

US EPA ARCHIVE DOCUMENT

# Vapor Intrusion Interim Measures Quarterly Report No. 10

Chamberlain Manufacturing Corporation

Former Facility at

550 Esther Street

Waterloo Iowa

EPA Docket Nos.

RCRA-07-2010-002

CERCLA-07-2010-0005

January 29, 2014

Terracon Project No. 07107020

**Prepared for:**

Chamberlain Manufacturing Corporation

Elmhurst, Illinois

**Prepared by:**

Terracon Consultants, Inc.

Omaha, Nebraska

RCRA



529083

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# Terracon

Geotechnical ■ Environmental ■ Construction Materials ■ Facilities

January 29, 2014

United States Environmental Protection Agency  
Region 7 - Air and Waste Management Division  
11201 Renner Blvd  
Lenexa, Kansas 66219

Attn: Mr. Bruce Morrison

Re: Vapor Intrusion Interim Measures Quarterly Report No. 10  
Chamberlain Manufacturing Corporation  
Former Facility at 550 Esther Street  
Waterloo, Iowa  
EPA Docket Nos. RCRA-07-2010-002 and CERCLA-07-2010-0005

Dear Mr. Morrison:

Terracon Consultants, Inc. (Terracon) is pleased to submit this Vapor Intrusion Interim Measures (VIIM) Quarterly Report for activities completed between October 1, 2013 and December 31, 2013 in conjunction with the site referenced above. The VIIM Quarterly Report presents a summary of activities related to the installation, operation, and monitoring of vapor mitigation systems in residential structures as requested by the EPA.

Should you have any questions or require additional information, please do not hesitate to contact our office.

Sincerely,

**Terracon Consultants, Inc.**



Michael E. Hagemeister  
Senior Principal

MEH/DMS:meh/ieb

Distribution: Addressee (1 bound)



David M. Svingen, P.E., P.G.  
Senior Principal

Terracon Consultants, Inc. 15080 A Circle Omaha, Nebraska 68144  
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### **APPENDIX A – EXHIBITS**

Exhibit 1 – Site Location Topographic Map

Exhibit 2 – Site Plan

## ACRONYMS & ABBREVIATIONS

CERCLA .....	Comprehensive Environmental Response, Compensation, and Liability Act
City .....	City of Waterloo
COC .....	Chain of Custody
EPA .....	Environmental Protection Agency
Facility .....	Chamberlain Manufacturing facility
HASP .....	Health and Safety Plan
NELAC .....	National Environmental Laboratory Accreditation Conference
PCE .....	Tetrachloroethene (or Perchloroethene)
PID .....	Photoionization Detector
ppm .....	parts per million
QA .....	Quality Assurance
QAM .....	Quality Assurance Manual
QAPP .....	Quality Assurance Project Plan
QC .....	Quality Control
RCRA .....	Resource Conservation and Recovery Act
RSL .....	Regional Screening Level
SOP .....	Standard Operating Procedure
SOW .....	Statement of Work
TCE .....	Trichloroethene
TestAmerica .....	TestAmerica, Inc.
TSOP .....	Terracon Standard Operating Procedure
UAO .....	Unilateral Administrative Order
USEPA .....	United States Environmental Protection Agency
VIC .....	Vapor Intrusion Characterization
VIIM .....	Vapor Intrusion Interim Measures
VMS .....	Vapor Mitigation System
VOC .....	Volatile Organic Compound

**VAPOR INTRUSION INTERIM MEASURES  
QUARTERLY REPORT NO. 10  
CHAMBERLAIN MANUFACTURING CORPORATION  
FORMER FACILITY AT  
550 ESTHER STREET  
WATERLOO, IOWA**

Terracon Project No. 07107020  
January 29, 2014

## **1.0 INTRODUCTION**

Terracon has developed this VIIM Quarterly Report to identify interim remedial measures completed in residential structures in which vapor concentrations related to shallow groundwater contamination from the former Chamberlain Manufacturing Facility (Facility) exceed indoor air screening levels for the period of October 1, 2013 through December 31, 2013. This VIIM Quarterly Report is submitted in accordance with the requirements of the UAO, Docket Nos. RCRA 07-2010-002 and CERCLA 07-2010-005 dated April 20, 2010 and Task IA of the SOW attached to the UAO. Capitalized terms not defined herein have the definitions set forth in the UAO or the SOW.

When required per agreement with the USEPA, the VIIM Quarterly Report also provides a summary of indoor analytical results that have been obtained from the residences sampled for the above-referenced report period. Residences did not require sampling this period so determinations related to the installation of vapor mitigation based on concentrations were not applicable.

### **1.1 Site Conditions**

The Facility is an irregularly shaped parcel containing approximately 22.8 acres and located at 550 Esther Street in Waterloo, Iowa. A Topographic Vicinity Map is included as Exhibit 1 in Appendix A. A Site Diagram is included as Exhibit 2.

The Facility manufactured metal washer wringers and projectile metal parts from approximately 1919 until 1996 when it was sold to Atlas Warehouse L.C. for use as a storage facility. The Facility was subsequently abandoned and is currently vacant. The City of Waterloo (City) acquired the Facility from Atlas Warehouse L.C in 2005 in an effort to facilitate redevelopment and has demolished a significant portion of the Facility. The concrete foundation and pad

removal work being performed by others under a City contract was apparently completed in the fourth quarter of 2013.

The Facility is zoned Heavy Industrial (M-2) by the City. The Facility is adjoined by park land to the north and south, single family residential housing to the west, and Virden Creek followed by a golf course to the east. Virden Creek is within approximately 100 feet of the Facility at its closest point. Gates Park adjoins the Facility to the north across Louise Street, to the east across Virden Creek, and to the south across the railroad tracks. Single family residences are located across East 4th Street to the west of the Facility. Single family residences are also located along the east side of East 4th between Anita and Louise Streets.

## 1.2 Previous Assessment Activities

Beginning in 2004, the City conducted an environmental assessment of the site using a USEPA Brownfields Grant. Results of assessment activities identified impacts to soil and groundwater at the site including a chlorinated solvent plume that extends offsite to the south and west. Site assessment activities were not completed due to funding restrictions of the Brownfields Grant program.

Subsequently, environmental assessment activities of onsite soil and groundwater conditions and the offsite chlorinated solvent plume were completed by Chamberlain. The lateral extent of the chlorinated solvent plume has been determined to extend south and west from the Facility into an area of residential development. USEPA's preliminary evaluation of the vapor intrusion to indoor air pathway resulting from the groundwater plume identified the potential for vapor intrusion into residential structures.

To further evaluate the vapor intrusion pathway, the USEPA conducted subslab vapor sampling of selected residences in November 2008. Due to problems with the sampling and analysis equipment, the sampling activities were repeated in April/May 2009. Subslab vapor samples were collected from ten homes located along and near East 4<sup>th</sup> Street and analyzed for VOCs. In addition, one indoor air sample was collected from one of the ten homes. The results of sampling activities identified PCE and TCE in excess of subslab vapor screening levels. The elevated concentrations were generally located within the 2200, 2300, and 2400 block of East 4<sup>th</sup> Street.

In accordance with the approved VIC Work Plan, Terracon initially conducted vapor intrusion characterization at 22 residences that responded with completed Sampling Request Forms and Access Agreements from both the property owner and current renter. Initial subslab, indoor air, and ambient air sampling was conducted between April 25, 2011 and May 3, 2011. Additional indoor air samples were collected from four residences on June 16, 2011 and from one residence on September 14, 2011. Based on the analytical results, the reported concentrations

of indoor air samples in seven residences were greater than the indoor air screening level. Subslab and indoor air sample results were presented in the VIC Report dated July 5, 2011.

In accordance with the approved VIC Report, Terracon offered vapor sampling to 14 additional residences located on the west side of the 300 block of Boston Avenue and the east side of the 400 block of Boston Avenue. Terracon also reoffered vapor sampling to those residences that did not respond to previous submittals and contacted residences that requested sampling through the USEPA or that had previously authorized sampling, but could not be reached to schedule an appointment. Supplemental subslab, indoor air, and ambient air sampling was conducted at nine residences between December 12, and December 14, 2011. Analytical results for subslab samples collected from two residences exceeded subslab screening levels and as such, additional indoor air samples were collected at these locations on March 23, 2012. Analytical results for supplemental sampling activities were submitted to the USEPA on April 19, 2012. During the second quarter 2012, indoor air samples were collected at Residences 48 and 73 and were reported in Terracon's July 19, 2012 VIIM Quarterly Report No. 4.

Based upon requests from residences No. 57 and 61 to Mr. Bruce Morrison for sampling of their homes, Chamberlain conducted a sampling event in September 2013 with the results being presented in Terracon's October 31, 2013 VIIM Quarterly Report No. 9. The results from this subslab sampling event were below applicable screening levels. As such, the report, which the USEPA approved with comments, recommended the removal of the ports from these two homes.

Terracon has been conducting routine indoor air sampling of select homes consistent with the requirements of the UAO and July 5, 2011 VIC Report. In addition to indoor air sampling, Chamberlain has periodically checked required vapor mitigation systems for proper operation. Results of this work has been summarized in Terracon's Quarterly VIIM reports. This report covers the period of October 1, 2013 to December 31, 2013.

### **1.3 Project Objectives**

The objective of this VIIM Quarterly Report is to present the information required by Section 4.0 of the approved VIIM Work Plan dated October 14, 2010, revised on August 1, 2011, and amended July 19, 2011. This information includes system design "as-builts," information on the expected operational life of the system, a recommendation for the frequency for monitoring and maintaining the system, criteria for determining its effectiveness, a schedule for system replacement in whole or in part (as appropriate), the frequency of system inspection by the Respondent, the results of post-installation system monitoring and any approved deviations from the approved VIIM Work Plan.

## **2.0 SCOPE OF SERVICES**

### **2.1 Mitigation Determination**

During the fourth quarter 2013, sampling services were not required. As such, mitigation determinations were not made in the fourth quarter 2013 period.

### **2.2 Site Access Protocol**

When sampling is required, residences are contacted at least 48 hours in advance of system shut-down, sampling, or system inspection to arrange a time and date for proposed activities. Sampling activities were not required during this report period.

## **3.0 PROCEDURES FOR SYSTEM DESIGN, INSTALLATION AND COMMISSIONING**

Vapor mitigation systems were not designed, installed, commissioned or decommissioned during the fourth calendar quarter of 2013.

## **4.0 COMPLETED SYSTEM INSTALLATIONS**

Interim mitigation systems were previously offered to, accepted by, and installed at eight Residences. Interim mitigation systems were subsequently shut off at three Residences (37, 38, and 48) with USEPA approval. The five Residences with required mitigation systems include Residences 4, 22, 28, 45, and 46. System installations were not completed during the fourth calendar quarter of 2013.

## **5.0 COMPLETED SYSTEM INSPECTION AND REPAIR**

In accordance with the approved VIIM Work Plan, system inspections are to occur on an annual basis following installation through the period of required operation. The purpose of the site inspection is to check each operating system for general condition using visual observation. The inspection includes checking for: proper operation of the blower, possible cracks or

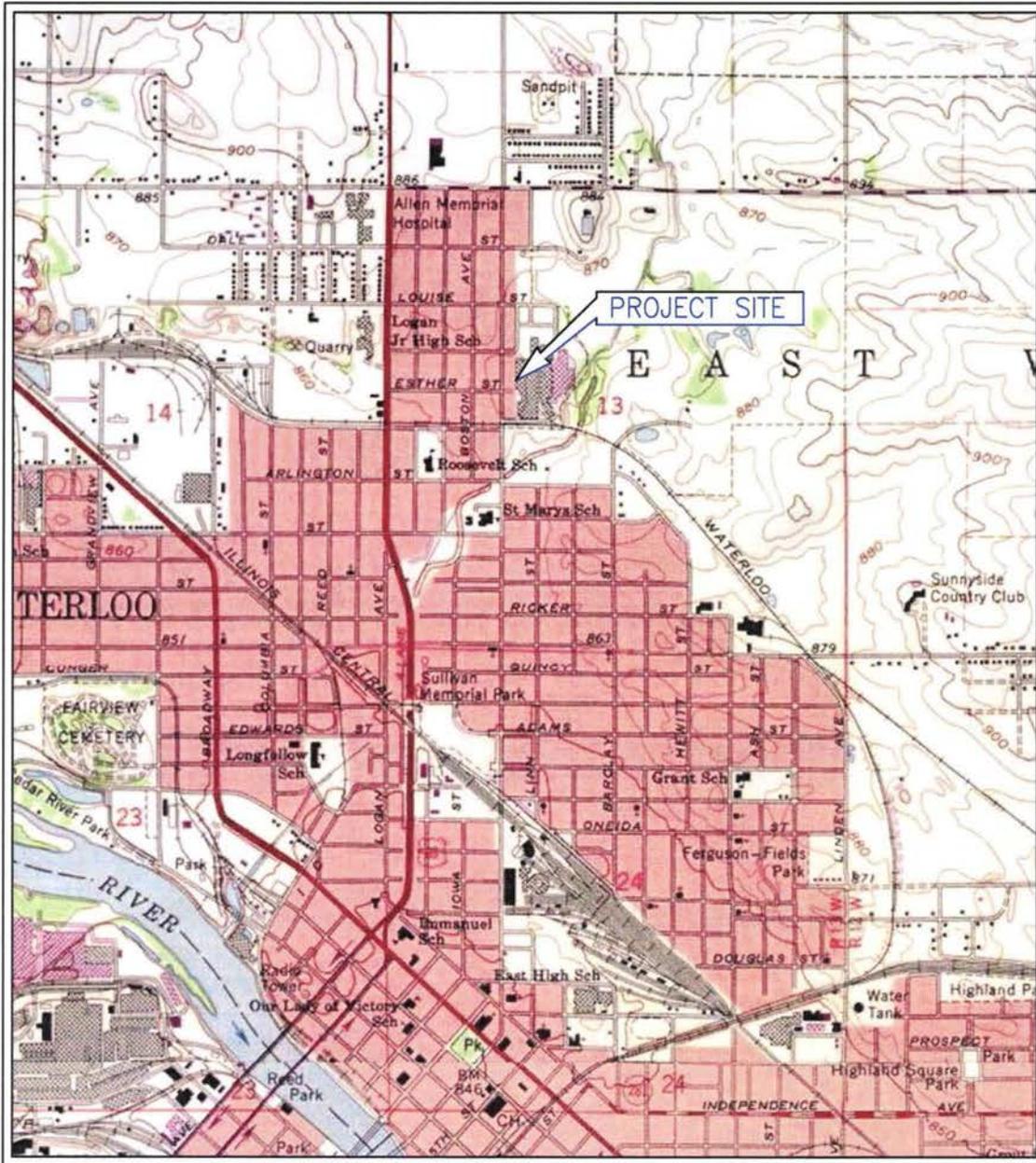
disconnections in visible piping, piping attachments, and checking manometer to confirm system vacuum. The most recent inspection period occurred in September 2013 so the next scheduled inspection period will be August or September 2013.

## **6.0 INDOOR AIR MONITORING RESULTS**

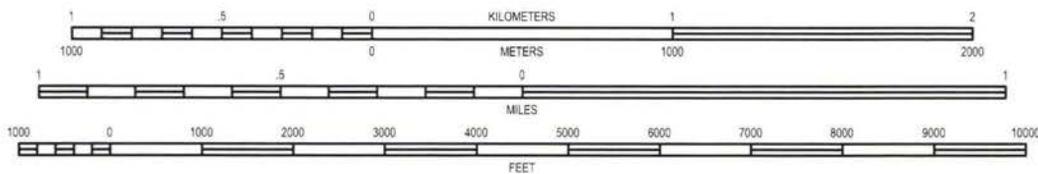
During the fourth quarter 2013, sampling services were not required. As such, a discussion of analytical results is not required. The next sampling event is scheduled to occur in February 2014. This sampling event is planned to include Residences No. 20, 33, 40, 47, 48, 60, 73, and 76.

## Appendix A

UNITED STATES – DEPARTMENT OF THE INTERIOR – GEOLOGICAL SURVEY



SCALE 1:24,000

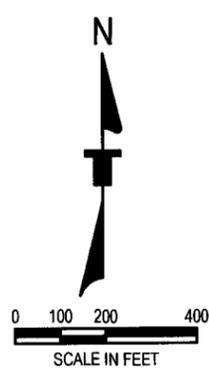
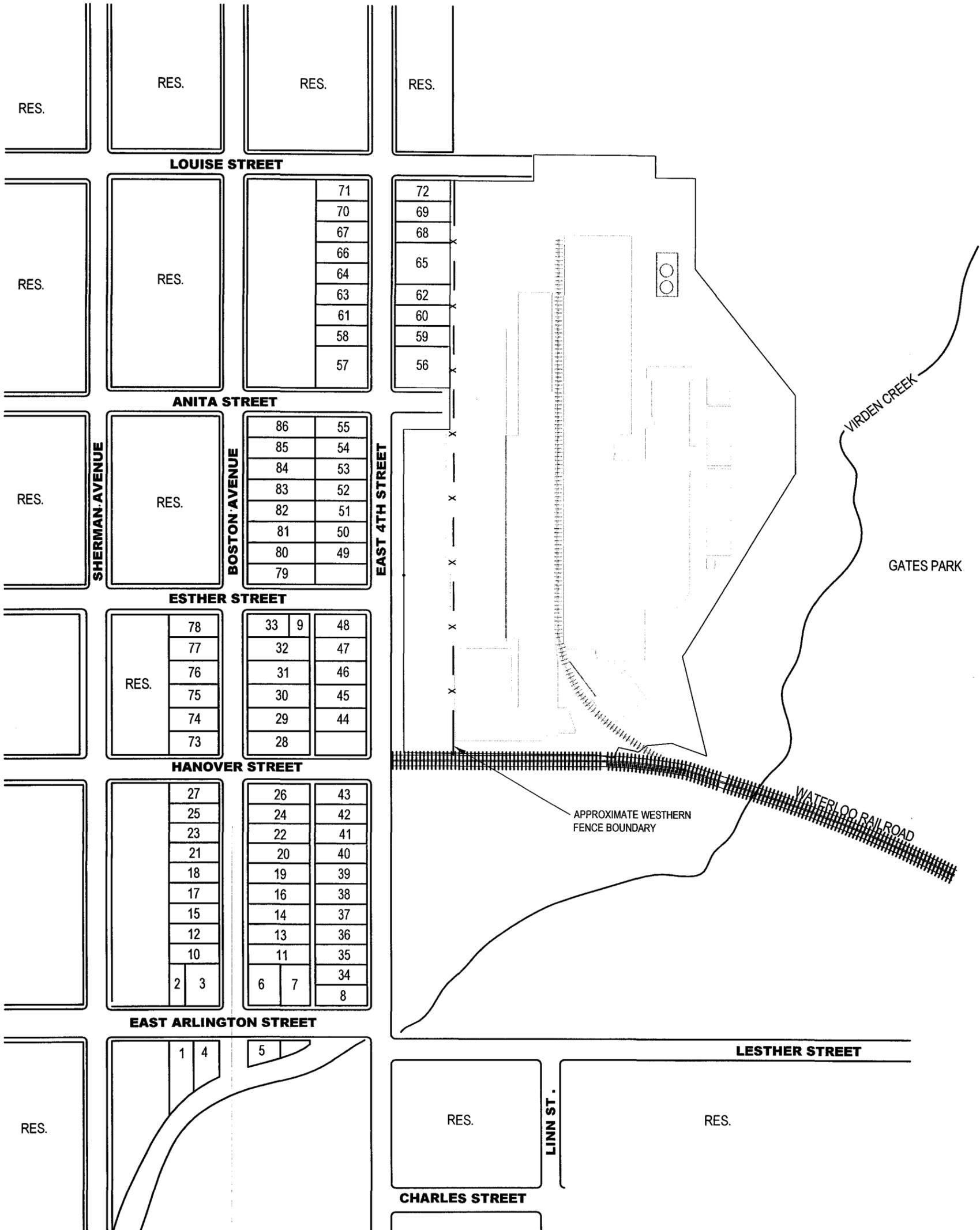


CONTOUR INTERVAL 10 FEET  
NATIONAL GEODETIC VERTICAL DATUM OF 1929

WATERLOO NORTH, IOWA  
QUADRANGLE  
1972  
7.5 MINUTE SERIES (TOPOGRAPHIC)



Project Mngr: MEH	Project No. 07107020	<p>Consulting Engineers and Scientists</p> <p>15080 A CIRCLE OMAHA, NE 68144 PH. (402) 330-2202 FAX. (402) 330-7606</p>	SITE LOCATION TOPOGRAPHIC MAP	EXHIBIT  1
Drawn By: PAI	Scale AS SHOWN		VIIM QUARTERLY REPORT NO. 10	
Checked By: MEH	File No. 07107020C08		FORMER CHAMBERLAIN MANUFACTURING FACILITY	
Approved By: DMS	Date: 1/28/14		550 ESTHER STREET	
			WATERLOO IOWA	



NOTE: SITE FEATURES (SHOWN IN LIGHT GRAY AT THE SITE) WERE DEMOLISHED BY THE CITY OF WATERLOO. THE BUILDINGS, RAIL AND A MAJORITY OF THE CONCRETE HAVE BEEN REMOVED AS OF OCTOBER 20, 2013.

**LEGEND**

40 RESIDENCES INCLUDED IN STUDY AREA WITH ID NUMBER

REV.	DATE	BY	DESCRIPTION

**Terracon**  
Consulting Engineers and Scientists

15080 A CIRCLE OMAHA, NE 68144  
PH. (402) 330-2202 FAX. (402) 330-7606

SITE PLAN

VIIM QUARTERLY REPORT NO. 10

**FORMER CHAMBERLAIN MANUFACTURING FACILITY**

550 ESTHER STREET

WATERLOO IOWA

EXHIBIT	
PROJECT MGR:	MEH
DRAWN BY:	PAI
APPVD. BY:	DMS
SCALE:	AS SHOWN
DATE:	1/28/14
PROJECT NO.:	07107020
FILE NAME:	07107020C08
SHEET NO.:	2 OF 2