DOCUMENTATION OF ENVIRONMENTAL INDICATOR DETERMINATION

Interim Final 2/5/99
DEQ adapted to Word 8/07
Revised 8/19/13

RCRA Corrective Action Environmental Indicator (EI) RCRAInfo Code (CA750)
Migration of Contaminated Groundwater Under Control

Facility Name: RACER Former General Motors Romulus Engineering Center
Facility Address: 37350 Ecorse Road, Romulus, Michigan
Facility EPA ID #: MID 000 809 905

1. Has **all** available relevant/significant information on known and reasonably suspected releases to the groundwater media, subject to RCRA Corrective Action (e.g., from Waste Management Units (WMU), Regulated Units (RU), and Areas of Concern (AOC)), been **considered** in this EI determination?

   ☒ If yes - check here and continue with #2 below.

   ☐ If no - reevaluate existing data, or

   ☐ If data are not available, skip to #8 and enter "IN" (more information needed) status code.

BACKGROUND

Definition of Environmental Indicators (for the RCRA Corrective Action)

EIs are measures being used by the RCRA Corrective Action Program to go beyond programmatic activity measures (e.g., reports received and approved, etc.) to track changes in the quality of the environment. The two EIs developed to-date indicate the quality of the environment in relation to current human exposures to contamination and the migration of contaminated groundwater. An EI for nonhuman (ecological) receptors is intended to be developed in the future.

Definition of "Migration of Contaminated Groundwater Under Control" EI

A positive "Migration of Contaminated Groundwater Under Control" EI determination ("YE" status code) indicates that the migration of "contaminated" groundwater has stabilized and that monitoring will be conducted to confirm that contaminated groundwater remains within the original "area of contaminated groundwater" (for all groundwater "contamination" subject to RCRA Corrective Action at or from the identified Facility [i.e., site-wide]).

Relationship of EI to Final Remedies

While final remedies remain the long-term objective of the RCRA Corrective Action Program, the EIs are near-term objectives that are currently being used as program measures for the Government Performance and Results Act of 1993, (GPRA). The "Migration of Contaminated Groundwater Under Control" EI pertains ONLY to the physical migration (i.e., further spread) of contaminated groundwater and contaminants within groundwater (e.g., nonaqueous phase liquids or Non-Aqueous Phase Liquids (NAPLs). Achieving this EI does not substitute for achieving other stabilization or final remedy requirements and expectations associated with sources of contamination and the need to restore, wherever practicable, contaminated groundwater to be suitable for its designated current and future uses.

Duration/Applicability of EI Determinations

EI determination status codes should remain in the RCRAInfo national database ONLY as long as they remain true (i.e., RCRAInfo status codes must be changed when the regulatory authorities become aware of contrary information).

Site Summary:
The RACER Former General Motors Romulus Engineering Center (Facility) is a 70-acre tract located in Romulus, Michigan. The Facility was constructed in 1981 and used primarily for engine testing. The Facility is currently vacant and site buildings were demolished in 2010. Approximately 200,000 square feet of concrete slab remains in place at the site. All pits, sumps, and basements were broken to prevent them from collecting precipitation and filled to grade with crushed concrete as part of the demolition.

RCRA Facility Investigation (RFI) activities were conducted in late 2013 and early 2014. The Facility and surrounding area is generally flat with a mixture of glacial and lacustrine organic deposits. Below a surface consisting primarily of concrete and gravel fill, shallow soils are dominated by poorly-graded sand and silt to a depth of approximately 10 feet below ground surface (BGS). These shallow soils are underlain by a stiff clay to at least 30 feet BGS (the depth at which soil borings were terminated). This clay serves as an aquitard. Water is generally encountered in the shallow soils at a depth of less than 1 foot BGS. Shallow groundwater flow is toward the north-northeast. The McLaughrey Drain, a county drain, wraps around the Facility from the southwest corner and exits near the northeast side. The McLaughrey Drain is the primary focus of groundwater-surface water interface (GSI) concerns at the Facility. See attached figure from the RFI Report for an overview of the site.

RFI groundwater sampling activities documented exceedances of the drinking water environmental protection standards established under the administrative rules promulgated pursuant to Part 111, Hazardous Waste Management, of Michigan's Natural Resources and Environmental Protection Act, 1994 PA 451 as amended, for arsenic at two monitoring wells interior to the site (MW-07-111 and MW-07-112). These were relatively minor exceedances (11 micrograms per liter (µg/L) and 13 µg g/L, respectively; the drinking water criterion for arsenic is 10 µg /L) and are believed to be reflective of local background conditions, as arsenic is not known to have been used at the Facility. In addition, copper (maximum of 19 µg/L) and selenium (maximum of 14 µg/L) have been detected in exceedance of their respective GSI environmental protection standards under the Part 111 Rules (9 µg/L for copper and 5 µg/L for selenium).

References:
RCRA Facility Investigation Report, Former Romulus Engineering Center, 37350 Ecorse Road, Romulus Michigan. Haley and Aldrich, 2013.

Groundwater Data Report, E-mail from Christine Horch (Haley and Aldrich) to Ronda Blayer (MDEQ), September 9, 2014.

Quarterly Groundwater Elevation Monitoring Reports (January 2013 to September 2014), Haley and Aldrich.

2. Is **groundwater** known or reasonably suspected to be **"contaminated"**[1] above appropriately protective "levels" (i.e., applicable promulgated standards, as well as other appropriate standards, guidelines, guidance, or criteria) from releases subject to RCRA Corrective Action, anywhere at, or from, the Facility?

☒ If yes - continue after identifying key contaminants, citing appropriate "levels," and referencing supporting documentation.

☐ If no - skip to #8 and enter "YE" status code, after citing appropriate "levels," and referencing supporting documentation to demonstrate that groundwater is not "contaminated."

☐ If unknown - skip to #8 and enter "IN" status code.

Rationale and Reference(s):
Shallow groundwater in the interior of the site is contaminated with arsenic, copper, and selenium. Arsenic has been detected above the drinking water and GSI environmental protection standards, and copper and selenium above GSI environmental protection standards.

3. Has the **migration** of contaminated groundwater **stabilized** (such that contaminated groundwater is expected to remain within "existing area of contaminated groundwater"[2] as defined by the monitoring locations designated at the time of this determination)?

   ☒ If yes - continue, after presenting or referencing the physical evidence (e.g., groundwater sampling/measurement/migration barrier data) and rationale why contaminated groundwater is expected to remain within the (horizontal or vertical) dimensions of the "existing area of groundwater contamination"[2].

   ☐ If no (contaminated groundwater is observed or expected to migrate beyond the designated locations defining the "existing area of groundwater contamination"[2]) – skip to #8 and enter "NO" status code, after providing an explanation.

   ☐ If unknown - skip to #8 and enter "IN" status code.

Rationale and Reference(s):
Repeated rounds of groundwater monitoring have demonstrated that groundwater flow is consistently to the north-northeast and that copper and selenium concentrations in groundwater in the monitoring wells downgradient of those wells contaminated above the GSI environmental protection standards are below all applicable criteria. In addition, should these downgradient concentrations of copper and selenium increase to levels similar to those in the interior of the site, those concentrations would still be less than three times their respective GSI environmental protection standards and would be deemed "insignificant" pursuant to the instructions for Item 5 of this form, below. Groundwater contamination has not migrated off-site, and groundwater monitoring is proposed to continue until corrective action is complete/an EI RCRAInfo Code CA999 can be filed.

4. Does "contaminated" groundwater **discharge** into **surface water** bodies?

   ☐ If yes - continue after identifying potentially affected surface water bodies.

   ☒ If no - skip to #7 (and enter a "YE" status code in #8, if #7 = yes) after providing an explanation and/or referencing documentation supporting that groundwater "contamination" does not enter surface water bodies.

   ☐ If unknown - skip to #8 and enter "IN" status code.

Rationale and Reference(s):
Several rounds of groundwater sampling have demonstrated that groundwater GSI exceedances for copper and selenium have not migrated off the Facility.

5. Is the **discharge** of "contaminated" groundwater into surface water likely to be **"insignificant"** (i.e., the maximum concentration[3] of each contaminant discharging into surface water is less than 10 times their appropriate groundwater "level," and there are no other conditions [e.g., the

nature, and number, of discharging contaminants, or environmental setting], that significantly increase the potential for unacceptable impacts to surface water, sediments, or eco-systems at these concentrations)?

☐ If yes - skip to #7 (and enter "YE" status code in #8 if #7 = yes), after documenting: (1) the maximum known or reasonably suspected concentration[3] of key contaminants discharged above their groundwater "level," the value of the appropriate "level(s)," and if there is evidence that the concentrations are increasing; and (2) provide a statement of professional judgment/explanation (or reference documentation) supporting that the discharge of groundwater contaminants into the surface water is not anticipated to have unacceptable impacts to the receiving surface water, sediments, or eco-system.

☐ If no - (the discharge of "contaminated" groundwater into surface water is potentially significant) - continue after documenting: (1) the maximum known or reasonably suspected concentration[3] of each contaminant discharged above its groundwater "level," the value of the appropriate "level(s)," and if there is evidence that the concentrations are increasing; and (2) for any contaminants discharging into surface water in concentrations[3] greater than 100 times their appropriate groundwater "levels," the estimated total amount (mass in kg/yr) of each of these contaminants that are being discharged (loaded) into the surface water body (at the time of the determination), and identify if there is evidence that the amount of discharging contaminants is increasing.

☐ If unknown - enter "IN" status code in #8.

Rationale and Reference(s):

6. Can the **discharge** of "contaminated" groundwater into surface water be shown to be "**currently acceptable**" (i.e., not cause impacts to surface water, sediments or eco-systems that should not be allowed to continue until a final remedy decision can be made and implemented[4])?

☐ If yes - continue after either: (1) identifying the final remedy decision incorporating these conditions, or other site-specific criteria (developed for the protection of the site's surface water, sediments, and eco-systems), and referencing supporting documentation demonstrating that these criteria are not exceeded by the discharging groundwater; OR (2) providing or referencing an interim-assessment,[5] appropriate to the potential for impact, that shows the discharge of groundwater contaminants into the surface water is (in the opinion of a trained specialists, including ecologist) adequately protective of receiving surface water, sediments, and eco-systems, until such time when a full assessment and final remedy decision can be made. Factors that should be considered in the interim-assessment (where appropriate to help identify the impact associated with discharging groundwater) include: surface water body size, flow, use/classification/habitats and contaminant loading limits, other sources of surface water/sediment contamination, surface water and sediment sample results and comparisons to available and appropriate surface water and sediment "levels," as well as any other factors, such as effects on ecological receptors (e.g., via bio-assays/benthic surveys or site-specific ecological Risk Assessments), that the overseeing regulatory agency would deem appropriate for making the EI determination.

☐ If no - (the discharge of "contaminated" groundwater can not be shown to be "**currently acceptable**") - skip to #8 and enter "NO" status code, after documenting the currently unacceptable impacts to the surface water body, sediments, and/or eco-systems.

☐ If unknown - skip to 8 and enter "IN" status code.

Rationale and Reference(s):

7. Will groundwater **monitoring**/measurement data (and surface water/sediment/ecological data, as necessary) be collected in the future to verify that contaminated groundwater has remained within the horizontal (or vertical, as necessary) dimensions of the "existing area of contaminated groundwater?"

   ☒ If yes - continue after providing or citing documentation for planned activities or future sampling/measurement events. Specifically identify the well/measurement locations which will be tested in the future to verify the expectation (identified in #3) that groundwater contamination will not be migrating horizontally (or vertically, as necessary) beyond the "existing area of groundwater contamination."

   ☐ If no - enter "NO" status code in #8.

   ☐ If unknown - enter "IN" status code in #8.

Rationale and Reference(s):
RACER proposes continued groundwater monitoring, pursuant to a Michigan Department of Environmental Quality-approved plan, to demonstrate that copper and selenium are not migrating off-site at or above applicable environmental protection standards.

8. Check the appropriate RCRAInfo status codes for the Migration of Contaminated Groundwater Under Control EI (event code CA750), obtain supervisor signature and date on the EI determination below, and attach appropriate supporting documentation, as well as a map of the Facility.

   ☒ YE - Yes, "Migration of Contaminated Groundwater Under Control" has been verified. Based on a review of the information contained in this EI determination, it has been determined that the "Migration of Contaminated Groundwater" is "Under Control" at the **RACER Former General Motors Romulus Engineering Center Facility, EPA ID # MID 000 809 905, located at 37350 Ecorse Road, Romulus, Michigan**. Specifically, this determination indicates that the migration of "contaminated" groundwater is under control, and that monitoring will be conducted to confirm that contaminated groundwater remains within the "existing area of contaminated groundwater." This determination will be reevaluated when the agency/state becomes aware of significant changes at the Facility.

   ☐ NO - Unacceptable migration of contaminated groundwater is observed or expected.

   ☐ IN - More information is needed to make a determination.

Completed by: Ronda L. Blayer Date: September 18, 2014

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Locations where references may be found:

Hazardous Waste Section facility files at:
Office of Waste Management and Radiological Protection
Michigan Department of Environmental Quality
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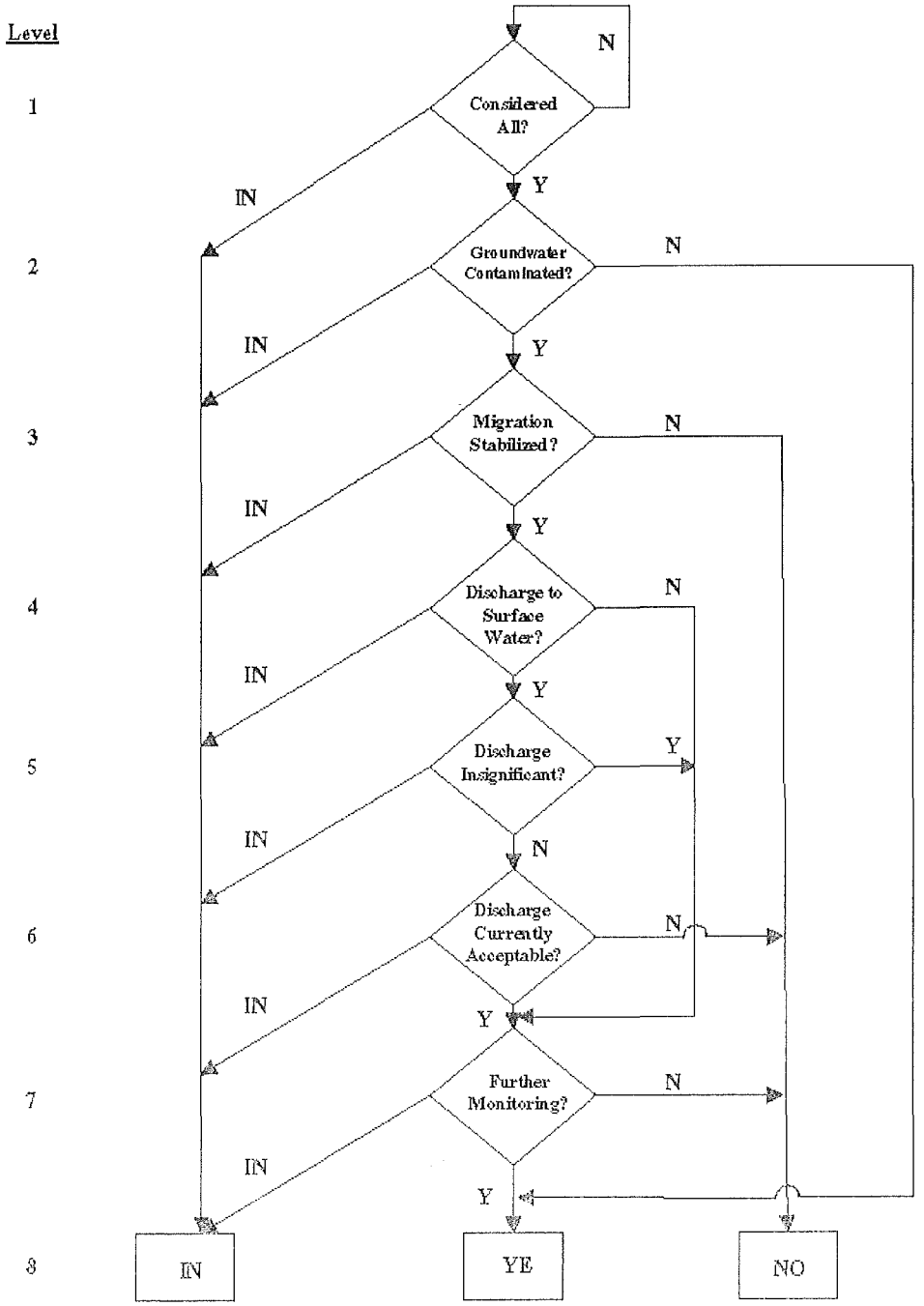
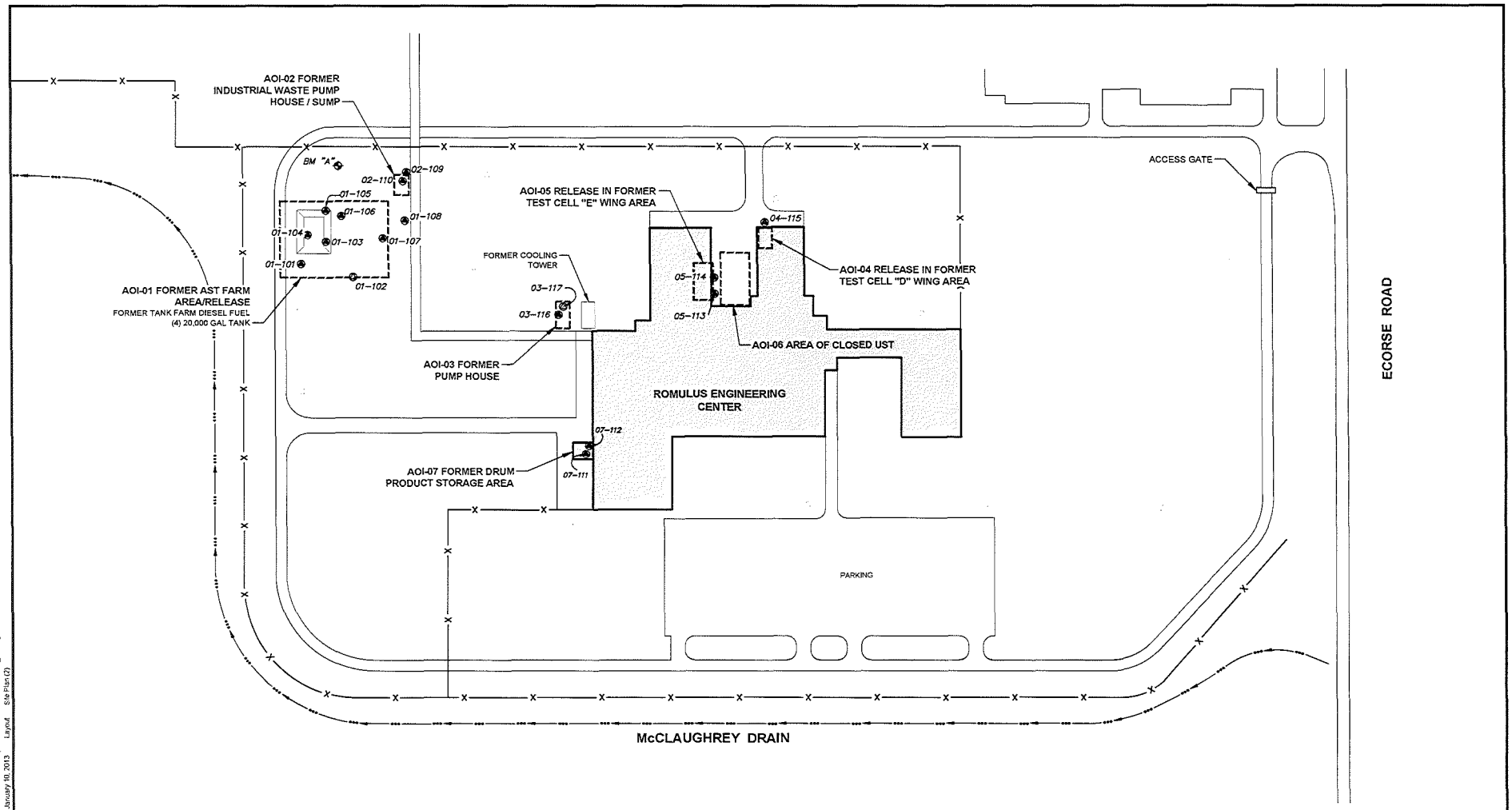
Facility Name: RACER Former General Motors Romulus Engineering Center
EPA ID#: MID 000 809 905
City/State: 37350 Ecorse Road, Romulus, Michigan

MIGRATION OF CONTAMINATED GROUNDWATER
UNDER CONTROL (CA 750)



Attachment: Figure 2 from RFI Report.



LEGEND

- FENCE LINE
- McCLAUGHREY DRAIN
- FIRE HYDRANT
- MONITORING WELL
- SOIL BORING
- BENCHMARK

NOTES

1. BASE MAP DEVELOPED FROM SITE PLAN PROVIDED BY GM POWERTRAIN.
2. THE SITE IS COMPLETELY DEMOLISHED.
3. BENCHMARK "A" ELEVATION = 664.49 (NAVD88) A TOP RAILROAD SPIKE IN NW FACE OF 22 INCH OAK. LOCATED 200'± SOUTH AND 40'± WEST OF THE NE FENCE CORNER AT 37350 ECORSE ROAD.

E N S W

0 200 400

APPROXIMATE SCALE IN FEET

HALEY & ALDRICH

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

SITE PLAN

SCALE: AS SHOWN
JANUARY 2013

FIGURE 2

Drawing Name G:\37515-Romulus Engineering Center\005-RFI Implementation\CAD\37515-005_02.dwg
Operator Name LUCIDO, SAM Plot Date January 10, 2013 Layout Site Plan (2)