	05/31/18 12:25	05/31/18 13:52
T18E686-15	TMW-13	Water	adm	05/31/18 12:39	05/31/18 13:52

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AN EXPLANATION OF TERMS AND SYMBOLS WHICH MAY OCCUR IN THIS REPORT

DEFINITIONS

LCS	Laboratory Control Sample
LCSD	Laboratory Control Sample Duplicate
MS	Matrix Spike
MSD	Matrix Spike Duplicate
RPD	Relative Percent Difference
DUP	Matrix Duplicate
RDL	Reporting Detection Limit
MCL	Maximum Contamination Limit
TIC	Tentatively Identified Compound
<, ND or U	Indicates the compound was analyzed for but not detected
*	Indicates a result that exceeds its associated MCL or Surrogate control limits
N	Indicates that the compound has not been evaluated by NELAC
NA	Indicates that the compound is not available.

NOTE: Samples for volatiles that have been extracted with a water miscible solvent were corrected for the total volume of the solvent/water mixture.
Solid matrices Method Blanks are at 100% solids as such results are the same wet or dry.

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ANALYTICAL RESULTS

Trace Project ID: T18E686
Client Project ID: Tysman Phase III

Trace ID: T18E686-01 | Date Collected: 05/31/18 09:34 | Matrix: Soil
Sample ID: SB-5 | Date Received: 05/31/18 13:52

PARAMETERS	RESULTS	UNITS	RDL	DILUTION	PREPARED	BY	ANALYZED	BY	NOTES	MCL
VOLATILE ORGANIC COMPOUNDS BY GC-MS										
Analysis Method: EPA 8260C										
Batch: T077621										
Methyl-tert-butyl ether	<250	ug/kg dry	250	50	05/31/18	was	05/31/18	was		
Benzene	<50	ug/kg dry	50	50	05/31/18	was	05/31/18	was		
1,2-Dichloroethane	<50	ug/kg dry	50	50	05/31/18	was	05/31/18	was		
Toluene	<100	ug/kg dry	100	50	05/31/18	was	05/31/18	was		
1,2-Dibromoethane (EDB)	<50	ug/kg dry	50	50	05/31/18	was	05/31/18	was		
Ethylbenzene	<50	ug/kg dry	50	50	05/31/18	was	05/31/18	was		
m,p-Xylene	<100	ug/kg dry	100	50	05/31/18	was	05/31/18	was	N	
o-Xylene	<50	ug/kg dry	50	50	05/31/18	was	05/31/18	was	N	
Xylenes, total	<150	ug/kg dry	150	50	05/31/18	was	05/31/18	was		
1,3,5-Trimethylbenzene	<100	ug/kg dry	100	50	05/31/18	was	05/31/18	was		
1,2,4-Trimethylbenzene	<100	ug/kg dry	100	50	05/31/18	was	05/31/18	was		
Naphthalene	<330	ug/kg dry	330	50	05/31/18	was	05/31/18	was	N	
2-Methylnaphthalene	<330	ug/kg dry	330	50	05/31/18	was	05/31/18	was	N	
Surrogates:										
1,2-Dichloroethane-d4	100	%	68-133	50	05/31/18	was	05/31/18	was		
Toluene-d8	101	%	75-120	50	05/31/18	was	05/31/18	was		
4-Bromofluorobenzene	103	%	69-119	50	05/31/18	was	05/31/18	was		
1,2-Dichlorobenzene-d4	98	%	72-127	50	05/31/18	was	05/31/18	was		
WET CHEMISTRY										
Analysis Method: ASTM D2974-87										
Batch: T077634										
% Solids	**83**	**% by Wt.**	**0.10**	**1**	**06/01/18**	**jm**	**06/01/18**	**jm**	**N**	

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ANALYTICAL RESULTS

Trace Project ID: T18E686
Client Project ID: Tysman Phase III

Trace ID: T18E686-02 | Date Collected: 05/31/18 09:50 | Matrix: Soil
Sample ID: SB-7 | Date Received: 05/31/18 13:52

PARAMETERS	RESULTS	UNITS	RDL	DILUTION	PREPARED	BY	ANALYZED	BY	NOTES	MCL
VOLATILE ORGANIC COMPOUNDS BY GC-MS										
Analysis Method: EPA 8260C										
Batch: T077621										
Methyl-tert-butyl ether	<250	ug/kg dry	250	50	05/31/18	was	05/31/18	was		
Benzene	<50	ug/kg dry	50	50	05/31/18	was	05/31/18	was		
1,2-Dichloroethane	<50	ug/kg dry	50	50	05/31/18	was	05/31/18	was		
Toluene	<100	ug/kg dry	100	50	05/31/18	was	05/31/18	was		
1,2-Dibromoethane (EDB)	<50	ug/kg dry	50	50	05/31/18	was	05/31/18	was		
Ethylbenzene	<50	ug/kg dry	50	50	05/31/18	was	05/31/18	was		
m,p-Xylene	<100	ug/kg dry	100	50	05/31/18	was	05/31/18	was	N	
o-Xylene	<50	ug/kg dry	50	50	05/31/18	was	05/31/18	was	N	
Xylenes, total	<150	ug/kg dry	150	50	05/31/18	was	05/31/18	was		
1,3,5-Trimethylbenzene	<100	ug/kg dry	100	50	05/31/18	was	05/31/18	was		
1,2,4-Trimethylbenzene	<100	ug/kg dry	100	50	05/31/18	was	05/31/18	was		
Naphthalene	<330	ug/kg dry	330	50	05/31/18	was	05/31/18	was	N	
2-Methylnaphthalene	<330	ug/kg dry	330	50	05/31/18	was	05/31/18	was	N	
Surrogates:										
1,2-Dichloroethane-d4	103	%	68-133	50	05/31/18	was	05/31/18	was		
Toluene-d8	101	%	75-120	50	05/31/18	was	05/31/18	was		
4-Bromofluorobenzene	101	%	69-119	50	05/31/18	was	05/31/18	was		
1,2-Dichlorobenzene-d4	97	%	72-127	50	05/31/18	was	05/31/18	was		
WET CHEMISTRY										
Analysis Method: ASTM D2974-87										
Batch: T077634										
% Solids	**88**	**% by Wt.**	**0.10**	**1**	**06/01/18**	**jm**	**06/01/18**	**jm**	**N**	

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ANALYTICAL RESULTS

Trace Project ID: T18E686
Client Project ID: Tysman Phase III

Trace ID: T18E686-03 | Date Collected: 05/31/18 09:55 | Matrix: Soil
Sample ID: SB-6 | Date Received: 05/31/18 13:52

PARAMETERS	RESULTS	UNITS	RDL	DILUTION	PREPARED	BY	ANALYZED	BY	NOTES	MCL
VOLATILE ORGANIC COMPOUNDS BY GC-MS										
Analysis Method: EPA 8260C										
Batch: T077621										
Methyl-tert-butyl ether	<250	ug/kg dry	250	50	05/31/18	was	05/31/18	was		
Benzene	<50	ug/kg dry	50	50	05/31/18	was	05/31/18	was		
1,2-Dichloroethane	<50	ug/kg dry	50	50	05/31/18	was	05/31/18	was		
Toluene	<100	ug/kg dry	100	50	05/31/18	was	05/31/18	was		
1,2-Dibromoethane (EDB)	<50	ug/kg dry	50	50	05/31/18	was	05/31/18	was		
Ethylbenzene	<50	ug/kg dry	50	50	05/31/18	was	05/31/18	was		
m,p-Xylene	<100	ug/kg dry	100	50	05/31/18	was	05/31/18	was	N	
o-Xylene	<50	ug/kg dry	50	50	05/31/18	was	05/31/18	was	N	
Xylenes, total	<150	ug/kg dry	150	50	05/31/18	was	05/31/18	was		
1,3,5-Trimethylbenzene	<100	ug/kg dry	100	50	05/31/18	was	05/31/18	was		
1,2,4-Trimethylbenzene	<100	ug/kg dry	100	50	05/31/18	was	05/31/18	was		
Naphthalene	<330	ug/kg dry	330	50	05/31/18	was	05/31/18	was	N	
2-Methylnaphthalene	<330	ug/kg dry	330	50	05/31/18	was	05/31/18	was	N	
Surrogates:										
1,2-Dichloroethane-d4	101	%	68-133	50	05/31/18	was	05/31/18	was		
Toluene-d8	105	%	75-120	50	05/31/18	was	05/31/18	was		
4-Bromofluorobenzene	104	%	69-119	50	05/31/18	was	05/31/18	was		
1,2-Dichlorobenzene-d4	103	%	72-127	50	05/31/18	was	05/31/18	was		
WET CHEMISTRY										
Analysis Method: ASTM D2974-87										
Batch: T077634										
% Solids	**84**	**% by Wt.**	**0.10**	**1**	**06/01/18**	**jm**	**06/01/18**	**jm**	**N**	

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ANALYTICAL RESULTS

Trace Project ID: T18E686
Client Project ID: Tysman Phase III

Trace ID: T18E686-04 | Date Collected: 05/31/18 10:20 | Matrix: Water
Sample ID: TMW-4 | Date Received: 05/31/18 13:52

PARAMETERS	RESULTS	UNITS	RDL	DILUTION	PREPARED	BY	ANALYZED	BY	NOTES	MCL
VOLATILE ORGANIC COMPOUNDS BY GC-MS										
Analysis Method: EPA 8260C										
Batch: T077636										
Methyl-tert-butyl ether	<5.0	ug/L	5.0	1	05/31/18	was	05/31/18	was		
Benzene	<1.0	ug/L	1.0	1	05/31/18	was	05/31/18	was		
1,2-Dichloroethane	<1.0	ug/L	1.0	1	05/31/18	was	05/31/18	was		
Toluene	<1.0	ug/L	1.0	1	05/31/18	was	05/31/18	was		
1,2-Dibromoethane (EDB)	<1.0	ug/L	1.0	1	05/31/18	was	05/31/18	was		
Ethylbenzene	<1.0	ug/L	1.0	1	05/31/18	was	05/31/18	was		
m,p-Xylene	<2.0	ug/L	2.0	1	05/31/18	was	05/31/18	was	N	
o-Xylene	<1.0	ug/L	1.0	1	05/31/18	was	05/31/18	was	N	
Xylenes, total	<3.0	ug/L	3.0	1	05/31/18	was	05/31/18	was		
1,3,5-Trimethylbenzene	<1.0	ug/L	1.0	1	05/31/18	was	05/31/18	was		
1,2,4-Trimethylbenzene	<1.0	ug/L	1.0	1	05/31/18	was	05/31/18	was		
Naphthalene	<5.0	ug/L	5.0	1	05/31/18	was	05/31/18	was	N	
2-Methylnaphthalene	<5.0	ug/L	5.0	1	05/31/18	was	05/31/18	was	N	
Surrogates:										
1,2-Dichloroethane-d4	98	%	68-133	1	05/31/18	was	05/31/18	was		
Toluene-d8	102	%	75-120	1	05/31/18	was	05/31/18	was		
4-Bromofluorobenzene	104	%	69-119	1	05/31/18	was	05/31/18	was		
1,2-Dichlorobenzene-d4	101	%	72-127	1	05/31/18	was	05/31/18	was		

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ANALYTICAL RESULTS

Trace Project ID: T18E686
Client Project ID: Tysman Phase III

Trace ID: T18E686-05 | Date Collected: 05/31/18 10:15 | Matrix: Water
Sample ID: TMW-3 | Date Received: 05/31/18 13:52

PARAMETERS	RESULTS	UNITS	RDL	DILUTION	PREPARED	BY	ANALYZED	BY	NOTES	MCL
VOLATILE ORGANIC COMPOUNDS BY GC-MS										
Analysis Method: EPA 8260C										
Batch: T077636										
Methyl-tert-butyl ether	<5.0	ug/L	5.0	1	05/31/18	was	05/31/18	was		
Benzene	<1.0	ug/L	1.0	1	05/31/18	was	05/31/18	was		
1,2-Dichloroethane	<1.0	ug/L	1.0	1	05/31/18	was	05/31/18	was		
Toluene	<1.0	ug/L	1.0	1	05/31/18	was	05/31/18	was		
1,2-Dibromoethane (EDB)	<1.0	ug/L	1.0	1	05/31/18	was	05/31/18	was		
Ethylbenzene	<1.0	ug/L	1.0	1	05/31/18	was	05/31/18	was		
m,p-Xylene	<2.0	ug/L	2.0	1	05/31/18	was	05/31/18	was	N	
o-Xylene	<1.0	ug/L	1.0	1	05/31/18	was	05/31/18	was	N	
Xylenes, total	<3.0	ug/L	3.0	1	05/31/18	was	05/31/18	was		
1,3,5-Trimethylbenzene	<1.0	ug/L	1.0	1	05/31/18	was	05/31/18	was		
1,2,4-Trimethylbenzene	<1.0	ug/L	1.0	1	05/31/18	was	05/31/18	was		
Naphthalene	<5.0	ug/L	5.0	1	05/31/18	was	05/31/18	was	N	
2-Methylnaphthalene	<5.0	ug/L	5.0	1	05/31/18	was	05/31/18	was	N	
Surrogates:										
1,2-Dichloroethane-d4	98	%	68-133	1	05/31/18	was	05/31/18	was		
Toluene-d8	102	%	75-120	1	05/31/18	was	05/31/18	was		
4-Bromofluorobenzene	107	%	69-119	1	05/31/18	was	05/31/18	was		
1,2-Dichlorobenzene-d4	102	%	72-127	1	05/31/18	was	05/31/18	was		

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ANALYTICAL RESULTS

Trace Project ID: T18E686
Client Project ID: Tysman Phase III

Trace ID: T18E686-06 | Date Collected: 05/31/18 10:24 | Matrix: Water
Sample ID: TMW-5 | Date Received: 05/31/18 13:52

PARAMETERS	RESULTS	UNITS	RDL	DILUTION	PREPARED	BY	ANALYZED	BY	NOTES	MCL
VOLATILE ORGANIC COMPOUNDS BY GC-MS										
Analysis Method: EPA 8260C										
Batch: T077636										
Methyl-tert-butyl ether	<5.0	ug/L	5.0	1	05/31/18	was	05/31/18	was		
Benzene	<1.0	ug/L	1.0	1	05/31/18	was	05/31/18	was		
1,2-Dichloroethane	<1.0	ug/L	1.0	1	05/31/18	was	05/31/18	was		
Toluene	<1.0	ug/L	1.0	1	05/31/18	was	05/31/18	was		
1,2-Dibromoethane (EDB)	<1.0	ug/L	1.0	1	05/31/18	was	05/31/18	was		
Ethylbenzene	<1.0	ug/L	1.0	1	05/31/18	was	05/31/18	was		
m,p-Xylene	<2.0	ug/L	2.0	1	05/31/18	was	05/31/18	was	N	
o-Xylene	<1.0	ug/L	1.0	1	05/31/18	was	05/31/18	was	N	
Xylenes, total	<3.0	ug/L	3.0	1	05/31/18	was	05/31/18	was		
1,3,5-Trimethylbenzene	<1.0	ug/L	1.0	1	05/31/18	was	05/31/18	was		
1,2,4-Trimethylbenzene	<1.0	ug/L	1.0	1	05/31/18	was	05/31/18	was		
Naphthalene	<5.0	ug/L	5.0	1	05/31/18	was	05/31/18	was	N	
2-Methylnaphthalene	<5.0	ug/L	5.0	1	05/31/18	was	05/31/18	was	N	
Surrogates:										
1,2-Dichloroethane-d4	100	%	68-133	1	05/31/18	was	05/31/18	was		
Toluene-d8	101	%	75-120	1	05/31/18	was	05/31/18	was		
4-Bromofluorobenzene	106	%	69-119	1	05/31/18	was	05/31/18	was		
1,2-Dichlorobenzene-d4	103	%	72-127	1	05/31/18	was	05/31/18	was		

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ANALYTICAL RESULTS

Trace Project ID: T18E686
Client Project ID: Tysman Phase III

Trace ID: T18E686-07 | Date Collected: 05/31/18 10:41 | Matrix: Soil
Sample ID: SB-9 | Date Received: 05/31/18 13:52

PARAMETERS	RESULTS	UNITS	RDL	DILUTION	PREPARED	BY	ANALYZED	BY	NOTES	MCL
VOLATILE ORGANIC COMPOUNDS BY GC-MS										
Analysis Method: EPA 8260C										
Batch: T077621										
Methyl-tert-butyl ether	<260	ug/kg dry	260	50	05/31/18	was	05/31/18	was		
Benzene	<53	ug/kg dry	53	50	05/31/18	was	05/31/18	was		
1,2-Dichloroethane	<53	ug/kg dry	53	50	05/31/18	was	05/31/18	was		
Toluene	<100	ug/kg dry	100	50	05/31/18	was	05/31/18	was		
1,2-Dibromoethane (EDB)	<53	ug/kg dry	53	50	05/31/18	was	05/31/18	was		
Ethylbenzene	<53	ug/kg dry	53	50	05/31/18	was	05/31/18	was		
m,p-Xylene	<110	ug/kg dry	110	50	05/31/18	was	05/31/18	was	N	
o-Xylene	<53	ug/kg dry	53	50	05/31/18	was	05/31/18	was	N	
Xylenes, total	<160	ug/kg dry	160	50	05/31/18	was	05/31/18	was		
1,3,5-Trimethylbenzene	<100	ug/kg dry	100	50	05/31/18	was	05/31/18	was		
1,2,4-Trimethylbenzene	<100	ug/kg dry	100	50	05/31/18	was	05/31/18	was		
Naphthalene	<330	ug/kg dry	330	50	05/31/18	was	05/31/18	was	N	
2-Methylnaphthalene	<330	ug/kg dry	330	50	05/31/18	was	05/31/18	was	N	
Surrogates:										
1,2-Dichloroethane-d4	101	%	68-133	50	05/31/18	was	05/31/18	was		
Toluene-d8	101	%	75-120	50	05/31/18	was	05/31/18	was		
4-Bromofluorobenzene	104	%	69-119	50	05/31/18	was	05/31/18	was		
1,2-Dichlorobenzene-d4	103	%	72-127	50	05/31/18	was	05/31/18	was		
WET CHEMISTRY										
Analysis Method: ASTM D2974-87										
Batch: T077634										
% Solids	**79**	**% by Wt.**	**0.10**	**1**	**06/01/18**	**jm**	**06/01/18**	**jm**	**N**	

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ANALYTICAL RESULTS

Trace Project ID: T18E686
Client Project ID: Tysman Phase III

Trace ID: T18E686-08 | Date Collected: 05/31/18 11:03 | Matrix: Water
Sample ID: TMW-7 | Date Received: 05/31/18 13:52

PARAMETERS	RESULTS	UNITS	RDL	DILUTION	PREPARED	BY	ANALYZED	BY	NOTES	MCL
VOLATILE ORGANIC COMPOUNDS BY GC-MS										
Analysis Method: EPA 8260C										
Batch: T077636										
Methyl-tert-butyl ether	<5.0	ug/L	5.0	1	05/31/18	was	05/31/18	was		
Benzene	<1.0	ug/L	1.0	1	05/31/18	was	05/31/18	was		
1,2-Dichloroethane	<1.0	ug/L	1.0	1	05/31/18	was	05/31/18	was		
Toluene	<1.0	ug/L	1.0	1	05/31/18	was	05/31/18	was		
1,2-Dibromoethane (EDB)	<1.0	ug/L	1.0	1	05/31/18	was	05/31/18	was		
Ethylbenzene	<1.0	ug/L	1.0	1	05/31/18	was	05/31/18	was		
m,p-Xylene	<2.0	ug/L	2.0	1	05/31/18	was	05/31/18	was	N	
o-Xylene	<1.0	ug/L	1.0	1	05/31/18	was	05/31/18	was	N	
Xylenes, total	<3.0	ug/L	3.0	1	05/31/18	was	05/31/18	was		
1,3,5-Trimethylbenzene	<1.0	ug/L	1.0	1	05/31/18	was	05/31/18	was		
1,2,4-Trimethylbenzene	<1.0	ug/L	1.0	1	05/31/18	was	05/31/18	was		
Naphthalene	<5.0	ug/L	5.0	1	05/31/18	was	05/31/18	was	N	
2-Methylnaphthalene	<5.0	ug/L	5.0	1	05/31/18	was	05/31/18	was	N	
Surrogates:										
1,2-Dichloroethane-d4	101	%	68-133	1	05/31/18	was	05/31/18	was		
Toluene-d8	102	%	75-120	1	05/31/18	was	05/31/18	was		
4-Bromofluorobenzene	106	%	69-119	1	05/31/18	was	05/31/18	was		
1,2-Dichlorobenzene-d4	103	%	72-127	1	05/31/18	was	05/31/18	was		

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ANALYTICAL RESULTS

Trace Project ID: T18E686
Client Project ID: Tysman Phase III

Trace ID: T18E686-09 | Date Collected: 05/31/18 11:20 | Matrix: Water
Sample ID: TMW-8 | Date Received: 05/31/18 13:52

PARAMETERS	RESULTS	UNITS	RDL	DILUTION	PREPARED	BY	ANALYZED	BY	NOTES	MCL
VOLATILE ORGANIC COMPOUNDS BY GC-MS										
Analysis Method: EPA 8260C										
Batch: T077636										
Methyl-tert-butyl ether	<5.0	ug/L	5.0	1	05/31/18	was	05/31/18	was		
Benzene	<1.0	ug/L	1.0	1	05/31/18	was	05/31/18	was		
1,2-Dichloroethane	<1.0	ug/L	1.0	1	05/31/18	was	05/31/18	was		
Toluene	<1.0	ug/L	1.0	1	05/31/18	was	05/31/18	was		
1,2-Dibromoethane (EDB)	<1.0	ug/L	1.0	1	05/31/18	was	05/31/18	was		
Ethylbenzene	<1.0	ug/L	1.0	1	05/31/18	was	05/31/18	was		
m,p-Xylene	<2.0	ug/L	2.0	1	05/31/18	was	05/31/18	was	N	
o-Xylene	<1.0	ug/L	1.0	1	05/31/18	was	05/31/18	was	N	
Xylenes, total	<3.0	ug/L	3.0	1	05/31/18	was	05/31/18	was		
1,3,5-Trimethylbenzene	<1.0	ug/L	1.0	1	05/31/18	was	05/31/18	was		
1,2,4-Trimethylbenzene	<1.0	ug/L	1.0	1	05/31/18	was	05/31/18	was		
Naphthalene	<5.0	ug/L	5.0	1	05/31/18	was	05/31/18	was	N	
2-Methylnaphthalene	<5.0	ug/L	5.0	1	05/31/18	was	05/31/18	was	N	
Surrogates:										
1,2-Dichloroethane-d4	101	%	68-133	1	05/31/18	was	05/31/18	was		
Toluene-d8	102	%	75-120	1	05/31/18	was	05/31/18	was		
4-Bromofluorobenzene	110	%	69-119	1	05/31/18	was	05/31/18	was		
1,2-Dichlorobenzene-d4	108	%	72-127	1	05/31/18	was	05/31/18	was		

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ANALYTICAL RESULTS

Trace Project ID: T18E686
Client Project ID: Tysman Phase III

Trace ID: T18E686-10 | Date Collected: 05/31/18 10:50 | Matrix: Soil
Sample ID: SB-8 | Date Received: 05/31/18 13:52

PARAMETERS	RESULTS	UNITS	RDL	DILUTION	PREPARED	BY	ANALYZED	BY	NOTES	MCL
VOLATILE ORGANIC COMPOUNDS BY GC-MS										
Analysis Method: EPA 8260C										
Batch: T077621										
Methyl-tert-butyl ether	<260	ug/kg dry	260	50	05/31/18	was	05/31/18	was		
Benzene	<51	ug/kg dry	51	50	05/31/18	was	05/31/18	was		
1,2-Dichloroethane	<51	ug/kg dry	51	50	05/31/18	was	05/31/18	was		
Toluene	<100	ug/kg dry	100	50	05/31/18	was	05/31/18	was		
1,2-Dibromoethane (EDB)	<51	ug/kg dry	51	50	05/31/18	was	05/31/18	was		
Ethylbenzene	<51	ug/kg dry	51	50	05/31/18	was	05/31/18	was		
m,p-Xylene	<100	ug/kg dry	100	50	05/31/18	was	05/31/18	was	N	
o-Xylene	<51	ug/kg dry	51	50	05/31/18	was	05/31/18	was	N	
Xylenes, total	<150	ug/kg dry	150	50	05/31/18	was	05/31/18	was		
1,3,5-Trimethylbenzene	<100	ug/kg dry	100	50	05/31/18	was	05/31/18	was		
1,2,4-Trimethylbenzene	<100	ug/kg dry	100	50	05/31/18	was	05/31/18	was		
Naphthalene	<330	ug/kg dry	330	50	05/31/18	was	05/31/18	was	N	
2-Methylnaphthalene	<330	ug/kg dry	330	50	05/31/18	was	05/31/18	was	N	
Surrogates:										
1,2-Dichloroethane-d4	98	%	68-133	50	05/31/18	was	05/31/18	was		
Toluene-d8	99	%	75-120	50	05/31/18	was	05/31/18	was		
4-Bromofluorobenzene	98	%	69-119	50	05/31/18	was	05/31/18	was		
1,2-Dichlorobenzene-d4	98	%	72-127	50	05/31/18	was	05/31/18	was		
WET CHEMISTRY										
Analysis Method: ASTM D2974-87										
Batch: T077634										
% Solids	**80**	**% by Wt.**	**0.10**	**1**	**06/01/18**	**jm**	**06/01/18**	**jm**	**N**	

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ANALYTICAL RESULTS

Trace Project ID: T18E686
Client Project ID: Tysman Phase III

Trace ID: T18E686-11 | Date Collected: 05/31/18 11:37 | Matrix: Water
Sample ID: TMW-9 | Date Received: 05/31/18 13:52

PARAMETERS	RESULTS	UNITS	RDL	DILUTION	PREPARED	BY	ANALYZED	BY	NOTES	MCL
VOLATILE ORGANIC COMPOUNDS BY GC-MS										
Analysis Method: EPA 8260C										
Batch: T077636										
Methyl-tert-butyl ether	<5.0	ug/L	5.0	1	05/31/18	was	05/31/18	was		
Benzene	<1.0	ug/L	1.0	1	05/31/18	was	05/31/18	was		
1,2-Dichloroethane	<1.0	ug/L	1.0	1	05/31/18	was	05/31/18	was		
Toluene	<1.0	ug/L	1.0	1	05/31/18	was	05/31/18	was		
1,2-Dibromoethane (EDB)	<1.0	ug/L	1.0	1	05/31/18	was	05/31/18	was		
Ethylbenzene	<1.0	ug/L	1.0	1	05/31/18	was	05/31/18	was		
m,p-Xylene	<2.0	ug/L	2.0	1	05/31/18	was	05/31/18	was	N	
o-Xylene	<1.0	ug/L	1.0	1	05/31/18	was	05/31/18	was	N	
Xylenes, total	<3.0	ug/L	3.0	1	05/31/18	was	05/31/18	was		
1,3,5-Trimethylbenzene	<1.0	ug/L	1.0	1	05/31/18	was	05/31/18	was		
1,2,4-Trimethylbenzene	<1.0	ug/L	1.0	1	05/31/18	was	05/31/18	was		
Naphthalene	<5.0	ug/L	5.0	1	05/31/18	was	05/31/18	was	N	
2-Methylnaphthalene	<5.0	ug/L	5.0	1	05/31/18	was	05/31/18	was	N	
Surrogates:										
1,2-Dichloroethane-d4	101	%	68-133	1	05/31/18	was	05/31/18	was		
Toluene-d8	103	%	75-120	1	05/31/18	was	05/31/18	was		
4-Bromofluorobenzene	107	%	69-119	1	05/31/18	was	05/31/18	was		
1,2-Dichlorobenzene-d4	104	%	72-127	1	05/31/18	was	05/31/18	was		

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ANALYTICAL RESULTS

Trace Project ID: T18E686
Client Project ID: Tysman Phase III

Trace ID: T18E686-12 | Date Collected: 05/31/18 11:55 | Matrix: Water
Sample ID: TMW-10 | Date Received: 05/31/18 13:52

PARAMETERS	RESULTS	UNITS	RDL	DILUTION	PREPARED	BY	ANALYZED	BY	NOTES	MCL
VOLATILE ORGANIC COMPOUNDS BY GC-MS										
Analysis Method: EPA 8260C										
Batch: T077620										
Methyl-tert-butyl ether	<5.0	ug/L	5.0	1	05/31/18	was	05/31/18	was		
Benzene	<1.0	ug/L	1.0	1	05/31/18	was	05/31/18	was		
1,2-Dichloroethane	<1.0	ug/L	1.0	1	05/31/18	was	05/31/18	was		
Toluene	<1.0	ug/L	1.0	1	05/31/18	was	05/31/18	was		
1,2-Dibromoethane (EDB)	<1.0	ug/L	1.0	1	05/31/18	was	05/31/18	was		
Ethylbenzene	<1.0	ug/L	1.0	1	05/31/18	was	05/31/18	was		
m,p-Xylene	<2.0	ug/L	2.0	1	05/31/18	was	05/31/18	was	N	
o-Xylene	<1.0	ug/L	1.0	1	05/31/18	was	05/31/18	was	N	
Xylenes, total	<3.0	ug/L	3.0	1	05/31/18	was	05/31/18	was		
1,3,5-Trimethylbenzene	<1.0	ug/L	1.0	1	05/31/18	was	05/31/18	was		
1,2,4-Trimethylbenzene	<1.0	ug/L	1.0	1	05/31/18	was	05/31/18	was		
Naphthalene	<5.0	ug/L	5.0	1	05/31/18	was	05/31/18	was	N	
2-Methylnaphthalene	<5.0	ug/L	5.0	1	05/31/18	was	05/31/18	was	N	
Surrogates:										
1,2-Dichloroethane-d4	100	%	68-133	1	05/31/18	was	05/31/18	was		
Toluene-d8	105	%	75-120	1	05/31/18	was	05/31/18	was		
4-Bromofluorobenzene	102	%	69-119	1	05/31/18	was	05/31/18	was		
1,2-Dichlorobenzene-d4	102	%	72-127	1	05/31/18	was	05/31/18	was		

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ANALYTICAL RESULTS

Trace Project ID: T18E686
Client Project ID: Tysman Phase III

Trace ID: T18E686-13 | Date Collected: 05/31/18 12:10 | Matrix: Water
Sample ID: TMW-11 | Date Received: 05/31/18 13:52

PARAMETERS	RESULTS	UNITS	RDL	DILUTION	PREPARED	BY	ANALYZED	BY	NOTES	MCL
VOLATILE ORGANIC COMPOUNDS BY GC-MS										
Analysis Method: EPA 8260C										
Batch: T077620										
Methyl-tert-butyl ether	<5.0	ug/L	5.0	1	05/31/18	was	05/31/18	was		
Benzene	<1.0	ug/L	1.0	1	05/31/18	was	05/31/18	was		
1,2-Dichloroethane	<1.0	ug/L	1.0	1	05/31/18	was	05/31/18	was		
Toluene	<1.0	ug/L	1.0	1	05/31/18	was	05/31/18	was		
1,2-Dibromoethane (EDB)	<1.0	ug/L	1.0	1	05/31/18	was	05/31/18	was		
Ethylbenzene	<1.0	ug/L	1.0	1	05/31/18	was	05/31/18	was		
m,p-Xylene	<2.0	ug/L	2.0	1	05/31/18	was	05/31/18	was	N	
o-Xylene	<1.0	ug/L	1.0	1	05/31/18	was	05/31/18	was	N	
Xylenes, total	<3.0	ug/L	3.0	1	05/31/18	was	05/31/18	was		
1,3,5-Trimethylbenzene	<1.0	ug/L	1.0	1	05/31/18	was	05/31/18	was		
1,2,4-Trimethylbenzene	<1.0	ug/L	1.0	1	05/31/18	was	05/31/18	was		
Naphthalene	<5.0	ug/L	5.0	1	05/31/18	was	05/31/18	was	N	
2-Methylnaphthalene	<5.0	ug/L	5.0	1	05/31/18	was	05/31/18	was	N	
Surrogates:										
1,2-Dichloroethane-d4	98	%	68-133	1	05/31/18	was	05/31/18	was		
Toluene-d8	103	%	75-120	1	05/31/18	was	05/31/18	was		
4-Bromofluorobenzene	106	%	69-119	1	05/31/18	was	05/31/18	was		
1,2-Dichlorobenzene-d4	102	%	72-127	1	05/31/18	was	05/31/18	was		

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ANALYTICAL RESULTS

Trace Project ID: T18E686
Client Project ID: Tysman Phase III

Trace ID: T18E686-14 | Date Collected: 05/31/18 12:25 | Matrix: Water
Sample ID: TMW-12 | Date Received: 05/31/18 13:52

PARAMETERS	RESULTS	UNITS	RDL	DILUTION	PREPARED	BY	ANALYZED	BY	NOTES	MCL
VOLATILE ORGANIC COMPOUNDS BY GC-MS										
Analysis Method: EPA 8260C										
Batch: T077620										
Methyl-tert-butyl ether	<5.0	ug/L	5.0	1	05/31/18	was	05/31/18	was		
Benzene	<1.0	ug/L	1.0	1	05/31/18	was	05/31/18	was		
1,2-Dichloroethane	<1.0	ug/L	1.0	1	05/31/18	was	05/31/18	was		
Toluene	<1.0	ug/L	1.0	1	05/31/18	was	05/31/18	was		
1,2-Dibromoethane (EDB)	<1.0	ug/L	1.0	1	05/31/18	was	05/31/18	was		
Ethylbenzene	<1.0	ug/L	1.0	1	05/31/18	was	05/31/18	was		
m,p-Xylene	<2.0	ug/L	2.0	1	05/31/18	was	05/31/18	was	N	
o-Xylene	<1.0	ug/L	1.0	1	05/31/18	was	05/31/18	was	N	
Xylenes, total	<3.0	ug/L	3.0	1	05/31/18	was	05/31/18	was		
1,3,5-Trimethylbenzene	<1.0	ug/L	1.0	1	05/31/18	was	05/31/18	was		
1,2,4-Trimethylbenzene	<1.0	ug/L	1.0	1	05/31/18	was	05/31/18	was		
Naphthalene	<5.0	ug/L	5.0	1	05/31/18	was	05/31/18	was	N	
2-Methylnaphthalene	<5.0	ug/L	5.0	1	05/31/18	was	05/31/18	was	N	
Surrogates:										
1,2-Dichloroethane-d4	100	%	68-133	1	05/31/18	was	05/31/18	was		
Toluene-d8	107	%	75-120	1	05/31/18	was	05/31/18	was		
4-Bromofluorobenzene	104	%	69-119	1	05/31/18	was	05/31/18	was		
1,2-Dichlorobenzene-d4	100	%	72-127	1	05/31/18	was	05/31/18	was		

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ANALYTICAL RESULTS

Trace Project ID: T18E686
Client Project ID: Tysman Phase III

Trace ID: T18E686-15 | Date Collected: 05/31/18 12:39 | Matrix: Water
Sample ID: TMW-13 | Date Received: 05/31/18 13:52

PARAMETERS	RESULTS	UNITS	RDL	DILUTION	PREPARED	BY	ANALYZED	BY	NOTES	MCL
VOLATILE ORGANIC COMPOUNDS BY GC-MS										
Analysis Method: EPA 8260C										
Batch: T077620										
Methyl-tert-butyl ether	<5.0	ug/L	5.0	1	05/31/18	was	05/31/18	was		
Benzene	<1.0	ug/L	1.0	1	05/31/18	was	05/31/18	was		
1,2-Dichloroethane	<1.0	ug/L	1.0	1	05/31/18	was	05/31/18	was		
Toluene	<1.0	ug/L	1.0	1	05/31/18	was	05/31/18	was		
1,2-Dibromoethane (EDB)	<1.0	ug/L	1.0	1	05/31/18	was	05/31/18	was		
Ethylbenzene	<1.0	ug/L	1.0	1	05/31/18	was	05/31/18	was		
m,p-Xylene	<2.0	ug/L	2.0	1	05/31/18	was	05/31/18	was	N	
o-Xylene	<1.0	ug/L	1.0	1	05/31/18	was	05/31/18	was	N	
Xylenes, total	<3.0	ug/L	3.0	1	05/31/18	was	05/31/18	was		
1,3,5-Trimethylbenzene	<1.0	ug/L	1.0	1	05/31/18	was	05/31/18	was		
1,2,4-Trimethylbenzene	<1.0	ug/L	1.0	1	05/31/18	was	05/31/18	was		
Naphthalene	<5.0	ug/L	5.0	1	05/31/18	was	05/31/18	was	N	
2-Methylnaphthalene	<5.0	ug/L	5.0	1	05/31/18	was	05/31/18	was	N	
Surrogates:										
1,2-Dichloroethane-d4	98	%	68-133	1	05/31/18	was	05/31/18	was		
Toluene-d8	108	%	75-120	1	05/31/18	was	05/31/18	was		
4-Bromofluorobenzene	102	%	69-119	1	05/31/18	was	05/31/18	was		
1,2-Dichlorobenzene-d4	100	%	72-127	1	05/31/18	was	05/31/18	was		

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QUALITY CONTROL RESULTS

Trace Project ID: T18E686
Client Project ID: Tysman Phase III

QC Batch: T077620
QC Batch Method: EPA 8260C
Analysis Description: Volatiles, OpMemo14 full list
Analysis Method: EPA 8260C

METHOD BLANK: T077620-BLK1

Parameter	Units	Blank Result	Reporting Limit	Notes
Methyl-tert-butyl ether	ug/L	<5.0	5.0	
Benzene	ug/L	<1.0	1.0	
1,2-Dichloroethane	ug/L	<1.0	1.0	
Toluene	ug/L	<1.0	1.0	
1,2-Dibromoethane (EDB)	ug/L	<1.0	1.0	
Ethylbenzene	ug/L	<1.0	1.0	
m,p-Xylene	ug/L	<2.0	2.0	
o-Xylene	ug/L	<1.0	1.0	
Xylenes, total	ug/L	<3.0	3.0	
1,3,5-Trimethylbenzene	ug/L	<1.0	1.0	
1,2,4-Trimethylbenzene	ug/L	<1.0	1.0	
Naphthalene	ug/L	<5.0	5.0	
2-Methylnaphthalene	ug/L	<5.0	5.0	
1,2-Dichloroethane-d4 (S)	%	99	68-133	
Toluene-d8 (S)	%	107	75-120	
4-Bromofluorobenzene (S)	%	105	69-119	
1,2-Dichlorobenzene-d4 (S)	%	100	72-127	

LABORATORY CONTROL SAMPLE: T077620-BS1

Parameter	Units	Spike Conc.	LCS Result	LCS % Rec	% Rec Limit	Notes
Benzene	ug/L	20.0	20.8	104	80-120	
Toluene	ug/L	20.0	20.7	104	80-120	
1,2-Dichloroethane-d4 (S)	%	30.0	30.0	100	68-133	
Toluene-d8 (S)	%	30.0	31.0	103	75-120	
4-Bromofluorobenzene (S)	%	30.0	30.5	102	69-119	
1,2-Dichlorobenzene-d4 (S)	%	30.0	34.0	113	72-127	

Trace Project ID: T18E686
Client Project ID: Tysman Phase III

QC Batch: T077621
QC Batch Method: EPA 8260C
Analysis Description: Volatiles, OpMemo14 full list
Analysis Method: EPA 8260C

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METHOD BLANK: T077621-BLK1

Parameter	Units	Blank Result	Reporting Limit	Notes
Methyl-tert-butyl ether	ug/kg wet	<250	250	
Benzene	ug/kg wet	<50	50	
1,2-Dichloroethane	ug/kg wet	<50	50	
Toluene	ug/kg wet	<100	100	
1,2-Dibromoethane (EDB)	ug/kg wet	<50	50	
Ethylbenzene	ug/kg wet	<50	50	
m,p-Xylene	ug/kg wet	<100	100	
o-Xylene	ug/kg wet	<50	50	
Xylenes, total	ug/kg wet	<150	150	
1,3,5-Trimethylbenzene	ug/kg wet	<100	100	
1,2,4-Trimethylbenzene	ug/kg wet	<100	100	
Naphthalene	ug/kg wet	<330	330	
2-Methylnaphthalene	ug/kg wet	<330	330	
1,2-Dichloroethane-d4 (S)	%	99	68-133	
Toluene-d8 (S)	%	107	75-120	
4-Bromofluorobenzene (S)	%	105	69-119	
1,2-Dichlorobenzene-d4 (S)	%	100	72-127	

LABORATORY CONTROL SAMPLE: T077621-BS1

Parameter	Units	Spike Conc.	LCS Result	LCS % Rec	% Rec Limit	Notes
Benzene	ug/kg wet	1000	1040	104	80-120	
Toluene	ug/kg wet	1000	1040	104	80-120	
1,2-Dichloroethane-d4 (S)	%	30.0	30.0	100	68-133	
Toluene-d8 (S)	%	30.0	31.0	103	75-120	
4-Bromofluorobenzene (S)	%	30.0	30.5	102	69-119	
1,2-Dichlorobenzene-d4 (S)	%	30.0	34.0	113	72-127	

MATRIX SPIKE / MATRIX SPIKE DUPLICATE: T077621-MSD1 Original: **T18E686-10**

Parameter	Units	Original Result	Spike Conc.	MS Result	MSD Result	MS % Rec	MSD % Rec	% Rec Limit	RPD	Max RPD	Notes
Benzene	ug/kg dry	0	1250	1680	1690	135	136	78-114	0.7	11	
Toluene	ug/kg dry	0	1250	1500	1630	121	131	77-118	8	10	
1,2-Dichloroethane-d4 (S)	%		30.0	29.9	29.4	100	98	68-133			
Toluene-d8 (S)	%		30.0	29.0	30.5	97	102	75-120			
4-Bromofluorobenzene (S)	%		30.0	30.9	30.4	103	101	69-119			
1,2-Dichlorobenzene-d4 (S)	%		30.0	34.2	32.9	114	110	72-127			

Trace Project ID: T18E686
Client Project ID: Tysman Phase III

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QC Batch: T077636
QC Batch Method: EPA 8260C

Analysis Description: Volatiles, OpMemo14 full list
Analysis Method: EPA 8260C

METHOD BLANK: T077636-BLK1

Parameter	Units	Blank Result	Reporting Limit	Notes
Methyl-tert-butyl ether	ug/L	<5.0	5.0	
Benzene	ug/L	<1.0	1.0	
1,2-Dichloroethane	ug/L	<1.0	1.0	
Toluene	ug/L	<1.0	1.0	
1,2-Dibromoethane (EDB)	ug/L	<1.0	1.0	
Ethylbenzene	ug/L	<1.0	1.0	
m,p-Xylene	ug/L	<2.0	2.0	
o-Xylene	ug/L	<1.0	1.0	
Xylenes, total	ug/L	<3.0	3.0	
1,3,5-Trimethylbenzene	ug/L	<1.0	1.0	
1,2,4-Trimethylbenzene	ug/L	<1.0	1.0	
Naphthalene	ug/L	<5.0	5.0	
2-Methylnaphthalene	ug/L	<5.0	5.0	
1,2-Dichloroethane-d4 (S)	%	99	68-133	
Toluene-d8 (S)	%	102	75-120	
4-Bromofluorobenzene (S)	%	109	69-119	
1,2-Dichlorobenzene-d4 (S)	%	103	72-127	

LABORATORY CONTROL SAMPLE: T077636-BS1

Parameter	Units	Spike Conc.	LCS Result	LCS % Rec	% Rec Limit	Notes
Benzene	ug/L	20.0	19.4	97	80-120	
Toluene	ug/L	20.0	19.4	97	80-120	
1,2-Dichloroethane-d4 (S)	%	50.0	49.6	99	68-133	
Toluene-d8 (S)	%	50.0	47.7	95	75-120	
4-Bromofluorobenzene (S)	%	50.0	54.0	108	69-119	
1,2-Dichlorobenzene-d4 (S)	%	50.0	50.3	101	72-127	

MATRIX SPIKE / MATRIX SPIKE DUPLICATE: T077636-MSD1 Original: **T18E686-08**

Parameter	Units	Original Result	Spike Conc.	MS Result	MSD Result	MS % Rec	MSD % Rec	% Rec Limit	RPD	Max RPD	Notes
Benzene	ug/L	0	20.0	18.7	20.3	94	101	78-114	8	11	
Toluene	ug/L	0	20.0	18.9	20.2	94	101	77-118	7	10	
1,2-Dichloroethane-d4 (S)	%		50.0	49.2	48.7	98	97	68-133			
Toluene-d8 (S)	%		50.0	48.1	47.7	96	95	75-120			
4-Bromofluorobenzene (S)	%		50.0	53.9	53.5	108	107	69-119			
1,2-Dichlorobenzene-d4 (S)	%		50.0	51.6	50.7	103	101	72-127			

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Trace Project ID: T18E686
Client Project ID: Tysman Phase III

QC Batch: T077634
QC Batch Method: % Solids

Analysis Description: Solids, Dry Weight
Analysis Method: ASTM D2974-87

SAMPLE DUPLICATE: T077634-DUP1 Original: **T18E686-01**

Parameter	Units	Original Result	DUP Result	RPD	Max RPD	Notes
% Solids	% by Wt.	83.1	82.9	0.2	20	

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CHAIN-OF-CUSTODY RECORD

Page 1 of 2

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Trace ID No. T18E686

Report Results To:

Company Name: Westshore Consulting
Report To: Roger Bour
Mailing Address: 2534 Black Creek Rd
City, State, Zip Code: Muskegon, MI 49444
Office Phone: (231) 777-3447 Cell Phone:
Email Address: RBour@westshoreconsulting.com

Bill To:

PO #:
Contact Name: Sen Garwood
Billing Address (if different):
City, State, Zip Code:
Phone Number:
Billing Email Address:

Trace Use:

Logged By: MB
Checked By: JS
Soil Volatiles Preserved (circle if applicable): MeOH Low Level Lab
Sampling Time:

Turnaround Requirements:

- ☐ Standard
- ☐ 4 Day*
- ☐ 3 Day*
- ☐ 48 Hour*
- ☒ 24 Hour*

* Requires Prior Approval

Matrix Key:

S = Soil / Solid, W = Water, SL = Sludge, OI = Oil, WI = Wipes, LW = Liquid Waste, A = Air, D = Drinking Water

Project Name: Tysman Phase III
Sampled By: ADM

Trace No.	Date Collected	Time Collected	Client Sample ID	Metals Field Filtered (Y / N)	Matrix	Number of Containers	Preservation: Cool	HCl	HNO_3	H_2SO_4	NaOH	Other	Gas VOCs	Remarks	Possible Health Hazards?
1	5/31	9:34	SB-5	/	S	2							X		
2	5/31	9:50	SB-7	/	S	2							X		
3	5/31	9:55	SB-6	/	S	2							X		
4	5/31	10:20	TMW-4	/	W	2	X						X		
5	5/31	10:15	TMW-3	/	W	2	X						X		
6	5/31	10:24	TMW-5	/	W	2	X						X		
7	5/31	10:41	SB-9	/	S	2							X		
8	5/31	10:03	TMW-7	/	W	2	X						X		
9	5/31	11:20	TMW-8	/	W	2	X						X		
10	5/31	10:50	SB-8	/	S	2							X		

Analysis Requested

Release Sign	Released By	Received By	Date	Time	Released By	Received By	Date	Time
	1) [signature]	[signature]	5-31-18	13:52	2)			
	3)				4)			

In executing this Chain of Custody, the client acknowledges the terms as set forth at www.trace-labs.com/terms-of-agreement.

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Trace ID No. T18E686

Report Results To:

Company Name:	Westshore Consulting
Report To:	Roger Bour
Mailing Address:	
City, State, Zip Code:	
Office Phone:	Cell Phone:
Email Address:	RBour@westshoreconsulting.com

Bill To:

PO #:	
Contact Name:	Jen Garwood
Billing Address (if different):	
City, State, Zip Code:	
Phone Number:	
Billing Email Address:	

Trace Use:

Logged By:	MD
Checked By:	JS
Soil Volatiles Preserved (circle if applicable):	MeOH Low Level Lab
Sampling Time:	

Turnaround Requirements:

- ☐ Standard
- ☐ 4 Day*
- ☐ 3 Day*
- ☐ 48 Hour*
- ☒ 24 Hour*

* Requires Prior Approval

Matrix Key:

S = Soil / Solid, W = Water, SL = Sludge, Oil = Oil, WI = Wipes, LW = Liquid Waste, A = Air, D = Drinking Water

Project Name: Tysman Phase III

Sampled By: AM

Trace No.	Date Collected	Time Collected	Client Sample ID	Metals Field Filtered (Y / N)	Matrix	Number of Containers	Preservation: Cool	HCl	HNO_3	H_2SO_4	NaOH	Other	Analysis Requested: Gas Vocs	Remarks	Possible Health Hazards?
11	5/31/18	11:37	TMW-9	/	W	2		X					X		
12	5/31/18	11:55	TMW-10	/	W	2		X					X		
13	5/31	12:10	TMW-11	/	W	2		X					X		
14	5/31	12:25	TMW-12	/	W	2		X					X		
15	5/31	12:39	TMW-13	/	W	2		X					X		

Please Sign

Released By	Received By	Date	Time	Released By	Received By	Date	Time
1) [signature]	[signature]	5-31-18	13:57	2)			
3)				4)			

In executing this Chain of Custody, the client acknowledges the terms as set forth at www.trace-labs.com/terms-of-agreement.

☐ Check this box if you would not like your samples analyzed if received outside of the conditions outlined in the Trace Sample Acceptance Policy at www.trace-labs.com/downloads.

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Muskegon, MI 49444-2673

TRACE ANALYTICAL LABORATORIES, INC.

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SAMPLE LOG IN CHECKLIST

Trace ID #: T18E686 Date: 5-31-18 Package Description: Cooler Temperature: 9.4
Client Name: Lake Shore Consulting Time: 13:52 Logged in by: MB

Cooler Receipt

Cooler/samples delivered by: Trace courier [ ] Hand delivered [X] Name of delivery person: _____
Commercial courier [ ] UPS [ ] FED EX [ ] US Mail [ ]

Tracking Number: [X] Not Applicable
Tracking #: _____

COC Seals present and intact on cooler? [X] Not Applicable [ ] No [ ] Yes
Custody seals signed by Client? [ ] No [ ] Yes Client custody seal # (if applicable): _____

Coolant and Temperature

Type of Coolant Used

Slurry w/ crushed, cubed, or chip ice? [X]
Multiple bags of ice around samples? [ ]
Ice Packs/ Blue Ice : [ ]
No Coolant Present: [ ]

Ice still present upon receipt (circle one): Yes No N/A

Cooler Temperature

Correction Factors: •Digital Stick Thermometer CF = -1.0°C
•IR Thermometer CF = -0.3°C

Representative Sample Temperature: 10.1 °C (check one below)
[ ] Temp Blank (Stick Thermometer)
[X] Client Sample (IR Thermometer)

Melt Water: 3.0 °C (Use Digital Stick Thermometer)

General

	Yes	No	NA	Comments
All bottles arrived unbroken with labels in good condition?	X			
Each sample point is in a sealed plastic bag?	X			
Labels filled out completely?	X			
All bottle labels agree with Chain of Custody (COC)?	X			
Sufficient sample to run tests requested?	X			
pH checked and samples at correct pH?	X			See Below*
Correct preservative added to samples?	X			
Air bubbles absent from VOAs?	X			
COC filled out properly and signed by client?	X			
COC signed in by TRACE sample custodian?	X			
Was project manager called and samples discussed?			X	

Notes:

*EMD pH Test Strips Used:
[X] pH 0-2.5 Lot: HC606169 [ ] pH 11.0-13.0 Lot: HC600691
[ ] Other: _____

Form 70-A.24
Effective 4/17/18

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WESTSHORE
ENGINEERING & SURVEYING
ENVIRONMENTAL

Response Activity Plan / Due Care Plan

Subject Property Commonly Located At:

17114 Robbins Road, Grand Haven, Michigan 49417

Tax Parcel ID#:	70-03-33-200-035	70-03-33-200-007
	70-03-33-200-056	70-03-33-200-070
	70-03-33-200-077	

(Located in NE 1/4 of Section 33, T08N, R16W,
Grand Haven Township, Ottawa County, Michigan)

Conducted pursuant to Section 20126(1) (c) of 1994 PA 451, Part 201, as amended, and the rules promulgated thereunder.

Prepared for:

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Prepared by:

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03513-0017

July 2, 2018

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1.0 Introduction

This report provides a Response Activity Plan / Due Care Plan (RAP/Due Care Plan) for the property consisting of the following five parcels of land commonly located at 17114 Robbins Road, Grand Haven, Michigan 49417 (Subject Property). The five parcels are:

- 17114 Robbins Road (70-03-33-200-035)
- 17134 Robbins Road (70-03-33-200-007)
- V/L Robbins Road (70-03-33-200-056)
- V/L Robbins Road (70-03-33-200-070)
- V/L Robbins Road (70-03-33-200-077)

This RAP/Due Care Plan will be a sister document to the Baseline Environmental Assessment (BEA) that will be prepared for the Subject Property. The BEA will document all of the known contamination on the Subject Property, and will be submitted to the Michigan Department of Environmental Quality (MDEQ).

The Subject Property is located to the south of Robbins Road and east of 172nd Avenue. The surrounding properties are mostly commercial and/or residential, with a large grocery store located adjacent west, residential dwellings located adjacent north and south, commercial operations located north and undeveloped land east. The topography of the Subject Property is flat.

The map coordinates are approximately the Northwest 1/4 of the Northeast 1/4 of Section 33 of Grand Haven Township (T08N R16W), Ottawa County Michigan. Figure 1 is a site location map and Figure 2 is a general layout of the proposed site plan. The Subject Property is approximately 13.78-acres total, comprised of the following five tax parcel identification numbers:

Tax Parcel Identification #	Approx. Acres	Address
70-03-33-200-035	2.881	17114 Robbins Road
70-03-33-200-007	1.781	17134 Robbins Road
70-03-33-200-056	1.447	V/L Robbins Road
70-03-33-200-070	4.920	V/L Robbins Road
70-03-33-200-077	2.750	V/L Robbins Road

A Phase I Environmental Site Assessment (Phase I ESA) for the Subject Property was completed on June 5, 2017. In response to the findings of that Phase I ESA, groundwater and soil sampling (Phase II ESA) was conducted to address the only *recognized environmental condition* (*REC*) discovered during the Phase I ESA. The Phase II ESA determined that groundwater and soil impact exists on the Subject Property in the former aboveground storage tank (AST) area. The Phase II sampling data will be utilized to prepare a BEA for the Subject Property. The sampling data was also utilized to prepare this Due Care Plan.

This document summarizes how the new Owners and Operators of the Subject Property (Tysman Companies, LLC) intend to satisfy Due Care Requirements under Section 7a of Part 201 of Michigan Act 451, and the Michigan Department of Environmental Quality (MDEQ) rules and guidance promulgated under that Section, including R299.51001 et seq.

The Subject Property has been utilized as a landscaping materials and aggregate supply since approximately the early 1960's. Prior to that time the Subject Property was believed to have been utilized for agricultural purposes.

The future intended use of the Subject Property is a Planned Unit Development (PUD) where an apartment complex will be built on the Subject Property. All former structures, landscaping aggregate inventory, deicing salt, etc. will be removed from the Subject Property, prior to redevelopment.

Environmental Status

Phase II ESA soil and groundwater sampling and analyses was conducted on May 2 and May 31, 2018, to attempt to determine if petroleum had been released from the AST area on the Subject Property. The soil and groundwater samples were collected from locations in the former AST area, after the ASTs and concrete pad had been removed. The attached data tables, Table 1 and Table 2 of this document, show all of the analytical data for the samples collected in and around the former AST area. Constituents that are present above MDEQ Generic Residential Clean-up Criteria (GRCC), Nonresidential Generic Clean-up Criteria (NRGCC), and/or the various MDEQ vapor intrusion (VI) screening values are shaded and/or outlined in bold on the table.

As can be seen on Tables 1 and 2, the known constituents in the soil include: benzene, ethylbenzene, and 1,2,4-trimethylbenzene at concentrations above VI screening values. No other volatile or semi-volatile organic compounds were detected exceeding GRCC, NRGCC, or VI screening values. The volatile organic compounds exceeding VI screening values, are gasoline constituents. No evidence of diesel fuel constituents were detected in the initial round of sampling. The approximate maximum horizontal extent of the soil impacts was established and is depicted on Figure 3. The vertical extent of the impacts extends to the top of the first water bearing unit (i.e., approximately 2.0 feet below ground surface (bgs)).

The known groundwater constituents include: benzene, ethylbenzene, and 1,2,4-trimethylbenzene at concentrations above GRCC, NRGCC, and VI screening values. No other volatile or semi-volatile organic compounds were detected exceeding GRCC, NRGCC, or VI screening values. The volatile organic compounds exceeding the clean-up criteria are gasoline constituents. No evidence of diesel fuel constituents were detected in the initial round of sampling. The approximate maximum horizontal extent of the shallow groundwater impact was established and is depicted on Figure 3. The vertical extent of the impact has not been established, nor the horizontal extent of any deep groundwater impact if it exists. Deep groundwater contamination appears unlikely currently.

The source of both the soil and groundwater impacts is believed to be from overfill or spillage when filling the gasoline ASTs, or spilling while dispensing gasoline.

2.0 Detailed Characteristics of Property Use

The new Owner and Operator of the Subject Property will be Tysman Companies, LLC. Their future intended use of the Subject Property will be to demolish the structures on the Subject Property, remove all of the former inventory of aggregates and deicing salt, regrade the Subject Property, and then build an apartment complex (i.e., redevelop the site into multi-family housing). Recent photographs are contained in Appendix A, Figure 1 shows the Site Location Map, and Figure 2 shows the General Layout of the Proposed Site Plan.

The Subject Property is serviced by public utilities including electric, natural gas and municipal water. The two structures on the Subject Property both utilize individual private sewer systems. The former residential structure adjacent to Robbins Road has a conventional septic tank with drain field, whereas, the maintenance building has a holding tank. A stormwater drain is located on the Subject Property that drains to the main stormwater drain located on Robbins Road. The maintenance building has a network of floor drains that discharge to the on-site stormwater drain. A floor drain and holding tank assessment report was prepared for the Subject Property maintenance building on June 18, 2018. A copy of that report is included in Appendix B of this RAP/Due Care Plan.

Typical future use the Subject Property will include normal residential activities occurring in a multi-family housing development, driving and/or walking on the Subject Property by tenants and groundskeepers, and children playing in green spaces. No significant quantities of hazardous materials will be utilized or stored on the Subject Property. Minor amounts of hazardous materials such as maintenance cleaning products and small amounts of fuel for lawn maintenance vehicles may be transferred in vehicles across the Subject Property, and fuel will be utilized in the tenant's vehicles parked or driven on the Subject Property.

3.0 Hazardous Substance Information

Subsurface groundwater and soil sampling at the Subject Property confirmed the presence of both soil and groundwater gasoline constituents in the former AST area. The impact is isolated to a small area as depicted on Figure 3. No presence of light non-aqueous phase liquid (LNAPL) was detected on the Subject Property.

Figure 3 shows the locations from which the soil and groundwater samples were collected, and this data is compared to the applicable MDEQ clean-up criteria and the various MDEQ VI screening values, in Tables 1 and 2. Concentrations in the samples exceeding MDEQ Part 201 GRCC, NRGCC, or VI screening values are shaded and/or outlined in bold on the tables.

As stated previously, no other environmental impact is known to be present in the soil or groundwater at the Subject Property.

Maximum horizontal extents of the constituents in the soil and shallow groundwater have been established. The vertical extent of the groundwater impact has not been determined nor the horizontal extent of any deep groundwater impact if it exists. The status of the groundwater plume has not been established (i.e., whether it is stable, expanding or shrinking).

The soil impact is documented to be present at concentrations above the Residential and Nonresidential VI screening values. None of the other MDEQ clean-up criteria were exceeded.

The groundwater impact is documented to be present at concentrations above Part 201 GRCC, NRGCC, and VI screening values. The criteria exceed by the groundwater contamination are: the Residential and Nonresidential Drinking Water Criteria, the Groundwater Surface Water Interface (GSI) Criteria, and the Residential and Nonresidential VI screening values. None of the other MDEQ clean-up criteria were exceeded.

4.0 Plan for Response Activities

The following response activities beyond the creation of this RAP/Due Care Plan are necessary to meet the Section 7a obligations.

4.1 Horizontal Location Survey of Contamination

Since the future intended use of the Subject Property includes demolition of all of the structures on the site and regrading of the entire site, the location of known groundwater and soil impacts must be identified and preserved. Therefore, a horizontal survey of the location of the known groundwater and soil impacts will be prepared. This will aide completing the other response activities listed below, primarily, the groundwater monitoring well installation, the groundwater monitoring and the hydrogeological dewatering assessment.

4.2 Groundwater Monitoring Well Installation & Well Casing Elevation Survey

Permanent groundwater monitoring wells will be installed to allow sampling to determine if the known groundwater contamination plume is expanding and if so, to determine in what direction(s).

A total of five permanent groundwater monitoring wells will be installed in and around the known groundwater impacts. Figure 4 depicts the proposed monitoring well locations. Four (4) of the monitoring wells will be installed with screens set to intersect the top of the first water bearing unit (also referred to as shallow groundwater) located at approximately 2.0 feet bgs.

The top of the monitoring well casings elevations will be surveyed so that water level elevations can be measured and the groundwater flow direction determined. Once the groundwater flow direction is determined (after well development and stabilization), a single deep soil boring will be conducted to approximately 20.0 feet (plus or minus) to determine the soil lithology and to determine the optimum depth for a deep screened monitoring well to determine if the groundwater is impacted at deeper depths. A monitoring well will then be installed in this boring location. The top of well casing on this well will be surveyed and will be tied in to the elevations of the other monitoring wells to determine if there is a vertical flow gradient.

4.3 Groundwater Monitoring Plan

4.3.1 Purpose

The purpose of the groundwater monitoring plan is to ensure that the groundwater plume is not expanding. Also, the groundwater monitoring will include measurement of groundwater elevations that will allow determination of the direction of groundwater flow. The location and chemical concentrations of the groundwater plume will allow the Owners/Operators of the Subject Property to implement Due Care as necessary and/or implement additional response activities with regard to the plume and its location.

4.3.2 Sampling Frequency & Duration

The groundwater monitoring wells will be sampled after well installation, development and stabilization. The monitoring wells will be sampled quarterly (i.e., once per quarter) for the first year after installation. After the first year of sampling, if no plume migration is noted in the downgradient monitoring wells, the duration will be reduced to semi-annual. After the second year of sampling if no plume migration is noted, the monitoring frequency will be reduced to

annual. If no plume migration is noted after the third year of sampling, the monitoring wells sampled will be reduced to only the most downgradient well, and that well will be sampled once annually. Annual sampling will continue annually, unless additional sampling in the source area is conducted and it confirms that the groundwater contamination concentrations have naturally attenuated (biodegraded) to levels no longer a threat to humans and the environment.

If the groundwater sampling/monitoring at any point in time determines that the plume appears to be migrating, additional monitoring well installation and sampling, remedial activity, and or mitigation measures may be implemented, depending on the direction, and the potential exposure pathways the migrating plume may cause.

4.3.3 Monitoring Parameters

The groundwater monitoring parameters are based on the findings of the Phase II ESA sampling results indicating that the known groundwater and soil contamination at the Subject Property is the result of gasoline spills or leaking from the former AST area. That sampling concluded that there was no evidence of any diesel fuel present in the soil or groundwater.

The groundwater samples will be analyzed for volatile organic gasoline constituent indicator parameters: methyl-butyl ether (MTBE), benzene, 1,2-dichloroethane, toluene, 1,2-dibromoethane, ethyl benzene, xylenes, 1,3,5-trimethybenzene, 1,2,4-trimethybenzene, naphthalene, and 2-methylnaphthalene.

After sample collection, the groundwater samples will be transferred under chain-of-custody to an Environmental Analytical Laboratory (i.e., Trace Analytical Labs in Muskegon, Michigan) for analyses. Another similar laboratory may be utilized if conditions (prices, etc.) warrant it.

4.3.4 Groundwater Sampling Techniques

The groundwater monitoring wells will be sampled utilizing the methods consistent with those approved by the MDEQ.

4.3.5 Reporting

Upon completion of each groundwater sampling event, a brief letter report will be prepared for the Owners/Operators of the Subject Property. The report will document the analytical results of the samples collected, the groundwater elevation measurements made and calculated, and direction of groundwater flow. The report will include a summary of the groundwater plume location and any recommendations if warranted to address a migrating plume. The report will also list amendments to this RAP/Due Care Plan if they are warranted based on the findings of each report. The report will be completed in approximately 2-3 weeks after samples are collected.

4.4 Dewatering Hydrogeological Assessment

Prior to conducting any dewatering for building construction and/or utility installation on the Subject Property the Owners/Operators of the Subject Property will coordinate with their Engineering Consultant and their Environmental Consultant to determine where the proposed features are located, and the proposed dewatering regime for each phase of construction. The specifications of the proposed or needed dewatering will be conveyed to the Environmental Consultant. The Environmental Consultant will conduct a hydrogeological assessment to determine the horizontal influence of the proposed dewatering. That is, the hydrogeologist will determine if the proposed dewatering regime(s) will negatively influence the horizontal and/or

vertical extent of the groundwater plume. The assessment will also determine the most feasible alternative for disposing of the pumped dewatering groundwater if it is determined that the regime will pump impacted water (i.e., discharge the groundwater to the municipal sanitary sewer, treat the groundwater and dispose of it elsewhere, etc.). It should be noted that dewatering in the groundwater plume area, done properly and via the appropriate legal channels, will actually act as a remedial action (i.e., will reduce the mass and volume of the contamination plume). The assessment may determine that moving utility locations is more economically feasible than attempting to dewater in or in close proximity to the groundwater contaminant plume.

4.5 Dewatering Groundwater Treatment and/or Discharge Permitting for Grand Haven/Spring Lake Sewer Authority

Based on the outcome of the dewatering hydrogeological assessment(s) the Environmental Consultant will assist the Owners/Operators of the Subject Property in obtaining the appropriate permits to discharge and/or treat the pumped dewatering groundwater. The Environmental Consultant will also assist the Owners/Operators in procuring groundwater treatment equipment if warranted, as well as, conducting any required groundwater sampling of the discharge and/or treatment waters.

4.6 Removal and/or Closure-in-Place of Underground Sanitary Waste Holding Tank

The sanitary waste holding tank confirmed to be present off the south end of the Subject Property maintenance building will be crushed and left-in-place, or will be removed from the ground and disposed of offsite. Liquid residuals in the tank (groundwater or stormwater) will be drained back into the excavation upon removal if the tank is removed for disposal offsite, as the tank was recently pumped out and the discharge into the tank from the maintenance building bathroom was discontinued upon the date the tank was pumped out. The report in Appendix B of this document details the Ottawa County Health Departments Guidance correspondence regarding the recommended closure procedure for this underground holding tank.

4.7 Visual Confirmation of Second Holding Tank and/or Floor Drain Piping After Demolition

During and/or after demolition of the Subject Property maintenance building, the absence or presence of a second holding tank just off the northeast corner of the building will be confirmed by the Environmental Consultant. The absence or presence of any abandoned piping tying the building floor drains to the known holding tank off the south end of the building or to any newly discovered holding tank will be confirmed.

If a new holding tank is discovered, efforts will be made to determine what discharged into the tank. If abandoned piping is located, appropriate soil and/or groundwater sampling will be conducted along the piping runs if any signs of leaking are observed. Furthermore, if a second or new holding tank is discovered, it will be closed similarly to the one that exists on the south side of the building, unless piping is identified that indicates that floor drains discharge into it. In that scenario, the tank will be closed by removing it from the ground and a confirmation groundwater sample will be collected in the excavation by the Environmental Consultant. Based on the findings of that groundwater sample this RAP/Due Care Plan would then be amended if warranted.

4.8 Confirmation of Salt Pile Removal

As part of the redevelopment of the Subject Property, all of the structures, the various stockpiles of aggregate, and the deicing salt pile will be removed. The remaining salt in the salt barn and any spillage around the front of the barn will be removed. The remaining salt in the salt barn and/or residual spillage on the ground in front of it will not be used as fill, pushed elsewhere onsite, or graded into other soils on the Subject Property. The salt will be recycled (transferred to a similar operation) where it will be utilized for deicing.

4.9 Engineering Controls

Based on the findings of the initial groundwater monitoring and the dewatering hydrogeological assessment, additional engineering controls may be utilized to prevent the possible exposure to the groundwater and/or soil impacts on the Subject Property.

Since the proposed watermain location appears to be in close proximity to the areas of impact, petroleum resistant gaskets will be utilized in the construction of the watermain. If the watermain location is changed based on the above studies, and the groundwater flow direction is away from the new proposed location, typical gaskets may be utilized in that instance.

If the groundwater flow direction of the groundwater plume is found to be towards one or several of the proposed structures on the Subject Property, the Owners/Operators may install a vapor mitigation system in that building(s) during construction as a precaution. The option to not install a vapor mitigation system(s) and conduct additional “sentinel” groundwater monitoring, conduct remedial activities, or install a vapor mitigation systems at a later time if warranted, will remain open.

5.0 Evaluation & Demonstration of Compliance with Section 7a Obligations

5.1 Exacerbation (Section 7a(1)(a))

Several potential avenues exist for exacerbation of the existing impacts in the soils and groundwater based on the future intended use of the Subject Property. However, each of the potential avenues is listed below and the appropriate precautions that will be implemented to mitigate those potentials is also listed.

Impacted Soil

There are only two (2) ways to potentially exacerbate the soil contamination:

1. To add petroleum (gasoline) to the area of known soil impact. The future intended use of the Subject Property does not include the use, storage, or dispensing of any petroleum products on the Subject Property. Only insignificant amounts of petroleum products will be utilized on the Subject Property (i.e., in tenants vehicles, and that used in snow and lawn care implements).
2. To push or excavate the soil, spread it, or make the area of impact larger than it currently is. Therefore, construction contractors will be required to read and understand this RAP/Due Care Plan and will be specifically notified regarding the fact that soil may not be disturbed in the area of known soil impact. The only disturbance allowed will be if the impacted soil is excavated and disposed of offsite at a licensed landfill. Such soil cannot be moved offsite to other locations. In the event the soils are to be removed from the Subject Property, the Environmental Consultant will assist the Owners/Operators with that process.

Impacted Groundwater

The following four (4) avenues for potentially exacerbating the groundwater impact exist based on the future intended use of the Subject Property:

1. Adding petroleum (gasoline) to the area of known groundwater impact. The future intended use of the Subject Property does not include the use, storage, or dispensing of any petroleum products on the Subject Property. Only insignificant amounts of petroleum products will be utilized on the Subject Property (i.e., in tenants vehicles, and that used in snow and lawn care implements).
2. Dewatering has the potential to increase the horizontal and vertical extent of the groundwater plume and/or has the potential to actually remove or extract impacted groundwater from the ground. As discussed in Section 4.4 of this RAP/Due Care Plan, a hydrogeological assessment will be conducted to determine the influence of any proposed dewatering on the groundwater plume. The assessment will determine the feasibility of alternatives for disposal of impacted groundwater if the proposed dewatering regime is determined to affect the groundwater plume to that degree (i.e., if the groundwater dewatering is expected to actually pump or extract impacted groundwater). The assessment will also explore the feasibility of moving the location of proposed utilities if the proposed dewatering cost is determined to be prohibitive.

   It should be noted that pumping impacted groundwater out of the ground during dewatering, and subsequently treating it and/or disposing of it to the Grand Haven/

Spring Lake Sewer Authority would not necessarily exacerbate the groundwater impact; however, would actually aide in remediating the problem. However, simply expanding the size of the groundwater plume or drawing it to a new location (e.g., under or close to a building) is exacerbating it. Another example might be if the groundwater plume was drawn toward or near the stormwater sewer; where it could then discharge into the sewer.

3. Pushing or moving the groundwater plume via stormwater concentration or infiltration may be exacerbating the plume. Installation of a stormwater retention or detention pond, infiltration bed, gallery, swale or other feature that concentrates stormwater runoff and allows it to be in direct hydraulic communication with the groundwater in or near the area of groundwater impact will be prohibited on the Subject Property. The location and design of any such features will be reviewed by a hydrogeologist prior to construction to ensure that the discharge location is at an adequate distance or to ensure that the discharge from such feature is insignificant with regard to hydraulically impacting the plume.
4. Irrigation with groundwater on the Subject Property will be prohibited. Installation of water wells on the Subject Property (other than groundwater monitoring wells) will be prohibited. Pumping an irrigation well located in or in close proximity to the groundwater plume may have the same effect as dewatering (discussed above). Furthermore, spraying impacted groundwater around the Subject Property can expand the area of impact in both the soil and groundwater.

5.2 Due Care (Section 7a(1)(b))

The applicable and relevant exposure pathways are evaluated (see Tables 1 & 2) by comparing the constituent concentrations known to exist at the Subject Property to their respective GRCC, NRGCC and the VI screening values.

Soil Exposure Pathways

The soil impact on the Subject Property is considered a potential vapor source that could cause a vapor intrusion condition if a structure is built over it or near it (i.e., less than 6.0 feet over it or adjacent to it). The soil volatilization to indoor air exposure pathway is not currently complete on the Subject Property because there are no buildings or structures on or within close proximity to the soil impacts. The impacted soil is not a hazard to humans that handle or come in direct contact with it. The impacted soil is not a threat to flora and/or fauna if allowed to erode into a surface water body or a conveyance leading to one. The impacted soil is not a threat from leaching to groundwater utilized as drinking water source. The soil is not a threat from leaching to groundwater if the groundwater is venting to a surface water body or conveyance leading to one (i.e., a stormwater drain).

Therefore, only one (1) potentially complete soil exposure pathway exists, based on the future intended use of the Subject Property, and that is the soil volatilization to indoor air exposure pathway. No buildings are planned to be placed over or in close proximity to the impacted soil based on the proposed development of the Subject Property. Building any structures above or within close proximity to the impacted soil will be prohibited.

Groundwater Exposure Pathways

The impacted groundwater on the Subject Property is only potentially harmful if ingested by humans, if it vents via groundwater flow to a surface water body or conveyance leading to a

surface water body, if it is pumped directly to a surface water body or conveyance leading to a surface water body, and/or becomes a vapor intrusion source for a structure (i.e., if a building or structure is built on top of it or within close proximity to it).

Therefore, the only potentially complete groundwater exposure pathways at the Subject Property are the drinking water pathway, the GSI pathway, and the groundwater volatilization to indoor air pathway.

Since the Subject Property will be serviced by municipal potable water supply; the drinking water exposure pathway is not complete and will not be complete in the future.

The groundwater GSI pathway is not currently complete. Future groundwater monitoring will determine if groundwater venting to a surface water body or conveyance to one will occur in the future or if it can potentially occur. However, this potential scenario is not one of the Owners/Operators' Due Care concerns since they are not liable for the existing impacts. The future intended use of the Subject Property will not have a significant effect on this exposure pathway (i.e., this exposure pathway will likely remain incomplete in the future).

The groundwater volatilization to indoor air exposure pathway is not currently complete on the Subject Property because there are no buildings or structures on, above, or in close proximity to the groundwater plume. The future proposed development will not have any buildings on top of or in close proximity to the groundwater plume. Future groundwater monitoring will determine if the groundwater plume is expanding and if so which direction it is flowing. Additional groundwater monitoring, remedial action, and/or mitigation action can be implemented if the groundwater volatilization to indoor air exposure pathway/vapor intrusion pathway appears to be complete in the future.

No other groundwater exposure pathways are applicable or relevant at the Subject Property.

Abandoned or Discarded Containers

No *abandoned or discarded containers*, or underground storage tanks containing hazardous substances (are known to be present). Unknown or undiscovered abandoned containers will be addressed according to the applicable and relevant environmental regulations. Any new or additional holding tank discovered will be addressed as described in Section 4.6 of this RAP/Due Care Plan.

Offsite Migration Notices

The subsurface investigation conducted at the Subject Property did not definitively determine the horizontal extent of the known groundwater impact. The horizontal extent of the shallow groundwater was determined; however, the vertical extent, and the horizontal extent of the deeper groundwater was not confirmed. The maximum horizontal and vertical extent of the soil impact was established. However, currently there is no reason to believe that the groundwater impact is migrating offsite. It is likely that the groundwater impact is limited to the shallow groundwater at the Subject Property. The proposed groundwater monitoring plan will confirm this.

Therefore, currently it appears unlikely that migration to adjacent properties is occurring either via groundwater flow, or via vapor encroachment. Therefore, no *Notice of Offsite Migration of Contamination* will need to be submitted to adjacent property owners or the State of Michigan at

this time. Proposed groundwater monitoring will determine if any notices are required in the future.

No communications to potentially unknowing third parties are necessary given that no exposure pathways are complete on the Subject Property and none are expected to be complete in the future.

5.3 Reasonable Precautions (Section 7a(1)(c))

This RAP/Due Care Plan is intended to address the reasonably foreseeable acts of third parties. The exposure pathway analysis indicates that reasonably foreseeable potential exposure pathways do not present adverse exposures to employees, residents/tenants, customers or employees of the adjacent businesses, adjacent residences, vendors, construction workers, or utility workers.

In the case of earth moving or groundwater disturbance on the Subject Property, any contractors, utility workers, or employees involved in any earth moving or disturbance will be notified of the Due Care obligations associated with the known soil and groundwater impacts. That is, they will be required to read this RAP/Due Care Plan and agree that they understand it. Specifically, the soil may not be disturbed in the area of soil impacts and may not be removed from the Subject Property without further characterization or without disposing of properly in a licensed disposal facility. In addition the groundwater may not be utilized, pumped, or disturbed for any reason on the Subject Property without further approval from the Owners/Operators.

5.4 Cooperation & Land Use Restrictions (Section 7a(1)(d), (e) & (f))

The Owners/Operators will notify any new purchaser of the Subject Property that the Subject Property is a *facility* and the associated Due Care Obligations. The Owners/Operators will notify its employees of the Due Care obligations as outlined in this document if they are to conduct any work on the Subject Property.

5.5 Intended Future Use Change

The Owners/Operators will reassess its Due Care Obligations in the event that intended future use of the Subject Property changes (i.e., any physical changes to the Subject Property that will influence the soil and/or groundwater in any way) and will amend this RAP/Due Care Plan accordingly.

Furthermore, if unplanned future use such as: required subsurface utility work, new construction, or acts of god, result in unidentified existing contamination being discovered on the Subject Property, the Owners/Operators will contact an Environmental Consultant and/or Attorney for guidance with regard to any response activity required to maintain Due Care compliance associated with the new discovery. The Environmental Consultant and/or Attorney will then amend this RAP/Due Care Plan as needed.

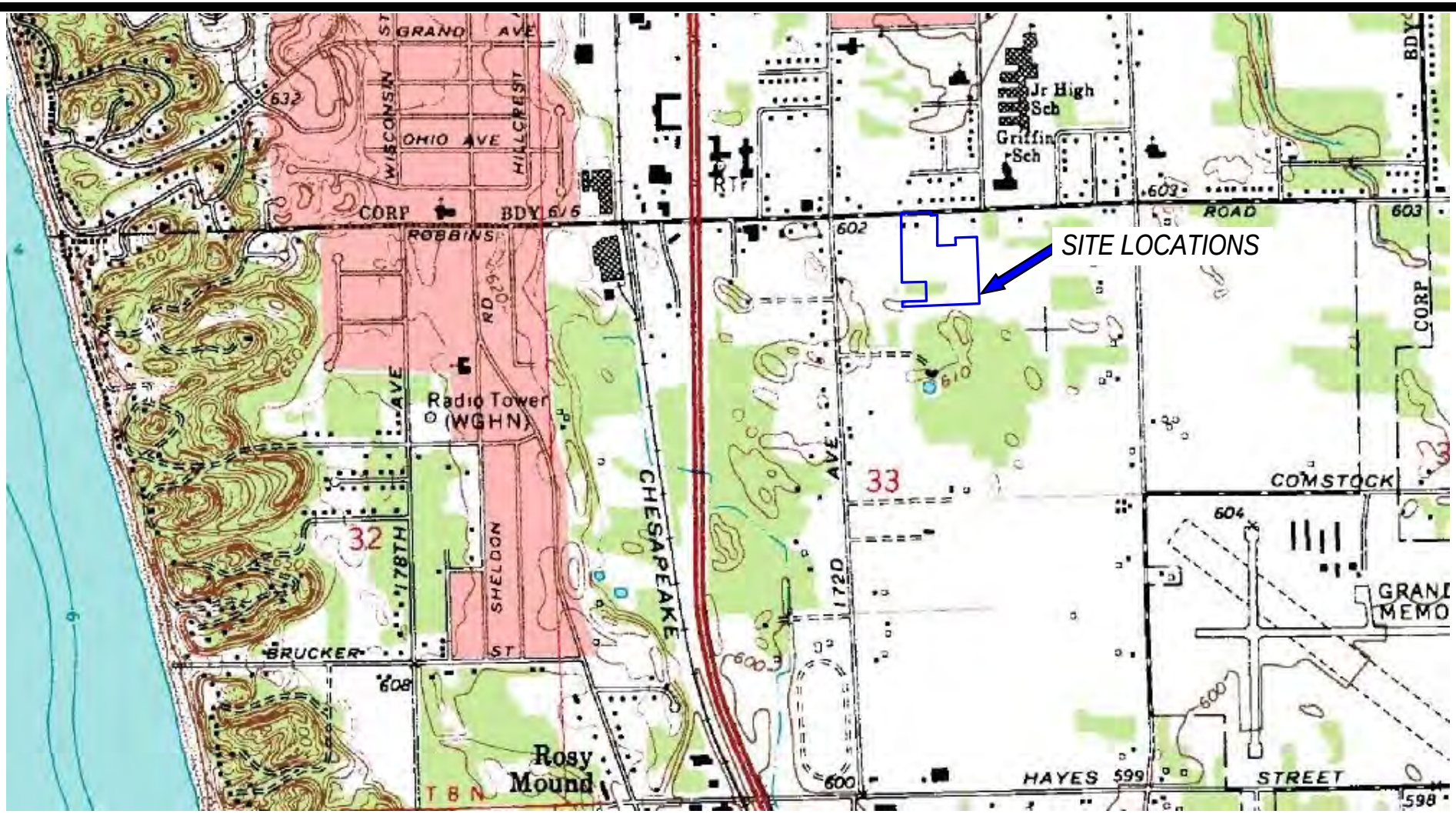
Figures

Figure 1 - Site Location Map

Figure 2 - Due Care Site Plan

Figure 3 - Soil and Groundwater Sample Locations

Figure 4 - Proposed Groundwater Monitoring Well Locations



TOPOGRAPHIC BASE: UNITED STATES GEOLOGICAL SURVEY, 7.5 MINUTE QUADRANGLE SERIES; GRAND HAVEN QUADRANGLE, MICHIGAN 1972; REVISED PHOTOINSPECTED 1980

WESTSHORE ENGINEERING & SURVEYING ENVIRONMENTAL

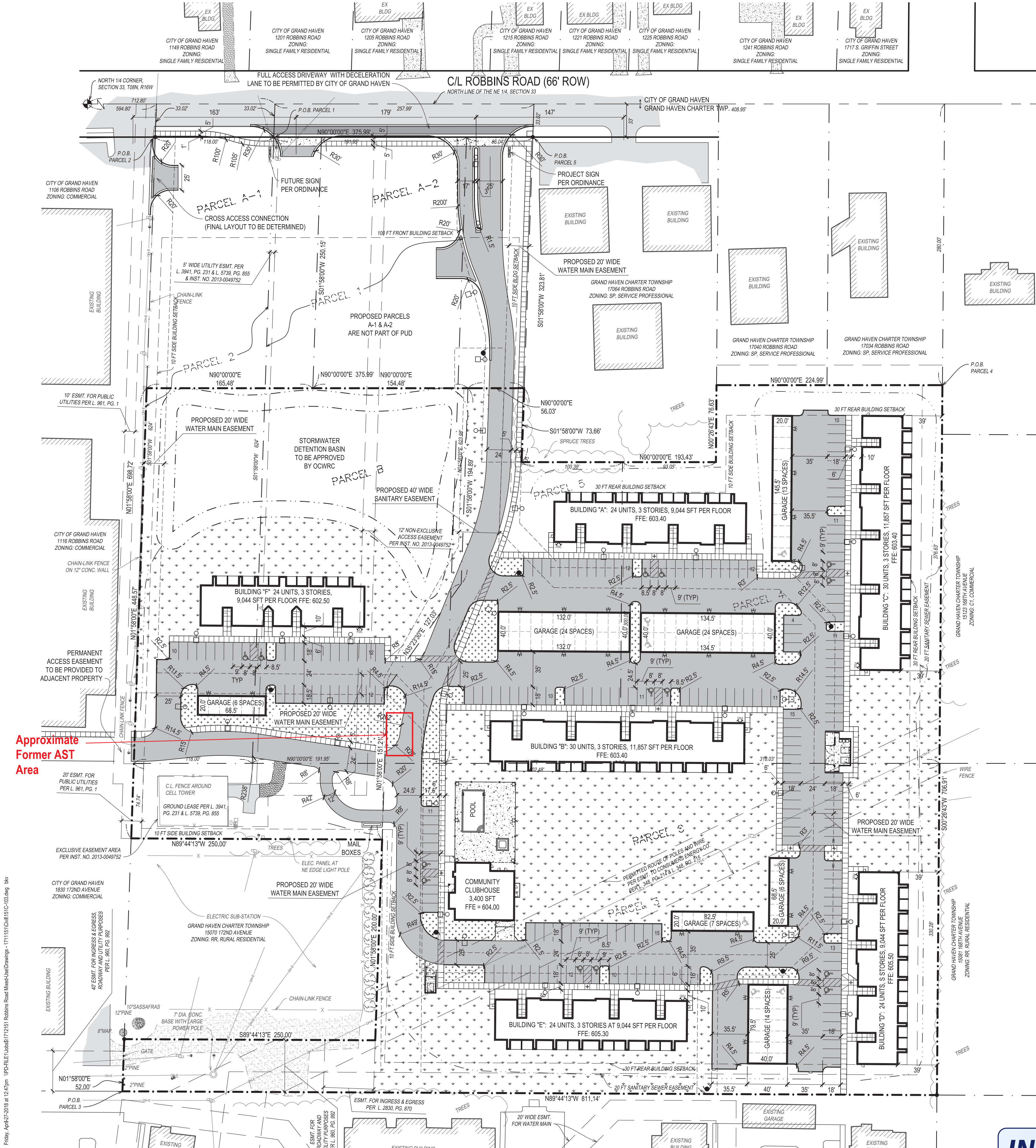
www.WestshoreConsulting.com (800) 968-2864

Client: **Tysman Companies LLC**

Site: Robbins Road parcels, Grand Haven Township, Ottawa County, Michigan

SITE LOCATION MAP

Checked:	RAB
Date:	05/17/17
Drawn by:	JLG
Date:	05/17/17
File No.:	03513-0017
Figure:	1



GENERAL NOTES:

REFER TO ARCHITECTURAL PLANS FOR DETAILS OF CONCRETE SIDEWALK AROUND BUILDING, AND CONCRETE DUMPSTER PAD.

REFER TO ARCHITECTURAL FOUNDATION PLAN FOR DETAILING OF BUILDING AND EXACT BUILDING DIMENSIONS.

REFER TO LANDSCAPE PLAN FOR FOR RESTORATION OF ALL NON PAVED SURFACES.

OWNER HAS SUBMITTED FOR AND OBTAINED THE FOLLOWING SITE RELATED PERMITS:

AGENCY	PERMIT #

OWNER HAS SUBMITTED FOR AND IS IN THE PROCESS OF OBTAINING THE FOLLOWING SITE RELATED PERMITS:

AGENCY	PERMIT
GRAND HAVEN TOWNSHIP	PLANNED UNIT DEVELOPMENT / SPA
OTTAWA COUNTY WATER RESOURCES COMMISSIONER	STORMWATER / DRAIN USE APPROVAL
CITY OF GRAND HAVEN	ROBBINS ROAD DRIVEWAYS

UPON AWARD OF CONTRACT, CONTRACTOR WILL BE RESPONSIBLE TO CHECK WITH ENGINEER AND JURISDICTION ON STATUS OF THE PERMIT(S) LISTED ABOVE.

CONTRACTOR IS RESPONSIBLE TO OBTAIN ALL SITE RELATED PERMITS NOT BEING OBTAINED BY THE OWNER. CONTRACTOR IS REQUIRED TO COMPLETE THE APPLICATION, AND SUBMIT NECESSARY DRAWINGS, FEES, ETC. TO THE APPROPRIATE JURISDICTION. CONTRACTOR SHALL PAY ALL FEES RELATED TO PERMIT(S) AND SECURE PERMIT(S) IN HIS NAME.

CONTRACTOR IS RESPONSIBLE TO COORDINATE ALL SITE UTILITY CONNECTIONS AND INSPECTIONS WITH THE PROPER JURISDICTION AND PAY ALL ASSOCIATED FEES.

THE CONTRACTOR SHALL FIELD VERIFY LOCATION AND ELEVATION OF EXISTING WATER, SANITARY SEWER, AND STORM SEWER CROSSINGS AND CONNECTION POINTS PRIOR TO CONSTRUCTION. CONTACT ENGINEER WITH ANY DISCREPANCIES.

ALL DIMENSIONS SHOWN TO CONCRETE CURB AND GUTTER ARE TO BACK OF CURB UNLESS OTHERWISE NOTED.

CONCRETE GUTTER PAN TO TIP IN THE DIRECTION OF THE ADJACENT PAVEMENT.

ALL PAVEMENT MARKINGS SHALL BE 4" WIDE. STANDARD PARKING SPACES SHALL BE MARKED IN YELLOW AND BARRIER FREE SPACES IN BLUE. EACH BARRIER FREE SPACE SHALL BE PROVIDED WITH A PAINTED PAVEMENT SYMBOL, A PRECAST CONCRETE BUMPER BLOCK, AND A SIGN PER THE MANUAL OF UNIFORM TRAFFIC CONTROLS.

REFERENCE SOILS REPORT FOR BORING LOGS AND PREPARATION AND CONSTRUCTION PROCEDURES FOR SUBBASE AND DESIGN SECTION OF ALL PAVED AREAS.

ALL MDOT REFERENCES ARE TO THE 2012 EDITION.

GENERAL NOTES:

DESCRIPTION OF PUD PARCEL (PARCELS B & C):
PART OF THE NE 1/4 OF SECTION 33, T8N, R16W, GRAND HAVEN TOWNSHIP, OTTAWA COUNTY, MICHIGAN, DESCRIBED AS: COMMENCING AT THE NORTH 1/4 CORNER OF SAID SECTION 33; THENCE N90°00'E 594.80 FEET ALONG THE NORTH LINE OF SAID NE 1/4; THENCE S01°58'00"W 283.17 FEET TO THE PLACE OF BEGINNING OF THIS DESCRIPTION; THENCE N90°00'E 375.99 FEET; THENCE S01°58'00"W 73.66 FEET; THENCE N90°00'E 193.44 FEET; THENCE N00°26'43"E 76.63 FEET; THENCE N90°00'E 224.99 FEET; THENCE S00°26'43"W 706.91 FEET; THENCE N89°44'13"W 811.14 FEET; THENCE N01°58'00"E 52.00 FEET; THENCE S89°44'13"E 250.00 FEET; THENCE N01°58'00"E 200.00 FEET; THENCE N89°44'13"W 250.00 FEET; THENCE N01°58'00"E 448.57 FEET TO THE PLACE OF BEGINNING.
THIS PARCEL CONTAINS 11.47 ACRES.

DESCRIPTION OF OVERALL PARCEL (A-1, A-2, B & C):
PART OF THE NE 1/4 OF SECTION 33, T8N, R16W, GRAND HAVEN TOWNSHIP, OTTAWA COUNTY, MICHIGAN, DESCRIBED AS: COMMENCING AT THE NORTH 1/4 CORNER OF SAID SECTION 33; THENCE N90°00'E 594.80 FEET ALONG THE NORTH LINE OF SAID NE 1/4; THENCE S01°58'00"W 33.02 FEET TO THE SOUTHERLY LINE OF ROBBINS ROAD AND THE PLACE OF BEGINNING OF THIS DESCRIPTION; THENCE N90°00'E 375.99 FEET ALONG SAID SOUTHERLY LINE; THENCE S01°58'00"W 323.81 FEET; THENCE N90°00'E 193.44 FEET; THENCE N00°26'43"E 76.63 FEET; THENCE N90°00'E 224.99 FEET; THENCE S00°26'43"W 706.91 FEET; THENCE N89°44'13"W 811.14 FEET; THENCE N01°58'00"E 52.00 FEET; THENCE S89°44'13"E 250.00 FEET; THENCE N01°58'00"E 200.00 FEET; THENCE N89°44'13"W 250.00 FEET; THENCE N01°58'00"E 698.72 FEET TO THE PLACE OF BEGINNING.
THIS PARCEL CONTAINS 13.62 ACRES.

PROPOSED LAND USE SUMMARY:

PARCEL B	= 2.97 ACRES
CURRENT ZONING	= C-1 AND I-1
PROPOSED USE	= MULTIFAMILY (APARTMENTS)
PARCEL C	= 8.49 ACRES
CURRENT ZONING	= C-1 AND I-1
PROPOSED USE	= MULTIFAMILY (APARTMENTS)
TOTAL SITE AREA	= 11.47 ACRES

LANDSCAPING AND OPEN SPACE:

PARCEL B & C - PARKING LOT INTERIOR LANDSCAPING:
PARKING LOT AREA = 121,244 SFT (2.78 AC)
REQUIRED = 8,083 SFT (1 SFT PER 15 SFT)
PROVIDED = 18,784 SFT

PARCEL B & C - OPEN SPACE:
PARCEL B & C AREA = 499,423 SFT (11.47 AC)
REQUIRED OPEN SPACE = 99,885 SFT (20%)
PROVIDED OPEN SPACE = 109,328 SFT (22%)

RESIDENTIAL PUD DENSITY:

UNITS PROPOSED IN PARALLEL PLAN = 306 UNITS

BASE R-4 DENSITY ALLOWED PER ORDINANCE
1 DWELLING UNIT PER 3,000 SFT
499,423 SFT / 3000 SFT = 166 DWELLING UNITS

PUD DENSITY BONUS
20% OPEN SPACE = 8% DENSITY BONUS
COMMUNITY CLUBHOUSE = 5% DENSITY BONUS
TOTAL DENSITY BONUS = 13%
166 UNITS X 1.13 = 187 DWELLING UNITS

ALL UNITS ARE EITHER 1 OR 2 BEDROOM RANGING FROM 496 SFT TO 1,070 SFT

PARKING DATA:

APARTMENTS REQUIRE 2 SPACES PER DWELLING UNIT
156 DWELLING UNITS X 2 = 312 SPACES

CLUBHOUSE POOL IS ACCESSORY TO APARTMENTS

PROPOSED PARKING:
218 SURFACE PARKING SPACES
94 GARAGE SPACES
TOTAL 312 TOTAL SPACES

THE PROPOSED PARKING ABOVE INCLUDES BARRIER FREE SPACES AS FOLLOWS:

14 BARRIER FREE SURFACE SPACES
8 BARRIER FREE GARAGE SPACES

PARKING SPACE: 9' x 18'
DRIVE AISLE: 24' MINIMUM

PROPOSED LEGEND

SIGN
BUMP POST
LANDING AREA
HYDRANT
BOLLARD LIGHT (SEE ELECTRICAL DRAWINGS)
LIGHT POLE (SEE ELECTRICAL DRAWINGS)
WALL LIGHT (SEE ELECTRICAL DRAWINGS)
CONCRETE SIDEWALK
SIDEWALK RAMP
CONCRETE PAVEMENT
STANDARD DUTY BITUMINOUS
GRAVEL DRIVE
PUD OPEN SPACE
INTERIOR LANDSCAPING
STANDARD CURB & GUTTER
INVERTED CURB & GUTTER
LANDSCAPE CURB
FENCE

NOT FOR CONSTRUCTION

N

NOTE: ALL UTILITIES SHOWN ARE APPROXIMATE LOCATIONS FROM FIELD DATA AND AVAILABLE INFORMATION. THEY SHOULD NOT BE INTERPRETED AS EXACT LOCATIONS NOR SHOULD THEY BE ASSUMED TO BE THE ONLY UTILITIES IN THE AREA.

0 50' 100'

ARCHITECTS • ENGINEERS
paradigm design
GRAND RAPIDS 550 3 MILE N.W. SUITE B GRAND RAPIDS, MI 49544 (616) 785 - 5656
TRAVERSE CITY 333 E. STATE STREET TRAVERSE CITY, MI 49684 (231) 346 - 3030
WEB ParadigmAE.com

NOTE: THIS DOCUMENT IS PRELIMINARY IN NATURE AND IS NOT A FINAL, SIGNED AND SEALED DOCUMENT.
BRIAN T. SINNOTT
MI REGISTRATION #6201052169
EXP. DATE 10/31/2019

PROJECT

LAKESHORE GARDENS APARTMENTS

A PLANNED UNIT DEVELOPMENT
17114 ROBBINS ROAD
GRAND HAVEN, MI 49417

DEVELOPER

MAIN STREET CAPITAL GROUP
18000 COVE STREET, STE 201
SPRING LAKE, MI 49456

RELEASE DATE

△	DATE	DESCRIPTION
	01-16-18	PUD APPLICATION
	02-07-18	PUD APPLICATION
	03-09-18	PUD APPLICATION
	04-27-18	PUD APPLICATION

PROJECT

1712151

SHEET

CIVIL LAYOUT PLAN

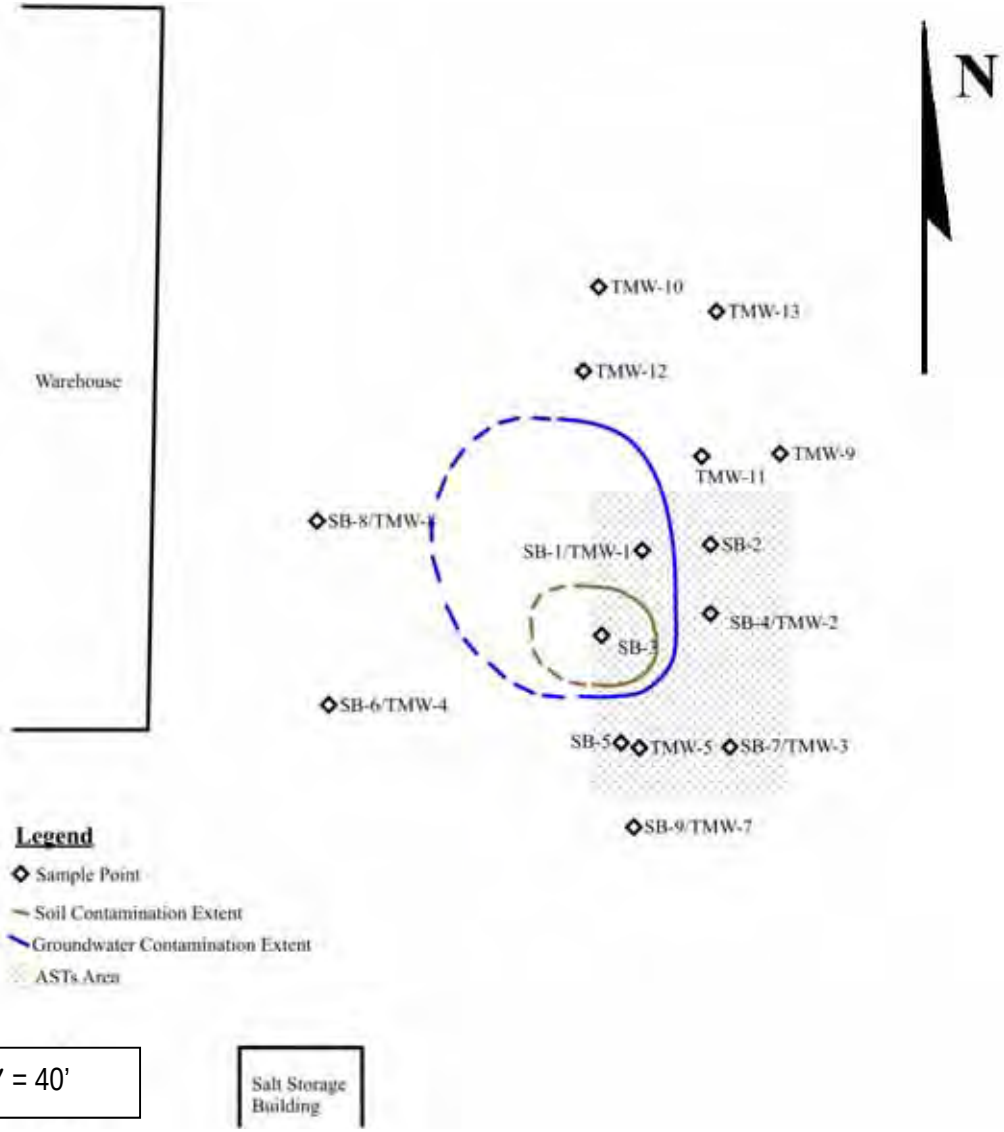
C-103

Friday, April-27-2018 at 12:47pm \\PD-FILE1\Jobs$\1712151 Robbins Road Mixed-Use\Drawings - 1711151\Civil\151C-103.dwg bkv

INFORMATION ONLY

Not Printed to Scale

Figure 2



Scale: 1″ = 40’

COUNTY OF OTTAWA, GRAND HAVEN TOWNSHIP, NORTHEAST 1/4, SECTION 33, T08N, R16W ~ GIS Aerial Photograph Parcel Map obtained from Ottawa County GIS online mapping

WESTSHORE ENGINEERING & SURVEYING ENVIRONMENTAL	*Client:* **Tysman Companies**	**SOIL & GROUNDWATER SAMPLE LOCATIONS**	*Checked:* RAB
			Date: 06/04/18
			Drawn by: JLG
			Date: 06/04/18
www.WestshoreConsulting.com *(800) 968-2864*	*Site:* Sampling at 17114 Robbins Road, Grand Haven Township, Ottawa County, Michigan		*File No.:* 03513-0017
			Figure: **3**

* Note: Exact Location of Deep MW will be determined

Scale: 1″ = 40’

COUNTY OF OTTAWA, GRAND HAVEN TOWNSHIP, NORTHEAST 1/4, SECTION 33, T08N, R16W ~ GIS Aerial Photograph Parcel Map obtained from Ottawa County GIS online mapping

WESTSHORE ENGINEERING & SURVEYING ENVIRONMENTAL

www.WestshoreConsulting.com *(800) 968-2864*

Client: **Tysman Companies LLC**

Site: Sampling at 17114 Robbins Road, Grand Haven Township, Ottawa County, Michigan

PROPOSED GROUNDWATER MONITORING WELL LOCATIONS

Checked:	*RAB*
Date:	*06/04/18*
Drawn by:	*JLG*
Date:	*06/04/18*
File No.:	*03513-0017*
Figure:	***4***

Tables

Table 1 - Soil Analytical Results

Table 2 - Groundwater Analytical Results

Table 1 ~ Soil Analytical Results
Five Parcels of land located along Robbins Road in Grand Haven Township, Ottawa County, Michigan

Constituent	Chemical Abstract Service Number (CAS #)	Statewide Default Background Levels	Residential - Part 201 Generic Cleanup Criteria								Media-Specific Volatilization to Indoor Air Interim Action Screening Levels		SB-1	SB-2	SB-3	SB-4	SB-5
			Drinking Water Protection Criteria	Groundwater Surface Water Interface Protection Criteria	Soil Volatilization to Indoor Air Inhalation	Infinite Source Volatile Soil Inhalation Criteria (VSIC)	Finite VSIC for 2 Meter Source Thickness	Particulate Soil Inhalation Criteria	Direct Contact Criteria	Soil Saturation Concentration Screening Levels (Csat)	Soil Residential RIASL	Soil Nonresidential RIASL	1.5-2.0'	1.7-2.2'	1.5-2.0'	1.3-1.8'	1.5-2.0'
													05/02/18	05/02/18	05/02/18	05/02/18	05/31/18
Volatile Organic Compounds (VOCs)																	
VOC Analysis Date													05/05/18	05/05/18	05/08/18	05/08/18	05/31/18
VOC Analysis Method													8260C	8260C	8260C	8260C	8260C
Dichlorodifluoromethane	75718	NA	95,000	ID	900,000	53,000,000	1,400,000,000	3,300,000,000,000	52,000,000	1,000,000	NC	NC	<250	<250	<250	<250	*NT*
Chloromethane	74873	NA	5,200	ID	2,300	40,000	1,000,000	4,900,000,000	1,600,000	1,100,000	6.9 (M)	31 (M)	<250	<250	<250	<250	*NT*
Vinyl Chloride	75014	NA	40	260 {X}	270	4,200	73,000	350,000,000	3,800	490,000	0.082 (M)	2.0 (M)	<40	<40	<46	<40	*NT*
Bromomethane	74839	NA	200	700	860	11,000	140,000	330,000,000	320,000	2,200,000	NC	NC	<200	<200	<200	<200	*NT*
Chloroethane	75003	NA	8,600	22,000 {X}	2,900,000	30,000,000	280,000,000	670,000,000,000	2,600,000	950,000	330	1,500	<250	<250	<250	<250	*NT*
Trichlorofluoromethane	75694	NA	52,000	NA	2,800,000	92,000,000	1,500,000,000	3,800,000,000,000	79,000,000	560,000	NC	NC	<100	<100	<100	<100	*NT*
Diethyl ether	60297	NA	200	ID	28,000,000	85,000,000	340,000,000	800,000,000,000	110,000,000	7,400,000	NC	NC	<200	<200	<230	<200	*NT*
Tert-butyl alcohol	75650	NA	78,000	NA	310,000,000	97,000,000	200,000,000	130,000,000,000	120,000,000	110,000,000	NC	NC	<2,500	<2,500	<2,900	<2,500	*NT*
1,1-Dichloroethylene	75354	NA	140	2,600	62	1,100	13,000	62,000,000	200,000	570,000	12 (M)	54	<50	<50	<58	<50	*NT*
Acetone	67641	NA	15,000	34,000	290,000,000	130,000,000	190,000,000	390,000,000,000	23,000,000	110,000,000	260,000	780,000	<1,000	<1,000	<1,000	<1,000	*NT*
Iodomethane	74884	NA	NC	NC	NC	NC	NC	NC	NC	NC	NC	NC	<100	<100	<100	<100	*NT*
Carbon disulfide	75150	NA	16,000	ID	76,000	1,300,000	19,000,000	47,000,000,000	7,200,000	280,000	NC	NC	<250	<250	<290	<250	*NT*
Methyl t-butyl ether (MTBE)	1634044	NA	800	140,000 {X}	9,900,000	25,000,000	87,000,000	200,000,000,000	1,500,000	5,900,000	74 (M)	520	<250	<250	<290	<250	<250
Methylene chloride	75092	NA	100	30,000 {X}	45,000	210,000	1,400,000	6,600,000,000	1,300,000	2,300,000	130	570	<250	<250	<250	<250	*NT*
Acrylonitrile	107131	NA	100	100	6,600	5,000	10,000	46,000,000	16,000	8,300,000	NC	NC	<100	<100	<120	<100	*NT*
trans-1,2-Dichloroethene	156605	NA	2,000	30,000 {X}	23,000	280,000	2,000,000	4,700,000,000	3,800,000	1,400,000	39 (M)	340	<50	<50	<58	<50	*NT*
1,1-Dichloroethane	75343	NA	18,000	15,000	230,000	2,100,000	14,000,000	33,000,000,000	27,000,000	890,000	2.6 (M)	19 (M)	<50	<50	<58	<50	*NT*
Diisopropyl Ether	108203	NA	600	ID	670,000	340,000	1,800,000	4,100,000,000	920,000	1,300	NC	NC	<250	<250	<290	<250	*NT*
2-Butanone (MEK)	78933	NA	260,000	44,000	54,000,000	29,000,000	35,000,000	67,000,000,000	120,000,000	27,000,000	NC	NC	<750	<750	<870	<750	*NT*
cis-1,2-Dichloroethene	156592	NA	1,400	12,000	22,000	180,000	990,000	2,300,000,000	2,500,000	640,000	2.1 (M)	9.2 (M)	<50	<50	<58	<50	*NT*
t-Butyl Ethyl Ether (ETBE)	637923	NA	980	ID	540,000	1,900,000	11,000,000	25,000,000,000	ID	650,000	NC	NC	<250	<250	<290	<250	*NT*
Bromochloromethane	74975	NA	NC	NC	NC	NC	NC	NC	NC	NC	NC	NC	<100	<100	<100	<100	*NT*
Tetrahydrofuran	109999	NA	1,900	220,000 {X}	1,300,000	13,000,000	160,000,000	390,000,000,000	2,900,000	120,000,000	NC	NC	<1,000	<1,000	<1,200	<1,000	*NT*
Chloroform	67663	NA	1,600	7,000	7,200	45,000	270,000	1,300,000,000	1,200,000	1,500,000	0.26 (M)	1.9 (M)	<50	<50	<58	<50	*NT*
1,1,1-Trichloroethane	71556	NA	4,000	1,800	250,000	3,800,000	28,000,000	67,000,000,000	500,000,000	460,000	450	1,900	<50	<50	<58	<50	*NT*
Carbon tetrachloride	56235	NA	100	900 {X}	190	3,500	28,000	130,000,000	96,000	390,000	NC	NC	<50	<50	<58	<50	*NT*
Benzene	71432	NA	100	4,000 {X}	1,600	13,000	79,000	380,000,000	180,000	400,000	1.7 (M)	12 (M)	<50	<50	**81**	<50	<50
t-Amyl Methyl Ether (TAME)	994058	NA	3,900	NA	58,000	340,000	1,800,000	4,100,000,000	29,000,000	440,000	NC	NC	<250	<250	<290	<250	*NT*
1,2-Dichloroethane	107062	NA	100	7,200 {X}	2,100	6,200	26,000	120,000,000	91,000	1,200,000	NC	NC	<50	<50	<58	<50	<50
Cyclohexane	108941	NA	5,200,000	NA	17,000	1,000,000	27,000,000	67,000,000,000	1,000,000,000	220,000,000	NC	NC	<250	<250	<290	<250	*NT*
Trichloroethene	79016	NA	100	4,000 {X}	1,000	11,000	57,000	130,000,000	110,000	500,000	0.33 (M)	1.0 (M)	<50	<50	<58	<50	*NT*
1,2-Dichloropropane	78875	NA	100	4,600 {X}	4,000	25,000	110,000	270,000,000	140,000	550,000	NC	NC	<50	<50	<58	<50	*NT*
Dibromomethane	74953	NA	1,600	NA	ID	ID	ID	ID	2,500,000	2,000,000	NC	NC	<250	<250	<250	<250	*NT*
Bromodichloromethane	75274	NA	1,600	ID	1,200	9,100	19,000	84,000,000	110,000	1,500,000	NC	NC	<100	<100	<100	<100	*NT*
1,3-Dichloropropene	542756	NA	170	180 {X}	1,000	18,000	160,000	780,000,000	10,000	620,000	NC	NC	<50	<50	<58	<50	*NT*
4-Methyl-2-pentanone (MIBK)	108101	NA	36,000	ID	37,000,000	45,000,000	67,000,000	140,000,000,000	56,000,000	2,700,000	NC	NC	<2,500	<2,500	<2,900	<2,500	*NT*
Toluene	108883	NA	16,000	5,400	330,000	2,800,000	12,000,000	27,000,000,000	50,000,000	250,000	3,700	16,000	<100	<100	**430**	<100	<100
1,1,2-Trichloroethane	79005	NA	100	6,600 {X}	4,600	17,000	44,000	190,000,000	180,000	920,000	NC	NC	<50	<50	<58	<50	*NT*
Tetrachloroethene	127184	NA	100	1,200 {X}	11,000	170,000	1,100,000	2,700,000,000	200,000	88,000	6.2 (M)	19 (M)	<50	<50	<58	<50	*NT*
2-Hexanone	591786	NA	20,000	ID	990,000	1,100,000	1,400,000	2,700,000,000	32,000,000	2,500,000	NC	NC	<2,500	<2,500	<2,900	<2,500	*NT*
Dibromochloromethane	124481	NA	1,600	ID	3,900	24,000	33,000	130,000,000	110,000	610,000	NC	NC	<100	<100	<100	<100	*NT*
1,2-Dibromoethane	106934	NA	20	110 {X}	670	1,700	3,300	14,000,000	92	890,000	NC	NC	<50	<50	<58	<50	<50
Chlorobenzene	108907	NA	2,000	500	120,000	770,000	2,100,000	4,700,000,000	4,300,000	260,000	82	360	<50	<50	<58	<50	*NT*
1,1,1,2-Tetrachloroethane	630206	NA	1,500	ID	6,200	36,000	100,000	420,000,000	480,000	440,000	NC	NC	<100	<100	<100	<100	*NT*
Ethyl benzene	100414	NA	1,500	360	87,000	720,000	2,200,000	10,000,000,000	22,000,000	140,000	12 (M)	86	<50	<50	**65**	<50	<50
Xylenes	1330207	NA	5,600	820	6,300,000	46,000,000	130,000,000	290,000,000,000	410,000,000	150,000	280	1,200	<150	<150	**720**	<150	<150
Styrene	100425	NA	2,700	2,100 {X}	250,000	970,000	1,400,000	5,500,000,000	400,000	520,000	NC	NC	<50	<50	<58	<50	*NT*
Bromoform	75252	NA	1,600	ID	150,000	900,000	900,000	2,800,000,000	820,000	870,000	NC	NC	<100	<100	<100	<100	*NT*
Isopropylbenzene	98828	NA	91,000	3,200	400,000	1,700,000	2,800,000	5,800,000,000	25,000,000	390,000	NC	NC	<250	<250	<250	<250	*NT*
1,1,2,2-Tetrachloroethane	79345	NA	170	1,600 {X}	4,300	10,000	14,000	54,000,000	53,000	870,000	NC	NC	<50	<50	<58	<50	*NT*
1,2,3-Trichloropropane	96184	NA	840	NA	4,000	9,200	11,000	20,000,000	1,300,000	830,000	NC	NC	<100	<100	<100	<100	*NT*
trans-1,4-Dichloro-2-butene	110576	NC	NC	NC	NC	NC	NC	NC	NC	NC	NC	NC	<50	<50	<58	<50	*NT*
Bromobenzene	108861	NA	550	NA	310,000	450,000	450,000	530,000,000	540,000	760,000	NC	NC	<100	<100	<100	<100	*NT*
n-Propylbenzene	103651	NA	1,600	ID	ID	ID	ID	1,300,000,000	2,500,000	10,000,000	NC	NC	<100	<100	<100	<100	*NT*
1,3,5-Trimethylbenzene	108678	NA	1,800	1,100	2,600,000	16,000,000	380,000,000	82,000,000,000	32,000,000	94,000	100	450	<100	<100	<100	<100	<100
tert-Butylbenzene	98066	NA	1,600	ID	ID	ID	ID	670,000,000	2,500,000	10,000,000	NC	NC	<50	<50	<58	<50	*NT*
1,2,4-Trimethylbenzene	95636	NA	2,100	570	4,300,000	21,000,000	500,000,000	82,000,000,000	32,000,000	110,000	150	650	<100	<100	**220**	<100	<100
sec-Butylbenzene	135988	NA	1,600	ID	ID	ID	ID	400,000,000	2,500,000	10,000,000	NC	NC	<50	<50	<58	<50	*NT*
p-Isopropyltoluene	99876	NA	NC	NC	NC	NC	NC	NC	NC	NC	NC	NC	<100	<100	<100	<100	*NT*
1,3-Dichlorobenzene	541731	NA	170	680	26,000	79,000	110,000	200,000,000	200,000	170,000	10 (M)	45 (M)	<100	<100	<100	<100	*NT*
1,4-Dichlorobenzene	106467	NA	1,700	360	19,000	77,000	110,000	450,000,000	400,000	NA	23 (M)	160	<100	<100	<100	<100	*NT*
n-Butylbenzene	104518	NA	1,600	ID	ID	ID	ID	2,000,000,000	2,500,000	10,000,000	NC	NC	<50	<50	<58	<50	*NT*
1,2,3-Trimethylbenzene	526738	NC	NC	NC	NC	NC	NC	NC	NC	NC	270	1,200	<50	<50	**80**	<50	*NT*
1,2-Dichlorobenzene	95501	NA	14,000	280	11,000,000	39,000,000	52,000,000	100,000,000,000	19,000,000	210,000	NC	NC	<100	<100	<100	<100	*NT*
1,2-Dibromo-3-chloropropane	96128	NA	10	ID	220	260	260	560,000	4,400	1,200	NC	NC	<100	<100	<120	<100	*NT*
Hexachloroethane	67721	NA	430	1,800 {X}	40,000	550,000	930,000	230,000,000	230,000	NA	NC	NC	<100	<100	<100	<100	*NT*
1,2,4-Trichlorobenzene	120821	NA	4,200	5,900 {X}	9,600,000	28,000,000	28,000,000	25,000,000,000	990,000	1,100,000	53 (M)	230 (M)	<330	<330	<330	<330	*NT*
Naphthalene	91203	NA	35,000	730	250,000	300,000	300,000	200,000,000	16,000,000	NA	NC	NC	<330	<330	<330	<330	<330
1,2,3-Trichlorobenzene	87616	NA	NC	NC	NC	NC	NC	NC	NC	NC	NC	NC	<250	<250	<250	<250	*NT*
2-Methylnaphthalene	91576	NA	57,000	4,200	2,700,000	1,500,000	1,500,000	670,000,000	8,100,000	NA	NC	NC	<330	<330	<330	<330	<330
Polynuclear Aromatic Hydrocarbons (PNAs)																	
PNA Extract Date													05/03/18	05/03/18	05/03/18	05/03/18	
PNA Analysis Date													05/04/18	05/04/18	05/04/18	05/04/18	
PNA Analysis Method													8270C	8270C	8270C	8270C	
Naphthalene	91203	NA	35,000	730	250,000	300,000	300,000	200,000,000	16,000,000	NA	NC	NC	<330	<330	<330	<330	*NT*
2-Methylnaphthalene	91576	NA	57,000	4,200	2,700,000	1,500,000	1,500,000	670,000,000	8,100,000	NA	NC	NC	<330	<330	<330	<330	*NT*
Acenaphthylene	208968	NA	5,900	ID	1,600,000	2,200,000	2,200,000	2,300,000,000	1,600,000	NA	NC	NC	<330	<330	<330	<330	*NT*
Acenaphthene	83329	NA	300,000	8,700	190,000,000	81,000,000	81,000,000	14,000,000,000	41,000,000	NA	NC	NC	<330	<330	<330	<330	*NT*
Fluorene	86737	NA	390,000	5,300	580,000,000	130,000,000	130,000,000	9,300,000,000	27,000,000	NA	NC	NC	<330	<330	<330	<330	*NT*
Phenanthrene	85018	NA	56,000	2,100	2,800,000	160,000	160,000	6,700,000	1,600,000	NA	NC	NC	<330	<330	<330	<330	*NT*
Anthracene	120127	NA	41,000	ID	1,000,000,000	1,400,000,000	1,400,000,000	67,000,000,000	230,000,000	NA	NC	NC	<330	<330	<330	<330	*NT*
Fluoranthene	206440	NA	730,000	5,500	1,000,000,000	740,000,000	740,000,000	9,300,000,000	46,000,000	NA	NC	NC	<330	<330	<330	<330	*NT*
Pyrene	129000	NA	480,000	ID	1,000,000,000	650,000,000	650,000,000	6,700,000,000	29,000,000	NA	NC	NC	<330	<330	<330	<330	*NT*
Benzo[a]anthracene	56553	NA	NLL	NLL	NLV	NLV	NLV	ID	20,000	NA	NC	NC	<330	<330	<330	<330	*NT*
Chrysene	218019	NA	NLL	NLL	ID	ID	ID	ID	2,000,000	NA	NC	NC	<330	<330	<330	<330	*NT*
Benzo[b]fluoranthene	205992	NA	NLL	NLL	ID	ID	ID	ID	20,000	NA	NC	NC	<330	<330	<330	<330	*NT*
Benzo[k]fluoranthene	207089	NA	NLL	NLL	NLV	NLV	NLV	ID	200,000	NA	NC	NC	<330	<330	<330	<330	*NT*
Benzo[a]pyrene	50328	NA	NLL	NLL	NLV	NLV	NLV	1,500,000	2,000	NA	NC	NC	<330	<330	<330	<330	*NT*
Indeno[1,2,3-cd]pyrene	193395	NA	NLL	NLL	NLV	NLV	NLV	ID	20,000	NA	NC	NC	<330	<330	<330	<330	*NT*
Dibenzo[a,h]anthracene	53703	NA	NLL	NLL	NLV	NLV	NLV	ID	2,000	NA	NC	NC	<330	<330	<330	<330	*NT*
Benzo[g,h,i]perylene	191242	NA	NLL	NLL	NLV	NLV	NLV	800,000,000	2,500,000	NA	NC	NC	<330	<330	<330	<330	*NT*

Notes:

- Results are reported in micrograms per kilogram (µg/Kg); equivalent to parts per billion (ppb).
- MDEQ Criteria are from Table 2, R299.46 Generic Soil Cleanup Criteria for Residential Category found on RRD website Rule 299.1 to 299.50 Environmental Contamination Response Activity Rules, effective December 30, 2013.
- ID - Inadequate Data to develop criterion. - NA - Not Available.
- NLL - Hazardous substance is Not Likely to Leach under most soil conditions. - NLV - Not Likely to Volatilize.
- {X} - Criteria not established based on surface water use for drinking water.
- Bolded values indicate detection of constituent, shaded values indicate an exceedance of at least one criteria.

- *NT* - Not Tested. - NC - MDEQ has published no criteria for this constituent.

- MDEQ Media-Specific Volatilization to Indoor Air Interim Action Screening Levels, August 2017.
- RIASL: Recommended Interim Action Screening Levels. Nonresidential RIASL is based on a former residential structure that is now nonresidential use that has an unoccupied basement.
- (M): Site-specific criterion may be below target detection limits (TDL).
- Bolded box indicate an exceedance of of at least one RIASL.

Table 1 ~ Soil Analytical Results
Five Parcels of land located along Robbins Road in Grand Haven Township, Ottawa County, Michigan

Constituent	Chemical Abstract Service Number (CAS #)	Statewide Default Background Levels	Residential - Part 201 Generic Cleanup Criteria								Media-Specific Volatilization to Indoor Air Interim Action Screening Levels		SB-6	SB-7	SB-8	SB-9
			Drinking Water Protection Criteria	Groundwater Surface Water Interface Protection Criteria	Soil Volatilization to Indoor Air Inhalation	Infinite Source Volatile Soil Inhalation Criteria (VSIC)	Finite VSIC for 2 Meter Source Thickness	Particulate Soil Inhalation Criteria	Direct Contact Criteria	Soil Saturation Concentration Screening Levels (Csat)	Soil Residential RIASL	Soil Nonresidential RIASL	1.5-2.0'	1.5-2.0'	1.5-2.0'	2.5-3.0'
													05/31/18	05/31/18	05/31/18	05/31/18
Volatile Organic Compounds (VOCs)																
VOC Analysis Date													05/31/18	05/31/18	05/31/18	05/31/18
VOC Analysis Method													8260C	8260C	8260C	8260C
Dichlorodifluoromethane	75718	NA	95,000	ID	900,000	53,000,000	1,400,000,000	3,300,000,000,000	52,000,000	1,000,000	NC	NC	NT	NT	NT	NT
Chloromethane	74873	NA	5,200	ID	2,300	40,000	1,000,000	4,900,000,000	1,600,000	1,100,000	6.9 (M)	31 (M)	NT	NT	NT	NT
Vinyl Chloride	75014	NA	40	260 {X}	270	4,200	73,000	350,000,000	3,800	490,000	0.082 (M)	2.0 (M)	NT	NT	NT	NT
Bromomethane	74839	NA	200	700	860	11,000	140,000	330,000,000	320,000	2,200,000	NC	NC	NT	NT	NT	NT
Chloroethane	75003	NA	8,600	22,000 {X}	2,900,000	30,000,000	280,000,000	670,000,000,000	2,600,000	950,000	330	1,500	NT	NT	NT	NT
Trichlorofluoromethane	75694	NA	52,000	NA	2,800,000	92,000,000	1,500,000,000	3,800,000,000,000	79,000,000	560,000	NC	NC	NT	NT	NT	NT
Diethyl ether	60297	NA	200	ID	28,000,000	85,000,000	340,000,000	800,000,000,000	110,000,000	7,400,000	NC	NC	NT	NT	NT	NT
Tert-butyl alcohol	75650	NA	78,000	NA	310,000,000	97,000,000	200,000,000	130,000,000,000	120,000,000	110,000,000	NC	NC	NT	NT	NT	NT
1,1-Dichloroethylene	75354	NA	140	2,600	62	1,100	13,000	62,000,000	200,000	570,000	12 (M)	54	NT	NT	NT	NT
Acetone	67641	NA	15,000	34,000	290,000,000	130,000,000	190,000,000	390,000,000,000	23,000,000	110,000,000	260,000	780,000	NT	NT	NT	NT
Iodomethane	74884	NA	NC	NC	NC	NC	NC	NC	NC	NC	NC	NC	NT	NT	NT	NT
Carbon disulfide	75150	NA	16,000	ID	76,000	1,300,000	19,000,000	47,000,000,000	7,200,000	280,000	NC	NC	NT	NT	NT	NT
Methyl t-butyl ether (MTBE)	1634044	NA	800	140,000 {X}	9,900,000	25,000,000	87,000,000	200,000,000,000	1,500,000	5,900,000	74 (M)	520	<250	<250	<260	<260
Methylene chloride	75092	NA	100	30,000 {X}	45,000	210,000	1,400,000	6,600,000,000	1,300,000	2,300,000	130	570	NT	NT	NT	NT
Acrylonitrile	107131	NA	100	100	6,600	5,000	10,000	46,000,000	16,000	8,300,000	NC	NC	NT	NT	NT	NT
trans-1,2-Dichloroethene	156605	NA	2,000	30,000 {X}	23,000	280,000	2,000,000	4,700,000,000	3,800,000	1,400,000	39 (M)	340	NT	NT	NT	NT
1,1-Dichloroethane	75343	NA	18,000	15,000	230,000	2,100,000	14,000,000	33,000,000,000	27,000,000	890,000	2.6 (M)	19 (M)	NT	NT	NT	NT
Diisopropyl Ether	108203	NA	600	ID	670,000	340,000	1,800,000	4,100,000,000	920,000	1,300	NC	NC	NT	NT	NT	NT
2-Butanone (MEK)	78933	NA	260,000	44,000	54,000,000	29,000,000	35,000,000	67,000,000,000	120,000,000	27,000,000	NC	NC	NT	NT	NT	NT
cis-1,2-Dichloroethene	156592	NA	1,400	12,000	22,000	180,000	990,000	2,300,000,000	2,500,000	640,000	2.1 (M)	9.2 (M)	NT	NT	NT	NT
t-Butyl Ethyl Ether (ETBE)	637923	NA	980	ID	540,000	1,900,000	11,000,000	25,000,000,000	ID	650,000	NC	NC	NT	NT	NT	NT
Bromochloromethane	74975	NA	NC	NC	NC	NC	NC	NC	NC	NC	NC	NC	NT	NT	NT	NT
Tetrahydrofuran	109999	NA	1,900	220,000 {X}	1,300,000	13,000,000	160,000,000	390,000,000,000	2,900,000	120,000,000	NC	NC	NT	NT	NT	NT
Chloroform	67663	NA	1,600	7,000	7,200	45,000	270,000	1,300,000,000	1,200,000	1,500,000	0.26 (M)	1.9 (M)	NT	NT	NT	NT
1,1,1-Trichloroethane	71556	NA	4,000	1,800	250,000	3,800,000	28,000,000	67,000,000,000	500,000,000	460,000	450	1,900	NT	NT	NT	NT
Carbon tetrachloride	56235	NA	100	900 {X}	190	3,500	28,000	130,000,000	96,000	390,000	NC	NC	NT	NT	NT	NT
Benzene	71432	NA	100	4,000 {X}	1,600	13,000	79,000	380,000,000	180,000	400,000	1.7 (M)	12 (M)	<50	<50	<51	<53
t-Amyl Methyl Ether (TAME)	994058	NA	3,900	NA	58,000	340,000	1,800,000	4,100,000,000	29,000,000	440,000	NC	NC	NT	NT	NT	NT
1,2-Dichloroethane	107062	NA	100	7,200 {X}	2,100	6,200	26,000	120,000,000	91,000	1,200,000	NC	NC	<50	<50	<51	<53
Cyclohexane	108941	NA	5,200,000	NA	17,000	1,000,000	27,000,000	67,000,000,000	1,000,000,000	220,000,000	NC	NC	NT	NT	NT	NT
Trichloroethene	79016	NA	100	4,000 {X}	1,000	11,000	57,000	130,000,000	110,000	500,000	0.33 (M)	1.0 (M)	NT	NT	NT	NT
1,2-Dichloropropane	78875	NA	100	4,600 {X}	4,000	25,000	110,000	270,000,000	140,000	550,000	NC	NC	NT	NT	NT	NT
Dibromomethane	74953	NA	1,600	NA	ID	ID	ID	ID	2,500,000	2,000,000	NC	NC	NT	NT	NT	NT
Bromodichloromethane	75274	NA	1,600	ID	1,200	9,100	19,000	84,000,000	110,000	1,500,000	NC	NC	NT	NT	NT	NT
1,3-Dichloropropene	542756	NA	170	180 {X}	1,000	18,000	160,000	780,000,000	10,000	620,000	NC	NC	NT	NT	NT	NT
4-Methyl-2-pentanone (MIBK)	108101	NA	36,000	ID	37,000,000	45,000,000	67,000,000	140,000,000,000	56,000,000	2,700,000	NC	NC	NT	NT	NT	NT
Toluene	108883	NA	16,000	5,400	330,000	2,800,000	12,000,000	27,000,000,000	50,000,000	250,000	3,700	16,000	<100	<100	<100	<100
1,1,2-Trichloroethane	79005	NA	100	6,600 {X}	4,600	17,000	44,000	190,000,000	180,000	920,000	NC	NC	NT	NT	NT	NT
Tetrachloroethene	127184	NA	100	1,200 {X}	11,000	170,000	1,100,000	2,700,000,000	200,000	88,000	6.2 (M)	19 (M)	NT	NT	NT	NT
2-Hexanone	591786	NA	20,000	ID	990,000	1,100,000	1,400,000	2,700,000,000	32,000,000	2,500,000	NC	NC	NT	NT	NT	NT
Dibromochloromethane	124481	NA	1,600	ID	3,900	24,000	33,000	130,000,000	110,000	610,000	NC	NC	NT	NT	NT	NT
1,2-Dibromoethane	106934	NA	20	110 {X}	670	1,700	3,300	14,000,000	92	890,000	NC	NC	<50	<50	<51	<53
Chlorobenzene	108907	NA	2,000	500	120,000	770,000	2,100,000	4,700,000,000	4,300,000	260,000	82	360	NT	NT	NT	NT
1,1,1,2-Tetrachloroethane	630206	NA	1,500	ID	6,200	36,000	100,000	420,000,000	480,000	440,000	NC	NC	NT	NT	NT	NT
Ethyl benzene	100414	NA	1,500	360	87,000	720,000	2,200,000	10,000,000,000	22,000,000	140,000	12 (M)	86	<50	<50	<51	<53
Xylenes	1330207	NA	5,600	820	6,300,000	46,000,000	130,000,000	290,000,000,000	410,000,000	150,000	280	1,200	<150	<150	<150	<160
Styrene	100425	NA	2,700	2,100 {X}	250,000	970,000	1,400,000	5,500,000,000	400,000	520,000	NC	NC	NT	NT	NT	NT
Bromoform	75252	NA	1,600	ID	150,000	900,000	900,000	2,800,000,000	820,000	870,000	NC	NC	NT	NT	NT	NT
Isopropylbenzene	98828	NA	91,000	3,200	400,000	1,700,000	2,800,000	5,800,000,000	25,000,000	390,000	NC	NC	NT	NT	NT	NT
1,1,2,2-Tetrachloroethane	79345	NA	170	1,600 {X}	4,300	10,000	14,000	54,000,000	53,000	870,000	NC	NC	NT	NT	NT	NT
1,2,3-Trichloropropane	96184	NA	840	NA	4,000	9,200	11,000	20,000,000	1,300,000	830,000	NC	NC	NT	NT	NT	NT
trans-1,4-Dichloro-2-butene	110576	NC	NC	NC	NC	NC	NC	NC	NC	NC	NC	NC	NT	NT	NT	NT
Bromobenzene	108861	NA	550	NA	310,000	450,000	450,000	530,000,000	540,000	760,000	NC	NC	NT	NT	NT	NT
n-Propylbenzene	103651	NA	1,600	ID	ID	ID	ID	1,300,000,000	2,500,000	10,000,000	NC	NC	NT	NT	NT	NT
1,3,5-Trimethylbenzene	108678	NA	1,800	1,100	2,600,000	16,000,000	380,000,000	82,000,000,000	32,000,000	94,000	100	450	<100	<100	<100	<100
tert-Butylbenzene	98066	NA	1,600	ID	ID	ID	ID	670,000,000	2,500,000	10,000,000	NC	NC	NT	NT	NT	NT
1,2,4-Trimethylbenzene	95636	NA	2,100	570	4,300,000	21,000,000	500,000,000	82,000,000,000	32,000,000	110,000	150	650	<100	<100	<100	<100
sec-Butylbenzene	135988	NA	1,600	ID	ID	ID	ID	400,000,000	2,500,000	10,000,000	NC	NC	NT	NT	NT	NT
p-Isopropyltoluene	99876	NA	NC	NC	NC	NC	NC	NC	NC	NC	NC	NC	NT	NT	NT	NT
1,3-Dichlorobenzene	541731	NA	170	680	26,000	79,000	110,000	200,000,000	200,000	170,000	10 (M)	45 (M)	NT	NT	NT	NT
1,4-Dichlorobenzene	106467	NA	1,700	360	19,000	77,000	110,000	450,000,000	400,000	NA	23 (M)	160	NT	NT	NT	NT
n-Butylbenzene	104518	NA	1,600	ID	ID	ID	ID	2,000,000,000	2,500,000	10,000,000	NC	NC	NT	NT	NT	NT
1,2,3-Trimethylbenzene	526738	NC	NC	NC	NC	NC	NC	NC	NC	NC	270	1,200	NT	NT	NT	NT
1,2-Dichlorobenzene	95501	NA	14,000	280	11,000,000	39,000,000	52,000,000	100,000,000,000	19,000,000	210,000	NC	NC	NT	NT	NT	NT
1,2-Dibromo-3-chloropropane	96128	NA	10	ID	220	260	260	560,000	4,400	1,200	NC	NC	NT	NT	NT	NT
Hexachloroethane	67721	NA	430	1,800 {X}	40,000	550,000	930,000	230,000,000	230,000	NA	NC	NC	NT	NT	NT	NT
1,2,4-Trichlorobenzene	120821	NA	4,200	5,900 {X}	9,600,000	28,000,000	28,000,000	25,000,000,000	990,000	1,100,000	53 (M)	230 (M)	NT	NT	NT	NT
Naphthalene	91203	NA	35,000	730	250,000	300,000	300,000	200,000,000	16,000,000	NA	NC	NC	<330	<330	<330	<330
1,2,3-Trichlorobenzene	87616	NA	NC	NC	NC	NC	NC	NC	NC	NC	NC	NC	NT	NT	NT	NT
2-Methylnaphthalene	91576	NA	57,000	4,200	2,700,000	1,500,000	1,500,000	670,000,000	8,100,000	NA	NC	NC	<330	<330	<330	<330
Polynuclear Aromatic Hydrocarbons (PNAs)																
PNA Extract Date																
PNA Analysis Date																
PNA Analysis Method																
Naphthalene	91203	NA	35,000	730	250,000	300,000	300,000	200,000,000	16,000,000	NA	NC	NC	NT	NT	NT	NT
2-Methylnaphthalene	91576	NA	57,000	4,200	2,700,000	1,500,000	1,500,000	670,000,000	8,100,000	NA	NC	NC	NT	NT	NT	NT
Acenaphthylene	208968	NA	5,900	ID	1,600,000	2,200,000	2,200,000	2,300,000,000	1,600,000	NA	NC	NC	NT	NT	NT	NT
Acenaphthene	83329	NA	300,000	8,700	190,000,000	81,000,000	81,000,000	14,000,000,000	41,000,000	NA	NC	NC	NT	NT	NT	NT
Fluorene	86737	NA	390,000	5,300	580,000,000	130,000,000	130,000,000	9,300,000,000	27,000,000	NA	NC	NC	NT	NT	NT	NT
Phenanthrene	85018	NA	56,000	2,100	2,800,000	160,000	160,000	6,700,000	1,600,000	NA	NC	NC	NT	NT	NT	NT
Anthracene	120127	NA	41,000	ID	1,000,000,000	1,400,000,000	1,400,000,000	67,000,000,000	230,000,000	NA	NC	NC	NT	NT	NT	NT
Fluoranthene	206440	NA	730,000	5,500	1,000,000,000	740,000,000	740,000,000	9,300,000,000	46,000,000	NA	NC	NC	NT	NT	NT	NT
Pyrene	129000	NA	480,000	ID	1,000,000,000	650,000,000	650,000,000	6,700,000,000	29,000,000	NA	NC	NC	NT	NT	NT	NT
Benzo[a]anthracene	56553	NA	NLL	NLL	NLV	NLV	NLV	ID	20,000	NA	NC	NC	NT	NT	NT	NT
Chrysene	218019	NA	NLL	NLL	ID	ID	ID	ID	2,000,000	NA	NC	NC	NT	NT	NT	NT
Benzo[b]fluoranthene	205992	NA	NLL	NLL	ID	ID	ID	ID	20,000	NA	NC	NC	NT	NT	NT	NT
Benzo[k]fluoranthene	207089	NA	NLL	NLL	NLV	NLV	NLV	ID	200,000	NA	NC	NC	NT	NT	NT	NT
Benzo[a]pyrene	50328	NA	NLL	NLL	NLV	NLV	NLV	1,500,000	2,000	NA	NC	NC	NT	NT	NT	NT
Indeno[1,2,3-cd]pyrene	193395	NA	NLL	NLL	NLV	NLV	NLV	ID	20,000	NA	NC	NC	NT	NT	NT	NT
Dibenzo[a,h]anthracene	53703	NA	NLL	NLL	NLV	NLV	NLV	ID	2,000	NA	NC	NC	NT	NT	NT	NT
Benzo[g,h,i]perylene	191242	NA	NLL	NLL	NLV	NLV	NLV	800,000,000	2,500,000	NA	NC	NC	NT	NT	NT	NT

Notes:

- Results are reported in micrograms per kilogram (µg/Kg); equivalent to parts per billion (ppb).
- MDEQ Criteria are from Table 2, R299.46 Generic Soil Cleanup Criteria for Residential Category found on RRD website Rule 299.1 to 299.50 Environmental Contamination Response Activity Rules, effective December 30, 2013.
- ID - Inadequate Data to develop criterion. - NA - Not Available.
- NLL - Hazardous substance is Not Likely to Leach under most soil conditions. - NLV - Not Likely to Volatilize.
- {X} - Criteria not established based on surface water use for drinking water.
- Bolded values indicate detection of constituent, shaded values indicate an exceedance of at least one criteria.

- *NT* - Not Tested. - NC - MDEQ has published no criteria for this constituent.

- MDEQ Media-Specific Volatilization to Indoor Air Interim Action Screening Levels, August 2017.
- RIASL: Recommended Interim Action Screening Levels. Nonresidential RIASL is based on a former residential structure that is now nonresidential use that has an unoccupied basement.
- (M): Site-specific criterion may be below target detection limits (TDL).
- Bolded box indicate an exceedance of of at least one RIASL.

Table 2 ~ Groundwater Analytical Results
Five Parcels of land located along Robbins Road in Grand Haven Township, Ottawa County, Michigan

Constituent	Chemical Abstract Service Number (CAS #)	Part 201 Generic Cleanup Criteria					Media-Specific Volatilization to Indoor Air Interim Action Screening Levels							TMW-1 / SB-1	TMW-2 / SB-4	TMW-3	TMW-4
		Residential Drinking Water	Nonresidential Drinking Water	Groundwater Surface Water Interface	Residential Groundwater Volatilization to Indoor Air Inhalation	Nonresidential Groundwater Volatilization to Indoor Air Inhalation	Shallow Groundwater Residential RIASL	Shallow Groundwater Nonresidential RIASL	Groundwater Residential RIASL	Groundwater Residential TSRIASL	Groundwater Nonresidential RIASL	Groundwater Nonresidential $RIASL_{12}$	Groundwater Nonresidential $TSRIASL_{12}$	05/02/18	05/02/18	05/31/18	05/31/18
Volatile Organic Compounds (VOCs)																	
VOC Analysis Date														05/08/18	05/09/18	05/31/18	05/31/18
VOC Analysis Method														8260C	8260C	8260C	8260C
Dichlorodifluoromethane	75718	1,700	4,800	ID	220,000	300,000	NC	NC	NC	NC	NC	NC	NC	<5.0	<5.0	*NT*	*NT*
Chloromethane	74873	260	1,100	ID	8,600	45,000	15	30	160	470	810	1,600	8,000	<5.0	<5.0	*NT*	*NT*
Vinyl Chloride	75014	2.0	2.0	13 {X}	1,100	13,000	0.12 (M)	1.8	0.96 (M)	9.6	28	56	1,800	<1.0	<1.0	*NT*	*NT*
Bromomethane	74839	10	29	35	4,000	9,000	NC	NC	NC	NC	NC	NC	NC	<5.0	<5.0	*NT*	*NT*
Chloroethane	75003	430	1,700	1,100 {X}	5,700,000	5,700,000	620	1,300	6,700	20,000	35,000	69,000	670,000	<5.0	<5.0	*NT*	*NT*
Trichlorofluoromethane	75694	2,600	7,300	NA	1,100,000	1,100,000	NC	NC	NC	NC	NC	NC	NC	<1.0	<1.0	*NT*	*NT*
Diethyl ether	60297	10 {E} 3,700	10 {E} 10,000	ID	61,000,000	61,000,000	NC	NC	NC	NC	NC	NC	NC	<10	<10	*NT*	*NT*
Tert-butyl alcohol	75650	3,900	11,000	NA	1,000,000,000	1,000,000,000	NC	NC	NC	NC	NC	NC	NC	<50	<50	*NT*	*NT*
1,1-Dichloroethene	75354	7.0	7.0	130	200	1,300	18	45	170	510	860	1,700	16,000	<1.0	<1.0	*NT*	*NT*
Acetone	67641	730	2,100	1,700	1,000,000,000	1,000,000,000	50,000	62,000	12,000,000	12,000,000	47,000,000	47,000,000	160,000,000	<50	<50	*NT*	*NT*
Iodomethane	74884	NC	NC	NC	NC	NC	NC	NC	NC	NC	NC	NC	NC	<1.0	<1.0	*NT*	*NT*
Carbon disulfide	75150	800	2,300	ID	250,000	550,000	NC	NC	NC	NC	NC	NC	NC	<5.0	<5.0	*NT*	*NT*
Methyl t-butyl ether (MTBE)	1634044	40 {E} 240	40 {E} 690	7,100 {X}	47,000,000	47,000,000	250	610	4,000	40,000	32,000	65,000	2,000,000	<5.0	<5.0	<5.0	<5.0
Methylene chloride	75092	5.0	5.0	1,500 {X}	220,000	1,400,000	79	490	3,900	6,200	20,000	40,000	200,000	<5.0	<5.0	*NT*	*NT*
Acrylonitrile	107131	2.6	11	2.0	34,000	190,000	NC	NC	NC	NC	NC	NC	NC	<2.0	<2.0	*NT*	*NT*
trans-1,2-Dichloroethene	156605	100	100	1,500 {X}	85,000	200,000	27	78	650	1,900	6,500	6,500	21,000	<1.0	<1.0	*NT*	*NT*
1,1-Dichloroethane	75343	880	2,500	740	1,000,000	2,300,000	4.7	14	67	670	540	1,100	34,000	<1.0	<1.0	*NT*	*NT*
Diisopropyl Ether	108203	30	86	ID	8,000	8,000	NC	NC	NC	NC	NC	NC	NC	<5.0	<5.0	*NT*	*NT*
2-Butanone (MEK)	78933	13,000	38,000	2,200	240,000,000	240,000,000	NC	NC	NC	NC	NC	NC	NC	<25	<25	*NT*	*NT*
cis-1,2-Dichloroethene	156592	70	70	620	93,000	210,000	3.4	5.8	48	140	240	490	4,600	<1.0	<1.0	*NT*	*NT*
t-Butyl Ethyl Ether (ETBE)	637923	49 {E}	49 {E}	ID	2,900,000	5,600,000	NC	NC	NC	NC	NC	NC	NC	<5.0	<5.0	*NT*	*NT*
Bromochloromethane	74975	NC	NC	NC	NC	NC	NC	NC	NC	NC	NC	NC	NC	<1.0	<1.0	*NT*	*NT*
Tetrahydrofuran	109999	95	270	11,000 {X}	6,900,000	16,000,000	NC	NC	NC	NC	NC	NC	NC	<90	<90	*NT*	*NT*
Chloroform	67663	80	80	350	28,000	180,000	0.49 (M)	1.3	7.6	76	61	120	3,800	<1.0	<1.0	*NT*	*NT*
1,1,1-Trichloroethane	71556	200	200	89	660,000	1,300,000	180	750	8,600	8,600	41,000	41,000	120,000	<1.0	<1.0	*NT*	*NT*
Carbon tetrachloride	56235	5.0	5.0	45 {X}	370	2,400	NC	NC	NC	NC	NC	NC	NC	<1.0	<1.0	*NT*	*NT*
Benzene	71432	5.0	5.0	200 {X}	5,600	35,000	1.0	3.0	14	82	120	230	2,600	**36**	<1.0	<1.0	<1.0
t-Amyl Methyl Ether	994058	190 {E} 910	190 {E} 2,600	NA	260,000	570,000	NC	NC	NC	NC	NC	NC	NC	<5.0	<5.0	*NT*	*NT*
1,2-Dichloroethane	107062	5.0	5.0	360 {X}	9,600	59,000	NC	NC	NC	NC	NC	NC	NC	<1.0	<1.0	<1.0	<1.0
Cyclohexane	108941	33,000	94,000	NA	1,500	3,300	NC	NC	NC	NC	NC	NC	NC	**13**	<5.0	*NT*	*NT*
Trichloroethene	79016	5.0	5.0	200 {X}	2,200	4,900	0.073 (M)	0.21 (M)	6.1	18	21	41	380	<1.0	<1.0	*NT*	*NT*
1,2-Dichloropropane	78875	5.0	5.0	230 {X}	16,000	36,000	NC	NC	NC	NC	NC	NC	NC	<1.0	<1.0	*NT*	*NT*
Dibromomethane	74953	80	230	NA	ID	ID	NC	NC	NC	NC	NC	NC	NC	<5.0	<5.0	*NT*	*NT*
Bromodichloromethane	75274	80	80	ID	4,800	37,000	NC	NC	NC	NC	NC	NC	NC	<1.0	<1.0	*NT*	*NT*
1,3-Dichloropropene	542756	8.5	35	9.0 {X}	3,900	26,000	NC	NC	NC	NC	NC	NC	NC	<1.0	<1.0	*NT*	*NT*
4-Methyl-2-pentanone (MIBK)	108101	1,800	5,200	ID	20,000,000	20,000,000	NC	NC	NC	NC	NC	NC	NC	<50	<50	*NT*	*NT*
Toluene	108883	790 {E} 1,000	790 {E} 1,000	270	530,000	530,000	300	850	23,000	33,000	110,000	110,000	350,000	**2.6**	<1.0	<1.0	<1.0
1,1,2-Trichloroethane	79005	5.0	5.0	330 {X}	17,000	110,000	NC	NC	NC	NC	NC	NC	NC	<1.0	<1.0	*NT*	*NT*
Tetrachloroethene	127184	5.0	5.0	60 {X}	25,000	170,000	1.5	4.4	96	96	320	640	1,900	<1.0	<1.0	*NT*	*NT*
2-Hexanone	591786	1,000	2,900	ID	4,200,000	8,700,000	NC	NC	NC	NC	NC	NC	NC	<50	<50	*NT*	*NT*
Dibromochloromethane	124481	80	80	ID	14,000	110,000	NC	NC	NC	NC	NC	NC	NC	<5.0	<5.0	*NT*	*NT*
1,2-Dibromoethane	106934	0.05	0.05	5.7 {X}	2,400	15,000	NC	NC	NC	NC	NC	NC	NC	<1.0	<1.0	<1.0	<1.0
Chlorobenzene	108907	100	100	25	210,000	470,000	33	54	540	1,600	2,700	5,400	50,000	<1.0	<1.0	*NT*	*NT*
1,1,1,2-Tetrachloroethane	630206	77	320	ID	15,000	96,000	NC	NC	NC	NC	NC	NC	NC	<1.0	<1.0	*NT*	*NT*
Ethyl benzene	100414	74 {E} 700	74 {E} 700	18	110,000	170,000	2.8	8.5	45	450	360	710	22,000	**92**	<1.0	<1.0	<1.0
Xylenes	1330207	280 {E} 10,000	280 {E} 10,000	41	190,000	190,000	75	140	1,200	3,600	6,000	12,000	110,000 (S)	**75**	<3.0	<3.0	<3.0
Styrene	100425	100	100	80 {X}	170,000	310,000	NC	NC	NC	NC	NC	NC	NC	<1.0	<1.0	*NT*	*NT*
Bromoform	75252	80	80	ID	470,000	3,100,000	NC	NC	NC	NC	NC	NC	NC	<1.0	<1.0	*NT*	*NT*
Isopropylbenzene	98828	800	2,300	28	56,000	56,000	NC	NC	NC	NC	NC	NC	NC	<5.0	<5.0	*NT*	*NT*
1,1,2,2-Tetrachloroethane	79345	8.5	35	78 {X}	12,000	77,000	NC	NC	NC	NC	NC	NC	NC	<1.0	<1.0	*NT*	*NT*
1,2,3-Trichloropropane	96184	42	120	NA	8,300	18,000	NC	NC	NC	NC	NC	NC	NC	<1.0	<1.0	*NT*	*NT*
trans-1,4-Dichloro-2-butene	110576	NC	NC	NC	NC	NC	NC	NC	NC	NC	NC	NC	NC	<1.0	<1.0	*NT*	*NT*
Bromobenzene	108861	18	50	NA	180,000	390,000	NC	NC	NC	NC	NC	NC	NC	<1.0	<1.0	*NT*	*NT*
n-Propylbenzene	103651	80	230	ID	ID	ID	NC	NC	NC	NC	NC	NC	NC	<1.0	<1.0	*NT*	*NT*
1,3,5-Trimethylbenzene	108678	72 {E} 1,000	72 {E} 2,900	45	61,000	61,000	18	34	310	940	1,500	3,100	28,000	**3.5**	<1.0	<1.0	<1.0
tert-Butylbenzene	98066	80	230	ID	ID	ID	NC	NC	NC	NC	NC	NC	NC	<1.0	<1.0	*NT*	*NT*
1,2,4-Trimethylbenzene	95636	63 {E} 1,000	63 {E} 2,900	17	56,000	56,000	25	44	440	1,300	2,200	4,400	40,000	**48**	<1.0	<1.0	<1.0
sec-Butylbenzene	135988	80	230	ID	ID	ID	NC	NC	NC	NC	NC	NC	NC	<1.0	<1.0	*NT*	*NT*
p-Isopropyltoluene	99876	NC	NC	NC	NC	NC	NC	NC	NC	NC	NC	NC	NC	<5.0	<5.0	*NT*	*NT*
1,3-Dichlorobenzene	541731	6.6	19	28	18,000	41,000	2.6	4.2	52	150	250	510	4,600	<1.0	<1.0	*NT*	*NT*
1,4-Dichlorobenzene	106467	75	75	17	16,000	74,000	5.9	15	120	1,200	930	1,900	57,000	<1.0	<1.0	*NT*	*NT*
n-Butylbenzene	104518	80	230	ID	ID	ID	NC	NC	NC	NC	NC	NC	NC	<1.0	<1.0	*NT*	*NT*
1,2,3-Trimethylbenzene	526738	NC	NC	NC	NC	NC	43	71	800	2,400	3,900	7,900	72,000	**19**	<1.0	*NT*	*NT*
1,2-Dichlorobenzene	95501	600	600	13	160,000	160,000	NC	NC	NC	NC	NC	NC	NC	<1.0	<1.0	*NT*	*NT*
1,2-Dibromo-3-chloropropane	96128	0.2	0.2	ID	220	1,200	NC	NC	NC	NC	NC	NC	NC	<1.0	<1.0	*NT*	*NT*
Hexachloroethane	67721	7.3	21	6.7 {X}	27,000	50,000	NC	NC	NC	NC	NC	NC	NC	<5.0	<5.0	*NT*	*NT*
1,2,4-Trichlorobenzene	120821	70	70	99 {X}	300,000	300,000	3.8 (M)	5.8	95	290	460	920	8,100	<5.0	<5.0	*NT*	*NT*
Naphthalene	91203	520	1,500	11	31,000	31,000	NC	NC	NC	NC	NC	NC	NC	**6.2**	<5.0	<5.0	<5.0
1,2,3-Trichlorobenzene	87616	NC	NC	NC	NC	NC	NC	NC	NC	NC	NC	NC	NC	<5.0	<5.0	*NT*	*NT*
2-Methylnaphthalene	91576	260	750	19	25,000	25,000	NC	NC	NC	NC	NC	NC	NC	<5.0	<5.0	<5.0	<5.0
Polynuclear Aromatic Hydrocarbons (PNAs)																	
PNA Extract Date														05/09/18	05/08/18		
PNA Analysis Date														05/10/18	05/08/18		
PNA Analysis Method														8270C	8270C		
Naphthalene	91203	520	1,500	11	31,000	31,000	NC	NC	NC	NC	NC	NC	NC	<5.0	<5.0	*NT*	*NT*
2-Methylnaphthalene	91576	260	750	19	25,000	25,000	NC	NC	NC	NC	NC	NC	NC	<5.0	<5.0	*NT*	*NT*
Acenaphthylene	208968	52	150	ID	3,900	3,900	NC	NC	NC	NC	NC	NC	NC	<5.0	<5.0	*NT*	*NT*
Acenaphthene	83329	1,300	3,800	38	4,200	4,200	NC	NC	NC	NC	NC	NC	NC	<5.0	<5.0	*NT*	*NT*
Fluorene	86737	880	2,000	12	2,000	2,000	NC	NC	NC	NC	NC	NC	NC	<5.0	<5.0	*NT*	*NT*
Phenanthrene	85018	52	150	2.0	1,000	1,000	NC	NC	NC	NC	NC	NC	NC	<2.0	<2.0	*NT*	*NT*
Anthracene	120127	43	43	ID	43	43	NC	NC	NC	NC	NC	NC	NC	<5.0	<5.0	*NT*	*NT*
Fluoranthene	206440	210	210	1.6	210	210	NC	NC	NC	NC	NC	NC	NC	<1.0	<1.0	*NT*	*NT*
Pyrene	129000	140	140	ID	140	140	NC	NC	NC	NC	NC	NC	NC	<5.0	<5.0	*NT*	*NT*
Benzo[a]anthracene	56553	2.1	8.5	ID	NLV	NLV	NC	NC	NC	NC	NC	NC	NC	<1.0	<1.0	*NT*	*NT*
Chrysene	218019	1.6	1.6	ID	ID	ID	NC	NC	NC	NC	NC	NC	NC	<1.0	<1.0	*NT*	*NT*
Benzo[b]fluoranthene	205992	1.5	1.5	ID	ID	ID	NC	NC	NC	NC	NC	NC	NC	<1.0	<1.0	*NT*	*NT*
Benzo[k]fluoranthene	207089	1.0	1.0	NA	NLV	NLV	NC	NC	NC	NC	NC	NC	NC	<1.0	<1.0	*NT*	*NT*
Benzo[a]pyrene	50328	5.0	5.0	ID	NLV	NLV	NC	NC	NC	NC	NC	NC	NC	<1.0	<1.0	*NT*	*NT*
Indeno[1,2,3-cd]pyrene	193395	2.0	2.0	ID	NLV	NLV	NC	NC	NC	NC	NC	NC	NC	<2.0	<2.0	*NT*	*NT*
Dibenzo[a,h]anthracene	53703	2.0	2.0	ID	NLV	NLV	NC	NC	NC	NC	NC	NC	NC	<2.0	<2.0	*NT*	*NT*
Benzo[g,h,i]perylene	191242	1.0	1.0	ID	NLV	NLV	NC	NC	NC	NC	NC	NC	NC	<1.0	<1.0	*NT*	*NT*

Notes:

- Results are reported in micrograms per liter (µg/L); equivalent to parts per billion (ppb).
- MDEQ Criteria are from Table 1, R299.44 Generic Groundwater Cleanup Criteria found on RRD website Rule 299.1 to 299.50 Environmental Contamination Response Activity Rules, effective December 30, 2013.
- ID - Inadequate Data to develop criterion. - NLV - Not Likely to Volatilize.
- NA - Not Available.
- {X} - Criteria not established based on surface water use for drinking water.
- {E} - Criterion is the aesthetic drinking water value. Second value is Health-Based Drinking Water value.
- Bolded values indicate detection of constituent, shaded values indicate an exceedance of at least one criteria.

- *NT* - Not Tested. - NC - MDEQ has published no criteria for this constituent.

- MDEQ Media-Specific Volatilization to Indoor Air Interim Action Screening Levels, August 2017.
- RIASL: Recommended Interim Action Screening Levels. Nonresidential RIASL is based on a former residential structure that is now nonresidential use that has an unoccupied basement.
- $RIASL_{12}$: Nonresidential RIASL appropriate for exposures less than 12 hours.
- TSRIASL: Time-Sensitive Recommended Interim Action Screening Levels.
- $TSRIASL_{12}$: Time-Sensitive RIASL appropriate for exposures less than 12 hours for structures that were not formerly residential houses. It may be appropriate to take expedited response actions at former residential structures when concentrations are less than those identified.
- (M): Site-specific criterion may be below target detection limits (TDL).
- Bolded box indicate an exceedance of of at least one RIASL.

Table 2 ~ Groundwater Analytical Results
Five Parcels of land located along Robbins Road in Grand Haven Township, Ottawa County, Michigan

Constituent	Chemical Abstract Service Number (CAS #)	Part 201 Generic Cleanup Criteria					Media-Specific Volatilization to Indoor Air Interim Action Screening Levels							TMW-5	TMW-7	TMW-8	TMW-9
		Residential Drinking Water	Nonresidential Drinking Water	Groundwater Surface Water Interface	Residential Groundwater Volatilization to Indoor Air Inhalation	Nonresidential Groundwater Volatilization to Indoor Air Inhalation	Shallow Groundwater Residential RIASL	Shallow Groundwater Nonresidential RIASL	Groundwater Residential RIASL	Groundwater Residential TSRIASL	Groundwater Nonresidential RIASL	Groundwater Nonresidential $RIASL_{12}$	Groundwater Nonresidential $TSRIASL_{12}$	05/31/18	05/31/18	05/31/18	05/31/18
Volatile Organic Compounds (VOCs)																	
VOC Analysis Date														05/31/18	05/31/18	05/31/18	05/31/18
VOC Analysis Method														8260C	8260C	8260C	8260C
Dichlorodifluoromethane	75718	1,700	4,800	ID	220,000	300,000	NC	NC	NC	NC	NC	NC	NC	*NT*	*NT*	*NT*	*NT*
Chloromethane	74873	260	1,100	ID	8,600	45,000	15	30	160	470	810	1,600	8,000	*NT*	*NT*	*NT*	*NT*
Vinyl Chloride	75014	2.0	2.0	13 {X}	1,100	13,000	0.12 (M)	1.8	0.96 (M)	9.6	28	56	1,800	*NT*	*NT*	*NT*	*NT*
Bromomethane	74839	10	29	35	4,000	9,000	NC	NC	NC	NC	NC	NC	NC	*NT*	*NT*	*NT*	*NT*
Chloroethane	75003	430	1,700	1,100 {X}	5,700,000	5,700,000	620	1,300	6,700	20,000	35,000	69,000	670,000	*NT*	*NT*	*NT*	*NT*
Trichlorofluoromethane	75694	2,600	7,300	NA	1,100,000	1,100,000	NC	NC	NC	NC	NC	NC	NC	*NT*	*NT*	*NT*	*NT*
Diethyl ether	60297	10 {E} 3,700	10 {E} 10,000	ID	61,000,000	61,000,000	NC	NC	NC	NC	NC	NC	NC	*NT*	*NT*	*NT*	*NT*
Tert-butyl alcohol	75650	3,900	11,000	NA	1,000,000,000	1,000,000,000	NC	NC	NC	NC	NC	NC	NC	*NT*	*NT*	*NT*	*NT*
1,1-Dichloroethene	75354	7.0	7.0	130	200	1,300	18	45	170	510	860	1,700	16,000	*NT*	*NT*	*NT*	*NT*
Acetone	67641	730	2,100	1,700	1,000,000,000	1,000,000,000	50,000	62,000	12,000,000	12,000,000	47,000,000	47,000,000	160,000,000	*NT*	*NT*	*NT*	*NT*
Iodomethane	74884	NC	NC	NC	NC	NC	NC	NC	NC	NC	NC	NC	NC	*NT*	*NT*	*NT*	*NT*
Carbon disulfide	75150	800	2,300	ID	250,000	550,000	NC	NC	NC	NC	NC	NC	NC	*NT*	*NT*	*NT*	*NT*
Methyl t-butyl ether (MTBE)	1634044	40 {E} 240	40 {E} 690	7,100 {X}	47,000,000	47,000,000	250	610	4,000	40,000	32,000	65,000	2,000,000	<5.0	<5.0	<5.0	<5.0
Methylene chloride	75092	5.0	5.0	1,500 {X}	220,000	1,400,000	79	490	3,900	6,200	20,000	40,000	200,000	*NT*	*NT*	*NT*	*NT*
Acrylonitrile	107131	2.6	11	2.0	34,000	190,000	NC	NC	NC	NC	NC	NC	NC	*NT*	*NT*	*NT*	*NT*
trans-1,2-Dichloroethene	156605	100	100	1,500 {X}	85,000	200,000	27	78	650	1,900	6,500	6,500	21,000	*NT*	*NT*	*NT*	*NT*
1,1-Dichloroethane	75343	880	2,500	740	1,000,000	2,300,000	4.7	14	67	670	540	1,100	34,000	*NT*	*NT*	*NT*	*NT*
Diisopropyl Ether	108203	30	86	ID	8,000	8,000	NC	NC	NC	NC	NC	NC	NC	*NT*	*NT*	*NT*	*NT*
2-Butanone (MEK)	78933	13,000	38,000	2,200	240,000,000	240,000,000	NC	NC	NC	NC	NC	NC	NC	*NT*	*NT*	*NT*	*NT*
cis-1,2-Dichloroethene	156592	70	70	620	93,000	210,000	3.4	5.8	48	140	240	490	4,600	*NT*	*NT*	*NT*	*NT*
t-Butyl Ethyl Ether (ETBE)	637923	49 {E}	49 {E}	ID	2,900,000	5,600,000	NC	NC	NC	NC	NC	NC	NC	*NT*	*NT*	*NT*	*NT*
Bromochloromethane	74975	NC	NC	NC	NC	NC	NC	NC	NC	NC	NC	NC	NC	*NT*	*NT*	*NT*	*NT*
Tetrahydrofuran	109999	95	270	11,000 {X}	6,900,000	16,000,000	NC	NC	NC	NC	NC	NC	NC	*NT*	*NT*	*NT*	*NT*
Chloroform	67663	80	80	350	28,000	180,000	0.49 (M)	1.3	7.6	76	61	120	3,800	*NT*	*NT*	*NT*	*NT*
1,1,1-Trichloroethane	71556	200	200	89	660,000	1,300,000	180	750	8,600	8,600	41,000	41,000	120,000	*NT*	*NT*	*NT*	*NT*
Carbon tetrachloride	56235	5.0	5.0	45 {X}	370	2,400	NC	NC	NC	NC	NC	NC	NC	*NT*	*NT*	*NT*	*NT*
Benzene	71432	5.0	5.0	200 {X}	5,600	35,000	1.0	3.0	14	82	120	230	2,600	<1.0	<1.0	<1.0	<1.0
t-Amyl Methyl Ether	994058	190 {E} 910	190 {E} 2,600	NA	260,000	570,000	NC	NC	NC	NC	NC	NC	NC	*NT*	*NT*	*NT*	*NT*
1,2-Dichloroethane	107062	5.0	5.0	360 {X}	9,600	59,000	NC	NC	NC	NC	NC	NC	NC	<1.0	<1.0	<1.0	<1.0
Cyclohexane	108941	33,000	94,000	NA	1,500	3,300	NC	NC	NC	NC	NC	NC	NC	*NT*	*NT*	*NT*	*NT*
Trichloroethene	79016	5.0	5.0	200 {X}	2,200	4,900	0.073 (M)	0.21 (M)	6.1	18	21	41	380	*NT*	*NT*	*NT*	*NT*
1,2-Dichloropropane	78875	5.0	5.0	230 {X}	16,000	36,000	NC	NC	NC	NC	NC	NC	NC	*NT*	*NT*	*NT*	*NT*
Dibromomethane	74953	80	230	NA	ID	ID	NC	NC	NC	NC	NC	NC	NC	*NT*	*NT*	*NT*	*NT*
Bromodichloromethane	75274	80	80	ID	4,800	37,000	NC	NC	NC	NC	NC	NC	NC	*NT*	*NT*	*NT*	*NT*
1,3-Dichloropropene	542756	8.5	35	9.0 {X}	3,900	26,000	NC	NC	NC	NC	NC	NC	NC	*NT*	*NT*	*NT*	*NT*
4-Methyl-2-pentanone (MIBK)	108101	1,800	5,200	ID	20,000,000	20,000,000	NC	NC	NC	NC	NC	NC	NC	*NT*	*NT*	*NT*	*NT*
Toluene	108883	790 {E} 1,000	790 {E} 1,000	270	530,000	530,000	300	850	23,000	33,000	110,000	110,000	350,000	<1.0	<1.0	<1.0	<1.0
1,1,2-Trichloroethane	79005	5.0	5.0	330 {X}	17,000	110,000	NC	NC	NC	NC	NC	NC	NC	*NT*	*NT*	*NT*	*NT*
Tetrachloroethene	127184	5.0	5.0	60 {X}	25,000	170,000	1.5	4.4	96	96	320	640	1,900	*NT*	*NT*	*NT*	*NT*
2-Hexanone	591786	1,000	2,900	ID	4,200,000	8,700,000	NC	NC	NC	NC	NC	NC	NC	*NT*	*NT*	*NT*	*NT*
Dibromochloromethane	124481	80	80	ID	14,000	110,000	NC	NC	NC	NC	NC	NC	NC	*NT*	*NT*	*NT*	*NT*
1,2-Dibromoethane	106934	0.05	0.05	5.7 {X}	2,400	15,000	NC	NC	NC	NC	NC	NC	NC	<1.0	<1.0	<1.0	<1.0
Chlorobenzene	108907	100	100	25	210,000	470,000	33	54	540	1,600	2,700	5,400	50,000	*NT*	*NT*	*NT*	*NT*
1,1,1,2-Tetrachloroethane	630206	77	320	ID	15,000	96,000	NC	NC	NC	NC	NC	NC	NC	*NT*	*NT*	*NT*	*NT*
Ethyl benzene	100414	74 {E} 700	74 {E} 700	18	110,000	170,000	2.8	8.5	45	450	360	710	22,000	<1.0	<1.0	<1.0	<1.0
Xylenes	1330207	280 {E} 10,000	280 {E} 10,000	41	190,000	190,000	75	140	1,200	3,600	6,000	12,000	110,000 (S)	<3.0	<3.0	<3.0	<3.0
Styrene	100425	100	100	80 {X}	170,000	310,000	NC	NC	NC	NC	NC	NC	NC	*NT*	*NT*	*NT*	*NT*
Bromoform	75252	80	80	ID	470,000	3,100,000	NC	NC	NC	NC	NC	NC	NC	*NT*	*NT*	*NT*	*NT*
Isopropylbenzene	98828	800	2,300	28	56,000	56,000	NC	NC	NC	NC	NC	NC	NC	*NT*	*NT*	*NT*	*NT*
1,1,2,2-Tetrachloroethane	79345	8.5	35	78 {X}	12,000	77,000	NC	NC	NC	NC	NC	NC	NC	*NT*	*NT*	*NT*	*NT*
1,2,3-Trichloropropane	96184	42	120	NA	8,300	18,000	NC	NC	NC	NC	NC	NC	NC	*NT*	*NT*	*NT*	*NT*
trans-1,4-Dichloro-2-butene	110576	NC	NC	NC	NC	NC	NC	NC	NC	NC	NC	NC	NC	*NT*	*NT*	*NT*	*NT*
Bromobenzene	108861	18	50	NA	180,000	390,000	NC	NC	NC	NC	NC	NC	NC	*NT*	*NT*	*NT*	*NT*
n-Propylbenzene	103651	80	230	ID	ID	ID	NC	NC	NC	NC	NC	NC	NC	*NT*	*NT*	*NT*	*NT*
1,3,5-Trimethylbenzene	108678	72 {E} 1,000	72 {E} 2,900	45	61,000	61,000	18	34	310	940	1,500	3,100	28,000	<1.0	<1.0	<1.0	<1.0
tert-Butylbenzene	98066	80	230	ID	ID	ID	NC	NC	NC	NC	NC	NC	NC	*NT*	*NT*	*NT*	*NT*
1,2,4-Trimethylbenzene	95636	63 {E} 1,000	63 {E} 2,900	17	56,000	56,000	25	44	440	1,300	2,200	4,400	40,000	<1.0	<1.0	<1.0	<1.0
sec-Butylbenzene	135988	80	230	ID	ID	ID	NC	NC	NC	NC	NC	NC	NC	*NT*	*NT*	*NT*	*NT*
p-Isopropyltoluene	99876	NC	NC	NC	NC	NC	NC	NC	NC	NC	NC	NC	NC	*NT*	*NT*	*NT*	*NT*
1,3-Dichlorobenzene	541731	6.6	19	28	18,000	41,000	2.6	4.2	52	150	250	510	4,600	*NT*	*NT*	*NT*	*NT*
1,4-Dichlorobenzene	106467	75	75	17	16,000	74,000	5.9	15	120	1,200	930	1,900	57,000	*NT*	*NT*	*NT*	*NT*
n-Butylbenzene	104518	80	230	ID	ID	ID	NC	NC	NC	NC	NC	NC	NC	*NT*	*NT*	*NT*	*NT*
1,2,3-Trimethylbenzene	526738	NC	NC	NC	NC	NC	43	71	800	2,400	3,900	7,900	72,000	*NT*	*NT*	*NT*	*NT*
1,2-Dichlorobenzene	95501	600	600	13	160,000	160,000	NC	NC	NC	NC	NC	NC	NC	*NT*	*NT*	*NT*	*NT*
1,2-Dibromo-3-chloropropane	96128	0.2	0.2	ID	220	1,200	NC	NC	NC	NC	NC	NC	NC	*NT*	*NT*	*NT*	*NT*
Hexachloroethane	67721	7.3	21	6.7 {X}	27,000	50,000	NC	NC	NC	NC	NC	NC	NC	*NT*	*NT*	*NT*	*NT*
1,2,4-Trichlorobenzene	120821	70	70	99 {X}	300,000	300,000	3.8 (M)	5.8	95	290	460	920	8,100	*NT*	*NT*	*NT*	*NT*
Naphthalene	91203	520	1,500	11	31,000	31,000	NC	NC	NC	NC	NC	NC	NC	<5.0	<5.0	<5.0	<5.0
1,2,3-Trichlorobenzene	87616	NC	NC	NC	NC	NC	NC	NC	NC	NC	NC	NC	NC	*NT*	*NT*	*NT*	*NT*
2-Methylnaphthalene	91576	260	750	19	25,000	25,000	NC	NC	NC	NC	NC	NC	NC	<5.0	<5.0	<5.0	<5.0
Polynuclear Aromatic Hydrocarbons (PNAs)																	
PNA Extract Date																	
PNA Analysis Date																	
PNA Analysis Method																	
Naphthalene	91203	520	1,500	11	31,000	31,000	NC	NC	NC	NC	NC	NC	NC	*NT*	*NT*	*NT*	*NT*
2-Methylnaphthalene	91576	260	750	19	25,000	25,000	NC	NC	NC	NC	NC	NC	NC	*NT*	*NT*	*NT*	*NT*
Acenaphthylene	208968	52	150	ID	3,900	3,900	NC	NC	NC	NC	NC	NC	NC	*NT*	*NT*	*NT*	*NT*
Acenaphthene	83329	1,300	3,800	38	4,200	4,200	NC	NC	NC	NC	NC	NC	NC	*NT*	*NT*	*NT*	*NT*
Fluorene	86737	880	2,000	12	2,000	2,000	NC	NC	NC	NC	NC	NC	NC	*NT*	*NT*	*NT*	*NT*
Phenanthrene	85018	52	150	2.0	1,000	1,000	NC	NC	NC	NC	NC	NC	NC	*NT*	*NT*	*NT*	*NT*
Anthracene	120127	43	43	ID	43	43	NC	NC	NC	NC	NC	NC	NC	*NT*	*NT*	*NT*	*NT*
Fluoranthene	206440	210	210	1.6	210	210	NC	NC	NC	NC	NC	NC	NC	*NT*	*NT*	*NT*	*NT*
Pyrene	129000	140	140	ID	140	140	NC	NC	NC	NC	NC	NC	NC	*NT*	*NT*	*NT*	*NT*
Benzo[a]anthracene	56553	2.1	8.5	ID	NLV	NLV	NC	NC	NC	NC	NC	NC	NC	*NT*	*NT*	*NT*	*NT*
Chrysene	218019	1.6	1.6	ID	ID	ID	NC	NC	NC	NC	NC	NC	NC	*NT*	*NT*	*NT*	*NT*
Benzo[b]fluoranthene	205992	1.5	1.5	ID	ID	ID	NC	NC	NC	NC	NC	NC	NC	*NT*	*NT*	*NT*	*NT*
Benzo[k]fluoranthene	207089	1.0	1.0	NA	NLV	NLV	NC	NC	NC	NC	NC	NC	NC	*NT*	*NT*	*NT*	*NT*
Benzo[a]pyrene	50328	5.0	5.0	ID	NLV	NLV	NC	NC	NC	NC	NC	NC	NC	*NT*	*NT*	*NT*	*NT*
Indeno[1,2,3-cd]pyrene	193395	2.0	2.0	ID	NLV	NLV	NC	NC	NC	NC	NC	NC	NC	*NT*	*NT*	*NT*	*NT*
Dibenzo[a,h]anthracene	53703	2.0	2.0	ID	NLV	NLV	NC	NC	NC	NC	NC	NC	NC	*NT*	*NT*	*NT*	*NT*
Benzo[g,h,i]perylene	191242	1.0	1.0	ID	NLV	NLV	NC	NC	NC	NC	NC	NC	NC	*NT*	*NT*	*NT*	*NT*

Notes:

- Results are reported in micrograms per liter (µg/L); equivalent to parts per billion (ppb).
- MDEQ Criteria are from Table 1, R299.44 Generic Groundwater Cleanup Criteria found on RRD website Rule 299.1 to 299.50 Environmental Contamination Response Activity Rules, effective December 30, 2013.
- ID - Inadequate Data to develop criterion. - NLV - Not Likely to Volatilize.
- NA - Not Available.
- {X} - Criteria not established based on surface water use for drinking water.
- {E} - Criterion is the aesthetic drinking water value. Second value is Health-Based Drinking Water value.
- Bolded values indicate detection of constituent, shaded values indicate an exceedance of at least one criteria.

- *NT* - Not Tested. - NC - MDEQ has published no criteria for this constituent.

- MDEQ Media-Specific Volatilization to Indoor Air Interim Action Screening Levels, August 2017.
- RIASL: Recommended Interim Action Screening Levels. Nonresidential RIASL is based on a former residential structure that is now nonresidential use that has an unoccupied basement.
- $RIASL_{12}$: Nonresidential RIASL appropriate for exposures less than 12 hours.
- TSRIASL: Time-Sensitive Recommended Interim Action Screening Levels.
- $TSRIASL_{12}$: Time-Sensitive RIASL appropriate for exposures less than 12 hours for structures that were not formerly residential houses. It may be appropriate to take expedited response actions at former residential structures when concentrations are less than those identified.
- (M): Site-specific criterion may be below target detection limits (TDL).
- Bolded box indicate an exceedance of of at least one RIASL.

Table 2 ~ Groundwater Analytical Results
Five Parcels of land located along Robbins Road in Grand Haven Township, Ottawa County, Michigan

Constituent	Chemical Abstract Service Number (CAS #)	Part 201 Generic Cleanup Criteria					Media-Specific Volatilization to Indoor Air Interim Action Screening Levels							TMW-10	TMW-11	TMW-12	TMW-13
		Residential Drinking Water	Nonresidential Drinking Water	Groundwater Surface Water Interface	Residential Groundwater Volatilization to Indoor Air Inhalation	Nonresidential Groundwater Volatilization to Indoor Air Inhalation	Shallow Groundwater Residential RIASL	Shallow Groundwater Nonresidential RIASL	Groundwater Residential RIASL	Groundwater Residential TSRIASL	Groundwater Nonresidential RIASL	Groundwater Nonresidential $RIASL_{12}$	Groundwater Nonresidential $TSRIASL_{12}$	05/31/18	05/31/18	05/31/18	05/31/18
Volatile Organic Compounds (VOCs)																	
VOC Analysis Date														05/31/18	05/31/18	05/31/18	05/31/18
VOC Analysis Method														8260C	8260C	8260C	8260C
Dichlorodifluoromethane	75718	1,700	4,800	ID	220,000	300,000	NC	NC	NC	NC	NC	NC	NC	*NT*	*NT*	*NT*	*NT*
Chloromethane	74873	260	1,100	ID	8,600	45,000	15	30	160	470	810	1,600	8,000	*NT*	*NT*	*NT*	*NT*
Vinyl Chloride	75014	2.0	2.0	13 {X}	1,100	13,000	0.12 (M)	1.8	0.96 (M)	9.6	28	56	1,800	*NT*	*NT*	*NT*	*NT*
Bromomethane	74839	10	29	35	4,000	9,000	NC	NC	NC	NC	NC	NC	NC	*NT*	*NT*	*NT*	*NT*
Chloroethane	75003	430	1,700	1,100 {X}	5,700,000	5,700,000	620	1,300	6,700	20,000	35,000	69,000	670,000	*NT*	*NT*	*NT*	*NT*
Trichlorofluoromethane	75694	2,600	7,300	NA	1,100,000	1,100,000	NC	NC	NC	NC	NC	NC	NC	*NT*	*NT*	*NT*	*NT*
Diethyl ether	60297	10 {E} 3,700	10 {E} 10,000	ID	61,000,000	61,000,000	NC	NC	NC	NC	NC	NC	NC	*NT*	*NT*	*NT*	*NT*
Tert-butyl alcohol	75650	3,900	11,000	NA	1,000,000,000	1,000,000,000	NC	NC	NC	NC	NC	NC	NC	*NT*	*NT*	*NT*	*NT*
1,1-Dichloroethene	75354	7.0	7.0	130	200	1,300	18	45	170	510	860	1,700	16,000	*NT*	*NT*	*NT*	*NT*
Acetone	67641	730	2,100	1,700	1,000,000,000	1,000,000,000	50,000	62,000	12,000,000	12,000,000	47,000,000	47,000,000	160,000,000	*NT*	*NT*	*NT*	*NT*
Iodomethane	74884	NC	NC	NC	NC	NC	NC	NC	NC	NC	NC	NC	NC	*NT*	*NT*	*NT*	*NT*
Carbon disulfide	75150	800	2,300	ID	250,000	550,000	NC	NC	NC	NC	NC	NC	NC	*NT*	*NT*	*NT*	*NT*
Methyl t-butyl ether (MTBE)	1634044	40 {E} 240	40 {E} 690	7,100 {X}	47,000,000	47,000,000	250	610	4,000	40,000	32,000	65,000	2,000,000	<5.0	<5.0	<5.0	<5.0
Methylene chloride	75092	5.0	5.0	1,500 {X}	220,000	1,400,000	79	490	3,900	6,200	20,000	40,000	200,000	*NT*	*NT*	*NT*	*NT*
Acrylonitrile	107131	2.6	11	2.0	34,000	190,000	NC	NC	NC	NC	NC	NC	NC	*NT*	*NT*	*NT*	*NT*
trans-1,2-Dichloroethene	156605	100	100	1,500 {X}	85,000	200,000	27	78	650	1,900	6,500	6,500	21,000	*NT*	*NT*	*NT*	*NT*
1,1-Dichloroethane	75343	880	2,500	740	1,000,000	2,300,000	4.7	14	67	670	540	1,100	34,000	*NT*	*NT*	*NT*	*NT*
Diisopropyl Ether	108203	30	86	ID	8,000	8,000	NC	NC	NC	NC	NC	NC	NC	*NT*	*NT*	*NT*	*NT*
2-Butanone (MEK)	78933	13,000	38,000	2,200	240,000,000	240,000,000	NC	NC	NC	NC	NC	NC	NC	*NT*	*NT*	*NT*	*NT*
cis-1,2-Dichloroethene	156592	70	70	620	93,000	210,000	3.4	5.8	48	140	240	490	4,600	*NT*	*NT*	*NT*	*NT*
t-Butyl Ethyl Ether (ETBE)	637923	49 {E}	49 {E}	ID	2,900,000	5,600,000	NC	NC	NC	NC	NC	NC	NC	*NT*	*NT*	*NT*	*NT*
Bromochloromethane	74975	NC	NC	NC	NC	NC	NC	NC	NC	NC	NC	NC	NC	*NT*	*NT*	*NT*	*NT*
Tetrahydrofuran	109999	95	270	11,000 {X}	6,900,000	16,000,000	NC	NC	NC	NC	NC	NC	NC	*NT*	*NT*	*NT*	*NT*
Chloroform	67663	80	80	350	28,000	180,000	0.49 (M)	1.3	7.6	76	61	120	3,800	*NT*	*NT*	*NT*	*NT*
1,1,1-Trichloroethane	71556	200	200	89	660,000	1,300,000	180	750	8,600	8,600	41,000	41,000	120,000	*NT*	*NT*	*NT*	*NT*
Carbon tetrachloride	56235	5.0	5.0	45 {X}	370	2,400	NC	NC	NC	NC	NC	NC	NC	*NT*	*NT*	*NT*	*NT*
Benzene	71432	5.0	5.0	200 {X}	5,600	35,000	1.0	3.0	14	82	120	230	2,600	<1.0	<1.0	<1.0	<1.0
t-Amyl Methyl Ether	994058	190 {E} 910	190 {E} 2,600	NA	260,000	570,000	NC	NC	NC	NC	NC	NC	NC	*NT*	*NT*	*NT*	*NT*
1,2-Dichloroethane	107062	5.0	5.0	360 {X}	9,600	59,000	NC	NC	NC	NC	NC	NC	NC	<1.0	<1.0	<1.0	<1.0
Cyclohexane	108941	33,000	94,000	NA	1,500	3,300	NC	NC	NC	NC	NC	NC	NC	*NT*	*NT*	*NT*	*NT*
Trichloroethene	79016	5.0	5.0	200 {X}	2,200	4,900	0.073 (M)	0.21 (M)	6.1	18	21	41	380	*NT*	*NT*	*NT*	*NT*
1,2-Dichloropropane	78875	5.0	5.0	230 {X}	16,000	36,000	NC	NC	NC	NC	NC	NC	NC	*NT*	*NT*	*NT*	*NT*
Dibromomethane	74953	80	230	NA	ID	ID	NC	NC	NC	NC	NC	NC	NC	*NT*	*NT*	*NT*	*NT*
Bromodichloromethane	75274	80	80	ID	4,800	37,000	NC	NC	NC	NC	NC	NC	NC	*NT*	*NT*	*NT*	*NT*
1,3-Dichloropropene	542756	8.5	35	9.0 {X}	3,900	26,000	NC	NC	NC	NC	NC	NC	NC	*NT*	*NT*	*NT*	*NT*
4-Methyl-2-pentanone (MIBK)	108101	1,800	5,200	ID	20,000,000	20,000,000	NC	NC	NC	NC	NC	NC	NC	*NT*	*NT*	*NT*	*NT*
Toluene	108883	790 {E} 1,000	790 {E} 1,000	270	530,000	530,000	300	850	23,000	33,000	110,000	110,000	350,000	<1.0	<1.0	<1.0	<1.0
1,1,2-Trichloroethane	79005	5.0	5.0	330 {X}	17,000	110,000	NC	NC	NC	NC	NC	NC	NC	*NT*	*NT*	*NT*	*NT*
Tetrachloroethene	127184	5.0	5.0	60 {X}	25,000	170,000	1.5	4.4	96	96	320	640	1,900	*NT*	*NT*	*NT*	*NT*
2-Hexanone	591786	1,000	2,900	ID	4,200,000	8,700,000	NC	NC	NC	NC	NC	NC	NC	*NT*	*NT*	*NT*	*NT*
Dibromochloromethane	124481	80	80	ID	14,000	110,000	NC	NC	NC	NC	NC	NC	NC	*NT*	*NT*	*NT*	*NT*
1,2-Dibromoethane	106934	0.05	0.05	5.7 {X}	2,400	15,000	NC	NC	NC	NC	NC	NC	NC	<1.0	<1.0	<1.0	<1.0
Chlorobenzene	108907	100	100	25	210,000	470,000	33	54	540	1,600	2,700	5,400	50,000	*NT*	*NT*	*NT*	*NT*
1,1,1,2-Tetrachloroethane	630206	77	320	ID	15,000	96,000	NC	NC	NC	NC	NC	NC	NC	*NT*	*NT*	*NT*	*NT*
Ethyl benzene	100414	74 {E} 700	74 {E} 700	18	110,000	170,000	2.8	8.5	45	450	360	710	22,000	<1.0	<1.0	<1.0	<1.0
Xylenes	1330207	280 {E} 10,000	280 {E} 10,000	41	190,000	190,000	75	140	1,200	3,600	6,000	12,000	110,000 (S)	<3.0	<3.0	<3.0	<3.0
Styrene	100425	100	100	80 {X}	170,000	310,000	NC	NC	NC	NC	NC	NC	NC	*NT*	*NT*	*NT*	*NT*
Bromoform	75252	80	80	ID	470,000	3,100,000	NC	NC	NC	NC	NC	NC	NC	*NT*	*NT*	*NT*	*NT*
Isopropylbenzene	98828	800	2,300	28	56,000	56,000	NC	NC	NC	NC	NC	NC	NC	*NT*	*NT*	*NT*	*NT*
1,1,2,2-Tetrachloroethane	79345	8.5	35	78 {X}	12,000	77,000	NC	NC	NC	NC	NC	NC	NC	*NT*	*NT*	*NT*	*NT*
1,2,3-Trichloropropane	96184	42	120	NA	8,300	18,000	NC	NC	NC	NC	NC	NC	NC	*NT*	*NT*	*NT*	*NT*
trans-1,4-Dichloro-2-butene	110576	NC	NC	NC	NC	NC	NC	NC	NC	NC	NC	NC	NC	*NT*	*NT*	*NT*	*NT*
Bromobenzene	108861	18	50	NA	180,000	390,000	NC	NC	NC	NC	NC	NC	NC	*NT*	*NT*	*NT*	*NT*
n-Propylbenzene	103651	80	230	ID	ID	ID	NC	NC	NC	NC	NC	NC	NC	*NT*	*NT*	*NT*	*NT*
1,3,5-Trimethylbenzene	108678	72 {E} 1,000	72 {E} 2,900	45	61,000	61,000	18	34	310	940	1,500	3,100	28,000	<1.0	<1.0	<1.0	<1.0
tert-Butylbenzene	98066	80	230	ID	ID	ID	NC	NC	NC	NC	NC	NC	NC	*NT*	*NT*	*NT*	*NT*
1,2,4-Trimethylbenzene	95636	63 {E} 1,000	63 {E} 2,900	17	56,000	56,000	25	44	440	1,300	2,200	4,400	40,000	<1.0	<1.0	<1.0	<1.0
sec-Butylbenzene	135988	80	230	ID	ID	ID	NC	NC	NC	NC	NC	NC	NC	*NT*	*NT*	*NT*	*NT*
p-Isopropyltoluene	99876	NC	NC	NC	NC	NC	NC	NC	NC	NC	NC	NC	NC	*NT*	*NT*	*NT*	*NT*
1,3-Dichlorobenzene	541731	6.6	19	28	18,000	41,000	2.6	4.2	52	150	250	510	4,600	*NT*	*NT*	*NT*	*NT*
1,4-Dichlorobenzene	106467	75	75	17	16,000	74,000	5.9	15	120	1,200	930	1,900	57,000	*NT*	*NT*	*NT*	*NT*
n-Butylbenzene	104518	80	230	ID	ID	ID	NC	NC	NC	NC	NC	NC	NC	*NT*	*NT*	*NT*	*NT*
1,2,3-Trimethylbenzene	526738	NC	NC	NC	NC	NC	43	71	800	2,400	3,900	7,900	72,000	*NT*	*NT*	*NT*	*NT*
1,2-Dichlorobenzene	95501	600	600	13	160,000	160,000	NC	NC	NC	NC	NC	NC	NC	*NT*	*NT*	*NT*	*NT*
1,2-Dibromo-3-chloropropane	96128	0.2	0.2	ID	220	1,200	NC	NC	NC	NC	NC	NC	NC	*NT*	*NT*	*NT*	*NT*
Hexachloroethane	67721	7.3	21	6.7 {X}	27,000	50,000	NC	NC	NC	NC	NC	NC	NC	*NT*	*NT*	*NT*	*NT*
1,2,4-Trichlorobenzene	120821	70	70	99 {X}	300,000	300,000	3.8 (M)	5.8	95	290	460	920	8,100	*NT*	*NT*	*NT*	*NT*
Naphthalene	91203	520	1,500	11	31,000	31,000	NC	NC	NC	NC	NC	NC	NC	<5.0	<5.0	<5.0	<5.0
1,2,3-Trichlorobenzene	87616	NC	NC	NC	NC	NC	NC	NC	NC	NC	NC	NC	NC	*NT*	*NT*	*NT*	*NT*
2-Methylnaphthalene	91576	260	750	19	25,000	25,000	NC	NC	NC	NC	NC	NC	NC	<5.0	<5.0	<5.0	<5.0
Polynuclear Aromatic Hydrocarbons (PNAs)																	
PNA Extract Date																	
PNA Analysis Date																	
PNA Analysis Method																	
Naphthalene	91203	520	1,500	11	31,000	31,000	NC	NC	NC	NC	NC	NC	NC	*NT*	*NT*	*NT*	*NT*
2-Methylnaphthalene	91576	260	750	19	25,000	25,000	NC	NC	NC	NC	NC	NC	NC	*NT*	*NT*	*NT*	*NT*
Acenaphthylene	208968	52	150	ID	3,900	3,900	NC	NC	NC	NC	NC	NC	NC	*NT*	*NT*	*NT*	*NT*
Acenaphthene	83329	1,300	3,800	38	4,200	4,200	NC	NC	NC	NC	NC	NC	NC	*NT*	*NT*	*NT*	*NT*
Fluorene	86737	880	2,000	12	2,000	2,000	NC	NC	NC	NC	NC	NC	NC	*NT*	*NT*	*NT*	*NT*
Phenanthrene	85018	52	150	2.0	1,000	1,000	NC	NC	NC	NC	NC	NC	NC	*NT*	*NT*	*NT*	*NT*
Anthracene	120127	43	43	ID	43	43	NC	NC	NC	NC	NC	NC	NC	*NT*	*NT*	*NT*	*NT*
Fluoranthene	206440	210	210	1.6	210	210	NC	NC	NC	NC	NC	NC	NC	*NT*	*NT*	*NT*	*NT*
Pyrene	129000	140	140	ID	140	140	NC	NC	NC	NC	NC	NC	NC	*NT*	*NT*	*NT*	*NT*
Benzo[a]anthracene	56553	2.1	8.5	ID	NLV	NLV	NC	NC	NC	NC	NC	NC	NC	*NT*	*NT*	*NT*	*NT*
Chrysene	218019	1.6	1.6	ID	ID	ID	NC	NC	NC	NC	NC	NC	NC	*NT*	*NT*	*NT*	*NT*
Benzo[b]fluoranthene	205992	1.5	1.5	ID	ID	ID	NC	NC	NC	NC	NC	NC	NC	*NT*	*NT*	*NT*	*NT*
Benzo[k]fluoranthene	207089	1.0	1.0	NA	NLV	NLV	NC	NC	NC	NC	NC	NC	NC	*NT*	*NT*	*NT*	*NT*
Benzo[a]pyrene	50328	5.0	5.0	ID	NLV	NLV	NC	NC	NC	NC	NC	NC	NC	*NT*	*NT*	*NT*	*NT*
Indeno[1,2,3-cd]pyrene	193395	2.0	2.0	ID	NLV	NLV	NC	NC	NC	NC	NC	NC	NC	*NT*	*NT*	*NT*	*NT*
Dibenzo[a,h]anthracene	53703	2.0	2.0	ID	NLV	NLV	NC	NC	NC	NC	NC	NC	NC	*NT*	*NT*	*NT*	*NT*
Benzo[g,h,i]perylene	191242	1.0	1.0	ID	NLV	NLV	NC	NC	NC	NC	NC	NC	NC	*NT*	*NT*	*NT*	*NT*

Notes:

- Results are reported in micrograms per liter (µg/L); equivalent to parts per billion (ppb).
- MDEQ Criteria are from Table 1, R299.44 Generic Groundwater Cleanup Criteria found on RRD website Rule 299.1 to 299.50 Environmental Contamination Response Activity Rules, effective December 30, 2013.
- ID - Inadequate Data to develop criterion. - NLV - Not Likely to Volatilize.
- NA - Not Available.
- {X} - Criteria not established based on surface water use for drinking water.
- {E} - Criterion is the aesthetic drinking water value. Second value is Health-Based Drinking Water value.
- Bolded values indicate detection of constituent, shaded values indicate an exceedance of at least one criteria.

- *NT* - Not Tested. - NC - MDEQ has published no criteria for this constituent.

- MDEQ Media-Specific Volatilization to Indoor Air Interim Action Screening Levels, August 2017.
- RIASL: Recommended Interim Action Screening Levels. Nonresidential RIASL is based on a former residential structure that is now nonresidential use that has an unoccupied basement.
- $RIASL_{12}$: Nonresidential RIASL appropriate for exposures less than 12 hours.
- TSRIASL: Time-Sensitive Recommended Interim Action Screening Levels.
- $TSRIASL_{12}$: Time-Sensitive RIASL appropriate for exposures less than 12 hours for structures that were not formerly residential houses. It may be appropriate to take expedited response actions at former residential structures when concentrations are less than those identified.
- (M): Site-specific criterion may be below target detection limits (TDL).
- Bolded box indicate an exceedance of of at least one RIASL.

Appendix A

Photographs

View from Subject Property - looking West at Adjacent Properties | **1**

Wet Soil Area on West Margin of Subject Property | **2**

Southwest Adjacent Telecommunications Tower | **3**

Road Salt Barn on Subject Property | **4**

Aboveground Storage Tanks in Central Portion of Subject Property | **5**

Floor Staining in Shop/Maintenance Building | **6**

Site: Five Parcels along Robbins Road, Grand Haven Township, Ottawa County, Michigan

Client: Tysman Companies, LLC

File No.:	03513-0017
Photos By:	R. Bour
Date:	05/11/17

WESTSHORE CONSULTING
Engineers ▪ Scientists ▪ Surveyors

Muskegon, MI
(231) 777-3447

Grand Haven, MI
(800) 965-2864

Typical Floor Drain in Shop/Maintenance Building | **7**

Aboveground Storage Tanks in Shop/Maintenance Building | **8**

Soil/Aggregate Piles on Subject Property | **9**

South Adjacent Residential Apartments | **10**

Stockpile of Dyed Wood Chips on Subject Property | **11**

Southwest Adjacent Consumers Energy Electrical Substation | **12**

Site: Five Parcels along Robbins Road, Grand Haven Township, Ottawa County, Michigan

Client: Tysman Companies, LLC

File No.:	03513-0017
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Appendix B

Floor Drain and Holding Tank Assessment Report

WESTSHORE
ENGINEERING & SURVEYING
ENVIRONMENTAL

2534 Black Creek Road · Muskegon, MI 49444
Ph: (231) 777-3447 · Fx: (231) 773-3453

June 18, 2018 ***Sent Via Email Only***

Mr. Ben Robbins
Tysman Companies, LLC
c/o Main Street Capital Group
18000 Cove Street, Suite 201
Spring Lake, MI 49456

Re: Floor Drain & Holding Tank Assessment – 17114 Robbins Rd., Grand Haven, Michigan

Dear Mr. Robbins:

On June 2, 2018, Westshore completed an assessment of the floor drains and holding tank(s) in and around the maintenance building located at the 17114 Robbins Road, Grand Haven, Michigan (the "Subject Property"). Westshore returned to the site on June 12, and 14, 2018 to confirm and observe the conditions of both the floor drains and the identified holding tank on the south end of the maintenance building. The findings of the assessment are summarized below.

Scope of Work

Westshore identified the general area of the two holding tanks mentioned in the Ottawa County Health Department correspondence documented in the Phase I ESA completed for the Subject Property on June 5, 2017. One holding tank on the south end of the building was confirmed to be present in the correspondence; whereas, another holding tank was proposed to be installed east of the northeast corner of building. No record of the proposed tank ever having been installed was discovered during the Phase I ESA process.

Grand Haven Township Building/Permits Department was contacted to obtain copies of any building plans or diagrams of the Subject Property maintenance building that might show a floor drain diagram.

Attempts to locate the two holding tanks on June 2, 2018 were made using a ground probe and a metal detector (magnetometer). Once a holding tank(s) was located, flush tests were to be performed on the floor drains in the maintenance building to determine if the floor drains discharge to the holding tank(s) and/or to attempt to determine where else they may discharge.

Based on the findings of the assessment, correspondence with the Ottawa County Health Department was to occur to determine the measures necessary to properly close or decommission any holding tanks discovered.

In addition to identifying the absence and/or presence of the holding tanks, the flush testing of the floor drains, and determining the location of the discharge points, Westshore attempted to determine if the holding tank(s) and floor drains were in hydraulic communication with the groundwater adjacent and below the maintenance building. This was to be determined by observing the condition of the tank(s) and floor drain/catch basins after they were pumped out. That is, if the holding tanks and/or the floor drain/catch basins filled with water shortly after having pumped all of the liquids out of them, then it would confirm that these receptacles are in communication with the groundwater.

A storm water drain is located adjacent to the maintenance building that extends in a north-south direction on the Subject Property. This stormwater drain discharges to a main stormwater drain on the south side of Robbins Road that extends east and west. A flush test was also performed on the floor drains in the maintenance building to determine if the floor drains discharge to the storm water drain.

The floor drains, holding tank(s), and storm drain catch basins were probed to determine if they had solid bottoms or floors in them, or if they were open directly to the subsurface soil/groundwater.

Findings

One holding tank was discovered on the south side of the maintenance building. The tank is large, approximately 8 feet wide by 16 feet long by 4 feet deep. There is cleanout/access port on the eastern side of the tank. A float/alarm was observed from the cleanout; however, the float/alarm was not connected to power and was not operational. The tank was nearly full. No sheen was observed on the surface of the liquid. The holding tank smelled like sanitary sewage. Observation of the holding tank shortly after being completely pumped out by a licensed sanitary waste hauler on June 12, 2018, revealed that that tank had completely refilled with water. This indicates that the holding tank is in direct communication with the groundwater around and beneath it.

The second holding tank, included in the County Health Department correspondence as "proposed", on the northeast corner of the maintenance building, did not appear to have been installed. No indication of a second tank was recorded with the magnetometer, no clean-out port, or manhole covers were discovered, and probing did not indicate any presence of a tank or vault in the area depicted in the Health Department correspondence.

A flush test was performed on each of the floor drains in the maintenance building. All of the floor drain/catch basin inverts on the inflow and outfall pipes were oriented so that flow was to the north in the main portion of the building, and to the east in the addition portion of the building. The liquid flow direction was determined by adding water to each floor drain/catch basin and is shown on Figure 1. The floor drains are oriented north-south in the south portion of the building (i.e., the main portion of the building) and the water flows north. The floor drains in the northern portion of the maintenance building (the addition portion of the building) are oriented east-west and flow to the east out to the adjacent stormwater drain.

The flush tests confirmed that all of the floor drains in the maintenance building discharge into the storm water drain flowing north towards the main stormwater drain located on Robbins Road.

Solid concrete bottoms or floors were identified in all of the floor drains, the holding tank, and the storm water drain catch basins.

A flush test was not completed for the bathroom in the maintenance building because Health Department correspondence documented that the bathroom sewage was piped to the holding tank.

Initially, all of the floor drain/catch basins in the maintenance building were full of liquids up to the level of the drainage pipe and inflow pipe inverts, indicating that they are either water tight, or are in communication with the groundwater (i.e., groundwater is infiltrating into the basins). Observations of the floor drain/catch basins after being pumped/cleaned out indicated that no

liquids refilled the basins up to the inflow or outflow inverts. This indicates that these basins are water tight and are not in direct communication with the groundwater below them.

The Township Building/Permits Department did not have any files depicting floor drains in the maintenance building or their actual or proposed discharge points.

A copy of your email correspondence on June 14, 2018 with the Ottawa County Health Department indicating that the holding tank on the south side of the building was identified was pumped out, and it refilled with water subsequent to pumping, is attached. A copy of the June 15, 2018 response from Ms. Kimberly Wolters from the Health Department is also attached. Based on her response, the only remedial activity required at this point with regard to that holding tank, is to tape it off to prevent anyone from falling into it until it is crushed in place during construction or until it is totally removed from the ground and disposed of.

Conclusions/Recommendations

Further investigation of the floor drains is not warranted because:

- No record of the floor drains ever discharging to the subsurface has been discovered in the Township Building/Permits Department or Health Department files/records.
- Observations and testing completed in this assessment indicate that the floor drain/catch basins are water tight and not in communication with the groundwater.
- The discharge point of the floor drains was determined to be the storm water drain that discharges offsite.
- No evidence is visible in the maintenance building or floor drain/catch basins that indicate that they once discharged or flowed to the holding tank on the south side of the building.

No evidence of a second holding tank was discovered; however, the absence or presence of the proposed second holding tank can be confirmed during demolition. The absence or presence of any abandoned piping beneath the building or adjacent to it can be confirmed during demolition. Observation of the subsurface for evidence of leaking beneath the piping connecting the floor drain/catch basins can be completed during demolition.

Effort should be made to insure all operations in the maintenance building have been discontinued and any liquid discharge to the stormwater sewer via the floor drains cannot occur.

Effort should be made to insure that the bathroom discharging to the holding tank is discontinued.

Please call me if you have any questions or wish to discuss this assessment further.

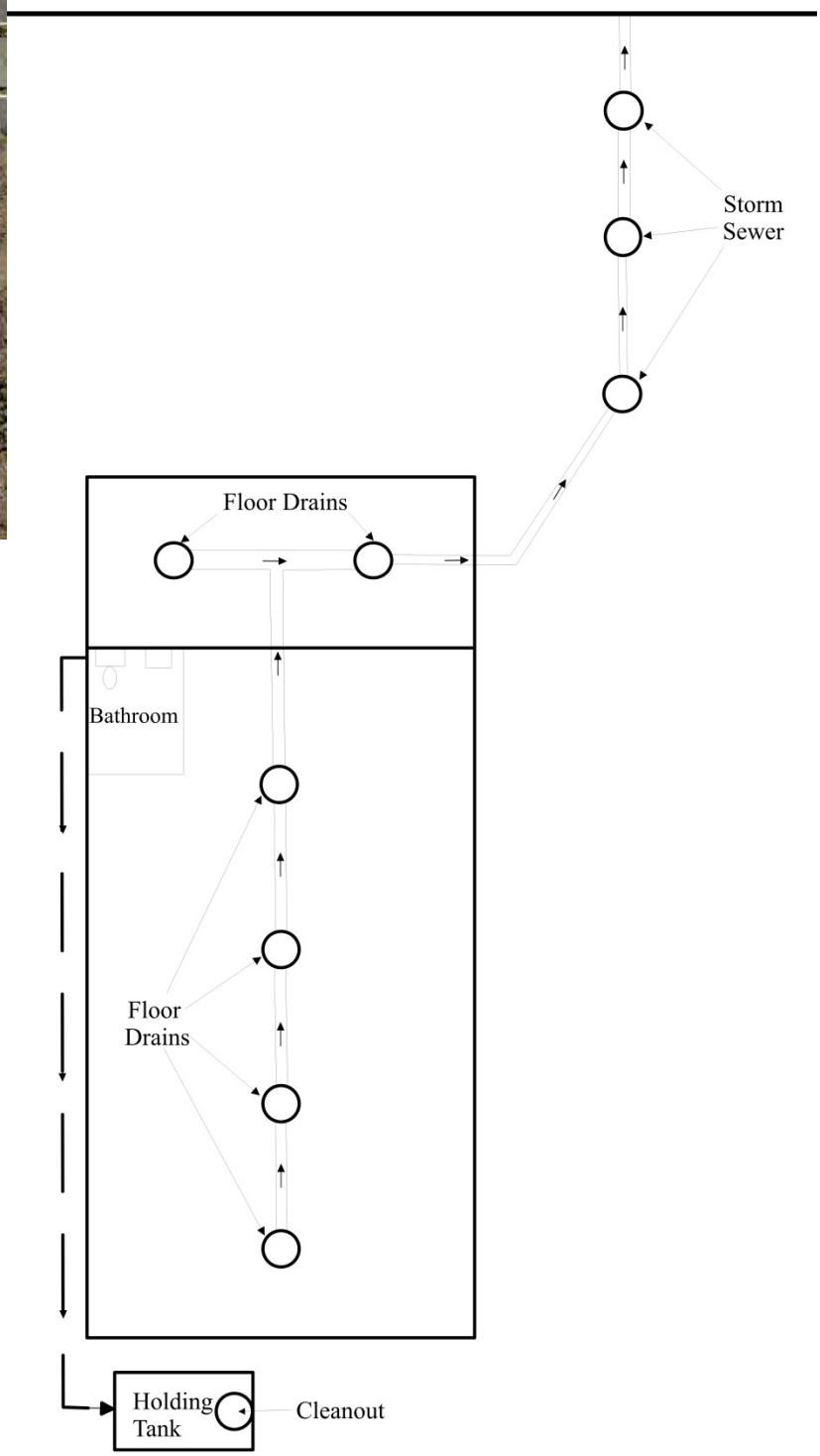
Sincerely,

WESTSHORE CONSULTING

Roger A. Bour
Senior Project Manager

RAB/jlg/03513-0017

Figure 1 – Floor Drain & Holding Tank Map
Health Department Correspondence



WESTSHORE ENGINEERING & SURVEYING ENVIRONMENTAL	*Client:* **Tysman Companies, LLC**	**FLOOR DRAINS & HOLDING TANK MAP**	*Checked:* RAB
			Date: 06/14/18
			Drawn by: JLG
www.WestshoreConsulting.com	*Site:* 17114 Robbins Road, Grand Haven Township, Ottawa County, Michigan		*Date:* 06/14/18
(800) 968-2864			*File No.:* 03513-0017
			Figure: **1**

Roger Bour

From: Kimberly Wolters <kwolters@miottawa.org>
Sent: Friday, June 15, 2018 1:27 PM
To: Ben Robbins
Subject: RE: Holding tank removal for redevelopment project

Ben,

The tank must be pumped and crushed. If Kendall has already pumped the tank and now it is filled with groundwater is can simply be crushed. This can be done at the time of construction. It is recommended that it be taped off until then to reduce foot traffic over the tank. Due to municipal water and sewer to this lot, no further requirements would need to be taken.

Please feel free to contact me with any further questions.

Kimberly Wolters

Environmental Health Specialist
(616)-393-5633
12251 James St. Suite 200
Holland, MI 49424

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From: Ben Robbins [mailto:brobbins@main-streetpartners.com]
Sent: Thursday, June 14, 2018 1:35 PM
To: Kimberly Wolters
Subject: Holding tank removal for redevelopment project

Kim,

Thanks for the time on the phone today. To summarize, we are re-developing the real estate located at 17114 Robbins Road in Grand Haven. In the process we located a holding tank that is roughly 800 gallons. We plan on removing the

tank during construction and want to make sure we properly close this issue. On 6/12/18 we had Kendall Septic come out and pump the tank. They estimated that it was 70% liquid and 30% solid. After they completed pumping it, the tank started to fill back up with groundwater and it is now full again. There isn't any prior record of this tank being pumped. The proposed project will be residential apartments served by municipal water and sewer.

Can you please advise me on the proper steps to take to remove this tank? Do we need to test the ground water when it's removed? Based on the current site plan, this area of the site will likely be a road or lawn.

Thanks for your help.

Ben Robbins
Director
18000 Cove Street, Suite 201
Spring Lake, Michigan 49456
c. (616) 638-6756
o. (616) 607-6073 ext #5
f. (231) 780-3891 fax
Main Street Capital Group

DEVELOPMENT COVENANT

THIS DEVELOPMENT COVENANT ("Covenant") is made this __ day of _____ 2018, by Lakeshore Gardens Apartments, LLC, a Michigan limited liability company, with offices at 18000 Cove Street #201, Spring Lake, MI 49456 ("Developer") with reference to the following:

RECITALS

A. Developer proposes to develop an apartment community ("Development") on that real property legally described on Exhibit A (the "Property"), which Property is located within the Charter Township of Grand Haven ("Township").

B. As a condition to the Township's approval of the Development, the Township Zoning Ordinance requires that the Developer designate certain open space on the Property ("Open Space") and that the Developer enter into this Covenant with respect to the preservation, management, and maintenance of the Open Space. The Open Space is legally depicted on the Site Plan ("Site Plan") attached as Exhibit B.

COVENANTS

NOW, THEREFORE, the Developer covenants as follows:

1. Preservation and Use of Open Space.
   a. The Open Space is protected from all forms of development except as shown on the approved Site Plan;
   b. The Open Space shall not be changed to another use without the consent of the Township;
   c. The proposed allowable use of the designated Open Space: The Open Space may be used only by residents of the Development and their invitees for passive recreation purposes allowable under local, state and federal law and are restricted to such non-destructive and non-disruptive activities such as sitting, walking, jogging, and other non-motorized activities consistent with those allowed in areas like public parks. Passive recreation purposes do not include structured team activities or the installation, construction or use of non-passive facilities or structures.
   d. The Developer, its successors or assigns, shall be liable for the continuing maintenance and upkeep of the designated Open Space shown on the Site Plan.
   e. The scheduled maintenance of the Open Space: The scheduled maintenance of the Open Space shall include the regularly-scheduled mowing, trash removal, irrigation, landscaping and plant care and replacement so as to prevent such areas from becoming unsightly or a nuisance.
   f. The maintenance of the Open Space may be undertaken by the Township in the event that the Open Space is inadequately maintained or becomes a nuisance after

Township has given Developer with seven (7) days' notice and an opportunity to cure such failure to comply. Further that, any costs incurred by the Township for such maintenance shall be assessed against the owner(s) of the Property. If the Developer fails to pay those costs within 60 days of the Township's demand, the Township shall be entitled to place a lien upon the Property to recover its cost.

2. Recording. This Covenant shall be recorded in the Office of the Ottawa County Register of Deeds.

3. Enforceability. This Covenant shall be enforceable only by the Developer and the Township and no other person shall have the right to enforce any provision contained herein.

4. Governing Law. This Covenant shall be governed by, and construed and interpreted in accordance with, the laws of the State of Michigan.

5. Run with the Land. This Covenant shall run with the land and be binding on all successors, assigns, and transferees of Developer.

6. Not a Public Dedication. Nothing in this Covenant shall be deemed a gift or dedication of any part of or interest in the Property to the general public or for any public use or purpose. No rights shall inure or obligations be owed under this Covenant to any third party nor shall any third party be deemed a beneficiary of any of its provisions.

7. Transfer Tax Exemption. This Declaration is exempt from transfer taxes pursuant to MCL § 207.505(a) and 207.526(a).

IN WITNESS WHEREOF, the Developer has caused this Covenant to be executed and delivered as of the day and year first above written.

DEVELOPER:

LAKESHORE GARDENS APARTMENTS, LLC, a Michigan limited liability company.

By: _____
Chad D. Bush
Title: Manager

{Notary on next page}

STATE OF MICHIGAN

COUNTY OF OTTAWA

On ___, 2018, before me, a Notary Public, in and for said County, personally appeared Chad D. Bush, Manager of Developer, who acknowledged the execution of the foregoing instrument as his free act and deed on behalf of the Developer.

_____
Notary Public
_____County, Michigan
My commission expires:_____

This Instrument Drafted By and After Recording Return To:

Ronald A. Bultje, Esq.
Dickinson Wright PLLC
200 Ottawa Ave. NW, Ste. 1000
Grand Rapids, MI 49503
616/336-1007

EXHIBIT B

Depiction and Legal Description of the Open Space

FLEIS&VANDENBRINK
DESIGN. BUILD. OPERATE.

Memo

VIA EMAIL

To:	**Mr. Ben Robbins** **Main Street Capital Group**
From:	**Michael J. Labadie, PE** **Brandon Hayes, PE, P.Eng.** **Fleis & VandenBrink**
Date:	**October 12, 2017**
Re:	**Proposed Robbins Road PUD** **Grand Haven Township, Michigan** **Traffic Impact Study**

Introduction

This memorandum presents the results of the Traffic Impact Study (TIS) for the proposed PUD located on a 13.62-acre parcel that currently includes a trucking/landscaping/snow removal/storage company (Bill Tysman Companies) in Grand Haven Township, Michigan. The site comprises two distinct parcels included in the PUD: a 129-unit residential apartment development, and a 26,454 square foot (SF) self-storage development. These uses will share access to Robbins Road via a proposed new site access drive.

Robbins Road is under the jurisdiction of the City of Grand Haven. The subject property is located along the northern boundary of Grand Haven Township. This TIS has been completed to identify the impacts (if any) of the proposed development on the following study intersections:

- Robbins Road & 172nd Avenue,
- Robbins Road & S. Griffin Street, and
- The proposed site access points.

The scope of the study was developed based on Fleis & VandenBrink's (F&V) knowledge of the study area, understanding of the development program, accepted traffic engineering practice, and methodologies published by the Institute of Transportation Engineers (ITE). Additionally, F&V solicited input regarding the scope of work from the City of Grand Haven and Grand Haven Township.

Data Collection

The existing weekday turning movement traffic volume data were collected for vehicles, cyclists, and pedestrians by F&V subconsultant Traffic Data Collection, Inc. (TDC) on Tuesday, September 19, 2017. Intersection turning movement counts were collected during the weekday AM (7:00 AM to 9:00 AM) and PM (2:00 PM to 6:00 PM) peak periods at all study intersections. This data was used as a baseline to establish existing traffic conditions without the proposed development. The peak hour volumes for each intersection were utilized for this study and the volumes were balanced upward through the study network. At locations where access is provided between study intersections, "dummy" intersections were used to account for sink and source volumes, and through volumes were carried along the main study roadways. Additionally, F&V collected an inventory of existing lane use and traffic controls and obtained existing traffic signal timing

27725 Stansbury Boulevard, Suite 195
Farmington Hills, MI 48334
P: 248.536.0080
F: 248.536.0079
www.fveng.com

information from the Grand Haven Board of Light & Power. The applicable data referenced in this memorandum are attached.

Existing Conditions

Existing peak hour vehicle delays and Levels of Service (LOS) were calculated at the study intersections using Synchro (Version 10) traffic analysis software. This analysis was based on the existing lane use and traffic control shown on the attached Figure 1, the existing peak hour traffic volumes shown on the attached Figure 2, and the methodologies presented in the *Highway Capacity Manual, 6th Edition* (HCM6). Typically, LOS D is considered acceptable, with LOS A representing minimal delay, and LOS F indicating failing conditions. Additionally, SimTraffic network simulations were reviewed to evaluate network operations and vehicle queues. The existing conditions results are attached and summarized in Table 1.

Table 1: Existing Intersection Operations

			AM Peak		PM Peak	
Intersection	Control	Approach	Delay (s/veh)	LOS	Delay (s/veh)	LOS
1. Robbins Road & 172nd Avenue	Signalized	EB	19.8	B	32.2	C
		WB	17.9	B	0.7	A
		NB	25.6	C	0.7	A
		SB	31.2	C	5.8	A
		Overall	**22.8**	**C**	**9.7**	**A**
2. Robbins Road & S. Griffin Street	STOP (Minor)	EB LT	9.5	A	12.6	B
		WB	Free		Free	
		SB	14.7	B	12.6	B

The results of the existing conditions analysis show that all approaches and movements currently operate at a LOS C or better during both peak periods. A review of network simulations showed good traffic operations at all study area intersection approaches and movements during both the AM and PM peak hours. Long vehicle queues were not observed during either peak hour.

Background Conditions

In order to determine the applicable growth rate for the existing traffic volumes to the project build-out year of 2018, historical traffic volume data was reviewed. The historical growth rates on Robbins Road to the east of the study area indicate that between 2013 and 2016, the average annual growth rate was negative (decreasing traffic volumes) on all sections of Robbins Road where data is available. Therefore, no growth rate was applied to the existing 2017 traffic volumes to forecast the 2019 background traffic volumes ***without the proposed development.***

In addition to background growth, it is important to account for traffic that is expected to be generated by approved developments within the vicinity of the study area that have yet to be constructed or are currently under construction. No background developments were identified near the study area that are expected to be completed prior to the site buildout of the proposed development.

The development is proposed to be completed by 2019. Since there is no anticipated traffic growth for the study area, and no approved developments have been identified through the 2019 build-out year, future background conditions (without the proposed development) are assumed equal to existing conditions.

Site Trip Generation Analysis

The number of AM and PM peak hour vehicle trips that would be generated by the proposed development was forecast based on data published by ITE in the *Trip Generation Manual, 10th Edition.* The site trip generation forecast for the proposed development is summarized in Table 2.

Table 2: Site Trip Generation

Land Use	ITE Code	Amount	Units	Average Daily Traffic	AM Peak Hour In	AM Peak Hour Out	AM Peak Hour Total	PM Peak Hour In	PM Peak Hour Out	PM Peak Hour Total
Multifamily Housing (Mid-Rise)	221	129	D.U.	701	11	33	44	35	22	57
Mini-Warehouse	151	26,454	S.F.	40	2	1	3	2	2	4
New Trips				741	13	34	47	37	24	61

The vehicle trips that would be generated by the proposed development were assigned to the study road network based on existing peak hour traffic patterns, the proposed site plan, and the methodologies published by ITE. This methodology indicates that new trips will return to their direction of origin. The site trip distributions used in the analysis are summarized in Table 3.

Table 3: Site Trip Distribution

To / From	New Trips Via	AM	PM
North	172nd Avenue	10%	18%
	S. Griffin Street	27%	7%
South	172nd Avenue	17%	25%
East	Robbins Road	17%	23%
West	Robbins Road	29%	27%
		100%	100%

The site-generated vehicle trips were assigned to the study road network based on these trip distribution patterns and are shown on the attached Figure 4. The site-generated trips were added to the existing traffic volumes to calculate the future peak hour traffic volumes shown on the attached Figure 6.

Future Conditions

Future peak hour vehicle delays and LOS ***with the proposed development*** were calculated based on the existing lane use and traffic control, the future traffic volumes, the proposed site access plan, and the methodologies presented in the HCM. Additionally, SimTraffic simulations were reviewed to evaluate network operations and vehicle queues. The results of the future conditions analysis are attached and are summarized in Table 4.

Table 4: Future Intersection Operations

Intersection	Control	Approach	AM Peak Delay (s/veh)	AM Peak LOS	PM Peak Delay (s/veh)	PM Peak LOS
1. Robbins Road & 172nd Avenue	Signalized	EB	20.2	C	27.6	C
		WB	18.1	B	21.5	C
		NB	25.5	C	32.6	C
		SB	31.1	C	35.0	C
		Overall	**22.9**	**C**	**28.9**	**C**
2. Robbins Road & S. Griffin Street	STOP (Minor)	EB LT	9.6	A	8.9	A
		WB	Free		Free	
		SB	15.0	C	16.3	C
3. Robbins Road & Site Driveway	STOP (Minor)	EB	Free		Free	
		WB LT	7.9	A	8.7	A
		NB	11.5	B	14.2	B

The results show that all study intersection approaches and movements are expected to continue to operate in a manner similar to existing conditions during both the AM and PM peak hours. Vehicle delays and LOS as shown in Table 4 are expected to be similar to existing conditions and minor increases will generally not be discernable. In addition, all approaches and movements at the unsignalized site driveway intersection operate at a LOS B or better during both peak periods.

A review of network simulations showed good traffic operations at all study area intersection approaches and movements during both the AM and PM peak hours. Long vehicle queues were not observed during either peak hour. Overall, future traffic conditions will be similar to existing traffic conditions and the development is not expected to have a significant impact on the study intersections.

Auxiliary Lane Analysis

In order to determine the configurations of the proposed site access location on Robbins Road, warrants for right turn lanes were evaluated. The City of Grand Haven does not maintain right-turn lane and taper warrants. Therefore, the Ottawa County Road Commission (OCRC) requirements were reviewed. The OCRC requirements state the following:

> *Additional lanes, passing flares, or other improvements on adjacent public roadways may be required to provide access to a proposed development. Improvements may be identified in a traffic impact study or warranted based on traffic volumes and turning movements as follows:*
>
> *a) Left turns of 150 ADT from a public roadway into proposed development.*
>
> *b) Adjacent public roadway volume exceeds 3000 ADT and development has 15 or more lots/living units.*

Since the daily volume on Robbins Road exceeds 3000 ADT and development has 15 or more lots/living units, improvements at the site driveway should be considered. OCRC does not maintain right-turn lane and taper warrant, so MDOT traffic volumes guidelines for right-turn lanes and tapers were reviewed. Based upon the peak hour traffic volumes on Robbins Road at the site driveway, a right turn deceleration taper is required at the Site Drive. This taper should be designed in accordance with City of Grand Haven requirements.

Access Management

The City of Grand Haven standards for access management were reviewed with respect to the proposed site driveway on Robbins Road. The evaluation was based upon the requirements for a 35 mph roadway. The results of the driveway spacing analysis showed that the proposed Site Access driveway should be located 150 feet from adjacent commercial driveways per the City's standards.

The Robbins Road PUD at 17114 Robbins Road has proposed one access for all site users. The site driveway will be designed as a boulevard access, with ingress and egress lanes separated by a median. This will increase ease-of-access for emergency vehicles by providing additional access lanes via the site egress in the event of a driveway blockage at the site ingress.

Conclusions

The conclusions of this Traffic Impact Study are as follows:

1. The results of the existing conditions analysis showed that all approaches and movements currently operate at a LOS C or better during both peak periods.
2. The analysis of future conditions ***with the proposed development*** showed that all study intersection approaches and movements are expected to continue to operate in a manner similar to existing conditions during both the AM and PM peak hours. Vehicle delays and LOS are expected to be similar to existing conditions and minor increases in delay will not be discernable.
3. The proposed site driveway intersection approaches and movements operate at a LOS B or better during both peak periods.
4. The results of the auxiliary lane warrant analysis are summarized below:
    - A right-turn deceleration taper is required at the Site Drive.
5. The driveway spacing analysis showed that the proposed Site Drive should be located 150 feet from adjacent commercial driveways.
6. The proposed site driveways should be designed in accordance with City of Grand Haven requirements.

Attached: Figures 1-4
Traffic Volume Data
Synchro / SimTraffic Results
Auxiliary Lane Warrants

BMH:mjl

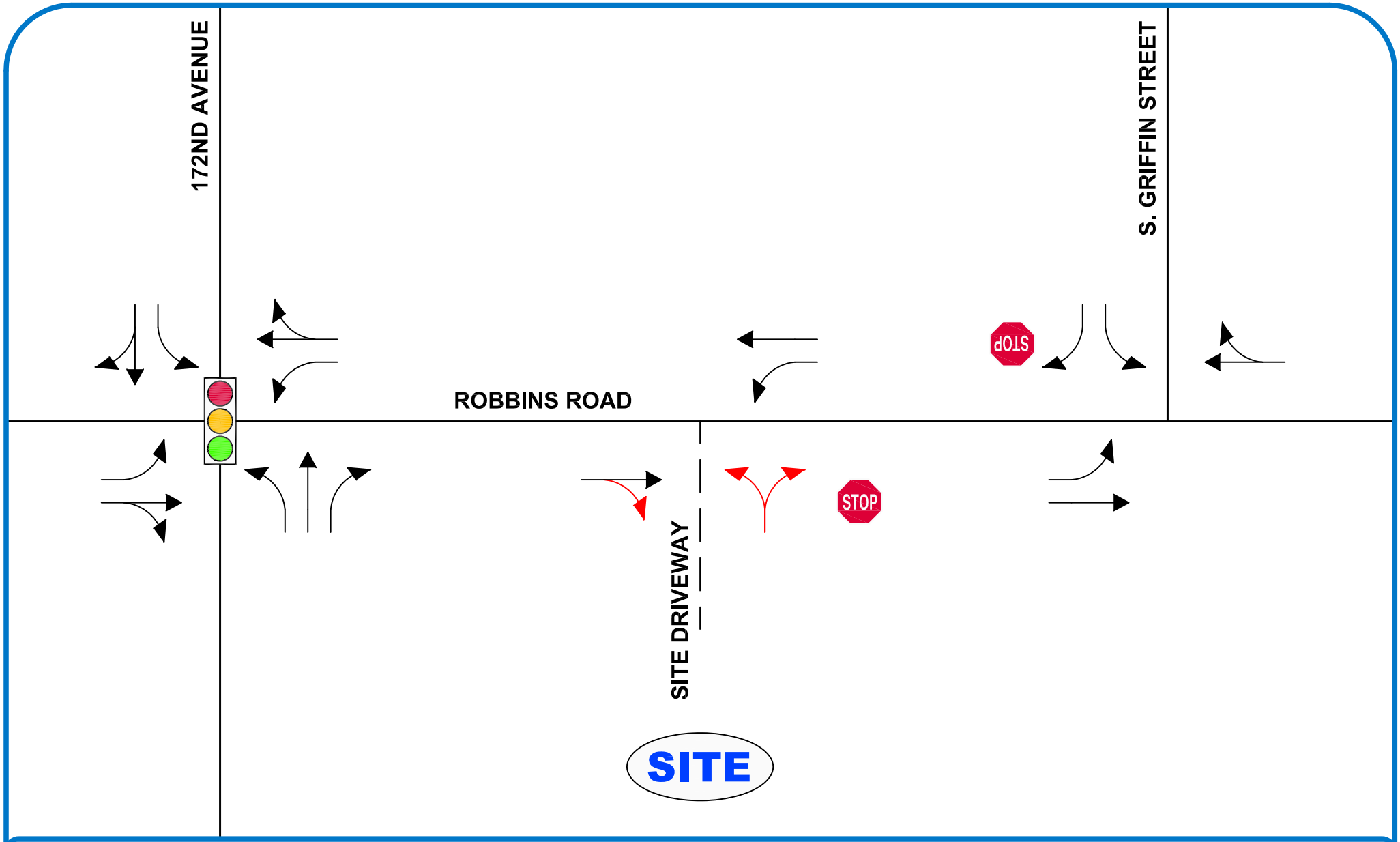

FIGURE 1
LANE USE AND TRAFFIC CONTROL

PROPOSED ROBBINS ROAD PUD - GRAND HAVEN TWP, MI

LEGEND

- SIGNALIZED INTERSECTION
- UNSIGNALIZED INTERSECTION
- ROADS
- EXISTING LANE USE
- PROPOSED LANE USE

NORTH

SCALE: NOT TO SCALE

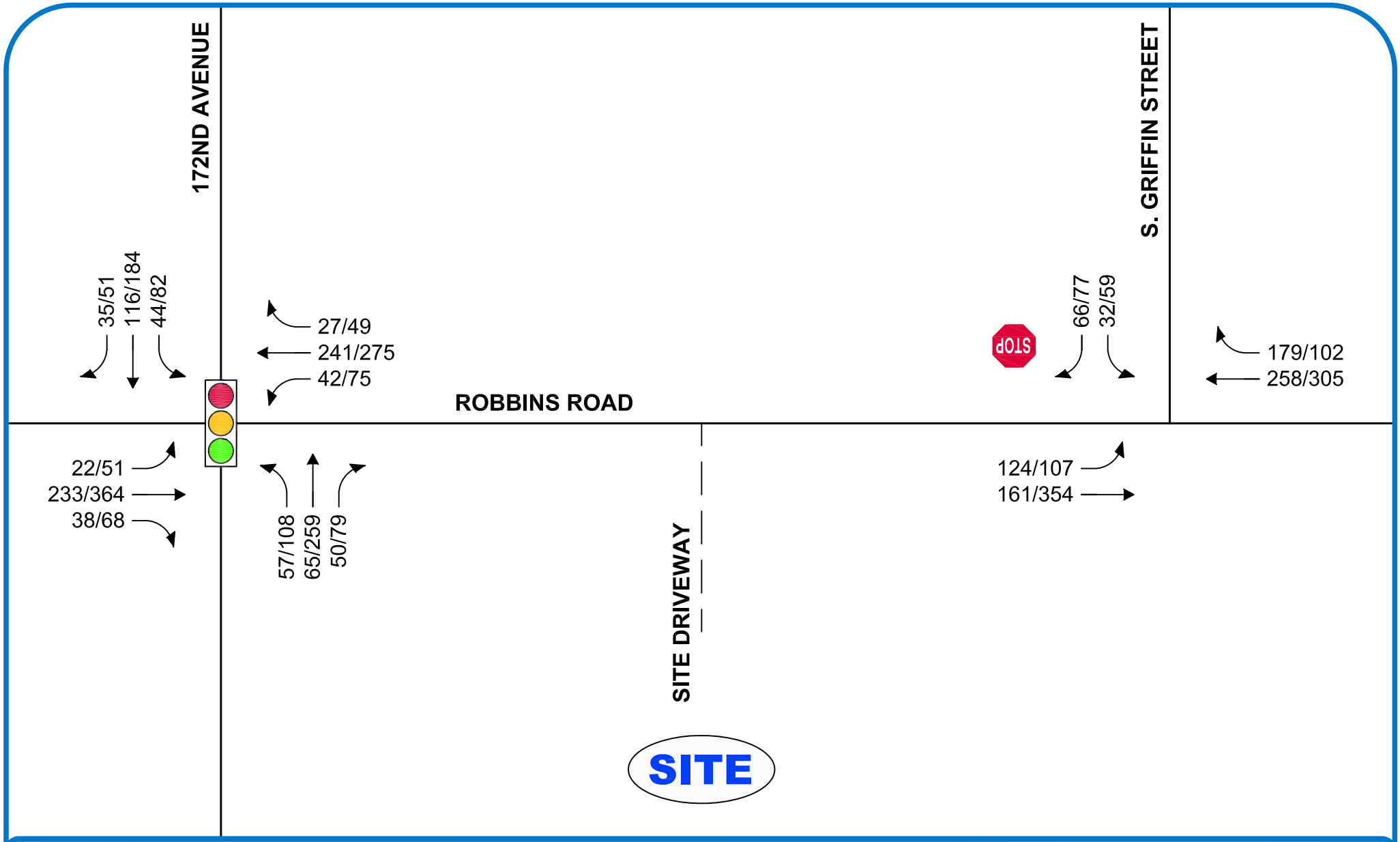

FIGURE 2
EXISTING TRAFFIC VOLUMES

PROPOSED ROBBINS ROAD PUD - GRAND HAVEN TWP, MI

LEGEND

- SIGNALIZED INTERSECTION
- UNSIGNALIZED INTERSECTION
- TRAFFIC VOLUMES (AM/PM)
- ROADS

NORTH

SCALE: NOT TO SCALE

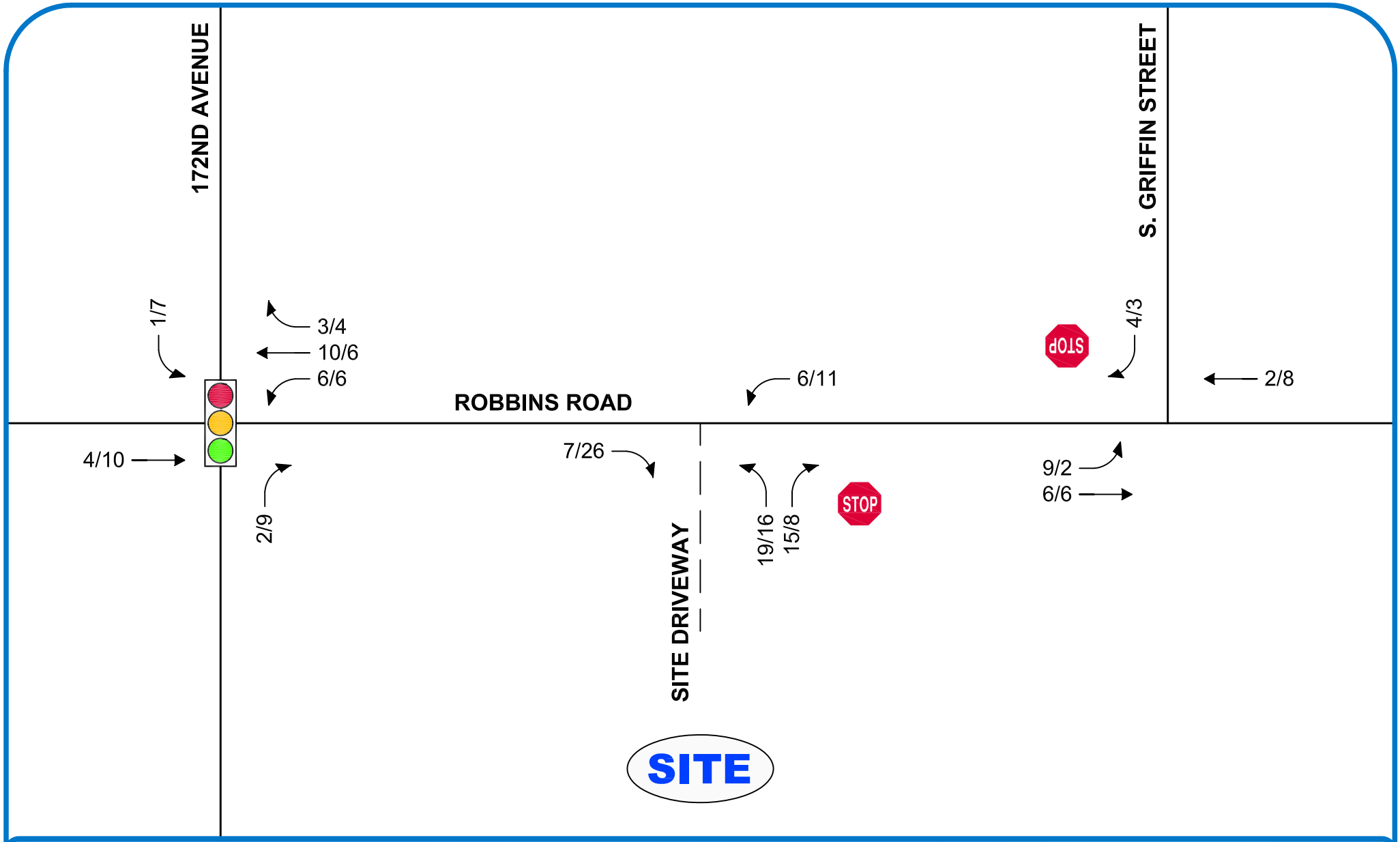

FIGURE 3
SITE-GENERATED TRAFFIC VOLUMES

PROPOSED ROBBINS ROAD PUD - GRAND HAVEN TWP, MI

LEGEND

- SIGNALIZED INTERSECTION
- UNSIGNALIZED INTERSECTION
- TRAFFIC VOLUMES (AM/PM)
- ROADS

NORTH

SCALE: NOT TO SCALE

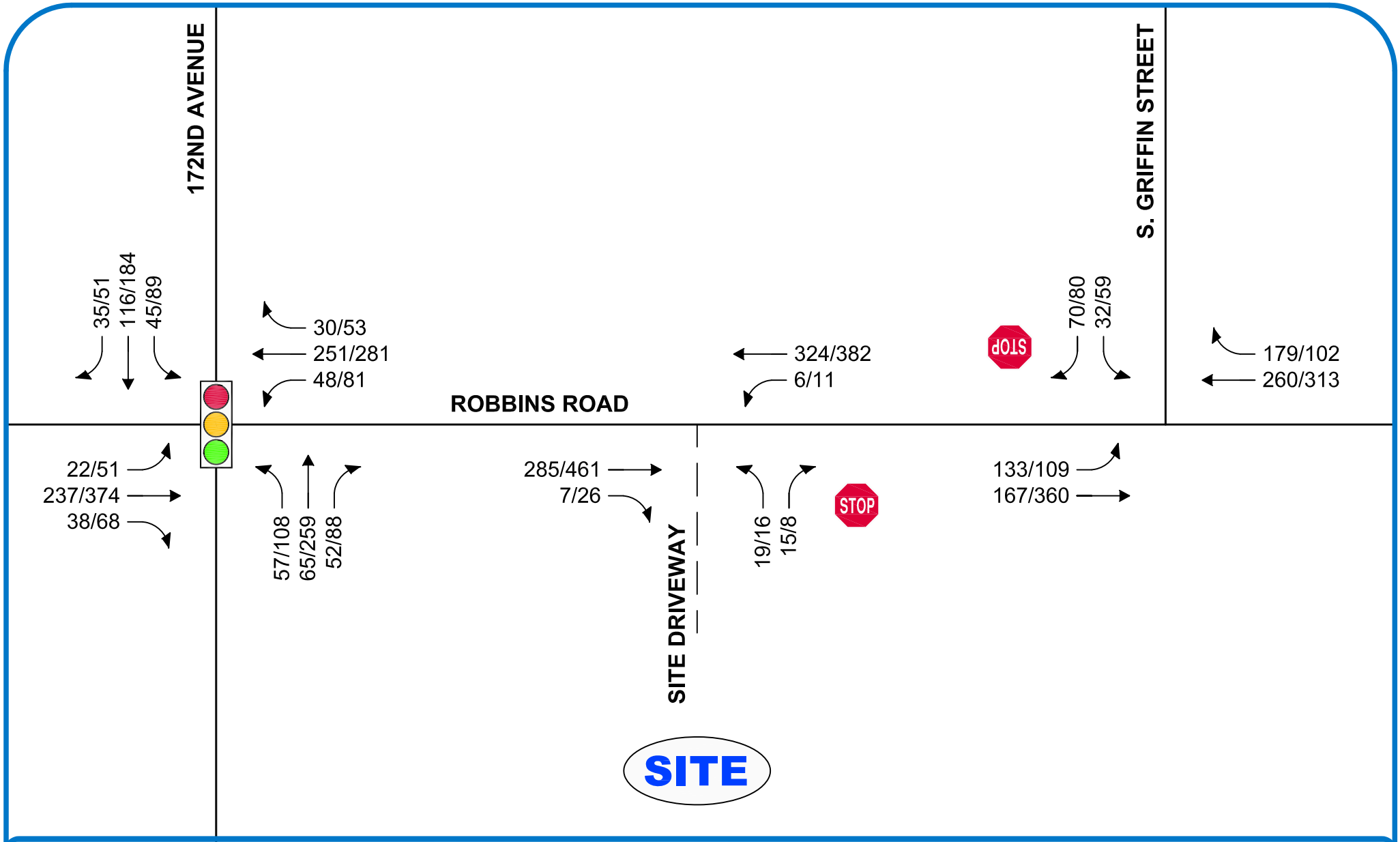

FIGURE 4
FUTURE TRAFFIC VOLUMES

PROPOSED ROBBINS ROAD PUD - GRAND HAVEN TWP, MI

LEGEND

- SIGNALIZED INTERSECTION
- UNSIGNALIZED INTERSECTION
- TRAFFIC VOLUMES (AM/PM)
- ROADS

NORTH

SCALE: NOT TO SCALE

Traffic Data Collection, LLC

tdccounts.com

Phone: (586) 786-5407

Traffic Study Peformed For:

Fleis & VandenBrink

Project:Grand Haven Traffic Impact Study
Type: 4 Hr. Video Turning Movement Count
Weather:Sunny/Cldy, Dry Deg. 70's
Count By: Miovision Video SCU 3DQ SE

File Name : TMC_1 Robbins & 172nd_9-19-17
Site Code : TMC_1
Start Date : 9/19/2017
Page No : 1

Groups Printed- Pass Cars - Buses - Single Units - Heavy Trucks - Peds. - Bikes

	172nd Ave. Southbound					Robbins Road Westbound					172nd Ave. Northbound					Robbins Road Eastbound					
Start Time	Rgt	Thru	Left	Peds	App. Total	Rgt	Thru	Left	Peds	App. Total	Rgt	Thru	Left	Peds	App. Total	Rgt	Thru	Left	Peds	App. Total	Int. Total
07:00 AM	3	12	7	1	23	5	51	9	0	65	4	9	8	1	22	6	36	3	1	46	156
07:15 AM	8	16	5	0	29	3	61	3	0	67	6	19	21	0	46	3	34	5	1	43	185
07:30 AM	4	25	5	2	36	9	56	5	1	71	9	25	15	0	49	8	43	10	2	63	219
07:45 AM	5	29	6	0	40	9	46	7	0	62	13	15	23	0	51	10	50	6	0	66	219
Total	20	82	23	3	128	26	214	24	1	265	32	68	67	1	168	27	163	24	4	218	779
08:00 AM	6	23	8	3	40	7	55	14	1	77	15	17	10	0	42	5	46	2	0	53	212
08:15 AM	17	34	11	3	65	9	61	9	1	80	21	17	16	1	55	13	68	5	2	88	288
08:30 AM	8	32	16	1	57	7	61	11	0	79	5	22	19	0	46	12	52	9	1	74	256
08:45 AM	4	27	9	1	41	4	64	8	0	76	9	9	12	0	30	8	67	6	2	83	230
Total	35	116	44	8	203	27	241	42	2	312	50	65	57	1	173	38	233	22	5	298	986
**** BREAK ****																					
02:00 PM	4	39	18	0	61	9	75	12	0	96	13	47	26	0	86	12	57	13	0	82	325
02:15 PM	10	50	19	1	80	12	69	15	1	97	13	54	30	0	97	13	49	12	1	75	349
02:30 PM	8	45	10	1	64	16	79	13	0	108	15	86	38	0	139	20	63	11	2	96	407
02:45 PM	13	37	17	0	67	14	55	19	0	88	17	48	29	0	94	7	79	10	1	97	346
Total	35	171	64	2	272	51	278	59	1	389	58	235	123	0	416	52	248	46	4	350	1427
03:00 PM	5	47	13	1	66	10	63	12	0	85	19	67	27	0	113	24	66	21	1	112	376
03:15 PM	7	43	14	2	66	11	66	14	0	91	24	57	23	0	104	12	68	18	0	98	359
03:30 PM	14	58	18	1	91	13	78	17	0	108	18	80	28	0	126	18	93	6	2	119	444
03:45 PM	11	46	26	1	84	17	66	13	2	98	20	65	26	0	111	15	90	16	2	123	416
Total	37	194	71	5	307	51	273	56	2	382	81	269	104	0	454	69	317	61	5	452	1595
04:00 PM	14	44	17	4	79	13	68	23	3	107	23	60	29	0	112	20	101	16	0	137	435
04:15 PM	12	36	21	5	74	6	63	22	3	94	18	54	25	0	97	15	80	13	0	108	373
04:30 PM	11	46	19	1	77	12	88	12	1	113	23	46	33	0	102	29	77	13	1	120	412
04:45 PM	18	40	16	0	74	16	78	15	1	110	22	56	33	0	111	22	63	12	0	97	392
Total	55	166	73	10	304	47	297	72	8	424	86	216	120	0	422	86	321	54	1	462	1612
05:00 PM	15	39	7	1	62	20	75	16	0	111	13	65	26	0	104	25	79	14	0	118	395
05:15 PM	6	46	16	4	72	12	65	9	3	89	15	48	22	1	86	21	64	9	1	95	342
05:30 PM	4	42	9	2	57	9	54	13	1	77	9	45	21	1	76	11	59	9	1	80	290
05:45 PM	6	26	10	0	42	23	71	6	0	100	16	37	23	3	79	16	69	7	5	97	318
Total	31	153	42	7	233	64	265	44	4	377	53	195	92	5	345	73	271	39	7	390	1345
Grand Total	213	882	317	35	1447	266	1568	297	18	2149	360	1048	563	7	1978	345	1553	246	26	2170	7744
Apprch %	14.7	61	21.9	2.4		12.4	73	13.8	0.8		18.2	53	28.5	0.4		15.9	71.6	11.3	1.2		
Total %	2.8	11.4	4.1	0.5	18.7	3.4	20.2	3.8	0.2	27.8	4.6	13.5	7.3	0.1	25.5	4.5	20.1	3.2	0.3	28	
Pass Cars	207	848	306	0	1361	256	1535	282	0	2073	342	1024	544	0	1910	342	1517	239	0	2098	7442
% Pass Cars	97.2	96.1	96.5	0	94.1	96.2	97.9	94.9	0	96.5	95	97.7	96.6	0	96.6	99.1	97.7	97.2	0	96.7	96.1
Buses	5	26	10	0	41	8	20	9	0	37	14	21	6	0	41	0	20	7	0	27	146
% Buses	2.3	2.9	3.2	0	2.8	3	1.3	3	0	1.7	3.9	2	1.1	0	2.1	0	1.3	2.8	0	1.2	1.9
Single Units	1	7	1	0	9	2	11	3	0	16	4	3	11	0	18	3	11	0	0	14	57
% Single Units	0.5	0.8	0.3	0	0.6	0.8	0.7	1	0	0.7	1.1	0.3	2	0	0.9	0.9	0.7	0	0	0.6	0.7
Heavy Trucks	0	1	0	0	1	0	2	3	0	5	0	0	2	0	2	0	5	0	0	5	13
% Heavy Trucks	0	0.1	0	0	0.1	0	0.1	1	0	0.2	0	0	0.4	0	0.1	0	0.3	0	0	0.2	0.2
Peds.	0	0	0	31	31	0	0	0	18	18	0	0	0	7	7	0	0	0	21	21	77
% Peds.	0	0	0	88.6	2.1	0	0	0	100	0.8	0	0	0	100	0.4	0	0	0	80.8	1	1
Bikes	0	0	0	4	4	0	0	0	0	0	0	0	0	0	0	0	0	0	5	5	9
% Bikes	0	0	0	11.4	0.3	0	0	0	0	0	0	0	0	0	0	0	0	0	19.2	0.2	0.1

Comments: 4 hour traffic study conducted during typical weekday (Tuesday) from 7:00-9:00 AM morning & 2:00-6:00 PM afternoon peak hours while school was in session. Signalized intersection, with ped. signals for all quadrants. Push buttons exist for east & west legs. Video SCU camera was located within SE intersection quadrant.

Traffic Data Collection, LLC

tdccounts.com

Phone: (586) 786-5407

Traffic Study Peformed For:

Fleis & VandenBrink

Project:Grand Haven Traffic Impact Study
Type: 4 Hr. Video Turning Movement Count
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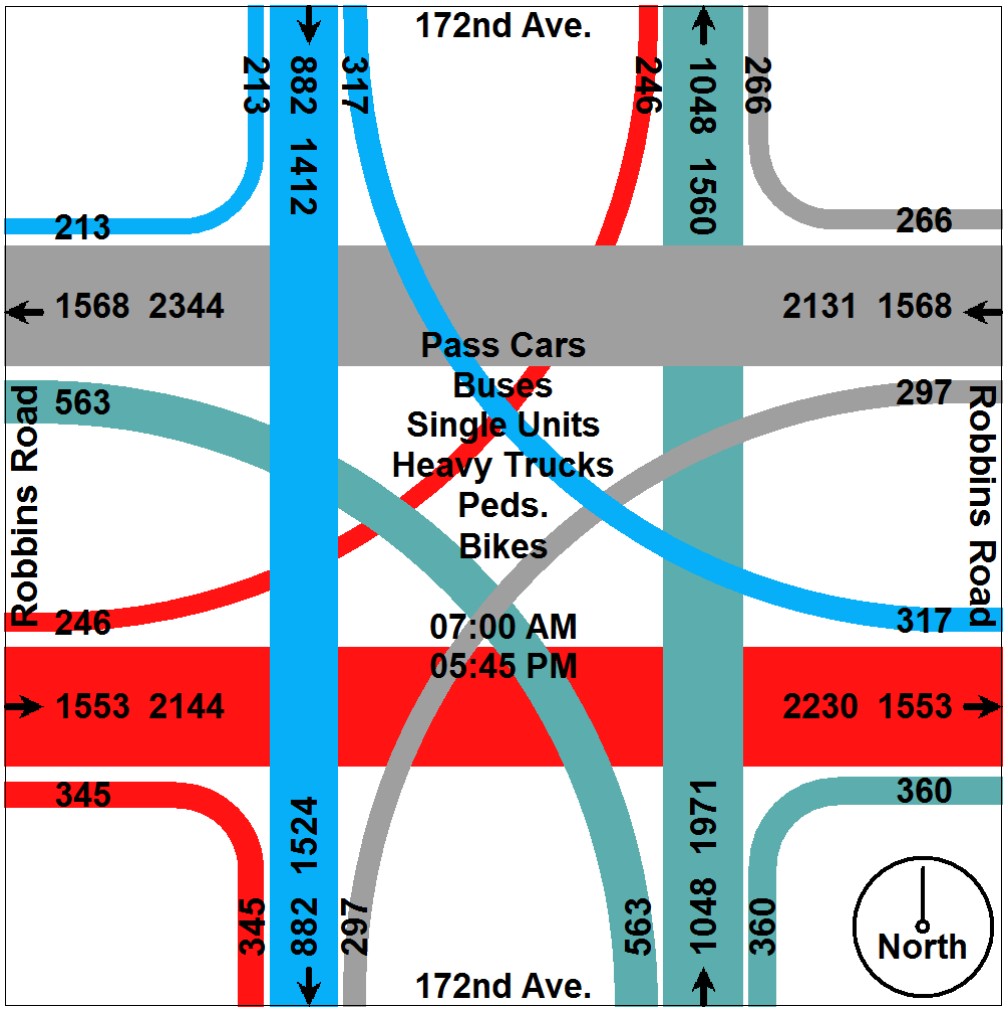

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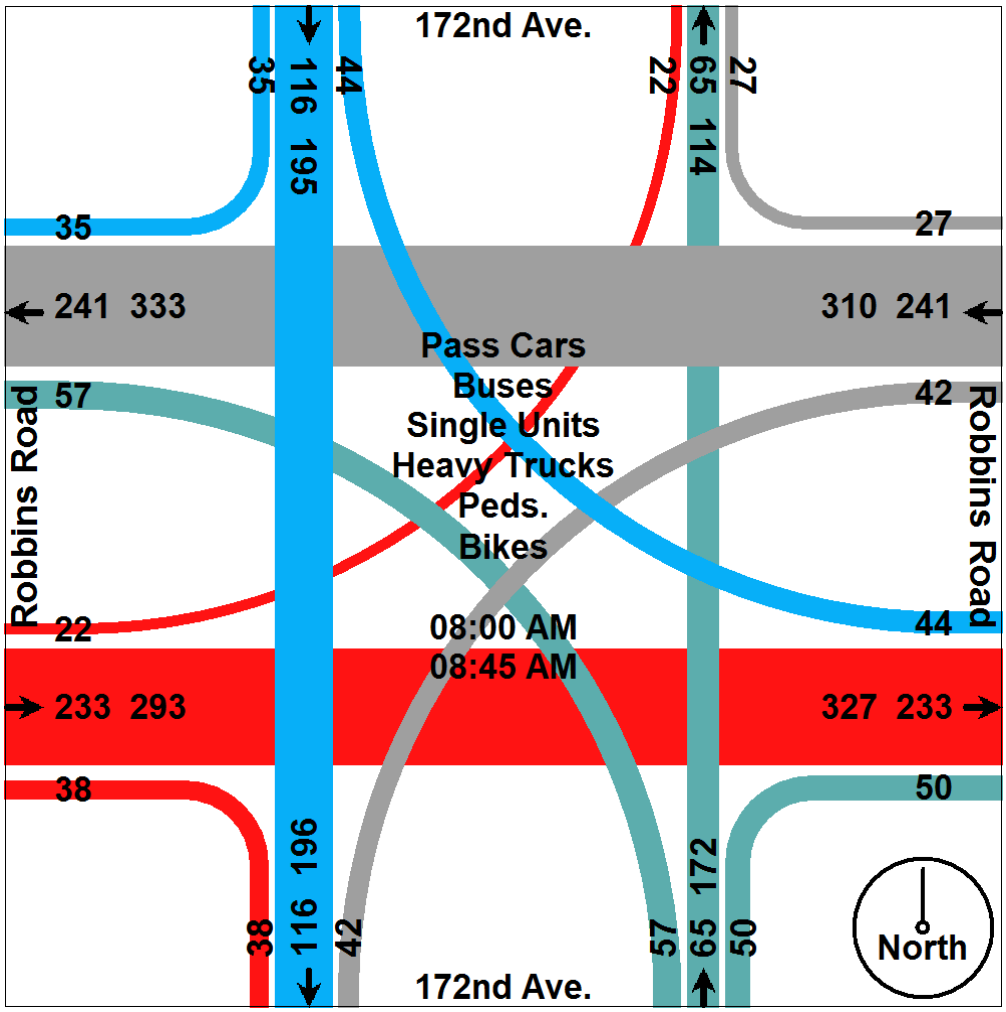
	172nd Ave. Southbound				Robbins Road Westbound				172nd Ave. Northbound				Robbins Road Eastbound				
Start Time	Rgt	Thru	Left	App. Total	Rgt	Thru	Left	App. Total	Rgt	Thru	Left	App. Total	Rgt	Thru	Left	App. Total	Int. Total
Peak Hour Analysis From 07:00 AM to 11:45 AM - Peak 1 of 1																	
Peak Hour for Entire Intersection Begins at 08:00 AM																	
08:00 AM	6	23	8	37	7	55	**14**	76	15	17	10	42	5	46	2	53	208
08:15 AM	**17**	**34**	11	**62**	**9**	61	9	**79**	**21**	17	16	**54**	**13**	**68**	5	**86**	**281**
08:30 AM	8	32	**16**	56	7	61	11	79	5	**22**	**19**	46	12	52	**9**	73	254
08:45 AM	4	27	9	40	4	**64**	8	76	9	9	12	30	8	67	6	81	227
Total Volume	35	116	44	195	27	241	42	310	50	65	57	172	38	233	22	293	970
% App. Total	17.9	59.5	22.6		8.7	77.7	13.5		29.1	37.8	33.1		13	79.5	7.5		
PHF	.515	.853	.688	.786	.750	.941	.750	.981	.595	.739	.750	.796	.731	.857	.611	.852	.863
Pass Cars	34	112	42	188	25	235	38	298	45	62	54	161	38	227	22	287	934
% Pass Cars	97.1	96.6	95.5	96.4	92.6	97.5	90.5	96.1	90.0	95.4	94.7	93.6	100	97.4	100	98.0	96.3
Buses	1	3	1	5	2	5	3	10	5	2	0	7	0	4	0	4	26
% Buses	2.9	2.6	2.3	2.6	7.4	2.1	7.1	3.2	10.0	3.1	0	4.1	0	1.7	0	1.4	2.7
Single Units	0	1	1	2	0	1	1	2	0	1	3	4	0	2	0	2	10
% Single Units	0	0.9	2.3	1.0	0	0.4	2.4	0.6	0	1.5	5.3	2.3	0	0.9	0	0.7	1.0
Heavy Trucks	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
% Heavy Trucks	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Peds.	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
% Peds.	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Bikes	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
% Bikes	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0



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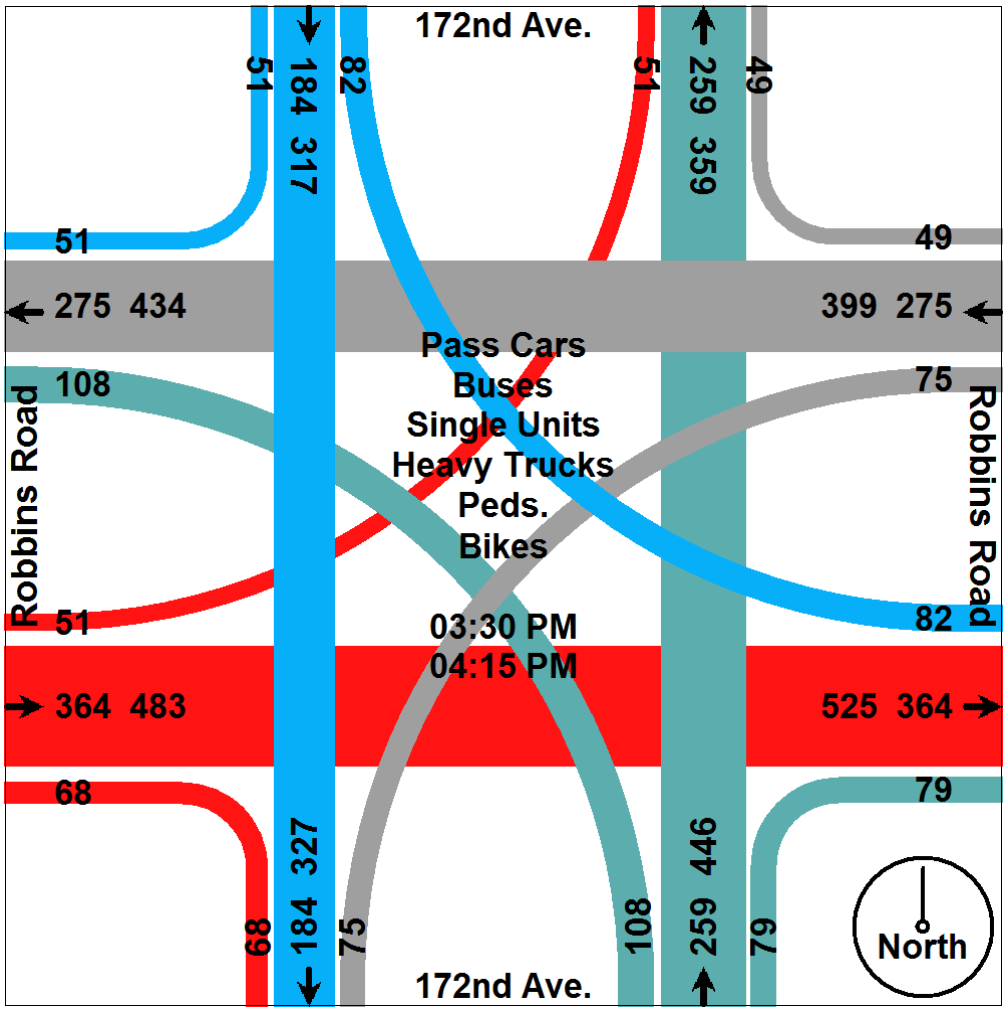
Traffic Study Peformed For:

Fleis & VandenBrink

Project:Grand Haven Traffic Impact Study
Type: 4 Hr. Video Turning Movement Count
Weather:Sunny/Cldy, Dry Deg. 70's
Count By: Miovision Video SCU 3DQ SE

File Name : TMC_1 Robbins & 172nd_9-19-17
Site Code : TMC_1
Start Date : 9/19/2017
Page No : 4

	172nd Ave. Southbound				Robbins Road Westbound				172nd Ave. Northbound				Robbins Road Eastbound				
Start Time	Rgt	Thru	Left	App. Total	Rgt	Thru	Left	App. Total	Rgt	Thru	Left	App. Total	Rgt	Thru	Left	App. Total	Int. Total
Peak Hour Analysis From 12:00 PM to 05:45 PM - Peak 1 of 1																	
Peak Hour for Entire Intersection Begins at 03:30 PM																	
03:30 PM	**14**	**58**	18	**90**	13	**78**	17	**108**	18	**80**	28	**126**	18	93	6	117	**441**
03:45 PM	11	46	**26**	83	**17**	66	13	96	20	65	26	111	15	90	**16**	121	411
04:00 PM	14	44	17	75	13	68	**23**	104	**23**	60	**29**	112	**20**	**101**	16	**137**	428
04:15 PM	12	36	21	69	6	63	22	91	18	54	25	97	15	80	13	108	365
Total Volume	51	184	82	317	49	275	75	399	79	259	108	446	68	364	51	483	1645
% App. Total	16.1	58	25.9		12.3	68.9	18.8		17.7	58.1	24.2		14.1	75.4	10.6		
PHF	.911	.793	.788	.881	.721	.881	.815	.924	.859	.809	.931	.885	.850	.901	.797	.881	.933
Pass Cars	49	178	77	304	49	270	74	393	75	256	107	438	67	355	50	472	1607
% Pass Cars	96.1	96.7	93.9	95.9	100	98.2	98.7	98.5	94.9	98.8	99.1	98.2	98.5	97.5	98.0	97.7	97.7
Buses	2	3	5	10	0	2	0	2	1	3	0	4	0	5	1	6	22
% Buses	3.9	1.6	6.1	3.2	0	0.7	0	0.5	1.3	1.2	0	0.9	0	1.4	2.0	1.2	1.3
Single Units	0	3	0	3	0	3	0	3	3	0	1	4	1	2	0	3	13
% Single Units	0	1.6	0	0.9	0	1.1	0	0.8	3.8	0	0.9	0.9	1.5	0.5	0	0.6	0.8
Heavy Trucks	0	0	0	0	0	0	1	1	0	0	0	0	0	2	0	2	3
% Heavy Trucks	0	0	0	0	0	0	1.3	0.3	0	0	0	0	0	0.5	0	0.4	0.2
Peds.	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
% Peds.	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Bikes	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
% Bikes	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0



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Traffic Study Peformed For:

Fleis & VandenBrink

Project:Grand Haven Traffic Impact Study
Type: 4 Hr. Video Turning Movement Count
Weather:Sunny/Cldy, Dry Deg. 70's
Count By: Miovision Video SCU 34N

File Name : TMC_2 Robbins & Griffin_9-19-17
Site Code : TMC_1
Start Date : 9/19/2017
Page No : 1

Groups Printed- Pass Cars - Buses - Single Units - Heavy Trucks - Peds. - Bikes

	S. Griffin Street Southbound					Robbins Road Westbound					Office Bldg. West Dw. Northbound					Robbins Road Eastbound					
Start Time	Rgt	Thru	Left	Peds	App. Total	Rgt	Thru	Left	Peds	App. Total	Rgt	Thru	Left	Peds	App. Total	Rgt	Thru	Left	Peds	App. Total	Int. Total
07:00 AM	12	0	2	4	18	11	67	0	0	78	0	0	0	0	0	0	35	9	0	44	140
07:15 AM	8	0	4	0	12	20	60	0	0	80	0	0	0	0	0	0	24	21	0	45	137
07:30 AM	10	0	4	1	15	10	64	0	0	74	0	0	0	0	0	0	32	7	1	40	129
07:45 AM	9	0	11	1	21	11	59	0	0	70	0	0	0	0	0	0	47	11	0	58	149
Total	39	0	21	6	66	52	250	0	0	302	0	0	0	0	0	0	138	48	1	187	555
08:00 AM	20	0	4	4	28	36	61	0	1	98	0	0	0	0	0	0	37	30	2	69	195
08:15 AM	16	0	7	3	26	87	65	0	1	153	0	0	0	0	0	0	34	51	0	85	264
08:30 AM	23	0	15	2	40	38	66	0	2	106	0	0	0	2	2	0	34	32	0	66	214
08:45 AM	7	0	6	1	14	18	66	0	0	84	0	0	0	0	0	0	56	11	1	68	166
Total	66	0	32	10	108	179	258	0	4	441	0	0	0	2	2	0	161	124	3	288	839
**** BREAK ****																					
02:00 PM	3	0	6	0	9	11	77	0	0	88	0	0	0	0	0	0	67	3	0	70	167
02:15 PM	3	0	5	2	10	5	84	0	1	90	0	0	0	0	0	0	63	7	0	70	170
02:30 PM	7	0	3	0	10	4	79	0	0	83	0	0	0	0	0	0	67	4	0	71	164
02:45 PM	5	0	6	1	12	16	73	0	0	89	0	0	0	0	0	0	84	11	0	95	196
Total	18	0	20	3	41	36	313	0	1	350	0	0	0	0	0	0	281	25	0	306	697
03:00 PM	8	0	6	3	17	17	60	0	0	77	0	0	0	0	0	0	86	11	0	97	191
03:15 PM	5	0	3	2	10	30	85	0	2	117	0	0	0	0	0	0	70	31	1	102	229
03:30 PM	14	0	14	1	29	34	90	0	0	124	0	0	0	0	0	0	87	28	0	115	268
03:45 PM	36	0	14	1	51	24	55	0	2	81	0	0	0	0	0	0	98	29	0	127	259
Total	63	0	37	7	107	105	290	0	4	399	0	0	0	0	0	0	341	99	1	441	947
04:00 PM	22	0	28	0	50	14	75	0	0	89	0	0	0	0	0	0	99	19	0	118	257
04:15 PM	19	0	5	0	24	8	62	0	1	71	0	0	0	0	0	0	87	16	2	105	200
04:30 PM	15	0	16	0	31	8	92	0	0	100	0	0	0	0	0	0	99	13	1	113	244
04:45 PM	9	0	1	3	13	12	94	0	0	106	0	0	0	0	0	0	83	14	0	97	216
Total	65	0	50	3	118	42	323	0	1	366	0	0	0	0	0	0	368	62	3	433	917
05:00 PM	20	0	17	1	38	18	85	0	0	103	0	0	0	0	0	0	102	13	0	115	256
05:15 PM	10	0	18	1	29	3	65	0	0	68	0	0	0	0	0	0	81	14	0	95	192
05:30 PM	14	0	5	0	19	5	69	0	0	74	0	0	0	0	0	0	82	12	1	95	188
05:45 PM	7	0	2	0	9	4	85	0	0	89	0	0	0	0	0	0	75	18	0	93	191
Total	51	0	42	2	95	30	304	0	0	334	0	0	0	0	0	0	340	57	1	398	827
Grand Total	302	0	202	31	535	444	1738	0	10	2192	0	0	0	2	2	0	1629	415	9	2053	4782
Apprch %	56.4	0	37.8	5.8		20.3	79.3	0	0.5		0	0	0	100		0	79.3	20.2	0.4		
Total %	6.3	0	4.2	0.6	11.2	9.3	36.3	0	0.2	45.8	0	0	0	0	0	0	34.1	8.7	0.2	42.9	
Pass Cars	292	0	190	0	482	392	1696	0	0	2088	0	0	0	0	0	0	1589	394	0	1983	4553
% Pass Cars	96.7	0	94.1	0	90.1	88.3	97.6	0	0	95.3	0	0	0	0	0	0	97.5	94.9	0	96.6	95.2
Buses	9	0	12	0	21	50	29	0	0	79	0	0	0	0	0	0	26	21	0	47	147
% Buses	3	0	5.9	0	3.9	11.3	1.7	0	0	3.6	0	0	0	0	0	0	1.6	5.1	0	2.3	3.1
Single Units	1	0	0	0	1	2	11	0	0	13	0	0	0	0	0	0	10	0	0	10	24
% Single Units	0.3	0	0	0	0.2	0.5	0.6	0	0	0.6	0	0	0	0	0	0	0.6	0	0	0.5	0.5
Heavy Trucks	0	0	0	0	0	0	2	0	0	2	0	0	0	0	0	0	4	0	0	4	6
% Heavy Trucks	0	0	0	0	0	0	0.1	0	0	0.1	0	0	0	0	0	0	0.2	0	0	0.2	0.1
Peds.	0	0	0	31	31	0	0	0	3	3	0	0	0	0	0	0	0	0	0	0	34
% Peds.	0	0	0	100	5.8	0	0	0	30	0.1	0	0	0	0	0	0	0	0	0	0	0.7
Bikes	0	0	0	0	0	0	0	0	7	7	0	0	0	2	2	0	0	0	9	9	18
% Bikes	0	0	0	0	0	0	0	0	70	0.3	0	0	0	100	100	0	0	0	100	0.4	0.4

Comments: 4 hour traffic study conducted during typical weekday (Tuesday) from 7:00-9:00 AM morning & 2:00-6:00 PM afternoon peak hours while school was in session. Non-signalized intersection. Griffin Elementary School located within NE intersection quadrant. Video SCU camera was located within NW intersection quadrant.

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Traffic Study Peformed For:

Fleis & VandenBrink

Project:Grand Haven Traffic Impact Study
Type: 4 Hr. Video Turning Movement Count
Weather:Sunny/Cldy, Dry Deg. 70's
Count By: Miovision Video SCU 34N

File Name : TMC_2 Robbins & Griffin_9-19-17
Site Code : TMC_1
Start Date : 9/19/2017
Page No : 2

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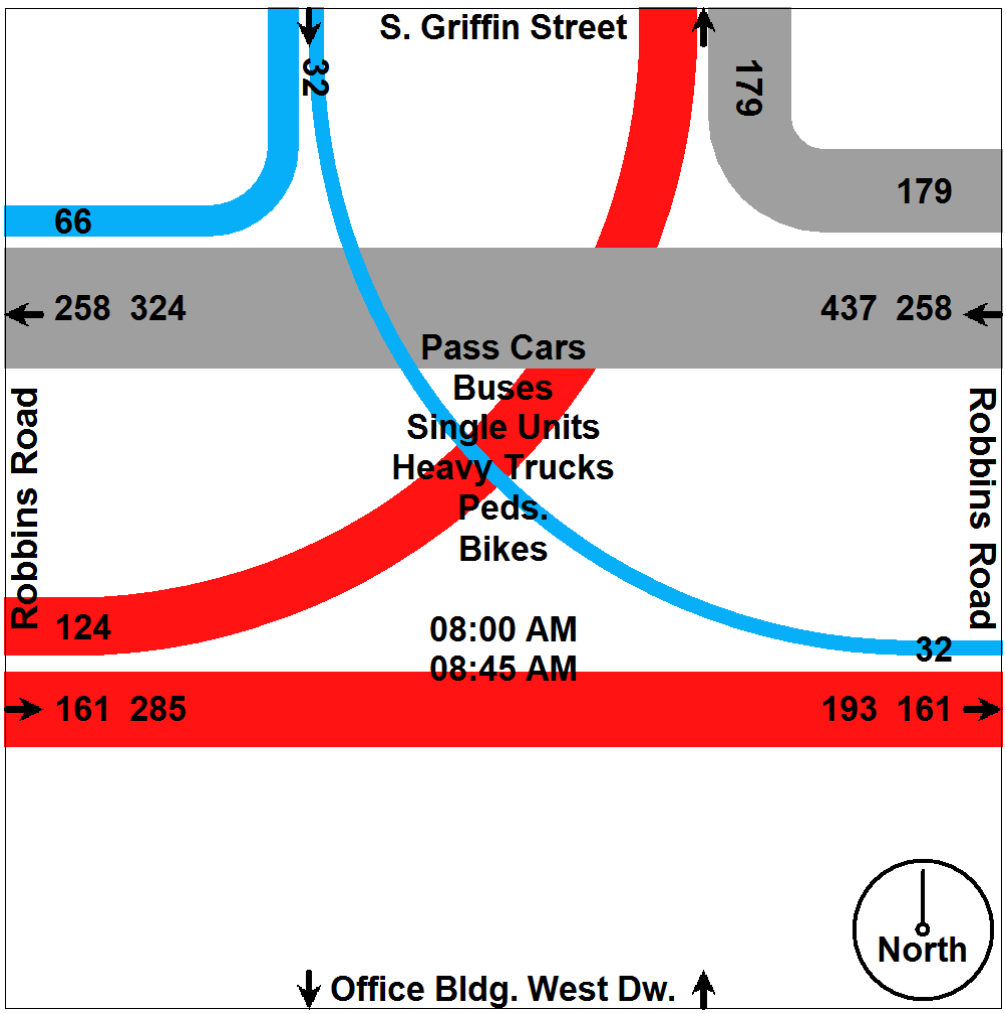
Traffic Study Peformed For:

Fleis & VandenBrink

Project:Grand Haven Traffic Impact Study
Type: 4 Hr. Video Turning Movement Count
Weather:Sunny/Cldy, Dry Deg. 70's
Count By: Miovision Video SCU 34N

File Name : TMC_2 Robbins & Griffin_9-19-17
Site Code : TMC_1
Start Date : 9/19/2017
Page No : 3

	S. Griffin Street Southbound				Robbins Road Westbound				Office Bldg. West Dw. Northbound				Robbins Road Eastbound				
Start Time	Rgt	Thru	Left	App. Total	Rgt	Thru	Left	App. Total	Rgt	Thru	Left	App. Total	Rgt	Thru	Left	App. Total	Int. Total
Peak Hour Analysis From 07:00 AM to 11:45 AM - Peak 1 of 1																	
Peak Hour for Entire Intersection Begins at 08:00 AM																	
08:00 AM	20	0	4	24	36	61	0	97	0	0	0	0	0	37	30	67	188
08:15 AM	16	0	7	23	**87**	65	0	**152**	0	0	0	0	0	34	**51**	**85**	**260**
08:30 AM	**23**	0	**15**	**38**	38	**66**	0	104	0	0	0	0	0	34	32	66	208
08:45 AM	7	0	6	13	18	66	0	84	0	0	0	0	0	**56**	11	67	164
Total Volume	66	0	32	98	179	258	0	437	0	0	0	0	0	161	124	285	820
% App. Total	67.3	0	32.7		41	59	0		0	0	0		0	56.5	43.5		
PHF	.717	.000	.533	.645	.514	.977	.000	.719	.000	.000	.000	.000	.000	.719	.608	.838	.788
Pass Cars	64	0	30	94	157	248	0	405	0	0	0	0	0	156	115	271	770
% Pass Cars	97.0	0	93.8	95.9	87.7	96.1	0	92.7	0	0	0	0	0	96.9	92.7	95.1	93.9
Buses	2	0	2	4	21	8	0	29	0	0	0	0	0	3	9	12	45
% Buses	3.0	0	6.3	4.1	11.7	3.1	0	6.6	0	0	0	0	0	1.9	7.3	4.2	5.5
Single Units	0	0	0	0	1	2	0	3	0	0	0	0	0	2	0	2	5
% Single Units	0	0	0	0	0.6	0.8	0	0.7	0	0	0	0	0	1.2	0	0.7	0.6
Heavy Trucks	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
% Heavy Trucks	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Peds.	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
% Peds.	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Bikes	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
% Bikes	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0



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Traffic Study Peformed For:

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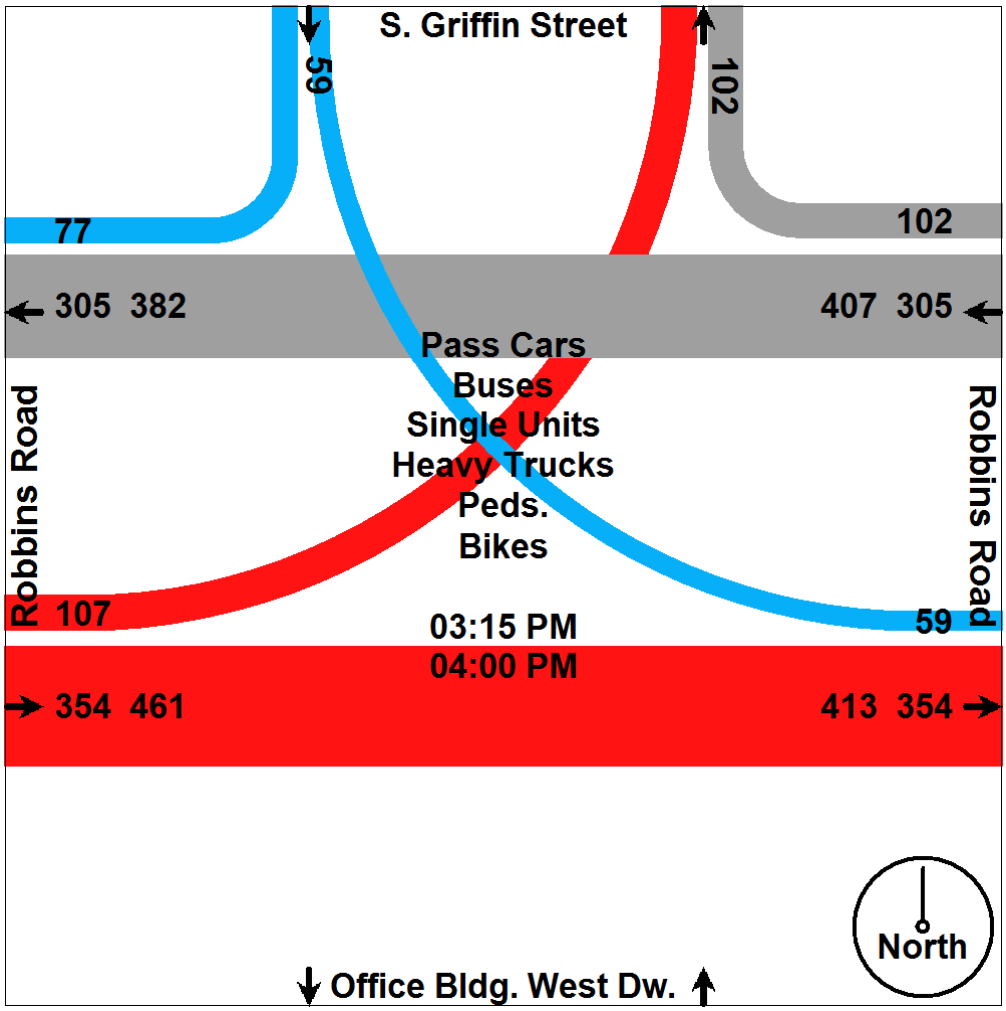
Project:Grand Haven Traffic Impact Study
Type: 4 Hr. Video Turning Movement Count
Weather:Sunny/Cldy, Dry Deg. 70's
Count By: Miovision Video SCU 34N

File Name : TMC_2 Robbins & Griffin_9-19-17
Site Code : TMC_1
Start Date : 9/19/2017
Page No : 4

	S. Griffin Street Southbound				Robbins Road Westbound				Office Bldg. West Dw. Northbound				Robbins Road Eastbound				
Start Time	Rgt	Thru	Left	App. Total	Rgt	Thru	Left	App. Total	Rgt	Thru	Left	App. Total	Rgt	Thru	Left	App. Total	Int. Total
Peak Hour Analysis From 12:00 PM to 05:45 PM - Peak 1 of 1																	
Peak Hour for Entire Intersection Begins at 03:15 PM																	
03:15 PM	5	0	3	8	30	85	0	115	0	0	0	0	0	70	**31**	101	224
03:30 PM	14	0	14	28	**34**	**90**	0	**124**	0	0	0	0	0	87	28	115	**267**
03:45 PM	**36**	0	14	**50**	24	55	0	79	0	0	0	0	0	98	29	**127**	256
04:00 PM	22	0	**28**	50	14	75	0	89	0	0	0	0	0	**99**	19	118	257
Total Volume	77	0	59	136	102	305	0	407	0	0	0	0	0	354	107	461	1004
% App. Total	56.6	0	43.4		25.1	74.9	0		0	0	0		0	76.8	23.2		
PHF	.535	.000	.527	.680	.750	.847	.000	.821	.000	.000	.000	.000	.000	.894	.863	.907	.940
Pass Cars	77	0	53	130	78	301	0	379	0	0	0	0	0	344	101	445	954
% Pass Cars	100	0	89.8	95.6	76.5	98.7	0	93.1	0	0	0	0	0	97.2	94.4	96.5	95.0
Buses	0	0	6	6	24	2	0	26	0	0	0	0	0	7	6	13	45
% Buses	0	0	10.2	4.4	23.5	0.7	0	6.4	0	0	0	0	0	2.0	5.6	2.8	4.5
Single Units	0	0	0	0	0	2	0	2	0	0	0	0	0	2	0	2	4
% Single Units	0	0	0	0	0	0.7	0	0.5	0	0	0	0	0	0.6	0	0.4	0.4
Heavy Trucks	0	0	0	0	0	0	0	0	0	0	0	0	0	1	0	1	1
% Heavy Trucks	0	0	0	0	0	0	0	0	0	0	0	0	0	0.3	0	0.2	0.1
Peds.	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
% Peds.	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Bikes	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
% Bikes	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0



Level of Service Criteria for Stop Sign Controlled Intersections

The level of service criteria are given in Table 17-2. As used here, control delay is defined as the total elapsed time from the time a vehicle stops at the end of the queue until the vehicle departs from the stop line; this time includes the time required for the vehicle to travel from the last-in-queue position to the first-in-queue position, including deceleration of vehicles from free-flow speed to the speed of vehicles in queue.

The average total delay for any particular minor movement is a function of the service rate or capacity of the approach and the degree of saturation. . . .

Exhibit 17-2. Level of Service Criteria for TWSC Intersections

LEVEL OF SERVICE	AVERAGE CONTROL DELAY (sec/veh)
A	≤ 10
B	> 10 and ≤ 15
C	> 15 and ≤ 25
D	> 25 and ≤ 35
E	> 35 and ≤ 50
F	> 50

Average total delay less than 10 sec/veh is defined as Level of Service (LOS) A. Follow-up times of less than 5 sec have been measured when there is no conflicting traffic for a minor street movement, so control delays of less than 10 sec/veh are appropriate for low flow conditions. To remain consistent with the AWSC intersection analysis procedure described later in this chapter, a total delay of 50 sec/veh is assumed as the break point between LOS E and F.

The proposed level of service criteria for TWSC intersections are somewhat different from the criteria used in Chapter 16 for signalized intersections. The primary reason for this difference is that drivers expect different levels of performance from different kinds of transportation facilities. The expectation is that a signalized intersection is designed to carry higher traffic volumes than an unsignalized intersection. Additionally, several driver behavior considerations combine to make delays at signalized intersections less onerous than at unsignalized intersections. For example, drivers at signalized intersections are able to relax during the red interval, where drivers on the minor approaches to unsignalized intersections must remain attentive to the task of identifying acceptable gaps and vehicle conflicts. Also, there is often much more variability in the amount of delay experienced by individual drivers at unsignalized than signalized intersections. For these reasons, it is considered that the total delay threshold for any given level of service is less for an unsignalized intersection than for a signalized intersection. . . .

LOS F exists when there are insufficient gaps of suitable size to allow a side street demand to cross safely through a major street traffic stream. This level of service is generally evident from extremely long total delays experienced by side street traffic and by queueing on the minor approaches. The method, however, is based on a constant critical gap size - that is, the critical gap remains constant, no matter how long the side street motorist waits. LOS F may also appear in the form of side street vehicles' selecting smaller-than-usual gaps. In such cases, safety may be a problem and some disruption to the major traffic stream may result. It is important to note that LOS F may not always result in long queues but may result in adjustments to normal gap acceptance behavior. The latter is more difficult to observe on the field than queueing, which is more obvious.

Source: Highway Capacity Manual, 2010. Transportation Research Board, National Research Council

Level of Service for Signalized Intersections

Level of service for signalized intersections is defined in terms of delay, which is a measure of driver discomfort and frustration, fuel consumption, and lost travel time. Specifically, level-of-service (LOS) criteria are stated in terms of the average stopped delay per vehicle for a 15-min analysis period. The criteria are given in Exhibit 16-2. Delay may be measured in the field or estimated using procedures presented later in this chapter. Delay is a complex measure and is dependent on a number of variables, including the quality of progression, the cycle length, the green ratio, and the *v/c* ratio for the lane group in question.

LOS A describes operations with very low delay, up to 10 sec per vehicle. This level of service occurs when progression is extremely favorable and most vehicles arrive during the green phase. Most vehicles do not stop at all. Short cycle lengths may also contribute to low delay.

LOS B describes operations with delay greater than 10 and up to 20 sec per vehicle. This level generally occurs with good progression, short cycle lengths, or both. More vehicles stop than with LOS A, causing higher levels of average delay.

Exhibit 16-2. Level-of-Service Criteria for Signalized Intersections

LEVEL OF SERVICE	STOPPED DELAY PER VEHICLE (SEC)
A	≤10.0
B	> 10.0 and ≤20.0
C	> 20.0 and ≤ 35.0
D	> 35.0 and ≤ 55.0
E	> 55.0 and ≤ 80.0
F	>80.0

LOS C describes operations with delay greater than 20 and up to 35 sec per vehicle. These higher delays may result from fair progression, longer cycle lengths, or both. Individual cycle failures may begin to appear at this level. The number of vehicles stopping is significant at this level, though many still pass through the intersection without stopping.

LOS D describes operations with delay greater than 35 and up to 55 sec per vehicle. At level D, the influence of congestion becomes more noticeable. Longer delays may result from some combination of unfavorable progression, long cycle lengths, or high *v/c* ratios. Many vehicles stop, and the proportion of vehicles not stopping declines. Individual cycle failures are noticeable.

LOS E describes operations with delay greater than 55 and up to 80 sec per vehicle. This level is considered by many agencies to be the limit of acceptable delay. These high delay values generally indicate poor progression, long cycle lengths, and high *v/c* ratios. Individual cycle failures are frequent occurrences.

LOS F describes operations with delay in excess of 80 sec per vehicle. This level, considered to be unacceptable to most drivers, often occurs with oversaturation, that is, when arrival flow rates exceed the capacity of the intersection. It may also occur at high *v/c* ratios below 1.0 with many individual cycle failures. Poor progression and long cycle lengths may also be major contributing causes to such delay levels.

Source: Highway Capacity Manual, 2010. Transportation Research Board, National Research Council

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	22	233	38	42	241	27	57	65	50	44	116	35
Future Volume (veh/h)	22	233	38	42	241	27	57	65	50	44	116	35
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	0.99		0.99	1.00		0.99	0.99		0.99	0.99		0.99
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach		No			No			No			No	
Adj Sat Flow, veh/h/ln	1870	1870	1870	1841	1841	1841	1811	1811	1811	1841	1841	1841
Adj Flow Rate, veh/h	26	274	45	44	254	28	71	81	62	56	147	44
Peak Hour Factor	0.85	0.85	0.85	0.95	0.95	0.95	0.80	0.80	0.80	0.79	0.79	0.79
Percent Heavy Veh, %	2	2	2	4	4	4	6	6	6	4	4	4
Cap, veh/h	503	652	107	475	702	77	352	433	443	430	317	95
Arrive On Green	0.04	0.42	0.42	0.05	0.43	0.43	0.06	0.24	0.24	0.06	0.23	0.23
Sat Flow, veh/h	1781	1564	257	1753	1627	179	1725	1811	1519	1753	1356	406
Grp Volume(v), veh/h	26	0	319	44	0	282	71	81	62	56	0	191
Grp Sat Flow(s),veh/h/ln	1781	0	1821	1753	0	1806	1725	1811	1519	1753	0	1762
Q Serve(g_s), s	0.7	0.0	11.1	1.2	0.0	9.5	2.7	3.2	2.7	2.1	0.0	8.4
Cycle Q Clear(g_c), s	0.7	0.0	11.1	1.2	0.0	9.5	2.7	3.2	2.7	2.1	0.0	8.4
Prop In Lane	1.00		0.14	1.00		0.10	1.00		1.00	1.00		0.23
Lane Grp Cap(c), veh/h	503	0	759	475	0	780	352	433	443	430	0	411
V/C Ratio(X)	0.05	0.00	0.42	0.09	0.00	0.36	0.20	0.19	0.14	0.13	0.00	0.46
Avail Cap(c_a), veh/h	575	0	759	521	0	780	375	433	443	464	0	411
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	0.00	1.00	1.00	0.00	1.00	1.00	1.00	1.00	1.00	0.00	1.00
Uniform Delay (d), s/veh	14.0	0.0	18.6	13.7	0.0	17.2	23.5	27.3	23.6	23.3	0.0	29.7
Incr Delay (d2), s/veh	0.0	0.0	1.7	0.1	0.0	1.3	0.3	1.0	0.7	0.1	0.0	3.7
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	0.3	0.0	4.8	0.5	0.0	4.0	1.0	1.4	1.0	0.9	0.0	4.0
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	14.0	0.0	20.3	13.8	0.0	18.5	23.8	28.2	24.2	23.5	0.0	33.4
LnGrp LOS	B	A	C	B	A	B	C	C	C	C	A	C
Approach Vol, veh/h		345			326			214			247	
Approach Delay, s/veh		19.8			17.9			25.6			31.2	
Approach LOS		B			B			C			C	

Timer - Assigned Phs	1	2	3	4	5	6	7	8
Phs Duration (G+Y+Rc), s	9.2	43.5	10.3	27.0	7.8	44.8	9.8	27.5
Change Period (Y+Rc), s	4.5	6.0	4.5	6.0	4.5	6.0	4.5	6.0
Max Green Setting (Gmax), s	7.0	34.0	7.0	21.0	7.0	34.0	7.0	21.0
Max Q Clear Time (g_c+I1), s	3.2	13.1	4.7	10.4	2.7	11.5	4.1	5.2
Green Ext Time (p_c), s	0.0	1.8	0.0	0.8	0.0	1.6	0.0	0.4

Intersection Summary	
HCM 6th Ctrl Delay	22.8
HCM 6th LOS	C

Intersection	
Int Delay, s/veh	3.3

Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Traffic Vol, veh/h	124	161	258	179	32	66
Future Vol, veh/h	124	161	258	179	32	66
Conflicting Peds, #/hr	10	0	0	10	10	10
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	100	-	-	-	150	0
Veh in Median Storage, #	-	0	0	-	0	-
Grade, %	-	0	0	-	0	-
Peak Hour Factor	84	84	72	72	65	65
Heavy Vehicles, %	5	5	7	7	4	4
Mvmt Flow	148	192	358	249	49	102

Major/Minor	Major1		Major2		Minor2	
Conflicting Flow All	617	0	-	0	991	503
Stage 1	-	-	-	-	493	-
Stage 2	-	-	-	-	498	-
Critical Hdwy	4.15	-	-	-	6.44	6.24
Critical Hdwy Stg 1	-	-	-	-	5.44	-
Critical Hdwy Stg 2	-	-	-	-	5.44	-
Follow-up Hdwy	2.245	-	-	-	3.536	3.336
Pot Cap-1 Maneuver	949	-	-	-	271	565
Stage 1	-	-	-	-	610	-
Stage 2	-	-	-	-	607	-
Platoon blocked, %		-	-	-		
Mov Cap-1 Maneuver	940	-	-	-	224	554
Mov Cap-2 Maneuver	-	-	-	-	320	-
Stage 1	-	-	-	-	509	-
Stage 2	-	-	-	-	601	-

Approach	EB	WB	SB
HCM Control Delay, s	4.2	0	14.7
HCM LOS			B

Minor Lane/Major Mvmt	EBL	EBT	WBT	WBR	SBLn1	SBLn2
Capacity (veh/h)	940	-	-	-	320	554
HCM Lane V/C Ratio	0.157	-	-	-	0.154	0.183
HCM Control Delay (s)	9.5	-	-	-	18.3	13
HCM Lane LOS	A	-	-	-	C	B
HCM 95th %tile Q(veh)	0.6	-	-	-	0.5	0.7

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	51	364	68	75	275	49	108	259	79	82	184	51
Future Volume (veh/h)	51	364	68	75	275	49	108	259	79	82	184	51
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	0.99		0.99	1.00		0.99	0.99		0.98	0.99		0.98
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach		No			No			No			No	
Adj Sat Flow, veh/h/ln	1870	1870	1870	1885	1885	1885	1870	1870	1870	1841	1841	1841
Adj Flow Rate, veh/h	58	414	77	82	299	53	121	291	89	93	209	58
Peak Hour Factor	0.88	0.88	0.88	0.92	0.92	0.92	0.89	0.89	0.89	0.88	0.88	0.88
Percent Heavy Veh, %	2	2	2	1	1	1	2	2	2	4	4	4
Cap, veh/h	449	599	111	353	622	110	319	444	477	298	322	89
Arrive On Green	0.06	0.39	0.39	0.07	0.40	0.40	0.07	0.24	0.24	0.07	0.23	0.23
Sat Flow, veh/h	1781	1530	285	1795	1555	276	1781	1870	1558	1753	1381	383
Grp Volume(v), veh/h	58	0	491	82	0	352	121	291	89	93	0	267
Grp Sat Flow(s),veh/h/ln	1781	0	1814	1795	0	1831	1781	1870	1558	1753	0	1764
Q Serve(g_s), s	1.7	0.0	20.3	2.3	0.0	12.9	4.5	12.6	3.8	3.5	0.0	12.3
Cycle Q Clear(g_c), s	1.7	0.0	20.3	2.3	0.0	12.9	4.5	12.6	3.8	3.5	0.0	12.3
Prop In Lane	1.00		0.16	1.00		0.15	1.00		1.00	1.00		0.22
Lane Grp Cap(c), veh/h	449	0	710	353	0	732	319	444	477	298	0	412
V/C Ratio(X)	0.13	0.00	0.69	0.23	0.00	0.48	0.38	0.66	0.19	0.31	0.00	0.65
Avail Cap(c_a), veh/h	481	0	710	371	0	732	325	444	477	311	0	412
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	0.00	1.00	1.00	0.00	1.00	1.00	1.00	1.00	1.00	0.00	1.00
Uniform Delay (d), s/veh	14.9	0.0	22.8	16.3	0.0	20.1	24.1	31.0	23.1	24.0	0.0	31.2
Incr Delay (d2), s/veh	0.1	0.0	5.5	0.3	0.0	2.3	0.7	7.4	0.9	0.6	0.0	7.7
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	0.6	0.0	9.2	0.9	0.0	5.7	1.8	6.2	1.4	1.5	0.0	6.1
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	15.0	0.0	28.3	16.6	0.0	22.3	24.9	38.4	23.9	24.6	0.0	38.9
LnGrp LOS	B	A	C	B	A	C	C	D	C	C	A	D
Approach Vol, veh/h		549			434			501			360	
Approach Delay, s/veh		26.9			21.3			32.6			35.2	
Approach LOS		C			C			C			D	

Timer - Assigned Phs	1	2	3	4	5	6	7	8
Phs Duration (G+Y+Rc), s	10.6	41.2	11.2	27.0	9.9	42.0	10.8	27.3
Change Period (Y+Rc), s	4.5	6.0	4.5	6.0	4.5	6.0	4.5	6.0
Max Green Setting (Gmax), s	7.0	34.0	7.0	21.0	7.0	34.0	7.0	21.0
Max Q Clear Time (g_c+I1), s	4.3	22.3	6.5	14.3	3.7	14.9	5.5	14.6
Green Ext Time (p_c), s	0.0	2.4	0.0	0.8	0.0	2.0	0.0	0.9

Intersection Summary	
HCM 6th Ctrl Delay	28.7
HCM 6th LOS	C

Intersection	
Int Delay, s/veh	3.5

Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Traffic Vol, veh/h	107	354	305	102	59	77
Future Vol, veh/h	107	354	305	102	59	77
Conflicting Peds, #/hr	4	0	0	4	4	1
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	100	-	-	-	150	0
Veh in Median Storage, #	-	0	0	-	0	-
Grade, %	-	0	0	-	0	-
Peak Hour Factor	91	91	82	82	68	68
Heavy Vehicles, %	3	3	7	7	4	4
Mvmt Flow	118	389	372	124	87	113

Major/Minor	Major1		Major2		Minor2	
Conflicting Flow All	500	0	-	0	1067	439
Stage 1	-	-	-	-	438	-
Stage 2	-	-	-	-	629	-
Critical Hdwy	4.13	-	-	-	6.44	6.24
Critical Hdwy Stg 1	-	-	-	-	5.44	-
Critical Hdwy Stg 2	-	-	-	-	5.44	-
Follow-up Hdwy	2.227	-	-	-	3.536	3.336
Pot Cap-1 Maneuver	1059	-	-	-	244	614
Stage 1	-	-	-	-	646	-
Stage 2	-	-	-	-	528	-
Platoon blocked, %		-	-	-		
Mov Cap-1 Maneuver	1055	-	-	-	215	611
Mov Cap-2 Maneuver	-	-	-	-	311	-
Stage 1	-	-	-	-	571	-
Stage 2	-	-	-	-	526	-

Approach	EB	WB	SB
HCM Control Delay, s	2.1	0	16
HCM LOS			C

Minor Lane/Major Mvmt	EBL	EBT	WBT	WBR	SBLn1	SBLn2
Capacity (veh/h)	1055	-	-	-	311	611
HCM Lane V/C Ratio	0.111	-	-	-	0.279	0.185
HCM Control Delay (s)	8.8	-	-	-	21	12.2
HCM Lane LOS	A	-	-	-	C	B
HCM 95th %tile Q(veh)	0.4	-	-	-	1.1	0.7

Intersection: 1: 172nd Avenue & Robbins Road

Movement	EB	EB	WB	WB	NB	NB	NB	SB	SB
Directions Served	L	TR	L	TR	L	T	R	L	TR
Maximum Queue (ft)	78	187	53	175	109	124	60	119	190
Average Queue (ft)	16	89	19	77	39	43	23	31	81
95th Queue (ft)	53	161	45	146	80	92	49	79	146
Link Distance (ft)		570		360		429			599
Upstream Blk Time (%)									
Queuing Penalty (veh)									
Storage Bay Dist (ft)	100		100		165		165	65	
Storage Blk Time (%)		7		4		0		1	15
Queuing Penalty (veh)		2		2		0		2	7

Intersection: 2: Robbins Road & S. Griffin Street

Movement	EB	EB	WB	SB	SB
Directions Served	L	T	TR	L	R
Maximum Queue (ft)	111	28	64	63	67
Average Queue (ft)	38	1	7	19	31
95th Queue (ft)	83	13	35	49	61
Link Distance (ft)		886	746		555
Upstream Blk Time (%)					
Queuing Penalty (veh)					
Storage Bay Dist (ft)	100			150	
Storage Blk Time (%)	0				
Queuing Penalty (veh)	0				

Zone Summary

Zone wide Queuing Penalty: 13

Intersection: 1: 172nd Avenue & Robbins Road

Movement	EB	EB	WB	WB	NB	NB	NB	SB	SB
Directions Served	L	TR	L	TR	L	T	R	L	TR
Maximum Queue (ft)	174	307	107	230	164	279	192	120	260
Average Queue (ft)	33	152	35	105	61	125	38	59	128
95th Queue (ft)	90	260	76	184	120	226	103	116	228
Link Distance (ft)		570		360		429			599
Upstream Blk Time (%)						0			
Queuing Penalty (veh)						0			
Storage Bay Dist (ft)	100		100		165		165	65	
Storage Blk Time (%)		19	0	8		4		5	27
Queuing Penalty (veh)		10	1	6		8		12	22

Intersection: 2: Robbins Road & S. Griffin Street

Movement	EB	EB	WB	SB	SB
Directions Served	L	T	TR	L	R
Maximum Queue (ft)	80	21	39	82	70
Average Queue (ft)	32	1	2	33	33
95th Queue (ft)	65	11	19	68	57
Link Distance (ft)		886	746		555
Upstream Blk Time (%)					
Queuing Penalty (veh)					
Storage Bay Dist (ft)	100			150	
Storage Blk Time (%)	0				
Queuing Penalty (veh)	0				

Zone Summary

Zone wide Queuing Penalty: 60

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	22	237	38	48	251	30	57	65	52	45	116	35
Future Volume (veh/h)	22	237	38	48	251	30	57	65	52	45	116	35
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	0.99		0.99	1.00		0.99	0.99		0.99	0.99		0.99
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach		No			No			No			No	
Adj Sat Flow, veh/h/ln	1870	1870	1870	1841	1841	1841	1811	1811	1811	1841	1841	1841
Adj Flow Rate, veh/h	26	279	45	51	264	32	71	81	65	57	147	44
Peak Hour Factor	0.85	0.85	0.85	0.95	0.95	0.95	0.80	0.80	0.80	0.79	0.79	0.79
Percent Heavy Veh, %	2	2	2	4	4	4	6	6	6	4	4	4
Cap, veh/h	491	647	104	474	694	84	352	433	449	430	317	95
Arrive On Green	0.04	0.41	0.41	0.06	0.43	0.43	0.06	0.24	0.24	0.06	0.23	0.23
Sat Flow, veh/h	1781	1569	253	1753	1609	195	1725	1811	1519	1753	1356	406
Grp Volume(v), veh/h	26	0	324	51	0	296	71	81	65	57	0	191
Grp Sat Flow(s),veh/h/ln	1781	0	1822	1753	0	1803	1725	1811	1519	1753	0	1762
Q Serve(g_s), s	0.7	0.0	11.4	1.4	0.0	10.0	2.7	3.2	2.8	2.1	0.0	8.4
Cycle Q Clear(g_c), s	0.7	0.0	11.4	1.4	0.0	10.0	2.7	3.2	2.8	2.1	0.0	8.4
Prop In Lane	1.00		0.14	1.00		0.11	1.00		1.00	1.00		0.23
Lane Grp Cap(c), veh/h	491	0	752	474	0	778	352	433	449	430	0	411
V/C Ratio(X)	0.05	0.00	0.43	0.11	0.00	0.38	0.20	0.19	0.14	0.13	0.00	0.46
Avail Cap(c_a), veh/h	563	0	752	512	0	778	375	433	449	463	0	411
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	0.00	1.00	1.00	0.00	1.00	1.00	1.00	1.00	1.00	0.00	1.00
Uniform Delay (d), s/veh	14.2	0.0	18.9	13.8	0.0	17.4	23.5	27.3	23.4	23.3	0.0	29.7
Incr Delay (d2), s/veh	0.0	0.0	1.8	0.1	0.0	1.4	0.3	1.0	0.7	0.1	0.0	3.7
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	0.3	0.0	4.9	0.5	0.0	4.2	1.0	1.4	1.0	0.9	0.0	4.0
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	14.3	0.0	20.7	13.9	0.0	18.8	23.8	28.2	24.1	23.5	0.0	33.4
LnGrp LOS	B	A	C	B	A	B	C	C	C	C	A	C
Approach Vol, veh/h		350			347			217			248	
Approach Delay, s/veh		20.2			18.1			25.5			31.1	
Approach LOS		C			B			C			C	

Timer - Assigned Phs	1	2	3	4	5	6	7	8
Phs Duration (G+Y+Rc), s	9.5	43.1	10.3	27.0	7.8	44.8	9.8	27.5
Change Period (Y+Rc), s	4.5	6.0	4.5	6.0	4.5	6.0	4.5	6.0
Max Green Setting (Gmax), s	7.0	34.0	7.0	21.0	7.0	34.0	7.0	21.0
Max Q Clear Time (g_c+I1), s	3.4	13.4	4.7	10.4	2.7	12.0	4.1	5.2
Green Ext Time (p_c), s	0.0	1.8	0.0	0.8	0.0	1.7	0.0	0.4

Intersection Summary	
HCM 6th Ctrl Delay	22.9
HCM 6th LOS	C

Intersection	
Int Delay, s/veh	3.5

Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Traffic Vol, veh/h	133	167	260	179	32	70
Future Vol, veh/h	133	167	260	179	32	70
Conflicting Peds, #/hr	10	0	0	10	10	10
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	100	-	-	-	150	0
Veh in Median Storage, #	-	0	0	-	0	-
Grade, %	-	0	0	-	0	-
Peak Hour Factor	84	84	72	72	65	65
Heavy Vehicles, %	5	5	7	7	4	4
Mvmt Flow	158	199	361	249	49	108

Major/Minor	Major1		Major2		Minor2	
Conflicting Flow All	620	0	-	0	1021	506
Stage 1	-	-	-	-	496	-
Stage 2	-	-	-	-	525	-
Critical Hdwy	4.15	-	-	-	6.44	6.24
Critical Hdwy Stg 1	-	-	-	-	5.44	-
Critical Hdwy Stg 2	-	-	-	-	5.44	-
Follow-up Hdwy	2.245	-	-	-	3.536	3.336
Pot Cap-1 Maneuver	946	-	-	-	260	562
Stage 1	-	-	-	-	608	-
Stage 2	-	-	-	-	589	-
Platoon blocked, %		-	-	-		
Mov Cap-1 Maneuver	937	-	-	-	212	551
Mov Cap-2 Maneuver	-	-	-	-	305	-
Stage 1	-	-	-	-	500	-
Stage 2	-	-	-	-	583	-

Approach	EB	WB	SB
HCM Control Delay, s	4.3	0	15
HCM LOS			C

Minor Lane/Major Mvmt	EBL	EBT	WBT	WBR	SBLn1	SBLn2
Capacity (veh/h)	937	-	-	-	305	551
HCM Lane V/C Ratio	0.169	-	-	-	0.161	0.195
HCM Control Delay (s)	9.6	-	-	-	19.1	13.1
HCM Lane LOS	A	-	-	-	C	B
HCM 95th %tile Q(veh)	0.6	-	-	-	0.6	0.7

Intersection	
Int Delay, s/veh	0.6

Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Traffic Vol, veh/h	285	7	6	324	19	15
Future Vol, veh/h	285	7	6	324	19	15
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	-	-	100	-	0	-
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	92	92	92	92	92	92
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	310	8	7	352	21	16

Major/Minor	Major1		Major2		Minor1	
Conflicting Flow All	0	0	318	0	680	314
Stage 1	-	-	-	-	314	-
Stage 2	-	-	-	-	366	-
Critical Hdwy	-	-	4.12	-	6.42	6.22
Critical Hdwy Stg 1	-	-	-	-	5.42	-
Critical Hdwy Stg 2	-	-	-	-	5.42	-
Follow-up Hdwy	-	-	2.218	-	3.518	3.318
Pot Cap-1 Maneuver	-	-	1242	-	417	726
Stage 1	-	-	-	-	741	-
Stage 2	-	-	-	-	702	-
Platoon blocked, %	-	-		-		
Mov Cap-1 Maneuver	-	-	1242	-	414	726
Mov Cap-2 Maneuver	-	-	-	-	515	-
Stage 1	-	-	-	-	737	-
Stage 2	-	-	-	-	702	-

Approach	EB	WB	NB
HCM Control Delay, s	0	0.1	11.5
HCM LOS			B

Minor Lane/Major Mvmt	NBLn1	EBT	EBR	WBL	WBT
Capacity (veh/h)	591	-	-	1242	-
HCM Lane V/C Ratio	0.063	-	-	0.005	-
HCM Control Delay (s)	11.5	-	-	7.9	-
HCM Lane LOS	B	-	-	A	-
HCM 95th %tile Q(veh)	0.2	-	-	0	-

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	51	374	68	81	281	53	108	259	88	89	184	51
Future Volume (veh/h)	51	374	68	81	281	53	108	259	88	89	184	51
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	0.99		0.99	1.00		0.99	0.99		0.98	1.00		0.98
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach		No			No			No			No	
Adj Sat Flow, veh/h/ln	1870	1870	1870	1885	1885	1885	1870	1870	1870	1841	1841	1841
Adj Flow Rate, veh/h	58	425	77	88	305	58	121	291	99	101	209	58
Peak Hour Factor	0.88	0.88	0.88	0.92	0.92	0.92	0.89	0.89	0.89	0.88	0.88	0.88
Percent Heavy Veh, %	2	2	2	1	1	1	2	2	2	4	4	4
Cap, veh/h	440	600	109	346	614	117	319	441	477	298	322	89
Arrive On Green	0.06	0.39	0.39	0.07	0.40	0.40	0.07	0.24	0.24	0.07	0.23	0.23
Sat Flow, veh/h	1781	1537	278	1795	1536	292	1781	1870	1558	1753	1381	383
Grp Volume(v), veh/h	58	0	502	88	0	363	121	291	99	101	0	267
Grp Sat Flow(s),veh/h/ln	1781	0	1816	1795	0	1828	1781	1870	1558	1753	0	1764
Q Serve(g_s), s	1.7	0.0	21.0	2.5	0.0	13.4	4.5	12.7	4.2	3.8	0.0	12.3
Cycle Q Clear(g_c), s	1.7	0.0	21.0	2.5	0.0	13.4	4.5	12.7	4.2	3.8	0.0	12.3
Prop In Lane	1.00		0.15	1.00		0.16	1.00		1.00	1.00		0.22
Lane Grp Cap(c), veh/h	440	0	708	346	0	731	319	441	477	298	0	412
V/C Ratio(X)	0.13	0.00	0.71	0.25	0.00	0.50	0.38	0.66	0.21	0.34	0.00	0.65
Avail Cap(c_a), veh/h	473	0	708	361	0	731	325	441	477	309	0	412
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	0.00	1.00	1.00	0.00	1.00	1.00	1.00	1.00	1.00	0.00	1.00
Uniform Delay (d), s/veh	15.0	0.0	23.1	16.5	0.0	20.2	24.1	31.1	23.2	24.0	0.0	31.2
Incr Delay (d2), s/veh	0.1	0.0	5.9	0.4	0.0	2.4	0.7	7.5	1.0	0.7	0.0	7.7
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	0.7	0.0	9.6	1.0	0.0	5.9	1.8	6.2	1.6	1.6	0.0	6.1
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	15.1	0.0	29.0	16.9	0.0	22.6	24.9	38.7	24.2	24.7	0.0	38.9
LnGrp LOS	B	A	C	B	A	C	C	D	C	C	A	D
Approach Vol, veh/h		560			451			511			368	
Approach Delay, s/veh		27.6			21.5			32.6			35.0	
Approach LOS		C			C			C			C	

Timer - Assigned Phs	1	2	3	4	5	6	7	8
Phs Duration (G+Y+Rc), s	10.7	41.1	11.2	27.0	9.9	42.0	10.9	27.2
Change Period (Y+Rc), s	4.5	6.0	4.5	6.0	4.5	6.0	4.5	6.0
Max Green Setting (Gmax), s	7.0	34.0	7.0	21.0	7.0	34.0	7.0	21.0
Max Q Clear Time (g_c+I1), s	4.5	23.0	6.5	14.3	3.7	15.4	5.8	14.7
Green Ext Time (p_c), s	0.0	2.4	0.0	0.8	0.0	2.0	0.0	1.0

Intersection Summary	
HCM 6th Ctrl Delay	28.9
HCM 6th LOS	C

Intersection	
Int Delay, s/veh	3.6

Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Traffic Vol, veh/h	109	360	313	102	59	80
Future Vol, veh/h	109	360	313	102	59	80
Conflicting Peds, #/hr	4	0	0	4	4	1
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	100	-	-	-	150	0
Veh in Median Storage, #	-	0	0	-	0	-
Grade, %	-	0	0	-	0	-
Peak Hour Factor	91	91	82	82	68	68
Heavy Vehicles, %	3	3	7	7	4	4
Mvmt Flow	120	396	382	124	87	118

Major/Minor	Major1		Major2		Minor2	
Conflicting Flow All	510	0	-	0	1088	449
Stage 1	-	-	-	-	448	-
Stage 2	-	-	-	-	640	-
Critical Hdwy	4.13	-	-	-	6.44	6.24
Critical Hdwy Stg 1	-	-	-	-	5.44	-
Critical Hdwy Stg 2	-	-	-	-	5.44	-
Follow-up Hdwy	2.227	-	-	-	3.536	3.336
Pot Cap-1 Maneuver	1050	-	-	-	237	606
Stage 1	-	-	-	-	639	-
Stage 2	-	-	-	-	521	-
Platoon blocked, %		-	-	-		
Mov Cap-1 Maneuver	1046	-	-	-	208	603
Mov Cap-2 Maneuver	-	-	-	-	303	-
Stage 1	-	-	-	-	563	-
Stage 2	-	-	-	-	519	-

Approach	EB	WB	SB
HCM Control Delay, s	2.1	0	16.3
HCM LOS			C

Minor Lane/Major Mvmt	EBL	EBT	WBT	WBR	SBLn1	SBLn2
Capacity (veh/h)	1046	-	-	-	303	603
HCM Lane V/C Ratio	0.115	-	-	-	0.286	0.195
HCM Control Delay (s)	8.9	-	-	-	21.6	12.4
HCM Lane LOS	A	-	-	-	C	B
HCM 95th %tile Q(veh)	0.4	-	-	-	1.2	0.7

Intersection	
Int Delay, s/veh	0.5

Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Traffic Vol, veh/h	461	26	11	382	16	8
Future Vol, veh/h	461	26	11	382	16	8
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	-	-	100	-	0	-
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	88	88	83	83	83	88
Heavy Vehicles, %	4	4	7	7	7	4
Mvmt Flow	524	30	13	460	19	9

Major/Minor	Major1		Major2		Minor1	
Conflicting Flow All	0	0	554	0	1025	539
Stage 1	-	-	-	-	539	-
Stage 2	-	-	-	-	486	-
Critical Hdwy	-	-	4.17	-	6.47	6.24
Critical Hdwy Stg 1	-	-	-	-	5.47	-
Critical Hdwy Stg 2	-	-	-	-	5.47	-
Follow-up Hdwy	-	-	2.263	-	3.563	3.336
Pot Cap-1 Maneuver	-	-	992	-	255	539
Stage 1	-	-	-	-	575	-
Stage 2	-	-	-	-	608	-
Platoon blocked, %	-	-		-		
Mov Cap-1 Maneuver	-	-	992	-	252	539
Mov Cap-2 Maneuver	-	-	-	-	380	-
Stage 1	-	-	-	-	568	-
Stage 2	-	-	-	-	608	-

Approach	EB	WB	NB
HCM Control Delay, s	0	0.2	14.2
HCM LOS			B

Minor Lane/Major Mvmt	NBLn1	EBT	EBR	WBL	WBT
Capacity (veh/h)	420	-	-	992	-
HCM Lane V/C Ratio	0.068	-	-	0.013	-
HCM Control Delay (s)	14.2	-	-	8.7	-
HCM Lane LOS	B	-	-	A	-
HCM 95th %tile Q(veh)	0.2	-	-	0	-

Intersection: 1: 172nd Avenue & Robbins Road

Movement	EB	EB	WB	WB	NB	NB	NB	SB	SB
Directions Served	L	TR	L	TR	L	T	R	L	TR
Maximum Queue (ft)	48	206	69	172	100	100	70	104	182
Average Queue (ft)	13	89	23	74	38	41	24	32	79
95th Queue (ft)	39	161	53	143	81	93	58	76	151
Link Distance (ft)		570		360		429			599
Upstream Blk Time (%)									
Queuing Penalty (veh)									
Storage Bay Dist (ft)	100		100		165		165	65	
Storage Blk Time (%)		8	0	4				1	15
Queuing Penalty (veh)		2	0	2				2	7

Intersection: 2: Robbins Road & S. Griffin Street

Movement	EB	EB	WB	SB	SB
Directions Served	L	T	TR	L	R
Maximum Queue (ft)	109	12	84	66	70
Average Queue (ft)	43	1	11	21	31
95th Queue (ft)	88	9	47	52	58
Link Distance (ft)		405	746		555
Upstream Blk Time (%)					
Queuing Penalty (veh)					
Storage Bay Dist (ft)	100			150	
Storage Blk Time (%)	1				
Queuing Penalty (veh)	1				

Intersection: 3: Site Drive & Robbins Road

Movement	WB	NB
Directions Served	L	LR
Maximum Queue (ft)	18	54
Average Queue (ft)	1	21
95th Queue (ft)	10	48
Link Distance (ft)		498
Upstream Blk Time (%)		
Queuing Penalty (veh)		
Storage Bay Dist (ft)	100	
Storage Blk Time (%)		
Queuing Penalty (veh)		

Zone Summary

Zone wide Queuing Penalty: 14

Intersection: 1: 172nd Avenue & Robbins Road

Movement	EB	EB	WB	WB	NB	NB	NB	SB	SB
Directions Served	L	TR	L	TR	L	T	R	L	TR
Maximum Queue (ft)	199	325	134	227	135	296	228	120	265
Average Queue (ft)	37	163	38	108	56	130	39	63	139
95th Queue (ft)	113	276	89	193	111	228	113	124	242
Link Distance (ft)		570		360		429			599
Upstream Blk Time (%)									
Queuing Penalty (veh)									
Storage Bay Dist (ft)	100		100		165		165	65	
Storage Blk Time (%)		22	0	10		5		6	32
Queuing Penalty (veh)		12	1	8		9		14	29

Intersection: 2: Robbins Road & S. Griffin Street

Movement	EB	EB	WB	SB	SB
Directions Served	L	T	TR	L	R
Maximum Queue (ft)	78	21	49	91	73
Average Queue (ft)	32	1	4	34	35
95th Queue (ft)	64	13	24	69	63
Link Distance (ft)		395	746		555
Upstream Blk Time (%)					
Queuing Penalty (veh)					
Storage Bay Dist (ft)	100			150	
Storage Blk Time (%)	0			0	
Queuing Penalty (veh)	0			0	

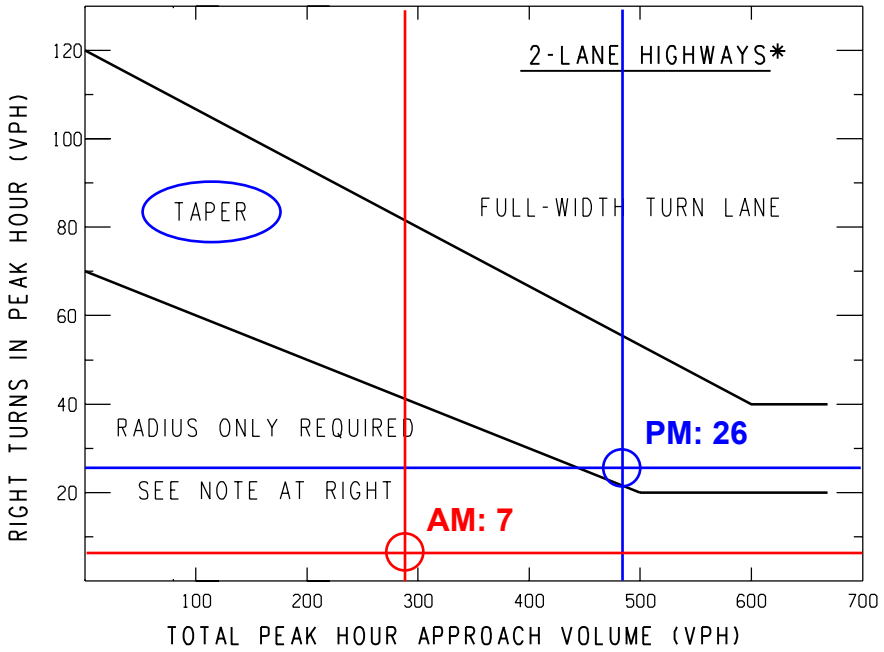
Intersection: 3: Site Drive & Robbins Road

Movement	WB	NB
Directions Served	L	LR
Maximum Queue (ft)	34	60
Average Queue (ft)	2	20
95th Queue (ft)	17	50
Link Distance (ft)		485
Upstream Blk Time (%)		
Queuing Penalty (veh)		
Storage Bay Dist (ft)	100	
Storage Blk Time (%)		
Queuing Penalty (veh)		

Zone Summary

Zone wide Queuing Penalty: 73

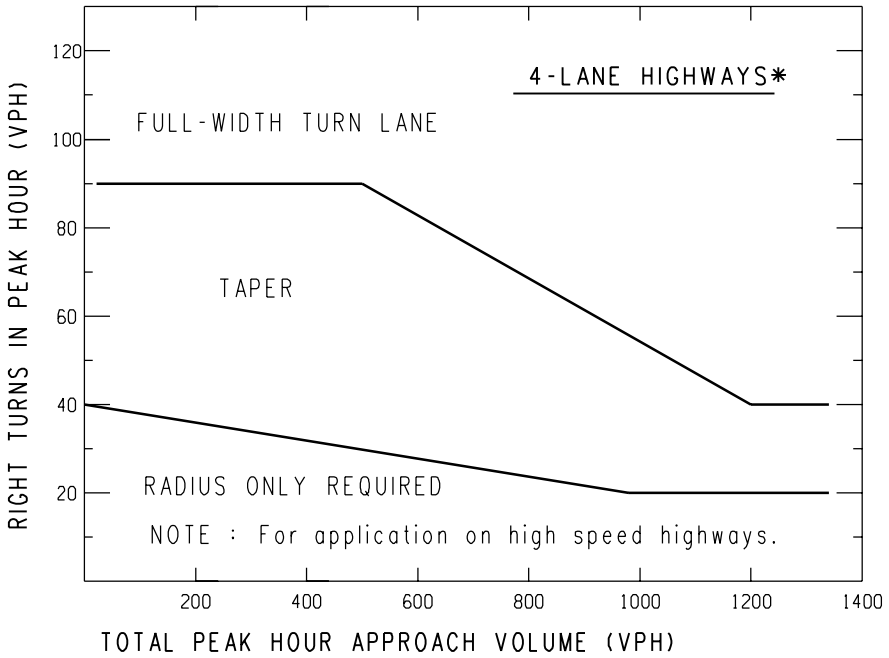
ROBBINS ROAD & SITE DRIVE RT LANE WARRANT



NOTE:
For posted speeds at or under 45 mph, peak hour right turns greater than 40 vph, and total peak hour approach less than 300 vph, adjust right turn volumes.

Adjust peak hour right turns = Peak hour right turns - 20

AM: 292
PM: 487



*If a center left-turn lane exists(i.e. 3 or 5 lane highway), subtract the number of left turns in approach volume from the total approach volume to get an adjusted total approach volume.

Sample Problem:
The Design Speed is 55 mph. The Peak Hour Approach Volume is 300 vph. The Number of Right Turns in the Peak Hour is 100 vph. Determine if a right turn lane is recommended.

Solution:
Figure indicates that the intersection of 300 vph and 100 vph is located above the upper trend line; thus,a right-turn lane may be recommended.

MDOT Michigan Department of Transportation TRAFFIC AND SAFETY NOTE	TRAFFIC VOLUME GUIDELINES FOR RIGHT-TURN LANES AND TAPERS		
DRAWN BY: MTS CHECKED BY: JAT	08/05/2004 PLAN DATE:	604A	SHEET 2 OF 2
FILE: K:/DGN/ts notes/Note604A tsn.dgn		REV. 08/05/2004	