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December 20, 2016

Mr. Mike Washburn
Environmental Scientist
Missouri Department of Natural Resources
Brownfields/Voluntary Cleanup Program
Jefferson City, Missouri 65102

**Subject:** **Analysis of Brownfields Cleanup Alternatives**
**LaGrange School Site, LaGrange, Missouri**
**Missouri Environmental Assessment Services Contract, Contract No. C312021002**
**Vendor No. 48120656000**

Dear Mr. Washburn:

Seagull Environmental Technologies, Inc. (Seagull) is submitting the attached Analysis of Brownfields Cleanup Alternatives (ABCA) report for the LaGrange School site in LaGrange, Missouri. If you have any questions or comments, please contact the project manager at (816) 682-4089.

Sincerely,

Brandon Jones
Project Manager

Enclosures

# ANALYSIS OF BROWNFIELDS CLEANUP ALTERNATIVES

# LAGRANGE SCHOOL SITE, LAGRANGE, MISSOURI

Missouri Environmental Assessment Services Contract

Contract No. C312021002
Vendor No. 48120656000

Prepared For:

Missouri Department of Natural Resources – Brownfields/Voluntary Cleanup Section
P.O. Box 176
Jefferson City, Missouri 65102

December 20, 2016

Prepared By:

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## 1.0 INTRODUCTION

Seagull Environmental Technologies, Inc. (Seagull) was tasked by the Missouri Department of Natural Resources (MDNR), under the Missouri Environmental Assessment Services contract, to complete an Analysis of Brownfields Cleanup Alternatives (ABCA) report for the LaGrange School site in LaGrange, Missouri. This ABCA examines alternatives for cleanup of asbestos-containing materials (ACM) and lead-based paint (LBP), including preliminary cost estimates. Cleanup alternatives and cost estimates for disposal of items potentially containing hazardous materials were not included.

## 2.0 SITE LOCATION AND DESCRIPTION

The site is comprised of a vacant school building approximately 32,000 square feet ($ft^2$) and a large outbuilding. The school building was built prior to the 1950s. Additions to the school building were constructed in the 1960s. Coordinates for the approximate center of the LaGrange School site are 40.042381 degrees north latitude and 91.506348 west longitude (see Appendix A, Figures 1 and 2). According to the Lewis County Assessor's office, the parcel number is 036360040100. The physical address of the property is 204 South (S.) 8$^{th}$ Street. The subject property is bordered to the north by residential dwellings; south by cropland and a residential dwelling; east by S. 8$^{th}$ street, with residential dwellings beyond; and west by cropland.

In December 2015, SCI Engineering, Inc. (SCI) completed a Phase I Environmental Site Assessment (ESA) for the site. The Phase I ESA identified a former underground storage tank (UST) and heating oil aboveground storage tank (AST) at the subject property. Due to the removal of these tanks, SCI did not consider these to be recognized environmental conditions (RECs). The report also identified miscellaneous building materials and concrete rubble stored to the west of the school building. The concrete and miscellaneous materials were considered to be non-hazardous and were not identified as a REC (SCI 2015a).

In conjunction with the Phase I ESA, an Asbestos and Lead-Based Paint Survey was conducted. The Asbestos and Lead-Based Paint Survey involved the collection of 91 bulk samples, 87 of which were then analyzed for asbestos by Polarized Light Microscopy (PLM). Potential lead-based paint was surveyed using an X-Ray Fluorescence (XRF) spectrometer. In total, 19 bulk samples were found to contain asbestos and 5 samples were found to contain lead-based paint (SCI 2015b).

The vacant school building is divided up into three sections; the 1960s addition, the central addition (which includes the southeast addition), and the original structure. The LaGrange School building and the additions are referred to in this report as the "school building".

## 3.0 POTENTIAL CLEANUP ALTERNATIVES

The overall goal of any Brownfields cleanup action is to address environmental conditions preventing or impeding the preferred type of site redevelopment, and to do so in a manner protective of human health and the environment. Future plans for the site may involve demolition of the school building or complete remediation and renovation.

Brownfields cleanup alternatives were evaluated for the site to address specific environmental concerns identified in the Asbestos and Lead-Based Paint Survey Activities report for the site (SCI 2015b). The purpose of the ABCA is to present viable cleanup alternatives based on site-specific conditions, technical feasibility, and preliminary cost evaluations.

The following sections describe Brownfields cleanup alternatives for addressing the ACM and LBP, including a "No Action" alternative. Following the description, each alternative is evaluated in terms of its effectiveness, implementability, and cost.

The effectiveness of an alternative refers to its ability to meet the objectives of the Brownfields cleanup. Specific criteria used to assess the effectiveness of an alternative include the following:

- Overall protection of public health and the environment;
- Compliance with applicable or relevant and appropriate requirements (ARAR) and other criteria, advisories, and guidance;
- Long-term effectiveness (includes resilience to impacts associated with natural disasters, climate change, etc.); specific effects of climate change evaluated for the site were for increased/decreased temperatures and precipitation, as well as extreme weather events (e.g., storms of unusual intensity, increased frequency and intensity of localized flooding events);
- Reduction of toxicity, mobility, or volume through treatment/removal;
- Short-term effectiveness.

The implementability criteria address the technical and administrative feasibility of implementing an alternative, and the availability of various services and materials required during its implementation. Specific criteria used to assess implementability of an alternative include:

- Technical feasibility;
- Administrative feasibility;
- Availability of services and materials;
- State acceptance;
- Community acceptance.

Each alternative is evaluated to determine its estimated cost. The evaluations compare each alternative's direct capital costs, which include equipment, services, and contingency allowances. The purpose of evaluating each alternative is to determine its advantages and disadvantages relative to the other alternatives in order to identify key tradeoffs that would affect selection of the preferred alternative.

## 3.1 EVALUATED CONTAMINATION

Contaminants and other hazardous materials evaluated as part of this ABCA include ACM and LBP. The sections below discuss contaminants/materials identified in the Asbestos and Lead-Based Paint Survey Activities report. Site photographs included as Appendix B show building materials determined to contain asbestos and LBP (SCI 2015b).

### 3.1.1 Asbestos-Containing Materials

During the asbestos and LBP survey conducted by SCI, 91 samples of building materials suspected to contain asbestos were collected for laboratory analysis; however, only 87 samples were ultimately analyzed. Nineteen materials associated with the school building were determined to contain asbestos. Specifically, those materials included various-sized vinyl floor tile and associated mastic; roofing; window caulk; window glaze; and soffits. In those materials, asbestos (chrysotile) was detected at concentrations that ranged from 2 to 60 percent (%). The U.S. Environmental Protection Agency (EPA) defines ACM as any material containing asbestos at a concentration above 1%. Table 1 summarizes the ACM identified in the Asbestos and LBP Survey Report.

**TABLE 1**

**ASBESTOS-CONTAINING MATERIALS**
**LAGRANGE SCHOOL SITE, LAGRANGE, MISSOURI**

| Material | Location | Estimated Quantity | Asbestos Result (%) |
|---|---|---|---|
| 12" x 12" Beige Floor Tile and Mastic (on concrete) | 1960s Addition – Loading Dock Entry, Classrooms and Center Addition Hallway | 4,270 $ft^2$ | Tile – None Detected<br>Mastic – 4% Chrysotile |
| 9" x 9" Red Floor Tile with Tan and Black Mastic (on concrete) | 1960s Addition – Hallway | 1,250 $ft^2$ | Tile – 4% Chrysotile<br>Black Mastic – 5% Chrysotile<br>Tan Mastic – None Detected |
| 9" x 9" Beige Floor Tile with Tan and Black Mastic (Under Tan Floor Tile [60-3abc] on concrete) | 1960s Addition – Center Class Rooms | 1,200 $ft^2$ | Tile – 4% Chrysotile<br>Black Mastic – 5% Chrysotile<br>Tan Mastic – None Detected |
| 9" x 9" Green Floor Tile with Tan and Black Mastic (Under Grey Floor Tile [60-5abc] on concrete) | 1960s Addition – Shop Class Room | 1,150 $ft^2$ | Tile – 4% Chrysotile<br>Black Mastic – 5% Chrysotile<br>Tan Mastic – None Detected |
| Roof System | 1960s Addition – 1960 Addition Roof | 5,200 $ft^2$ | Roofing – 60% Chrysotile<br>Black Roofing Material – None Detected<br>White Hard Material – None Detected |
| 9" x 9" Red Floor Tile with White Streak and Mastic (on concrete) | Center Addition – Partial Hallway and Room 4 | 1,200 $ft^2$ | Tile – 5% Chrysotile<br>Black Mastic – 5% Chrysotile<br>Tan Mastic – None Detected |
| 9" x 9" Green Floor Tile with White Streak and Mastic (on concrete) | Center Addition – Bathrooms and Original Structure Kitchen | 1,250 $ft^2$ | Tile – 5% Chrysotile<br>Black Mastic – 5% Chrysotile<br>Tan Mastic – None Detected |
| 9" x 9" Grey Floor Tile with White Streak and Mastic (on concrete) | Center Addition – Class Room 2 | 1,000 $ft^2$ | Tile – 4% Chrysotile<br>Black Mastic – 5% Chrysotile<br>Tan Mastic – None Detected |
| 9" x 9" Grey Floor Tile and Mastic (on concrete) | Center Addition – Lower and Upper Class Rooms | 6,260 $ft^2$ | Tile – 5% Chrysotile<br>Black Mastic – 5% Chrysotile<br>Tan Mastic – None Detected |
| Roof System | Original/Central Additional Roof | 26,800 $ft^2$ | Black Roofing – 20% Chrysotile<br>Black Fibrous Material – None Detected<br>Black Bituminous Material – None Detected |
| Window Caulk | Exterior | 650 LF | 2% Chrysotile |
| Window Glaze | Exterior | 2,200 LF | 2% Chrysotile |
| Transite Soffits | Exterior | 1,125 $ft^2$ | 20% Chrysotile |

Notes:

" Inches
% Percent
$ft^2$ Square feet
LF Linear feet

### 3.1.2 Lead-Based Paint

The LBP inspection was completed with an XRF. Paint-covered surfaces with lead at a concentration equal to or greater than (>) 1 milligram per square centimeter ($mg/cm^2$) were considered LBP. LBP was identified on structural components inside the 1960s addition, center addition, and original structure. Those components were concrete floor, composite chalkboard, plaster wall, and concrete block wall. Specifically, LBP was identified on the concrete floor (red color) in the 1960's addition shop room, the composite chalkboard (green color) in Room 2 of the center addition, the plaster wall (teal color) on the north wall of Room 12 in the original structure, and the concrete block wall (grey and green color) in the boiler room in the original structure. Specific XRF readings and the condition of the identified LBP from those areas were not provided in the Asbestos and Lead-Based Paint Survey Report; however, the condition of the paint appears to be primarily poor (chipped and flaking) based on the site photos provided. Table 2 summarizes the materials containing LBP, including quantities.

**TABLE 2**

**MATERIALS CONTAINING LEAD-BASED PAINT**
**LAGRANGE SCHOOL SITE, LAGRANGE, MISSOURI**

| Location | Substrate | Paint Color | Estimated Quantity ($ft^2$) |
|---|---|---|---|
| 1960s Addition – Shop Room Floor | Concrete | Red | 10 |
| Center Addition – Room 2 | Chalkboard | Green | 64 |
| Original Structure – Room 12 (North Wall) | Plaster | Teal | 96 |
| Original Structure – Boiler Room Wall | Concrete | Grey | 600 |
| Original Structure – Boiler Room Wall | Concrete | Green | |

Notes:

$ft^2$ Square feet

## 3.2 EVALUATION OF CLEANUP ALTERNATIVES

Evaluation of cleanup alternatives includes two options for ACM and three options for LBP. Evaluations for ACM and LBP have been developed with specific consideration to the MDNRs Brownfields/Voluntary Cleanup Program (BVCP) procedural requirements and Missouri Risk-Based Corrective Action (MRBCA)

technical guidance. This consideration was made because cleanup projects implemented with EPA Brownfields Cleanup funding generally require participation in a state voluntary cleanup program (or equivalent). For reference, fees associated with enrollment into the MDNR BVCP include a $200 application fee and refundable oversight deposit of $4,000.

### 3.2.1 Asbestos-Containing Materials

For ACM, two options were evaluated: (1) no action, and (2) abatement.

**Alternative 1: No Action**

Alternative 1 (no action) would consist of leaving ACM in place at the site.

Effectiveness

This alternative would not be effective regarding renovation and/or demolition of the site buildings that contain ACM. In accordance with National Emissions Standards for Hazardous Air Pollutants (NESHAP) regulations, demolition or rehabilitation/renovation of the site buildings cannot precede proper abatement; therefore, renovation or demolition could not occur if this alternative would be selected. This alternative would also be ineffective in achieving the goal of reducing health risks.

Implementation

Implementation of this alternative is straightforward—the ACM would be left in place. Renovation or demolition of the site buildings could not be conducted prior to abatement.

Cost

This alternative would not involve any direct costs.

**Alternative 2: Abatement of Asbestos-Containing Material**

Alternative 2 would involve abatement of the ACM associated with the site building, which includes vinyl floor tile (two sizes: 9-inch by 9-inch, and 12-inch by 12-inch), vinyl floor tile mastic, roofing system, window caulk, window glaze, and soffits. Abatement would be conducted in accordance with applicable local, state, and federal regulations by a registered asbestos abatement contractor. Regulatory clearance would be obtained through successful implementation of a Remedial Action Plan (RAP) and a post-abatement inspection. Because the ACM is non-friable, the collection of clearance air samples is not required.

Effectiveness

If all of the identified ACM was removed, then Alternative 2 would be most effective in removing the risk to human health posed by the ACM. In addition, full abatement would allow for renovation or demolition without restrictions concerning disturbance of ACM.

Implementation

Abatement would be conducted in accordance with applicable local, state, and federal regulations by a registered asbestos abatement contractor.

Cost

Estimated abatement costs were gathered from local vendors. The costs below are for full abatement of the ACM. Abatement costs per $ft^2$ and per window unit are provided and include removal and disposal costs. There are approximately 109 windows on the school building which were used for estimating abatement cost. Total abatement cost for all of the ACM is estimated at $196,250. Additional costs to be considered would include preparation of technical reports (RAP—$3,500, and Final Cleanup Report—$3,500). No restoration or replacement costs have been accounted for. Table 4 below summarizes abatement costs for ACM identified at the site.

**TABLE 3**

**ACM ABATEMENT COSTS**
**LAGRANGE SCHOOL SITE, LAGRANGE, MISSOURI**

| Material | Location | Estimated Quantity | Cost/Unit | Total Cost |
|---|---|---|---|---|
| 12" x 12" Beige Floor Tile and Mastic (on concrete) | 1960s Addition – Loading Dock Entry, Classrooms and Center Addition Hallway | 4,270 $ft^2$ | \$2.50/$ft^2$ | \$10,675 |
| 9" x 9" Red Floor Tile with Tan and Black Mastic (on concrete) | 1960s Addition – Hallway | 1,250 $ft^2$ | \$2.50/$ft^2$ | \$3,125 |
| 9" x 9" Beige Floor Tile with Tan and Black Mastic (Under Tan Floor Tile [60-3abc] on concrete) | 1960s Addition – Center Class Rooms | 1,200 $ft^2$ | \$2.50/$ft^2$ | \$3,000 |
| 9" x 9" Green Floor Tile with Tan and Black Mastic (Under Grey Floor Tile [60-5abc] on concrete) | 1960s Addition – Shop Class Room | 1,150 $ft^2$ | \$2.50/$ft^2$ | \$2,875 |
| Roof System | 1960s Addition – 1960 Addition Roof | 5,200 $ft^2$ | \$4/$ft^2$ | \$20,800 |
| 9" x 9" Red Floor Tile with White Streak and Mastic (on concrete) | Center Addition – Partial Hallway and Room 4 | 1,200 $ft^2$ | \$2.50/$ft^2$ | \$3,000 |
| 9" x 9" Green Floor Tile with White Streak and Mastic (on concrete) | Center Addition – Bathrooms and Original Structure Kitchen | 1,250 $ft^2$ | \$2.50/$ft^2$ | \$3,125 |
| 9" x 9" Grey Floor Tile with White Streak and Mastic (on concrete) | Center Addition – Class Room 2 | 1,000 $ft^2$ | \$2.50/$ft^2$ | \$2,500 |
| 9" x 9" Grey Floor Tile and Mastic (on concrete) | Center Addition – Lower and Upper Class Rooms | 6,260 $ft^2$ | \$2.50/$ft^2$ | \$15,650 |
| Roof System | Original/Central Additional Roof | 26,800 $ft^2$ | \$4/$ft^2$ | \$107,200 |
| Window Glaze and Caulk | Exterior | 109 Windows or 2,850 LF | \$200/window | \$21,800 |
| Transite Soffits | Exterior | 1,125 $ft^2$ | \$2.22/$ft^2$ | \$2,500 |
| **Total ACM Abatement Cost** | | | | **\$196,250** |

Notes:

" Inch
ACM Asbestos-containing material
$ft^2$ Square feet
LF Linear foot

### 3.2.2 Lead-Based Paint

Three cleanup alternatives were evaluated to address LBP found on components associated with the school building. These options include: (1) no action, (2) removal by stripping, (3) and removal by demolition. Each approach (excluding no action) is capable of achieving clearance or restricted clearance criteria under the MDNR BVCP.

**Alternative 1: No Action**

Alternative 1 (no action) would consist of leaving LBP in place at the site.

Effectiveness

This alternative would not be effective regarding renovation of the site. The areas containing LBP would be restricted to ensure those materials are not disturbed. This alternative would be ineffective in achieving the goal for reduction of health risks.

Implementation

Implementation of this alternative is straightforward — the LBP is left in place. Renovation activities would have to consider the location and condition of the LBP and ensure those materials are not disturbed.

Cost

This alternative would not involve any direct costs.

**Alternative 2: Lead-Based Paint Removal by Chemical Stripping**

Alternative 2 includes removal of LBP using wet stripping and/or chemical stripping techniques. This is a direct approach because LBP is removed and controls are not required to manage LBP left in place. LBP would be removed and disposed of off site as special or hazardous waste. Disposal characterization testing would be required prior to disposal. In addition, successful completion would require the collection of dust-wipe samples in accordance with MDNR clearance regulations.

For this site, chemical stripping is a viable option for the structural components (shop room floor, plaster wall, and boiler room walls). Chemical stripping of the green chalkboard will likely be ineffective, as lead is generally imbedded. The chalkboard would have to be removed and disposed of in accordance with applicable state and federal regulations.

Effectiveness

The LBP is permanently removed. This alternative would allow for redevelopment of the site without restrictions concerning disturbance and management of LBP.

Implementation

Abatement would be conducted in accordance with applicable state and federal regulations by registered LBP contractors. The complete removal of all LBP can be difficult, dependent on substrate conditions. In addition, this technique can generate a hazardous waste stream and requires careful consideration and precautions concerning worker health and safety.

Cost

Estimated stripping costs were gathered from local vendors. The cost per $ft^2$ includes removal and disposal costs. The estimated removal cost using wet and/or chemical stripping is $25 per $ft^2$, except for the concrete shop floor, which is $50 per $ft^2$. Based on that estimated cost, removal of LBP would be $18,150. Additional costs to be considered include technical plans/reports (RAP and Final Cleanup Report) and the collection of clearance samples. Estimated costs for technical plans/reports are $3,500 for the RAP and $3,500 for the Final Cleanup Report (cost of RAP and Final Report includes consideration of all environmental issues to be addressed by cleanup activities). Cost for clearance sampling is estimated at $1,000. Table 4 below summarizes abatement costs for LBP identified at the site.

**TABLE 4**

**LBP CHEMICAL STRIPPING COSTS**
**LAGRANGE SCHOOL SITE, LAGRANGE, MISSOURI**

| Material | Location | Estimated Quantity | Cost/Unit | Total Cost |
|---|---|---|---|---|
| Red Concrete Floor | 1960s Addition – Shop Floor | 10 $ft^2$ | $50/$ft^2$ | $500 |
| Green Chalkboard | Central Addition - Room 2 | 64 $ft^2$ | $250 | $250 |
| Green and Grey Concrete Wall | Central Addition - Boiler Room | 600 $ft^2$ | $25/$ft^2$ | $15,000 |
| Teal Plaster Wall | Original - Classroom 12 (North Wall) | 96 $ft^2$ | $25/$ft^2$ | $2,400 |
| **Total LBP Abatement Cost** | | | | **$18,150** |

Notes:

" Inch
LBP Lead-Based Paint
$ft^2$ Square feet

**Alternative 3: Lead-Based Paint Removal by Demolition**

Alternative 3 includes complete removal of LBP (by demolition) for proper disposal. All surfaces/components that contain LBP can be removed/demolished and disposed of as demolition waste.

Removal/demolition techniques are required to be conducted in a manner that does not chip, shred, mulch, or mill the LBP.

Based on discussed future use of the site, which includes complete demolition of the school building, this alternative is likely the most appropriate and economically feasible for the majority of LBP-containing components. For this alternative, materials containing LBP would be removed and disposed of off site as demolition waste. This alternative is a direct approach, because LBP is removed, and controls are not required to manage LBP left in place when redevelopment occurs.

For this site, removal by demolition is a viable option for the all LBP-containing components associated with the school building. These components can be easily removed for demolition.

Effectiveness

The LBP is permanently removed. This alternative would allow for renovation of the site without restrictions concerning disturbance and management of LBP.

Implementation

Removal would be conducted in accordance with applicable state and federal regulations. The identified LBP-covered components would be properly removed and disposed of. Removal/demolition is required to be conducted in a manner that does not chip, shred, mulch, or mill the LBP.

Cost

Total cost to remove the LBP-containing components and properly dispose of them as demolition waste would be included in the cost of demolition of the school building. No additional costs regarding technical reports (RAP and Final Cleanup Report), the collection of clearance samples would be incurred.

## 3.3 RECOMMENDED CLEANUP ALTERNATIVES

Asbestos-Containing Material

Alternative 2 – abatement of ACM – is the recommended cleanup alternative for ACM identified at the site. Future plans at the site include complete demolition of the school building. Therefore, removal of all of the identified ACM would be most effective in removing the risk to human health posed by the ACM.

Lead-Based Paint

Alternatives 3 – removal by demolition – is the recommended cleanup alternatives for LBP identified at the site. Future plans at the site include complete demolition of the school building. Therefore, the

components containing LBP can be treated as demolition waste and no cost, in addition to the cost of demolition of the building, would be incurred.

### 3.3.1 Total Cleanup Cost

Based on the recommended cleanup alternatives for ACM and LBP, the estimated total cleanup cost is $207,450, and includes site enrollment in the MDNR BVCP, and fees associated with preparation of required technical plans/reports. Specifically, full abatement of the ACM is estimated at $196,250, while removal of LBP by demolition would incur no additional cost to the demolition of the school building. All LBP-containing components may be disposed of as demolition waste. Site enrollment fees into the MDNR BVCP program are $4,200, while fees associated with preparation of technical reports would be $7,000 ($3,500 each for a RAP and Final Cleanup Report). Table 5 summarizes the discussed costs.

**TABLE 5**

**SUMMARY OF COSTS**
**LAGRANGE SCHOOL SITE, MAYVIEW, MISSOURI**

| Contaminant/Material | Recommended Alternative | Action – Cost | Total Cost |
|---|---|---|---|
| ACM | Alternative 2 – Abatement | Abatement - $196,250 | $196,250 |
| LBP | Alternatives 3 – Removal of LBP By Demolition | Removal by Demolition – No Additional Cost | $0 |
| MDNR Brownfields/Voluntary Cleanup Program Fees | | | $4,200 |
| Technical Plan Preparation (RAP and Final Cleanup Report) | | | $7,000 |
| **Total Cost - $207,450** | | | |

Notes:

| | |
|---|---|
| ACM | Asbestos-containing materials |
| LBP | Lead-based paint |
| MDNR | Missouri Department of Natural Resources |
| RAP | Remedial Action Plan |

## 4.0 REFERENCES

SCI Engineering, Inc. (SCI). 2015a. Phase I Environmental Site Assessment for the LaGrange School Site. December.

SCI. 2015b. Asbestos and Lead-Based Paint Survey Activites for the LaGrange School Site. December.

# APPENDIX A

# FIGURES

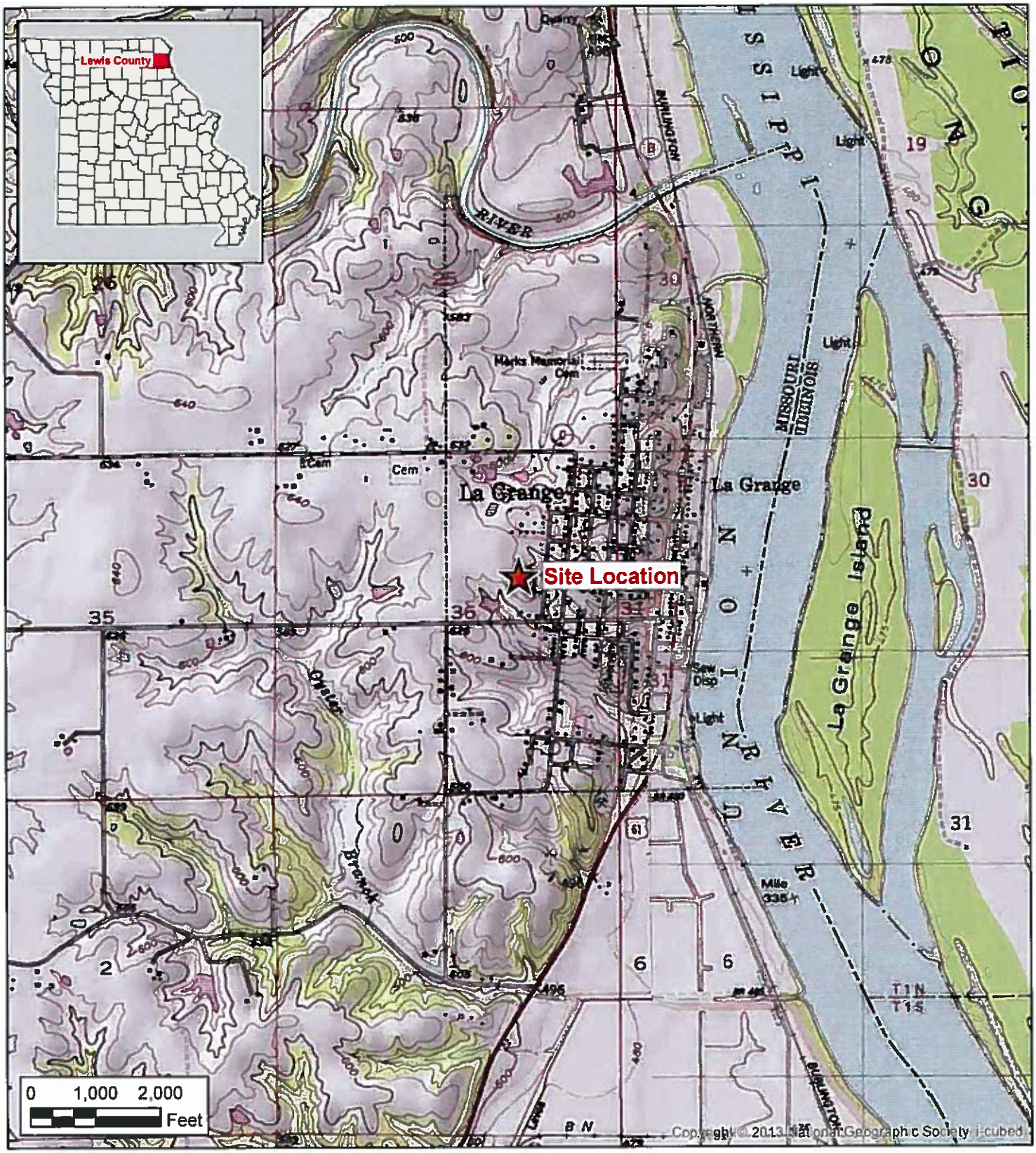



Figure 1
Site Location Map
**LaGrange School Site**
**LaGrange, Missouri**

Seagull Environmental Technologies, Inc.

Source: USGS Granite City, MO 7.5 Minute Topo Quad, 1983

Date: December 2016

Project No: MOESA077ABCA

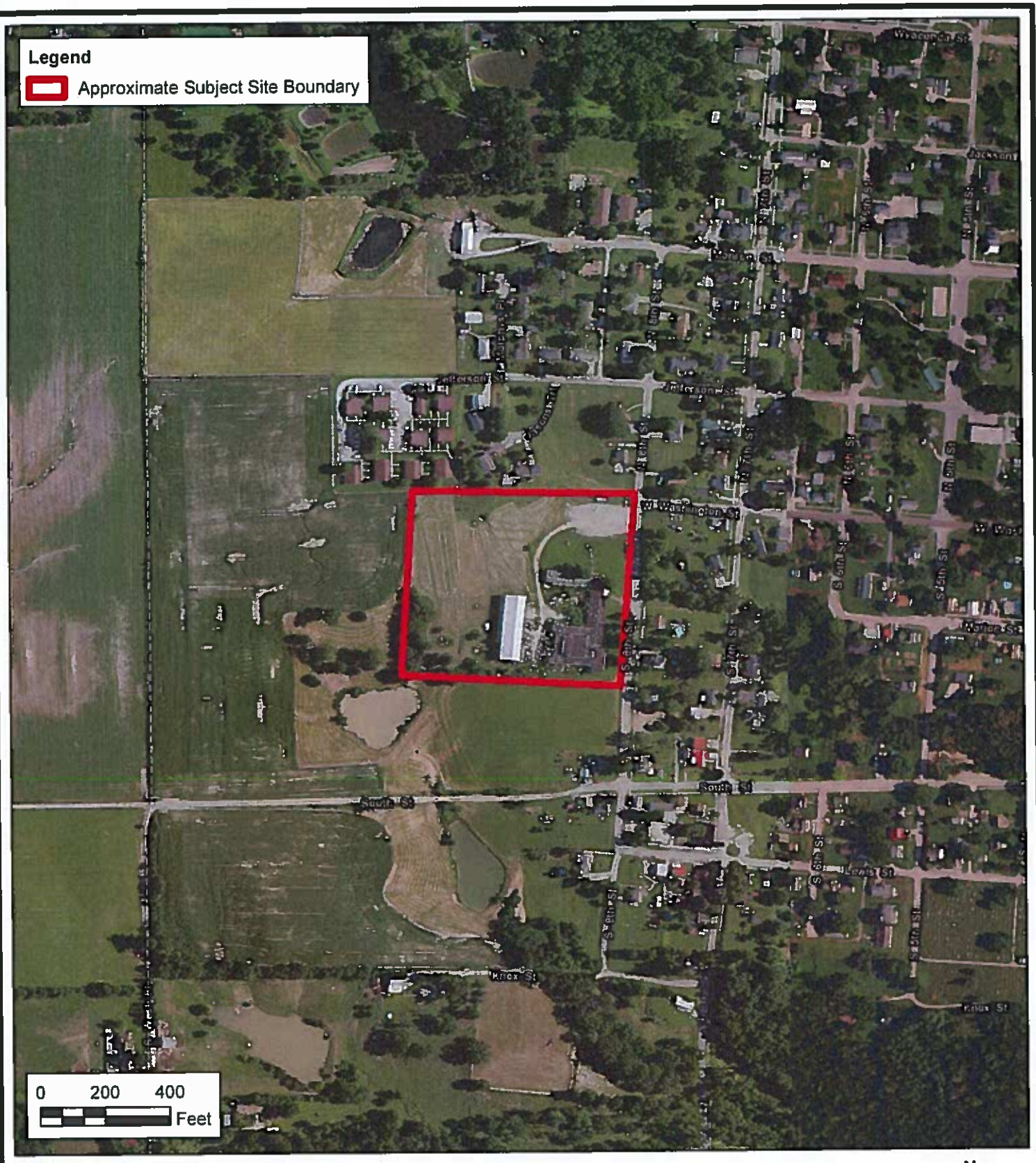



Figure 2
Site Aerial Map

**LaGrange School Site**
**LaGrange, Missouri**

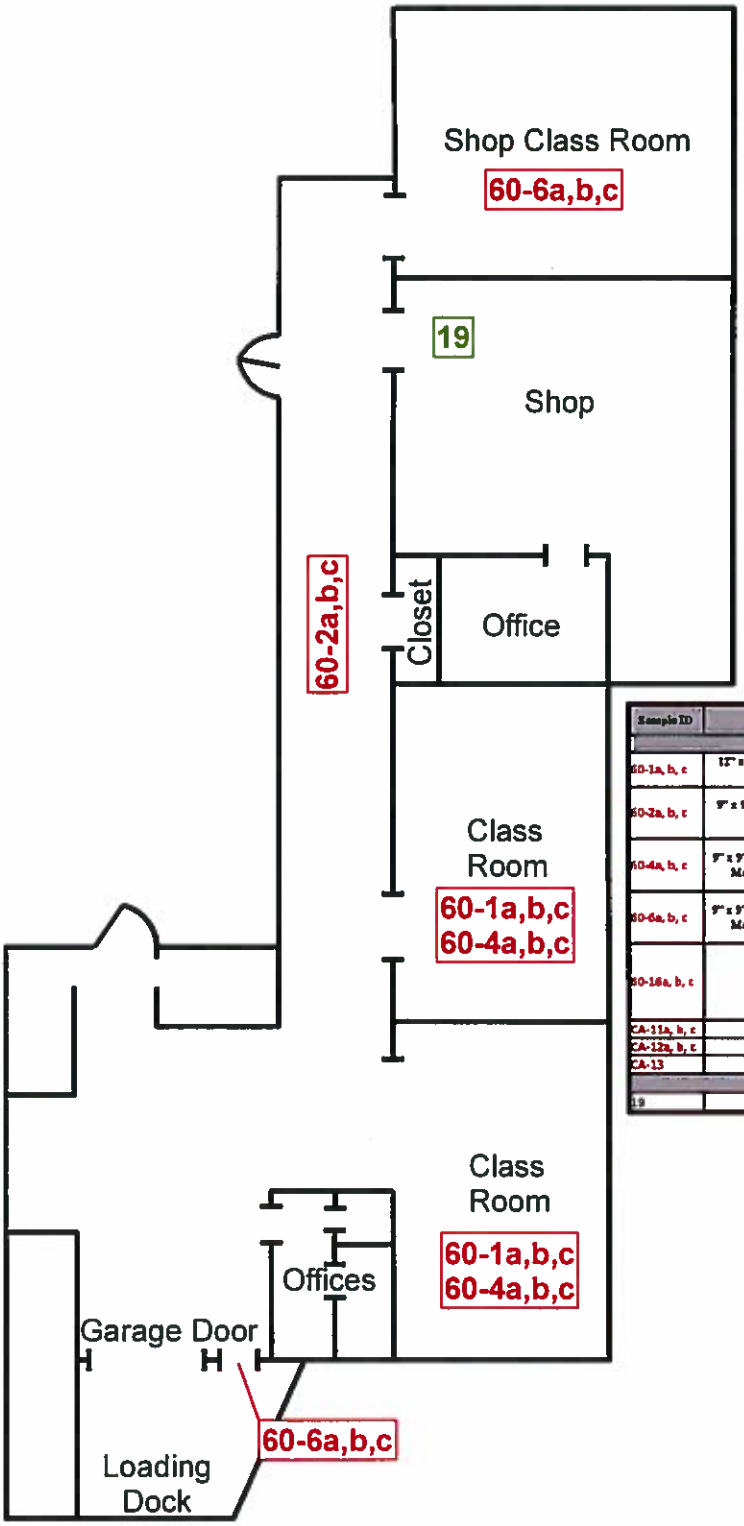
N
W E
S

Seagull Environmental Technologies, Inc.

Source: Esri World Imagery, 2014

Date: December 2016

Project No: MOESA077ABCA




Drawing is not to scale.

| Sample ID | Material | Location | Estimated Quantity | Asbestos Result (%) |
|---|---|---|---|---|
| Asbestos-Containing Materials | | | | |
| 60-1a, b, c | 12" x 12" Beige Floor Tile and Mastic (on concrete) | 1960's Addition – Loading Dock Entry, Classrooms and Central Addition Hallway | 4,270 ft² | Tile – None Detected<br>Mastic – 4% Chrysotile |
| 60-2a, b, c | 9" x 9" Red Floor Tile with Tan and Black Mastic (on concrete) | 1960's Addition – Hallway | 1,250 ft² | Tile – 4% Chrysotile<br>Black Mastic – 5% Chrysotile<br>Tan Mastic – None Detected |
| 60-4a, b, c | 9" x 9" Beige Floor Tile with Tan and Black Mastic (Under 60-3abc, on concrete) | 1960's Addition – Center Class Rooms | 1,200 ft² | Tile – 4% Chrysotile<br>Black Mastic – 5% Chrysotile<br>Tan Mastic – None Detected |
| 60-6a, b, c | 9" x 9" Green Floor Tile with Tan and Black Mastic (Under 60-5abc, on concrete) | 1960's Addition – Shop Class Room | 1,150 ft² | Tile – 4% Chrysotile<br>Black Mastic – 5% Chrysotile<br>Tan Mastic – None Detected |
| 60-16a, b, c | Roof System | 1960's Addition – 1960 Addition Roof | 5,200 ft² | Roofing – 60% Chrysotile<br>Black Roofing Material – None Detected<br>White Hard Material – None Detected |
| CA-11a, b, c | Window Caulk | Exterior | 650 LF | 2% Chrysotile |
| CA-12a, b, c | Window Glaze | Exterior | 2,100 LF | 2% Chrysotile |
| CA-13 | Transite Soffits | Exterior | 1,125 ft² | 20% Chrysotile |
| Lead-Based Paint | | | | |
| 19 | Red Concrete Floor | 1960's Addition – Shop Floor | 10 ft² | N/A |

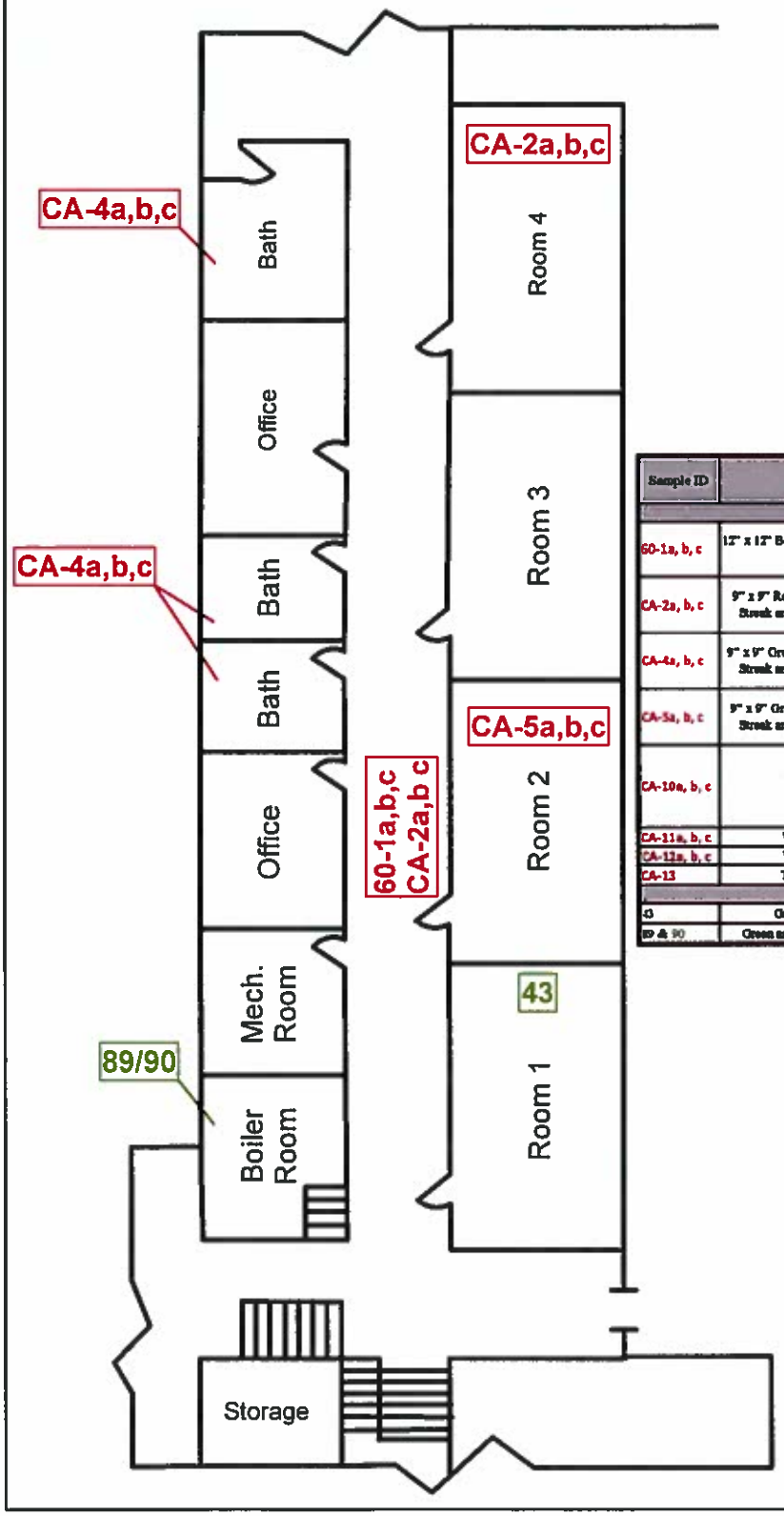
Figure 3
Asbestos-Containing Materials and Lead-Based Paint Location Map
(1960s Addition)
**LaGrange School Site**
**LaGrange, Missouri**

Seagull Environmental Technologies, Inc.

Source: Esri World Imagery, 2014

Date: December 2016

Project No: MOESA077ABCA




| Sample ID | Material | Location | Estimated Quantity | Asbestos Result (%) |
|---|---|---|---|---|
| Asbestos-Containing Material | | | | |
| 60-1a, b, c | 12" x 12" Beige Floor Tile and Mastic (on concrete) | 1960's Addition – Loading Dock Entry, Classrooms and Central Addition Hallway | 4,270 ft² | Tile – None Detected<br>Mastic – 4% Chrysotile |
| CA-2a, b, c | 9" x 9" Red Floor Tile with White Streak and Mastic (on concrete) | Central Addition – Partial Hallway and Room 4 | 1,200 ft² | Tile – 5% Chrysotile<br>Black Mastic – 5% Chrysotile<br>Tan Mastic – None Detected |
| CA-4a, b, c | 9" x 9" Green Floor Tile with White Streak and Mastic (on concrete) | Central Addition – Bathrooms and Original Structure Kitchen | 1,250 ft² | Tile – 5% Chrysotile<br>Black Mastic 5% Chrysotile<br>Tan Mastic – None Detected |
| CA-5a, b, c | 9" x 9" Grey Floor Tile with White Streak and Mastic (on concrete) | Central Addition – Class Room 2 | 1,000 ft² | Tile – 4% Chrysotile<br>Black Mastic – 5% Chrysotile<br>Tan Mastic – None Detected |
| CA-10a, b, c | Roof System | Original/Central Additional Roof | 26,800 ft² | Black Roofing – 20% Chrysotile<br>Black Fibrous Material – None Detected<br>Black Bituminous Material – None Detected |
| CA-11a, b, c | Window Caulk | Exterior | 630 LF | 2% Chrysotile |
| CA-12a, b, c | Window Glaze | Exterior | 2,200 LF | 2% Chrysotile |
| CA-13 | Transite Soffits | Exterior | 1,125 ft² | 20% Chrysotile |
| Lead-Based Paint | | | | |
| 43 | Green Chalkboard | Central Addition - Room 2 | 64 ft² | N/A |
| 89 & 90 | Green and Grey Concrete Wall | Central Addition - Boiler Room | 600 ft² | N/A |

**Drawing is not to scale.**

Figure 4
Asbestos-Containing Materials and Lead-Based Paint Location Map
(Central Addition)
**LaGrange School Site**
**LaGrange, Missouri**

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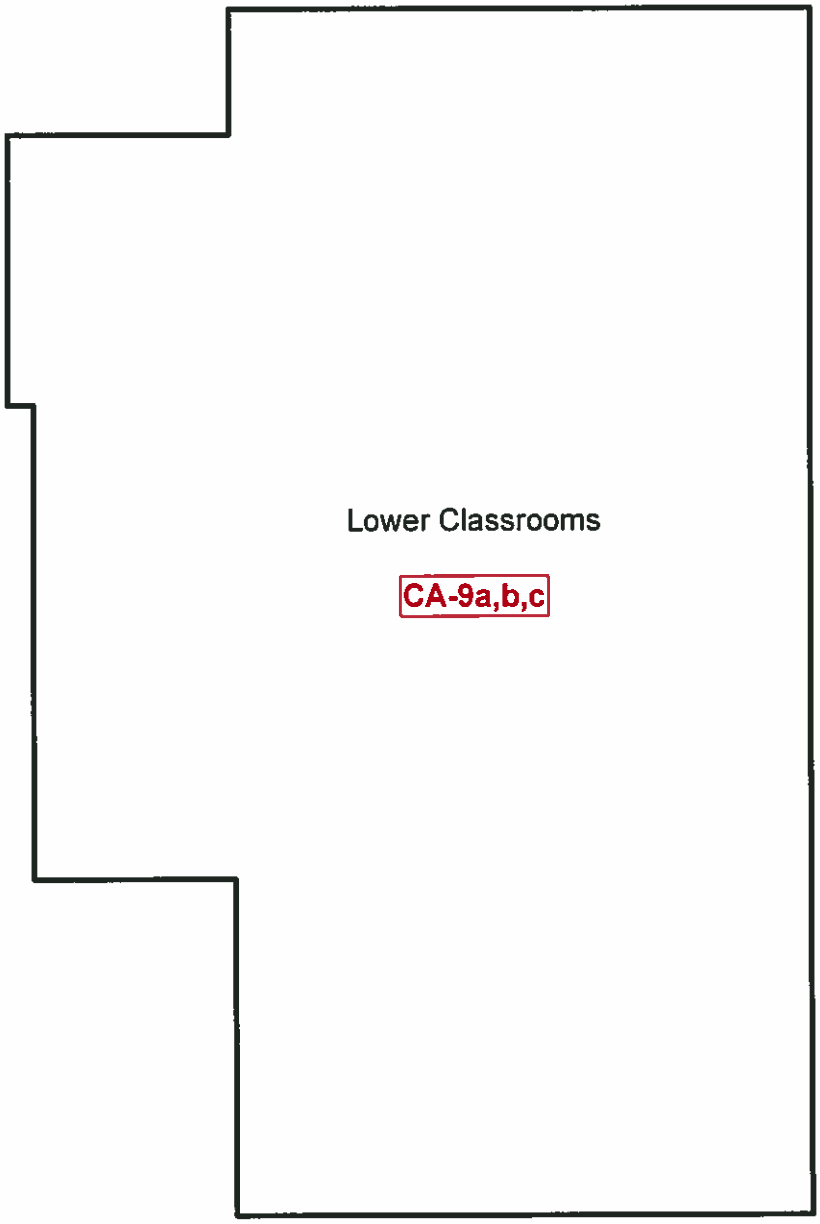
Seagull Environmental Technologies, Inc.

Source: Esri World Imagery, 2014

Date: December 2016

Project No: MOESA077ABCA




**Drawing is not to scale.**

| Sample ID | Material | Location | Estimated Quantity | Asbestos Result (%) |
|---|---|---|---|---|
| | | | | |
| CA-9a, b, c | 9" x 9" Grey Floor Tile and Mastic (on concrete) | Southeast Addition – Lower and Upper Class Rooms | 6,260 $ft^2$ | Tile – 5% Chrysotile<br>Black Mastic – 5% Chrysotile<br>Tan Mastic – None Detected |
| CA-11a, b, c | Window Caulk | Exterior | 650 LF | 2% Chrysotile |
| CA-12a, b, c | Window Glaze | Exterior | 2,200 LF | 2% Chrysotile |

Figure 5
Asbestos-Containing Materials and Lead-Based Paint Location Map
(Southeast Addition: First Floor)
**LaGrange School Site**
**LaGrange, Missouri**

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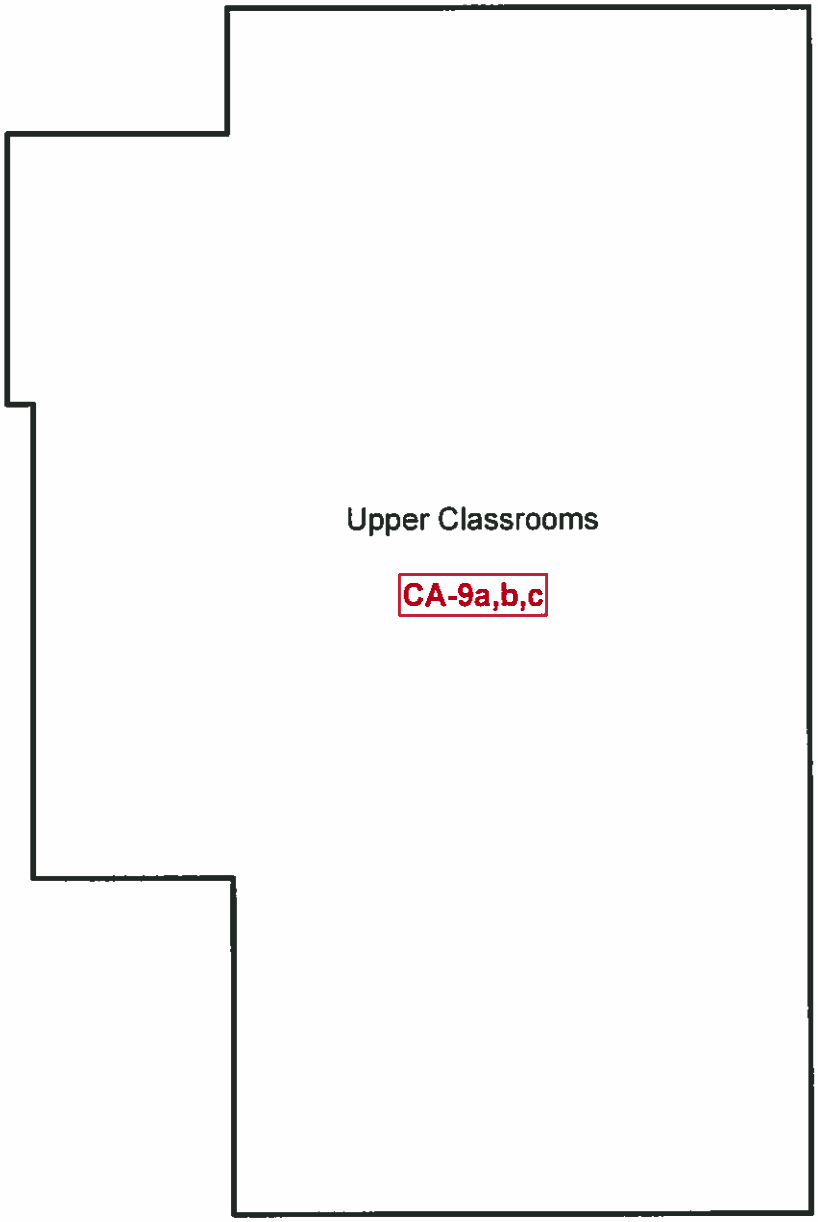
Seagull Environmental Technologies, Inc.

Source: Esri World Imagery, 2014

Date: December 2016

Project No: MOESA077ABCA




**Drawing is not to scale.**

| Sample ID | Material | Location | Estimated Quantity | Asbestos Result (%) |
|---|---|---|---|---|
| CA-9a, b, c | 9" x 9" Grey Floor Tile and Mastic (on concrete) | Southeast Addition – Lower and Upper Class Rooms | 6,260 $ft^2$ | Tile – 5% Chrysotile<br>Black Mastic – 5% Chrysotile<br>Tan Mastic – None Detected |
| CA-10a, b, c | Roof System | Original/Central Additional Roof | 26,800 $ft^2$ | Black Roofing – 20% Chrysotile<br>Black Fibrous Material – None Detected<br>Black Bituminous Material – None Detected |
| CA-11a, b, c | Window Caulk | Exterior | 650 LF | 2% Chrysotile |
| CA-12a, b, c | Window Glaze | Exterior | 2,200 LF | 2% Chrysotile |
| CA-13 | Transite Soffits | Exterior | 1,125 $ft^2$ | 20% Chrysotile |

Figure 6
Asbestos-Containing Materials and Lead-Based Paint Location Map
(Southeast Addition: Second Floor)
**LaGrange School Site**
**LaGrange, Missouri**

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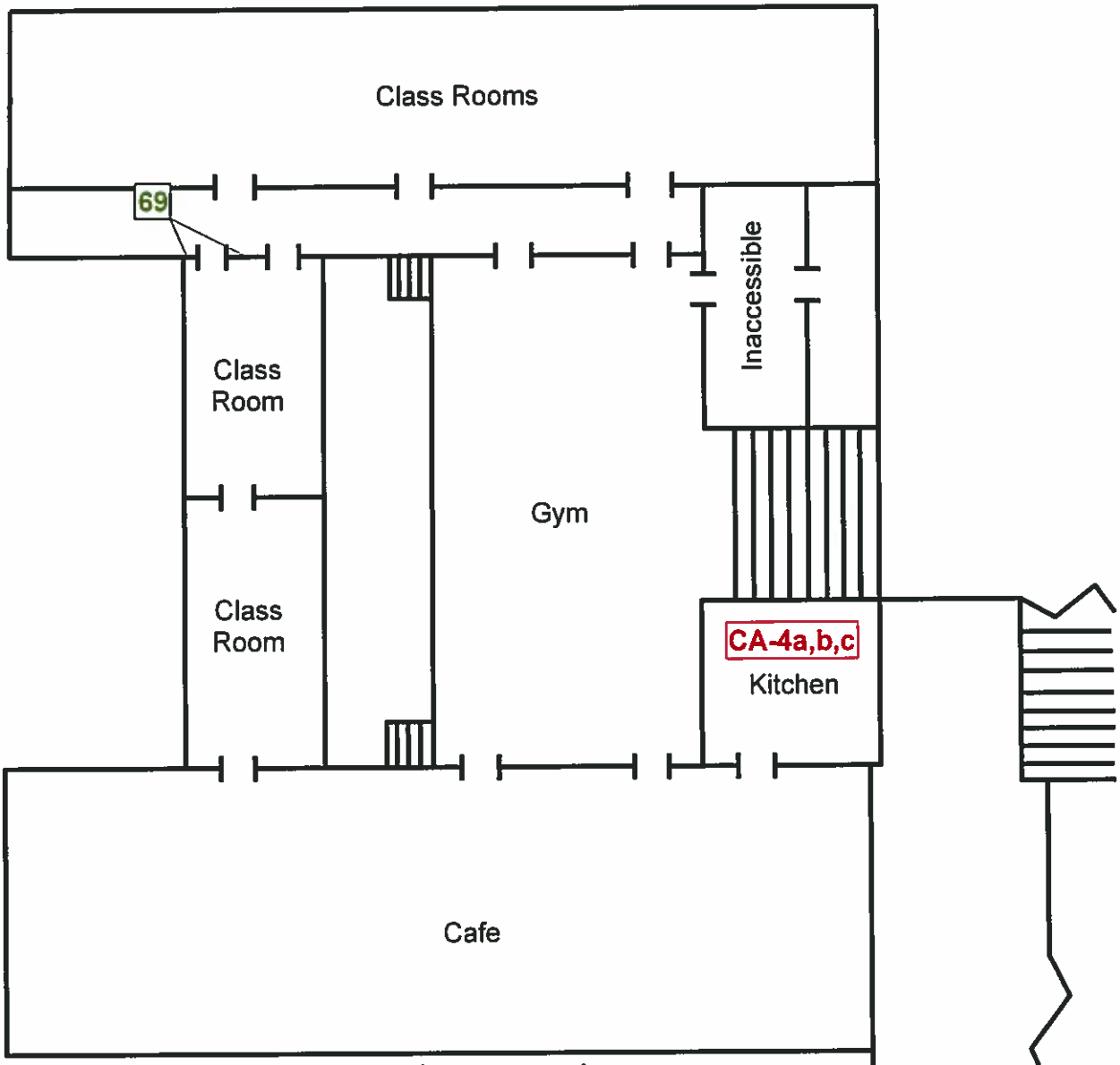
Seagull Environmental Technologies, Inc.

Source: Esri World Imagery, 2014

Date: December 2016

Project No: MOESA077ABCA




**Drawing is not to scale.**

| Sample ID | Material | Location | Estimated Quantity | Asbestos Result (%) |
|---|---|---|---|---|
| Asbestos-Containing Material | | | | |
| CA-4a, b, c | 9" x 9" Green Floor Tile with White Streak and Mastic (on concrete) | Central Addition – Bathrooms and Original Structure Kitchen | 1,250 $ft^2$ | Tile – 5% Chrysotile<br>Black Mastic – 5% Chrysotile<br>Tan Mastic – None Detected |
| CA-10a, b, c | Roof System | Original/Central Additional Roof | 26,800 $ft^2$ | Black Roofing – 20% Chrysotile<br>Black Fibrous Material – None Detected<br>Black Bituminous Material – None Detected |
| CA-11a, b, c | Window Caulk | Exterior | 650 LF | 2% Chrysotile |
| CA-12a, b, c | Window Glaze | Exterior | 2,200 LF | 2% Chrysotile |
| CA-13 | Transite Soffits | Exterior | 1,125 $ft^2$ | 20% Chrysotile |
| Lead/Based Paint | | | | |
| 69 | Teal Plaster Wall | Original Addition - Classroom 12 (North Wall) | 96 $ft^2$ | N/A |

Figure 7
Asbestos-Containing Materials and Lead-Based Paint Location Map
(Original Structure)
**LaGrange School Site**
**LaGrange, Missouri**

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Seagull Environmental Technologies, Inc.

Source: Esri World Imagery, 2014

Date: December 2016

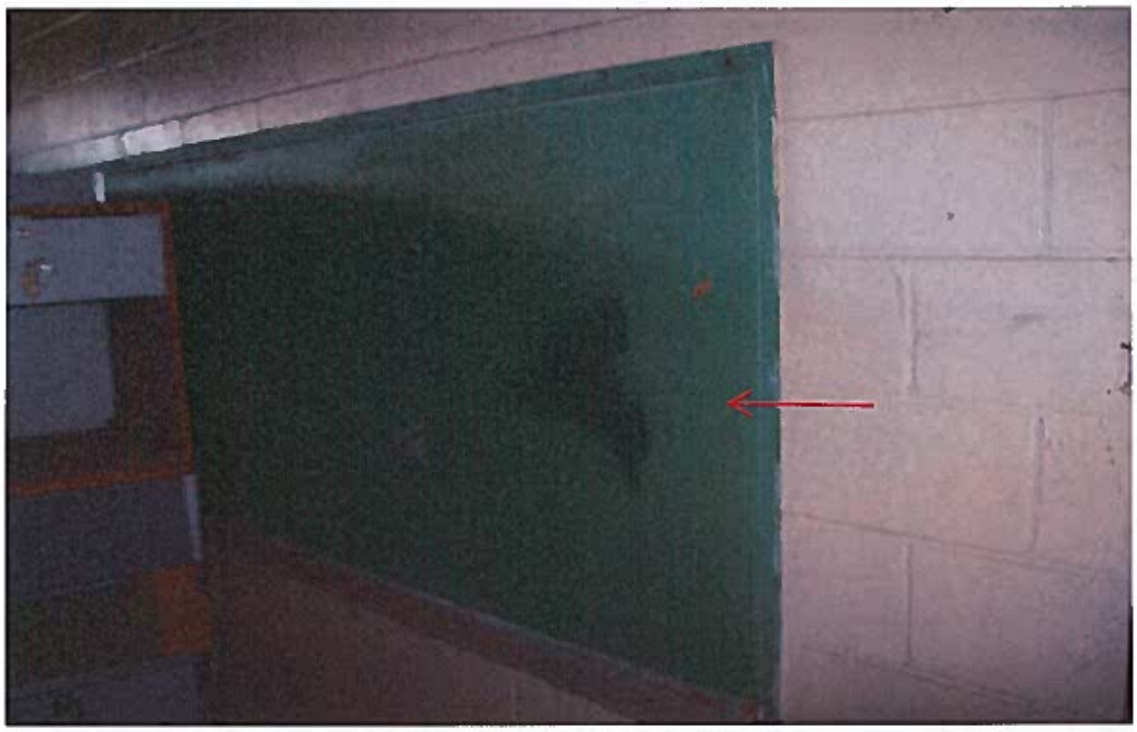
Project No: MOESA077ABCA

# APPENDIX B

# SITE PHOTOGRAPHS

Original Structure, Room 12, North Wall, Teal Plaster Wall (Lead Sample 69)

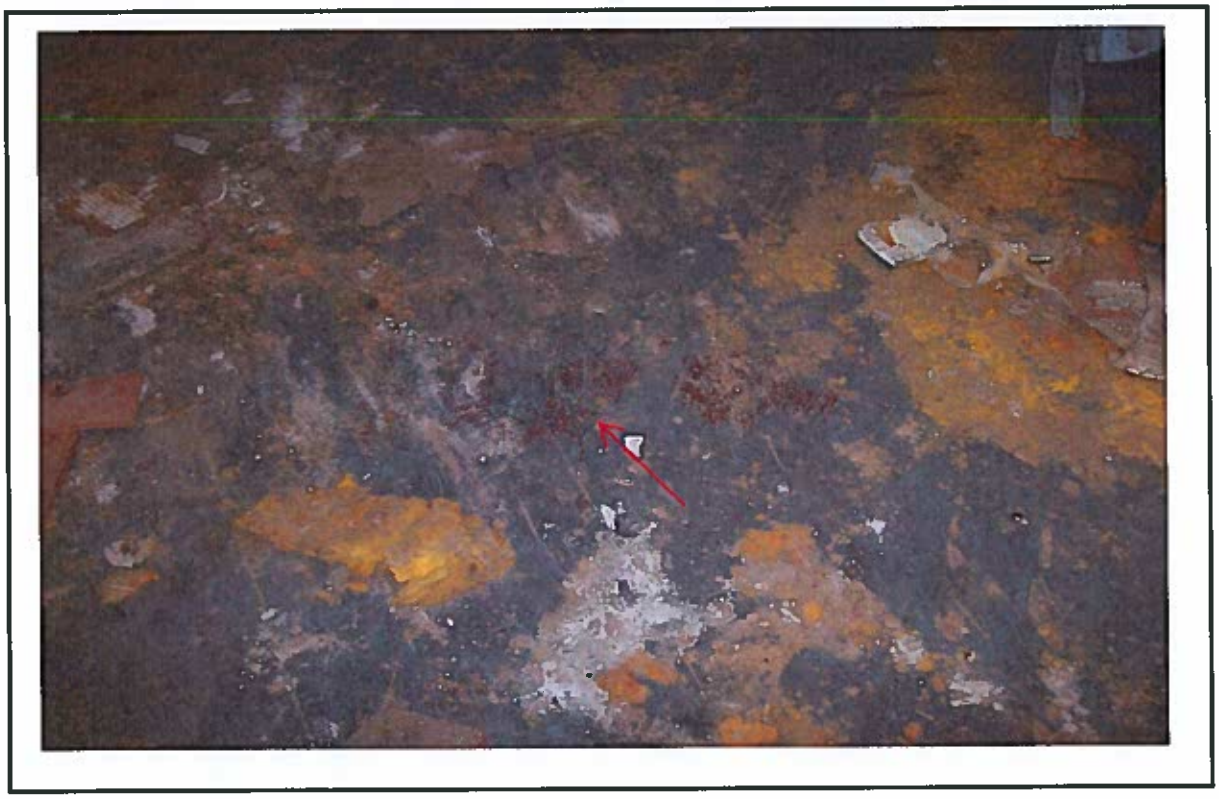
Original Structure, Room 12, North Wall, Teal Plaster Wall (Lead Sample 69)



Center Addition, Room 2, Green Chalkboard (Lead Sample 43)

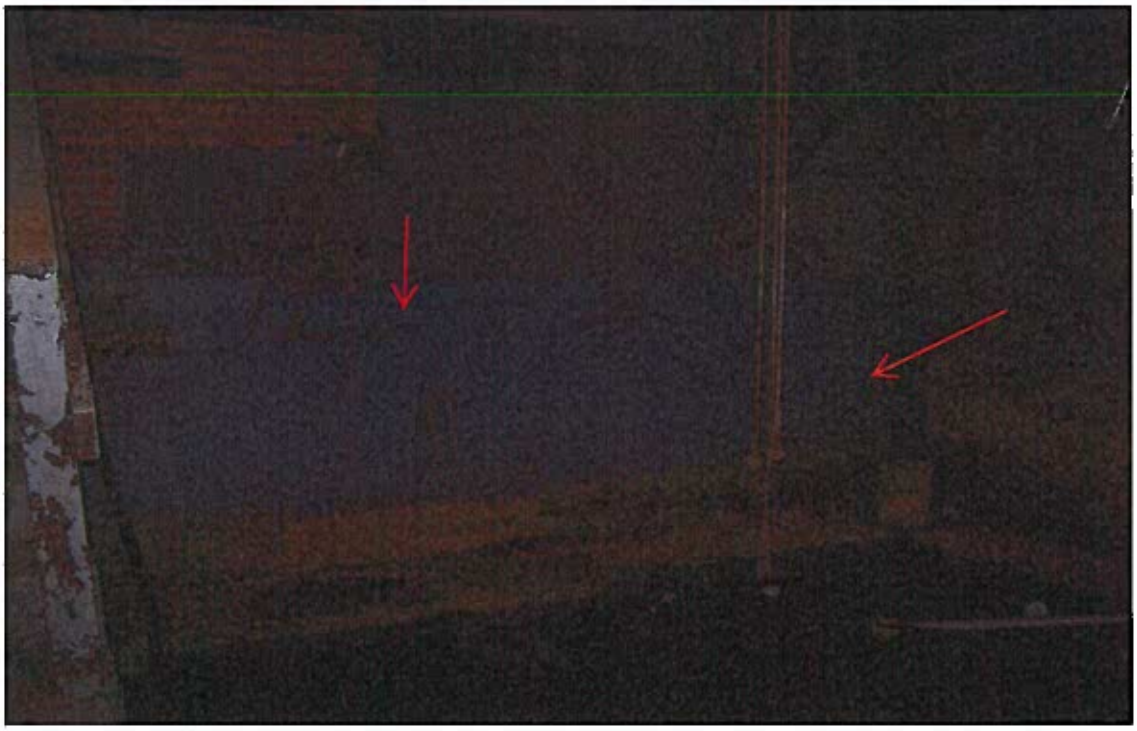
60s Addition, Shop Room, Red Concrete Floor (Lead Sample 19)

60s Addition, Shop Room, Red Concrete Floor (Lead Sample 19)



60s Addition, Shop Room, Red Concrete Floor (Lead Sample 19)

Original Structure, Boiler Room, Grey and Green Concrete Wall



Original Structure, Boiler Room, Grey and Green Concrete Wall

Original Structure, Boiler Room, Grey and Green Concrete Wall

Original Structure, Boiler Room, Grey and Green Concrete Wall