

SUMMARY OF INVESTIGATION/REMEDIATION ACTIVITIES
FORMER GM FAIRFAX PLANT I
KANSAS CITY, KANSAS

<i>Dates</i>	<i>Investigation/Remediation Description</i>	<i>Consultant</i>	<i>Report/Letter Presenting Data</i>	<i>KDHE Remediation Areas</i>	<i>Submitted to KDHE?</i>	<i>Significant Conclusions/Observations</i>	<i>KDHE Response to Findings</i>
1987 - 1988	Phase I ESA and Phase II ESA	HDR	HDR Report - Environmental Assessment Site Investigation Report, February 1988 (for GM internal use only)	All Areas	No	AOCs identified and investigated for GM internal use only	N/A
1990 - 1993	Groundwater sampling of monitoring wells	Burns & McDonnell	Various letters to KDHE	All Areas	Yes	Unknown	Unknown
1991 - 1994	Groundwater Remediation System operation	Burns & McDonnell	Various letters to KDHE	<u>MW-103A</u>	Yes	Unknown	Unknown
1998	Site-wide groundwater studies	CRA	CRA Report 3 - Comprehensive Groundwater Sampling Report, November 1998	All Areas	No	BTEX and PCE were detected above the MCLs in four wells: <u>MW-103A</u> , MW-110A, MW-4A, and MW-130A	N/A
1999	Soil screening survey, soil and groundwater sample collection near MW-103A	CRA	CRA Report 6 - Results of Soil and Groundwater Investigations Near Monitoring Well MW-103A, June 2000	<u>MW-103A</u>	Yes, by GM (6/30/00)	Groundwater data indicated exceedences of the KDHE RSK Tier 2 non-residential standards only in well <u>MW-103A</u> . Impacted soil was confirmed in the immediate area of <u>MW-103A</u> , with an estimated total volume of 3,000 cubic yards.	(5/16/01) The investigations provide useful information, but supplemental investigation is required.
2000 - 2002	Site-wide Groundwater Studies and off-site source documentation	CRA	CRA Report 9 - Pre-Design Investigations Work Plan was finalized in August 2001 and submitted to KDHE on 9/5/01 (Jones 1). In a letter to the KDHE dated 9/10/04 (Jones 3), an addendum to the work plan was submitted, stating that a results report would be prepared. In a letter to the KDHE dated 4/18/05 (Jones 4), it was stated that the pre-design activities were still planned. Finally, in a letter to the KDHE dated 5/9/06 (Price 1), it was stated that the final options and remedial design were being evaluated. [An internal memo was prepared on 8/1/01 and was revised on 4/20/06, and a recovery system conceptual design figure was prepared on 9/24/09.]	Site groundwater and <u>MW-103A</u> area	No	--	N/A
2000 - 2002	Collect design data for an in-situ treatment system and complete feasibility analyses	CRA		<u>MW-103A</u>	No	--	N/A
2002	Design of an in-situ treatment system	CRA		<u>MW-103A</u>	No	--	N/A
2004	Confirmation sampling of soils and groundwater around former PAOCs	CRA	CRA Report 10 - Results of Confirmatory Sampling Program, April 2005	All Areas (including <u>SB-113 near S-8</u>)	Yes	In soil, PCE and arsenic were detected above the Tier 2 criteria. Groundwater data indicated a localized area of groundwater contamination around <u>MW-103A</u> , as well as a plume(s) of VOC-impacted groundwater migrating onto the Site from industrial areas located south of the Site. No VOCs, SVOCs, of metals were detected above Tier 2 soil values at <u>SB-113</u> . The soil and groundwater exceedences (other than around <u>MW-103A</u>) were to be addressed through a groundwater use (land use) restriction.	(8/17/05) Soil contamination is fully characterized except for the <u>SB-110</u> area. For groundwater, additional work is necessary. Groundwater samples should be collected upgradient of the Site to assess contaminants migrating onto the Site, and also further downgradient to assess contaminants which may be migrating offsite.

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2005 - 2006	Supplemental confirmation sampling of soils and groundwater	CRA	Letters to KDHE dated 5/9/06 (Price 1) and 9/21/06 (Price 3)	<u>SB-110</u> area; upgradient and downgradient Site groundwater	Yes	Soil with concentrations of PCE exceeding KDHE Tier 2 soil objectives is limited to the vicinity of <u>SB-110</u> and SB-119 at 10 feet below grade. The soil exceedences would be addressed through an environmental use control. Groundwater VOC concentrations were all below the Tier 2 groundwater objectives.	(8/8/06) The investigation is approved. However, further investigation is necessary in the footprint of the former Fairfax I building, in Tract 2, northeast of <u>SB-110</u> , and northeast of MW-5.
2006	Data gaps studies around Tract 2 and other areas	CRA	Letters to KDHE dated 1/26/07 (Price 5) (Tract 2 only) and 2/19/07 (Price 6) (other areas)	Tract 2, <u>SB-110</u> , Former Assembly Plant (<u>TMW-127</u> and <u>TMW-130</u>), and MW-105	Yes	In Tract 2, arsenic was detected slightly above the Tier 2 soil standard in soil borings SB-122 and SB-133, and manganese was detected above the Tier 2 groundwater standard in the groundwater from all the wells sampled. In the other areas, the PCE soil impacts have been delineated to the east of <u>SB-110</u> ; LNAPL was discovered in <u>TMW-130</u> ; VOCs were detected in <u>TMW-127</u> above the Tier 2 groundwater standards; manganese was detected above the Tier 2 groundwater standard in the groundwater from all the wells sampled; and arsenic was detected slightly above the Tier 2 groundwater standard in TMW-123 and <u>TMW-127</u> . The soil and groundwater exceedences (other than the LNAPL in <u>TWM-130</u>) could be addressed through a groundwater use (environmental use) restriction.	(2/8/07) The 1/26/07 report (Tract 2 only) is approved. (2/13/07) No Further Action (NFA) letter issued for Tract 2. (3/12/07) The 2/19/07 report is approved with comments. KDHE has not concurred with using non-residential remedial goals at this time. KDHE notes that VOCs were detected in <u>TMW-127</u> above RSK for cis-1,2-DCE, methylene chloride, and arsenic. Additional investigation will be needed to address the <u>TMW-130</u> area. KDHE suggests additional investigation at <u>TMW-127</u> and TMW-123 concerning arsenic. With reference to groundwater, additional monitoring wells will be needed in the areas of TMW-123, <u>TMW-127</u> , and <u>TMW-130</u> .
2007 - 2008	Quarterly groundwater monitoring	CRA	CRA Report 15 - Groundwater Monitoring Plan (Revised), July 2007. Letters to KDHE dated 2/28/08 (Price 9), 4/29/08 (Price 12), 6/2/08 (Price 15), and 11/18/09 (Price 16)	Site Groundwater - All Areas	Yes	Quarterly groundwater monitoring for one year was proposed. The necessity for the groundwater monitoring program would be re-evaluated at the conclusion of the four quarterly events. Exceedences of KDHE groundwater standards were observed at <u>MW-103A</u> , MW-109, and <u>TMW-130</u> . MW-110 and MW-111 also indicated exceedences, which are believed to be due to offsite sources. CRA/GM consider offsite sources of VOCs to exist. <u>MW-103A</u> and <u>TMW-130</u> will be addressed through active remediation.	(8/7/07) Approval of the Revised Groundwater Monitoring Plan. (3/14/08 and 3/31/08) Approval of the 2/28/08 report. (5/8/08) Approval of the 4/29/08 report; however, KDHE considers the VOC impacts at MW-110A and MW-111 to be from the Site and not from an offsite source. (6/16/08) Approval of the 6/2/08 report. (10/20/09) KDHE again stated that they consider the VOC impacts to be from the Site and not from an offsite source. (12/16/09) Approval of the 11/18/09 report.
2007 - 2008	LNAPL Investigations in TMW-130 Area	CRA	Letter to KDHE dated 5/22/08 (Price 10). "TWM-130 Area Pilot Study" work plan (August 2008) and "Soil and Groundwater Characterization Work Plan - TWM-130 Area" (October 2008) were also submitted to KDHE.	<u>TMW-130</u>	Yes	The extent of the LNAPL was delineated and the extent of the soil impacts was delineated. The total area of impact measures approximately 170 feet by 300 feet. The historical source of the impacts may be located between <u>TWM-130</u> and TMW-140.	(6/11/08) Approval of the 5/22/08 report. However, additional soil delineation work will be needed to the east of LIF sample locations E2, F2, and G2. (9/4/08 and 9/5/08) Approval of the Pilot Study work plan. (10/27/08) Approval of the Characterization Work Plan.

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2008	Evaluation of arsenic in monitoring wells TMW-123 and TMW-127	CRA	Draft Letter to KDHE (Price 11) (draft dated 12/8/09)	TMW-123 and <u>TMW-127</u>	pending	The 2 wells were redeveloped and resampled in 9/2007. Arsenic in TWM-123 was now below the KDHE criteria. In <u>TWM-127</u> , total arsenic was still above the criteria, but the filtered arsenic was non-detect. It is, therefore, believed that the arsenic is present in the saturated deposits or material in the area of <u>TMW-127</u> , but is not related to a groundwater issue.	N/A
2009	Characterization of soil and groundwater in the TWM-130 area.	CRA	CRA Report 20 - Results of Soil and Groundwater Characterization Investigation (in preparation)	<u>TWM-130</u>	pending	The monitoring wells located outside the LNAPL limits indicate low levels of chlorinated VOCs, not related to the LNAPL. TPH and GRO were detected in soil from SB-B3-A (75' north of the LNAPL limit) at depths of 13 to 15 feet below ground. Overall, the data do not indicate any dissolved impacts from the LNAPL in soil or groundwater, except within the already defined limits of LNAPL. Observed stained and impacted soil at depth can be dealt with using engineering controls and institutional controls. Only the LNAPL requires active remediation.	N/A