



Douglas A. Ducey
Governor

ARIZONA DEPARTMENT OF ENVIRONMENTAL QUALITY



Misael Cabrera
Director

Via U.S. Mail

February 24, 2020
VRP 20-117

Lincoln Industrial, L.L.C.
Attention: Mr. Michael Cowley
1242 East Jackson Street
Phoenix, Arizona 85034

Re: Review of Non-Time-Critical Removal Action Work Plan
Closed Loop 27th Avenue Warehouse
624 South 25th Avenue & 625 South 27th Avenue
Phoenix, Arizona 85009
VRP Site Code: 513248-00

Dear Mr. Cowley:

The Arizona Department of Environmental Quality (ADEQ), Voluntary Remediation Program (VRP) has reviewed the document titled *Non-Time-Critical Removal Action Work Plan* (the Work Plan) prepared by Wood Environment & Infrastructure Solutions, Inc. and dated January 2020. The Work Plan proposes to remove all intact, unprocessed Cathode Ray Tube (CRT) material from the site and transport as Resource Conservation and Recovery Act hazardous waste to U.S. Ecology Nevada Landfill. The Work Plan also provides a general outline for removal of processed CRT material and decontamination of the building.

The VRP recognizes all the phases of work outlined in Table 2 have not been fully developed in this Work Plan, therefore the VRP approves only Phase 1 and 2 activities with the following comments:

1. Application for an Environmental Protection Agency ID number can be made via ADEQ's "my DEQ" online portal found at <http://www.azdeq.gov/node/5308.3>.
2. The Health and Safety Plan described in Section 2.1.1 must propose actions that will be taken if staff are exposed to lead at concentrations above the action level or permissible exposure limit.
3. Section 5.0 states a public notice, included in Appendix C, will be published in a local newspaper. This notice is unnecessary at this time. An on-site sign is all that is required for this portion of the activities at the site. Please note the language for the on-site sign must be approved by the VRP prior to posting. The sign should be visible during all activities at the site.
4. Please include an updated project schedule as found in Appendix B with the monthly progress reports described in Section 6.1.

Recommendations

The following recommendations apply only to the proposed Phase 3 and 4 activities outlined in Table 2. The VRP expects Lincoln Industrial, L.L.C. to submit fully developed work plans for those phases of work for VRP review and approval prior to initiation of those activities.

Main Office

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1. The Work Plan suggests all processed CRT material will be removed and disposed off-site as a non-hazardous waste after on-site stabilization (designated as Phase 3 in Table 2), once an on-site stabilization method is finalized and deemed cost-effective. Please note, the on-site stabilization pilot study documented in *Draft Final Report for Onsite Field Study: ECOBOND Application for Lead-Containing CRT Glass Material* (the Study) prepared by Metals Treatment Technologies, LLC and dated June 2019 was not approved by ADEQ. As stated in the VRP comment letter dated September 30, 2019, the Study did not assess or evaluate post-stabilization effectiveness of the ECOBOND application over an extended time period. The VRP requires evidence that ECOBOND treated CRT will not leach lead when exposed to the aggressive environment of a municipal landfill in which a variety of organic acids are generated. Furthermore, Lincoln Industrial, L.L.C. has not provided evidence of peer reviewed research demonstrating this technology was successfully employed at other similar CRT glass sites. Therefore, unless, or, until, it is demonstrated that ECOBOND can maintain long term stability of lead in CRT glass in an environment comparable to a municipal landfill, on-site stabilization using this product to facilitate removal and disposal of the CRT glass should not be considered.
2. A work plan for Phase 4 must:
 - a. Propose a detailed plan for achieving the Occupational Safety and Health Administration action levels of 30 micrograms per cubic meter ($\mu\text{g}/\text{m}^3$) and 25 $\mu\text{g}/\text{m}^3$ in air for lead and respirable crystalline silica, respectively, as described in Sections 1.5.1 and 1.5.2.
 - b. Clearly state data quality objectives and include a sampling design with the number and location of samples to be collected. Please include a figure depicting sampling locations. It is further recommended Lincoln Industrial, L.L.C. collect wipe samples from floors, walls, windowsills, ceiling, and other smooth surfaces.
 - c. Describe the activities that will be conducted to generate data that are requisite quality to enable a determination the facility was decontaminated/closed to meet the requirements of 40 Code of Federal Regulations (C.F.R.) § § 264.111 and 114, which provide “Closure Performance Standards”, and requirements for “Disposal or Decontamination of Equipment, Structures and Soil”, respectively, pertaining to treatment, storage, and disposal facilities.
 - d. Include cadmium and barium on Table 3 as their presence was observed during clean up at another facility at which Closed Loop had stored CRTs and CRT glass.
3. In Section 3.8, the fourth and fifth bullet points must be amended to state a hazardous waste determination will be conducted to determine proper management protocol of accumulated wash and rinse water. The plastic sheeting and associated pad materials must be considered solid wastes for which a hazardous waste determination must also be made. If they are determined to be hazardous, they should be managed as hazardous debris pursuant to 40 C.F.R. § 268.45.

How to Respond

A response to this letter is not necessary at this time. The VRP expects Lincoln Industrial, L.L.C. to submit fully developed work plans for Phases 3 and 4 for VRP review and approval prior to initiation of those activities.

If you have any questions or comments, please feel free to contact me at 602-771-4847, toll-free at 1-800-234-5677, or osuch.nichole@azdeq.gov.

Sincerely,



Nichole Osuch, PMP
Project Manager
Voluntary Remediation Program

cc: Mr. Todd Kerr, Perkins Coie, L.L.P. – via email
Mr. Derek Petersen, Perkins Coie, L.L.P. – via email

January 9, 2020

Todd R. Kerr
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F. +1.602.648.7055

BY EMAIL

Arizona Department of Environmental Quality
Voluntary Remediation Program
Attn: Nichole Osuch
1110 W. Washington St.
Phoenix, AZ 85007
osuch.nichole@azdeq.gov

**Re: Closed Loop 27th Avenue Warehouse
VRP Site Code: 513248-00**

Dear Nichole:

In response to your December 9, 2019 letter, Lincoln Industrial, LLC (the “Property Owner”) submits the accompanying Work Plan for the remediation of cathode ray tube (“CRT”) materials in the warehouse located at 625 South 27th Avenue, Phoenix, Arizona (the “27th Avenue Warehouse”). As requested, a completed Voluntary Remediation Program Work Plan Checklist accompanies the Work Plan.

Our consultants are still preparing one bound hard copy, one unbound hard copy, and one compact disc of the Work Plan. We hope to be able to deliver these additional copies to you shortly.

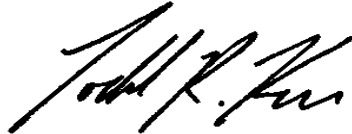
Like the Work Plan submitted by Berendo/Harrison for the 59th Ave. Warehouse, the Work Plan for the 27th Ave. Warehouse will proceed in phases due to the varied nature of CRT materials at the site and the need to proceed as efficiently and cost effectively as possible. The Property Owner is ready to begin Phase 1 in preparation for Phase 2 efforts. Supplemental information regarding Phase 3 will be provided later, as required.

These materials are submitted without prejudice to, and should not be deemed a waiver of, any of the positions taken by the Property Owner in its letter to the ADEQ VRP Program dated August 27, 2019, or in any other prior correspondence with ADEQ and/or VRP. The Property Owner expressly reserves all rights, claims, and defenses relating to the 27th Avenue Warehouse and related matters.

Arizona Department of Environmental Quality
January 9, 2020
Page 2

If you have any questions or need additional information, please let me know. As always, we are willing to meet with you and your team to discuss next steps, answer any questions you might have, or explore how this process might be further streamlined for added cost savings.

Sincerely,

A handwritten signature in black ink, appearing to read "Todd R. Kerr". The signature is written in a cursive, flowing style.

Todd R. Kerr

TRK:smc
Attachment

Copy: P. Derek Petersen

Voluntary Remediation Program Work Plan Checklist

Complete Shaded Areas and Submit with Work Plan

Site Name: Closed Loop 27th Avenue Warehouse VRP Site Code: 513248-00

Volunteer/Applicant Name: Lincoln Industrial, LLC

Volunteer/Applicant Email Address and Phone: _____

Authorized Agent (AA)/Consulting Company: Perkins Coie LLP - Todd Kerr

AA/Consultant Email Address and Phone: tkerr@perkinscoie.com, 602-351-8000

Reference	Summary of Statutory Requirement	Page(s) Where Addressed in Work Plan	VRP Use Only
	(please review all statutes in their entirety to ensure compliance)	(write N/A if not applicable)	
§49-175A.1	Summary of existing site characterization and assessment information; information regarding any remediation previously conducted; copies of referenced reports not previously submitted;	Section 1.1, Pg 1, Section 1.2 & Section 1.3 Pg 2	<input type="checkbox"/>
§49-175A.2	If the site has not been characterized, a plan to conduct site characterization and a schedule for completion.	Section 2.4, Pg 6	<input type="checkbox"/>
§49-175A.3.a	If site characterization is completed, a description of how the remediation will comply with §49-175B ("Work Plans") and how the completion of remediation will be verified. A schedule for completion must be included.	N/A	<input type="checkbox"/>
§49-175A.3.b	If site characterization is completed, the work plan may provide for the remediation to be conducted in phases or tasks. A schedule for completion must be included.	N/A	<input type="checkbox"/>
§49-175A.4	Schedule for submission of progress reports.	Appendix B	<input type="checkbox"/>
§49-175A.5	A proposal for community involvement as prescribed by §49-176 ("Community Involvement Requirements")	Section 5.0, Pg 10	<input type="checkbox"/>
§49-175A.6	If known, a list of institutional or engineering controls necessary during remediation and after completion of the proposed remediation to control exposure to contaminants.	N/A	<input type="checkbox"/>
§49-175A.7	A proposal for monitoring during remediation and after the remediation if necessary to verify whether the approved remediation levels or controls have been attained and will be maintained.	Section 2.4, Pg 6	<input type="checkbox"/>
§49-175A.8	A list of any permits or legal requirements known to apply to the work or already performed by the applicant.	Section 2.1.2 Pg 4	<input type="checkbox"/>
§49-175A.9	If requested by the department, information regarding the financial capability of the applicant to conduct the work identified in the application. <i>(IF APPLICABLE)</i>	N/A	<input type="checkbox"/>

Voluntary Remediation Program Work Plan Checklist

Complete Shaded Areas and Submit with Work Plan

Site Name: Closed Loop 27th Avenue Warehouse VRP Site Code: 513248-00

Reference	Summary of Statutory Requirement	Page(s) Where Addressed in Work Plan	VRP Use Only
	<small>(please review all statutes in their entirety to ensure compliance)</small>	<small>(write N/A if not applicable)</small>	
§49-175B	Remediation levels or controls for remediation conducted pursuant to this article shall be established in accordance with rules adopted pursuant to §49-282.06 unless one or more of the following applies: see §49-175B.1 through §49-175B.4, below.	Site-specific RAOs established in Section 1.4 & 1.5	<input type="checkbox"/>
§49-175B.1	The applicant demonstrates that remediation levels, institutional controls, or engineering controls for remediation of contaminated soil comply with §49-152 and the rules adopted.	N/A	<input type="checkbox"/>
§49-175B.2	The applicant demonstrates that remediation levels, institutional controls, or engineering controls for remediation of landfills or other facilities that contain materials that are not subject to §49-152 (i.e.: asbestos) do not exceed a cumulative excess lifetime cancer risk between 1×10^{-4} to 1×10^{-6} , and a hazard index of no greater than 1.	N/A	<input type="checkbox"/>
§49-175B.3	The applicant demonstrates that on achieving remediation levels or controls for a source or potential source of contamination to a navigable water, the source of contamination will not cause or contribute to an exceedance of surface water quality standards, or if a permit is required pursuant to 33 United States Code §1342 for any discharge from the source, that any discharges from the source will comply with the permit.	N/A	<input type="checkbox"/>
§49-175B.4	The applicant demonstrates that, on achieving remediation levels or controls for a source of contamination to an aquifer, the source will not cause or contribute to an exceedance of aquifer water quality standards (AWQS) beyond the boundary of the facility where the source is located.	N/A	<input type="checkbox"/>
§49-175C	The VRP may waive any work plan requirement under this section that it determines to be unnecessary to make any of the determinations required under §49-177 . <i>If any waivers are requested in the Work Plan or have been previously requested and approved by the VRP, cite them in the Work Plan, including a citation of the statute for which the waiver applies.</i>	N/A	<input type="checkbox"/>

Voluntary Remediation Program Work Plan Checklist

Complete Shaded Areas and Submit with Work Plan

Site Name: Closed Loop 27th Avenue Warehouse VRP Site Code: 513248-00

To support the prerequisites established by A.R.S. §49-177 and §49-180, the VRP expects certain documentation to accompany a Work Plan. The following provides a list of attachments/exhibits which are recommended for submittal with a Work Plan to provide the information required by the statutes.

Work Plan Information	Title of Figure/Table/Attachment/Exhibit Where Requested Information is Cited <small>(write N/A if not applicable)</small>	Figure/Table/ Attachment or Report Page Number <small>(write N/A if not applicable)</small>	VRP Use Only
Site Location Map <i>(topographic or aerial)</i>	Vicinity Map	Figure 1	<input type="checkbox"/>
Site Map <i>(to scale)</i>	Site Map	Figure 2	<input type="checkbox"/>
Historical Sampling Data Table	N/A	N/A	<input type="checkbox"/>
Historical Sample Location Map <i>(to scale)</i>	N/A	N/A	<input type="checkbox"/>
Proposed Sample Location Map <i>(to scale)</i>	N/A	N/A	<input type="checkbox"/>
Sampling and Analysis Plan <i>(includes Field Sampling Plan & Quality Assurance Plan)</i>	Field Sampling Plan, Quality Assurance and Quality Control	Section 3.0, Pgs 6 - 10	<input type="checkbox"/>
Proposed Remediation System Location Map	Cathode Ray Tube Exterior Storage Layout	Figure 4	<input type="checkbox"/>
Proposed Remediation System Layout <i>(Design Drawings)</i>	Haul Route	Figure 5	<input type="checkbox"/>
Schedule for Implementation of Project Activities* <i>(Gantt Style Chart)</i>	Project Schedule	Appendix B	<input type="checkbox"/>
<small>*Project Activities are defined in A.R.S. §§49-175A.2 through 49-175A.4, and 49-176A.2 (Community Involvement).</small>			
Proposed Language for Public Notification of Remediation <i>(i.e.: example signage)</i>	NOTICE OF AVAILABILITY AND 30-DAY PUBLIC COMMENT PERIOD	Appendix C	<input type="checkbox"/>
Plan for Investigative Derived Waste (IDW)	Investigation-Derived Waste Disposal	Section 3.9, Pg 10	<input type="checkbox"/>
Evaluation of Remedial Alternatives <i>(i.e: for Feasibility Study Work Plan)</i>	N/A	N/A	<input type="checkbox"/>

DOES THE WORK PLAN PROPOSE IMPLEMENTING SITE-SPECIFIC REMEDIATION LEVELS?

Yes No

DOES THE WORK PLAN PROPOSE EVALUATION OF BACKGROUND LEVELS?

Yes No

NOTE: When reports are submitted which document any type of sampling activity, the submittal of Electronic Data per ADEQ's [Groundwater Data Submittal Guidance \(V3.4\)](#) is strongly recommended.



**NON-TIME-CRITICAL REMOVAL ACTION WORK PLAN
CLOSED LOOP CATHODE RAY TUBE MATERIAL
LOCATED AT THE 27TH AVENUE WAREHOUSE
625 SOUTH 27TH AVENUE
PHOENIX, ARIZONA 85009
VRP SITE CODE: 513248-00**

**Prepared for:
Lincoln Industrial, L.L.C.
1242 East Jackson Street
Phoenix, Arizona 85034**

**Submitted by:
Wood Environment & Infrastructure Solutions, Inc.
4600 East Washington Street, Suite 600
Phoenix, Arizona 85034**

January 2020

Project No. 14-2018-2031



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LIST OF ACRONYMS AND ABBREVIATIONS

µg	microgram
µg/ft ²	micrograms per square foot
µg/m ³	micrograms per cubic meter
µm	micrometer
27th Avenue Warehouse	Suite 115 of the Warehouse located at 625 South 27th Avenue in Phoenix, Arizona
AAS	Atomic Absorption Spectrophotometer
ADEQ	Arizona Department of Environmental Quality
AIHA	American Industrial Hygiene Association
ALM	ALM Services, LLC
A.R.S.	Arizona Revised Statutes
ASTM	American Society for Testing and Materials
CFR	Code of Federal Regulations
Closed Loop	Closed Loop Recovery and Refining
COC	Chain-of-Custody
CRT	cathode ray tube
ft	foot, feet
ft ²	square feet
HASP	Health and Safety Plan
HEPA	High Efficiency Particulate Air Filter
HUD	Department for Housing and Urban Development
IDW	investigation-derived waste
LDR	Land Disposal Restriction
Lincoln	Lincoln Industrial, LLC
mg/L	milligrams per liter
MT2	Metals Treatment Technologies, LLC
NIOSH	National Institute of Occupational Safety and Health
NLLAP	National Lead Laboratory Accreditation Program
NMAM	National Institute of Occupational Safety and Health Manual of Analytical Methods
OSHA	Occupational Safety and Health Administration
PEL	Permissible Exposure Limit
PPE	personal protective equipment
PPI	Parallel Particulate Impactor
QA	quality assurance
QC	quality control
RAO	removal action objective
RCRA	Resource Conservation Recovery Act
TWA	time weighted average
USEPA	U.S. Environmental Protection Agency
VRP	Voluntary Remediation Program
Wood	Wood Environment & Infrastructure Solutions, Inc.
Work Plan	Non-Time-Critical Removal Action Work Plan
yd ³	cubic yard

1.0 INTRODUCTION

The purpose of this Non-Time-Critical Removal Action Work Plan (Work Plan) is to describe the approach for the removal and disposal of cathode ray tube (CRT) material located within Suite 115 of the warehouse located at 625 South 27th Avenue in Phoenix, Arizona (27th Avenue Warehouse), formerly leased by Closed Loop Refining and Recovery, Inc. (Closed Loop) (**Figure 1** & **Figure 2**).

Regulatory oversight for the scope of work presented by this Work Plan is being provided by the Arizona Department of Environmental Quality (ADEQ) Voluntary Remediation Program (VRP). The 27th Avenue Warehouse was accepted in the ADEQ VRP Program on May 23, 2019. The VRP will be responsible for regulatory review and approval of project documents and issuance of a Letter of Administrative Closure upon completion of the scope of work and request by the Property Owners, Lincoln Industrial, LLC (Lincoln). The VRP Site Code is 513248-00. This Work Plan has been prepared in general accordance with Arizona Revised Statutes (A.R.S.) §49-175.

The Property Owner plans to use different removal methods depending on the nature of the CRT material. All intact, unprocessed CRT material will be removed and transported as a RCRA hazardous waste to U.S. Ecology Nevada Landfill in Beatty, Nevada (designated as Phase 2 in subsequent sections of the Work Plan). All processed CRT material will be removed and disposed off-site as a non-hazardous waste after on-site stabilization (designated as Phase 3 in subsequent sections of the Work Plan). This Work Plan will be supplemented with further details once the Phase 3 on-site stabilization method is finalized and deemed cost-effective. If on-site stabilization is deemed not cost-effective, all processed CRT material will be removed and transported under the method used in Phase 2.

1.1 Background

The 27th Avenue Warehouse was leased and operated by Closed Loop, a former processor of CRTs used in television and computer monitors. The CRTs were processed and the resulting material (i.e., glass and scrap metal components) were boxed at the 59th Avenue Warehouse located at 435 South 59th Avenue in Phoenix, Arizona and transported to the 27th Avenue Warehouse for storage. Additionally, Closed Loop stored unprocessed CRT material at the 27th Avenue Warehouse. CRT material is currently stored in gaylord boxes inside the warehouse. ADEQ has requested that the CRT material be removed from the 27th Avenue Warehouse and properly disposed of. Due to the nature of the CRT material, ADEQ assumes that the CRT material would in its current state be considered a Resource Conservation Recovery Act (RCRA) hazardous waste if disposed off-site.

1.2 Initial Site Characterization and Lead Stabilization Testing

An initial inventory assessment was conducted in January 2019 to refine mass estimates of CRT material at the 27th Avenue Warehouse. As a part of inventory assessments, an aerial drone survey was conducted to estimate the volume of CRT material staged within the 27th Avenue Warehouse. The Survey Report is included in **Appendix A**. As shown on **Figure 3**, the drone survey resulted in the volume calculations for 21 individual areas of boxed CRT material to determine a total volume estimate of approximately 11,850.85 cubic yards (yd³) of CRT material. Of the 21 individual calculated areas, 14 of the areas were determined to contain primarily processed CRT material of an estimated volume of 9,582.38 yd³. The remaining seven areas were determined to contain primary unprocessed CRT material of an estimated volume of 2,268.47 yd³.

The mass of the material was determined by surveying an average of visible gaylord boxes marked with weights by Closed Loop or the shipment weight indicated on the packaging. Based on this survey, an

estimated 1,282,000 pounds (641 tons) unprocessed CRT material and an estimated 24,372,000 (12,186 tons) of processed CRT material is present at the 27th Avenue Warehouse.

Sampling and analysis of the CRT material originating from the interior of the 59th Avenue Warehouse revealed that concentrations of leachable lead range from 20.6 to 478 milligrams per liter (mg/L) (Metals Treatment Technologies, LLC [MT2], 2019). The processed CRT material inside the 27th Avenue Warehouse is assumed to be consistent with the materials found within the 59th Avenue Warehouse.

In April 2019 through May 2019, an on-site stabilization pilot study of a proprietary stabilization reagent, ECOBOND®, was conducted at the 59th Avenue Warehouse to evaluate the feasibility of reducing leachable lead in the CRT material. As documented in the “Draft Final Report Onsite Field Study: ECOBOND® application for lead-containing CRT glass materials” (MT2, 2019), the stabilization process was demonstrated to effectively stabilize CRT glass materials to below the Land Disposal Restriction Universal Treatment Standard of 0.75 mg/L for lead.

1.3 Initial Dust Remediation

Initial dust remediation was conducted in open spaces of the 27th Avenue Warehouse around the boxed CRT material in December 2019. ALM Services, LLC (ALM) was retained by the Property Owner to clean, treat and test the floors and columns in the approximately 105,000 square feet (ft²) of open space surrounding the boxed CRT material. Working within a negative pressure environment and with personal protective equipment (PPE), ALM applied Chemsafe 800, a liquid concentrate trisodium phosphate, to the subject area and wiped floors, columns and walls from a height of four feet (ft) from the floor. The initial area of dust remediation is depicted on **Figure 4**. Following the initial dust remediation in the warehouse space located to the west and south of the CRT material, a partition wall will be installed around the perimeter of the boxed CRT material to isolate the area containing CRT material in January 2020.

1.4 Removal Action Objectives

The following Removal Action Objectives (RAOs) are identified for the project:

- Prevent human exposure to lead in the CRT material that would pose an unacceptable health risk under current or future potential land uses.
- Remove CRT material from the 27th Avenue Warehouse to render the property available for future commercial leasing opportunities.

1.5 Chemical-Specific Removal Action Goals

The property, including the boundaries of the 27th Avenue Warehouse, is currently used for commercial purposes. No other future uses of the 27th Avenue Warehouse has been identified and use is not anticipated to change.

Table 1 Removal Action Goals

Chemical	OSHA Lead Exposure in Construction Decontamination Level ($\mu\text{g}/\text{ft}^2$)¹	OSHA Permissible Exposure Limit Action Level ($\mu\text{g}/\text{m}^3$)
Lead	200	30 ²
Silica	Not Applicable	25 ³

Notes:

1 = OSHA Instruction CPL 2-2.58 29 CFR 1926.62, Lead Exposure In Construction; Interim Final Rule--Inspection and Compliance Procedures, December 13, 1993

2 = Action level defined in General Industry 29 CFR Subpart Z 1910.1025(b) and Construction 29 CFR Subpart D 1926.62(b)

3 = Action level defined in General Industry 29 CFR Subpart Z 1910.1053(a)(2) and Construction 29 CFR Subpart Z 1926.1153(b)

$\mu\text{g}/\text{ft}^2$ = micrograms per square foot

$\mu\text{g}/\text{m}^3$ = micrograms per cubic meter

1.5.1 Lead

Current and future uses of the 27th Avenue Warehouse is not generally specified for "Construction work" as defined in 29 Code of Federal Regulations (CFR) 1910. 12. It is interpreted, however, that the substantive requirements of 29 CFR 1926 may apply to the 27th Avenue Warehouse in the event of possible future tenant improvements.

The requirements of 29 CFR 1926.62 at Section 1926.62(h)(1) state that "[a]ll surfaces shall be maintained as free as practicable of accumulations of lead." Section 1926.62(i)(2)(i) of this standard requires that "[t]he employer shall provide clean change areas for employees whose airborne exposure to lead is above the permissible exposure level...". Section 1926.62(i)(4)(ii) requires that, "[t]he employer shall assure that lunchroom facilities or eating areas are as free as practicable from lead contamination...". The Occupational Safety and Health Administration (OSHA) states in a Compliance Directive for the Interim Standard for Lead in Construction, CPL 2-2.5: in determining whether an employer has maintained surfaces of hygiene facilities free from contamination, OSHA recommends the use of Department for Housing and Urban Development (HUD)'s recommended level for acceptable decontamination of 200 micrograms per square foot ($\mu\text{g}/\text{ft}^2$) for floors in evaluating cleanliness of change areas, storage facilities, and lunchrooms/eating areas.

Employers are required to protect workers from inorganic lead exposure under OSHA lead standards covering general industry (29 CFR 1910.1025) and construction (29 CFR 1926.62). The lead standards establish a Permissible Exposure Limit (PEL) of 50 micrograms per cubic meter ($\mu\text{g}/\text{m}^3$) of lead over an 8-hour time weighted average (TWA). The required OSHA PEL action level for lead in general industry and the construction industry is a TWA of 30 $\mu\text{g}/\text{m}^3$ over 8-hours, at which point an employer must begin specific compliance activities, including blood lead testing for exposed workers. To establish that there will be no required compliance activities on the basis of the former presence of the CRT material storage within the 27th Avenue Warehouse following the removal action, the goal for lead in air will be the OSHA Action Level of 30 $\mu\text{g}/\text{m}^3$.

1.5.2 Respirable Crystalline Silica

Employers are required to limit worker exposures to respirable crystalline silica exposure under OSHA standards covering general industry (29 CFR 1910.1053), and construction (29 CFR 1926.1153). The

standards establish a PEL of 50 µg/m³ of respirable crystalline silica over an 8-hour TWA. The required OSHA PEL action level for respirable crystalline silica in general industry and the construction industry is a TWA of 25 µg/m³ over 8-hours, at which an employer must begin specific compliance activities, including routine air monitoring for exposed workers. To establish that there will be no required compliance activities on the basis of the former presence of the CRT material storage within the 27th Avenue Warehouse following the removal action, the goal for respirable crystalline silica in air will be the OSHA Action Level of 25 µg/m³.

2.0 SCOPE OF WORK

The scope of work for this project is described in the table and following subsections.

Table 2 Scope of Work

Scope of Work Phase	Phase Description	Phase Scope Items
Phase 1	Planning, Permitting, and Site Preparation	<ul style="list-style-type: none"> Preparation of a site-specific HASP Confirm or obtain EPA ID Equipment Mobilization
Phase 2	Unprocessed CRTs Removal, Transport and Disposal	<ul style="list-style-type: none"> Remove, load, transport and dispose of an estimated 1,282,000 pounds (641 tons) of boxed unprocessed CRT material
Phase 3	Processed CRT Glass	<ul style="list-style-type: none"> On-site stabilize, remove and transport as a non-hazardous waste an estimated 24,372,000 (12,186 tons) of boxed processed CRT material. Alternatively, remove, load, transport and dispose of as a RCRA hazardous waste an estimated 24,372,000 (12,186 tons) of boxed processed CRT material.
Phase 4	Dust Remediation	<ul style="list-style-type: none"> Industry-standard cleaning of dust impacted surfaces
Phase 5	Reporting	<ul style="list-style-type: none"> Monthly Progress Reporting Removal Action Completion / Site Characterization Report

2.1 Phase 1: Planning, Permitting, and Site Preparation

2.1.1 Health and Safety Plan

A project-specific health and safety plan (HASP) will be prepared and includes specific requirements for the sampling and removal activities. The HASP will be kept on-site and will address the health and safety hazards of each task conducted by employees for this project, including the requirements and procedures for worker protection (per 29 CFR 1910.120). The HASP will be developed based on the hazards known or suspected to be present, specifically as they relate to the work to be conducted by on-site employees. Air quality monitoring will be performed during the remedial activities in accordance with the project HASP. Air monitoring is designed to identify and quantify airborne contaminants, evaluate the impact of 27th Avenue Warehouse activities on the worker, and reduce or eliminate the migration of dust. Real-time air monitoring will be required during removal activities. Appropriate levels of PPE and decontamination procedures will be determined using monitoring data.

2.1.2 Hazardous Waste Requirements

Due to the potential volume of characteristic RCRA waste that may be generated from the 27th Avenue Warehouse, Lincoln will be required to obtain an U.S. Environmental Protection Agency (USEPA) ID Number. An initial notification will be submitted to ADEQ to obtain the facility USEPA ID number. It is anticipated

that more than 1,000 kilograms/month (2,200 pounds/month) of non-acute hazardous waste will be removed from the 27th Avenue Warehouse as a part of short-term remedial actions. The RCRA USEPA ID Number will be used on transport manifests as required under Subtitle C of RCRA.

2.1.3 Mobilization and Site Preparation

The 27th Avenue Warehouse will be accessed from 27th Avenue through the main entry gate on the southwestern portion of the property. **Figure 5** depicts the proposed haul route. The following activities will be performed as part of mobilization and site preparation:

- Areas specified for truck access and egress, exclusion areas, personnel / equipment decontamination, equipment staging, the loading of materials, and transport staging will be defined.
- Equipment mobilization will include fork lifts, reach forks, water truck, water holding tank, sampling equipment, air monitoring equipment, and health and safety equipment.
- As part of community involvement activities, signage will be displayed on-site during removal activities and posted on the main entry door on the east side of the 27th Avenue Warehouse.

2.2 Phase 2: Removal, Transport and Disposal of Unprocessed CRT Material as Hazardous Waste

The Contractor will dispose of approximately 1,282,000 (641 tons) of boxed unprocessed CRT material. The locations of the boxed unprocessed CRT material are shown on **Figure 3**. As depicted in **Figure 3**, unprocessed CRT material is located in the southern and western portion of the 27th Avenue Warehouse. The Contractor will use a reach fork, or where appropriate a forklift, to load the CRT material directly into end dump trucks for transport. Each waste shipping container will be covered with solid, vinyl, dust free roll top covers that completely overlap the top of the truck on all sides. The Contractor will develop a waste profile for the CRT material and provide waste manifests to document the shipment of truckloads from the 27th Avenue Warehouse. Uniform Hazardous Waste Manifests (USEPA Form 8700-22) will be prepared by the Contractor for approval by Lincoln prior to transportation. Approved manifests will require signature by Lincoln authorized personnel prior or the day of transport. Copies of manifests, bills of lading, and weight tickets will be managed by Wood Environment & Infrastructure Solutions, Inc. (Wood) and presented in the Removal Action Completion Report.

Unprocessed CRT material will require management as a RCRA hazardous waste carrying waste code of RCRA Debris and will be properly transported in placarded and permitted vehicles and shipped to U.S. Ecology Nevada Landfill in Beatty, Nevada. US Ecology treats the waste using a microencapsulation process that de-characterizes the waste so that it meets the Land Disposal Restrictions (LDRs). Off-site disposal of materials will be performed in accordance with applicable Federal, state, and local regulations pursuant to 40 CFR Part 262, Standards Applicable to Generators of Hazardous Waste ([45 FR 33142, May 19, 1980, as amended at 70 FR 10818, Mar. 4, 2005; 81 FR 85724, Nov. 28, 2016]) and 40 CFR Part 266, Standards for the Management of Specific Hazardous Wastes and Specific Types of Hazardous Waste Management Facilities (50 FR 666, Jan. 4, 1985).

2.3 Phase 3: Processed CRT Material

The Property Owner plans to remove and dispose of all processed CRT material as a non-hazardous waste after on-site stabilization. This Work Plan will be supplemented with further details once this on-site

stabilization method is finalized and deemed cost-effective. If on-site stabilization is deemed not cost-effective, all processed CRT material will be removed and transported under the method used in Phase 2.

2.4 Phase 4: Dust Remediation

Following removal of all CRT material from the 27th Avenue Warehouse, the remaining areas within the partition wall (constructed in January 2020) will be cleaned using industry-standard techniques for removal of lead dust. These procedures may include a combination method for cleaning horizontal surfaces with a vacuum cleaner equipped with a High Efficiency Particulate Air Filter (HEPA) or an equivalent high efficiency filter and wet washing methods including application of a trisodium phosphate cleaning solution.

Following the cleaning and lead dust removal, lead wipe and air sampling will occur. It is anticipated that up to 150 lead wipe samples will be collected throughout the partitioned area of Suite 115 and Suite 118B, as depicted on **Figure 3**. Results of the lead wipe sampling will be compared to the chemical-specific RAO of 200 µg/ft². Additional dust remediation and cleaning may occur following receipt of the analytical results to achieve the chemical-specific RAO of 200 µg/ft². Following the dust remediation and lead wipe sampling air sampling will occur. The area will be divided into five areas for the purposes of sample collection of lead in air and respirable crystalline silica where a static source sampling will occur. Results of the air sampling will be compared to the OSHA Action levels for the subject analytes.

3.0 FIELD SAMPLING PLAN, QUALITY ASSURANCE AND QUALITY CONTROL

This section provides general information regarding the methods that will be employed for various sampling activities to be completed during site activities. Sampling will be conducted for waste profiling post-removal building clearance. A summary of analytical methods and sample containers are provided in **Table 3**.

Table 3 Summary of Analytical Methods, Sample Containers, Preservation, and Holding Times

Target Analytes	Matrix	Analytical Method	Sample Volume/Container	Preservative	Holding Time
Post-Removal Sampling					
Lead	Surface Dust	NIOSH 7082	A disposable towelette moistened with a wetting agent meeting ASTM E1792	None	Not Applicable
Lead	Air	NIOSH 7082	0.8-micron cellulose ester filter, 200 – 1200 liters at flow rate 1-4 liters/minute	None	Not Applicable
Respirable Crystalline Silica	Air	Mod. NIOSH 0600/7500 OSHA ID-142; Grav./XRD	PPI Silica Samplers at flow rate 1-4 liters/minute	None	Not Applicable

Notes:

Samples will be analyzed using the most recently published versions of the analytical methods.
 ASTM = American Society for Testing and Materials
 NIOSH = National Institute of Occupational Safety and Health

The following subsections provide details regarding sample collection and management, quality assurance (QA) and quality control (QC), decontamination of non-disposable sampling equipment, and investigation-derived waste (IDW) management.

3.1 Collection of Samples

3.1.1 Air Sampling

Lead in Air

Air samples will be collected over an 8-hour work shift according to industry-standard air sampling procedures. Each area will have a low volume air pump that is equipped with a polyethylene tube connected to a 0.8 micrometer (μm) cellulose ester membrane sampling cassette. Sampling equipment will be placed in open spaces within the breathing zone and measured as a static source representation of that specific area. The sampling equipment will be regularly monitored to make sure that it runs the full 8-hour shift by manually checking the pump operation. It is proposed that no work within the testing space will be conducted during the 8-hour sampling period. Samples will be analyzed for lead by Flame Atomic Absorption Spectrophotometer (AAS) Method 7082 of the National Institute of Occupational Safety and Health (NIOSH) Manual of Analytical Methods (NMAM), Fourth Edition.

Respirable Crystalline Silica

Air samples will be collected over an 8-hour work shift according to industry-standard air sampling procedures, consistent with Chapter D and Chapter R of the NIOSH NMAM. This sampling procedure will utilize a low volume air pump that is equipped with a polyethylene tube connected to a SKC Parallel Particulate Impactor (PPI). PPI Silica Samplers are single-use, disposable, impaction-based samplers that provide a precise match to ISO 7708/CEN size-selection criteria that is specified in the 2016 OSHA final rule on respirable crystalline silica. Sampling equipment will be placed in open spaces within the breathing zone and measured as a static source representation of that specific area. The sampling equipment will be regularly monitored to make sure that it runs the full 8-hour shift by manually checking the pump operation. It is proposed that no work within the testing space will be conducted during the 8-hour sampling period. Samples will be submitted to an American Industrial Hygiene Association (AIHA) accredited laboratory for respirable dust/silica (crystalline quartz, cristobalite, & tridymite) analysis by NIOSH Method 7500 with filter de-deposition.

3.1.2 Dust Sampling

HUD, EPA, and the American Society for Testing and Materials (ASTM) have developed dust wipe sampling protocols. All wipe samples of settled dust will be collected using wipe material that meets ASTM Designation: E 1792-03. These specific protocols must be followed by risk assessors because the current standards were developed using only these methods. Wipe samples for settled lead dust can be collected from floors, interior window sills, and other reasonably smooth surfaces.

3.2 Quality Control

In order to obtain data of sufficient quality to support project objectives, specific procedures are required to allow evaluation of data quality. QC samples will be collected during the investigation to evaluate analytical results and assess whether errors were introduced during sample collection, handling, transport, and analysis. These procedures and requirements for their evaluation are described in this section.

3.2.1 Laboratory Quality Control

Laboratories will conduct internal QC checks in accordance with their SOPs and individual analytical method requirements. The laboratories will analyze internal QC samples at the frequency specified by the analytical

method. Method-specific QC procedures, frequency of QC sample analysis, and acceptance criteria (control limits) for the labs will be in accordance with industry standards. In order to receive the applicable accreditation, each National Lead Laboratory Accreditation Program (NLLAP)-accredited laboratory or/and AIHA-accreditation is required to have a validation program for ensuring that their analytical results meet accuracy standards.

3.2.2 Field Quality Control Samples

Evaluation of field sampling procedures and laboratory equipment accuracy and precision requires the collection and evaluation of field and laboratory QC samples.

Field Blank Air Sample

Collection of one blank air sampler will be conducted for every day of field collection. The field blank is handled the same as field samples, except that no air is drawn through the sampler during the course of the sampling event.

Field Blank Wipe Sample

Collection of one blank wipe will be conducted for every 20 field samples. The field blank is handled the same as field samples, except that no surface is wiped. The purpose of the field blank is to ensure quality sampling techniques and detect sampling material contamination. Blank media should contain no more than 5 µg/wipe.

Spiked Wipe Sample

Laboratory provided dust-spiked wipe samples should be submitted blindly to the laboratory at the rate of no less than one for every 50 field samples. Blind analysis of spiked samples must fall within 80 and 120 percent of the true value. If the laboratory fails to obtain readings within the QA/QC error limits, data may be qualified or rejected accordingly.

3.2.3 Data Verification and Data Review Procedures

Data must be evaluated to determine its usefulness. Data may be of use as a screening tool even if it is not of sufficient quality. The following criteria will be used to accept, reject or qualify analytical data:

- Accept data from:
 - Lead dust samples taken by an appropriately-trained licensed Lead Sampling Technician, Lead Inspector or Lead Risk Assessor.
- Reject data from:
 - Samples collected by a source not described above; or
 - Data from results that do not appear consistent with inspector knowledge or normal results; or
 - A laboratory that did not use an USEPA-approved method.

- Qualify data from:
 - Sources not meeting the criteria above. Such data may qualify for use as an indicator that lead may be present.

A Lead Risk Assessor will review all data received from the laboratory to make an assessment whether any of the data appear inconsistent with other aspects of the inspection report. This includes an on-going review of quality control data generated by the analyzing laboratory by reviewing the results of all duplicate and field blank samples collected during sampling events. It also includes assuring that sample holding time criteria were met. The Lead Risk Assessor is responsible for contacting the laboratory to identify the cause of the inconsistency and, based on the response from the laboratory, determining whether the results provided by the laboratory are reliable.

3.3 Sample Identification

Each sample ID will consist of a combination of source of sample, increment number, type of sample, and date of sample collection. Quality control samples, such as duplicates and blanks, will be submitted blind to the laboratory and will be identified by a unique ID.

3.4 Chain-of-Custody

COC forms will be completed and will accompany each sample at all times. Data on the COC will include the sample ID, location, date sampled, time sampled, project name, project number, and signatures of those in possession of the sample. COC forms will accompany those samples shipped to the designated laboratory so that sample possession information can be maintained. The field team will retain a separate copy of the COC at the field office. Additionally, the sample ID, date and time collected, collection location, and analysis requested will be documented in the field log book as discussed in Section 3.6.

3.5 Packaging and Shipping Procedures

All samples will be shipped by overnight air freight or hand-delivered to the laboratory. Unless otherwise indicated, samples will be treated as environmental samples, shipped in heavy duty boxes or coolers, packed in materials to prevent breakage, and in sealed plastic bags. Lead wipe and air samples do not require temperature control as a means of preservation. Therefore, the samples will not be packed and shipped on ice. Each shipment will include the appropriate field QC samples.

Corresponding COC forms will be placed in waterproof bags and taped to the inside of the cooler or box lids. All coolers will be taped shut and a custody seal will be placed over the tape to prevent tampering.

3.6 Sample Documentation

Sample control and tracking information will be recorded in bound dedicated field logbooks and will include the following information: sample number and location, date, sampler's name, method of sampling, sample depth, sample physical description, ambient weather conditions, and miscellaneous observations. At the conclusion of each day in the field, the sampling team leader will review each page of the logbook for errors and omissions. He or she will then date and sign each reviewed page.

3.7 Field Instrument Calibration

All field instruments will be calibrated following manufacturer recommended calibration procedures and frequencies. Field instrument calibrations will be recorded in a designated portion of the field logbook at the time of the calibration. Adverse trends in instrument calibration behavior will be corrected.

3.8 Decontamination Procedures

Decontamination of reusable sampling equipment, if used, and personnel will be performed to ensure chemical analyses reflect actual concentrations at sampling locations by maintaining the quality of samples and preventing cross-contamination. The standard equipment decontamination procedures for completion of soil sampling activities will be used as follows:

- A simple decontamination wash pad shall be constructed using plastic sheeting which is rolled up at the ends (typically with lumber) to contain water. The pad shall be large enough to hold multiple 5-gallon buckets and equipment that requires decontamination and to provide ample working area within the pad.
- Sampling equipment will be washed using a bristle brush in potable water to which Alconox or Liquinox laboratory detergent has been added. All items will then be thoroughly rinsed with potable water and allowed to air dry.
- Decontamination should be performed on the plastic sheeting of the temporary decontamination pad. Accumulated wash and rinse water will be left within the decontamination pad and allowed to evaporate.
- Once all decontamination water is evaporated, the plastic sheeting and associated pad materials shall be disposed of at an approved facility.
- After field cleaning, equipment will be handled only by personnel wearing clean gloves to prevent re-contamination. The equipment will be moved away from the cleaning area to prevent re-contamination. If the equipment is not to be immediately reused, it will be covered with plastic sheeting or wrapped in aluminum foil to prevent re-contamination. The area where the equipment is stored prior to re-use must be free of contaminants.

3.9 Investigation-Derived Waste Disposal

IDW anticipated to be generated during sampling activities may include disposable sampling equipment and PPE. Used IDW will be placed in polyethylene trash bags, which will be placed in transport containers along with excavated waste destined for landfill disposal.

4.0 SCHEDULE

The tentative schedule, including progress and reporting deliverables, is provided in **Appendix B**.

It is anticipated that field portions of Phase 2 will be conducted over approximately two weeks. The tentative schedule is based on an operational disposal rate of 130 tons per day of hazardous waste. Qualities of hazardous waste are estimated based on volume. Phase 3 will depend on the removal method selected, the schedule for which will be updated in a supplemental version of this Work Plan once the Phase 3 method is finalized.

All projected schedules and completion dates may vary or otherwise be delayed for lack of funds necessary to comply with removal and other remediation requirements imposed by ADEQ/VRP.

5.0 COMMUNITY INVOLVEMENT

Community involvement will consist of a public notice published in the local newspaper. The public notice will be submitted following ADEQ approval of this removal action work plan. A copy of the public notice is provided in **Appendix C**. As part of community involvement activities, signage will be displayed on-site during removal activities and posted on the main entry door on the east side of the 27th Avenue Warehouse.

6.0 PHASE 5: REPORTING

6.1 Monthly Progress Reporting

A Progress Report will be submitted monthly via email to the VRP project manager beginning after the completion of the 27th Avenue Warehouse preparation activities. Progress reports will include a summary of site activities for the previous month and including quantities of CRT disposed of, the estimated percent removal complete and anticipated activities for the next month.

6.2 Removal Action Completion

Following completion of the CRT material removal and dust remediation and following receipt of all disposal and analytical laboratory data, Wood will prepare a Removal Action Completion. The report will provide a summary of field activities and will include copies of all received waste profiles, disposal documents and a load transportation summary.

The report will be submitted via email to VRP within 45 days of receipt of all laboratory analytical results and waste disposal / field documentation. The Report will be submitted to the ADEQ VRP and will allow 45 calendar days for VRP review and comment. The Revised Report will be submitted within 14 days of receipt of approval from the VRP. Coordination with Property Owner and regulatory agencies will be conducted by teleconference as needed to resolve all comments in a timely manner.

7.0 REFERENCES

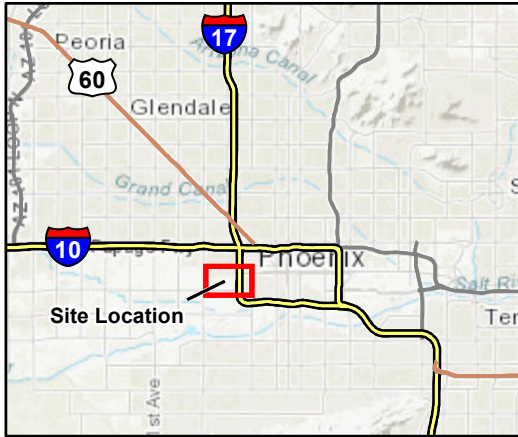
Metals Treatment Technologies LLC (MT2), 2019. Draft Final Report Onsite Field Study: ECOBOND® application for lead-containing CRT glass materials. June.

ASTM E1728-03. Standard practice for Collection of Settled Dust Samples Using Wipe Sampling Methods for Subsequent Lead Determination. Copies are available (for a fee) on the ASTM website at: <http://www.astm.org/Standards/E1728.htm>.

ASTM E1792-03 (Reapproved 2016) Standard Specification for Wipe Sampling Materials for Lead in Surface Dust. Copies are available (for a fee) on the ASTM website at: <http://www.astm.org/Standards/E1792.htm>.

wood.

FIGURES



Legend

Site Boundary



Job No.:	14-2018-2031
PM:	RP
Date:	1/6/2020
Scale:	1" = 1000'



The map shown here has been created with all due and reasonable care and is strictly for use with Wood Environment & Infrastructure Solutions, Inc. Project Number 14-2018-2031. This map has not been certified by a licensed land surveyor, and any third party use of this map comes without warranties of any kind. Wood Environment & Infrastructure Solutions, Inc. assumes no liability, direct or indirect, whatsoever for any such third party or unintended use.

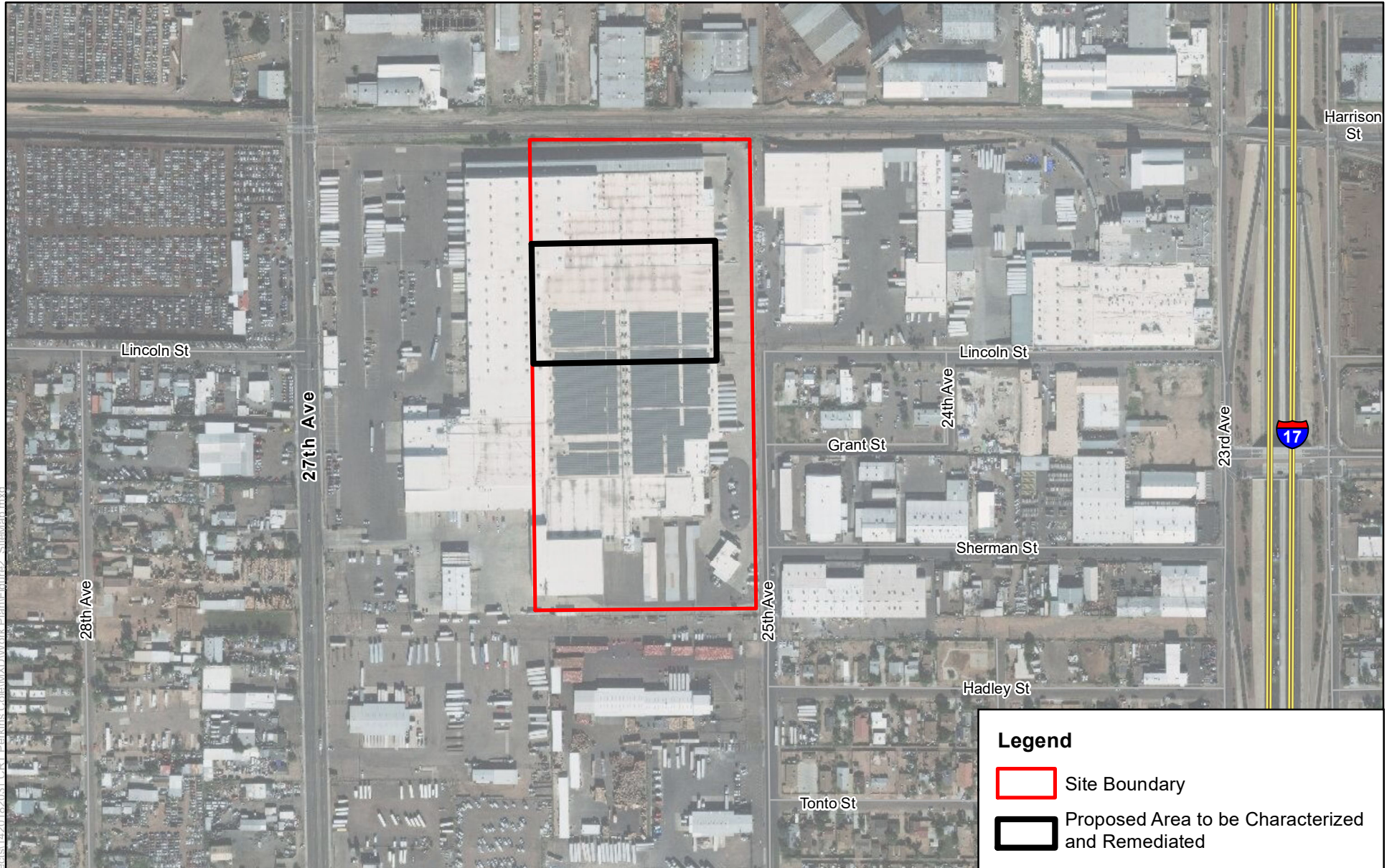
Non-Time-Critical Removal Action Work Plan
Cathode Ray Tube Material
625 South 27th Avenue
Phoenix, Arizona 85009

Vicinity Map

FIGURE
1



Path: X:\Projects\2018-Projects\1420182031_CRT_Perkins_Coia\Map\Work\Plan\Figure1_VicinityMap.mxd



Legend

- Site Boundary
- Proposed Area to be Characterized and Remediated



Job No.: 14-2018-2031
 PM: RP
 Date: 1/6/2020
 Scale: 1" = 400'



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Non-Time-Critical Removal Action Work Plan
 Cathode Ray Tube Material
 625 South 27th Avenue
 Phoenix, Arizona 85009

Site Map

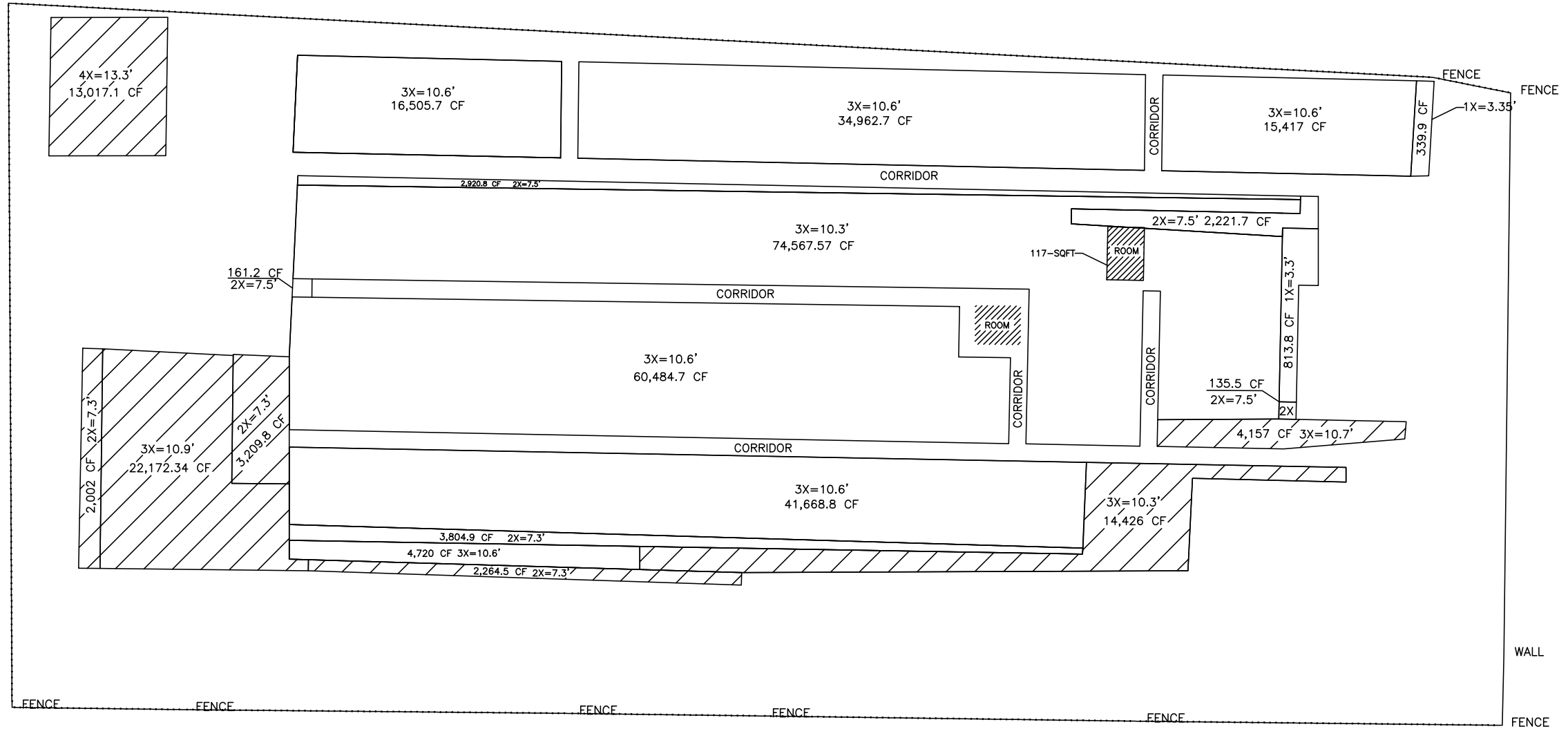
wood.

FIGURE 2

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UNPROCESSED
61,248.74 CF
2,268.47 CY

PROCESSED
258,724.27 CF
9,582.38 CY



X:\Projects\2018 Projects\1420182031 CRT Perkins Cole\MXD\Work Plan\Figure3_CathodeRayTubeStorageLayout

Job No.: 1420182031
PM: RP
Date: 1/6/2020
Scale: As Shown

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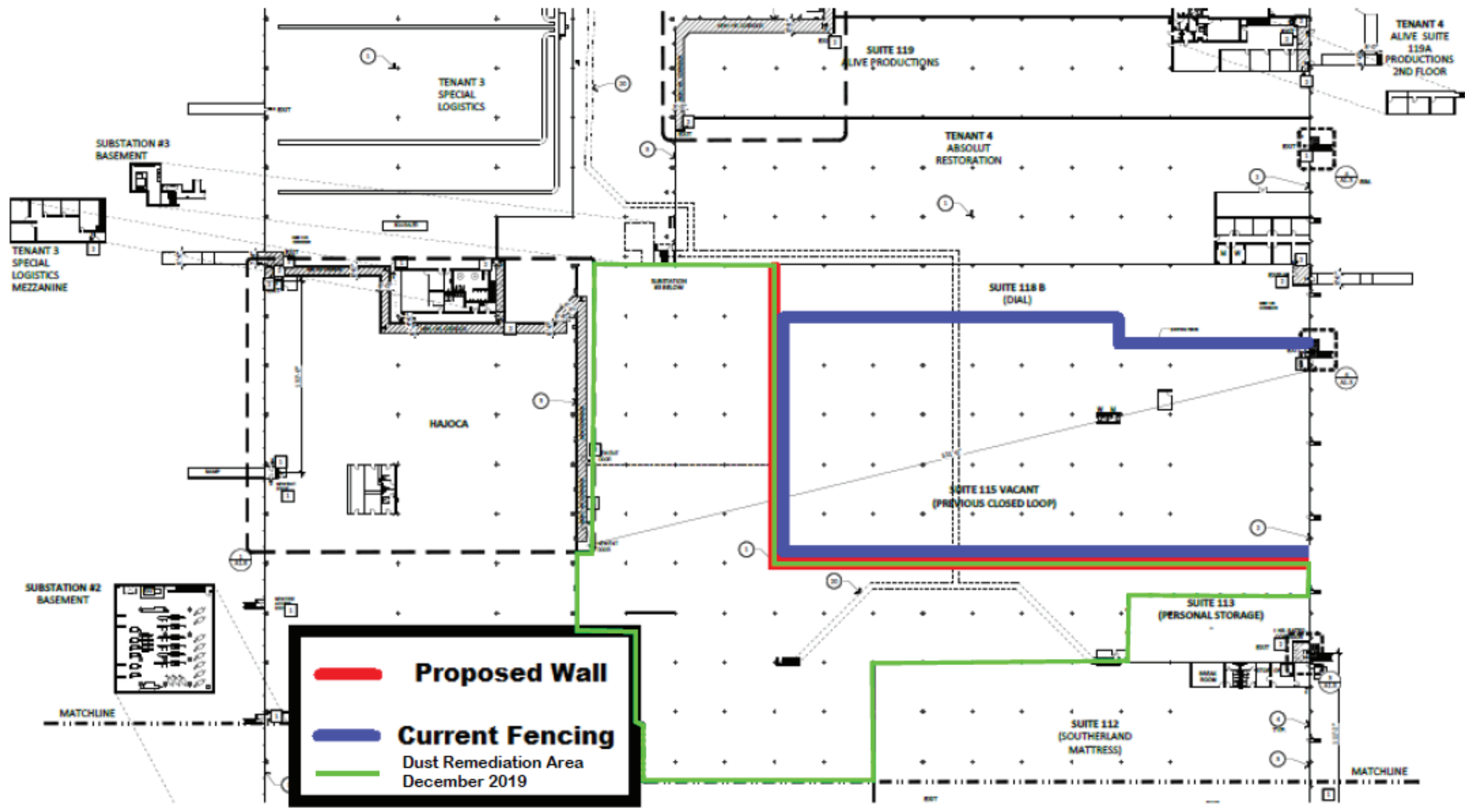
Non-Time-Critical Removal Action Work Plan
Cathode Ray Tube Material
625 South 27th Avenue
Phoenix, Arizona 85009

Cathode Ray Tube Storage Layout

Figure
3



X:\Projects\2018 Projects\1420182031 CRT Perkins Cole\MXD\Work Plan\Figure4_Interior Dust Remediation Area



1 OVERALL FLOOR PLAN - NORTH
SCALE: 1/8" = 1'-0"

Job No.: 1420182031
 PM: RP
 Date: 1/6/2020
 Scale: As Shown

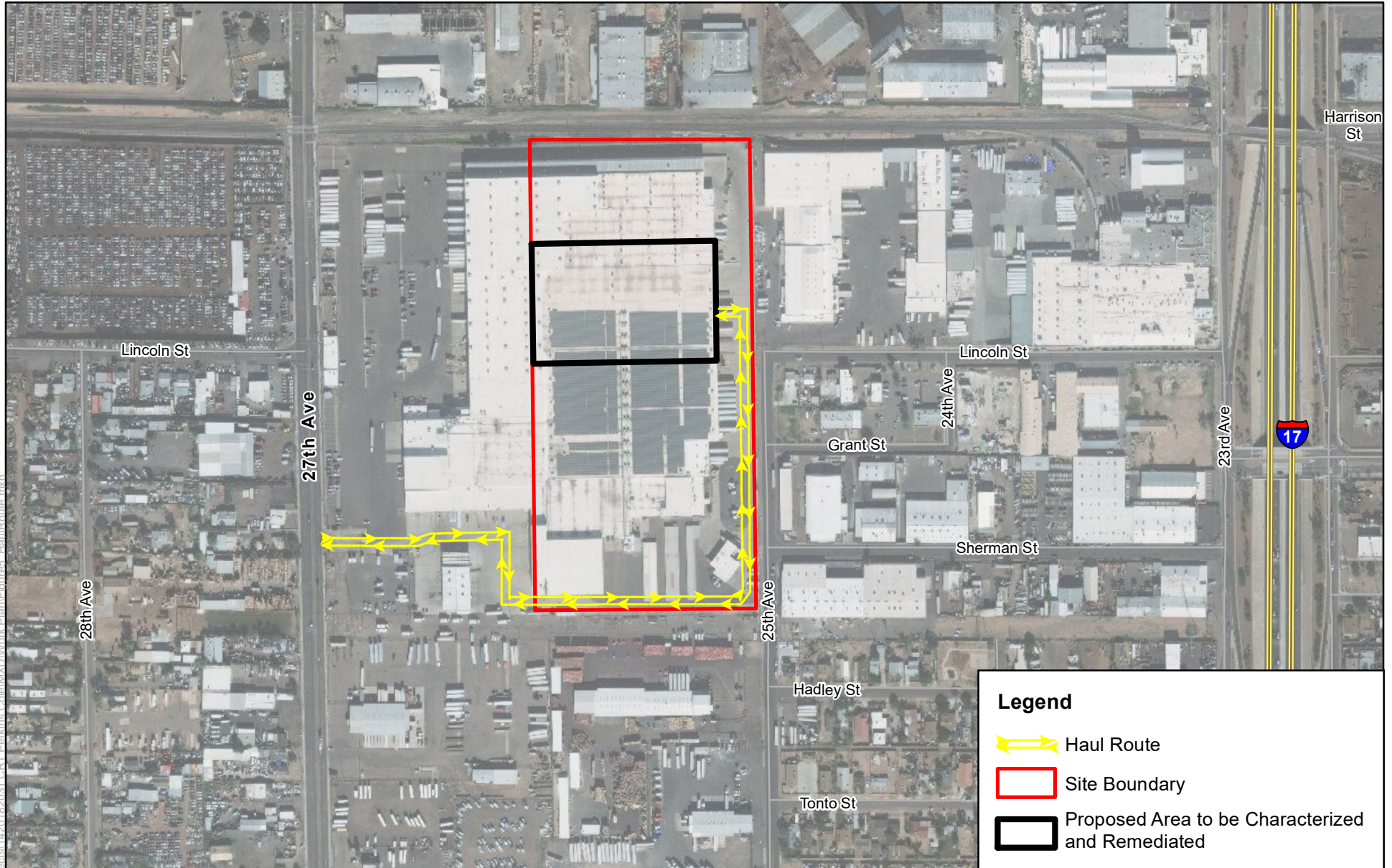
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Non-Time-Critical Removal Action Work Plan
 Cathode Ray Tube Material
 625 South 27th Avenue
 Phoenix, Arizona 85009




Interior Dust Remediation Area, December 2019

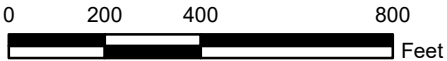
Figure
4





Legend

-  Haul Route
-  Site Boundary
-  Proposed Area to be Characterized and Remediated



Non-Time-Critical Removal Action Work Plan
 Cathode Ray Tube Material
 625 South 27th Avenue
 Phoenix, Arizona 85009



Job No.: 14-2018-2031
 PM: RP
 Date: 1/6/2020
 Scale: 1" = 400'



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Haul Route

FIGURE 5

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APPENDIX A
SURVEY REPORT

**PROJECT: REMOVAL ACTION 27TH
AVENUE WAREHOUSE**

**Authorizing Div. Project No. 1420182031
Wood Environment & Infrastructure Solutions
Survey Report**

SUMMARY

Narrative

Wood Survey Department was tasked with the performance of creating a quantities report for the materials, Cathode Ray Tube (CRT) contained within the warehouse at 27th Avenue between loading bays sixty-nine (69) and seventy-four (74). The materials are stored in cardboard containers approximately 4'x4'x4' individually placed on its own pallet stacked at varying heights ranging from a single pallet to four (4) pallets in height. Having completed an initial site inspection, it was determined a combination of survey methods would be applied to this project.

Survey Methods:

- Conventional Robotic Total Station using a local coordinate system to define the footprint and the average height of the various levels of the CRT materials within the warehouse.
- Small Unmanned Aerial System (sUAS) DJI Phantom 4 Pro V2.0 was used to over-fly the stored CRT materials. The purpose of the flights was to capture photographs and collect video footage from above the CRT materials to identify voids and inconsistencies. This information was applied to an AutoCAD drawing to aid in calculating quantities where the conditions were too hazardous for personnel.

Data Processing:

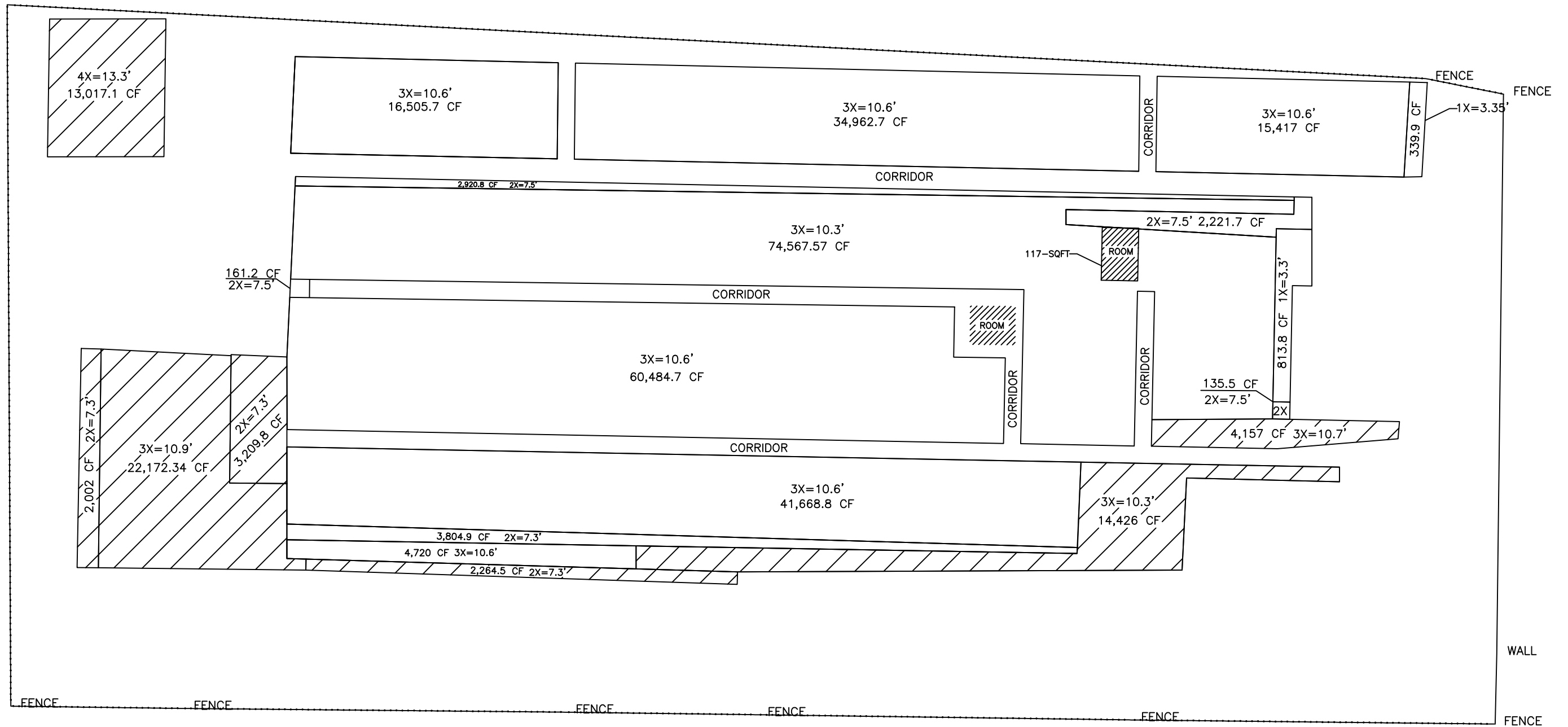
Upon processing the data with Trimble Business Center and AutoCAD Civil 3D 2016 and compiling the photographic and video to develop a concise representation of the stored CRT material, areas were defined by its stacked height. Once this process was accomplished simple mathematical calculations of area x height = volume was performed to obtain quantities for our volume report.

Control Datum:

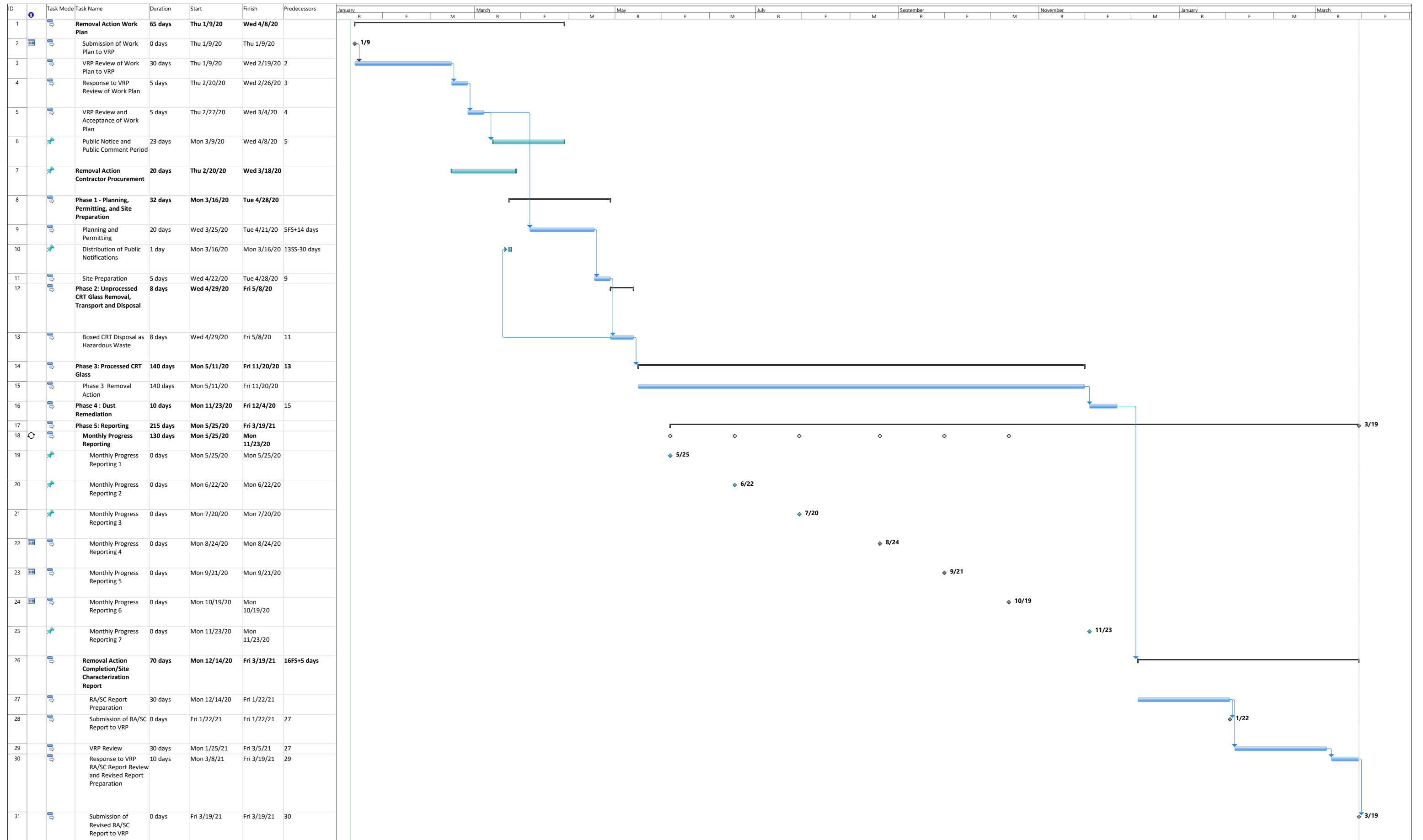
Horizontal and Vertical control were random and local to this project. Since the limits of the project were contained within a warehouse, a standard geodetic coordinate system such as State Plane Coordinates were of no benefit and thus not used. The vertical datum was also relative, meaning that to quantify the volume an accurate elevation above mean sea level provides no benefit and has no bearing on calculating volume values, so a random number was used for the warehouse floor elevation. Then CRT material heights were calculated using the warehouse floor.

UNPROCESSED
 61,248.74 CF
 2,268.47 CY

PROCESSED
 258,724.27 CF
 9,582.38 CY



APPENDIX B
PROJECT SCHEDULE



APPENDIX C
PUBLIC NOTICE



**NOTICE OF AVAILABILITY AND 30-DAY PUBLIC COMMENT PERIOD
CLOSED LOOP 27TH AVENUE WAREHOUSE
VOLUNTARY REMEDIATION PROGRAM (VRP) SITE
WORK PLAN FOR REMOVAL ACTION**

The Arizona Department of Environmental Quality (ADEQ) has received a work plan for the Closed Loop 27th Avenue Warehouse VRP site. The work plan proposes removal of cathode ray tube material for proper disposal and was submitted in accordance with Arizona Revised Statutes (A.R.S.) § 49-175 and § 176.

The 27th Avenue Warehouse VRP site consists of approximately a 60,000 square foot portion of a warehouse in Phoenix, Arizona. Contaminants of potential concern at the site are lead and respirable crystalline silica.

The work plan is available online at: <http://azdeq.gov/notices>, and at the ADEQ Records Center, 1110 W. Washington St., Phoenix, (602) 771-4380, or (800) 234-5677, ext. 6027714380. Please call for hours of operation and to schedule an appointment.

PARTIES WISHING TO SUBMIT WRITTEN COMMENTS regarding the remedial work plan for the Closed Loop 27th Avenue Warehouse VRP site may do so to ADEQ, Attention: Nichole Osuch, Voluntary Remediation Program, 1110 W. Washington St., Phoenix, AZ 85007, or nso@azdeq.gov and reference this listing. **Comments must be postmarked or received by ADEQ by close of business MONTH DAY, YEAR.**

Dated this DAY day of MONTH, YEAR