RESOURCE CONSERVATION AND RECOVERY ACT FACILITY INVESTIGATION WORK PLAN FOR THE FORMER GM ROMULUS ENGINEERING CENTER 37350 ECORSE ROAD, ROMULUS, MICHIGAN USEPA ID #MID000809905

by

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for

Revitalizing Auto Communities
Environmental Response Trust
Ypsilanti, Michigan

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HALEY & ALDRICH

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LIST OF SUPPORTING DOCUMENTS (Bound Separately)

Document Title

Resource Conservation and Recovery Act
Facility Investigation Quality Assurance Project Plan
for the Former Romulus Engineering Center
37350 Ecorse Road, Romulus, Michigan, RACER Site #1002
Haley & Aldrich of Michigan, Inc., 24 September 2012

Resource Conservation and Recovery Act
Facility Investigation Field Sampling Plan
for the Former Romulus Engineering Center
37350 Ecorse Road, Romulus, Michigan, RACER Site #1002
Haley & Aldrich of Michigan, Inc., 24 September 2012

LIST OF ACRONYMS AND ABBREVIATIONS

AOI	Area of Interest
BGS	Below Ground Surface
CCS	Current Conditions Summary
DMP	Data Management Plan
EI	Environmental Indicators
FSP	Field Sampling Plan
GM	General Motors
Haley & Aldrich	Haley & Aldrich of Michigan, Inc.
LNAPL	Light Non-aqueous Phase Liquid
DNALP	Dense Non-aqueous Phase Liquid
mL/min	Milliliters per minute
MDEQ	Michigan Department of Environmental Quality
MDNR	Michigan Department of Natural Resources
MDNRE	Michigan Department of Natural Resources and Environment
MI	Michigan
Michigan 10 Metals	Arsenic, Barium, Cadmium, Chromium, Copper, Lead, Mercury, Selenium, Silver, and Zinc
Part 201	Part 201 of Michigan's Natural Resources and Environmental Protection Act of 1994 (as amended)
PAHs	Polycyclic Aromatic Hydrocarbons
PBA	Performance Based Agreement
PCBs	Polychlorinated Biphenyls
POTW	Publicly-owned treatment works
RACER Trust	Revitalizing Auto Communities Environmental Response Trust
RCRA	Resource Conservation and Recovery Act
QAPP	Quality Assurance Project Plan
RFI	RCRA Facility Investigation
TAL	Target Analyte List
TCL	Target Compound List
UCL	Upper Confidence Limit
USEPA	United States Environmental Protection Agency
UST	Underground Storage Tank
VOCs	Volatile Organic Compounds

1. INTRODUCTION

1.1 General

Revitalizing Auto Communities Environmental Response Trust (RACER) of Ypsilanti, Michigan is working with Michigan Department of Environmental Quality (MDEQ) to characterize and address areas impacted by hazardous waste and/or constituents at the former General Motors (GM) Romulus Engineering Center, a property located at 37350 Ecorse Road in Romulus, Wayne County, Michigan (the Site). In support of this effort, RACER will investigate, and as necessary, remediate all releases of hazardous wastes or constituents at or from the Site. Work will be undertaken at the Site generally following a performance-based approach for corrective action under the Resource Conservation and Recovery Act (RCRA), despite that hazardous waste has not been stored at the Site for more than 90 days, and the Site has not been subject to RCRA interim status.

RACER will investigate, and as necessary, remediate any releases of hazardous waste and/or hazardous constituents at or from the Site which may pose an unacceptable risk to human health or the environment.

The current environmental conditions at the Site have been assessed as documented in the *Current Conditions Summary* (CCS) (Haley & Aldrich, December 2011). The CCS covers all areas of the Site, and summarizes current conditions with respect to prior investigations, historic operations, and physical setting, as well as past treatment, storage or disposal of hazardous waste or hazardous constituents. The current environmental conditions at the Site were assessed primarily by reviewing available Site and regulatory agency files and historic aerial photographs; conducting interviews of site personnel; and observing and documenting current conditions through several Site visits. Through this process, eight areas, where hazardous waste or hazardous constituents were potentially stored or released, were identified and designated as Areas of Interest (AOIs). Six of these eight AOIs have been identified as warranting further investigation. Summary information concerning these six AOIs is provided in Table I.

Haley & Aldrich of Michigan, Inc. (Haley & Aldrich) has prepared this document on behalf of RACER to serve as a RCRA Facility Investigation (RFI) Work Plan for investigating the six AOIs identified in Table I.

1.2 Site Background

The Site, measuring approximately 70 acres in size, is located at 37350 Ecorse Road in Romulus, Michigan and is immediately adjacent and to the west of the active General Motors Corporation Powertrain (GMPT) – Romulus Plant, which is located at 36880 Ecorse Road and is owned and operated by General Motors, LLC. The Site is a vacant parcel with the concrete slab of the former 196,000 square-foot Romulus Engineering Center remaining, a paved access road and areas of vegetation. The former building was constructed in 1981, housing dynamometer cells for engine testing. The building was demolished in 2010. The parcel is a generally rectangular-shaped tract of land that is situated in a mixed industrial / commercial / residential area. Figure 1 shows the location of the Site and the surrounding topographic features, and Figure 2 shows former Site features.

More details are presented in the CSS concerning: Site background, historical operations, physical setting, prior environmental investigations, and criteria used for identifying AOIs requiring additional investigation.

2. PROPOSED RCRA FACILITY INVESTIGATION ACTIVITIES

2.1 RFI Goals and Objectives

As noted previously, the overall goal of the RFI is to characterize the nature and extent of any release of hazardous waste and/or hazardous constituents at the Site which may pose an unacceptable risk to human health and the environment.

The primary objective of the RFI is to collect data of sufficient quality and quantity to support an assessment of potential current and future risks to human health and the environment associated with releases of hazardous waste and/or hazardous constituents.

Specifically, the RFI will:

- Determine whether releases of hazardous waste/constituents have occurred to soil, groundwater, surface water, or sediment at AOIs identified in Table I and illustrated on Figure 3;
- Characterize the source(s) of a release and determine the nature and extent of constituents in environmental media to the extent necessary to protect human health and the environment;
- Characterize actual and potential migration pathways, actual and potential human and environmental receptors, and current and reasonably expected future land and groundwater uses;
- Assess potential risk to human health and the environment associated with releases of hazardous waste/constituents;
- Determine whether interim corrective measures are necessary to control current unacceptable human exposures, or to control migration of contaminated groundwater;
- Provide sufficient data to support a demonstration that current human exposures to contamination above applicable criteria are under control, and that the migration of groundwater contaminated above acceptable levels is stabilized; and
- Determine if final corrective measures are necessary to mitigate all current and future unacceptable risks, if any, to human health and the environment.

The results of the RFI will be used to demonstrate that: 1) all current human exposures to media contaminated with hazardous waste and/or hazardous constituents above risk-based levels are under control; and 2) migration of groundwater contaminated with hazardous waste and/or hazardous constituents above acceptable levels is stabilized within any existing areas of contamination, and any discharge of contaminated groundwater to surface water is either insignificant or shown to be currently acceptable. This demonstration will be documented in Environmental Indicators Reports for Human Health (CA725) and Groundwater (CA750). The results of the RFI will be used to support the selection of final Corrective Measures necessary (if any) to protect human health and the environment from identified current and future unacceptable risks due to releases of hazardous waste or hazardous constituents at the Site.

2.2 RFI Approach

The RFI of the AOIs presented in Table I and illustrated on Figure 3 will be undertaken in a phased approach. After each phase, adequacy of the data will be evaluated to determine whether additional data collection is warranted. When data of sufficient quality and quantity have been collected, the data will be used to support decisions regarding the need for interim or final corrective measures. The first field event (Phase I) includes the following:

- Characterizing soil and/or groundwater quality at AOIs that have been identified for further investigation of potentially impacted media;
- Conducting ground surveying to establish sample and monitoring well location and elevation information; and
- Conducting a preliminary assessment of potential human and ecological exposures to environmental media at and surrounding the Site by comparing results to screening criteria.

Subsequent field events (if any) will consist of soil boring and/or well installations at individual AOIs where a potential impact to soil and/or groundwater is indicated from Phase I results. The second event will also include additional soil and groundwater sampling, as necessary, to achieve RFI goals, as discussed above.

Overall, the RFI activities will be implemented with the following considerations:

- Soil boring/monitoring well installations and soil and groundwater sampling and analysis will be implemented in a phased approach for data collection;
- To the extent possible, data evaluation concerning AOIs that are clustered geographically and/or functionality will be combined;
- Characterization of a suspected release will be biased toward areas of highest potential impacts by positioning borings/wells within or downgradient of likely release areas such as primary/surrogate components (sumps, pits, trenches, etc.) of each AOI or group of AOIs.
- Initially during Phase I activities, soil borings found to have measurable groundwater present will be converted to temporary monitoring wells (screen and riser installation with sand pack, but no pack/surface seal, surface mount, or protective casing) to facilitate initial borehole groundwater sampling;
- Temporary monitoring wells will be converted to permanent installations during Phase II efforts, pending the results of Phase I efforts; and
- If the results of the Phase I efforts show no release of hazardous waste and/or hazardous constituents at the Site which may pose an unacceptable risk to human health and the environment, no subsequent phases of investigation will be executed.

Further details concerning the collection and analysis of soil and groundwater samples are provided in Section 2.3.

The following documents are prepared under separate covers, and provide supporting information, means, methods, etc. in support of completing the RFI for this Site:

- Field Sampling Plan (FSP): The FSP presents Standard Operating Procedures for the collection of soil, sediment, and groundwater samples; and
- Quality Assurance Project Plan (QAPP): The QAPP presents the organization, objectives, plan activities and specific quality assurance/quality control procedures which will be utilized during the implementation of the RFI.

2.3 Sampling and Analysis Plan for Soil and Groundwater

Soil boring will be performed at each AOI that is slated for subsurface investigation, as noted in Table I. The location(s) of this boring will be selected based on field conditions, such as utility locations, overhead clearance, etc., and will be biased based on historical process information (e.g., historical drain, tank, or equipment locations), Site specific physical parameters (e.g., downgradient), observed potential evidence of contamination (e.g., surficial stains), or observed potential evidence of preferential pathways (e.g., cracked concrete). To the extent possible, all soil borings will be advanced using Geoprobe® techniques; however, conventional auger techniques may be necessary to facilitate monitoring well installations in some cases. Unless intended specifically for assessing the presence of dense non-aqueous phase liquid (DNAPL) or characterizing the local/regional confining layer, soil sampling will be collected at each boring location in approximately 2-foot depth intervals, and each will be screened with a photoionization detector [PID], visually characterized for lithology, and subjected to oil/water shake tests.

During Phase I efforts, soil samples will be submitted for laboratory analyses if obvious evidence of release (e.g., visual evidence of gross contamination, positive shake test results, and/or relatively high PID readings) is noted at the time of sample collection. These samples (if any) will be analyzed as noted below.

During Phase I, any soil borings found to contain a measurable amount of groundwater will be converted to a temporary (1.5-inch diameter) monitoring well (pre-packed screen and riser installation, but no pack/surface seal, surface mount, or protective casing) to facilitate initial borehole groundwater sampling. Borehole groundwater will be collected from each of these temporary monitoring wells during Phase I efforts, and will be analyzed as noted below. It should be noted, analysis for Michigan 10 metals will be conducted on samples of both filtered and unfiltered borehole water in the event borehole water turbidity is less than 10 Nephelometric Turbidity Units (NTUs). These temporary wells will be converted to permanent installations during Phase II efforts, pending the Phase I borehole water results. The Phase I borehole water results will be used as the primary indicator of release at each AOI. In the event that a well cannot be installed at the original boring location due to area limitations, an alternative well location will be selected accordingly; however, if the alternative well location is more than 10 feet from the original boring location, additional soil characterization (sampling and analysis) will be performed at that location.

Groundwater elevation measurements will be collected from each temporary monitoring well at the time of sampling. Initially, during Phase I efforts, groundwater samples will be collected as grab samples, using a peristaltic pump. If a Phase II is necessary and if groundwater samples are to be collected from

permanently-established wells, these samples will be collected via low stress/low flow sampling techniques (i.e., purge rates of 100 to a maximum of 500 milliliters per minute [mL/min]). Of these samples to be subject to metals analyses, both filtered and unfiltered analyses will be performed, if the given sample exhibits a turbidity reading of greater than 10 NTUs. Otherwise, only unfiltered samples will be analyzed.

Borehole water and groundwater samples will generally be analyzed for the following analytes:

- Target Compound List (TCL) volatile organic compounds (VOCs);
- TCL polycyclic aromatic hydrocarbons (PAHs);
- Michigan 10 metals* (Arsenic, Barium, Cadmium, Chromium, Copper, Lead, Mercury, Selenium, Silver and Zinc).

Borehole water and groundwater from all monitoring wells sampled will also be analyzed for the following parameters in the field:

- Dissolved Oxygen;
- Oxidation-reduction potential (ORP);
- Alkalinity/acidity (pH);
- Temperature;
- Conductivity; and
- Turbidity.

Groundwater sampling subsequent to Phase I efforts (e.g., Phase II efforts) may incorporate the completion of select temporary monitoring wells to permanent installations and/or newly installed monitoring wells, to further evaluate groundwater conditions based on the results of Phase I groundwater sampling or soil sampling results. Groundwater samples will be analyzed consistent with Phase I efforts.

Examples of conditions that might necessitate subsequent monitoring well installation and sampling during a Phase II include:

- Potential evidence of light non-aqueous phase liquid (LNAPL) (e.g., significant sheen, staining, or odor) may be identified during soil boring completion. In this case, a monitoring well may be installed across the water table at the location.
- Constituents may be identified at concentrations in soil that would indicate potential leaching to groundwater. In this case, a monitoring well may be installed downgradient of the area unless a previously installed temporary well indicates no significant impact to groundwater in the area.

* Analyses will be performed as total concentration for each analyte, with the exception of chromium, which will be speciated in select instances, as warranted.

The monitoring well would be screened at an appropriate interval to identify probable maximum concentrations of the constituent(s).

- Site-wide trends in groundwater concentrations may suggest the presence of a source area where monitoring wells are not located.

Soil samples subject to analyses will generally be analyzed for the following analytes:

- TCL VOCs;
- TCL PAHs;
- TCL polychlorinated biphenyls (PCBs); and/or
- Michigan 10 metals[†].

If a Phase II is necessary, at AOIs exhibiting evidence of release based on the Phase I borehole water results, soil samples will be collected and submitted for analyses based on the following criteria:

- At unpaved areas, representative 0- to 2-foot depth interval soil samples will be selected for analyses. Soil from the 0- to 2-foot interval below ground surface represents soil likely to be encountered by potential receptors if uncovered. It also represents the area most likely to be impacted by a release to the ground surface. If the soil is overlain by concrete, asphalt, sub-base, railway ballast, or other material, the sample will be collected from the uppermost 0- to 2-foot soil interval for analyses.
- Globally, at all soil borings, soil samples will be collected from unsaturated soils above the water table for analyses. One sample will be collected for analyses from the 8- to 10-foot depth interval (construction worker scenario), provided that this depth is significantly (e.g., 2 feet) above the sample taken in the unsaturated soil above the water table. (For example, if the water table is at 11 feet below ground surface [bgs], a sample would be collected from unsaturated soil just above the water table; a sample would not be collected for analyses from the 8- to 10-foot depth interval.)
- At least one other sample may also be collected for analyses, pending the findings of the field observations (visual evidence of gross contamination, positive shake test results, and/or relatively high PID readings).

Additionally, if borehole water/groundwater is not encountered a particular AOI during Phase I RFI activities noted previously, then a soil sample will be collected during Phase I efforts from the boring associated with this particular AOI. This soil sample will be selected from the ~2-foot interval below invert of AOI unit – e.g., 2 feet below floor of pit.

2.4 Sampling and Analysis Plan for Non-aqueous Phase Liquid (NAPL)

In the event free phase NAPL is encountered, the NAPL will be sampled instead of groundwater.

[†] Analyses will be performed as total concentration for each analyte, with the exception of chromium, which will be speciated in select instances, as warranted.

Samples will be analyzed for viscosity, specific density, and TCL VOCs, PAHs, and PCBs, as well as Michigan 10 metals. Dissolved-phase groundwater sampling will be performed in NAPL areas (if any) during Phase II efforts, in a manner that minimizes the risk that the collection of such samples through the NAPL will not result in significant cross contamination.

3. DATA EVALUATION

3.1 General

As noted above, data collected during the RFI will be used for achieving the RFI goals and objectives discussed in Section 3.1, and as also noted above, RFI data collection will be conducted in phases. After each phase, the adequacy of the data for the defined data uses will be evaluated to determine whether additional data collection is warranted. When data of sufficient quality and quantity have been collected, the data will be used to support decisions regarding the need for interim or corrective measures.

3.2 Sample Tracking and Data Management

Sample tracking and data management will be performed as discussed in the QAPP to ensure that the sampling program is properly completed, and that the sample turnaround times and requested analyses are appropriate.

Communication between field sampling crews and the laboratory will be provided by the project chemist. The sample tracking and management activities will include:

- Coordinating the delivery of sample containers, shipping coolers, and sampling supplies from the laboratory to the Site;
- Ensuring that sample shipments from the field arrived at the laboratory properly preserved;
- Resolving sample documentation issues;
- Identifying samples with unique turnaround time requirements or special analyses;
- Maintaining the integrity of field data (e.g., water levels, pH, conductivity) and sample identification information (e.g., field duplicate samples) through the use of standardized spreadsheet templates that are completed by field sampling crews and electronically transferred to the database management team;
- Arranging for re-collection of samples (if necessary) before the field sampling crew demobilizes from the Site; and
- Distributing preliminary and final data packages to the data users in a timely manner.

Earthsoft, Inc.'s Environmental Quality Information System (EQuIS) will be used for storing and managing RFI data. EQuIS is designed to include all tabular data including sampling and chemistry information for various media, groundwater elevations, well completion and lithology, and other information.

3.3 Laboratory Data and Data Validation

A standardized electronic data deliverable (EDD) will be required to ensure that laboratory data is received in a format efficient for import into an EQuIS database. The data will be validated as discussed in the QAPP to ensure that the data are consistent and correct.

Cross-checking between various data sets will be performed to ensure that the data are consistent and correct. This may include comparison between RFI sample results in the same area, comparison between RFI and historical sample results in the same area, and concurrent evaluation of chemical and physical data (for example, groundwater quality data should be consistent with measured groundwater flow directions and velocities).

3.4 Description of Potential Receptors and Exposure Media/Pathways

Under current and reasonably expected future conditions, the populations with potentially significant on-site exposures are routine workers, maintenance workers, construction workers, and trespassers. The off-site areas around the Site consist of a mixture of commercial/industrial and residential land use. Current zoning for these areas is expected to remain unchanged. As such, the largest potentially exposed populations at and around the Site are residents, routine workers, maintenance workers, and/or trespassers. Potential exposure media include air, soil, sediment, and groundwater.

3.5 Evaluation of Need for Additional Investigation

The primary purpose of data collection during the investigation is to provide sufficient characterization of the nature and extent of any releases of constituents to allow a reliable quantification of the risk from potential exposures. That is, the analytical data collected during the RFI must be adequate for achieving the goals and objectives discussed in Section 2.1. To ensure adequacy for these intended uses, the analytical data will be evaluated in accordance with Part 201 of the Michigan Natural Resources and Environmental Protection Act of 1994, Michigan Public Act 451, as amended (Part 201) and procedures outlined in USEPA guidance on baseline risk assessments (USEPA, 1989 & 1997).

3.5.1 Qualitative Data Review

One element in the evaluation of the analytical data will be a qualitative review of the data with respect to adequacy of the samples in characterizing the average concentrations of constituents for each exposure pathway identified as potentially relevant during the investigation. The qualitative review, using professional judgment, will include an examination of the following:

- Consistency in the types of constituents found in all sampled media at each AOI or in Site-wide groundwater vis-à-vis expectations based on history of operations and chemical properties of the constituents, which may indicate potential for false negative or false positive identification of constituents;
- Lateral and vertical distribution of constituent concentrations to detect any obvious spatial trends, which may indicate that concentrations significantly higher than the measured concentrations may be likely in unsampled areas or depths; and
- Presence of unusually high constituent concentrations, which may indicate the presence of non-aqueous phase liquids.

If the qualitative review identifies conditions that are likely to cause risk-based assessments of the data to provide unreliable conclusions regarding the need for interim or corrective measures,

further sampling or other actions (e.g., checking for laboratory errors) will be taken to address such conditions.

3.5.2 Quantitative Data Review

In conjunction with the qualitative review, the data will be evaluated using Generic Cleanup and Screening Criteria presented in Part 201 of the Michigan Natural Resources and Environmental Protection Act of 1994, Michigan Public Act 451, as amended (Part 201) to identify potentially significant concentrations. The screening will be conducted on each data point generated during the investigation. The presence of concentrations higher than screening levels will not necessarily mean that additional investigation is warranted. Similarly, the absence of concentrations higher than screening levels will not necessarily mean that additional investigation is unnecessary. Rather, decisions regarding the need for further investigation will be made based on professional judgment, considering the screening results and results of the qualitative review discussed above, including the magnitude of the concentrations, their spatial distribution, and other factors (e.g., background levels, as discussed below).

The analytical data also will be reviewed to identify constituents that are present at concentrations in soil that are within background levels. Site-related concentrations are those in excess of background levels, which are listed as state default background criteria in Part 201, estimated from site-specific data collected during the field investigations, or from published data appropriate to the region in which the Site is located. Background levels may be calculated after the completion of Phase II activities in a way that facilitates estimation of background risks separately from site-related risks. For this purpose, they will be calculated in the same way as exposure concentrations (as 95% upper confidence limits on the means). Other types of statistical limits (e.g., prediction limits) may be used for other purposes in the RFI (e.g., determining whether a concentration differs from background at a statistically significant level).

Although laboratory analytical data collected during the RFI will be validated as discussed in the QAPP, the evaluation of data after each phase of investigation will be conducted without waiting for data validation to be completed. This will allow for more timely decisions regarding the need for further field investigations. However, the use of data to support decisions regarding the need for interim or corrective measures will be based on validated data.

Specifically, soil and groundwater characterization data will be compared to screening criteria in order to determine if potentially significant releases to the environment have occurred, and if the field investigation adequately characterized the nature and extent of these potentially significant releases. Soil characterization data pertaining to the Site will be compared with screening criteria that are based on cleanup criteria developed by MDEQ to facilitate implementation of Part 201. The following are the Part 201 screening criteria to be used to evaluate the soil characterization data:

- Part 201 Nonresidential Drinking Water Criteria;
- Part 201 Nonresidential Volatilization to Indoor Air Inhalation Criteria;
- Part 201 Nonresidential Direct Contact Criteria;

- Water Solubility Levels;
- Flammability and Explosivity Levels; and
- Acute Inhalation Levels.

Borehole water samples will be collected from all applicable soil borings to assist in the assessment of potential groundwater impact and in the potential placement of future groundwater monitoring wells. Although care will be taken to minimize the potential for introducing contaminants (including soil particles) into the sample, such influence may not be entirely eliminated because of the nature of the samples. As such, the borehole water data may not necessarily represent groundwater quality in the saturated zone or the groundwater quality over the saturated thickness of the water-bearing zone. However, these data will be compared with the screening criteria for groundwater to provide an initial assessment of potential impact

A potentially significant release of hazardous constituents to the environment at an area will be identified when the highest site-related concentrations of constituents detected in soil or groundwater at the area are higher than any of the screening criteria. The presence of constituent concentrations higher than the screening criteria may not mean that the media necessarily poses a significant risk to human health or the environment. It only means that the potential to pose a significant risk should be further evaluated with consideration for additional site-specific factors

The analytical data resulting from the RFI will be initially compared to Part 201 Generic Cleanup and Screening Criteria. Because current and foreseeable future uses of the Site will be limited by a restrictive covenant to commercial/industrial uses, the chemicals found to exceed Part 201 Nonresidential criteria will be screened against corresponding Part 201 nonresidential criteria. Chemicals with at least one concentration exceeding the screening criteria anywhere at the Site will be selected for display on "data-box" figures. The data-box figures will illustrate the concentrations of these chemicals across the Site. . Chemical concentrations found to exceed such screening criteria will be highlighted on the data-box figures with contrasting color.

3.6 Use of Investigation Data

As noted above, the RFI is to determine whether potential risk to human health and the environment associated with hazardous waste or constituents warrants interim or corrective measures. This determination may rely on a risk-based assessment (which could be a baseline risk assessment) that will characterize the potential human health risk associated with each AOI or Site-wide (e.g., groundwater) from reasonable maximum exposures under current and reasonably expected future land and groundwater uses at and near the Site.

The Part 201 screening criteria represent conservative and generic exposure conditions, and thus may not represent actual Site-related exposure conditions, such as actual exposure populations and/or exposure durations. As such, conditions at the Site which exhibit levels of contamination exceeding these criteria may not necessarily require altered exposure activities (e.g., the use of personal protective equipment or engineering controls) and/or corrective measures. Once field investigations are completed, it will be determined whether or not a RFI Baseline Human Health Risk Assessment will be completed.

If implemented, the risk assessment will include development of exposure scenarios, consistent with current and reasonably expected future land and groundwater uses, that describe potential exposure pathways by which on-site and off-site human populations may become exposed to hazardous constituent releases to the environment from the AOI. Documentation to confirm reasonably expected future land and groundwater uses will be developed during the investigation for the baseline risk assessment. The physical characteristics of the Site, including topography, hydrology, hydrogeology, and geology will be evaluated in conjunction with chemical data to assess chemical fate and transport mechanisms. This information will be used to assess the current and potential future impact, if any, of any releases identified at any AOIs.

If implemented, the results of the RFI Baseline Human Health Risk Assessment will serve as a basis for slating areas for consideration for corrective measures (if any). Future land use at the Site is expected to remain commercial/industrial. A deed restriction is expected to be executed as part of RCRA corrective action implementation, to maintain continued non-residential use of the Site and to prevent any future use of groundwater at the Site.

4. REPORTING

The following submittals are anticipated:

- Phase I RFI Report (executive summary and data report);
- Phase II RFI Report (pending Phase I RFI results);
- Environmental Indicators Reports (pending Phase I RFI results);
- Final Corrective Measures Proposal (pending Phase I RFI results);and
- Final Remedy Construction Completion Report (pending Phase I RFI results).

4.1 Phase I and Phase II RFI Reporting

After completion of the Phase I RFI event, the resulting analytical data will be tabulated and illustrated on figures, relative to the screening criteria discussed in Section 3.6.2, for the purpose of documenting the completion of site characterization efforts. If the results of the Phase I RFI efforts show no release of hazardous waste and/or hazardous constituents at the Site which may pose an unacceptable risk to human health and the environment, no subsequent phases of investigation will be executed, and a Final RFI Report will be prepared. The Final RFI Report will be an Executive Summary type report, and will document any deviations from this RFI Work Plan and summarize the data collected in support of defining the nature and extent of any releases of hazardous waste and/or hazardous constituents at or from the Site. The data analysis and conclusions presented in this report will form the basis for no further action.

If the results of the Phase I RFI efforts show release of hazardous waste and/or hazardous constituents at the Site which may pose an unacceptable risk to human health and the environment, and a Phase II RFI is necessary, then a Phase II RFI report will be prepared consistent with the Phase I RFI Report.

After completion of each of the Phase I and Phase II investigation events, and the nature and extent of release of hazardous waste and/or hazardous constituents at the Site which may pose an unacceptable risk to human health and the environment are determined, a final RFI Report will be prepared as noted above. The data analysis and conclusions presented in this report under this scenario will form the basis for the Environmental Indicators Report and Final Corrective Measures Proposal.

4.2 Environmental Indicators Reports

The following environmental indicators reports will be submitted to MDEQ, pending Phase I RFI results:

- Current human exposures to contamination at or from the Site are under control (EI CA725); and
- Current migration of contaminated groundwater at or from the Facility is stabilized (EI CA750).

4.3 Final Corrective Measures Proposal

A Final Corrective Measures Proposal (CMP) will be submitted to MDEQ, pending Phase I RFI results, which will propose the final Corrective Measures necessary to protect human health and the environment from all current and future unacceptable risks due to releases of hazardous waste and/or hazardous constituents at or from the Site, if any.

4.4 Final Remedy Construction Completion Report

A Final Remedy Construction Completion Report will be submitted to MDEQ, pending Phase I RFI results, which will document the work performed pursuant to the Final Decision in which MDEQ will select the final Corrective Measures. An operations and maintenance plan of the Final Remedy, if required, will be included in the Final Remedy Construction Completion Report.

5. REFERENCES

1. Haley & Aldrich of Michigan, Inc., Resource Conservation and Recovery Act Current Conditions Summary for Former GM Romulus Engineering Center, 37350 Ecorse Road, Romulus, Michigan, 30 December 2011.

2. Haley & Aldrich of Michigan, Inc., Resource Conservation and Recovery Act Quality Assurance Project Plan for Former GM Romulus Engineering Center, 37350 Ecorse Road, Romulus, Michigan, 24 September 2012.

3. Haley & Aldrich of Michigan, Inc., Resource Conservation and Recovery Act Field Sampling Plan for Former GM Romulus Engineering Center, 37350 Ecorse Road, Romulus, Michigan, 24 September 2012.

AREAS OF INTEREST (AOIs) PROPOSED INVESTIGATIONS
RACER SITE #1002
CPC ROMULUS ENGINEERING CENTER

AOI #	AOI Title	Location	Basis for AOI Designation	Description / Components	AOI Approximate Dimensions (ft, unless indicated otherwise) (Length x Width x Depth)	Materials Managed	No. of Borings Per AOI
01	Former AST Farm Area	Northeast area of Site	Site walk /RACER documents	Former diesel fuel storage tanks (four 20,000-gallon tanks). Area impacted by release included: area identified as "federally designated wetland", area surrounding tank farm and "wetland", former pump house and sump. Response included installation of French drain and sump for remediation. It is not known whether these components remain at the Site.	"Wetland area" at time of release described as 200x120; French drains described as 15x2.5x3.5 and 30x2.5x3.5; Concrete pad 16x20	Diesel fuel	8
02	Former Industrial Waste Pump House	Northeast area of Site	Site walk /Facility drawings	Industrial wastewater conveyance from Romulus Engineering Center via overhead trestle to onsite WWTP at GMPT plant. Staining observed on concrete pad. Former below grade feature, possibly a sump, and staining were observed in the concrete pad.	Concrete pad 16x20; 3x3 (depth unk.)	Diesel fuel, industrial waste, oily waste	2
03	Former Pump House	Northeast area of Site	Site walk /Facility drawings	Feature identified on Site Plan as pump house. Use of pump house unknown; possibly associated with oil or fuel conveyance. Area of former pump house pad was covered by standing water at time of Site reconnaissance and could not be observed.	Dimensions unknown. Area inaccessible at time of Site reconnaissance.	Diesel fuel, oils	2
04	Evidence of Release in Test Cell "D" Wing Area	Southeast test cell	Site walk	Area of dark staining and oily residue observed on concrete and gravel near northeast corner of former Test Cell "D" Wing. Staining may be associated with demolition or subsequent activities.	4x4	Fuel, oil	1
05	Evidence of Release in Test Cell "E" Wing Area	Northeast test cell	Site walk	Staining observed on concrete and gravel near southwest area of the Test Cell "E" Wing. Staining may be associated with demolition or subsequent activities.	6x4	Fuel, oil	2
07	Former Drum Product Storage Shed	Northwest area of Facility; North of Shipping Dock	Facility drawings	Unknown	Unknown	Unknown	2
						Totals:	17

Notes:

1. All samples will be collected by Haley & Aldrich, Inc., and all analyses will be performed by Merit Laboratories, Inc.
2. Soil boring will be performed at each AOI that is slated for subsurface investigation, as noted.
3. The soil boring locations will be selected based on field conditions, such as utility locations, overhead clearance, etc., and will be biased based on historical process information (e.g., historical drain, tank, or equipment locations), Site specific physical parameters (e.g., downgradient), observed potential evidence of contamination (e.g., surficial stains), or observed potential evidence of preferential pathways (e.g., cracked concrete).
4. To the extent possible, all soil borings will be advanced using Geoprobe® techniques; however, conventional auger techniques may be necessary to facilitate monitoring well installations in some cases.
5. Unless intended specifically for assessing the presence of dense non-aqueous phase liquid (DNAPL) or characterizing the local/regional confining layer, soil sampling will be collected at each boring location in 2-foot depth intervals, and each will be screened with a photoionization detector [PID], visually characterized for lithology, and subjected to oil/water shake tests.
6. During Phase I efforts, soil samples will be submitted for laboratory analyses if obvious evidence of release (e.g., visual evidence of gross contamination and/or relatively high PID readings) is noted at the time of sample collection. These samples (if any) will be analyzed as noted below.

    > Target Compound List (TCL) volatile organic compounds (VOCs);
    > TCL polycyclic aromatic hydrocarbons (PAHs);
    > TCL polychlorinated biphenyls (PCBs); and
    > Michigan 10 metals (Arsenic, Barium, Cadmium, Chromium, Copper, Lead, Mercury, Selenium, Silver, and Zinc).

7. Each of the Phase I soil borings will initially be converted to a temporary (1.5-inch diameter) monitoring well (pre-packed screen and riser installation, but no pack/surface seal, or surface mount, or protective casing) to facilitate initial borehole groundwater sampling. Borehole groundwater will be collected from each of these temporary monitoring wells during Phase I efforts, and will be analyzed as noted below.

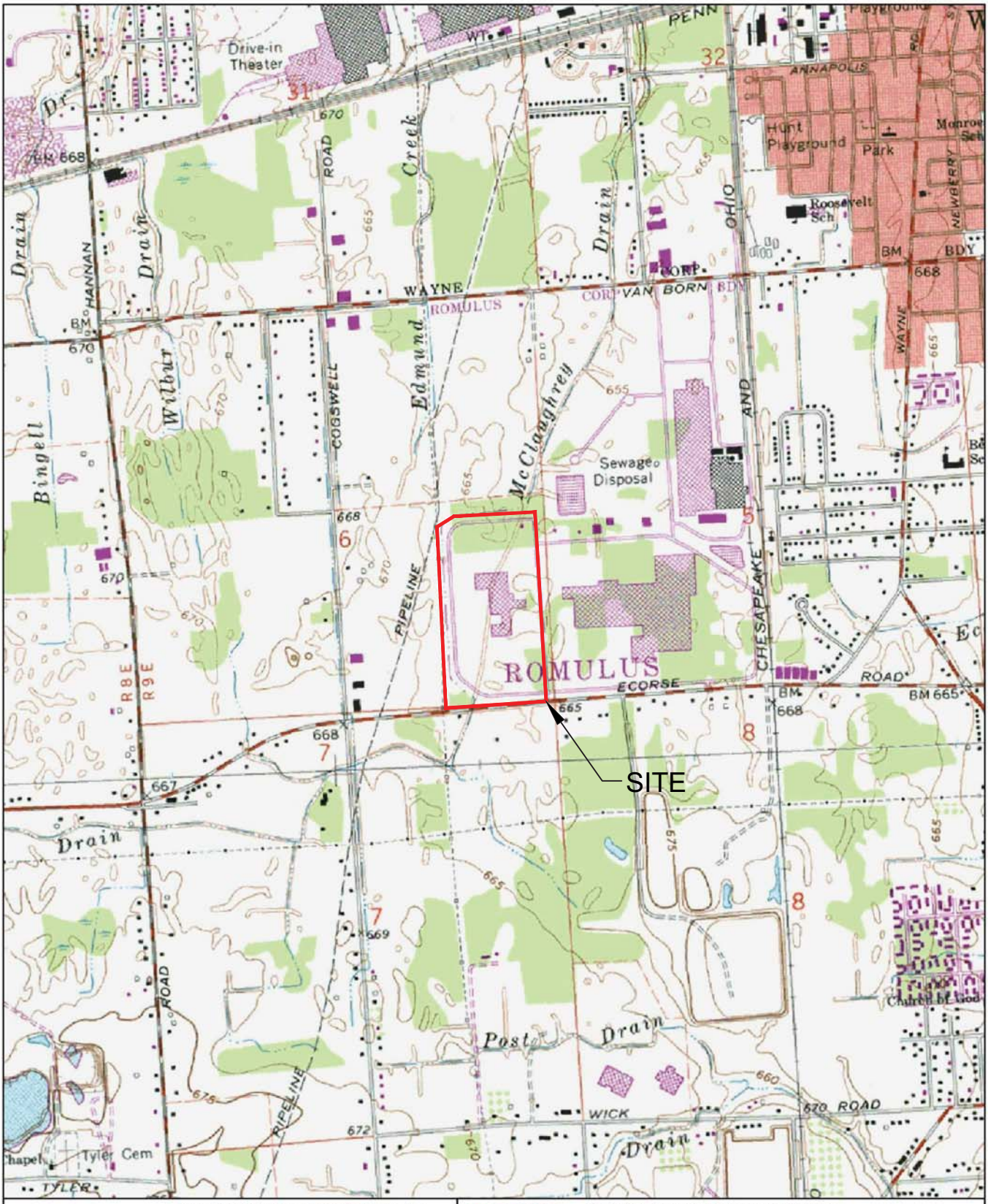
    These temporary wells will be converted to permanent installations during Phase II efforts, pending the Phase I borehole water results.
8. The Phase I borehole water results will be used as the primary indicator of release at each AOI. In the event that a well cannot be installed at the original boring location due to area limitations, an alternative well location will be selected accordingly; however, if the alternative well location is more than 10 feet from the original boring location, additional soil characterization (sampling and analysis) will be performed at that location.
9. Groundwater elevation measurements will be collected from each temporary monitoring well at the time of sampling. Initially, during Phase I efforts, groundwater samples will be collected as grab samples, using a peristaltic pump.
10. During Phase II, if groundwater samples are to be collected from permanently-established wells, these samples will be collected via low stress/low flow sampling techniques (i.e., purge rates of 100 to a maximum of 500 milliliters per minute [mL/min]).
11. Borehole water and groundwater samples will generally be analyzed for the following analytes:

    > TCL VOCs;
    > TCL PAHs; and
    > Michigan 10 metals.

12. Borehole water and groundwater from all monitoring wells sampled will also be analyzed for the following parameters in the field:

    > Dissolved Oxygen;
    > Oxidation reduction potential (ORP);
    > Alkalinity/acidity (pH);
    > Temperature;
    > Conductivity; and
    > Turbidity.

13. If borehole water/groundwater is not encountered a particular AOI during Phase I RFI activities noted previously, then a soil sample will be collected during Phase I efforts from the boring associated with this particular AOI. This soil sample will be selected from the~2-foot interval below invert of AOI unit – e.g., 2 feet below floor of pit.



SITE COORDINATES:42°15'20"N 83°24'32"W

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U.S.G.S. QUADRANGLE: WAYNE, MI

HALEY & ALDRICH

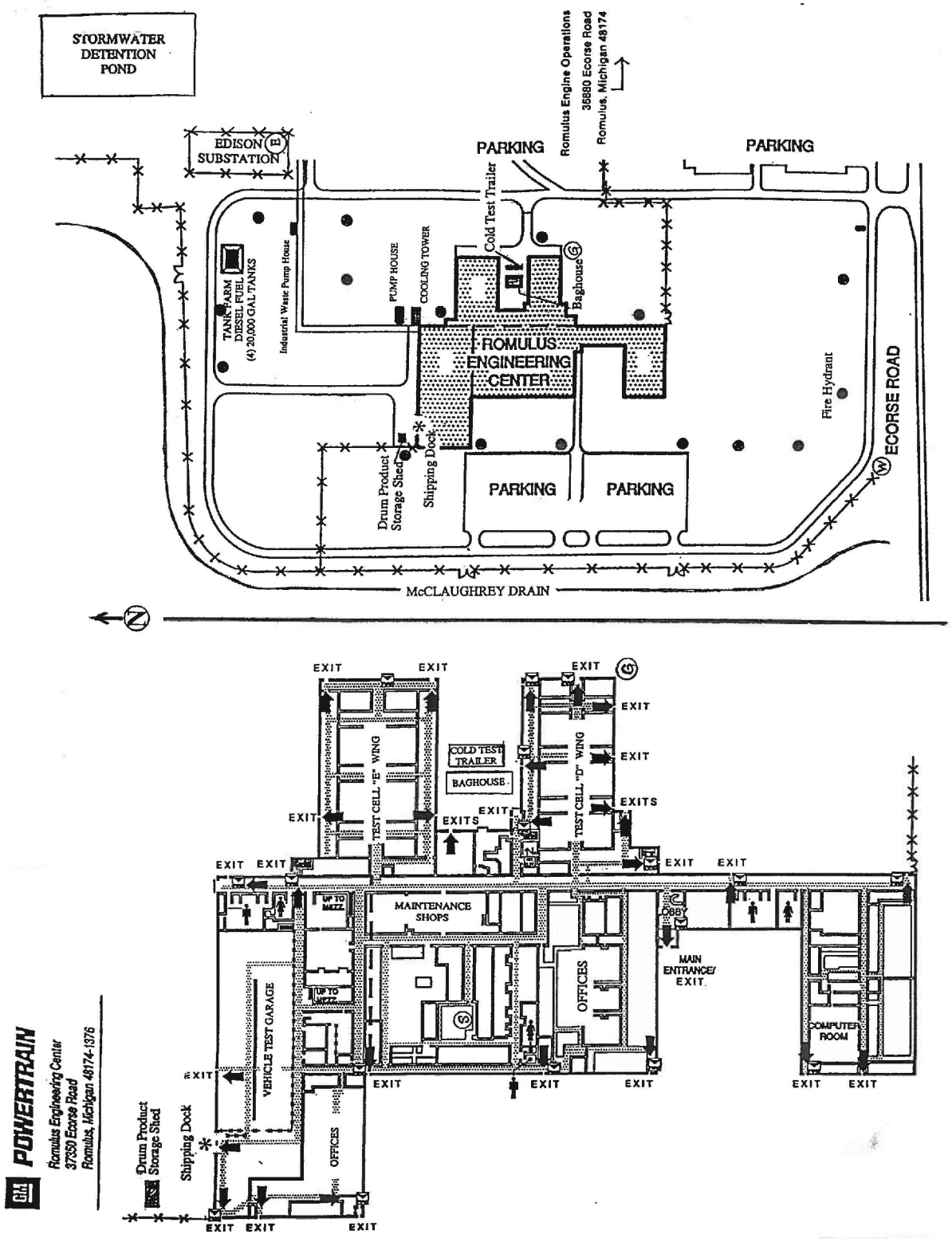
FORMER ROMULUS ENGINEERING CENTER
RACER SITE ID 1002
37350 ECORSE ROAD
ROMULUS, MICHIGAN

SITE LOCUS

SCALE: 1:24,000
DECEMBER 2011

FIGURE 1

37515-003 1.PDF



NOTES:

1. BASEMAP SOURCE: CITY OF ROMULUS DEPARTMENT OF BUILDING & SAFETY DEMOLITION PERMIT PDE100011, ISSUED MAY 14, 2010.

HALEY & ALDRICH

FORMER ROMULUS ENGINEERING CENTER
RACER SITE ID 1002
37350 ECORSE ROAD
ROMULUS, MI

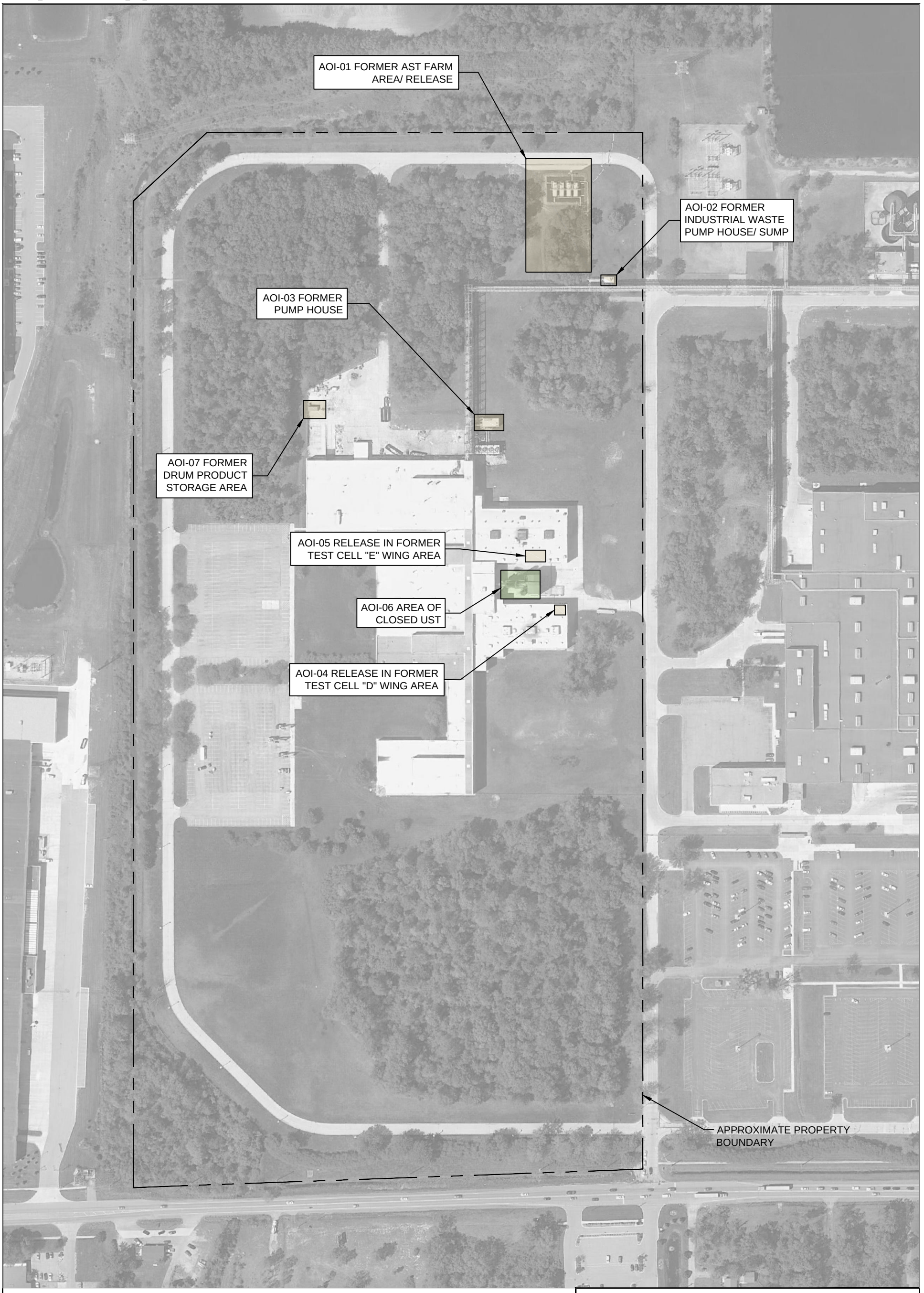
SITE PLAN

SCALE: NOT TO SCALE
DECEMBER 2011

FIGURE 2

G:\37515_RACER\003\CAD\37515_003_SITE PLAN.DWG

G:\37515_RACER\003\CAD\37515_003_AOI.DWG



LEGEND

NO FURTHER INVESTIGATION

FURTHER INVESTIGATION RECOMMENDED

NOTES:

1. AERIAL PROVIDED BY GOOGLE EARTH PRO, DATED MAY 9, 2010.
2. AOI-08 NOT SHOWN ON FIGURE; NOT LOCATED AT THIS SITE.

N
W E
S

0 200 400
200

HALEY & ALDRICH

FORMER ROMULUS ENGINEERING CENTER
RACER SITE ID 1002
37350 ECORSE ROAD
ROMULUS, MI

AOI LOCATIONS

SCALE: AS SHOWN
DECEMBER 2011

FIGURE 3