ANALYSIS OF BROWNFIELDS CLEANUP ALTERNATIVES

Comiskey Park Expansion Project
Washington Street to Elm Street / East 24th Street to East 25th Street, Dubuque, Iowa

City of Dubuque
Dubuque, Iowa

Date: 08/27/2024

IMPACT7G

8951 Windsor Parkway
Johnston, IA 50131
515.473.6256

Table of Contents

APPENDICES

1.0 EXECUTIVE SUMMARY

The City of Dubuque (City) is currently participating in the U.S. Environmental Protection Agency (EPA) Brownfield Multipurpose Program. The Comiskey Park Expansion Project site (Site) is 0.83 acres of land that formerly consisted of seven (7) vacant lots which now comprise a portion of parcel 1013451018 (Figure 2 – Property Location Map, Site). The parcel is west adjacent to the Morrison Brothers Company property and located between East 24th Street and East 25th Street in Dubuque, Iowa.

Impact7G, Inc. (Impact7G) was retained by the City to complete an Analysis of Brownfields Cleanup Alternatives (ABCA). After reviewing all the alternatives, Impact7G recommends the removal of approximately 1,000 cubic yards (yds^3) of lead-and arsenic contaminated soil to support redevelopment of the Site. This ABCA will detail each alternative for cleanup.

2.0 INTRODUCTION

2.1 Site Description

The Site is comprised of a portion of parcel 1013451018 which is addressed as 2496 Washington Street. The Site is located on seven (7) former lots comprising 0.83 acres. The Site is currently vacant, grass-covered land. The Site is bound to the north by single-family residential dwellings, to the east by Comiskey Park, to the west by Morrison Brothers, and south by the Bee Branch Greenway.

2.2 Previous Site Use(s)

Historically, the parcels were developed with residential properties from at least the late 1800s through the 2010s. By 2019, the residences had been demolished and have remained vacant since that time. The Morrison property was developed in the late 1880s as a tank and boiler manufacturer and woodworking facility. Historically, a machine shop, railroad siding, a foundry, and a 15,000-gallon fuel oil tank were located on the Morrison property. An underground storage tank (UST) was also reportedly located in the East 24th Street right-of-way.

2.3 Project Description

In 2016, the City Dubuque purchased the Site, with the intent to clean up the Site to residential standards and redevelop it as an expansion of the neighboring Comiskey Park.

2.4 Site Assessment Findings

A Phase I ESA was conducted in February 2016 on the Site and on the adjacent property to the east (Morrison property). Recognized Environmental Conditions (RECs) were identified during the Phase I ESA that included the former industrial use of the Morrison property from the 1890s to the present and the historical presence of railroad tracks south of East 24th Street. The Phase I ESA recommended further investigation.

In August 2016, a Phase II ESA was conducted on the Site. Soil and groundwater samples were collected and the results indicated polycyclic aromatic hydrocarbons (PAHs) and lead were detected in shallow soil at concentrations above the statewide standards (SWS). However, the Iowa Department of Natural Resources (IDNR) updated the SWS for PAHs since 2016 and the PAH levels detected is currently no longer above the SWS. In deeper soil samples, total extractable hydrocarbons (TEH) and volatile organic compounds (VOCs) were either not detected or below their SWS. The groundwater had impacts from TEH and VOCs reported above the SWS. It was determined that the VOCs detected were not a potential vapor risk at the Site. The non-cancer risk for site resident and site worker were reported as unacceptable due to concentrations of lead detected. The report concluded that the areas investigated were not suitable for future residential, commercial, or industrial use without remediation of the lead-impacted area.

Based on a review of the previous reports, there are lead and arsenic impacts in the shallow soil.

3.0 PROJECT GOAL

The goal of this Project is to mitigate soil lead and arsenic contamination at the Site to below the SWS. This will allow the City to advance with the reuse and redevelopment of the Site into an expansion of Comiskey Park.

4.0 APPLICABLE REGULATIONS AND CLEANUP STANDARDS

4.1 Lead in Soil

Lead in soil can pose a threat to human health and the environment. The IDNR uses the SWS as part of the evaluation to determine if a site may present an imminent and substantial endangerment and thus be eligible for inclusion on the CERCLA priority list. The SWS are also utilized by the IDNR for site cleanup levels. The residential SWS for lead in soil of 400 mg/kg is based on a model that calculates an estimated acceptable level of 10 micrograms/deciliter (ug/dL) of lead in the blood.

Waste that contains lead may be considered hazardous waste, depending on the leachability of the lead. Lead that is leachable above a concentration of 5.0 milligrams/liter (mg/L) as determined using the Toxicity Characteristic Leaching Procedure (TCLP) analysis is subject to Resources Conservation and Recovery Act (RCRA) hazardous waste handling and disposal requirements (40 CFR 261, Subpart C). Composite samples representative of the overall anticipated lead-containing waste streams (lead-contaminated soil) for the project were collected and analyzed for TCLP lead to assess whether these regulations are applicable.

4.2 Arsenic in Soil

Arsenic in soil can pose a threat to human health and the environment. The IDNR uses the SWS as part of the evaluation to determine if a site may present an imminent and substantial endangerment and thus be eligible for inclusion on the CERCLA priority list. The SWS are also utilized by the IDNR for site cleanup levels. The residential SWS for arsenic in soil of 1.9 mg/kg, however, a site-specific background standard of 3.42 mg/kg has been calculated for this site as stipulated by Iowa Administrative Code 567-137.10(4) b.

Waste that contains arsenic may be considered hazardous waste, depending on the leachability of the arsenic. Arsenic that is leachable above a concentration of 5.0 milligrams/liter (mg/L) as determined using the Toxicity Characteristic Leaching Procedure (TCLP) analysis is subject to Resources Conservation and Recovery Act (RCRA) hazardous waste handling and disposal requirements (40 CFR 261, Subpart C). Composite samples representative of the overall anticipated arsenic-containing waste streams (arsenic-contaminated soil) for the project were collected and analyzed for TCLP lead to assess whether these regulations are applicable.

4.3 Cleanup Oversight Responsibilities

The City has procured a qualified environmental professional (QEP), Impact7G, Inc. (Impact7G), to oversee the cleanup in accordance with local, state, and federal regulations. Impact7G will provide on-Site guidance of regulations and observations during the cleanup process. Impact7G will utilize a portable X-ray fluorescence (XRF) analyzer for the purpose of determining the extent of soil arsenic contamination; the extent of the soil excavation; and selecting soil samples for confirmation laboratory analysis. Impact7G will also monitor dust control, truck and equipment track out decontamination procedures, and provide daily reports of work in progress. All documents prepared during cleanup activities will be compiled into a final cleanup report.

4.4 Cleanup Standards for Major Contaminants

Lead and arsenic are the major contaminants of concern. The Site mitigation will include the over-excavation of approximately 1,000 yds^3 of lead and arsenic-contaminated soil to be transported off-site and disposed of at the Dubuque Metropolitan Area Solid Waste Authority Landfill located at 101 Airborne Road in Dubuque, Iowa as special waste. Soil above the SWS of 400 mg/kg for lead and the site-specific standard for arsenic of 3.42 will be removed.

5.0 EVALUATION OF CLEANUP ALTERNATIVES

5.1 Soil Cleanup Alternatives Considered

Based on the information available for the Site, three alternatives have been identified as the most reasonable alternatives to address soil impacted with lead and arsenic. The three cleanup alternatives considered for the Site are:

- Alternative #1 – No Action, included for comparison purposes.
- Alternative #2 – Soil capping with institutional controls (ICs).
- Alternative #3 – Excavation and off-site disposal of soil.

CRITERIA	ALTERNATIVE 1: NO ACTION	ALTERNATIVE 2: CAPPING	ALTERNATIVE 3: EXCAVATION
Effectiveness	Not Effective	Effective	Effective
Ease of Implementation	None	Readily Implementable	Readily Implementable
Cost	None	$70,000	$123,035

Effectiveness:

- Alternative 1: No Action is not effective in mitigating the human exposure risk to lead-contaminated soil at the Site.
- Alternative 2: Capping of lead and arsenic-contaminated soils is an effective measure to mitigate the human exposure risk to lead-contaminated soils; however, soils exceeding the SWS/Site-Specific Standards for and arsenic lead would remain in place thus hindering Site redevelopment as open greenspace for a park expansion. This is not a preferred alternative from a green/sustainable reuse perspective as it introduces unnecessary impervious surface to a flood prone section of the City of Dubuque.
- Alternative 3: Excavation: The removal and regulated disposal of lead and arsenic-contaminated soil is an effective method of eliminating the human exposure risk and would allow for Site redevelopment as open greenspace for a park expansion. This is the preferred alternative from a green/sustainable reuse perspective as it does not introduce unnecessary impervious surface to a flood prone section of the City of Dubuque.

Ease of Implementation:

- Alternative 1: No Action is easy to implement since no actions would be conducted.
- Alternative 2: Clay capping is relatively easy to implement and would require minimal disruption of the Site; however, this alternative would result in lead and arsenic-contaminated soil remaining on-Site above SWS/Site-Specific Standards levels and would require ICs to restrict removal of the cap and future construction on the Site.
- Alternative 3: Over-excavating and regulated disposal of lead- and arsenic contaminated soil is readily implementable given that the excavation depth would be limited to the top two (2) feet of unconsolidated sediments.

Cost:

- Alternative 1: No Action has no associated costs.
- Alternative 2: Constructing an engineered barrier over contaminated soil and the development of associated ICs is estimated to cost $70,000.
- Alternative 3: Based on current information, the cost for the removal, disposal, and backfilling of 1,000 cubic yards of contaminated surface soil is estimated to be $123,035.

6.0 RECOMMENDED CLEANUP ALTERNATIVE

- Each of the alternatives and the comparison criteria are summarized in the table below. Based on the evaluation of remedial alternatives presented above, the recommended alternative is Alternative #3, excavation and off-site disposal of the soil. The excavation and off-site disposal of soil was selected because it eliminates exposure risk while allowing for Site redevelopment as open greenspace for a park expansion. This is the preferred alternative from a green/sustainable reuse perspective as it does not introduce unnecessary impervious surface to a flood prone section of the City of Dubuque.

Summary of Remedial Alternatives for Soil			
Evaluation Criteria	**Alternative #1 No Action**	**Alternative #2 Soil Capping with Institutional Controls**	**Alternative #3 Excavation and Off-Site Disposal of Soil**
Effectiveness & Reliability	Not effective or reliable.	Is effective in preventing human exposure to contaminated soil but does not cleanup soils to below the SWS/Site-Specific Standards.	Is an effective measure to eliminate exposure to lead and arsenic contaminated soil and would allow for Site redevelopment as a park.
Feasibility & Ease of Implementation	Not feasible but easily implementable.	Is relatively easy to implement and would require minimal disruption of the Site; however, this alternative would result in lead and arsenic remaining on-site above the SWS/Site-Specific Standards and would require ICs to restrict removal of the cap and future construction on the Site.	Is readily implementable as only the top two feet of unconsolidated surface soils would be excavated and disposed of off-site.
Risk Reduction & Green and Sustainable Remediation	No reduction in risks to human health and the environment. No reduction in contaminant mobility or toxicity. No green or sustainable remediation or environmental benefits.	Risk to health and human exposure is reduced; however, not eliminated and does not allow for Site redevelopment as a park. Contractors will also be asked follow green and sustainable remediation techniques including not allowing engines to idle and reducing trips to the landfill where possible Adverse green or sustainable remediation and environmental impact effects.	Risk to human health by exposure to lead is eliminated and allows for Site redevelopment as a park. Positive green or sustainable remediation and environmental impact effects. Contractors will also be asked follow green and sustainable remediation techniques including not allowing engines to idle and reducing trips to the landfill where possible.
Costs	No cost	$70,000	$123,035
Time to Reach Permanent Solution	Will not be achieved.	1 to 2 months	1 to 2 months

7.0 SIGNATURES OF ENVIRONMENTAL PROFESSIONALS

Signatures of the environmental professionals responsible for this report:

Emily Smart, Senior Project Manager, Report Preparer

Steve Prideaux, Project Manager, Quality Control and Assurance

Appendix A – Qualifications

Emily Smart, LG, CGP

Senior Project Manager

Office: Coralville, IA
esmart@impact7g.com / 319.331.1577 (Cell)

Experience

Industry: 16 years Impact7G Tenure: <1 years

Emily is a licensed geologist and certified groundwater professional with sixteen years of environmental consulting experience including EPA and State-funded Brownfields redevelopment projects, Phase I and Phase II ESAs, environmental cleanups, wetland delineation, underground storage tank closures and RBCA assessments, and hydrogeological assessment. Stakeholder coordination, client relationships, business development, and technical writing are Emily's greatest strengths as a leader. As a Senior Project Manager with Impact7G, she has leveraged these abilities to earn the trust of clients and to win competitive pursuits. The EPA awarded Ms. Smart the LEAFS Award in April 2018 for excellence in site reuse for the construction of the Jule Operations & Training Center at the former Peoples Natural Gas Company Superfund Site. In 2015, her team's work on the International Harvester EPA Cleanup Grant was honored with the Phoenix Award for Brownfields Redevelopment at the National Brownfields Conference in Chicago, Illinois. Member, Environmental Professionals of Iowa, Iowa Groundwater Association, National Groundwater Association, Iowa Society of Solid Waste Operations.

Education

Master of Science, Geoscience • University of Iowa, 2008

Bachelor of Science, Geoscience • University of Iowa, 2003

Certifications

Licensed Geologist, Washington

Certified Groundwater Professional, Iowa

OSHA 40-Hour HAZWOPER Certified

Project Manager

Mr. Steve Prideaux, AICP is a Waterloo native with extensive knowledge of the EPA Brownfields Program. As his primary career focus since starting in 2007, his expertise includes helping communities identify and inventory potential brownfields sites, conducting Phase I Environmental Site Assessments (ESAs), creating outreach tools to educate residents on the brownfields process, coordinating with state and federal agencies, and advancing re-use planning efforts. Additionally, Steve ensures grantees remain in compliance with federal reporting requirements. This involves preparing necessary quarterly and annual documentation. Steve also specializes in leveraging funds for client projects.

He has secured $7.03 million of EPA Brownfields Program grants including $2.8 million on behalf of the City of Waterloo. Other successful grant applications include the following: Iowa Department of Natural Resources (Iowa DNR) 128a Program; Iowa Department of Economic Development (IDED) Iowa Brownfields Redevelopment Program; Iowa DNR Derelict Buildings Grant Program; EPA Re-Powering America's Land Program Feasibility Study Program; Iowa Office of Energy Independence (OEI) Energy Conservation Block Grant; United States Department of Agriculture (USDA) Rural Energy for America Program; and the EPA Environmental Justice Small Grants Program.

Education

M.S., Urban and Regional Planning, University of Iowa
B.A., History and Political Science, University of Iowa
Certified Planner, American Institute of Certified Planners

Contact Information

108 E 7th Street, Suite 2, Iowa 52340 / 515.473.6256 (Office)
sprideaux@impact7g.com / 319.635.6252 (Cell)

Appendix B – Figures

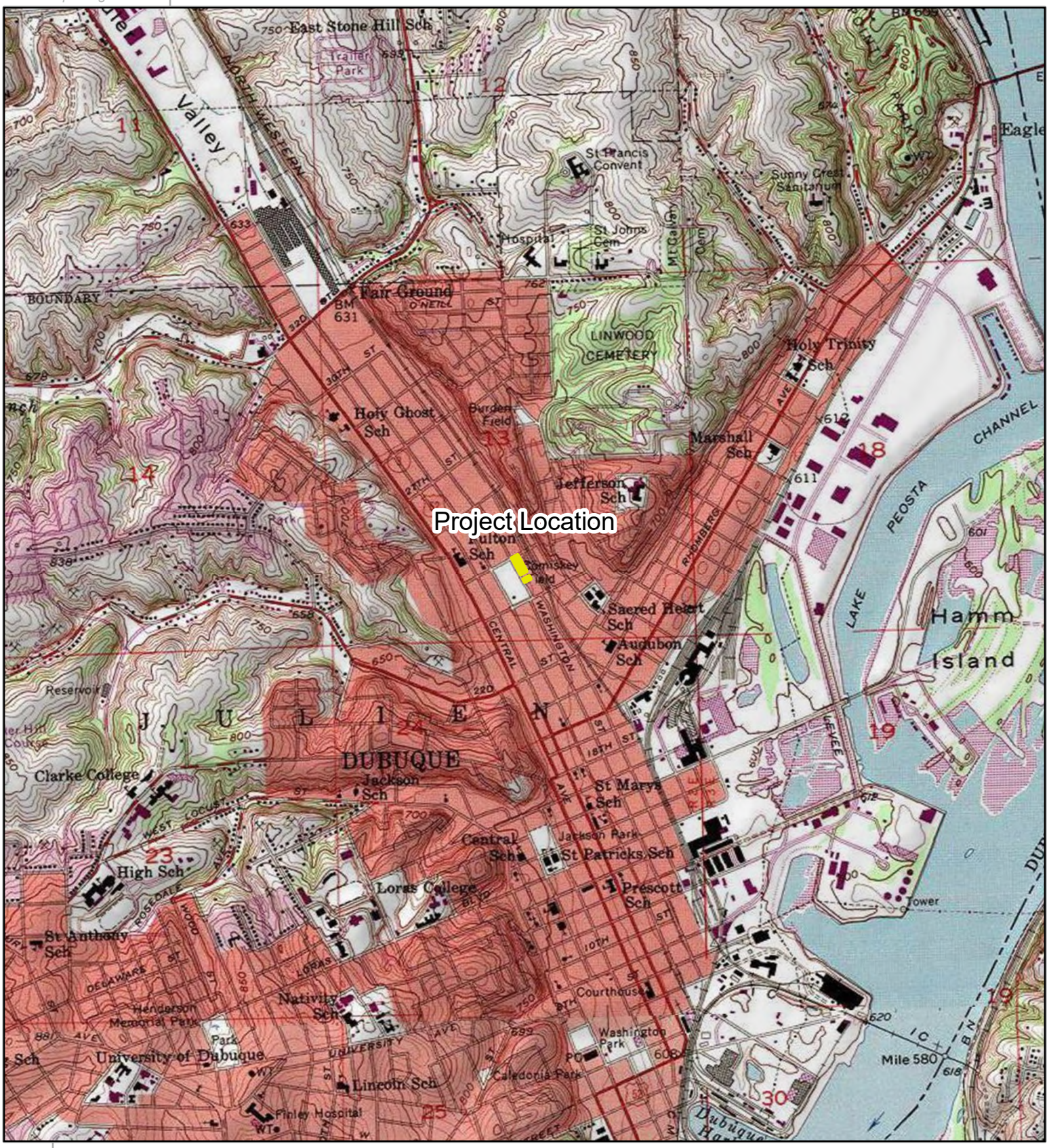
Figure 1 – Property Vicinity Map
Figure 2 – Property Location Map

IMPACT7G

www.impact7g.com

Project Vicinity Map

Dubuque County



LEGEND

Subject Property

FIGURE 3

0 0.13 0.25 0.5 Miles

N

IMPACT7G

www.impact7g.com

Project Location Map

T89N, R2E, Section 13

LEGEND

Subject Property

FIGURE 2

N

0 5 10 20

Meters

Appendix C

February 29, 2016 Phase I ESA

PHASE I ENVIRONMENTAL SITE ASSESSMENT

MORRISON BROTHERS PROPERTIES
DUBUQUE COUNTY
DUBUQUE, IOWA

HR GREEN, INC. PROJECT NO. 40140060.25

February 29, 2016
Viability of Environmental Site Assessment Expiration Date: July 16, 2016

PREPARED FOR:
CITY OF DUQUBUE

PREPARED BY:

PHASE I ENVIRONMENTAL SITE ASSESSMENT

Morrison Brothers Properties
Washington Street
Dubuque County
Dubuque, Iowa

February 29, 2016

HR GREEN PROJECT NO. 40140060.25

Prepared for:

CITY OF DUBUQUE
50 W. 13 STREET
DUBUQUE, IA 52001

TABLE OF CONTENTS

APPENDICES

1.0 EXECUTIVE SUMMARY

1.1 Investigative Findings

The City of Dubuque (Client) retained HR Green, Inc. (HR Green) to conduct a Phase I Environmental Site Assessment (ESA) of eight parcels owned by Morrison Bros or Morrison Brothers Company 24th & Elm Street. The properties are described by the Dubuque County Assessor's Office in the following table. HR Green has assigned a property ID number to each parcel.

Property ID	Address	Parcel Identification Number (PIN)	Area (acres)
1	2496 Washington Street	1013451001	0.12
2	None Assigned	1013451002	0.12
3	2482 Washington Street	1013451003	0.12
4	2476 Washington Street	1013451004	0.12
5	None Assigned	1013451005	0.12
6	2454 Washington Street	1013451006	0.06
7	2434 Washington Street	1013451010	0.12
8	None Assigned	1013451017	1.40

These properties are located in Dubuque, Dubuque County, Iowa (Figure 1 in Appendix A) and total 2.18 acres. The parcels are hereinafter jointly referred to as the "subject property."

Adjacent parcels to the north/northeast, north, east, southeast, and northwest contain residential development while the adjoining parcels to the south, southwest, and west contain recreational development, vacant property, or vacant residential development. See Figure 2 in Appendix A for specific use information.

HR Green has performed a Phase I ESA at the subject property in the City of Dubuque, Dubuque County, Iowa in conformance with the scope and limitations of ASTM Practice E 1527-13. Any exceptions to, or deletions from, this practice are described in Sections 2.4, 6.1 and 10.0 of this report. This assessment has revealed evidence of two (2) recognized environmental conditions (RECs) in connection with the subject property. The following summarizes the RECs:

On Site REC:

1. The subject property has contained industrial uses since at least the late 1880's including a tank and boiler manufacturer historically and currently contains a woodwork facility. Site reconnaissance and an owner interview indicate that a UST that has been filled in place is located on this parcel. No tank closure records were identified on IDNR's tank database. Site reconnaissance also identified three areas where possible fill/vent pipes were observed. Historical records identify a machine shop, railroad siding, a foundry, and a 15,000-gallon fuel oil tank on the subject property. Also identified in historical documents was an UST located in the E 24th Street ROW. The owner representative stated that much of the siding has been removed from the subject property but that some may also remain buried in the subsurface.

Off Site REC:

2. The historical use of the adjacent parcel to the south of the subject property as railroad tracks. Historical documents first identify this use in 1891.

1.2 Recommendations

The RECs identified during this evaluation require further investigation to quantify environmental impacts and to evaluate human health risk concerns. Ultimately, the user should make the decision whether or not to conduct a Phase II ESA. This choice is driven by at least three factors: 1) the Environmental Professional's opinion on whether or not further investigation is warranted based on the Phase I ESA results; 2) the intended reuse of the site (e.g., industrial, commercial, residential, etc.); 3) and the user's tolerance for possible environmental risks associated with potential undocumented soil, groundwater, and vapor contamination.

It is HR Green's opinion that the conditions identified during the Phase I ESA indicate the potential for environmental contamination. An understanding of the intended reuse of the site and the user's tolerance for possible environmental risks is necessary to provide additional recommendations, beyond what is stated here. HR Green encourages the user to discuss these findings in consultation with their legal counsel before making a decision to pursue a Phase II ESA on the subject property as this decision may impact the user's claim to federal landowner liability protections under CERCLA.

Should the user decide to pursue a Phase II ESA on the subject property, HR Green recommends that a site-specific Phase II Sampling Plan (PIISP) be completed to address the RECs identified during the Phase I ESA.

2.0 INTRODUCTION

2.1 Purpose

The purpose of this Phase I ESA is to identify, to the extent feasible pursuant to the process adopted by the American Society for Testing and Materials (ASTM), described in the Standard Practice for Environmental Site Assessments (ASTM E 1527-13), RECs (See Section 2.4) in connection with the subject property. In addition, the intention of this Phase I ESA is to permit the user to satisfy one of the requirements to qualify for the innocent landowner, contiguous property owner, or bona fide prospective purchaser limitations of Comprehensive Environmental Response, Compensation, and Liability Act (CERCLA) liability (hereinafter referred to as the "landowner liability protections" or "LLPs"): that is, the practice that constitutes "all appropriate inquiry into the previous ownership and uses of the property consistent with good commercial or customary practice" as defined in 42 USC §9601(35)(B).

2.2 Detailed Scope of Services

The approved scope of work for conducting Phase I ESAs under the EPA Cooperative Agreement was limited to meeting the requirements established in the ASTM E 1527-13 standard.

The Phase I ESA of the subject property was conducted for the Client during the months of January and February 2016. The assessment consisted of four components including:

- Visual inspection of the subject property and adjoining properties
- Interview with present owners/operator
- Reviews of historical sources
- Reviews of federal, state, tribal, and local government records

2.3 Significant Assumptions

HR Green used the following assumptions in determining potential RECs at the subject property:

- The Mississippi River is located approximately 1 mile east and southeast of the subject property and flows to the south. Therefore, groundwater at the subject property and adjacent properties is assumed to flow south-southeast towards the Mississippi River.

2.4 Limitations and Exceptions

Any conclusions regarding potential environmental risks or particular events and practices are limited by the quality and quantity of information provided by available historical documents; the visual site inspection; and interviews with site owners, site operators, former site owners and residents.

"*Recognized Environmental Conditions*" are defined in ASTM E 1527-13 as: "the presence or likely presence of any hazardous substances or petroleum products on a property under conditions that indicate an existing release, a past release, or a material threat of a release of any hazardous substances or petroleum products into structures on the property or into the ground, groundwater, or surface water of the property. The term includes hazardous substances or petroleum products even under conditions in compliance with laws. The term is not intended to include *de minimis* conditions that generally do not present a threat to human health or the environment and that generally would not be the subject of an enforcement action

if brought to the attention of appropriate governmental agencies. Conditions determined to be *de minimis* are not recognized environmental conditions."

"Controlled Recognized Environmental Conditions" are defined in ASTM E 1527-13 as: "recognized environmental condition resulting from a past release of hazardous substances or petroleum products that has been addressed to the satisfaction of the applicable regulatory authority (for example, as evidenced by the issuance of a no further action letter or equivalent, or meeting risk-based criteria established by regulatory authority), with hazardous substances or petroleum products allowed to remain in place subject to the implementation of required controls (for example, property use restrictions, activity and use limitations, institutional controls, or engineering controls)."

"*Historical Recognized Environmental Conditions*" are defined in ASTM E 1527-13 as: "a past release of any hazardous substances or petroleum products that has occurred in connection with the property and has been addressed to the satisfaction of the applicable regulatory authority or meeting unrestricted use criteria established by a regulatory authority, without subjecting the property to any required controls (for example, property use restrictions, activity and use limitations, institutional controls, or engineering controls)."

Pursuant to Section 13.1.5 of ASTM Standard Practice, the following is a list of non-scope considerations the user may want to assess in connection with commercial real estate transactions. No implication is intended as to the relative importance of inquiry into such non-scope considerations, and this list is not intended to be all-inclusive:

- Asbestos Containing Materials
- Radon
- Lead-Based Paint
- Lead in Drinking Water
- Wetlands
- Regulatory Compliance
- Cultural and Historic Resources
- Industrial Hygiene
- Health and Safety
- Ecological Resources
- Endangered Species
- Indoor Air Quality
- Biological Agents
- Mold

Any consideration of non-scope items, such as those listed previously, is included in Section 11 of this report.

The information and conclusions presented in this report are based solely on the observations made during the site assessment evaluation and on data provided by others (individuals – entities). Thus, the accuracy of the resulting reporting and conclusions drawn from this information is inherently based on the accuracy of the information obtained and provided. The conclusions and opinions stated herein do not represent or warrant the property is free from contamination, pollution, or environmental problems. In summary, there is always a possibility some contamination may be present on the property of interest which was not discovered or noted during the Phase I ESA activities (walkover inspection, records review) conducted by HR Green.

THEREFORE, NO GUARANTEES OR WARRANTIES AS TO THE CONDITION OF THE PROPERTY OF INTEREST OR SUITABILITY OF PROPERTY USE FOR ANY PARTICULAR PURPOSE ARE MADE OR IMPLIED BY HR GREEN.

2.5 Special Terms and Conditions

It should be noted Phase I ESAs do not include any testing or sampling of materials such as

soil, water, air, or building materials. Contractual terms, conditions, and liability limitations are specified in the Scope of Services Agreement and Contract between HR Green and the Client.

Information used to prepare this report was provided by a number of parties including government agencies, third party vendors, and persons familiar with the subject property. All information reviewed was not independently verified unless actual knowledge of subject property conditions or history indicated obvious inconsistencies or errors.

2.6 User Reliance

This report has been prepared on behalf of and for the exclusive use of the Client solely for use in evaluating the potential "recognized environmental conditions" and is not intended for any other purpose nor the benefit or use of any other person. This report and the findings contained herein shall not in whole or in part, be disseminated or conveyed to any other party, nor used by any other person, in whole or in part, without the prior written consent of HR Green. **If the party seeking all appropriate inquiries (AAI) protection is one other than the User of this report, that party should contact HR Green for a reliance letter. A user questionnaire must be also completed by this party in order to be eligible for AAI protection using this report.**

3.0 SITE DESCRIPTION

3.1 Location and Legal Description

The subject property is located within the SW ¼ of the SE ¼ of Section 13, Township 89 North, Range 2 East in Dubuque County, Iowa, and is further located by the latitude 42.5180530° North and longitude -90.6707600° West. Figure 1 in Appendix A shows the location of the subject property.

According to information recorded on the Dubuque County Assessor's Office website, the subject property totals 2.18 acres and includes the following addresses, PINs, acreages, and brief tax description:

Property ID	Address	PIN	Acres	Brief Tax Description
1	2496 Washington Street	1013451001	0.12	LOT 13 O S LANGWORTHYS ADD
2	None Assigned	1013451002	0.12	LOT 14 O S LANGWORTHYS ADD
3	2482 Washington Street	1013451003	0.12	LOT 15 O S LANGWORTHYS ADD
4	2476 Washington Street	1013451004	0.12	LOT 16 O S LANGWORTHYS ADD
5	None Assigned	1013451005	0.12	LOT 17 O S LANGWORTHYS ADD
6	2454 Washington Street	1013451006	0.06	N 1/2 LOT 18 O S LANGWORTHS
7	2434 Washington Street	1013451010	0.12	LOT 20 O S LANGWORTHYS ADD 2434-2436
8	None Assigned	1013451017	1.40	LOTS 1 TO 12 O S LANGWORTHYS

The subject property is comprised of six adjacent properties fronting along Washington Street (Property IDs #1-6), one parcel located approximately 75 feet to the southeast of the adjacent parcels (Property ID #7), and one parcel located along Elm Street running from East 24th Street to East 25th Street (Property ID #8). Refer to Figure 2 in Appendix A for a map displaying the

referenced parcels.

3.2 Site and Vicinity General Characteristics

Adjacent parcels to the north/northeast, north, east, southeast, and northwest contain residential development while the adjoining parcels to the south, southwest, and west contain recreational development, vacant property, or vacant residential development. See Figure 2 in Appendix A for specific use information.

The industrial parcel (Property ID #8) on the subject property is zoned LI (Light Industrial) and the smaller parcels (Property ID #1-7) on the subject property as well as the properties to the north/northwest, east, south, southwest, west, and northwest are zoned R-2A (Alternate Two-Family Residential). An adjacent parcel to the north/northwest is zoned OR (Office Residential) and an adjacent parcel to the north is zoned R-2 (Two-Family Residential). See Appendix G for the City's Zoning Map.

3.3 Current Use of the Property

The subject property contains one residential property (Property ID #1) and several vacant properties (Property ID #2-7) along Washington Street and an industrial property (Property ID #8) along Elm Street between East 24th Street and East 25th Street. The industrial property contains a wood working facility that manufactures underground storage tank covers.

3.4 Descriptions of Structures, Roads, Other Improvements on the Site

3.4.1 Descriptions of Structures. According to the Dubuque County Assessor's Office, the subject property contains a single-story building, constructed in 1900 with 1,317 square feet of space on the parcel located at 2496 Washington Street (Property ID #1). Property ID #8 contains a single-story manufacturing structure that was constructed in 1918 with 20,364 square feet of space with one addition of 125 square feet completed in 1996, a hoop structure that was constructed in 1996 with 2,400 square feet of space, and one single-story warehouse constructed in 1950 with 720 square feet of space and with one addition completed in 1980 with 90 square feet of space.

3.4.2 Descriptions of Roads. The subject property does not contain any roads. East 25th Street, Elm Street, East 24th Street, and Washington Street border the subject property to the north, east, south, and west, respectively. An alleyway bisects the subject property running north-to-south from East 25th Street to East 24th Street.

3.4.3 Heating/Cooling System. The Dubuque County Assessor's website states that the residential structure (Property ID #1) and manufacturing structure (Property ID #8) located on the subject property utilize hot water radiant heat and that the two other structures contain no HVAC systems.

3.4.4 Sewage Disposal. The City sanitary sewer system serves the subject property.

3.4.5 Source of Potable Water. The City potable water system serves the subject property.

3.5 Current Uses of the Adjoining Properties

Direction From Subject Property	Property Address (PIN)	Description (Deed Holder)
North/Northwest	2500 Washington Street (1013336024)	Residential property (Gene A & Shannon L Ninneman)
	2501 Elm Street (1013412004)	Residential property (Dubuque Rescue Mission)
North	407 East 25th Street (1013413011)	Residential (Heather M. Hubbard and Stacie L. & Richard J. Herring)
East	410 East 25th Street (1013452001)	Residential (Ym Properties LLC)
	2484 Elm Street (1013452003)	Residential (Gary K. & Spring A. Juno)
	2482 Elm Street (1013452004)	Residential (Alan J. & Elizabeth A. Koppes)
	2480 Elm Street (1013452005)	Residential (Richard P. Weland II)
	2468 Elm Street (1013452006)	Residential (At Home Properties LLC)
	2460 Elm Street (1013452007)	Residential (Gregory R. Howell)
	2446 Elm Street (1013452010)	Residential (Gerald I. & Phyllis M. Link)
	2444 Elm Street (1013452011)	Residential (Frank J. Jr. & Sharon B. Sarazin)
	2440 Elm Street (1013452012)	Residential (Queck Capital Management LLC)
	501 East 24th Street (1013452032)	Residential (Michael J. McGeough)
Southeast	2320 Prince Street (1013456001)	Residential (Joseph W. Vogt)
South	None Assigned (1013461001)	Creek restoration construction project (City of Dubuque)
	None Assigned (1013455001)	Creek restoration construction project (City of Dubuque)
Southwest	320 East 24th Street (1013460004)	Creek restoration construction project (City of Dubuque)
	2404 Washington Street (1013451016)	Vacant property (City of Dubuque)
	2410 Washington Street (1013451015)	Vacant property (City of Dubuque)
	2420 Washington Street (1013451014)	Vacant property (City of Dubuque)
	2422 Washington Street (1013451013)	Vacant property (City of Dubuque)
	2424 Washington Street (1013451012)	Vacant property (City of Dubuque)
	2426 Washington Street (1013451011)	Vacant property (City of Dubuque)
West	None assigned (1013380001)	City park (City of Dubuque)
	2442 Washington Street (1013451009)	Vacant property (City of Dubuque)
	2446 Washington Street (1013451008)	Vacant property (City of Dubuque)
	2450 Washington Street (1013451007)	Vacant property (City of Dubuque)
Northwest	2501 Washington Street (1013335041)	Residential property (Jeffery J Voss)

4.0 USER PROVIDED INFORMATION

4.1 Title Records

The User did not provide HR Green with a recorded land title search. HR Green attempted to review applicable records for the subject property from the Iowa Land Records and Dubuque County Recorder/Registrar's Office websites. HR Green searched for documents including, but not limited to, warranty deeds and/or any documents that included reference to significantly reduced price or indemnification language, judicial actions such as judgments or pending litigation, use restrictions on the property, easements such as natural gas pipelines, leases of record or mineral rights, or assessments for recent sewer or stormwater improvements.

- Warranty Deeds - The documents do not reference a significantly reduced price as a result of environmental impact or indemnification language, judicial actions such as judgments or pending litigation, use restrictions on the property, easements such as natural gas pipelines, leases of record or mineral rights, or assessments for recent sewer or stormwater improvements.

The available records did not provide adequate information or an exhaustive search dating back to 1940. This is considered a data gap and discussed further in Section 10.2.

4.2 Environmental Liens or Activity and Use Limitations
Mr. Steve Sampson Brown, user of the report, indicated that a recorded land title review has not been completed at this time.

4.3 Specialized Knowledge
Mr. Brown provided historical information on the property owner, specifically with some of the operations that had been located on Property ID #8. The attached document states that the Morrison Brothers operation moved to the vicinity of its current location after 1889. Operations at this facility included manufacturing of tanks and valves that included a foundry and machine shop.

4.4 Commonly Known or Reasonably Ascertainable Information
Mr. Brown stated that possible cleanup activities were completed in the 1980's. He also stated that a Phase II ESA completed in January 2016 was completed in an adjacent alleyway where diesel, arsenic, and 1,1,2,2-tetrachloroethane were detected in groundwater above applicable Statewide Standards and the vapor intrusion pathway was unacceptable for non-cancer risk to site resident. This Phase II ESA can be reviewed in Appendix G. Mr. Brown also referred to the historical document that is discussed above in Section 4.3.

4.5 Valuation Reduction for Environmental Issues
Mr. Brown indicated the purchase price for the subject property reasonably reflects its fair market value and the known presence of contamination on Property ID #8.

4.6 Owner, Property Manager, and Occupant Information
Morrison Brothers Company 24th & Elm Street own Property ID #1, 3, and 4 and Morrison Brothers Company owns Property ID # 2, 5, 6, 7, and 8 of the subject property. Mr. Charlie Glab serves as the property manager and owner representative for the subject property. There are no occupants.

4.7 Reason for Performing Phase I
The Client is contemplating the potential acquisition of the subject property.

4.8 Other
HR Green did not review any other information for the completion of this report.

5.0 RECORDS REVIEW

5.1 Standard Environmental Record Sources
The purpose of the records search is to obtain and review data and information to aid in identifying RECs in connection with the subject property. Environmental Data Resources, Inc.

(EDR) reviewed Federal and State environmental record sources to at least the minimum search distances established in ASTM E 1527-13. EDR specializes in the retrieval of such information and the EDR Report is presented in Appendix D. HR Green also completed a search of the Iowa Department of Natural Resources (IDNR) databases for the project area to verify the results of the report. Information from the federal and state record sources search is included in Sections 5.1.1 through 5.1.15. The EDR report was generated for the subject property. For the purpose of this report, the following table summarizes the results of the EDR report.

EDR Report Summary

SEARCH LISTS	RADIUS	SITES
Federal ASTM Standard Records		
National Priorities List (NPL)	1.00 mile	1
National Priorities List Delisted (NPL Delisted)	1.00 mile	0
Comprehensive Environmental Response, Compensation, and Liability Information System (CERCLIS) - Active Sites - No Further Remedial Action Planned (NFRAP)	 0.50 mile 0.50 mile	 0 0
Resource Conservation and Recovery Information System (RCRIS) - Corrective Action Report (COR ACT) - Treatment, Storage, and Disposal Facilities (TSD) - Generator Sites (GEN)	 1.00 mile 0.50 mile 0.25 mile	 1 0 5
Federal Institutional/Engineering Controls (IC/EC)	0.50 mile	0/0
Federal Brownfield	0.50 mile	1
Emergency Response Notification System (ERNS)	Target Property	0
State of Iowa ASTM Standard Records		
State/Tribal Equivalent CERCLIS (SHWS)	1.00 mile	0
State/Tribal Spills-1990 Sites (Spills)	Target Property	0
State/Tribal Solid Waste Landfill Facilities (SWL)	0.50 mile	0
State/Tribal Leaking Underground/Aboveground Storage Tank List (LUST/LAST)	0.50 mile	10
State/Tribal Underground/Aboveground Storage Tank List (UST/AST)	0.25 mile	6/0
State/Tribal Engineering Controls (EC)	0.50 mile	0
State/Tribal Institutional Controls (IC)	0.50 mile	0
State/Tribal (VCP)	0.50 mile	0
State/Tribal Brownfields	0.50 mile	0

5.1.1 NPL Facilities. The NPL is a list of the worst hazardous waste sites identified by Superfund. Sites are put on the list after being scored using the Hazard Ranking System (HRS) and subjected to public comment. Any site on the NPL is eligible for cleanup using Superfund Trust money. A Superfund site is any land in the United States contaminated by hazardous waste and identified by the EPA as a candidate for cleanup because it poses a risk to human health and/or the environment. The EDR report identified one (1) NPL site within the specified search radius.

NPL Site Information				
Property Name	**Distance/Direction**		**Description**	**Status**
Peoples Natural Gas Co. (EPA ID: IAD980852578)	0.961 miles south-southeast	Downgradient	Subsurface soil and groundwater contamination: coal tar, benzene, toluene, ethylbenzene, xylenes, naphthalene.	Final NPL (08/30/1990)

5.1.2 CERCLIS. The CERCLIS identifies current and potential Superfund sites currently or previously under investigation including facilities identified as hazardous or potentially hazardous, that may require action (Active Sites). CERCLIS also lists facilities once identified as hazardous or potentially hazardous; however, due to a lack of significant contamination they have been removed from the CERCLIS – Active list. No further remedial action is planned at these sites (NFRAP). The EDR report did not identify any CERCLIS sites within the specified search radius.

5.1.3 RCRIS. The RCRIS lists sites that treat, store, dispose, or incinerate hazardous waste. This database tracks events and activities that fall under RCRA. The database is separated into Treatment, Storage, and Disposal (TSD) facilities, Large Quantity Generator facilities (LGN), Small Quantity Generator facilities (SGN), Conditionally Exempt Small Quantity Generator facilities (CESQG) and Corrective Action Sites (COR ACT). While these facilities represent some form of hazardous waste activity, they are most significant if determined to be out of compliance or to have violations. RCRA-COR ACT is a list of facilities that have had hazardous waste releases and require RCRA corrective action activity, which can range from property investigations to remediation. RCRA-NLR is a list of facilities included in the RCRA Info database, but not classified by the EPA. Reasons for non-classification include, but are not limited to: the facility is no longer in business or no longer generating hazardous waste. The EDR report identified one (1) COR ACT site and five (5) CESQG sites within the specified search radius; however, the radius used by EDR for CESQG sites is greater than the radius required by the ASTM E 1527-13. The subject property is listed as a CESQG site.

RCRIS Site Information					
Property Name	**EPA ID No.**	**Distance/ Direction**		**Status**	**Violations Identified?**
Former McDonald Ay Disposal Site	1000338408	0.923 miles south-southeast	Downgradient	COR ACT	Yes
Stackis & Morrison Architectural Millwork	1000362855	Subject Property		CESQG	No

5.1.4 Federal IC/EC Sites. The Federal IC/EC database contains information regarding Superfund sites with either an engineering or institutional control, and maintains records of the control method and the media contaminated. The EDR report did not identify any Federal IC/EC site within the specified search radius.

5.1.5 Federal Brownfield. ASTM E 1527-13 requires listing all brownfields facilities within 0.5-miles of the subject property. The EPA Brownfield Management System database contains information on the major activities and accomplishments of various brownfield grant programs. This database also includes Cleanups in my Community including sites, facilities and properties that have been contaminated by hazardous materials and are being, or have been, cleaned up

under EPA's brownfield program. The EDR report identified one (1) Federal Brownfield site within the specified search radius.

Federal Brownfield Site Information				
Property Name	**ACRES ID**	**Distance/ Direction**		**Status**
1001 Garfield Avenue	1982810	0.485 miles east	Crossgradient	Phase I ESA

5.1.6 ERNS. The ERNS contains information on specific notification of releases of oil and hazardous substances to the environment. The EDR report did not identify any ERNS sites within the specified search radius.

5.1.7 State/Tribal Equivalent CERCLIS [State Hazardous Waste Sites (SHWS)]. The EDR report did not identify any State/Tribal Equivalent CERCLIS (SHWS) sites within the specified search radius.

5.1.8 Spills Sites (Spills). The Spills-1990 Sites (Spills) contains information provided by the IDNR database, which lists all reported spills since 1990. Spills data includes initial cause, initial source, material spilled and quantity. However, ASTM E 1527-13 does not require a search for Spills sites. The EDR report did not identify any Spills sites within the specified search radius.

5.1.9 State/Tribal Solid Waste Landfill Facilities (SWL). The State of Iowa maintains a database of all SWLs within the state of Iowa and the facilities are permitted by the IDNR. The EDR report did not identify any State/Tribal SWL sites within the specified search radius.

5.1.10 LUST/LAST. The IDNR Bureau of Land Quality LUST/LAST Program maintains a database of LUSTs and LASTs. ASTM E-1527-13 requires listing all state registered LUST and LASTs sites within 0.50 miles of the subject property. The EDR report identified ten (10) LUST sites located within the specified search radius.

LUST Site Information				
Property Name	**ID No.**	**Distance/Direction**		**Status**
The Jule Bus Garage (Formerly Keyline Bus Garage)	8LTY01	0.156 miles southwest	Crossgradient	NAR
	9LTQ67			Not reported*
Meineke Discount Mufflers (Former Service Station)	9LTC47	0.270 miles south	Downgradient	Low Risk*
Road Ranger #159	8LTD88	0.283 miles south	Downgradient	Low Risk*
Enders Diagnostics Center	8LTX98	0.337 miles south	Downgradient	NAR
Vacant Lot	9LTM80	0.323 miles south-southeast	Downgradient	NAR
Sunshine Mart	7LTP54	0.348 miles southeast	Downgradient	High Risk
Ron's 5 Point Mart	8LTN62	0.361 miles south-southeast	Downgradient	Low Risk*
Coastal Service	8LTG26	0.379 miles south-southeast	Downgradient	Low Risk**
Interstate Brands Corp	9LTG33	0.381 miles southeast	Downgradient	High Risk*

LUST Site Information				
Property Name	**ID No.**	**Distance/Direction**		**Status**
Mobil Stop Mart	8LTY03	0.383 miles south-southeast	Downgradient	NAR

NAR: No Action Required
* IDNR UST/LUST Database lists the status as "No Action Required."
** IDNR UST/LUST Database lists the status as "High Risk"

5.1.11 UST. The IDNR Underground and Aboveground Storage Tank (UST and AST) database lists all registered USTs and ASTs. ASTM E-1527-13 requires listing all UST and AST sites on or adjoining the subject property. The EDR report identified six (6) UST sites located within the specified search radius; however, the radius used by EDR is greater than the radius required by the ASTM E 1527-13. No UST sites are located on the subject property or any adjacent properties.

5.1.12 State Institutional Control (IC)/Engineering Control (EC) Sites. The IDNR maintains a summary of the nature of contamination found at several types of cleanup sites with institutional controls, restrictive covenants, and deed notices throughout the state. The EDR report did not identify any IC/EC sites within the specified search radius.

5.1.13 VCP - Land Recycling Program (LRP). The IDNR database contains sites enrolled in the LRP. The LRP allows owners or other stakeholders of a property to voluntarily assess and implement remedial actions at a site that is contaminated or is perceived to be contaminated. The EDR report did not identify any VCP sites within the specified search radius.

5.1.14 State/Tribal Brownfields. ASTM E 1527-13 requires listing all brownfields facilities within 0.5-miles of the subject property. The EDR report did not identify any State/Tribal Brownfield sites within the specified search radius.

5.1.15 Unmapped Sites. EDR report identified one (1) FTTS and HIST FTTS site and one (1) FINDS and ECHO site. These records are not required per ASTM E 1527-13. However, HR Green determined that they are located on the subject property and reviewed the documentation associated with each site.

5.2 Additional Environmental Record Sources

The following list contains information on additional individuals interviewed or sources consulted for this assessment.

- Mark Burkle, Assistant Chief/Fire Marshal, City of Dubuque Fire Department
- Tim Link, Environmental Sanitarian, City of Dubuque Health Services
- Dubuque County Assessor's Office website

Records of all interviews are included in Appendix E. A copy of information obtained from the Dubuque County Assessor's Office is included in Appendix G.

5.3 Physical Setting Source(s)

The center of the subject property is located at an approximate elevation of 615 feet above mean sea level (msl) and is relatively flat. Information on the topographic gradient is included in Figure 1 of Appendix A.

HR Green conducted a Natural Resources Conservation Service Web Soil Survey on February 23, 2016 to obtain a depiction of subject property soil. The survey classified the soil as urban land-Dorchester complex on 2 to 5 percent slope. Depth to water table is typically 48 to 72 inches. This soil type is found in flood plains and is classified as moderately well drained. A copy of the report is available in Appendix G.

HR Green searched the IDNR Well Search database on February 23, 2016. The search identified one Private Well Tracking System well record within 1,000 feet of the subject property. This well is not located on the subject property. Appendix G includes a copy of the IDNR Well Search report.

5.4 Historical Use Information of the Property

Historical information for the subject property and surrounding area was based on review of city directories and Sanborn maps provided by Environmental Data Resources (EDR); aerial imagery from the City of Dubuque; information obtained from the Dubuque County Assessor's office; and the site reconnaissance.

The following table summarizes the past uses of the subject property.

Date(s)	Source(s)	Property Use(s)
1891-present	Historical aerial photographs, city directories, and Sanborn maps, Dubuque County Assessor's Office website, and site reconnaissance	Residential and industrial development A historical Sanborn map dated 1891 identified dwellings and associated structures or vacant parcels on much of the subject property with the exception of three parcels on the central-western portion of the subject property identified as Morrison Brothers (boiler manufacturer) with an associated railroad siding; the subject property remained similar in the 1909 map with the exception that no railroad siding was present and all non-industrial properties were developed for residential use; all parcels along Washington Street contained residential development and the parcel along Elm Street contained the Morrison Brothers Plant that included tank shops, a 15,000-gallon fuel oil tank, railroad siding, a foundry, a machine shop, and an underground gasoline tank in the East 24th Street ROW in 1950; all parcels along Washington Street contained residential development and the parcel along Elm Street contained the Morrison Brothers Plant that included storage space, railroad siding, foundry, and a machine shop in 1970. City directories list Morrison Bros Co at 325 East 24th Street in 1954, 1959, 1963, 1968, 1973, 1978, 1983, and 1988. The property is not listed again until 2008 when it is listed as "Stackis & Morristown Archi Millwork" and "Stackis & Morrison Architectural Mil" in 2013. Aerial imagery shows the parcels located on Washington Street as residential or vacant. Currently, only one residential structure remains on these parcels.

5.5 Historical Use Information on Adjoining Properties

The following table summarizes past uses of parcels adjoining the subject property.

Date(s)	Source(s)	Property Use(s)
North/northwest		
1891-present	Historical aerial photographs, city directories, and Sanborn maps, Dubuque County Assessor's Office website, and site reconnaissance	Residential development
North		
1891-present	Historical aerial photographs, city directories, and Sanborn maps, Dubuque County Assessor's Office website, and site reconnaissance	Residential development
East		
1891-present	Historical aerial photographs, city directories, and Sanborn maps, Dubuque County Assessor's Office website, and site reconnaissance	Residential development
Southeast		
1891-present	Historical aerial photographs and Sanborn maps, Dubuque County Assessor's Office website, and site reconnaissance	Residential development
South		
1891-1978	Historical aerial photographs, city directories, and Sanborn maps	Residential development and Railroad tracks Historical Sanborn maps identify a creek running between the residential property and railroad tracks in 1891, this creek is not identified on later maps.
1980-2013	Historical aerial photographs and city directories	Residential development and trail Historical aerial imagery shows the formerly railroad track to be a paved trail in 1980's.
2015-present	Dubuque County Assessor's Office website and site reconnaissance	Vacant property and creek restoration construction project
Southwest		
1891	Historical Sanborn map	Residential development and vacant property
1901-2010	Historical aerial	Residential development

Date(s)	Source(s)	Property Use(s)
	photographs, city directories, and Sanborn maps, Dubuque	
2011-2013	Historical aerial photographs and city directories	Residential development and vacant property
2015-present	Dubuque County Assessor's Office website, and site reconnaissance	Vacant property and creek restoration construction project
West		
1891-present	Historical aerial photographs and Sanborn maps, Dubuque County Assessor's Office website, and site reconnaissance	Recreational and residential development
Northwest		
1891-present	Historical aerial photographs, city directories, and Sanborn maps, Dubuque County Assessor's Office website, and site reconnaissance	Residential development

6.0 SITE RECONNAISSANCE

6.1 Methodology and Limiting Conditions

Ms. Emily Smart of HR Green conducted the site reconnaissance on February 19, 2016. HR Green was unable to access the interior of the residential structure located at 2496 Washington Street (Property ID #1) during the site reconnaissance.

6.2 General Site Setting

Adjacent parcels to the north/northeast, north, east, southeast, and northwest contain residential development while the adjoining parcels to the south, southwest, and west contain recreational development, vacant property, or vacant residential development. See Figure 2 in Appendix A for specific use information.

6.3 Interior and Exterior Observations at Property

6.3.1 Hazardous Substances or Petroleum Products In Connection With Identified Uses. HR Green observed three small propane tanks, maintenance and cleaning chemicals, and wood treatment compounds. No staining was observed and they appeared to properly contained and stored.

6.3.2 Storage Tanks. HR Green observed the following storage tanks and associated

equipment on the subject property:

- Possible fill/vent pipes sticking up out of the ground in three separate locations; one on the east corner of Property ID #8, one on the northeast corner of the fenced area on Property ID #8, and one on the south corner of Property ID #7. See Observation: 373 and Observation: 378 in Appendix B.
- A manhole cover located in the fenced area of Property ID #8 where a formerly active UST was located. The owner representative stated that the tank has been closed and filled in place. See Observation: 357 in Appendix B.

6.3.3 Odors. HR Green did not observe any odors on the subject property.

6.3.4 Pools of Liquid. HR Green did not observe any pools of liquid on the subject property.

6.3.5 Drums. HR Green observed drums in the garage and industrial building on Property ID #8. The drums located in the garage were empty and the contents of the drums in the industrial building contained a spray coating that is applied to the wooden tank covers manufactured on the subject property. See Observation: 349 in Appendix B.

6.3.6 Hazardous Substances or Petroleum Products Containers (Not Necessarily in Connection With Identified Uses). HR Green did not observe any hazardous substances or petroleum products on the subject property beyond those identified in Section 6.3.5.

6.3.7 Unidentified Substance Containers. HR Green did not observe any unidentified substance containers on the subject property.

6.3.8 Polychlorinated Biphenyls (PCBs). HR Green observed pole-mounted transformers in the alley adjacent to the subject property. HR Green did not observe any stains, stressed vegetation, or PCB-free labels. See Observation: 365 in Appendix B.

6.3.9 Pits, Ponds, or Lagoons. HR Green did not observe any pits, ponds, or lagoons on the subject property.

6.3.10 Stained Soil or Pavement. HR Green did not observe stained soil or pavement on the subject property.

6.3.11 Stressed Vegetation. HR Green did not observe any stressed vegetation on the subject property.

6.3.12 Solid Waste. HR Green did not observe any solid waste on the subject property.

6.3.13 Waste Water. HR Green did not observe any source of waste water on the subject property.

6.3.14 Wells. HR Green did not observe any wells on the subject property.

6.3.15 Septic Systems. HR Green observed two cisterns on residential parcels on the subject property.

6.3.16 Stains and Corrosion. HR Green did not observe any stains and corrosion on the subject property.

6.3.17 Drains and Sumps. HR Green observed two floor drains within the industrial building on Property ID #8 on the subject property. See Observation: 344 in Appendix B.

7.0 INTERVIEWS

7.1 Interviews with Owners

HR Green interviewed Mr. Charlie Glab as owner representative. Mr. Glab has been familiar with the subject property since 1983. He indicated that the subject property has been used for industrial purposes and that the subject property has contained industrial drums or sacks of chemicals. Mr. Glab also indicated that there is a filled-in-place UST on Property ID #8 of the subject property. During the site reconnaissance, Mr. Glab stated that the railroad siding that had been located on Property ID #8 has since been removed but that some may still be in buried in the subsurface.

7.2 Interviews with Site Manager

Mr. Glab also serves as the manager of the subject property.

7.3 Interviews with Occupants

The subject property does not include any occupants.

7.4 Interviews with Local Government Officials

HR Green contacted the City of Dubuque Fire Department to obtain information regarding any spills, storage tanks, hazardous substances storage, or emergency responses at the subject property. Mr. Mark Burkle, Assistant Chief/Fire Marshal, stated that there were two small reported fires on the subject property at 2482 and 2496 Washington Street (Property ID # 3 and 1, respectively). A large fire occurred on Property ID #8 located at 4280 Elm Street on March 23, 1996. Mr. Burkle also indicated that a truck leaked 15 gallons of fuel in the area of 2434 Washington Street (Property ID #7) in August of 1999. He did not observe any UST records associated with the subject property.

HR Green contacted the City of Dubuque Health Services to obtain information regarding any spills, storage tanks, hazardous substances storage, or emergency responses at the subject property. Mr. Tim Link, Environmental Sanitarian, stated that they had no records associated with the subject property.

Copies of interview documentation are included in Appendix E.

7.5 Interviews with Others

HR Green did not interview anyone else associated with the subject property.

8.0 FINDINGS AND OPINION

This section identifies the findings from Sections 4.0, 5.0, 6.0, and 7.0 of this report. Findings include known or suspect recognized environmental conditions, controlled recognized environmental conditions, historical recognized environmental conditions, and de minimis conditions. HR Green's opinion of each finding's impact on the subject property is also discussed, including the rationale as to why each finding is or is not considered a REC.

8.1 User Provided Information

The User did not provide HR Green with a recorded land title search. Further, HR Green was unable to locate adequate title documents in searches completed on the Iowa Land Records and Dubuque County Recorder/Registrar's Office websites. This finding is a data gap and is discussed further in Section 10.2.

8.2 Records Review

8.2.1 EDR Report Summary

NPL- The EDR report identified one (1) NPL site within the specified search radius.

- It is the opinion of HR Green that the Peoples Natural Gas Co. facility is unlikely to impact the subject property based on its distance from the subject property and hydrological relationship with the subject property when considering groundwater flow.

RCRIS- The EDR report identified one (1) COR ACT site and five (5) CESQG sites within the specified search radius; however, the radius used by EDR is greater than the radius required by the ASTM E 1527-13. The subject property is listed as RCRA GEN site.

- The subject property is listed as a CESQG and has no reported violations. It is the opinion of HR Green that this facility is unlikely to impact the subject property based on its status and absence of violations.

- The Former McDonald Ay Disposal Site is located approximately a mile hydrologically downgradient of the subject property. It is the opinion of HR Green that the facility is unlikely to impact the subject property based on its hydrological relationship with the subject property when considering groundwater flow and the distance from the subject property.

Federal Brownfield- The EDR report identified one (1) Federal Brownfield site within the specified search radius.

- It is the opinion of HR Green that the 1001 Garfield Avenue facility is unlikely to impact the subject property based on its distance from the subject property and the status of the site.

LUST- The EDR report identified ten (10) LUST sites within the specified search radius.

- HR Green requested records for The Jule Bus Garage (Formerly Keyline Bus Garage) facilities from IDNR Records. These records identify limited soil and groundwater plumes that remained on the LUST property and did not extend toward the subject property. Utility notifications were completed for each LUST facility. The 8LTY01 and 9LTQ67 facilities received No Further Action (NFA) letters on December 11, 1998 and January 27, 2016, respectively. It is the opinion of HR Green that this facility is unlikely to impact the subject property due to its status and hydrological relationship with the subject property with regard to groundwater flow direction.

It is the opinion of HR Green that the remaining nine (9) facilities are unlikely to impact the subject property due to their respective regulatory status, distance from the subject property, and/or hydrological relationship with the subject property with regard to groundwater flow direction.

UST- The EDR report identified six (6) UST sites within the specified search radius; however, the radius used by EDR is greater than the radius required by the ASTM E 1527-13. Neither the subject property nor any adjacent properties were listed as UST sites.

ORPHAN SITES- The Morrison Bros Co facility is located on the subject property (Parcel ID #8) and is listed as a FTTS, HIST FTTS, FINDS, and ECHO facility. The FTTS and HIST FTTS facility state that no violations were observed at the facility. The ECHO and FINDS records appear to be related to the FTTS records or do not appear to indicate any environmental impact to the subject property. It is the opinion of HR Green that this finding does not constitute a REC.

EDR report identified one (1) FTTS and HIST FTTS site and one (1) FINDS and ECHO site. These records are not required per ASTM E 1527-13. However, HR Green determined that they are located on the subject property and reviewed the documentation associated with each site. It is the opinion of HR Green that this is unlikely to impact the subject property.

8.2.2 Historical Use Information

Subject Property

- It is the opinion of HR Green that the historical use of Property ID #8 as a tank manufacturer, valve manufacturer, and millwork facility since at least 1891 constitutes a finding with respect to the subject property. The parcel contained an aboveground storage tank and an underground storage tank and historical records identified an associated underground storage tank along East 24th Street just to the south of the subject property. The subject property has contained a manufacturing operation that included a foundry, railroad siding, and machine shop. This represents a REC.

Adjacent Properties - It is the opinion of HR Green that historical uses of the property adjoining the subject property constitute a finding with respect to the subject property.

- The historical use of the adjacent parcel to the south of the subject property. Historical documents identify railroad tracks on the property that also extend to the north along the east side of the subject property. This site use represents a REC.

Additional Proximate Properties - It is the opinion of HR Green that current and/or historical uses of the following proximate properties constitute a finding with respect to the subject property.

- Historical Sanborn maps dated 1950 and 1970 depict a filling station and automotive repair facility approximately 370 feet west of the subject property at 2497 Jackson Street. This facility is located hydrologically crossgradient of the subject property. It is the opinion of HR Green that this property is unlikely to impact the subject based on its hydrological relationship with the subject property when considering groundwater flow and the distance from the subject property.

8.3 Site Reconnaissance

HR Green observed three possible fill/vent pipes sticking up out the ground and one UST that has been filled in place on the subject property. These indicate the presence of a REC.

8.4 Interviews

HR Green conducted interviews with the owner of the subject property, the intended purchaser of the subject property, and local officials familiar with the subject property. The owner mentioned the filled-in-place UST that was observed during the site reconnaissance. He also stated that the subject property has contained industrial drums or sacks of chemicals. During the site reconnaissance, he said that the railroad siding has been removed from Property ID #8 but that some of it may remain buried in the subsurface. HR Green considers this to be a REC.

The user of this report provided historical information about the subject property that is included in Section 8.2.2. They also included reference to a Phase II ESA that was completed in the public ROW adjacent to the subject property that identified contamination in groundwater above Statewide Standards and unacceptable intrusion non-cancer risk to site residents. HR Green considers this to be a REC.

The Assistant Chief/Fire Marshal stated that there were two small reported fires on Property ID #s 1 and 3 and a large fire on Property ID #8 on March 23, 1996. He also indicated that a truck leaked 15 gallons of fuel in the area of 2434 Washington Street (Property ID #7) in August of 1999. It is the opinion of HR Green that these events are unlikely to impact the subject property.

9.0 CONCLUSIONS

We have performed a Phase I Environmental Site Assessment in conformance with the scope and limitations of ASTM Practice E1527-13 of the subject property described by the Dubuque County Assessor's Office as:

Property ID	Address	Parcel Identification Number (PIN)	Area (acres)
1	2496 Washington Street	1013451001	0.12
2	None Assigned	1013451002	0.12
3	2482 Washington Street	1013451003	0.12
4	2476 Washington Street	1013451004	0.12
5	None Assigned	1013451005	0.12
6	2454 Washington Street	1013451006	0.06
7	2434 Washington Street	1013451010	0.12
8	None Assigned	1013451017	1.40

Any exceptions to, or deletions from, this practice are described in Sections 2.4, 6.1 and 11.0 of this report. This assessment has revealed no evidence of recognized environmental conditions in connection with the subject property except for the following:

On Site REC:

1. The subject property has contained industrial uses since at least the late 1880's including a tank and boiler manufacturer historically and currently contains a woodwork facility. Site reconnaissance and an owner interview indicate that a UST that has been filled in place is located on this parcel. No tank closure records were identified on IDNR's tank database. Site reconnaissance also identified three areas where possible fill/vent pipes were observed. Historical records identify a machine shop, railroad siding, a foundry, and a 15,000-gallon fuel oil tank on the subject property. Also identified in historical documents was an UST located in the E 24th Street ROW. The owner representative stated that much of the siding has been removed from the subject

property but that some may also remain buried in the subsurface.

Off Site REC:

2. The historical use of the adjacent parcel to the south of the subject property as railroad tracks. Historical documents first identify this use in 1891.

The RECs identified during this evaluation require further investigation to quantify environmental impacts and to evaluate human health risk concerns. Ultimately, the user should make the decision whether or not to conduct a Phase II ESA. This choice is driven by at least three factors: 1) the Environmental Professional's opinion on whether or not further investigation is warranted based on the Phase I ESA results; 2) the intended reuse of the site (e.g., industrial, commercial, residential, etc.); 3) and the user's tolerance for possible environmental risks associated with potential undocumented soil, groundwater, and vapor contamination.

It is HR Green's opinion that the conditions identified during the Phase I ESA indicate the potential for environmental contamination. An understanding of the intended reuse of the site and the user's tolerance for possible environmental risks is necessary to provide additional recommendations, beyond what is stated here. HR Green encourages the user to discuss these findings in consultation with their legal counsel before making a decision to pursue a Phase II ESA on the subject property as this decision may impact the user's claim to federal landowner liability protections under CERCLA.

Should the user decide to pursue a Phase II ESA on the subject property, HR Green recommends that a site-specific Phase II Sampling Plan (PIISP) be completed to address the RECs identified during the Phase I ESA.

10.0 DEVIATIONS

10.1 Data Failure

HR Green did not experience any data failures during the preparation of this report.

10.2 Data Gaps

HR Green experienced the following data gaps during the preparation of this report:

- HR Green was unable to located historical records from the following periods: 1892-1908 and 1910-1949. However, it is the opinion of HR Green that this does not represent a data failure since the parcel uses did not appear to change during these periods.
- HR Green was unable to access the interior of the residential property located at 2496 Washington Street (Property ID #1); however, it is the opinion of HR Green that this does not represent a data failure based on the historical use of the referenced parcel.
- HR Green did not receive a recorded land title search from the User or identify any pertinent title documents. HR Green did complete a thorough historical and regulatory review; however, in the absence of an abstract or recorded title search document containing pertinent information HR Green considers this a data gap which may have affected the environmental professional's ability to identify on-site REC(s).
    - As the acquisition of the subject property is finalized, HR Green understands that a comprehensive title opinion and abstract update may be completed by the purchaser or the City's designated legal counsel. Should evidence of new RECs become

available during the development of this legal opinion, HR Green is available to review the new information and revise the findings in this report through a supplemental agreement between HR Green and the User.

11.0 ADDITIONAL SERVICES

Pursuant to Section 13.1.5 of ASTM Standard Practice, the following is a list of non-scope considerations the user may want to assess in connection with commercial real estate transactions. No implication is intended as to the relative importance of inquiry into such non-scope considerations, and this list is not intended to be all-inclusive:

- Asbestos Containing Materials
- Radon
- Lead-Based Paint
- Lead in Drinking Water
- Wetlands
- Regulatory Compliance
- Cultural and Historic Resources
- Industrial Hygiene
- Health and Safety
- Ecological Resources
- Endangered Species
- Indoor Air Quality
- Biological Agents
- Mold

12.0 REFERENCES

ASTM E 1527-13. Standard Practice for Environmental Site Assessments: Phase I Environmental Site Assessment Process. ASTM International. 100 Barr Harbor Drive. P.O. Box C700. West Conshohocken, PA.

40 CFR Part 312 – Standards and Practices for All Appropriate Inquiries; Final Rule. Federal Register Vol. 70, No. 210. Tuesday, November 1, 2005.

Aerial Photographs. City of Dubuque. 1950's, 1960's, 1970's, 1980's, 1994, 2002, 2004, 2005, 2010, 2011, and 2013.

City Directories. Environmental Data Resources, Inc. 1954, 1958, 1963, 1968, 1973, 1978, 1983, 1988, 1992, 1995, 1999, 2003, 2008, and 2013.

Dubuque County Assessor's Office Website – Parcel Search. Performed January 18 and February 22, 2016, https://beaconbeta.schneidercorp.com/Application.aspx?AppID=93&LayerID=929&PageTypeID=2&PageID=589.

EDR Radius Map Report, Environmental Data Resources, Inc., Morrison Bros Properties, Dubuque, IA 52001. Inquiry Number: 4544008.3s, February 22, 2016.

IDNR Leaking Underground Storage Tank System Database Site Information. Performed February 22, 2016. https://programs.iowadnr.gov/tanks/pages/advanced.aspx.

IDNR Well Search. Performed February 23, 2016, https://facilityexplorer.iowadnr.gov/FacilityExplorer/Default.aspx.

Iowa Land Records Search. Performed February 25, 2016,

https://iowalandrecords.org/portal/clris/ShowLogin.

Sanborn maps. Environmental Data Resources, Inc. 1891, 1909, 1950, and 1970.

United States Geological Survey 7.5 Minute Series (Topographic) Quadrangle Maps, Lancaster (1900 and 1908) and Dubuque North (1956, 1972, 1978), IA.

Web Soil Survey, Natural Resources Conservation Service. February 23, 2016. http://websoilsurvey.nrcs.usda.gov/app/WebSoilSurvey.aspx.

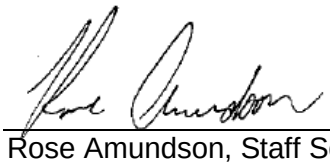
13.0 SIGNATURE(S) OF ENVIRONMENTAL PROFESSIONAL(S)

We declare, to the best of our professional knowledge and belief, we meet the definition of *Environmental Professional* as defined in §312.10 of 40 CFR 312 and we have the specific qualifications based on education, training, and experience to assess a *property* of the nature, history, and setting of the *subject site*. We have developed and performed the all appropriate inquiries in conformance with the standards and practices set forth in 40 CFR Part 312.

Signatures of the environmental professionals responsible for this report:

Scott Mattes, Project Manager, Quality Control and Assurance

Steve Prideaux, Project Planner I, Technical Review

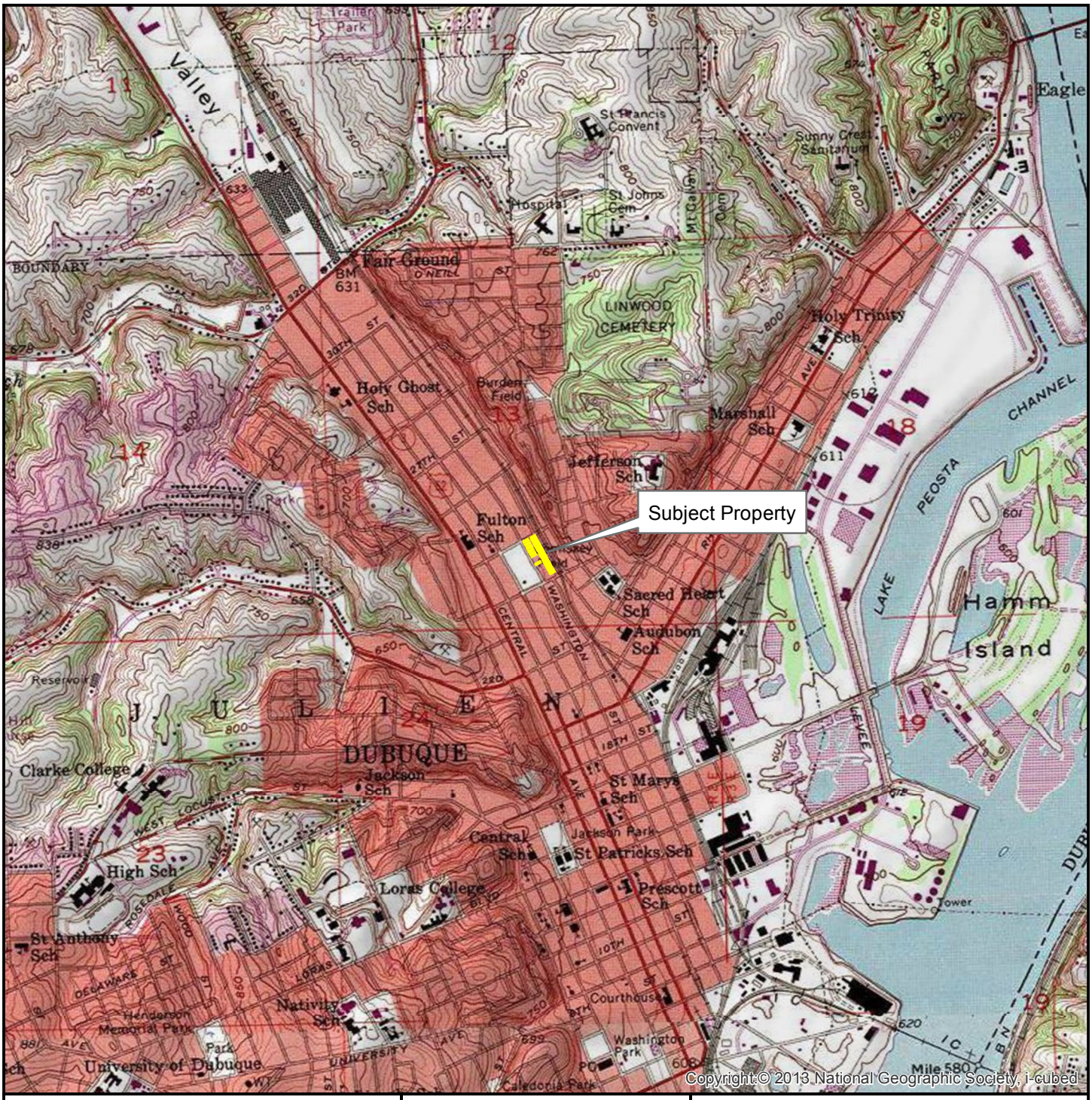


Rose Amundson, Staff Scientist II, Report Preparer

APPENDIX A

FIGURES

Figure 1 – Site Vicinity Map
Figure 2 – Site Location Map
Figure 3 – REC Map



Legend

Subject Property

Figure 1

Site Vicinity Map

Phase I ESA

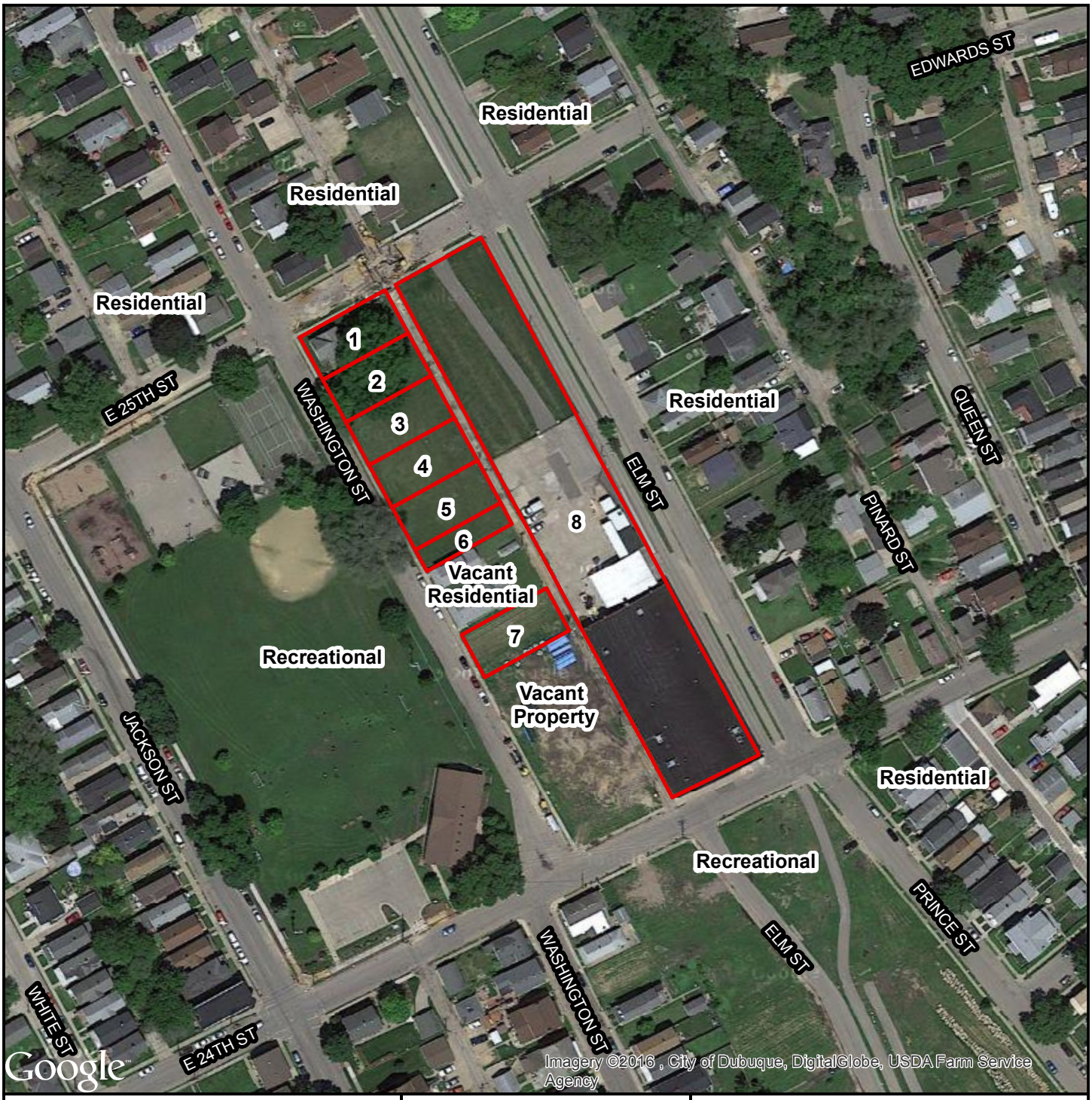
Morrison Brothers
Properties
Dubuque, IA

0 1,000 2,000 Feet

1 inch = 2,000 feet

N
W E
S

HRGreen



Legend

Subject Property

Figure 2

Site Location Map

Phase I ESA

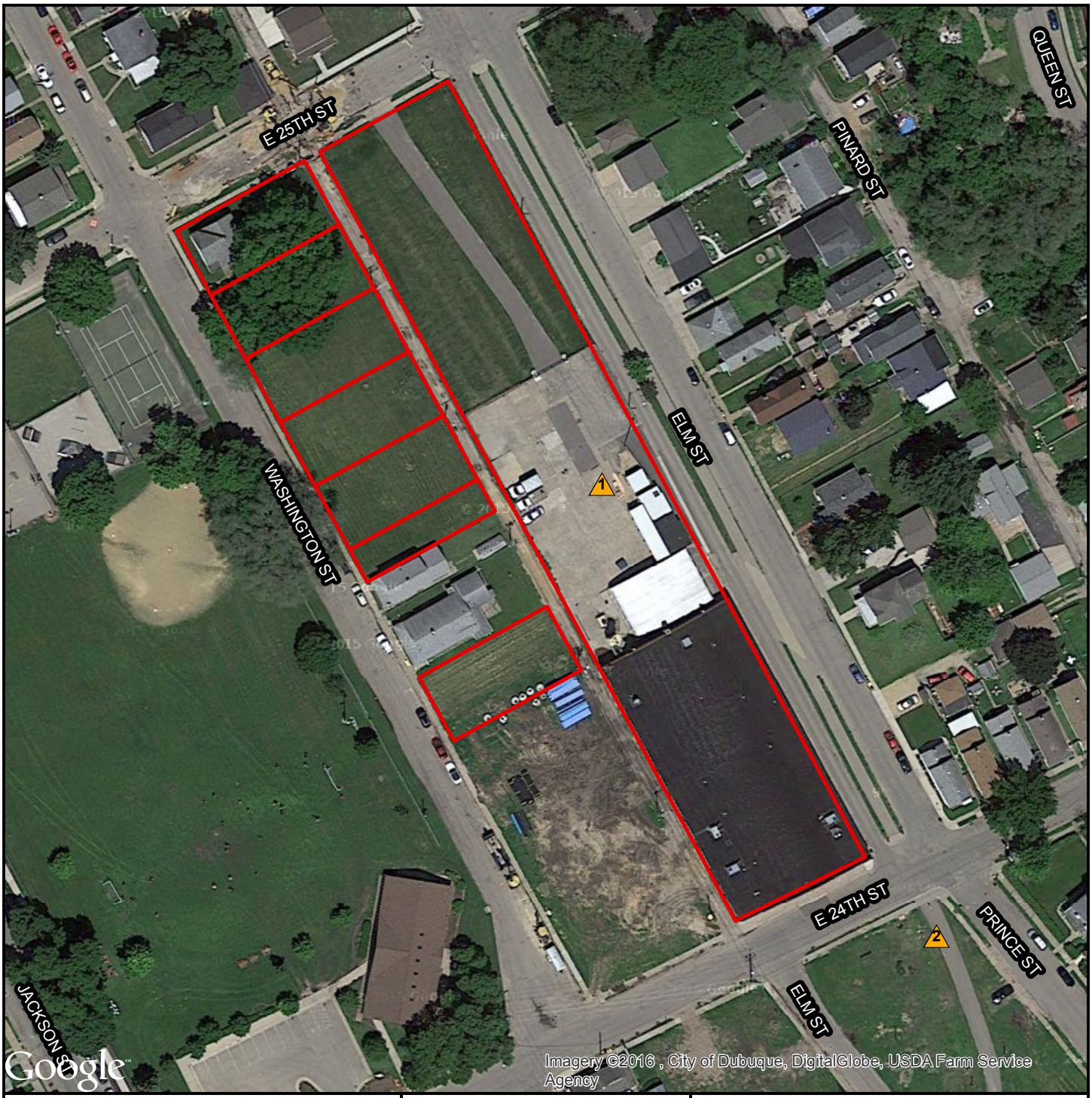
Morrison Brothers
Properties
Dubuque, IA

0 75 150 Feet

1 inch = 150 feet

N
W E
S

HRGreen



Legend

- REC
- Subject Property

Figure 3

REC Map

Phase I ESA

Morrison Brothers Properties
Dubuque, IA

0 50 100 Feet

1 inch = 100 feet

N
W E
S

HRGreen

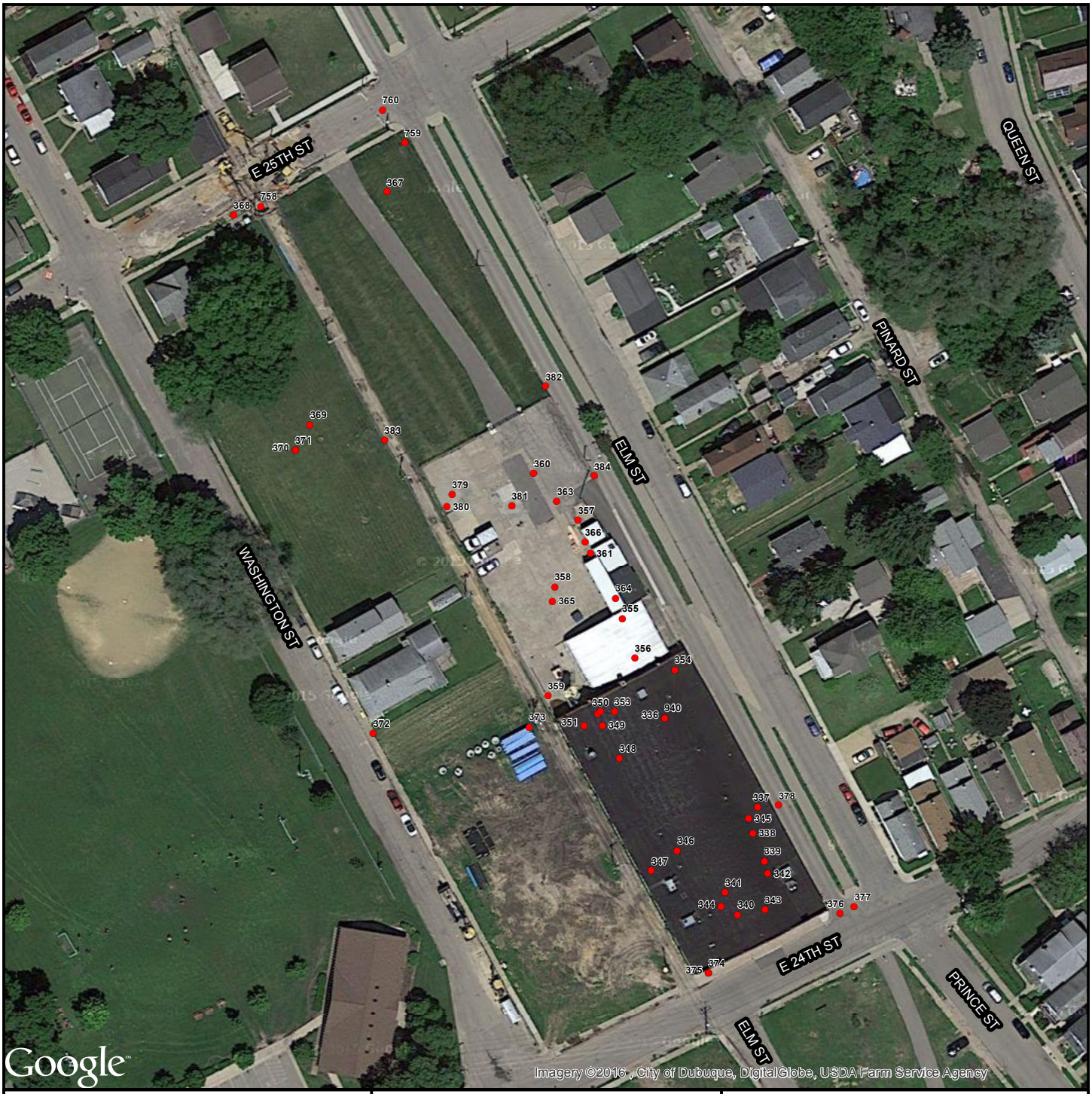
APPENDIX B

PROPERTY PHOTOGRAPHS

Morrison Brothers

Phase I Field Observations

February 19, 2016
Dubuque, Iowa



Legend

- Observation Location*

*Building interiors are outside the range of accurate GPS. Observation locations inside buildings were placed manually and are only approximations.

FIGURE 1

Site Observations Map

Morrison Brothers Properties

City of Dubuque
Dubuque, Iowa

N
W E
S

0 100 Feet

1 inch = 100 feet

HRGreen

Observation: 940

Observation Details...

Hazard Type: **General Observation**

Floor: **1st Floor**

Investigator: **Emily Smart**

20111

Observation: 336

Observation Details...

Hazard Type: **Asbestos**

Observation Date: **2016-02-19**

Floor: **1st Floor**

Investigator: **Emily Smart**

General Notes: **Known Asbestos.**

20506

Observation: 337

Observation Details...

Hazard Type: **General Observation**
Observation Date: **2016-02-19**
Investigator: **Emily Smart**
General Notes: **Mezzanine structure.**

Floor: **1st Floor**

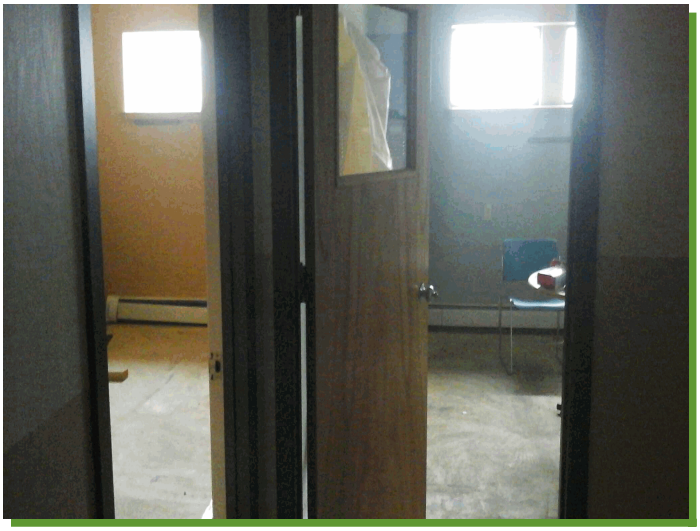
20507

Observation: 338

Observation Details...

Hazard Type: **General Observation**
Observation Date: **2016-02-19**
Investigator: **Emily Smart**

Floor: **1st Floor**



20508

Observation: 339

Observation Details...

Hazard Type: **Asbestos**
Observation Date: **2016-02-19**
Investigator: **Emily Smart**
Floor: **1st Floor**

20509

Observation: 340

Observation Details...

Hazard Type: **Lead-Based Paint**
Observation Date: **2016-02-19**
Investigator: **Emily Smart**
Floor: **2nd Floor**

20510

Observation: 341

Observation Details...

Hazard Type: **General Observation**
Observation Date: **2016-02-19** Floor: **1st Floor**
Investigator: **Emily Smart**
General Notes: **Provides sprinkler water to facility.**

20511

Observation: 342

Observation Details...

Hazard Type: **General Observation**
Observation Date: **2016-02-19** Floor: **2nd Floor**
Investigator: **Emily Smart**

20512

Observation: 343

Observation Details...

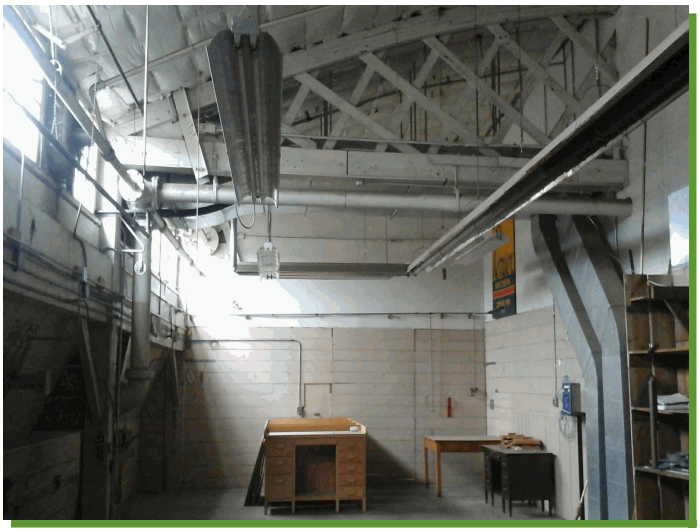
Hazard Type: **Lead-Based Paint**
Observation Date: **2016-02-19**
Investigator: **Emily Smart**

20513

Observation: 344

Observation Details...

Hazard Type: **General Observation**
Observation Date: **2016-02-19**
Floor: **2nd Floor**
Investigator: **Emily Smart**



20514

20515

Observation: 345

Observation Details...

Hazard Type: **General Observation**
Observation Date: **2016-02-19** Floor: **1st Floor**
Investigator: **Emily Smart**

20516

Observation: 346

Observation Details...

Hazard Type: **General Observation**
Observation Date: **2016-02-19** Floor: **1st Floor**
Investigator: **Emily Smart**
General Notes: **de minimis chemical storage**

20517

Observation: 347

Observation Details...

Hazard Type: **General Observation**
Observation Date: **2016-02-19** Floor: **1st Floor**
Investigator: **Emily Smart**

20518

Observation: 348

Observation Details...

Hazard Type: **General Observation**
Observation Date: **2016-02-19** Floor: **1st Floor**
Investigator: **Emily Smart**
General Notes: **Chemical process application booth. Posted Respirator Required.**

20519

Observation: 349

Observation Details...

Hazard Type: **General Observation**
Observation Date: **2016-02-19** Floor: **1st Floor**
Investigator: **Emily Smart**
General Notes: **Chemical process application drums 2/2 chemicals.**

20520

20521

Observation: 350

Observation Details...

Hazard Type: **Drains / Sumps**
Observation Date: **2016-02-19** Floor: **1st Floor**
Investigator: **Emily Smart**
General Notes: **Covered floor drain.**

20523

Observation: 351

Observation Details...

Hazard Type: **General Observation**
Observation Date: **2016-02-19** Floor: **1st Floor**
Investigator: **Emily Smart**
General Notes: **Facility power controls.**

20524

Observation: 352

Observation Details...

Hazard Type: **Drains / Sumps**
Observation Date: **2016-02-19** Floor: **1st Floor**
Investigator: **Emily Smart**
General Notes: **Floor drain near water service.**

20525

Observation: 353

Observation Details...

Hazard Type: **General Observation**
Observation Date: **2016-02-19**
Investigator: **Emily Smart**
General Notes: **Air compressor.**

Floor: **1st Floor**

20526

Observation: 354

Observation Details...

Hazard Type: **Drains / Sumps**
Observation Date: **2016-02-19**
Investigator: **Emily Smart**
General Notes: **Drain under pallet**

Floor: **1st Floor**

20527

Observation: 355

Observation Details...

Hazard Type: **General Observation**
Observation Date: **2016-02-19**
Investigator: **Emily Smart**
General Notes: **Empty Drum Storage**

20528

Observation: 356

Observation Details...

General Notes: **Empty drum storage - garage**

20529

Observation: 357

Observation Details...

Hazard Type: **Storage Tank**
Observation Date: **2016-02-19**
General Notes: **UST - Owner reports fill in place.**

20530

Observation: 358

Observation Details...

Hazard Type: **General Observation**
Investigator: **Emily Smart**
General Notes: **Sawdust load out.**

20531

Observation: 359

Observation Details...

Hazard Type: **General Observation**
Observation Date: **2016-02-19**
Investigator: **Emily Smart**
General Notes: **Building Construction Material**

20532

Observation: 360

Observation Details...

Hazard Type: **General Observation**
Investigator: **Emily Smart**
General Notes: **Cover as produced here for testing. No tank. Owner placed cover for drive testing.**

20533

Observation: 361

Observation Details...

Hazard Type: **General Observation**
Investigator: **Emily Smart**
General Notes: **Inside of shed. Impacted by fire.**

20534

Observation: 363

Observation Details...

Hazard Type: **Adjacent Property**
Observation Date: **2016-02-19**
Investigator: **Emily Smart**

20536

20537

Observation: 364

Observation Details...

Hazard Type: **General Observation**
Observation Date: **2016-02-19**
Investigator: **Emily Smart**
General Notes: **1/3 vaults - stored forms when foundry operated.**

20538

Observation: 365

Observation Details...

Hazard Type: **PCB**
Observation Date: **2016-02-19**
Investigator: **Emily Smart**

20539

20540

Observation: 366

Observation Details...

Hazard Type: **Hazardous Substance**
Observation Date: **2016-02-19**
Investigator: **Emily Smart**
General Notes: **Propane**

20541

Observation: 367

Observation Details...

Hazard Type: **Adjacent Property**
Observation Date: **2016-02-19**
Investigator: **Emily Smart**

20542

Observation: 368

Observation Details...

Hazard Type: **General Observation**
Observation Date: **2016-02-19**
Investigator: **Emily Smart**

20543

Observation: 369

Observation Details...

Hazard Type: **Other**
Observation Date: **2016-02-19**
Investigator: **Emily Smart**
General Notes: **Cisterns**

20544

Observation: 370

Observation Details...

Hazard Type: **Adjacent Property**
Observation Date: **2016-02-19**
Investigator: **Emily Smart**

20545

Observation: 371

Observation Details...

Hazard Type: **Adjacent Property**
Observation Date: **2016-02-19**
Investigator: **Emily Smart**

20546

Observation: 372

Observation Details...

Hazard Type: **General Observation**
Observation Date: **2016-02-19**
Investigator: **Emily Smart**

20547

Observation: 373

Observation Details...

Hazard Type: **General Observation**
Observation Date: **2016-02-19**
Investigator: **Emily Smart**
General Notes: **Pipe**

20548

Observation: 374

Observation Details...

Hazard Type: **General Observation**
Observation Date: **2016-02-19**
Investigator: **Emily Smart**

20549

Observation: 375

Observation Details...

Hazard Type: **Adjacent Property**
Observation Date: **2016-02-19**
Investigator: **Emily Smart**

20550

Observation: 376

Observation Details...

Hazard Type: **Adjacent Property**
Observation Date: **2016-02-19**
Investigator: **Emily Smart**

20551

Observation: 377

Observation Details...

Hazard Type: **Adjacent Property**
Observation Date: **2016-02-19**
Investigator: **Emily Smart**

20552

Observation: 378

Observation Details...

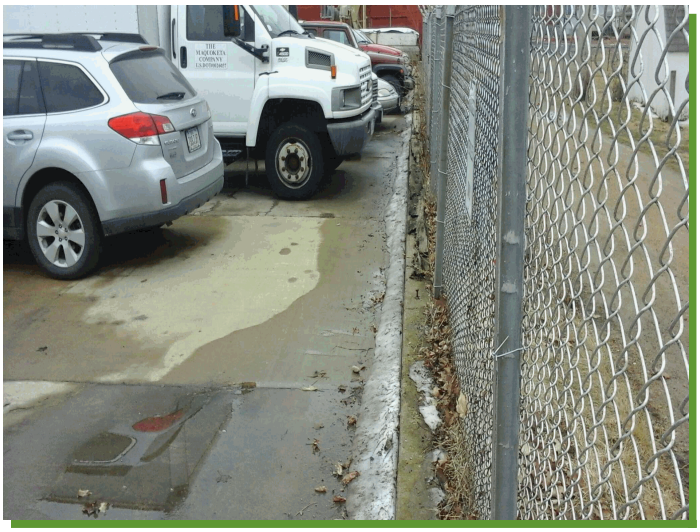
Hazard Type: **Other**
Observation Date: **2016-02-19**
Investigator: **Emily Smart**
General Notes: **Pipe**

20553

Observation: 379

Observation Details...

Hazard Type: **Other**
Observation Date: **2016-02-19**
Investigator: **Emily Smart**
General Notes: **Old Foundation Fire in 1996**



20554

Observation: 380

Observation Details...

Hazard Type: **Limiting Condition**
Observation Date: **2016-02-19**
Investigator: **Emily Smart**

20555

Observation: 381

Observation Details...

Hazard Type: **Other**
Observation Date: **2016-02-19**
Investigator: **Emily Smart**
General Notes: **Scale**

20556

Observation: 382

Observation Details...

Hazard Type: **Other**
Observation Date: **2016-02-19**
Investigator: **Emily Smart**
General Notes: **Pipe**

20557

Observation: 383

Observation Details...

Hazard Type: **Limiting Condition**
Observation Date: **2016-02-19**
Investigator: **Emily Smart**

20558

Observation: 384

Observation Details...

Hazard Type: **Other**
Investigator: **Emily Smart**
General Notes: **Stormwater**

20559

Observation: 760

Observation Details...

Hazard Type: **Adjacent Property**
Observation Date: **2016-02-25**
Investigator: **Emily Smart**

20928

Appendix D

August 31, 2016 Phase II ESA

PHASE II ENVIRONMENTAL SITE ASSESSMENT

MORRISON BROTHERS RESIDENTIAL PROPERTIES
Washington Street to Elm Street / East 24th Street to East 25th Street
DUBUQUE, IOWA

August 31, 2016

HR GREEN, INC. PROJECT NO. 40140060.25

Prepared for:

CITY OF DUBUQUE
50 W. 13TH STREET
DUBUQUE, IA 52001

HRGreen

TABLE OF CONTENTS

LIST OF TABLES

APPENDICES

GLOSSARY OF TERMS

BGS - Below Ground Surface

CERCLA - Comprehensive Environmental Response, Compensation, and Liability Act

Calculator – IDNR Cumulative Risk Calculator

EPA – Environmental Protection Agency

ESA – Environmental Site Assessment

HR Green – HR Green, Inc.

IAC - Iowa Administrative Code

IDNR - Iowa Department of Natural Resources

LCS – Laboratory Control Sample

LCSD - Laboratory Control Sample Duplicate

LRP - Land Recycling Program

LUST – Leaking Underground Storage Tank

MDL – Method Detection Limit

NFA – No Further Action

PAH – Polycyclic Aromatic Hydrocarbon

PID – Photoionization Detector

Range 1 – 0-2' bgs

Range 2 – >2' bgs

REC(s) – Recognized Environmental Condition(s) as used by ASTM Standard E 1527-13 is defined as the presence or likely presence of any hazardous substances or petroleum products in, on, or at a property: (1) due to release to the environment; (2) under conditions indicative of a release to the environment; or (3) under conditions that pose a material threat of a future release to the environment. De minimis conditions are not recognized environmental conditions.

RCRA Metals – Resource Conservation and Recovery Act metals

ROW – Public right-of-way

RPD - Relative Percent Difference

SWS – Statewide Standard(s)

SVOC – Semi-Volatile Aromatic Hydrocarbons

TEH – Total Extractable Hydrocarbon

UST - Underground Storage Tank

VOC - Volatile Organic Compound

1.0 EXECUTIVE SUMMARY

The City of Dubuque has retained HR Green, Inc. (HR Green) to conduct a Phase II ESA on seven (7) City-owned residential parcels, located along Washington Street between East 24th Street and East 25th Streets in Dubuque, Dubuque County, Iowa (Figure 1 in Appendix B). This report hereinafter refers to the seven (7) residential parcels as the "subject property".

HR Green completed a Phase I ESA on the subject property in addition to an industrial parcel owned by Morrison Brothers which abuts the alley that borders the subject property along the eastern edge. This assessment was completed on February 19, 2016. The Phase I assessment revealed the presence of RECs in connection with the subject property. The results of the Phase II ESA are provided in this document. The findings and conclusions are summarized as follows:

- **Range 1 Soil:** Sample results identified eleven (11) PAH compounds and six (6) RCRA metals above laboratory reporting limits. Benzo[a]pyrene and lead were identified at levels above applicable SWS.
- **Range 2 Soil:** No TEHs or VOCs were detected above SWS in Range 2 soil at any of the sample locations. Sample results identified one (1) TEH and eight (8) VOCs above laboratory reporting limits but *below* SWS.
- **Groundwater:** One (1) TEH, five (5) VOCs, thirteen (13) PAHs, and two (2) RCRA metals were detected above laboratory reporting limits in the groundwater samples. 2-methylnaphthalene and diesel were detected above both the Protected and Non-Protected Groundwater SWS. Additionally, reporting limits for one (1) PAH and five (5) VOCs were above the Protected Groundwater SWS
- **Vapor Intrusion:** The maximum detected groundwater values or non-detect groundwater values above applicable SWS for eight (8) PAHs and seven (7) VOCs are sufficiently volatile and sufficiently toxic to present a vapor intrusion risk, and are available compounds for entry into the Calculator. These groundwater results were evaluated using the EPA Johnson and Ettinger Vapor Intrusion Model for Forward Calculation of Indoor Air Concentration. The highest indoor air concentration predicted by the model was then input into the Calculator for a slab-on-grade building and for a building with basement. The calculated results for this media indicate that vapor intrusion alone does not pose a risk on this site. Cumulative risk is discussed below.
- **Cumulative Risk Evaluation:** Calculated cancer risk for site resident, site worker, and construction worker are *acceptable.* Calculated non-cancer risk for site resident and site worker are *unacceptable.* Calculated non-cancer risk for construction worker is *acceptable*.

  The *unacceptable* non-cancer determinations for site resident and site worker are driven by Range 1 soil lead concentrations.

The results of this study indicate that the subject property is not suitable for future residential, commercial, or industrial purposes without remediation of Range 1 soil in compliance with local, state, and federal regulations. Alternatively, implementation of institutional and engineering controls (e.g., environmental covenant, engineered clean

soil barrier with geo-membrane, concrete cap) may be permissible in lieu of soil remediation and off-site disposal. It is recommended that no ground surface (as opposed to raised bed) community gardens be permitted on the subject property without remediation of both Range 1 soil and groundwater. Ground surface community garden restrictions should be detailed in any future environmental covenant if contamination remains on the property in either soil or groundwater.

The City of Dubuque has an ordinance (Section No. 16-11-20) that prevents the installation of private wells unless public water is not available. This requires permit approval by the County's Health Department. Further, no wells may be installed within 500 feet of a LUST site. A 1,000-foot radius well search was also conducted on 7/5/2016 to evaluate the area for existing wells. One search was completed using MBI-1 as the center point. Only one well was identified. This is a closed-system geothermal well and therefore is not a receptor. Well search documentation is provided in Appendix D. HR Green recommends notifying the City of Dubuque's Water Department in addition to the County's Health Department of the groundwater results contained in this Phase II ESA, in order to prevent the installation of new wells on the subject property or on adjacent properties. This action will sever the groundwater ingestion pathway for the subject property.

The results of this study indicate that Range 2 soil and vapor intrusion are not media which present a risk to construction workers or to future users of the subject property. This report should be provided to the IDNR for guidance on what actions will be required as a result of the observed contamination in order for the subject property to be redeveloped as a community space.

2.0 INTRODUCTION

The City of Dubuque (City) is evaluating potential for redevelopment of the subject property as a park for the benefit of the community, associated with the Upper Bee Branch Creek Restoration Project.

2.1 Purpose

The major objective of this project is to eliminate concerns regarding perceived or actual contamination on the subject property so redevelopment can occur. The objective of this assessment was to evaluate any environmental impairment to the subject property resulting from the RECs identified during the Phase I ESA process. The data gathered during this assessment will assist the City in evaluating the feasibility of redevelopment by comparing constituent concentrations on the property to the risk-based standards outlined in IAC 567 *Chapter 137: Iowa Land Recycling Program and Response Action Standards* or the Tier 1 Levels in IAC *Chapter 135: Technical Standards and Corrective USTs.*

This Phase II ESA assessing the RECs is a part of the all appropriate inquiry requirements to obtain protection from potential liability under CERCLA as an innocent landowner, a contiguous property owner, or a bona fide prospective purchaser.

2.2 Problem Statement

Evaluation of environmental impairment is conducted using the regulatory programs outlined in IAC. Evaluation of environmental impairment not associated with USTs involves risk-based evaluation and response action through the LRP as set forth in IAC 567-137(457B) *Chapter 137: Iowa Land Recycling Program and Statewide Response Action Standards* (IAC 137). In the event contamination is associated with USTs, IAC 137 defers to the evaluation criteria outlined in IAC 567-135(455B) *Chapter 135: Technical Standards and Corrective Action Requirements for Owners and Operators of Underground Storage Tanks* (IAC 135). For this Project, soil and groundwater evaluations for public risk were conducted according to IAC 135 and IAC 137, depending on the source of contamination.

2.3 Limitations and Exceptions of Assessments

This report has been prepared in accordance with generally accepted environmental methodologies referred to in ASTM 1903-11, and contains all the limitations inherent in these methodologies. No other warranties, expressed or implied, are made as to the professional services provided under the terms of our contract and included in this report.

2.4 Limiting Conditions and Methodologies Used

No ESA can eliminate all uncertainty. Furthermore, any sample, either surface or subsurface, taken for chemical analysis may or may not be representative of a larger population. Professional judgment and interpretation are inherent in the process and uncertainty is inevitable. Additional assessment may be able to reduce the uncertainty.

Even when Phase II ESA work is executed with an appropriate site-specific standard of care, certain conditions present especially difficult detection problems. Such conditions may include, but are not limited to, complex geological settings, the fate and transport characteristics of certain hazardous substances and petroleum products, the distribution

of existing contamination, physical limitations imposed by the location of utilities and other man-made objects, and the limitations of assessment technologies.

Phase II ESAs do not generally require an exhaustive assessment of environmental conditions on a property. There is a point at which the cost of information obtained and the time required to obtain it outweigh the usefulness of the information and, in fact, may be a material detriment to the orderly completion of transactions. If hazardous substance or petroleum releases are confirmed on a parcel of property, the extent of further assessment is related to the degree of uncertainty that is acceptable to the user with respect to the real estate transaction.

Measurements and sampling data only represent the site conditions at the time of data collection. Therefore, the usability of data collected as part of this Phase II ESA may have a finite lifetime depending on the application and use being made of the data. An environmental professional should evaluate whether the generated data are appropriate for any subsequent use beyond the original purpose for which it was collected.

3.0 BACKGROUND

The subject property is located within the SW ¼ of the SE ¼ of Section 13, Township 89 North, Range 2 East in Dubuque County, Iowa. Figure 1 in Appendix B shows the location of the subject property.

3.1 Site Characteristics

The subject property consists of seven (7) parcels owned by the City of Dubuque located along Washington Street running from East 24th Street to East 25th Street in Dubuque, Dubuque County, Iowa (Figure 1, Appendix B).

3.2 Phase I Environmental Site Assessment

Based on data gathered during the Phase I ESA on the Residential and Industrial parcels, HR Green recommended completing a Phase II ESA to include soil and groundwater sampling for analytes including but not limited to the following: TEHs, VOCs, PAHs, and RCRA metals. The laboratory analytical reports can be found in Appendix C.

4.0 PHASE II ACTIVITIES

4.1 Soil Assessment

Twenty (20) soil borings were advanced on the subject property using a direct-push Geoprobe on June 8th, 2016. Soils encountered were generally brown silt and sand with increasing clay content with depth followed by fine to coarse grained sand at the water table. Groundwater was encountered at an approximate depth of 10 feet bgs on the northern portion of the subject property. Depth to groundwater increased toward the south along the subject property, likely due to dewatering activities on the Upper Bee Branch Creek Restoration Project to the south.

Field observations included a petroleum odor at soil boring location MBR2-C3, MBR3-C3, MBR4-C3, MBR5-C3, and MBR6-C3. Coal and slag were noted in several locations in Range 1 soil. Soil boring logs are provided in Appendix D.

Soil samples collected from boring locations on the subject property included both Range 1 and Range 2 samples. One (1) two-point and six (6) three-point composite samples were collected from Range 1 soils for RCRA metals and PAH analysis and six (6) samples were collected from Range 2 soils for TEH and VOC analysis. No Range 2 soil sample was collected from location MBRC1 as no PID readings in excess of 10 ppm were measured.

Soil samples were field screened for the presence of organic vapors using a PID. The soil core was then logged for geologic materials. The detected Range 1 analytical results are summarized in Table 1 below. Detected Range 2 analytical results are summarized in Table 2 below.

Table 1
Phase II ESA Range 1 Soil Analytical Results – RCRA Metals and PAHs (mg/kg)

Parameter	SWS	MBR1-C1 0-2'	MBR2-C2 0-2'	MBR3-C3 0-2'	MBR4-C4 0-2'	MBR5-C5 0-2'	MBR6-C6 0-2'	MBR7-C7 0-2'
RCRA Metals								
Arsenic	17	**8.56**	**4.38**	<7.26	**6.55**	**4.00**	**6.79**	**5.12**
Barium	15000	**98.5**	**99.4**	**94.2**	**90.2**	**102**	**182**	**216**
Cadmium	70	<1.11	<1.01	<1.82	<0.951	<0.996	**1.22**	<1.01
Chromium	190	**17.7**	**14.3**	**13.7**	**12.0**	**13.5**	**16.9**	**18.6**
Lead	400	**105**	**67.9**	**186**	**170**	**166**	**367**	**1230**
Mercury	23	**0.124**	**0.110**	**0.211**	**0.254**	**0.196**	**0.607**	**0.301**
PAHs								
Benzo[a]anthracene	3.1	**0.198**	**0.239**	<0.113	**0.140**	**0.256**	**0.380**	**0.739**
Benzo[a]pyrene	0.31	**0.197**	**0.276**	<0.113	**0.150**	**0.240**	**0.478**	**0.777**
Benzo[b]fluoranthene	3.1	**0.257**	**0.384**	**0.115**	**0.207**	**0.347**	**0.750**	**1.02**
Benzo[g,h,i]perylene	170	**0.133**	**0.208**	<0.113	**0.127**	**0.174**	**0.372**	**0.565**
Benzo[k]fluoranthene	31	<0.112	**0.140**	<0.113	<0.111	**0.145**	**0.302**	**0.500**
Chrysene	310	**0.204**	**0.267**	<0.113	**0.162**	**0.268**	**0.554**	**0.823**
Dibenz(a,h)anthracene	0.31	<0.112	<0.112	<0.113	<0.111	<0.111	<0.108	**0.145**
Fluoranthene	2300	**0.438**	**0.456**	**0.124**	**0.291**	**0.453**	**1.01**	**1.35**
Indeno[1,2,3-cd]pyrene	3.1	<0.112	**0.161**	<0.113	<0.111	**0.138**	**0.319**	**0.467**
Phenanthrene	1700	**0.352**	**0.190**	<0.113	**0.148**	<0.111	**0.500**	**0.410**
Pyrene	1700	**0.413**	**0.447**	**0.115**	**0.273**	**0.405**	**0.875**	**1.24**

Bold - concentration above laboratory reporting limits. **Shaded** - a concentration in exceedance of Statewide Standards.

Results from Range 1 soil samples identified eleven (11) PAH compounds above laboratory reporting limits. Benzo[a]pyrene was identified at a level *above* the SWS. Sample results identified six (6) RCRA metals above laboratory reporting limits. Lead was identified at a level *above* SWS.

Table 2
Phase II ESA Range 2 Soil Analytical Results –
TEHs and VOCs (mg/kg)

Parameter	SWS	MBR2 8-10'	MBR3 8-10'	MBR4 10-11'	MBR5 10-11'	MBR6 10-12'
TEHs						
Diesel	28000	**4280**	**1680**	**10400**	**11700**	**12600**
VOCs						
n-Butylbenzene	3800	**0.223**	<0.0142	**0.0168**	<0.0129	**0.917**
sec-Butylbenzene	NA	**0.117**	<0.0142	**0.0361**	<0.0129	**0.738**
tert-Butylbenzene	NA	<0.0137	<0.0142	<0.0149	**0.0354**	**0.0403**
Isopropylbenzene	7600	**0.0234**	<0.0142	**0.0384**	**0.0232**	**0.513**
p-Isopropyltoluene	NA	**0.12**	<0.0142	<0.0149	<0.0129	<0.0116
N-Propylbenzene	7600	**0.0353**	<0.0142	**0.0269**	<0.0129	**0.595**
1,2,4-Trimethylbenzene	3800	**0.222**	<0.0142	<0.0149	<0.0129	<0.0116
1,3,5-Trimethylbenzene	760	**0.0157**	<0.0142	<0.0149	<0.0129	<0.0116

Bold - concentration above laboratory reporting limits. NA – not applicable. If the source of contamination is found to be an underground storage tank, then these results should be evaluated against the Iowa Tier 1 Level Look-Up table.

Sample results identified one (1) TEH and eight (8) VOCs above laboratory reporting limits. No TEHs or VOCs were detected above SWS in Range 2 soil at any of the sample locations.

4.2 Groundwater Assessment

Groundwater samples were collected from seven (7) borings using a screen point sampler and a peristaltic pump with dedicated collection tubing. Groundwater was encountered in all borings and samples were analyzed for TEHs, VOCs, PAHs and dissolved RCRA metals. The detected analytical results are summarized in Table 3.

Table 3
Phase II ESA Groundwater Analytical Results –
TEHs, VOCs, PAHs, and RCRA Metals (mg/L)

Parameter	SWS PGW	SWS NPGW	MBR1	MBR2	MBR3	MBR4	MBR5	MBR6	MBR7
TEHs									
Diesel	2.2	44	<0.278	**1.52**	**26.5**	**56.9**	<0.278	**3.17**	<0.278
VOCs									
n-Butylbenzene	0.35	1.8	<0.001	<0.001	<0.001	<0.001	<0.001	**0.00394**	<0.001
sec-Butylbenzene	NA	NA	<0.001	<0.001	**0.00226**	**0.00198**	<0.001	**0.00241 F1**	<0.001
Isopropylbenzene	0.7	3.5	<0.001	<0.001	**0.0052**	**0.00607**	<0.001	**0.00474**	<0.001
N-Propylbenzene	3.4	17	<0.001	**0.00142**	**0.00406**	**0.00389**	<0.001	**0.00416**	<0.001
1,2,4-Trimethylbenzene	0.35	1.8	<0.001	**0.00188**	<0.001	<0.001	<0.001	<0.001	<0.001
1,1,2,2-Tetrachloroethane	0.0003	0.018	*<0.001*	*<0.001*	*<0.001*	*<0.001*	*<0.001*	*<0.001*	*<0.001*
1,2,3-Trichloropropane	0.0000058	0.00012	*<0.001*	*<0.001*	*<0.001*	*<0.001*	*<0.001*	*<0.001*	*<0.001*
1,2-Dibromoethane (EDB)	0.00005	0.0018	*<0.01*	*<0.01*	*<0.01*	*<0.01*	*<0.01*	*<0.01*	*<0.01*
Hexachlorobutadiene	0.001	0.045	*<0.005*	*<0.005*	*<0.005*	*<0.005*	*<0.005*	*<0.005*	*<0.005*
1,2-Dibromo-3-Chloropropane	0.0002	0.0029	*<0.01*	*<0.01*	*<0.01*	*<0.01*	*<0.01*	*<0.01*	*<0.01*
PAHs									
Acenaphthene	0.42	2.1	<0.0000926	<0.0000926	**0.00666**	**0.0122**	**0.000209**	<0.0000926	<0.0000926
Acenaphthylene	0.21	1	<0.0000926	<0.0000926	**0.00337**	**0.00307**	**0.000104**	<0.0000926	<0.0000926
Anthracene	2.1	10	<0.0000926	<0.0000926	**0.00115**	**0.00186**	<0.0000926	<0.0000926	<0.0000926
Benzo[a]anthracene	0.00024	0.0048	<0.0000926	<0.0000926	<0.0000962	**0.000191**	<0.0000926	<0.0000926	<0.0000926
Benzo[a]pyrene	0.0002	0.001	<0.0000926	<0.0000926	<0.0000962	**0.0000972**	<0.0000926	<0.0000926	<0.0000926
Benzo[b]fluoranthene	0.00024	0.0048	<0.0000926	<0.0000926	<0.0000962	**0.000131**	<0.0000926	<0.0000926	<0.0000926
Chrysene	0.024	0.48	<0.0000926	<0.0000926	**0.000224**	**0.000417**	<0.0000926	<0.0000926	<0.0000926
Dibenz(a,h)anthracene	0.000024	0.00048	*<0.0000926*	*<0.0000926*	*<0.0000962*	*<0.0000926*	*<0.0000926*	*<0.0000926*	*<0.0000926*
Fluoranthene	0.28	1.4	<0.0000926	<0.0000926	**0.000675**	**0.00115**	<0.0000926	<0.0000926	<0.0000926
Fluorene	0.28	1.4	<0.0000926	<0.0000926	**0.00742**	**0.0152**	**0.000364**	<0.0000926	<0.0000926
2-Methylnaphthalene	0.028	0.14	<0.000463	<0.000463	**0.0677**	**0.183**	**0.00221**	<0.000463	<0.000463
Phenanthrene	0.21	1	<0.0000926	<0.0000926	**0.00552**	**0.0169**	**0.000267**	<0.0000926	<0.0000926
Pyrene	0.21	1	<0.0000926	<0.0000926	**0.00135**	**0.00246**	<0.0000926	<0.0000926	<0.0000926
Naphthalene	0.1	0.7	<0.000463	<0.000463	**0.00166**	**0.00147**	<0.000463	<0.000463	<0.000463
Dissolved RCRA Metals									
Arsenic, Dissolved	0.01	0.05	<0.00100	<0.00100	**0.00127**	**0.00250**	<0.00100	<0.00100	<0.00100
Barium, Dissolved	2	10	**0.149**	**0.218**	**0.459**	**0.340**	**0.199**	**0.266**	**0.0983**

Bold - concentration above laboratory reporting limits. **Shaded** - a concentration in exceedance of Statewide Standards. *Italicized* – reporting limits above Protected Groundwater Statewide Standard, therefore, the reporting limit value was treated as an estimated "detection" as a conservative measure. PGW - Protected groundwater, NPGW – Non-protected groundwater, NA – not applicable. If the source of contamination is found to be an underground storage tank, then these results should be evaluated against the Iowa Tier 1 Level Look-Up table

HRGreen

One (1) TEH, five (5) VOCs, thirteen (13) PAHs, and two (2) RCRA metals were detected above laboratory reporting limits in the groundwater samples. Benzo[a]anthracene was detected *above* the protected groundwater Statewide Standards but *below* the non-protected groundwater Statewide Standards. 2-methylnaphthalene, diesel, and waste oil were detected *above* both the Protected and Non-Protected Groundwater SWS. The reporting limits for one (1) PAH and five (5) VOCs were above the Protected Groundwater SWS.

4.3 Risk Evaluations

Iowa Administrative Code 137.10(7), Sub rule 567 specifies cumulative risk criteria that must be complied with in order to acquire a NFA under LRP. Cumulative risk is the summation of cancer and non-cancer risks, determined separately, based on exposure to multiple contaminants from the same medium and exposure of the same individual to contaminants in multiple media. Evaluation of cumulative risk is conducted using the Calculator on the IDNR Contaminated Sites Section website.

This Calculator assesses risk to potentially exposed parties, based on three standard exposure scenarios: site resident, site worker, and construction worker. The potential pathways for exposure under each of these scenarios are groundwater, soil, and air.

To evaluate compliance with the cumulative risk criteria, the results from the Calculator must not show increased cancer and non-cancer health risks. The cumulative risk criteria are as follows:

- Cumulative cancer risk summation of multiple media shall not exceed 1 in 10,000.
- Non-cancer health risk summation of multiple media to the same target organ shall not exceed a cumulative Hazard Quotient of 1.

The values for input into the Calculator are chosen using one of the following representations of the dataset:

- The maximum value for each contaminant in each medium from multiple samples of each medium of concern; or,
- The 95% Upper Confidence Limit (95% UCL) of the mean contaminant concentration in each medium. This method requires a minimum of six samples.

For this report, risk was determined for a site resident, site worker and for construction worker using the maximum detected value of each contaminant or non-detect values above applicable SWS. Tables 4 and 5 summarize the cancer and non-cancer risk calculations. The straight sum for each media and exposure scenario (site resident, site worker and construction worker) is calculated in these tables. Final risk calculation findings are determined after removal of values which are not considered to be complete exposure pathways. HR Green recommends notifying the County's Health Department of the groundwater results contained in this Phase II ESA to prevent the installation of new wells on the subject property or on adjacent properties. This action will sever the groundwater ingestion pathway for the subject property. The Final Sum row of Tables 4

and 5 represents the actual applicable risk assessment results. Cumulative Risk calculation inputs and results are included in Appendix E.

Range 1 Soil
The maximum detected values for the eleven (11) PAHs and six (6) RCRA metal compounds were input into the Calculator.

Range 2 Soil
The maximum detected values for one (1) TEH and five (5) VOCs were input into the Calculator. Three (3) VOCs were not included as they are not available compounds in the Calculator.

Groundwater
The maximum detected values or non-detect values above applicable SWS for one (1) TEHs, fourteen (14) PAHs, nine (9) VOCs, and two (2) RCRA metal compounds were input into the risk calculator. One VOC was not included as it is not an available compound in the Calculator.

Vapor Intrusion
The maximum detected groundwater values or non-detect groundwater values above applicable SWS for eight (8) PAHs and seven (7) VOCs are sufficiently volatile and sufficiently toxic to present a vapor intrusion risk, and are available compounds for entry into the Calculator. These groundwater results were evaluated using the EPA Johnson and Ettinger Vapor Intrusion Model for Forward Calculation of Indoor Air Concentration (**http://www3.epa.gov/ceampubl/learn2model/part-two/onsite/JnE_lite_forward.html**). The highest indoor air concentration predicted by the model was then input into the Calculator for a slab-on-grade building and for a building with basement.

Table 4
Phase II ESA IDNR Risk Calculator Cancer Summations

Media	Site Resident	Site Worker	Construction Worker
Range 1 Soil	0.19	0.04	0
Range 2 Soil	0.02	0.01	0
Groundwater	10.91	2.27	0
***Vapor Intrusion–SG/B**	**0.10**/0.11	**0.02**/0.02	**0**/0
****Sum**	11.22	2.34	0
*****Final Sum**	**0.31**	**0.07**	**0**

Severed exposure pathways are greyed out. * Vapor intrusion –SG/B - slab-on-grade/basement- potential for slab-on-grade or basement vapor intrusion is assessed using groundwater contaminants which are sufficiently volatile and sufficiently toxic to present a vapor intrusion risk. **Bold** indicates the value used for sum and final sum number based on anticipated redevelopment.**Sum equals total calculated risk BEFORE excluding "severed" exposure pathways. ***Final Sum represents the actual applicable risk assessment results of all remaining human health risk exposure pathways. **A Final Sum of <1 represents acceptable cancer risk. A Final Sum of >1 represents unacceptable cancer risk.**

Table 5
Phase II ESA IDNR Risk Calculator Non-Cancer Summations

Site Resident														
Media	**Heart**	**Liver**	**Blood**	**Kidney**	**Skin**	**Endoc**	**Eye**	**Immu**	**Nerve**	**GenUr**	**Respi**	**Other**	**Devel**	**Gastro**
Range 1 Soil	3.08	0	0.09	3.13	0	0	0	0	0	0.02	0	0.11	3.07	0.09
Range 2 Soil	0	0	0.02	0	0	0	0	0	0.02	0	0	0.02	0	0
GW	0.4	0.14	0.43	1.41	0.25	0.07	0	0	0.39	3.4	3.05	0.42	0	0.25
***Vapor – SG/B**	**0**/0	**0**/0	**0**/0	**0.03**/0.03	**0**/0	**0.03**/0.03	**0**/0	**0**/0	**0.03**/0.03	**0**/0	**0.04**/0.04	**0**/0	**0**/0	**0**/0
****Sum**	3.48	0.14	0.54	4.57	0.25	0.10	0	0	0.44	3.42	3.09	0.55	3.07	0. 41
*****Final Sum**	**3.08**	**0**	**0.11**	**3.16**	**0**	**0.03**	**0**	**0**	**0.05**	**0.02**	**0.04**	**0.13**	**3.07**	**0.09**

Site Worker														
Media	**Heart**	**Liver**	**Blood**	**Kidney**	**Skin**	**Endoc**	**Eye**	**Immu**	**Nerve**	**GenUr**	**Respi**	**Other**	**Devel**	**Gastro**
Range 1 Soil	1.116	0	0.02	1.126	0	0	0	0	0	0	0	0.02	1.116	0.02
Range 2 Soil	0	0	0	0	0	0	0	0	0	0	0	0	0	0
GW	0.09	0.01	0.05	0.18	0.07	0	0	0	0.05	0.45	0.4	0.05	0	0.08
***Vapor – SG/B**	**0**/0	**0**/0	**0**/0	**0.01**/0.01	**0**/0	**0.01**/0.01	**0**/0	**0**/0	**0.01**/0.01	**0**/0	**0.01**/0.01	**0**/0	**0**/0	**0**/0
****Sum**	1.206	0.01	0.07	1.316	0.07	0.02	0	0	0.06	0.45	0.41	0.07	1.116	0.1
*****Final Sum**	**1.116**	**0**	**0.02**	**1.306**	**0**	**0.01**	**0**	**0**	**0.01**	**0**	**0.01**	**0.02**	**1.116**	**0.02**

Construction Worker														
Media	**Heart**	**Liver**	**Blood**	**Kidney**	**Skin**	**Endoc**	**Eye**	**Immu**	**Nerve**	**GenUr**	**Respi**	**Other**	**Devel**	**Gastro**
Range 1 Soil	0.62	0	0.02	0.63	0	0	0	0	0	0	0	0.02	0.62	0.02
Range 2 Soil	0	0	0	0	0	0	0	0	0	0	0	0	0	0
GW	0	0	0	0	0	0	0	0	0	0	0	0	0	0
***Vapor – SG/B**	**0**/0	**0**/0	**0**/0	**0**/0.01	**0**/0	**0**/0.01	**0**/0	**0**/0	**0**/0.01	**0**/0	**0**/0.01	**0**/0	**0**/0	**0**/0
****Sum**	0.62	0	0.02	0.63	0	0	0	0	0	0	0	0.02	0.62	0.02
*****Final Sum**	**0.62**	**0**	**0.02**	**0.63**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0.02**	**0.62**	**0.02**

Endoc–endocrine system, Immu–immune system, GenUr-genitourinary system, Respi-respiratory system, Devel-developmental, Severed exposure pathways are greyed out. * Vapor intrusion –SG/B - slab-on-grade/basement- potential for slab-on-grade or basement vapor intrusion is assessed using groundwater contaminants which are sufficiently volatile and sufficiently toxic to present a vapor intrusion risk. **Bold** indicates result used for final sum number based on anticipated redevelopment. **Sum equals total calculated risk BEFORE excluding "severed" exposure pathways. ***Final Sum represents the actual applicable risk assessment results of all remaining human health risk exposure pathways. **A Final Sum of <1 represents acceptable cancer risk. A Final Sum of >1 represents unacceptable cancer risk.**

HRGreen

5.0 FINDINGS

The findings and conclusions are summarized as follows:

- **Range 1 Soil:** Sample results identified eleven (11) PAH compounds and six (6) RCRA metals above laboratory reporting limits. Benzo[a]pyrene and lead were identified at levels above applicable SWS.
- **Range 2 Soil:** No TEHs or VOCs were detected above SWS in Range 2 soil at any of the sample locations. Sample results identified one (1) TEH and eight (8) VOCs above laboratory reporting limits but *below* SWS.
- **Groundwater:** One (1) TEH, five (5) VOCs, thirteen (13) PAHs, and two (2) RCRA metals were detected above laboratory reporting limits in the groundwater samples. 2-methylnaphthalene and diesel were detected above both the Protected and Non-Protected Groundwater SWS. Additionally, reporting limits for one (1) PAH and five (5) VOCs were above the Protected Groundwater SWS
- **Vapor Intrusion:** The maximum detected groundwater values or non-detect groundwater values above applicable SWS for eight (8) PAHs and seven (7) VOCs are sufficiently volatile and sufficiently toxic to present a vapor intrusion risk, and are available compounds for entry into the Calculator. These groundwater results were evaluated using the EPA Johnson and Ettinger Vapor Intrusion Model for Forward Calculation of Indoor Air Concentration. The highest indoor air concentration predicted by the model was then input into the Calculator for a slab-on-grade building and for a building with basement. The calculated results for this media indicate that vapor intrusion alone does not pose a risk on this site. Cumulative risk is discussed below.
- **Cumulative Risk Evaluation:** Calculated cancer risk for site resident, site worker, and construction worker are *acceptable.* Calculated non-cancer risk for site resident and site worker are *unacceptable.* Calculated non-cancer risk for construction worker is *acceptable*.

  The *unacceptable* non-cancer determinations for site resident and site worker, are driven by Range 1 soil lead concentrations.

6.0 DISCUSSION AND RECOMMENDATIONS

The results of this study indicate that the subject property is not suitable for future residential, commercial, or industrial purposes without remediation of Range 1 soil in compliance with local, state, and federal regulations. Alternatively, implementation of institutional and engineering controls (e.g., environmental covenant, engineered clean soil barrier with geo-membrane, concrete cap) may be permissible in lieu of soil remediation and off-site disposal. It is recommended that no ground surface (as opposed to raised bed) community gardens be permitted on the subject property without remediation of both Range 1 soil and groundwater. Ground surface community garden restrictions should be detailed in any future environmental covenant if contamination remains on the property in either soil or groundwater.

The City of Dubuque has an ordinance (Section No. 16-11-20) that prevents the installation of private wells unless public water is not available. This requires permit approval by the County's Health Department. Further, no wells may be installed within 500 feet of a LUST site. A 1,000-foot radius well search was also conducted on 7/5/2016 to evaluate the area for existing wells. One search was completed using MBI-1 as the center point. Only one well was identified. This is a closed-system geothermal well and therefore is not a receptor. Well search documentation is provided in Appendix D. HR Green recommends notifying the City of Dubuque's Water Department in addition to the County's Health Department of the groundwater results contained in this Phase II ESA, in order to prevent the installation of new wells on the subject property or on adjacent properties. This action will sever the groundwater ingestion pathway for the subject property.

The results of this study indicate that Range 2 soil and vapor intrusion are not media which present a risk to construction workers or to future users of the subject property. This report should be provided to the IDNR for guidance on what actions will be required as a result of the observed contamination in order for the subject property to be redeveloped as a community space.

7.0 DATA VALIDATION AND USABILITY

Validation of the data collected during the Phase II ESA of the subject property is included below.

7.1 Representativeness

All samples were collected in a manner and at locations as planned to accurately reflect the constituent concentrations in the media from which they were taken at the time of sampling. Sample locations were biased to focus efforts on areas of the property with the greatest potential for impact.

Representativeness of the data was partially ensured by avoiding cross-contamination, adhering to standard sample handling and analytical procedures, and use of proper chain-of-custody documentation procedures.

7.2 Comparability

In order that one set of data may be compared with another, all analyses were performed by accepted EPA or state methods, and all analytical results were reported in similar concentration units and format.

7.3 Completeness

In order for a set of data to be used with confidence to make a decision, the data must be complete. The sampling design as planned included the collection of samples from the area of the property most likely to be impacted by adjacent properties. The samples were collected as planned.

7.4 Sensitivity

Detection and quantification limits for sample data must be below the Statewide Standard action levels specified in IAC 137. The reporting limits for 1,1,2,2-tetrachloroethane, 1,2,3-trichloropropane, 1,2-dibromoethane (EDB),

dibenz(a,h)anthracene, and hexachlorobutadiene were above Protected Groundwater SWS in all groundwater sample locations.

7.5 Precision

Precision is a measure of the variability of a measurement system. Precision was assessed through the evaluation of laboratory quality control samples. Precision is typically an estimate by means of duplicate measurements and is expressed in terms of RPD.

Based on the laboratory report two (2) PAHs, anthracene and phenanthrene, were noted as having RPDs of the LCS or LCSD exceeding the control limits. This was noted using an asterisk (*) in the lab report, and the data were reported.

7.6 Accuracy

Trip blanks were used to evaluate the purity of sample containers, chemical preservatives, and sampling equipment. No compounds were detected above laboratory reporting limits in the trip blank.

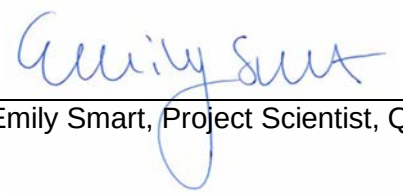
All sampling and analytical activities were conducted in accordance with EPA approved methods or industry standard practices.

8.0 SIGNATURES OF ENVIRONMENTAL PROFESSIONALS

We declare, to the best of our professional knowledge and belief, we meet the definition of *Environmental Professional* as defined in §312.10 of 40 CFR 312 and we have the specific qualifications based on education, training, and experience to assess a *property* of the nature, history, and setting of the *subject site*. We have developed and performed the all appropriate inquiries in conformance with the standards and practices set forth in 40 CFR Part 312.

Signatures of the environmental professionals responsible for this report:

Emily Wilson, Staff Scientist II, Report Preparer



Emily Smart, Project Scientist, Quality Control and Assurance

Scott Mattes, Project Director, Technical Review

APPENDIX A

QUALIFICATIONS

HR GREEN COMPANY PROFILE

HR Green, Inc. is a professional engineering and technical consulting firm serving clients in the public and private sectors. We are a privately held, employee-owned company, and fully committed to the success of our clients and the well-being of our nearly 400 employees.

HR Green builds **business accountability into every task we perform for our clients**. This means we partner with our clients to create viable facilities and healthy enterprises that are truly sustainable **for the client**.

We have been in business without interruption since 1913. We carefully target our technical services to address the most timely needs of society, and thus to succeed as sustainable businesses.

QUALIFICATIONS OF INDIVIDUALS PREPARING THIS REPORT

Ms. Emily Wilson is a Staff Scientist II with experience working with groundwater, wastewater, stormwater, and industrial pre-treatment sampling, regulatory compliance, geographic information systems (GIS) projects and Phase I and II Environmental Site Assessments. Emily holds a Bachelor of Science Degree in Environmental Science – Biosciences and a minor in Biology from the University of Iowa and is 40-hour Hazardous Waste Operations and Emergency Response (HAZWOPER) certified.

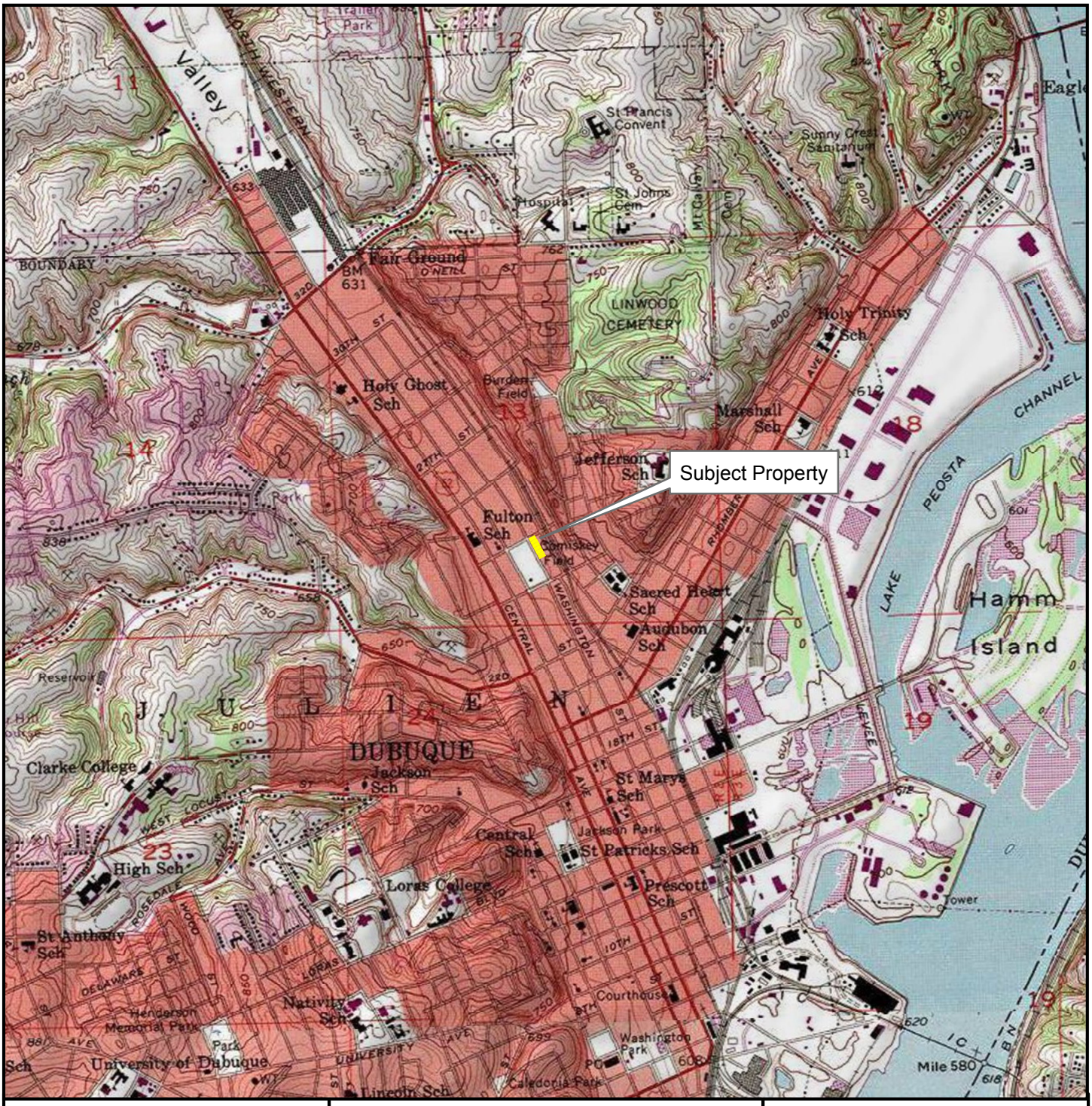
Ms. Emily Smart is a Project Scientist I with eight years of experience working as an environmental consultant. Emily's experience includes oversight on large scale remedial sites, management and execution of Phase I and Phase II Environmental Site Assessments, and Remedial Investigations, and State compliance reporting. Emily is a licensed professional geologist in the States of Washington (#2896) and Illinois (#196.001397) and holds a Master's Degree in Geoscience from the University of Iowa. Emily is also a certified groundwater professional (#2125) in the State of Iowa. Emily is 40-hour Hazardous Waste Operations and Emergency Response (HAZWOPER) certified.

Mr. Scott Mattes is an Environmental Program Director with over 19 years of experience in the environmental engineering industry. Scott has extensive experience managing a range of environmental projects from RCRA Enforcement Actions, hazardous site demolitions, lead and asbestos management, construction permitting for airborne emission sources, environmental impact studies, Brownfield site clean-up and redevelopment, and State and Federal environmental compliance reporting. He also has widespread experience implementing geographic information systems (GIS) for numerous communities to assist with redevelopment planning, public involvement, and community-based asset management systems. Scott is a licensed Professional Environmental Engineer in Iowa (#18035) and Nebraska (#E-10197) and nationally recognized Certified Industrial Hygienist (#8408CP).

APPENDIX B

FIGURES

Figure 1 – Site Vicinity Map
Figure 2 – Sample Location Map



Legend

Subject Property

Figure 1

Site Vicinity Map

Phase II ESA

Morrison Brothers
Residential Parcels
Dubuque, IA

N
W E
S

0 1,000 2,000 Feet

1 inch = 2,000 feet

HRGreen

Legend

- Composite Sample
- Sample Location
- Subject Property
- Sample Label — Range 1 Composite Sample Label

Figure 2

Sample Location Map

Phase II ESA

Morrison Brothers
Residential Parcels
Dubuque, Iowa

0 100 Feet

1 inch = 100 feet

N W E S

HRGreen

HRG PLOT: 10:46:01 AM 8/26/2016 BY: ewilson FILE: \\hrgdmnas\data\40140060.25\Phase II ESA\Figures\MXD\Figure 2 - Residential.mxd