

Hazardous Materials Remediation

COMMERCIAL BUILDING
203/205 W Broad Street
Texarkana, Texas
EPA ACRES ID Nos. 72441/72421

United States Environmental Protection Agency, Region 6
Brownfields Multi-Purpose Pilot
Hazardous Substances
Cooperative Agreement No. BF-00F62801

June 5, 2016
Terracon Project No. 94137464B



Prepared for:
City of Texarkana
Texarkana, Texas

Prepared by:
Terracon Consultants, Inc.
Dallas, Texas

terracon.com

Terracon

Environmental



Facilities



Geotechnical



Materials

Project Overview

This project consists of the remediation of hazardous materials at the vacant commercial building located at 203/205 W Broad Street, Texarkana, Texas. The City of Texarkana expects to encounter asbestos-containing and -contaminated materials, lead paint-coated building components, avian pathogen-contaminated materials and fungal-contaminated (mold) materials based on the findings of previous ASTM E1527 Phase I environmental site assessments and limited historical testing. The site specific asbestos, lead, mold and avian-pathogen abatement scope of work are provided in separate sections within this document.

The City with structural engineer Jeff Raley, Raley & Associates, Inc. (RAI), Bossier City, Louisiana, were on-site July 29, 2015 for observation to reevaluate and report project conditions relative to structural integrity and safety to implement the EPA-approved sampling plans. In the subsequent RAI report it was stated;

“As of this date, the building structures appear to be unstable and not safe for persons to enter the structures for the purpose of sampling. It is our opinion that it would not be cost effective to do temporary shoring for the purpose of sampling since sampling can be done during material removal (see photos).

The adjacent buildings to the east and west will need to be protected during the removal of materials for assessment and clean up.”

The contractor submitting a proposal on the work must take this into account in the preparation of their proposal.

It has evolved that a combined cleanup with simultaneous assessment of debris and materials from the interior of 203/205 can occur. In general here and later set forth in more detail in the Site Cleanup Plan, the expected approach is to have a licensed abatement contractor stabilize the structure sufficient to remove unsegregated hazardous materials to a processing station on the exterior of the building. Hazardous substance assessments will be conducted on-site and in-process at a safe staging area to determine whether waste/debris should be handled and disposed as asbestos-, mold-, avian pathogen- or lead-impacted waste material as part of cleanup.

The contractor will perform the hazardous materials remediation under conditions and in a sequence that ensures compliance with applicable state and federal asbestos, lead and mold regulations. With pre-emption by asbestos, debris will initially be assumed to be asbestos-containing material (ACM) or asbestos-contaminated and appropriately collected, handled and removed through the rear of the structure to a staging and assessment area in the alley.

In the staging area, materials will be first visually assessed and segregated as suspect materials or asbestos materials. Under Texas rule determination that materials do or do not contain asbestos have to be submitted to a third party laboratory as set forth in the EPA-approved PSAP (Appendix B); this may require temporary containment and staging with rush analyses.

Hazardous Materials Remediation

Commercial Building ■ 203/205 W Broad Street ■ Texarkana, Texas
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June 5, 2016 ■ Terracon Project No. 94137464B / City of Texarkana RFP#16-2001-07



Alternatively, a Texas-licensed asbestos consultant, inspector or management planner may assume materials contain asbestos.

Secondly, materials will be visually segregated as having mold or adhered or mixed avian waste (e.g. bird or bat guano). If possible, these materials will be cleaned of mold or avian waste contamination.

Thirdly, materials will be visually segregated for suspect lead-containing coatings and tested on-site using x-ray fluorescence (XRF) field technology.

The remaining materials once cleaned of potentially adhering *de minimis* ACM, mold or avian waste will be handled and disposed as demolition debris.

The defined sequencing will avoid combining regulated waste generated as part of the remediation. The contractor will provided a detailed schedule of the remediation sequence which will include, at a minimum, containment and non-containment areas, regulated areas, order in which identified hazardous materials will be remediated, waste packaging, and disposal, to ensure regulatory compliance with applicable state and federal regulations.

The Contractor selected to perform the remediation work will demonstrate experience performing abatement of each of the hazardous materials identified and experience with similar structures. Prior to beginning work at the site the Contractor will attend a preconstruction meeting to coordinate all site activities with the Owner and their designated representative. In addition, prior to beginning any remediation activities the contractor will conduct an orientation meeting with their personnel. The purpose of the meeting will be to inform each employee of the health and safety hazards present on the site and the specific procedures to be followed to minimize those hazards.

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SECTION 00010 – REQUEST FOR PROPOSALS

PROJECT NO: 94137464B / City of Texarkana RFP#16-2001-07

PROPOSAL DATE/TIME: June 5, 2016 to July 6, 2016, 2:00 p.m.

PROJECT SITE: Commercial Building
203/205 W Broad Street
Texarkana, Texas

OWNER: City of Texarkana
PO Box 1967
220 Texas Boulevard, 4th Floor
Texarkana, Texas 75504

CONSULTANT: Terracon Consultants, Inc. (Terracon)
8901 John Carpenter Freeway, Suite 100
Dallas, Texas 75247
(214) 630-1010

- Proposals shall be on a totality basis; segregated proposals will not be accepted.
- Contractor shall identify the sealed proposal on the outside of the envelope by writing “PROPOSAL”. The proposals shall be mailed or delivered to Ms. Sharon Moore, Purchasing Manager, City of Texarkana, PO Box 1967 – 220 Texas Boulevard, 2nd Floor, Texarkana, Texas 75504. **No Faxed Proposals Will Be Accepted!**
- Proposals are due by 2:00 p.m. on July 6, 2016. Late proposals will not be accepted.
- Pre-Proposal Conference will be conducted Tuesday, June 14, 2016 at 2:00 p.m. The pre-proposal meeting will be at the Texarkana, Texas Municipal Building, 220 Texas Blvd., Texarkana, Texas 75501 in the 2nd floor Conference Room, followed by a walkthrough of the project site. Interested proposers are required to attend.
- Proposals will be opened publicly in the 2nd floor conference room of the Texarkana, Texas Municipal Building, 220 Texas Blvd., Texarkana, Texas 75501 on the proposal closing date.

- Right is reserved, as the interest of the Owner may require, to reject any and all proposals and to waive any informality in proposals received.
- The Owner reserves the right to accept or reject any and all proposals in whole or in part, waive any minor technicality and enter into this contract deemed to provide the best value to the Owner.

END OF SECTION 00010

SECTION 00020 - PROPOSAL FORM FOR HAZARDOUS MATERIALS REMEDIATION

Project: Commercial Building
203/205 W Broad Street
Texarkana, Texas

Company: _____
Contact: _____
Phone: _____
Email: _____

Terracon Project No.: 94137464B

PROPOSAL FORM

To: _____ Date: _____

In compliance with your Request for Proposals and subject to all the conditions thereof the undersigned:

Name of Proposer

A Corporation organized and existing under the laws of the State of _____, a Partnership consisting of _____ or an Individual trading as _____, having principal offices in the city of _____, hereby proposes to furnish all labor and materials and perform all Work required for the following Project:

ACKNOWLEDGMENTS: The proposer declares that he himself has examined the site of the Work and fully informed himself regarding all pertinent conditions, and that he has examined the Scope of Work (including all Addenda received) for the work relative thereto, and that he has satisfied himself relative to the Work to be performed.

1. BASE PROPOSAL (Time Frame 1): The Proposer herewith submits for the portion of the Work identified as "Base Proposer" a lump sum cost of: _____
2. ADDENDA: The Proposer acknowledges receipt of Addenda No's: _____

3. PROJECT SCHEDULE: The Proposer submits the following work schedule:

The proposer agrees to start work within _____ consecutive calendar days of receipt of notice to proceed and complete the Contract within:

SCHEDULE & STAFF

Total number of work days to complete: _____
Number of days per week Contractor will work: _____
Hours per day the Contractor will work: _____
Number of TDSHS Supervisors/Workers: _____

PRICE

A. Total Base Proposal (includes labor, materials, disposal & reporting): _____
B. Performance and Payment Bonding Rate: _____

CERTIFICATIONS: The undersigned certifies that he is authorized to execute contracts on behalf of the Proposer as legally named, that this proposal is submitted in good faith without fraud or collusion with any other Proposer, that the data indicated below is true and complete, and that the proposal is made in good faith and in full accord with State Law. Notice or acceptance may be sent to the undersigned at the address set forth below:

Legal Name of Proposer*: _____
Mailing Address: _____
By (Legal Signature): _____
Name Typed: _____
Title: _____

DATA ON PROPOSER:

Abatement Contractor's State Licenses: Submit Copies of Licenses.

If a partnership, list all partners and their addresses. If a corporation, affix corporate seal: If proposal is signed by other than the president or vice president, attach written authority to bind the corporation. If an individual, then so state. Any modifications to a proposal shall be over the initials of the person signing the proposal or of an agent who supplied written authority with the modification.

The Proposer as part of the proposal package shall submit a list of a minimum of five (5) previous asbestos, fungal, lead paint and avian pathogen abatement projects of a similar scope and size, successfully completed by the Proposer along with the Owner's name, address and telephone number. If the projects were handled by a consulting firm, the name, address, contact and telephone number of the firm shall also be included.

LIST FIVE PREVIOUS HAZARDOUS MATERIAL ABATEMENT PROJECTS OF SIMILAR SCOPE (highlight historical projects and note if scope of work included a deteriorated structure with common walls to adjoining, sound structures):

1. Owner: _____ Phone No.: _____
 Contract Amount: _____ Completion Date: _____
 Consultant: _____ Phone No.: _____
 Common Wall: Yes No Historical: Yes No

2. Owner: _____ Phone No.: _____
 Contract Amount: _____ Completion Date: _____
 Consultant: _____ Phone No.: _____
 Common Wall: Yes No Historical: Yes No

3. Owner: _____ Phone No.: _____
 Contract Amount: _____ Completion Date: _____
 Consultant: _____ Phone No.: _____
 Common Wall: Yes No Historical: Yes No

4. Owner: _____ Phone No.: _____
 Contract Amount: _____ Completion Date: _____
 Consultant: _____ Phone No.: _____
 Common Wall: Yes No Historical: Yes No

5. Owner: _____ Phone No.: _____
 Contract Amount: _____ Completion Date: _____
 Consultant: _____ Phone No.: _____
 Common Wall: Yes No Historical: Yes No

ADDITIONAL ITEMS REQUIRED WITH PROPOSAL: The following items are additionally required as part of this proposal submittal.

1. INSURANCE CERTIFICATES.
2. CONTRACTOR'S QUALIFICATION STATEMENT: Completed AIA Document A305.
3. A notarized statement, signed by an officer of the company, containing the following information of a statement of negative of the same:

- a) A record of citations issued by Federal, State, or Local regulatory agencies relating to asbestos, fungal(mold) and lead paint abatement activity for the Contracting company and any and all affiliates. Include projects, dates and resolutions.
 - b) Situations in which an asbestos and lead related contract has been terminated including projects, dates and reasons for terminations.
 - c) A listing of any asbestos or lead-related legal proceedings/claims in which the Proposer (or employees scheduled to participate in this project) have participated or are currently involved. Include descriptions of role, issue and resolution to date.
- 4. Name of supervisor and/or supervisors who will work on the project. Include a detailed description of his/her experience with references and years of experience.
 - 5. Contractor will provide the name and appropriate permit information of the waste transporter and their insurance certificate.
 - 6. Contractor will provide the name of the landfill at which the asbestos and lead waste will be disposed.

END OF PROPOSAL FORM

SECTION 00030 – GENERAL TERMS AND CONDITIONS

**** PLEASE READ CAREFULLY ****

THESE GENERAL CONDITIONS APPLY TO ALL PROPOSALS AND BECOME A PART OF THE TERMS AND CONDITIONS OF ANY PROPOSAL SUBMITTED AND SUBSEQUENT PURCHASE ORDER OR CONTRACT. THE CITY SHALL MEAN THE CITY OF TEXARKANA, TEXAS.

1. **REQUIRED INFORMATION:** The proposal form section of the proposal packet must be completed prior to the date and time set for the proposal opening and included with the proposal packet or the vendor will be found non-responsive.
2. **INSTRUCTIONS:** These instructions apply to all quotations and become a part of terms and conditions of any proposal packet submitted and subsequent purchase order or contract.
3. **ERROR-QUANTITY:** Proposal price must be submitted on units of quantity specified, extend, and total shown. In the event of discrepancies in extensions, the unit price shall govern.
4. **AWARD:** The City of Texarkana, Texas reserves the right to accept or reject any and all proposals in whole or in part and waive any minor technicality and enter into contract deemed to provide the **best value** to the City.
The City of Texarkana, Texas reserves the right to award a separate contract to separate vendors for each item/group or to award one contract for the entire proposal.
 - 4.1 The contract may be awarded either to the lowest responsible proposer or to the proposer who provides goods or services at the best value for the City of Texarkana, Texas. In determining the best value for the City of Texarkana, Texas, the City may consider:
 - (a) The purchase price;
 - (b) The reputation of the proposer and of the proposer's goods or services;
 - (c) The quality of the proposer's goods or services;
 - (d) The extent to which the goods or services meet the City's needs;
 - (e) The proposer's past relationship with the City;
 - (f) The impact on the ability of the City to comply with laws and rules relating to contracting with Historically Underutilized Businesses and non-profit organizations employing persons with disabilities;
 - (g) The total long-term cost to the City to acquire goods or services; and
 - (h) Any relevant criteria specifically listed in the Request for Proposal.
 - 4.2 All proposals are evaluated for compliance with specifications before the proposal price is considered. Failure to comply with the listed General Conditions may result in disqualification of proposal.
 - 4.3 In case of tie proposals, preference will be given to local proposers.
 - 4.4 Any contract made, or purchase order issued, as a result of this Request for Proposal, shall be entered into the State of Texas and under the laws of the State of Texas. In connection with the performance of work, the Proposer agrees to comply with the Fair Labor Standard Act, Equal Opportunity Employment Act, and all other applicable Federal, State, and Local laws, regulations, and executive orders to the extent that the same may be applicable.

Responsible Proposer Criteria: The City shall consider only responsible Proposers. Responsible Proposers are those that have, in the sole judgment of the City, the financial ability, experience, resources, skills, capability, reliability and business integrity necessary to perform the requirements of the contract. The City may also consider references and financial stability in determining a responsible Proposer.

5. **INVOICES:** Invoices shall be submitted by the successful proposer to the City of Texarkana, Texas, Purchasing, P. O. Box 1967, Texarkana, Texas 75504
6. **PAYMENT TERMS:** Net 30 days.
7. **TAXES:** The City of Texarkana, Texas is exempt from Federal Manufacturer's excise and state sales tax. Tax must not be included in proposal. Tax exemption certificates will be executed by the City and furnished upon request.
8. **DELIVERY PROMISE:** Proposals must show the number of calendar days required to place the materials in the possession of the City. Do not quote shipping dates.
9. **FUNDING:** The City of Texarkana, Texas is a home-rule municipal corporation operated and funded on an October 1 to September 30 basis; accordingly, the City reserves the right to terminate, without liability to the City, any contract for which funding is not available.
10. **ASSIGNMENT:** The successful proposer shall not sell, assign, transfer or convey this contract in whole, or part, without the prior written consent of the Purchasing Department.
11. **LATE PROPOSALS:** Proposal packets received after submission deadline shall be returned unopened and will be considered void and unacceptable. The City of Texarkana, Texas is not responsible for the lateness of mail carrier, weather conditions, etc.
12. **ALTERING PROPOSALS:** Proposal prices cannot be altered or amended after submission deadline. Any interlineation alteration or erasure made before opening time must be initialed by the signer of the proposal, guaranteeing authenticity.
13. **WITHDRAWAL OF PROPOSALS:** A proposal price may not be withdrawn or canceled by the proposer for a period of ninety (90) days following the date designated for the receipt of proposals without written approval of Purchasing Director, and proposer so agrees upon submittal of proposal.
14. **CHANGE ORDERS:** No oral statement of any person shall modify or otherwise change, or affect the terms, conditions or specifications stated in the resulting contract. All change orders to the contract will be made in writing by the City of Texarkana, Texas.
15. **ADDENDA:** Any interpretations, corrections or changes to this proposal packet will be made by addenda. Sole issuing authority shall be vested in the City of Texarkana, Texas Purchasing Department. Addenda will be sent to all who are known to have received a copy of this proposal packet. If the addenda contain changes to the "specification" or "proposal form", proposers shall acknowledge receipt of all addenda or they will be declared non-responsive.
16. **Contractor shall release, defend, indemnify and hold harmless the City** and its officers, agents and employees from and against all damages, injuries (including death), claims, property damages (including loss of use), losses, demands, suits, judgments and costs, including reasonable attorney's fees and expenses, in any way arising out of,

related to, or resulting from the performance of the work or caused by the negligent act or omission of contractor, its officers, agents, employees, subcontractors, licensees, invitees or any other third parties for whom contractor is legally responsible (hereinafter "claims"). Contractor is expressly required to defend City against all such claims.

In its sole discretion, City shall have the right to select or to approve defense counsel to be retained by contractor in fulfilling its obligation hereunder to defend and indemnify City, unless such right is expressly waived by City in writing. City reserves the right to provide a portion or its own entire defense; however, City is under no obligation to do so. Any such action by City is not to be construed as a waiver of contractor's obligation to defend City or as a waiver of contractor's obligation to indemnify City pursuant to this contract. Contractor shall retain City approved defense counsel within seven (7) business days of City's written notice that City is invoking its right to indemnification under this contract. If contractor fails to retain counsel within such time period, City shall have the right to retain defense council on its own behalf, and contractor shall be liable for all costs incurred by City.

17. **TERMINATION:** The City of Texarkana, Texas reserves the right to enforce the performance of this contract in any manner prescribed by law or deemed to be in the best interest of the City in the event of breach or default of this contract. The City reserves the right to terminate the contract immediately in the event the successful proposer fails to 1) meet delivery schedules or 2) otherwise perform in accordance with these specifications or 3) the City of Texarkana may terminate this contract for any reason with 30 days written notice.
18. **VENUE:** This agreement will be governed and constructed according to the laws of the State of Texas. This agreement is performable in Bowie County, Texas.
19. **NO PROHIBITED INTEREST:** Proposer acknowledges and represents that they are aware of the laws, City charter, and City code of conduct regarding conflicts of interest. The City charter states that "no officer or employee of the City shall have a financial interest, direct or indirect, in any contract with the City, nor shall be financially interested, directly or indirectly, in the sale to the City of any land, or rights or interest in any land, materials, supplies or service".
20. **PREPARATION COST:** The City will not be liable for any costs associated with the preparation, transmittal, or presentation of any proposals or materials submitted in response to any proposal, quotation, or proposal.
21. **MINOR DEFECT:** The City reserves the right to waive any minor defect, irregularity, or informality in any proposal. The City may also reject any or all proposals without cause prior to award.
22. **PROPOSAL OPENINGS:** All proposals submitted will be read at the City's regularly scheduled proposal opening for the designated project. However, the reading of a proposal at proposal opening should not be construed as a comment on the responsiveness of such proposal or as any indication that the City accepts such proposal as responsive. The City will make a determination as to the responsiveness of proposals submitted based upon compliance with all applicable laws, City of Texarkana, Texas purchasing guidelines, and project documents, including but not limited to the project specifications and contract documents. The City will notify the successful proposer upon award of the contract and, according to state law; all proposals received will be available for inspection at that time.

23. **FORCE MAJEURE:** Neither party shall be held responsible for losses or damages hereunder, if the fulfillment of any terms of provisions of the contract is delayed or prevented by strike, walkouts, acts of god, or public enemy, fire, or flood.
24. **PRICE:** The price or prices for the work shall include full compensation for all taxes, permits, etc. that the proposer is or may be required to pay.
25. **CONFLICT OF INTEREST:** The proposer shall not offer or accept gifts or anything of value nor enter into any business arrangement with any employee, official or agent of the City of Texarkana, Texas.

By signing and executing this proposal, the proposer certifies and represents to the City the proposer has not offered, conferred or agreed to confer any pecuniary benefit or other thing of value for the receipt of special treatment, advantage, information, recipient's decision, opinion, recommendation, vote or any other exercise of discretion concerning this proposal.

26. **PERMITS:** Successful proposer is responsible for obtaining any and all City permits when job requires.
27. **CONFLICT OF INTEREST DISCLOSURE:** Disclosure requirements of potential conflicts of interest involving counties, cities, and other local government entities must be filed after January 1, 2006. The disclosures must be filed by vendors or potential vendors to local government entities. The new requirements are set forth in a new Chapter 176 of the Texas Local Government Code added by H.B. No. 914 of the last Texas Legislature.

A "local government entity" includes counties, municipalities, school districts, and other political subdivisions of the state or any entity to which a member is appointed by a county commissioner's court or the mayor or governing body of a municipality. A "local government officer" means a member of the governing body of a local government entity and the person designated as the chief executive officer of the local government entity.

Companies and individuals who contract, or seek to contract, with the City of Texarkana, Texas and its agents (including employees involved in the business with the entity) must file with the City Secretary's Office at 220 Texas Blvd., Room 102, Texarkana, Texas 75504 a Conflict of Interest Questionnaire that describes, among other things, affiliations or business relationships with City of Texarkana, Texas officers, or certain family members or other businesses of the City of Texarkana, Texas officer, and certain employees or other contractors of the City of Texarkana, Texas with which such persons do business.

The new requirements are in addition to any other disclosures required by law. The dates for filing disclosure statements begin on January 1, 2006. A violation of the filing requirements is a Class C misdemeanor.

The Conflict of Interest Questionnaire (Form CIQ) may be downloaded from http://www.ethics.state.tx.us/conflict_forms.htm.

28. **Disclosing "Interested Parties" to a Contract, HB1295:** A governmental entity (the City) or state agency may not enter into a contract described by Subsection (b) with a business entity unless the business entity, in accordance with this section and rules adopted under this section submits a disclosure of interested parties to the governmental entity or state agency at the time the business entity submits the signed contract to the governmental entity or state agency.

“controlling interest” means: (1) an ownership interest or participating interest in a business entity by virtue of units, percentage, shares, stock or otherwise that exceeds 10%; (2) membership on a board of directors or other governing body of a business entity of which the board or other governing body is composed of not more than 10 members; or (3) service as an officer of business entity that has four or fewer officers or service as one of the four officers most highly compensated by a business entity that has more than four officers.

“Interested party” means a person who has a controlling interest in the business entity with whom a governmental entity or state agency contracts or who actively participated in facilitating the contract or negotiating the terms of the contract, including a broker, intermediary, adviser or attorney for the business entity.

The disclosure of interested parties must be submitted on a form prescribed by the Texas Ethics Commission that includes:

- (1) A list of each interested party for the contract of which the contracting business entity is aware; and
- (2) The signature of the authorized agent of the contracting business entity, acknowledging that the disclosure is made under oath and under penalty of perjury.

A copy of this form can be found on the Texas Ethics Commission website with instructions. <https://www.ethics.state.tx.us/tec/1295-info.htm>

SECTION 00040 - INSURANCE REQUIREMENTS

Prior to the award of this contract by the City and before commencing work, the successful proposer shall be required, at his own expense, to furnish the City of Texarkana, Texas, within ten (10) days of notification of award with certified copies of all insurance certificates showing the following insurance coverage to be in force throughout the term of the contract. The City shall have no duty to pay or perform under this contract until such certificate has been delivered to and approved by the City, and no officer or employee of the City shall have authority to waive this requirement without written approval from the City Manager.

(a) Commercial General Liability (CGL) insurance at minimum combined single limits of \$1,000,000 per-occurrence and \$2,000,000 general aggregate for bodily injury and property damage. Coverage must be written on an occurrence form. Contractual liability must be maintained with respect to the contractor's obligations contained in the contract. The general aggregate limit must be at least two (2) times the per-occurrence limit. CGL shall include coverage for:

1. Premises/Operations
2. Products Completed Operations
3. Personal Injury

(b) Workers Compensation insurance at statutory limits.

(c) Commercial Automobile Liability insurance at minimum combined single limits of \$1,000,000 per-occurrence for bodily injury and property damage, including owned, non-owned, and hired vehicle coverage.

The required limits may be satisfied by any combination of primary, excess or umbrella liability insurances, provided the primary policy complies with the above requirements and the excess umbrella is following form. The successful proposer may maintain reasonable and customary deductibles, subject to approval by the City.

A comprehensive general liability insurance form may be used in lieu of a commercial general liability insurance form. In this event, coverage must be written on an occurrence basis, at limits of \$500,000 per occurrence, combined single limit; and coverage must include a broad form comprehensive general liability endorsement, coverage for products/completed operations, and broad form contractual liability covering the obligations included in the contract.

With reference to the foregoing insurance requirement, the successful proposer shall specifically endorse applicable insurance policies as follows:

- (1) The City shall be named as an additional insured with respect to general liability.
- (2) A waiver of subrogation in favor of the City of Texarkana, Texas shall be contained in the workers compensation coverage.
- (3) All insurance policies shall be endorsed to require the insurer to immediately notify the City of any material change in the insurance coverage.
- (4) All insurance policies shall be endorsed to the effect that the City will receive at least 10 days notice prior to cancellation, non-renewal or termination of the insurance.

- (5) All copies of Certificates of Insurance shall reference the project/contract number for which the insurance is being supplied.

The City prefers that all insurance be purchased from an insurance company that meets the following requirements:

- 1) A financial rating of A:VII or better as assigned by the BEST rating Company or A or better by Standard and Poor's.
- 2) Written by companies approved by the State of Texas and acceptable to the City of Texarkana, Texas.

All insurance must be written on forms filed with and approved by the Texas State Board of Insurance. Certificates of Insurance shall be prepared and executed by the insurance company or it's authorized agent, and shall contain provisions representing and warranting the following:

- 1) The insurance set forth by the insurance company are underwritten on forms, which have been approved by the Texas State Board of Insurance.
- 2) Sets forth all endorsements and insurance coverage according to requirements and instructions contained herein.
- 3) Shall specifically set forth the notice of cancellation or termination provisions to the City of Texarkana, Texas.

CONTRACTOR SHALL:

- (1) provide coverage for its employees providing services on a project, for the duration of the project based on proper reporting of classification codes and payroll amounts and filling of any coverage agreements;
- (2) provide a certificate of coverage showing workers' compensation coverage to the governmental entity prior to beginning work on the project;
- (3) provide the governmental entity, prior to the end of the coverage period, a new certificate of coverage showing extension of coverage, if the coverage period shown on the contractor's current certificate of coverage ends during the duration of the project;
- (4) obtain from each person providing services on a project, and provide to the governmental entity:
 - (A) a certificate of coverage, prior to that person beginning work on the project, so the governmental entity will have on file certificates of coverage showing coverage for all persons providing services on the project; and
 - (B) no later than seven days after receipt by the contractor, a new certificate of coverage showing extension of coverage, if the coverage period shown on the current certificate of coverage ends during the duration of the project;

- (5) retain all required certificates of coverage on file for the duration of the project and for one year thereafter;
- (6) notify the governmental entity in writing by certified mail or personal delivery, within ten (10) days after the contractor knew or should have known, of any change that materially affects the provision of coverage of any person providing services on the project;
- (7) post a notice on each project site informing all persons providing services on the project that they are required to be covered, and stating how a person may verify current coverage and report failure to provide coverage. This notice does not satisfy other posting requirements imposed by the Act or other commission rules. This notice must be printed in at least 19-point normal type, and shall be in both English and Spanish and any other language common to the worker population. The text for the notices shall be the following text provided by the commission on the sample notice, without any additional words or changes:

REQUIRED WORKERS' COMPENSATION COVERAGE

"The law requires that each person working on this site or providing services related to this construction project must (see reverse) be covered by workers' compensation insurance. This includes persons providing, hauling, or delivering equipment and materials, or providing labor or transportation or other service related to the project, regardless of the identity of their employer or status as an employee."

"Call the Texas Workers' Compensation Commission at 512-305-7238 to receive information on the legal requirement for coverage, to verify whether your employer has provided the required coverage, or to report an employer's failure to provide coverage." and

- (8) contractually require each person with whom it contracts to provide services on a project, to:
 - (A) provide coverage based on proper reporting of classification codes and payroll amounts and filing of any coverage agreements for all of its employees providing services on the project, for the duration of the project;
 - (B) provide a certificate of coverage to the contractor prior to that person beginning work on the project;
 - (C) include in all contracts to provide services on the project the language in subsection (e) (3) of this rule;
 - (D) provide the contractor, prior to the end of the coverage period, a new certificate of coverage showing extension of coverage, if the coverage period shown on the current certificate of coverage ends during the duration of the project;
 - (E) obtain from each other person with whom it contracts, and provide to the contractor:

- and
- (i) a certificate of coverage, prior to the other person beginning work on the project;
 - (ii) prior to the end of the coverage period, a new certificate of coverage showing extension of the coverage period, if the coverage period shown on the current certificate of coverage ends during the duration of the project;
- (F) retain all required certificates of coverage on file for the duration of the project and for one year thereafter;
- (G) notify the governmental entity in writing by certified mail or personal delivery, within (ten) 10 days after the person knew or should have known, of any change that materially affects the provision of coverage of any person providing services on the project; and
- (H) contractually require each other person with whom it contracts, to perform as required by paragraphs (A) - (H), with the certificate of coverage to be provided to the person for whom they are providing services.

SECTION 00050 –BOND REQUIREMENTS

BID BOND

An acceptable Bid Bond, certified check or cashier's check (bid/proposal security) payable without recourse to the order of the City of Texarkana, Texas, in an amount not less than **five percent (5%)** of the amount of the bid/proposal must accompany each bid/proposal as guarantee that, if awarded the contract, the bidder/proposer will enter into a contract within ten (10) days of the presentation of such contract to the bidder/proposer by the City. The Bid Bond must be on a form acceptable to City and the bonding company supplying the Bid Bond must be authorized to do business in the State of Texas.

The bid/proposal security submitted with each bid/proposal shall be considered as the amount of the liquidated damages which the City of Texarkana will sustain by the failure, neglect or refusal of the bidder/proposer to execute and deliver the agreement should the contract be awarded him.

If the bidder/proposer defaults in executing the agreement within ten (10) days after presentation of the contract to him, the bid/proposal security shall become the property of the City of Texarkana.

Bidder/Proposer warrants that the bid/proposal he submits has been checked for mathematical correctness and same is correct. Bidder/proposer agrees that should he desire to withdraw his bid/proposal after bid/proposal opening because of a mathematical mistake that the City of Texarkana may retain the bid/proposal security as liquidated damages and not as penalty and the bidder/proposer hereby waives any legal defense available to bidder/proposer for such mistake. (i.e. unilateral mistake).

The Bid Bond shall be retained by the City of Texarkana as liquidated damages in the event the successful bidder/proposer, after the award, fails to comply with the terms of this bid/proposal.

Bond rating must be A- or better.

PERFORMANCE BOND

Successful bidders/proposers must provide a performance bond for 100 percent of the contract price to ensure fulfillment of the Contractor's obligations under the contract.

PAYMENT BOND

Successful bidders/proposers must provide a payment bond for 100 percent of the contract price. Said payment bond is to ensure payment as required by statute to all persons supplying labor and material under the contract.

SECTION 00100 – INSTRUCTIONS TO PROPOSERS

A complete set of the proposal documents will be provided by Terracon. A complete set of proposal documents shall be used in preparing proposals; neither Owner, nor Terracon assume any responsibility for errors or misinterpretations resulting from the use of incomplete sets of proposal documents.

Owner by making available copies of the proposal documents on the above terms, does so only for the purpose of obtaining proposals on the work and does not confer a license or grant for any other use.

Qualification of Proposers

All proposers must demonstrate qualifications to perform work. Each proposer must submit the required documents including previous work experience and proof of authority to conduct business in the jurisdiction in the area in which the work is to be performed.

Contractors submitting proposals must comply with requirements of the Davis-Bacon Act and associated U.S. Department of Labor regulations for all construction, alteration and repair activities. Cleanup activities will involve construction, alteration and repair activities and are, therefore, subject to the Davis-Bacon Act. The remediation of asbestos- and lead-containing materials are considered “Building Construction” under the Davis-Bacon Act. These requirements include, but are not limited to, payment of prevailing wages, weekly payment of wages, and specific job-site postings. More information is available at <https://www.dol.gov/whd/govcontracts/dbra.htm>.

Contractor proposals must include:

- Davis-Bacon Wage Determinations; available at www.wdol.gov Wage Determinations
- Federal Labor Standards Clauses

Proposal Submittal: Required Documents Summary

Insurance Certificate

Bid Bond (5%) will be required for this project.

Performance Bond and Labor and Material Payment Bond will be required for this project.

AIA A305 Contractor's Qualification Statement

State of Texas Asbestos, Lead and Mold Contractor Licenses

State of Texas Supervisor License and Work Experience (Asbestos, Lead and Mold)

Name of the Proposed Landfill at which the Waste will be Disposed

Name of the Waste Transporter and a Certificate of Insurance

Notarized Statement of Compliances

Scoring and Selection

The following criteria will be used to score the proposals:

- Experience Specific to Deteriorated Structures that Include Common Walls – 25 Points
- Experience Specific to Façade Preservation of Deteriorated Structures – 20 Points
- Experience Specific to Federally Funded State Environmental Cleanups – 15 Points
- References – 15 Points
- Demonstrated Ability to Adhere to Project Timelines – 15 Points
- Total Project Cost - 10 Points

In the event of a tie score, the Owner will break the tie amongst the tying proposers using the following method:

- (1) The first tie breaker, if needed, will be preference to local contractor as shown in “General Terms and Conditions” Section 4.3.
- (2) The second tie breaker, if needed, will be the highest score for the “Total Project Cost” criterion.
- (3) The third tie breaker, if needed, will be the highest score for the “Demonstrated Ability to Adhere to Project Timelines” criterion.
- (4) The fourth tie breaker, if needed, will be the highest score for the “References” criterion.

Timeline

Contractor is required to meet the following timeline:

- Begin field work – no later than July 25, 2016
- Abatement/remediation and clearance completion – by August 12, 2016
- Closeout submittals – within 7 working days following completion of abatement.
- All invoices must be submitted within 14 days following completion of abatement.

Upon Proposal Award the Contractor will submit the Following Items:

Hazardous Communication Program

Respiratory Protection Program

Material Safety Data Sheets

Current Worker Licensing and Registration

Medical Surveillance Information for Personnel

Original Certificate of Insurance

Safety Plan

Examination of Proposal Documents and Site

Before submitting a proposal, each proposer must:

- a) Examine the contract documents thoroughly.
- b) Attend the mandatory pre-proposal walk-through to familiarize the proposer with variances that may affect cost, progress, or performance of the work.
- c) Familiarize himself with local, federal and state laws, ordinances, rules and regulations that may affect cost, progress or performance of the work.
- d) Study and carefully correlate proposer's observations with the contract documents.

The Owner reserves the right to award only one contract to one contractor after receipt of proposals.

Before submitting a proposal, each proposer will, at his own expense, make any investigations and tests as the proposer may deem necessary to determine his proposal for performance of the work in accordance with the time, price and other terms and conditions of the contract documents.

Interpretation:

Questions about the meaning or intent of the Proposal Package shall be submitted to Terracon via electronic mail. Replies will be issued by addenda transmitted via electronic mail to all parties recorded by Terracon as having received the proposal package. Questions received less than two (2) days prior to the date for opening of proposals will not be answered. Only questions answered by formal written addenda will be binding. Oral and other interpretations or clarifications will be without legal effect.

END OF SECTION 00100

APPENDIX A
SITE CLEANUP PLAN

SITE CLEANUP PLAN

COMMERCIAL BUILDING
203/205 W Broad Street
Texarkana, Texas
EPA ACRES ID Nos. 72441/72421

United States Environmental Protection Agency, Region 6
Brownfields Multi-Purpose Pilot
Hazardous Substances
Cooperative Agreement No. BF-00F62801

February 25, 2016
Terracon Project No. 94137464B



Prepared for:
City of Texarkana
Texarkana, Texas

Prepared by:


Greg Calhoun
TDSHS Individual Asbestos Consultant
License No. 10-5510
Expires 10.19.17

Terracon Consultants, Inc.
Dallas, Texas
TDSHS Asbestos Consultant Agency License No. 10-0157
TDSHS Lead Firm License No. 2110106
TDSHS Mold Assessment Company License No. ACO0117

terracon.com

Terracon

Environmental



Facilities



Geotechnical



Materials

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SITE CLEANUP PLAN

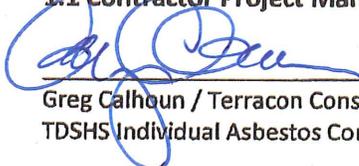
Commercial Building
203/205 W Broad Street, Texarkana, Texas 75501
EPA ACRES ID Nos. 72441/72421

Brownfields Multi-Purpose Pilot Grant, Cooperative Agreement No. BF-00F62801
U.S. Environmental Protection Agency, Region 6
Terracon Project No. 94137464B

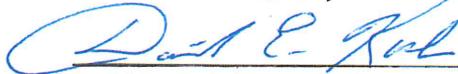
Prepared by: Terracon Consultants, Inc., Dallas, Texas
TDSHS Asbestos Consultant Agency License No. 10-0157
TDSHS Lead Firm License No. 2110106
TDSHS Mold Assessment Company License No. ACO0117

1.0 TITLES AND APPROVALS

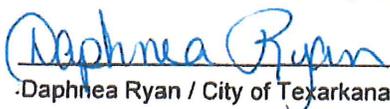
1.1 Contractor Project Manager


Date 3/28/16
Greg Calhoun / Terracon Consultants, Inc.
TDSHS Individual Asbestos Consultant, License No. 10-5510, Expires 10.19.17

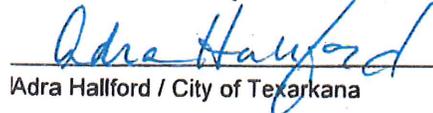
1.2 Contractor Quality Assurance Reviewer


Date 3/28/16
David E. Koch / Terracon Consultants, Inc.

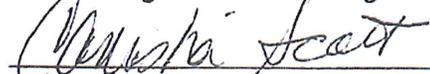
1.3 Grantee Brownfields Program Manager


Date 3/24/16
Daphnea Ryan / City of Texarkana

1.4 Grantee Quality Assurance Manager


Date 3/28/16
Adra Hallford / City of Texarkana

1.5 EPA Region 6 Grant Manager


Date 3/24/16
Camisha Scott / USEPA Region 6

Responsive ■ Resourceful ■ Reliable

1

TDSHS Asbestos Consultant License #10-5510
Expires 10.19.17


Greg Calhoun
TDSHS Asbestos Consultant License #10-5510
Expires 10.19.17

Site Cleanup Plan

Commercial Building ■ 203/205 W Broad Street ■ Texarkana, Texas
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2.0 INTRODUCTION

The U.S. Environmental Protection Agency (EPA) Brownfields Program announced in 2011 a pilot program that combined environmental assessment and cleanup funds into one grant. The Multi-Purpose Pilot Grant award required a government entity to apply for a specific site that passed CERCLA liability requirements and was owned by the applying government entity.

The objectives of the City of Texarkana, Texas' Brownfields Program include improving public health and safety, increasing jobs, increasing revenue for the City, increasing industrial, commercial and housing development, increasing green space, conserving energy, protecting natural resources, enhancing community pride and improving the overall quality of life for our citizens. Brownfields revitalization of real property is integral to all these objectives. The City submitted a FY2012 application for 203/205 West Broad Street in the Fiscal Year 2012 national grant competition. EPA awarded Texarkana a \$400,000 Multi-Purpose Pilot Grant to conduct environmental assessment and cleanup of this property to improve environmental health conditions in our community and stimulate redevelopment interest.

The downtown West Broad Street property is a catalyst site identified by previous environmental assessments and planning. Catalysts sites have elevated potential to initiate community change if they can be revitalized. The purpose of this grant project is to assess and clean up this Downtown Brownfields site to a point where residual environmental issues do not reasonably obstruct active re-use of the structures and redevelopment.

3.0 THE PROJECT

The site has been physically developed with structure(s) since at least 1885. The current commercial building consists of two physically adjoined 0.08-acre parcels located at 203 and 205 West Broad Street in Texarkana, Bowie County, Texas. Both parcels are developed with single story retail buildings which are adjoined to other commercial structures on the block in a manner typical of historic downtown development. Both buildings are vacant. Prior to City of Texarkana acquisition in 2012 the buildings had not been maintained for several years. Water infiltration had severely damaged the roof and flooring of both buildings, to the point of partial collapse.

203 West Broad Street. This portion of the project is a one story former bail bonds office in a multi-tenant retail center. The structure is constructed on a slab on grade and pier and beam foundation and consists of approximately 2,800 square feet. The exterior

A handwritten signature in blue ink, appearing to read "Greg Calhoun".

Greg Calhoun

Site Cleanup Plan

Commercial Building ■ 203/205 W Broad Street ■ Texarkana, Texas
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February 25, 2016 ■ Terracon Project No. 94137464B

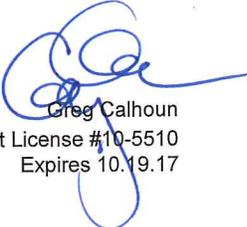
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of the building consists of wood, brick, and hard plaster. The roof consists of a flat, built-up roofing system. The interior of the structure consists of former sales floor, office, restrooms, storage rooms, stockroom, and crawlspace. Multiple areas of the interior are currently deemed unsafe and not accessible for other than remote visual evaluation. The interior walls consist of textured drywall, unfinished drywall with wallpaper, unfinished drywall, wood, brick and hard plaster. The ceiling consists of a drop ceiling, hard plaster, and wood ceiling system suspended from a wood deck. The floors consist of vinyl floor tile on a concrete and wood substrate. Fungal growth as mold is visible and analytically documented at multiple locations in the interior of the building on gypsum wallboard walls, ceiling tiles, wood sub-flooring, ceiling and roof decks, plaster walls and exposed wood framing and beams. The roof and/or ceiling systems are collapsed in various locations of the indoor spaces allowing inclement weather to directly impact the interior building materials. Portions of the floor system are collapsed, exposing the crawlspace.

205 West Broad Street. This portion of the project is a one-story former key store in a multi-tenant retail center. The structure is constructed on a slab on grade and pier and beam foundation and consists of approximately 3,500 square feet. The exterior of the building consists of wood, brick, and hard plaster. The roof consists of a flat, built-up roofing system. The interior of the site consists of a north entrance area, sales floor, safe room, mezzanine area, mechanical room, restroom, and crawlspace. The interior walls consist of textured drywall, wood, brick, and hard plaster. The ceiling consists of a drop ceiling, drywall, hard plaster, and interlocking tiles ceiling system suspended from a wood deck. The floors consist of carpet, vinyl floor tile, and terrazzo on a concrete and wood substrate. Fungal growth as mold is visible and analytically documented at multiple locations in the interior of the building on gypsum wallboard walls, ceiling tiles, wood sub-flooring, ceiling and roof decks, plaster walls and exposed wood framing and beams. The roof and/or ceiling systems are collapsed in various locations of the indoor spaces allowing inclement weather to directly impact the interior building materials. Portions of the floor system are collapsed, exposing the crawlspace.

3.1 Original Approach

The City of Texarkana expected to encounter asbestos-containing and -contaminated materials, lead paint-coated building components, avian pathogen-contaminated materials and fungal-contaminated (mold) materials based on the findings of previous ASTM E1527 Phase I environmental site assessments and limited historical testing. As grantee Texarkana proposed to complete a traditional series of EPA-approved plans to assess and cleanup the property.



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Site Cleanup Plan

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Central to grant activities was structural integrity of the 2-story commercial property. Developed more than 130 years ago, the walls, roof, structural members and street façade had deteriorated to a degree it was suspected unsafe to conduct physical sampling activities. City ownership was requisite of the grant. Raley & Associates, Inc. (RAI), Bossier City, Louisiana conducted a visual observation of the connected buildings in October 2012 as part of grant proposal preparation. In the interests of worker and public safety, the grant application provided for additional structural integrity analysis of the building before EPA-approved Phase II assessment occurred. In the interim, the City of Texarkana has secured and maintained doors, windows, and structural openings of the premises to prevent access by unauthorized persons consistent with *Chapter 5, Article III, of the Code of Ordinances* of the City of Texarkana, Texas for substandard structures.

Under the Multi-Purpose Pilot Grant Texarkana competitively procured Qualified Environmental Professional (QEP) consultant services to develop grant plans and conduct assessment as physical sampling and analysis. Assessment would develop an improved understanding of the distribution of contaminants known to be in and possibly beneath the structures. This information would then be used to quantify contaminants. Contaminant quantities would be used to decide a cleanup strategy and plan to mitigate or manage contaminants consistent with Texas regulatory programs and goals for re-use.

Under this approach, the following were completed toward grant implementation;

- Negotiated with *EPA Cooperative Agreement # BF-00F62801, 2012*
- A supporting cooperative agreement work plan as *Brownfields Multi-Purpose Pilot Grant Milestones and Schedule, City of Texarkana, Texas, 203/205 West Broad Street Site, (\$200,000 Hazardous Substances Assessment, \$200,000 Hazardous Substances Clean Up); 2012*
- Competitive selection process to secure Qualified Environmental Professional services, *Consultant Services, Qualified Environmental Professional To Assist in the Implementation and Management of the EPA Brownfields Multi-Purpose Grant, Texarkana Request For Qualifications #13-2001-02, May 2013*
- Selection of Terracon Consultants, Inc. for Qualified Environmental Professional (QEP) services, initiating first services with Texarkana Purchase Order #01204, June 2013
- Qualitative interior observation and testing limited by safety and physical access;
 - *Hazardous Materials Consulting Report: Visual Mold Assessment, 203 and 205 West Broad Street, Texarkana, Texas, Terracon Project No. 94137464, September 20, 2013*
 - *Lead-Based Paint Vacant Commercial Structures, 203 & 205 West Broad Street, Texarkana, Texas 75165; Terracon Project No. 94137464, September 23, 2013*

A blue ink signature of Greg Calhoun, written over a circular stamp that partially overlaps the text "Greg Calhoun".

Greg Calhoun

Site Cleanup Plan

Commercial Building ■ 203/205 W Broad Street ■ Texarkana, Texas
EPA ACRES ID No. 72441/72421 ■ Cooperative Agreement No. BF-00F62801
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- *Asbestos Survey, Vacant Commercial Structures, 203 & 205 West Broad Street, Texarkana, Texas; Terracon Project No. 94137464, October 1, 2013*
- *EPA-approved Site-Specific Quality Assurance Project Plan for Assessment and Cleanup (Revision 1), Terracon Project No. 94137464B, March 31, 2014*
- *Property-Specific Sampling And Analysis Plan (PSAP) – Asbestos, Lead-Paint, Mold and Guano Sampling, Commercial Building, 203 & 205 W Broad Street, Texarkana, Texas 75501; Brownfields Multi-Purpose Pilot Grant, U.S. Environmental Protection Agency, Region 6, EPA Cooperative Agreement No. BF-00F62801, Terracon Project No. 94137464B, July 2014 (reference Appendix B)*
- *Property-Specific Sampling and Analysis Plan (PSAP) – Soil And Groundwater Assessment, Commercial Building, 203 & 205 W Broad Street, Texarkana, Texas 75501; Brownfields Multi-Purpose Pilot Grant, U.S. Environmental Protection Agency, Region 6, EPA Cooperative Agreement No. BF-00F62801, Terracon Project No. 94137464B, July 2014*

3.2 Changed Conditions

Terracon conducted September 2013 observations and limited qualitative sampling and testing of materials of the structures' interiors where safe access allowed. This testing was external to the grant budget. Testing was conducted and results evaluated by Texas-licensed professionals. Testing produced quantitative data, but is considered qualitative in that it was developed external to the final quality assurance project plan and cannot be used for critical grant process decisions. Qualitative data identified measured asbestos-containing materials, lead-based paint and mold. The data was considered in developing technical sampling plans under the grant. At that time Terracon observed the southern section of the roof and sub-floor at the 203 West Brown Street location were collapsed. The sub-floor and roof visually appeared structurally damaged throughout the interior of 205. Building debris was observed throughout the interior of both 203 and 205 consisting of wood, ceiling tile, floor tile and mastic, drywall, plaster materials and roofing materials.

During 2013 and 2014 although the structure was secured against access, it could not be sealed against all weather. Seasonal weather fluctuations, often severe, further impacted and degraded the structure. High winds associated with rain penetrated the building further. In one instance on April 27, 2014 the metropolitan area of the twin cities of Texarkana, Texas and Texarkana, Arkansas was hit by damaging hail ranging in size up to 1.75 inches in diameter. In that extensive band of weather, 25 miles south of the city a single hailstone 4.5 inches in diameter was reported.¹ On _____, 2015 the City observed the effects of further deterioration of the structure as crumbling facade debris on

¹ *DamageRecon, Event Details Texarkana Apr 27 2014*, online <https://damagerecon.donan.com/map-central/texarkana-tx>, February 2016

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Site Cleanup Plan

Commercial Building ■ 203/205 W Broad Street ■ Texarkana, Texas
EPA ACRES ID No. 72441/72421 ■ Cooperative Agreement No. BF-00F62801
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the street front side and structural wall movement evidenced by exterior widening of cracks.

The City with structural engineer Jeff Raley, RAI, were on-site July 29, 2015 for observation to re-evaluate and report project conditions relative to structural integrity and safety to implement the EPA-approved sampling plans. In the subsequent RAI report it was stated;

“As of this date, the building structures appear to be unstable and not safe for persons to enter the structures for the purpose of sampling. It is our opinion that it would not be cost effective to do temporary shoring for the purpose of sampling since sampling can be done during material removal (see photos).

The adjacent buildings to the east and west will need to be protected during the removal of materials for assessment and clean up.”

3.3 Adjusted Approach

There followed discussions and meetings by City of Texarkana with EPA, Texas Commission on Environmental Quality (TCEQ), the community and the QEP on alternatives to successfully complete the Multi-Purpose Grant in support of redeveloping 203/205 W Broad Street. The following issues were considered;

- The project site remains a viable redevelopment catalyst site for the community. To discontinue and stabilize without cleanup for redevelopment would be detrimental to the community brownfield revitalization goals and investment to date
- Contaminated materials and debris need to be removed from the structure so that routine architectural and structural stabilizations can be done
- Technically the traditional sequence of assessment and cleanup as “sample-test-report- design-cleanup-confirm-report” cannot be not be completed safely with reasonable cost
- In removing mixed and jointly degraded materials not readily segregated from the interior of structures, asbestos contamination pre-empts lead-, mold- and avian waste-impacted materials for regulation of handling and disposal. Unsegregated materials become subject to Texas Asbestos Health Protection Rules (TAHPR), Texas Administrative Code (TAC), Title 25, Part 1, Chapter C, Subchapter 295, which require that any asbestos-related activity be performed by an individual licensed by the State of Texas through the Texas Department of State Health Services (TDSHS)


Greg Calhoun

Site Cleanup Plan

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- Quality process and methods of EPA-approved PSAPs remain valid for sampling and analysis relative to assessment and cleanup, although rationale and number of samples change

The following were completed toward adjusting the grant approach and implementation as a result of changed conditions;

- City of Texarkana negotiated 1-year extension of project period to September 30, 2016 for cooperative agreement #BF-00F62801
- Updated structural integrity observations and report, Raley and Associates, Inc., July 31, 2015 (reference Appendix A)
- City of Texarkana met with Ms. Mary Kemp and Ms. Camisha Scott / EPA Region 6 on November 12, 2015 on an adjusted approach consistent with changed conditions
- Open House and Public Meeting was advertised and held by City of Texarkana on December 10, 2015 to update the community on Multi-Purpose Grant adjustments and solicit input on the project

It has evolved that a combined cleanup with simultaneous assessment of debris and materials from the interior of 203/205 can occur. In general here and later set forth in more detail in this plan, the adjusted approach is to have a licensed abatement contractor stabilize the structure sufficient to remove unsegregated hazardous materials to a processing station on the exterior of the building. The adjusted plan is to conduct hazardous substance assessments on-site and in-process at a safe staging area to determine whether waste/debris should be handled and disposed as asbestos-, mold-, avian pathogen- or lead-impacted waste material as part of cleanup.

With pre-emption by asbestos, debris will initially be assumed to be asbestos-containing material (ACM) or asbestos-contaminated and appropriately collected, handled and removed through the rear of the structure to a staging and assessment area in the alley.

In the staging area, materials will be first visually assessed and segregated as suspect materials or asbestos materials. Under Texas rule determination that materials do or do not contain asbestos have to be submitted to a third party laboratory as set forth in the EPA-approved PSAP (Appendix B); this may require temporary containment and staging with rush analyses. Alternatively, a Texas-licensed asbestos consultant, inspector or management planner may assume materials contain asbestos.

Secondly, materials will be visually segregated as having mold or adhered or mixed avian waste (e.g. bird or bat guano). If possible, these materials will be cleaned of mold or avian waste contamination.


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Site Cleanup Plan

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Thirdly, materials will be visually segregated for suspect lead-containing coatings and tested on-site using x-ray fluorescence (XRF) field technology.

The remaining materials once cleaned of potentially adhering *de minimis* ACM, mold or avian waste will be handled and disposed as demolition debris.

Assessment and cleanup testing will be subject to the EPA-approved PSAP and related QAPP, modified for locations and sample quantities as the adjusted approach requires. Some anticipated adjustments are addressed in Section 4.1 *Deviations from Assessment Sampling Plan*. All testing will be documented in final reports.

Alley control and security will be coordinated with the City of Texarkana. The City will communicate and work with adjacent property owners and businesses prior to, during and after cleanup.

4.0 SAMPLING FOR ASSESSMENT AND CLEANUP

Public readers of this document should understand that the Multi-Purpose Pilot is a 'trial' process used by EPA to explore the effectiveness and implementability of programs. Not all pilots programs evolve beyond to full-scale grants or programs. Prior to 2002, all EPA Brownfield grants were pilots. The Multi-Purpose Pilot Grant program provides a single grant to an eligible entity for both assessment and cleanup work at a specific brownfield site owned by the applicant.

Although they are often technically identical, sampling and testing of structure-related materials falls into two different programmatic categories under the Multi-Purpose Grant. These categories are Assessment and Cleanup. They are allocated to separate Multi-Purpose grant budgets. Assessment involves characterization of materials as part of quantitation for design of remedy and plans to implement it. The latter involves sampling and analysis that is part of the actual cleanup to document compliance for regulatory closure.

4.1 Deviations from Assessment Sampling Plan

Sampling and analysis as part of assessment will be done by the QEP. This will involve assessing materials as practically feasible immediately after they are removed from the structure and staged. Methods, operating procedures and analyses will occur as set forth in the EPA-approved *Property-Specific Sampling and Analysis Plan (PSAP) for Asbestos, Lead-Paint, Mold and Guano Sampling, Commercial Building, 203 & 205 W Broad Street, Texarkana, Texas 75501, July 2014* (reference Appendix B).


Greg Calhoun

Site Cleanup Plan

Commercial Building ■ 203/205 W Broad Street ■ Texarkana, Texas
EPA ACRES ID No. 72441/72421 ■ Cooperative Agreement No. BF-00F62801
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The following deviations are planned relative to data quality indicators and data quality objectives in applying the EPA-approved PSAP to the adjusted approach;

PSAP 4.2 Precision. Testing was specified for typical substrates and surfaces which will now be removed, physically reduced and likely mixed together as debris consistent with interior demolition practices. Testing will now be done as needed on materials, partial surfaces or broken fixtures as identified in the bulk debris removed and staged. Selection of materials for sampling will make use of professional judgment by the **QEP**. Heterogeneity of sample matrices can produce wide-ranging variability of media and effect strict comparisons of precision. Failure of precision as a data quality indicator will not invalidate data providing the minimums are met necessary to document regulatory closures or suitability to the needed project decisions. These will be discussed as part of data usability and quality in final reports.

PSAP 4.3 Accuracy. The use of fluid decontamination and cleaning blanks of QAPP A.7.3.2 will not apply to asbestos, fungal or avian pathogen sampling due to the technical method of collection.

PSAP 4.5 Completeness. The PSAP estimated the number of samples as in-situ structure sampling, often to represent homogenous areas or rooms. The adjusted approach for safety will not allow in-situ testing or an accurate estimate of the number of samples. While it is believed that the estimated number of samples is adequate, fewer samples may be needed. Failure of completeness will not invalidate data providing the minimums are met necessary to document regulatory closures or suitability to the needed project decisions. These will be discussed as part of data usability and quality in final reports.

PSAP 7.0 Sampling Rationale and Methodology. The overall governance of regulatory programs cited will remain the same. The rationale for sampling is adjusted for typical substrates and surfaces which will now be removed, physically reduced and likely mixed together as debris consistent with interior demolition practices. Testing will now be done as needed on materials, partial surfaces or broken fixtures as identified in the bulk debris removed and staged. Selection of materials for sampling will make use of professional judgment by the **QEP** to select representative material as the debris is segregated as described above in *1.3 Adjusted Approach* and later hereafter. Significant or special deviations from adjusted rationale will be discussed in final reports.


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4.2 Sampling and Testing by Contractor

Sampling and analysis in the field or by fixed-based laboratory conducted by contractor for safety, abatement, disposal, clearance or otherwise required as part of the cleanup of materials relative to state or federal regulations or other law shall be to the requirements and documentation of those programs. Where sampling and analysis of the QEP and contractor overlap or are coordinated in staging areas, the data may be shared. Texarkana and the QEP may rely on the contractor data for qualitative project decision-making.

5.0 IMPLEMENTATION OF THE CLEANUP PLAN

The following sets forth the technical details necessary by the successful contractor competitively selected by the City of Texarkana with assistance from Terracon as QEP within the requirements of the Cooperative Agreement, hereafter **CONTRACTOR**.

Traditionally, prior assessment would better provide quantities for abatement contractors to bid and implement contractor elements of the cleanup plan. The adjusted approach will necessarily require use of experienced, licensed abatement contractors capable of making initial estimates, with overage and underage contingencies, to fully implement the cleanup plan. With unknown quantities and multiple handling exterior to traditional building containment, the remainder of the plan further focuses on strict control of materials and process in close coordination with the City and QEP.

6.0 MATERIAL DESCRIPTION AND QUANTITIES

Briefly and without force and effect upon the contract documents, the work of the Contract can be summarized as the removal and disposal of the following suspect asbestos-containing and -contaminated materials, lead containing components, avian pathogen-contaminated materials and fungal-contaminated materials:

- Floor tile and mastic
- Carpet and mastic
- Resilient sheet flooring
- Drywall wall/ceiling systems
- Ceiling tile
- Wall/ceiling plaster
- Ceramic wall and floor tile grout/thinset
- Cove base and mastic
- Duct insulation and mastic
- Cementitious pipe


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- Rolled-out roofing materials
- Built-up roofing materials
- Roof cement
- Roof flashing
- Assorted unsegregated building material debris

The preceding list should be considered representative only and not a comprehensive catalog of subject materials present on the site. The **CONTRACTOR** is responsible for verifying site conditions and material quantities prior to submission of bid. The **CONTRACTOR** will perform work for materials and locations indicated, regardless of actual quantities, and no increase in Contract amount will be allowed for quantity adjustment.

The subject commercial building structure has been vacant for an extended period of time. As noted above, the structure has significant structural degradation, including roof collapse; items that are porous (i.e. carpet, furnishings) exposed to damaged suspect asbestos containing materials, avian pathogens or fungal contamination will be disposed of as asbestos, fungal- or avian pathogen-contaminated waste in accordance with applicable regulation and this scope of work.

Non-porous items which are not suspect asbestos-containing materials and bear no paint or lacquer coatings may be cleaned and decontaminated, then removed through the processing area and disposed of as general construction debris. Non-porous items with paint or lacquer coatings will be cleaned of surface contamination and disposed of as lead-paint waste

The **CONTRACTOR** will be responsible for providing power and water to the work areas. **NOTE: NEGATIVE PRESSURE MUST BE MAINTAINED WITHIN THE WASTE PROCESSING STATION UNTIL CLEARANCE HAS BEEN ACHIEVED.** "Fire watch" is required while active work areas are in place at the site.

7.0 WORK PRACTICES

CONTRACTOR shall maintain personnel on the site at all times any portion of the work area(s) is open or not properly secured. **CONTRACTOR** will ensure that at least one (1) **CONTRACTOR** representative is on-site at all times during work hours, including during lunch break. **CONTRACTOR** will ensure that work areas are secure at the end of each work day. **CONTRACTOR** will have a company representative stay on-site to maintain security during times other than normal working hours.


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If a regulatory inspection is conducted by the Texas Department of State Health Services (TDSHS) inspector, the **CONTRACTOR'S** abatement project supervisor must immediately cease all abatement activities and give his complete and undivided attention to the inspector. Should the TDSHS inspector don personal protective equipment (PPE) and enter the containment, the abatement project supervisor will also don PPE and enter the containment to accompany the inspector on his inspection. If any deficiency/deficiencies are noted by the TDSHS inspector, the abatement project supervisor will direct the workers to immediately correct the deficiency/deficiencies.

The abatement project supervisor will accompany the TDSHS inspector throughout the duration of the inspection process, whether inside or outside the containment. Upon the TDSHS inspector's departure from the site, the supervisor will resume abatement activities.

7.1 Respiratory Protection

During asbestos related activities, the **CONTRACTOR** will provide respirators which are applicable and suitable for the purpose intended in accordance with OSHA 1910.134 – Respirator Standard. Terracon recommends use of powered air purifying respirators (PAPR) pending receipt of air monitoring data collected on-site; Terracon further recommends use of combination HEPA/organic vapor combination respirator filters.

7.2 Protective Clothing

During preparation, removal and cleanup activities in interior areas, at least one protective suit will be worn by each worker. Boots and gloves will be made available to each worker as needed. All protective suits will be properly disposed of at the conclusion of each work-shift. Prior to exiting the work area, the workers performing the cleanup will decontaminate thoroughly in three-chambered wet decontamination system attached to the work area.

During cleanup in exterior regulated areas, each worker will wear two (2) protective suits and proper respiratory protection. Upon completion of cleanup activities in each or regulated area, workers will thoroughly HEPA vacuum the outer suit. Workers will then remove the outer suit and, still wearing the inner suit, proceed to either (a) the next regulated work area, where a new outer suit will be donned over the inner suit, or (b) a central decontamination area as defined below. All protective suits will be properly disposed of at the conclusion of each work shift.

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7.3 Containment/Regulated Area

The **CONTRACTOR** will establish the waste processing station and regulated work area(s) in compliance with applicable local, state and federal regulations.

Preparation of the work area will include, but may not be limited to, the cleanup of asbestos-containing and -contaminated materials, lead paint-coated components, avian pathogen-contaminated materials and fungal-contaminated materials. These activities will be performed after the installation of critical barriers and establishment of HEPA-filtered circulatory air flow. The **CONTRACTOR** will install a three chambered personnel decontamination system as described below and place HEPA-filtered negative air machines in the work area and exhausted to the outside prior to beginning precleaning activities.

The **CONTRACTOR** will establish a waste processing station on the exterior of the structure. This waste processing station will be subdivided into separate dedicated chambers for the processing of (a) general construction debris, (b) asbestos-, avian pathogen-, or fungal-contaminated materials, and (c) lead-paint waste. Please refer to Appendix C for a conceptual sketch of the waste processing station.

The waste processing station will be constructed with a rigid frame and provide protection from overhead hazards as necessary. Waste processing station walls, floors and ceilings will be constructed of or covered with two (2) layers of minimum 6-mil polyethylene sheeting. Damaged polyethylene sheeting will be repaired or replaced immediately. The **CONTRACTOR** will provide one additional floor layer of 6-mil polyethylene sheeting per shift change and remove contaminated layer after each shift.

The floor of the waste processing station will be kept clean and clear of waste and debris. Accumulated water will be collected through a HEPA-filtered vacuum and disposed of through storm drain or sanitary sewer.

The **CONTRACTOR** will be responsible for providing power and water to the work areas. **NOTE: NEGATIVE PRESSURE MUST BE MAINTAINED WITHIN THE WASTE PROCESSING STATION UNTIL CLEARANCE HAS BEEN ACHIEVED.** "Fire watch" is required while active work areas are in place at the site.

Exterior asbestos containing materials (e.g. window glazing, roof flashing, cementitious siding, cementitious debris) will be abated in accordance with the National Emission Standard for Hazardous Air Pollutants (NESHAP) within a series of regulated areas, each employing asbestos warning signs and barrier tape at all approaches to the work area, drop-cloths consisting 6-mil polyethylene sheeting in and around all removal areas,

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localized HEPA vacuum systems, critical barriers at all openings into the structure within and adjoining the regulated area, and a central three-chambered wet decontamination system.

Provide a Personnel Decontamination Unit consisting of a serial arrangement of connected rooms or spaces, Changing Room, Shower Room, and Equipment Room. **NOTE: disposable/pop-up units displaying excessive use or wear will not be permitted for the decontamination system.** Require all persons without exception to pass through this decontamination unit for entry into and exiting from the work area for any purpose. Do not allow parallel routes for entry or exit.

Changing Room (clean room): Provide a room that is physically and visually separated from the rest of the building for the purpose of changing into protective clothing. Construct using polyethylene sheeting, at least 6-mil in thickness, to provide an airtight seal between the Changing Room and the rest of the building. Locate so that access to Work Area from Changing Room is through Shower Room. Separate Changing Room from the building by a sheet polyethylene flapped doorway.

Maintain floor of changing room dry and clean at all times. Do not allow overflow water from shower to wet floor in changing room. Damp wipe all surfaces twice after each shift change with a disinfectant solution.

Provide a continuously adequate supply of disposable bath towels.

Provide posted information for all emergency phone numbers and procedures.

Shower Room: Provide a completely water tight operational shower to be used for transit by cleanly dressed workers entering the Work Area from the Changing Room, or for showering by workers exiting the Work Area after undressing in the Equipment Room.

Construct room by providing a shower pan and 2 shower walls in a configuration that will cause water running down walls to drip into pan. Install a freely draining floor in the shower pan at an elevation that is at the top of pan.

Separate this room from the rest of the building with airtight walls fabricated of 6-mil polyethylene sheeting.

Separate this room from the Changing and Equipment Rooms with airtight walls fabricated of 6-mil polyethylene sheeting.

Provide splash-proof entrances to Changing and Equipment Rooms with 2 doors arranged


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in the following configuration:

At each entrance to the Shower Room construct a doorframe out of lumber, PVC Pipe or equivalent. Attach to this door frame two overlapping flaps fastened at the head (top) and jambs (sides). Overlap the flaps that present a shingle-like configuration to the water stream from the shower. Arrange so that any air movement out of the Work Area will cause the flaps to seal against the door frame.

Provide shower head and controls. Provide temporary extensions of existing hot and cold water and drainage, as necessary for a complete and operable shower.

Provide a continuously adequate supply of soap and maintain in sanitary condition. Arrange so that water from showering does not splash into the Changing or Equipment Rooms.

Provide flexible hose showerhead. Pump wastewater to drain or to storage for use in amended water. If pumped to drain, provide 20 micron and 5 micron waste water filters in line to drain or waste water storage. Change filters daily or more often if necessary. Provide Hose Bib.

Equipment Room (contaminated area): Require work equipment, footwear and additional contaminated work clothing to be left here. This is a change and transit area for workers. Separate this room from the work area by a 6-mil polyethylene flap doorway. Separate this room from the rest of the building with airtight walls fabricated of 6-mil polyethylene sheeting. Separate this room from the Shower Room and Work Area with airtight walls fabricated of 6-mil polyethylene sheeting.

Work Area: Separate work area from the Equipment Room by polyethylene barriers. If the airborne asbestos level in the work area is expected to be high, as in dry removal, add an intermediate cleaning space between the Equipment room and the Work area. Damp wipe clean all surfaces after each shift change. Provide one additional floor layer of 6-mil polyethylene sheeting per shift change and remove contaminated layer after each shift.

Waste Load-out Area: the **CONTRACTOR** will conduct the waste load out in areas separate from any non-project personnel or passers-by.

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7.4 Removal

The **CONTRACTOR** will perform the removal and disposal in accordance with current local, state and federal regulations.

The **CONTRACTOR** will be responsible for providing power and water to the work areas. **NOTE: NEGATIVE PRESSURE MUST BE MAINTAINED WITHIN THE WASTE PROCESSING STATION UNTIL CLEARANCE HAS BEEN ACHIEVED.** "Fire watch" is required while active work areas are in place at the site.

Suspect asbestos-containing and -contaminated materials, lead containing components, avian pathogen-contaminated materials and fungal-contaminated materials will be abated in a series of regulated work areas constructed in accordance with applicable regulations and these specifications. Spray these materials with amended water or removal encapsulant. Allow time for amended water or removal encapsulant to saturate the material. Do not over saturate to cause excess dripping. The **CONTRACTOR** will insure that associated nails/screws/fasteners and associated structural wall components are removed or thoroughly cleaned as part of the abatement process. If amended water is used, spray material repeatedly during the work process to maintain a continuously wet condition. If a removal encapsulant is used, apply in strict accordance with manufacturer's written instruction. The use of mechanical methods for removal will not be permitted. The clean surfaces will be encapsulated after passing a visual inspection conducted by a Terracon representative.

Following removal of loose or accumulated building debris, the **CONTRACTOR** will establish install splashguards of minimum 6-mil polyethylene sheeting extending a minimum four vertical feet (4') from the floor, two (2) layers of minimum 6-mil polyethylene sheeting on the floors (where applicable) prior to removing adhered flooring materials from their substrate(s).

Asbestos containing flooring materials may be applied to wood substrates. Removal of these materials through demolition of the wood substrate requires installation of a critical barrier in crawlspace(s) beneath the abatement area, if present.

7.5 Disposal of Asbestos-Containing or -Contaminated Materials, Mold-Contaminated Materials, and Avian Waste-Contaminated Materials

1. As the subject materials are removed, they will be double bagged and labeled in accordance with Texas Department of State Health Services (TDSHS) and OSHA guidelines. Pre-printed Generator Labels shall be affixed to each bag or wrapped component prior to being placed in the lined waste disposal dumpster or trailer. **The**

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use of bladder bags, onion bags or any other disposal bags deemed unconventional by the QEP will not be permitted, unless authorized in writing by the QEP prior to contract award.

2. Asbestos-containing or -contaminated waste will be labeled in accordance with 29 CFR 1910.1200 (f) of OSHA's Hazard Communication standard, and will contain the following information:

DANGER
CONTAINS ASBESTOS FIBERS
AVOID CREATING DUST
CANCER AND LUNG DISEASE HAZARD

3. The area between the bag-out area and the prepared waste receptacle shall be regulated with barrier tape during bag-out operations. The waste dumpster or trailer shall remain secured during all other periods.
4. The waste will be disposed in an approved landfill. The waste will be transported to the landfill in a lined closed top receptacle. Verification of disposal at the landfill will be provided to the **OWNER** by **CONTRACTOR** via the Uniform Hazardous Waste Manifest signed by the landfill.
5. The waste will be transported to the landfill in a lined closed top receptacle. Verification of disposal at the landfill will be provided to the **OWNER** by **CONTRACTOR** via the Uniform Hazardous Waste Manifest.

7.6 Disposal of Lead-Containing or -Contaminated Materials

This section describes the disposal of lead containing or lead contaminated components and/or waste materials. Disposal includes packaging of all non-metal waste materials and shall be accomplished by land filling or incineration as appropriate. Approval by **OWNER** is required prior to all recycling or disposal activities.

Absent testing of waste to determine disposal requirements, suspect lead-containing or -contaminated materials will be disposed of as lead-containing. Testing, if conducted, shall be conducted by the **QEP**. The **QEP** shall verify that the waste has been properly segregated, containerized, and classified in the following categories:

Hazardous Solid Waste:

- Paint chips
- Rags, sponges, mops, HEPA vacuum filters and contents, respirator


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- cartridges, protective clothing, shower water filter(s) and other materials used during abatement.
- Building components if applicable

Hazardous Liquid Waste (as determined by testing)

- Waste water

Place all lead waste generated during the project in a DOT approved drum lined with a 6-mil disposal bag in an enclosed dumpster, truck or designated secure storage area. Separate waste materials into the following categories and label all disposal drums.

All waste shall be handled and disposed of according to local, city, state, and federal regulations. All waste assumed to be hazardous shall be transported off-site to the approved disposal site by **CONTRACTOR**.

Disposal of Hazardous Liquid or Solid Wastes (as categorized by QEP):

- a. Comply with Resource Conservation Recovery Act (RCRA), Department of Transportation (DOT), state and local regulations.
- b. Comply with DOT and state regulations for containers. The most stringent regulation shall apply.
- c. All waste is to be hauled by a licensed waste hauler with all required licenses from all state and local authorities with jurisdiction.
- d. Load all waste material into properly sized disposal bags or polyethylene sheeting prior to being placed in lead-tight drums. Prior to transporting, all materials are to be contained in a DOT approved sealable steel drum with one of the following:
 - One, 6-mil layer of sheet polyethylene, duct tape all seams or
 - One, 6-mil disposal bag; or
 - Two, 4-mil disposal bags
- e. Protect interior of truck or dumpster with two (2) layers of 6-mil polyethylene sheeting with all seams sealed with duct tape.
- f. Load containerized waste in fully enclosed dumpsters or trucks for transport.


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- g. Do not store containerized materials outside of the Work Area. Take containers from the Work Area directly to the designated storage area or enclosed dumpster or truck.
- h. At completion of hauling and disposal of each load submit copy of Uniform Hazardous Waste Manifest to QEP.

7.7 Disposal of Non-Hazardous Waste

Non-Hazardous Solid Waste:

- After thorough cleaning, plastic sheeting and duct tape used during abatement.

Disposal of Non-Hazardous Solid Waste (as categorized by QEP)

Materials are to remain in 6-mil disposal bags or wrapped in polyethylene sheeting.

Transport waste in enclosed trucks or dumpsters.

Disposal of Non-Hazardous Liquid Waste (as categorized by QEP)

Dispose of liquid waste by pouring into sanitary sewage system if permission is received from publicly owned treatment works facility (POTW). Do not dispose of liquid waste by pouring onto ground or into storm drain. If the liquid waste contains phosphates or other chemicals, advise treatment facility of quantity of liquid and that it is likely to contain phosphates.

Properly filtered shower water shall be disposed of as non-hazardous liquid waste. All filters shall be disposed of in accordance with applicable regulations.

7.8 Clearance

Removal will be considered complete following a visual inspection by the QEP. The QEP will inspect all interior surfaces for dust, debris or other evidence of the subject materials.

Asbestos

Asbestos final air clearance sampling will be conducted in interior work areas, negative-pressure enclosures, full containments and the waste processing station; sampling will be performed in accordance with the Texas Asbestos Health Protection Rules (TAHPR) 295.58(i)(3). Clearance samples will be collected using aggressive sampling techniques.


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as described in TAHPR 295.58(i)(3)(A). Equipment used in aggressive sampling should be properly cleaned and decontaminated before use. Air filtration units shall remain on during the clearance air-monitoring period. Prior to air sample collection, floors, ceiling and walls shall be swept with the exhaust of a minimum one (1) horsepower leaf blower. A minimum of eight (8) complete air changes will occur within any containment prior to collection of clearance samples.

A minimum of three (3) samples will be collected inside each negative-pressure enclosure or full containment; at the QEP'S direction, one additional sample will be collected for each 10,000 cubic feet of containment volume (or fraction thereof) in excess of 30,000 cubic feet. The PCM analysis will be performed in accordance with the most current NIOSH 7400 Method and A Counting Rule for the determination of final clearance. The release criteria for PCM analysis is complete if all PCM air samples are determined below 0.01 fibers per cubic centimeter. If the PCM results fail to meet the release criteria, then the decontamination is incomplete and recleaning per the specification is required.

Mold

The project will be cleared by: 1) visual inspection; and, 2) total bioaerosol analysis. The post remedial inspection and air sample collection will be conducted while the containment is in place and properly ventilated. The containment must be on direct exhaust ventilation to the outdoor environment or sealed and in air scrub mode for a cumulative of 24 hours after final cleaning and prior to the PRV final clearance air sample collection. The containment(s) may not be removed or depressurized until final clearance criteria has been achieved and written, interim notice provided by the MAC to the MRC.

The visual evaluation criteria will consist of an evaluation of the remediation area to determine if the remediation has been properly conducted in accordance with the project specifications and procedures, applicable state regulations, and visible fungal growth and extraneous debris within the work areas has been properly removed.

Representative air samples shall be collected from within the containment, the outdoor environment, and analyzed by standard optical light microscopy methods. Total bioaerosol analysis must be conducted by a licensed Mold Analysis Laboratory. Any area whose air test does not meet post remediation criteria will be re-tested following cleaning and air scrubbing of those areas.

Total bioaerosol analytical clearance criteria will be based on qualitative and quantitative similarity between the indoor samples and the ambient outdoor control samples collected contemporaneously. Air samples will be collected and analyzed in a manner that provides a


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minimum detection limit of 43 spores/m³. Fungal aerosols in the indoor environment should not exceed the contemporaneously collected outdoor control samples by more than 650 spores/m³ (2), or, fungal spores that are unique to the indoor environment should not exceed more than 50 % of the "high" results for Typical Outdoor Spore Levels (Texas) as reported in the EMLab P & K IAQ Pocket Reference Guide, 6th Edition (3). The consultant may make numeric exceptions for frequently isolated genera such as *Cladosporium* or other typical mesophilic fungi.

Lead

The QEP shall confirm removal of lead waste through visual inspection and wipe sampling for lead dust concentrations conducted as follows:

- a) Post-abatement or removal to determine if previously specified clearance criteria has been met in each area of remediation. The clearance level has been established at 40 micrograms per square foot ($\mu\text{g}/\text{ft}^2$) on horizontal surfaces.
- b) The specific location and number of samples will be determined upon conclusion of the remediation. If at any time the post-abatement or removal wipe samples exceed the clearance levels identified. The **CONTRACTOR** shall be responsible additional cleaning of the area to attempt to achieve clearance levels. If additional cleaning is required, the **CONTRACTOR** will perform the re-cleaning with no adjustment in the contract price.

8.0 CONTRACTOR SUBMITTALS

Submittals required for proper execution include but are not limited to the following:

Pre-Construction Submittals (submitted to QEP):

Regulatory Notification Information

Plan of Action

Fire Action Plan

Emergency Phone List

Project Schedule

2 "Post Remedial Assessment and Clearance Criteria for Mold Remediation Projects" L. D. Robertson, H. L. Horner, Mycological Society of America Annual Conference, Louisiana State University, August 9, 2007.

3 IAQ Pocket Reference Guide – 6th Edition, EMLab P & K.


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Copy of Written Respirator Program which conforms to 29 CFR 1910.134(b)
OSHA Material Safety and Data Sheets (Product Handling)
Negative Initial Exposure Assessment
Copy of EPA "uniform hazardous waste manifest" form
Sample of disposal bag and labels to be used.

Construction Submittals (submitted to **QEP** before start of work on-site)

Licenses: Contractor, Supervisor, Transporter(s)
NESHAP Training Certificate
Personal Air Monitoring Lab Results
List of Workers
Worker Registration Certificates
Medical Examination Results
Pre-project lead blood level monitoring testing for each supervisor and worker
Worker Training Certificates
Respiratory Fit Test Certificate
Certificates of Worker Acknowledgement

Project Closeout (submitted to **QEP**)

Contractor's Daily Log
Worker Registration Certificates for Personnel
Waste Disposal Manifest Copies
Company Licenses/Certifications
Worker Training Certificates
Respiratory Fit Test Certificate
Certificate of Completion
Releases, Occupancy Permits (if applicable)
Personal Air Monitoring Lab Results
Post-project lead blood level monitoring testing for each supervisor and worker
Personal Air Monitoring Lab Results

RESUBMISSION:

Revise submittals as required and resubmit as specified for initial submittal. Indicate any changes which have been made other than those requested by **QEP**.

CONTRACTOR RESPONSIBILITIES:

Illegible submittals will be rejected and returned for re-submittal.


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Schedule submittals according to general flow of Work and so as to allow for adequate and timely review of submittals by **QEP**.

Review submittals prior to submission and submit to **QEP** in accordance with provisions herein.

Verify field measurements, construction criteria, catalog numbers and similar data.
Coordinate submittals with requirements of Work and Contract Documents.

CONTRACTOR'S responsibility for errors or omissions is not relieved by **QEP's** review.

CONTRACTOR'S responsibility for deviations from requirements of Contract Documents is not relieved by **QEP'S** review, unless **QEP** is notified of deviations in writing at time of submittal, and gives written consent to specific deviations.

Do not begin work which requires submittals until reviewed submittals have been reviewed and approved by **QEP**.

If required, reproduce and distribute copies after **QEP'S** review.

QEP'S RESPONSIBILITIES:

The responsibility of performing the final visual inspection and the final air clearance is delegated to Terracon's on-site State of Texas licensed project manager.

Review submittals within two working days or indicate in writing reasons for reviews which require additional time.

Review for conformance with design concept of project and information given in Contract Documents.

Indicate results of review and return submittals to **CONTRACTOR** for distribution.

QEP is not responsible for verification of field measurements, construction criteria, catalog numbers and other similar data.

Review of separate items does not constitute review of an assembly in which items function.


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9.0 CONSTRUCTION NOTES

The **CONTRACTOR** is responsible for filing and managing the 10-Day Notification to the Texas Department of State Health Services (TDSHS) and is responsible for communicating amendments of changes to the local TDSHS staff. The **OWNER** shall be responsible for payment of notification fees included in the Demolition/Renovation Notification Form. On Notification form, **OWNER** shall be listed as stated on front cover.

The **CONTRACTOR** will be responsible for providing power and water to the containment areas. **NOTE: NEGATIVE PRESSURE MUST BE MAINTAINED WITHIN ANY CONTAINED AREA UNTIL CLEARANCE HAS BEEN ACHIEVED.** Terracon recommends that "fire watch" be performed while active containments are in place at the site.

The **CONTRACTOR** is to be current and in good standing on all asbestos abatement notification fees. The **OWNER** reserves the right to verify **CONTRACTOR'S** standing.

The **CONTRACTOR** shall maintain all records required by TDSHS Texas Asbestos Health Protection Rules, Texas Environmental Lead Reduction Rules, and Texas Mold Assessment and Remediation Rules, as applicable.

CONTRACTOR parking and disposal dumpster areas will be as designated by the **OWNER**. The **CONTRACTOR** will keep work and parking areas clean.

Prior to any commencement of work, the **CONTRACTOR** will provide a licensed electrician to provide power lock-out and tag-out of all circuits to be affected by the asbestos abatement activities. Lock-out/Tag-out must meet OSHA 1910.147 requirements. All electrical circuits in the regulated and/or contained area shall have ground-fault interrupter (GFCI) units installed.

Exhaust negative pressure ventilation system to outside of building.

The **CONTRACTOR** shall be responsible for installing hard barriers in any window openings utilized for exhaust of negative pressure and shall ensure that the building can be secured between work periods. If necessary, a hard barrier decontamination unit shall be constructed at the site to ensure building security.

The **CONTRACTOR** shall provide temporary self-contained toilet units for use by **CONTRACTOR** and **QEP** personnel throughout the duration of abatement activities.

A blue ink signature of Greg Calhoun, written in a cursive style. Below the signature, the name "Greg Calhoun" is printed in a small, black, sans-serif font.

Greg Calhoun

Site Cleanup Plan

Commercial Building ■ 203/205 W Broad Street ■ Texarkana, Texas
EPA ACRES ID No. 72441/72421 ■ Cooperative Agreement No. BF-00F62801
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The **CONTRACTOR** shall install one fire extinguisher in the work area for each 1,000 square feet of work area or fraction thereof. Additional fire extinguishers shall be installed in the Equipment Room and Clean Room of the decontamination unit.

The **CONTRACTOR** shall conduct a safety meeting for **CONTRACTOR'S** employees with emphasis on operation of fire extinguishers and emergency exits in case of fire. **CONTRACTOR** shall have posted emergency phone numbers for the fire department and police.

CONTRACTOR shall store a minimum of volatile substances on the job site and in fire resistant containers only.

10.0 PRODUCTS

Amended Water: Provide water to which a surfactant has been added. Use a mixture of surfactant and water which results in wetting of the ACM and retardation of fiber release during disturbance of the material.

Disposal Bags: Provide as a minimum, individual, 6-mil thick, leak-tight, manufactured polyethylene bags.

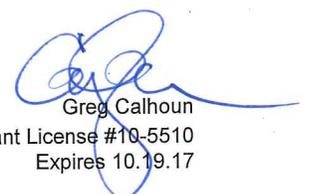
Disposal Bag Labels: Provide labels with **OWNER'S** name, **CONTRACTOR'S** name, project site address and the following warnings and labels, in accordance with regulatory requirements. Labels shall be lettered with indelible ink.

First Label:

CAUTION
CONTAINS ASBESTOS FIBERS
AVOID OPENING OR BREAKING CONTAINER
BREATHING ASBESTOS IS HAZARDOUS TO YOUR HEALTH

Second Label: Provide in accordance with 29 CFR 1910.1200(f) of OSHA's Hazard Communication standard:

DANGER
CONTAINS ASBESTOS FIBERS
AVOID CREATING DUST
CANCER AND LUNG DISEASE HAZARD
BREATHING AIRBORNE ASBESTOS, TREMOLITE, ANTHOPHYLLITE, OR
ACTINOLITE FIBERS IS HAZARDOUS TO YOUR HEALTH



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Third Label: Provide in accordance with U.S. Department of Transportation Regulation on hazardous waste marking. 49 CFR parts 171 and 172. Hazardous Substances: Final Rule:

RQ HAZARDOUS
SUBSTANCE,
CLASS 9,
NA 2212, PG III
(ASBESTOS)

Polyethylene Wrap: Provide minimum 6-mil polyethylene sheeting as a wrapping for large sections of rigid waste material and for construction of floors and critical barriers in the containment areas. Provide minimum 4-mil polyethylene sheeting for construction of walls of the containment.

Removal Encapsulant: Provide a penetrating type encapsulant designed specifically for removal of ACM. Utilize an encapsulant that will meet or exceed the results produced by use of Amended Water, as described above.

11.0 AIR MONITORING SERVICES

The responsibility for performing visual inspections and air monitoring services is delegated to Terracon's on-site State of Texas licensed project manager/air monitoring technician.

The **QEP** shall verify that the Work performed is in compliance with applicable regulations and that the building areas beyond the Work Area and the outside environment remain free of contamination. This section also sets forth airborne fiber levels both inside and outside the Work Area as permissible exposure limits (PELs), and describes the action required by the **CONTRACTOR** if a permissible exposure limit is met or exceeded.

AIR MONITORING:

The **QEP** will be conducting air monitoring throughout the course of the project.

Work Area Isolation: The **QEP** will monitor airborne fiber counts outside the Work Area. The purpose of this air monitoring will be to detect faults in the Work Area isolation including, but not limited to, contamination of the building outside of the Work Area with airborne asbestos fibers, failure of filtration or rupture in the ventilation system, or contamination of the exterior of the building with airborne asbestos fibers.

Should any of the above occur, the **CONTRACTOR** shall immediately cease asbestos


Greg Calhoun
TDSHS Asbestos Consultant License #10-5510
Expires 10/19/17

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abatement activities until the fault is corrected. Work shall not recommence until authorized by the **QEP**.

Work Area Airborne Fiber Count: The **QEP** will monitor airborne fiber counts in the Work Area. The purpose of this air monitoring will be to detect airborne fiber counts which may significantly challenge the integrity of Work Area isolation procedures that protect the balance of the building or outside of the building from contamination by airborne fibers.

AIRBORNE FIBER COUNTS:

Inside Work Area: Maintain an average airborne count in the Work Area of less than 0.1 fibers per cubic centimeter. If the fiber counts rise above this figure for any sample taken, revise work procedures to lower fiber counts. If the Time Weighted Average (TWA) fiber count for any Work shift or eight (8) hour period exceeds 0.1 fibers per cubic centimeter, stop work and leave ventilation system in operation. Do not recommence work until authorized by the **QEP**.

Outside Work Area: Maintain an average airborne count outside the Work Area of less than the Permissible Exposure Limit (PEL) of 0.1 f/cc of air.

If any air sample taken outside the Work Area exceeds the PEL, immediately stop work until the source of the elevated fiber readings can be determined by the **QEP**. Immediately take corrective as instructed by the **QEP**.

Decontaminate the affected area in accordance industry standard methods.

ANALYTICAL METHODS:

The following methods will be utilized at the discretion of the **QEP** in collecting and analyzing air samples:

Phase Contrast Microscopy (NIOSH 7400 Method, Issue 2, Revision 3 or OSHA Reference Method)

Transmission Electron Microscopy (40 CFR Part 763, Subpart E, Appendix A)

SAMPLE PROTOCOLS:

General: The number and volume of air samples taken by the **QEP** will generally be in accordance with the following schedule. Sample quantities, locations, volumes and methodologies may vary depending upon the analytical method, project layout, procedures used and at the discretion of the **QEP**.


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SCHEDULE OF AIR SAMPLES FOR WORK AREAS & WASTE PROCESSING STATION(S):

Base Line Sample Schedule: The **QEP** will secure the following air samples to establish a Base Line before start of Work. The number of samples may vary according to site plan and on authorization of **QEP**.

Location Sampled	Minimum Number of Samples	Minimum Sample Volume	Planned Analytical Method
Each Work Area	3	1,250 Liters	PCM

Daily Sample Schedule (per 8-hour work period): The **QEP** will generally take the following samples on a daily (8-hour work period) basis. The number of samples may vary according to site plan and on authorization of **QEP**.

Location Sampled	Minimum Number of Samples	Minimum Sample Volume	Planned Analytical Method
Each Interior Work Area	1	500 Liters	PCM
Outside Each Interior Work Area/Inside Building	1	500 Liters	PCM
Decon Unit Clean Room	1	500 Liters	PCM
Output of Negative Pressure Ventilation System	1	500 Liters	PCM

Clearance Sample Schedule: The **QEP** will secure the following air samples to determine air clearance at the conclusion of abatement. The number of samples may vary according to site plan and on authorization of **QEP**.

Location Sampled	Minimum Number of Samples	Minimum Sample Volume	Planned Analytical Method
Each Interior Work Area	3	1,250 Liters	PCM

If airborne fiber counts exceed baseline limits, additional samples will be taken (and classified as retests) as necessary to monitor fiber levels and confirm sources.


 Greg Calhoun
 TDSHS Asbestos Consultant License #10-5510
 Expires 10/19/17

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Please refer to Section 3.8 Clearance for mold and lead clearance procedures.

SCHEDULE OF AIR SAMPLES FOR EXTERIOR WORK AREA(S):

Daily Sample Schedule (per 8-hour work period): The **QEP** will generally take the following samples on a daily (8-hour work period) basis. The number of samples may vary according to site plan and on authorization of **QEP**.

Location Sampled	Minimum Number of Samples	Minimum Sample Volume	Planned Analytical Method
"Upwind" of Work Area	1	500 Liters	PCM
"Downwind" of Work Area	1	500 Liters	PCM

The **QEP**, in addition to providing air monitoring services, will provide full-time, on-site inspection of work activities. Work shall not proceed without prior notice to the **QEP** and presence of the **QEP** on the work site (requires 48 hours advance notice of work).

The **QEP** will conduct the following key Project inspections and no work by the **CONTRACTOR** will proceed beyond these points until all discrepancies noted during the inspection have been corrected.

The **QEP'S** inspections do not relieve the **CONTRACTOR** of Contract obligations and are not designed to locate all project discrepancies. The **CONTRACTOR** is responsible for project quality.

First Key Inspection:

Inspection of Work Area Prior to Start of Removal: Removal operations shall not proceed until the **QEP** has completed inspection of the Work Area preparations and until all discrepancies noted have been corrected.

Second Key Inspection:

Inspection during Removal: Removal Work shall not be conducted unless the **QEP** is on the Project site. Daily inspection of the Work Area and Work practices will be conducted; upon discovery and report of a discrepancy the **CONTRACTOR** shall immediately stop Work and correct the discrepancy.

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Third Key Inspection:

Inspection of Work Area after Completion of Removal Work, but Prior to Encapsulation and Containment Disassembly: A visual inspection of the Work site and/or Containment areas and removal surfaces will be conducted at this point by the **QEP** and encapsulation and/or containment disassembly shall not proceed until discrepancies noted have been corrected.

Fourth Key Inspection:

Final Clearance: After encapsulation and final clean-up of the Work Area, but prior to removal of Critical Barriers, the **QEP** will conduct a visual inspection.

Final Key Inspection:

Project Closeout Inspection: A final inspection will be conducted by the **QEP** after the **CONTRACTOR** has removed all barrier tape, drop-cloths, equipment, and supplies. A project "Punch List" will be provided of any items requiring correction or completion. Punch List items shall be completed prior to issuance of final completion notice by the **CONTRACTOR**.

Discrepancies or needed corrective measures observed by the **QEP** will be reported to the **CONTRACTOR'S** Superintendent on-site and shall be immediately corrected.

The above inspections are not necessarily single events. Failed inspections will be re-conducted and time classified as retests and charged back to the **CONTRACTOR** in accordance with the project documents. Inspections will require 24 hours advance notice to the **QEP**.

PERSONAL MONITORING:

The **CONTRACTOR** shall perform air monitoring as required to meet OSHA requirements for maintenance of Time Weighted Average (TWA) and excursion limit fiber counts for types of respiratory protection provided. The **OWNER** will not be providing air monitoring services to meet these OSHA requirements. Note: Results of Personal Monitoring shall be submitted to the **QEP** within 72 hours of the time samples are obtained. A listing of all personal monitoring results obtained during the project shall be submitted to the **QEP** with the **CONTRACTOR** closeout submittals.


Greg Calhoun

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LABORATORY TESTING:

The **QEP** will perform field analysis of the air samples. A microscope and field laboratory will be set up at the jobsite, at the option of the **QEP**, so that verbal reports on air samples can be obtained promptly after collection.

Reports to the **OWNER** by the **QEP** will include air monitoring data and pertinent information on work being conducted such as: work hours, number of workers, procedures used, contractor discrepancies and corrective measures, containment methods and construction, and amount of ACM removed.

A handwritten signature in blue ink, appearing to read "Greg Calhoun".

Greg Calhoun

APPENDIX A
STRUCTURAL ASSESSMENT
RALEY & ASSOCIATES, INC.
July 2015



**RALEY AND
ASSOCIATES, INC.**

Civil & Structural Engineering, Surveying, Planning & Consulting
4913 Shed Road, Bossier City, LA 71111 · Phone 318-752-9023 · Fax 318-752-9025

July 31, 2015

Ms. Daphnea Ryan
Manager of Environmental Services
City of Texarkana, TX
P.O. Box 1967
Texarkana, TX 75504

Re: 203 and 205 W. Broad
Texarkana, TX

Dear Ms. Ryan,

Per your request, this office made a visual observation of the subject buildings on Wednesday, July 29, 2015. We had made a previous observation on October 4, 2012. The purpose of this visit was to observe the buildings for the possibility of shoring the structure while Phase II environmental sampling could be done. For the record, Jeff Raley, P.E. and Heather Ochoa, City of Texarkana, were present during this visit.

As of this date, the building structures appear to be unstable and not safe for persons to enter the structures for the purpose of sampling. It is our opinion that it would not be cost effective to do temporary shoring for the purpose of sampling since sampling can be done during material removal (see photos).

The adjacent buildings to the east and west will need to be protected during the removal of materials for assessment and clean up.

Once the buildings are cleared of rubble and debris, we can assess the front walls to determine the feasibility of saving them in place. It has been our experience that more times than not, this is a possibility. The rear walls have been damaged from the roof collapses and most likely will have to be rebuilt. The adjacent side walls will need to be reinforced once the removal is complete.

We are not able to determine the type of shoring or reinforcing that will be required for the front and sidewalls at this time. We are available to make that assessment as soon as the removal is complete.

This report is based upon our experience, readily accessible visible defects and certain assumptions that conventional methods of construction were used to build the buildings. We cannot normally see irregularities inside structures. Nature through excessive rain, droughts and differing soil characteristics cause extremes we cannot anticipate. Also, remodeling and changes

Professional Engineers Licensed in:

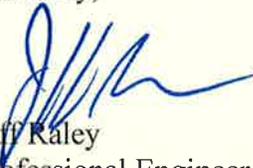
Alabama, Arizona, Arkansas, Colorado, Connecticut, District of Columbia, Florida, Georgia, Idaho, Indiana, Iowa, Kentucky, Louisiana, Maine, Maryland, Massachusetts, Michigan, Minnesota, Mississippi, Missouri, Nevada, New Mexico, North Carolina, Ohio, Oklahoma, Oregon, Pennsylvania, Rhode Island, South Carolina, Tennessee, Texas, Vermont, Virginia, Washington, West Virginia, Wisconsin

in the building alter conditions that affect the building. Because of all these unknowns, this firm offers no warranty or guaranty with this report.

This report is intended to generally educate the client about the structural condition of the building and does not apply to the condition of any mechanical, electrical or plumbing items that may exist in the building. This report does not apply to the possible presence and/or danger from harmful substances such as toxic chemicals, lead paint, carbon monoxide, airborne hazards, mold, etc.

This report has been written for your sole use and only you have the authority to distribute this report to others. Raley and Associates, Inc. and its agents and employees do not have and do disclaim any contractual relationship with, or duty or obligation to, any party other than the addressee of this report. Only the engineer(s) who signed this document has the authority to change its contents and then only in writing to you. This report addresses the results of work completed to date. Should any additional information become available, we reserve the right to amend, as warranted, any of our conclusions or recommendations.

If you have any questions or need additional information, please call.

Sincerely,

Jeff Raley
Professional Engineer
TX-F594



APPENDIX B
PROPERTY-SPECIFIC SAMPLING AND ANALYSIS PLAN (PSAP)
ASBESTOS, LEAD-PAINT, MOLD AND GUANO SAMPLING

Commercial Building
203 & 205 W Broad Street
Texarkana, Texas 75501

Brownfields Multi-Purpose Pilot Grant
United States Environmental Protection Agency, Region 6
EPA Cooperative Agreement No. BF-00F62801
Terracon Project No. 94137464B
July 2014

PROPERTY-SPECIFIC SAMPLING AND ANALYSIS PLAN (PSAP) – ASBESTOS, LEAD-PAINT, MOLD AND GUANO SAMPLING

Commercial Building
203 & 205 W Broad Street
Texarkana, Texas 75501

Brownfields Multi-Purpose Pilot Grant
United States Environmental Protection Agency, Region 6
EPA Cooperative Agreement No. BF-00F62801
Terracon Project No. 94137464B

1.0 TITLE AND APPROVALS

1.1 Contractor Project Manager

_____ Date _____
Greg Calhoun / Terracon Consultants, Inc.

1.2 Contractor QA Reviewer

_____ Date _____
John Sallman, P.G. / Terracon Consultants, Inc.

1.3 Grantee Brownfields Project Manager

_____ Date _____
Craig Lindholm / City of Texarkana

1.4 Grantee QA Manager

_____ Date _____
Daphnea Ryan/ City of Texarkana

1.5 EPA Region 6 Grant Manager

_____ Date _____
Camisha Scott/ USEPA Region 6



The project Quality Assurance Project Plan (QAPP) and this Property-Specific Sampling and Analysis Plan (PSAP) incorporate TRIAD elements of systematic planning, a dynamic work plan and use of on-site analytical tools. This document makes direct use of the most current QAPP approved by USEPA, providing numerical references to the QAPP where appropriate.

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Appendix A: Health & Safety Plan

Appendix B: Survey Protocols

Appendix C: Site Access Agreement

3.0 PROPERTY IDENTIFICATION AND ELIGIBILITY

3.1 City Identifications

City Riggs Addition Lot 2 Tract 27, 203 West Broad Street, Bowie County, Texas
City Riggs Addition Lot 2 Tract 27, 205 West Broad Street, Bowie County, Texas

Property ID Number(s): 203 W Broad Street - Parcel No. 03840017100
205 W Broad Street - Parcel No. 03840017200

3.2 Agency Approvals to Allow Assessment

Hazardous Substance by EPA **Yes** **NO-STOP**
Petroleum by State (provide Attachment D) **Yes** **NO-STOP**
Co-mingled Hazardous and Petroleum by EPA by State **Yes*** **NO-STOP**

3.3 All Appropriate Inquiries Completed per Cooperative Agreement

ASTM E1527-05 **Yes** **NO-STOP**

Phase I ESA report completed February 3, 2012

3.4 Access By Owner/Other Authority, Referenced or Attached

Yes **NO-STOP**

The current owner will grant access the site.

3.5 Have Property Conditions changed since Phase I Assessment?

No **Yes** **Not Applicable**

3.6 Site Description

The site is located at 203 and 205 West Broad Street in Texarkana, Bowie County, Texas. The site consists of two contiguous commercial buildings totaling approximately 3,500 square-feet.

4.0 PURPOSE AND OBJECTIVES

(Expanded in QAPP Section A5.2) The United States Environmental Protection Agency (EPA) selected the City of Texarkana, Texas (City and Grantee) for a Brownfields Multi-Purpose Pilot Grant (Grant). The purpose of this project is to fully assess the Downtown Texarkana, Texas 203/205 W. Broad Street Brownfields site (Project)

4.1 Data Quality Indicators (DQIs)

(QAPP A7.3) When conducting this investigation, all measurements will be made so that results are reflective of the medium and conditions being measured. DQIs will be assessed by

evaluating Precision, Accuracy, Representativeness, Completeness, Comparability, Sensitivity and Bias of the data collection process.

4.2 Precision

A measure of the reproducibility of analyses under a given set of conditions calculated at data check per QAPP Section A7.3.1.

4.3 Accuracy

A measure of the bias that exists in a measurement system, calculated at data check per QAPP Section A7.3.2.

4.4 Representativeness

The degree of how well sampling data accurately and precisely depict selected characteristics, calculated at data check per QAPP Section A7.3.4.

4.5 Completeness

The measure of the amount of valid data obtained from a measurement system compared to the amount that was expected to be obtained under “normal” conditions, calculated at data check per QAPP Section A7.3.3.

4.6 Comparability

The degree of confidence with which one data set can be compared to another, determined at data check per QAPP Section A7.3.5.

4.7 Sensitivity

Sensitivity is the ability of the method or instrument to detect target compounds at the level of interest, determined at data check per QAPP Section A7.3.6.

4.8 Bias

Bias is the systematic or persistent distortion of a measurement process that causes errors in one direction, determined at data check per QAPP Section A7.3.7.

5.0 NEEDED PROJECT DECISIONS

(Expanded in QAPP Section A5) The Brownfields project decision is the same for all eligible properties of assessment. The data collected is used to determine whether or not a property with an ASTM REC identified in Phase I assessment is or is not impacted relative to Texas environmental standards. Based on the outcome of the data collection, there are two actions:

- The property is “clean” and presents, due to measured conditions of environmental impairment compared to state cleanup standards, no reasonable impediment to consideration for redevelopment than would normally be exercised by the Grantee; or,
- The property is impacted and presents, based on measured conditions of environmental impairment compared to state cleanup standards, a need for additional evaluation above

that normally exercised by the Grantee in considering a property as feasible for redevelopment.

6.0 STATEMENT OF RECOGNIZED ENVIRONMENTAL CONDITIONS

With the support provided through the EPA Brownfields Multi-Purpose Pilot Grant, the City of Texarkana, Texas will assess, cleanup, and prepare the derelict property site located at heart of the Texarkana's Historic Central Business District, 203 and 205 W. Broad Street, Texarkana, Texas 75501-5609, for commercial redevelopment.

The City conducted a Phase I ESA using EPA Brownfields Assessment Grant funds while the property was under the ownership of Josh and Dianna Morriss. Phase I ESA's were also performed through the AR-Tex Council of Governments with EPA Brownfields funds (2005) and TCEQ (2008). There are no less than 20 recognized environmental conditions (REC's) for the site. RECs are conditions observed by the environmental professional that could potentially produce environmental impairment. In and of themselves, RECs do not require action. This is an opportunity for Texarkana to address asbestos, lead paint, pigeon guano and mold contamination, as well as possible subsurface contamination (see separate PSAP).

6.1 Hazardous Materials

Petroleum REC Hazardous Substance REC Co-mingled REC

During the Phase I site reconnaissance, the buildings were observed to be in extremely poor condition. Water infiltration has severely damaged the roof and flooring of both buildings, with a significant portion of the roof at 203 W Broad Street collapsed, as well as the floor of 205 W Broad Street. Based on the age and deteriorated condition of the buildings, asbestos-containing materials, lead-based paint, mold, and bird guano may be present on the site.

The City of Texarkana is requesting asbestos, lead-based paint, mold and bird guano surveys prior to renovation of the on-site structures. The survey reports will include quantities and locations of various types of the respective hazardous materials.

7.0 SAMPLING RATIONALE AND METHODOLOGY

This PSAP describes the type and frequency of samples that will be collected for this project. Any significant modifications to this PSAP that are the result of field conditions will be discussed with the EPA. The rationale for location and type of sample indicated at these locations is indicated in Table 1 below.

Table 1. Rationale for Sample Locations

Location	Media	Project Rationale
A-1 thru A-200	Suspect Asbestos-Containing Building Materials	Sample suspect asbestos-containing building materials in accordance with NESHAP, AHERA and TAHPR requirements; Protect human health by determining if suspect building materials are asbestos containing.
L-1 thru L-30	Suspect Lead-Based Paint Coatings	Sample suspect lead-based paint coatings with TELRR requirements; Protect human health by determining if suspect paint coatings are lead containing.
M-1 thru M-15	Suspect Fungal Growth	Sample suspect fungal growth in accordance with TMARR guidelines. Protect human health by determining if suspect fungal growth is hazardous and provide OSHA Right to Know information related to dealing with hazardous materials.
G-1 thru G-7	Bat/Bird Guano/Debris	Bulk materials of Bat/Bird guano/debris will be aseptically sampled and analyzed by PCR to determine if <i>Histoplasma capsulatum</i> , <i>Cryptococcus neoformans</i> and <i>Chlamydiaophila psittaci</i> are present and provide OSHA Right to Know information related to dealing with hazardous material, develop appropriate PPE based on laboratory results.

Building material samples collected for asbestos analysis will be collected following the applicable Asbestos Hazard Emergency Response Act (AHERA) and Texas Department of State Health Services (TSDHS) protocols, including the Texas Asbestos Health Protection Rules (TAHPR), TAC 295.31 through 295.73 and discussed in detail in the Asbestos Survey Protocol (ASP) included as Appendix B. The building materials samples will be collected by TSDHS licensed inspectors; the samples will be analyzed by TSDHS licensed and National Voluntary Laboratory Accreditation Program (NVLAP) accredited laboratories.

Building material samples collected for lead analysis will be collected following the applicable protocols, including the Texas Environmental Lead Reduction Rules (TELRR), TAC 295.201 through 295.220 and discussed in detail in the Lead-Based Paint Survey Protocol (LBSP) included as Appendix B. The building materials samples will be collected by TSDHS certified inspectors; the samples will be analyzed by a NVLAP accredited laboratory.

An evaluation of building materials for visible mold contamination will be conducted in general accordance with guidelines published by the TSDHS (*Texas Mold Assessment and Remediation Rules*, 2004), the American Conference of Governmental Industrial Hygienist (*Bioaerosols; Assessment and Control*, 1999) and American Standard Test Methods (*Standard Guide for Assessment of Fungal Growth in Buildings*, ASTM D7338-10). The TSDHS regulates fungal assessment and remediation activities under the Texas Mold Assessment and Remediation Rules (TMARR). The TMARR requires that fungal assessments be performed by a TSDHS-licensed Mold Assessment Technician (MAT) or Mold Assessment Consultant (MAC) following specified minimum work practices and procedures. Bulk, surface and air samples collected during a fungal assessment must be analyzed by a TSDHS-licensed mold analysis laboratory.

Visible fungal growth that exceeds twenty-five (25) contiguous square feet is considered a regulated quantity in accordance with the TMARR.

Bat/Bird guano and debris associated with Bat/Bird nesting materials are well documented as a reservoir for pathogenic microorganisms. The microorganisms of interest include the avian pathogens *Histoplasma capsulatum*, *Cryptococcus neoformans* and *Chlamydia psittaci*. There are no federal, state or local regulatory limits related to the referenced avian pathogens; however, qualitative and quantitative information developed by bulk and air sample collection will satisfy OSHA Right to Know information related to handling hazardous materials and assist in making judgments regarding the level of PPE required at various stages of the project. Bulk materials of Bat/Bird guano/debris will be aseptically sampled by trained staff and analyzed by Polymerase Chain Reaction (PCR) to determine if these pathogens are present. Bulk and air samples will be analyzed by a laboratory participates in custody (COC) protocol to NAME Laboratories, accredited by the American Industrial Hygiene Association (AIHA®) Laboratory Accreditation Programs, LLC under the Environmental Microbiology Laboratory Accreditation Program (EMLAP) and is Texas licensed Mold Analysis Laboratory under the TMARR.

7.1 Sample Summary

Samples will be collected in a manner consistent with the QAPP and Survey Protocols as summarized below.

It is estimated that 200 building material samples will be collected and analyzed for asbestos through Polarized Light Microscopy (PLM) analysis. Current TDSHS and EPA regulations require that a minimum number of samples from each homogeneous area be obtained in order to characterize a material as non-ACM. In accordance with sampling protocols established in EPA AHERA and NESHAP, and the TAHPR, sample collection points will be randomly selected dependent on locations of homogenous areas of suspect asbestos containing materials. A minimum of three samples will be collected from each homogenous area in accordance with the AHERA 3, 5 and 7 rule; therefore, additional quality control samples are not anticipated, as all three samples will be analyzed for each homogeneous material. In addition, where applicable, samples of surfacing materials will be collected in accordance with guidelines referenced above, which may require the collection of more than three samples from each homogenous area depending on the quantity of material.

It is estimated that 30 paint chip samples will be collected from representative building component surfaces and analyzed for lead content through Flame Atomic Absorption Spectrophotometer (AAS) analysis. Representative building component surfaces that may be sampled include, but are not necessarily limited to, woodwork/molding, door jambs and trim, window sills and sashes, cabinets, walls, ceilings, counter tops, stair railings, floors, radiators, balcony railings, and baseboards. The LBP sampling will be conducted in general accordance with applicable protocols.

The indoor environment will be evaluated for visual evidence of moisture intrusion or visible fungal growth that could impact indoor air quality. It is estimated that 10-15 tape lift samples will be

collected from suspect building material substrates. Criteria to establish fungal growth on the substrates sampled will be microscopic confirmation of fungal somatic and reproductive structures. Tape lift samples will be submitted under chain of custody (COC) to a laboratory accredited by the AHIA® Laboratory Accreditation Programs, LLC under EMLAP and is Texas licensed Mold Analysis Laboratory under the TMARR.

Bulk materials of Bat/Bird guano/debris will be aseptically sampled by trained staff and transferred to appropriately labeled sterile containers. Additionally, air samples will be collected on 37-millimeter cassettes containing sterile filter media at flow rates between 3 liters/minute (l/m) and 15 l/m. Target air volumes will range from 540 liters and 1800 liters. The air samples will be shipped under COC to a laboratory accredited by the AHIA® Laboratory Accreditation Programs, LLC under EMLAP and is Texas licensed Mold Analysis Laboratory under the TMARR for analysis. Analysis of the bulk and air samples will be conducted by PCR for both qualitative and quantitative information on the concentrations of the avian pathogens *Histoplasma capsulatum*, *Cryptococcus neoformans* and *Chlamydia psittaci*.

7.2 Laboratory Methodology

Sample collection, preservation and analytical methods will be consistent with QAPP B2.2 and the Survey Protocols included as Appendix B as summarized below.

Table 2. Preservation, Storage and Container Requirements

Analysis	State or EPA Approved Method	Water				Soil/Solid		
		Volume (ml)	Container	Preservation	Holding Time	Volume (oz)/ Quantity	Container	Holding Time
Asbestos	Polarized Light Microscopy (PLM)	---	---	---	---	N/A	Sealable Plastic Bag	---
Lead-based Paint	NIOSH 7300	---	---	---	---	2 square inches	Sealable Plastic Bag	---
Mold (tape lift method)	---	---	---	---	---	N/A	Sealable Plastic Bag	---
Guano						N/A	Sealable, Rigid, Sterile Container	--

8.0 QUALITY CONTROL

Terracon does not anticipate collecting Quality Control samples as stipulated in Section B5 of the QAPP. The following is a field summary of quality control checks.

9.0 HEALTH AND SAFETY

(QAPP A8.1.4, Default Approval Limited to D & D-Modified Levels) Provide Attachment A as completed Terracon Health and Safety Plan per QAPP and referenced corporate plans and management requirements.

- Level D Personal Protective Equipment (PPE): equip, monitor and record accordingly.
- Level D-Modified Personal Protective Equipment (PPE): equip, monitor and record accordingly.
- Level C Personal Protective Equipment (PPE): **STOP - Contact Project Manager or Safety Officer**

10.0 DEVIATIONS FROM APPROVED QAPP

No deviations from the approved QAPP are projected.

11.0 PERSONNEL

Persons involved at this property and their roles and/or responsibilities consistent with section A4 of the approved QAPP are summarized below.

Table 3. Key Personnel

Title	Name	Responsibilities	Phone Number
City Brownfields Coordinator	Craig Lindholm	General grant project coordination and management; EPA, Terracon, and landowner contact; financial oversight and budget approvals; scope development; report reviews	903-798-3902
Terracon Project Manager	Greg Calhoun	General project oversight and management; EPA and Client contact; scope and PSAP development and implementation; field oversight, data validation; report development	214-630-1010
Coordinator	Greg Calhoun	Field implementation of PSAP; field quality control and documentation; contractor administration	214-630-1010
Terracon Field Captain & Site Health and Safety Officer	David Ladage	Health and Safety Plan (HASP) development; utility locates; project safety briefings; field implementation of HASP	214-630-1010
Terracon Quality Assurance Reviewer	John Sallman	Internal project audits; data validation; draft report reviews	913-577-0403
Contractor Personnel			
Steve Moody Micro Services	Bruce Crabb	Laboratory analytical procedures and reporting; laboratory quality control	877-606-0788
Cates Laboratories, Inc.	John Cates	Laboratory analytical procedures and reporting; laboratory quality control	972-564-4723
Environmental Hazards Services, LLC	Julie Dickerson	Laboratory analytical procedures and reporting; laboratory quality control	800-347-4010

Title	Name	Responsibilities	Phone Number
ESC	Peter Schulert	Laboratory analytical procedures and reporting; laboratory quality control	615-758-5858
EMLab P&K	Marcella Hodges	Laboratory analytical procedures and reporting; laboratory quality control	623-445-6111

12.0 SCHEDULE OF ASSESSMENT

Activities are scheduled for this property as follows;

Table 4. Proposed Project Schedule

Task	Anticipated Completion Timeline
Submission of Revised PSAP	- - -
EPA Review, PSAP Revision, and EPA Approval	- - -
Field Activities Completed	Within 15 days of EPA PSAP approval
Laboratory Work Completed	Within 25 days of EPA PSAP approval
Submission of Draft Report	Within 35 days of EPA PSAP approval
Report Review, Revision, and Submission of Final Report	Within 10 days of City approval of draft report

APPENDIX A: HEALTH & SAFETY PLAN



SITE HEALTH AND SAFETY PLAN

HAZARDOUS MATERIALS SURVEY

**Commercial Buildings
203 & 205 W Broad Street
Texarkana, Texas
Terracon Project No. 94137464B**

1.0 INTRODUCTION

This Site Health and Safety Plan has been developed to define the protocols and requirements to be followed by Terracon personnel during hazardous materials sampling activities at the Commercial Buildings, 203 & 205 W Broad Street in Texarkana, Texas.

Prior to the start of site activities, the designated Site Safety Officer will conduct a safety briefing and review the contents of this plan with participating field personnel. Project participants will review this plan and sign the Acknowledgment of Instruction page prior to the start of hazardous material-related project activities.

The guidelines contained in this Health and Safety Plan are based upon potential health hazards from exposure to asbestos, lead-based paint, mold and guano. Sampling activities will be performed in accordance with applicable federal/state health and safety regulations. The Site Safety Officer is responsible for enforcing the provisions contained in this Plan.

2.0 TRAINING AND MEDICAL SURVEILLANCE REQUIREMENTS

Project participants actively engaged in asbestos sample collection must have received State of Texas accredited Building Inspector training and will possess a current State of Texas asbestos inspection license. All Terracon field personnel and will be medically cleared for asbestos work in accordance with OSHA 29 CFR 1926.1101.

Project participants actively engaged in lead-based paint sample collection must have received State of Texas accredited Lead Inspector training and will possess a current State of Texas lead inspector certification.

Project participants actively engaged in mold inspection or guano inspection activities must have received State of Texas accredited Mold Inspector training and will possess a current State of Texas mold inspector license.

Terracon personnel will also be medically cleared, trained and properly fit-tested for respirator use in accordance with OSHA 29 CFR 1910.134.

3.0 PROJECT ORGANIZATIONAL STRUCTURE

Project Manager:	Greg Calhoun Terracon	214-630-1010
Corporate Health and Safety Mgr.:	Mark Huddleston, CSP, Terracon	913-577-0419
Site Safety Officer/Project Supervisor	David Ladage Terracon	214-630-1010

4.0 SCOPE OF SERVICES

Terracon personnel will mobilize to the project site to conduct surveys of suspect asbestos containing materials (ACM), lead-based paint (LBP), mold and guano may be present in the building at the site.

Bulk asbestos samples will be collected in general accordance with the Texas Department of State Health Services (TDSHS) and AHERA sampling protocols and will be submitted to a NVLAP-accredited and TDSHS-licensed laboratory for analysis by polarized light microscopy.

Lead-based paint samples will be collected following the applicable United States Department of Housing and Urban Development (HUD) 24 CFR Part 35 and TSDHS protocols, including the Texas Environmental Lead Reduction Rules (TELRR) and will be submitted to a NVLAP-accredited laboratory for analysis through Flame Atomic Absorption Spectrophotometer (AAS).

Building materials will be evaluated for visible mold contamination in general accordance with guidelines published by the TDSHS (*Texas Mold Assessment and Remediation Rules*, 2004), the American Conference of Governmental Industrial Hygienist (*Bioaerosols; Assessment and Control*, 1999) and American Standard Test Methods (*Standard Guide for Assessment of Fungal Growth in Buildings*, ASTM D7338-10). Bulk, surface and air samples collected during a fungal assessment will be submitted for analysis by TDSHS-licensed mold analysis laboratory.

Bulk materials of bat/bird guano/debris will be aseptically sampled by trained staff and analyzed by Polymerase Chain Reaction (PCR) to determine if these pathogens are present. Bulk and air samples will be analyzed by a laboratory accredited by the American Industrial Hygiene Association (AHIA®) Laboratory Accreditation Programs, LLC under the Environmental Microbiology Laboratory Accreditation Program (EMLAP) and is Texas licensed Mold Analysis Laboratory under the TMARR.

The primary purpose of this Plan is to ensure that Terracon personnel are aware that site activities will be conducted in a facility where asbestos, lead-based paint, mold and guano hazards may be present. A separate job hazard analysis of facility-specific hazards is required to help assure that project personnel are protected against these potential hazards through controlled sampling techniques and appropriate personal protective equipment. The following procedures are designed to provide standardization with respect to location and number of samples collected and method of labeling sample locations.

4.1 Asbestos Sampling Equipment Requirements

In addition to the personal protective equipment outlined below, each project participant should mobilize an asbestos sampling equipment kit similar to that outlined below. The Site Safety Officer will review sample collection techniques with each project participant prior to the start of sample collection. Wet methods will be employed in collecting all suspect ACM samples. Absolutely no bulk asbestos samples will be collected over the heads of or in near proximity to non-project personnel.

- Utility knife
- Coring tool
- Duct tape
- Sample containers (preferably ziplock style clear plastic bags)
- Sample labels
- Laboratory chain of custody for paint chip sample analysis
- Spray atomizer containing detergent amended water
- Spray adhesive
- Flashlight
- Cut-resistant gloves
- Hardhat
- Steel- or composite-toe safety boots

4.2 Fiber Release

Asbestos bulk sampling activities must be conducted in a manner which minimizes the generation of dusts and airborne fibers. Each sample team member will assess the condition of ACM prior to sampling or otherwise disturbing the material. Sampling will not be conducted in buildings occupied by non-project personnel, or over the heads of any personnel. Wherever possible, sample collection will be conducted at a level below the breathing zone of the sampler.

If sampling impregnated materials or other ACMs appear non-friable (floor tiles, mastic, roofing felt or sealant, ceiling tile, etc.), respiratory protection should not be required. If collecting samples of friable ACM or normally non-friable materials which are in deteriorated condition,

precautions must be taken to prevent the release of fibers to the work area. Precautions include isolation of the material prior to disturbance (i.e., glove bagging) and the use of wet sampling methods as described below.

4.3 Lead-Based Paint Sampling Equipment Requirements

LBP analysis will be conducted by collecting paint chip samples. The Site Safety Officer will review sample collection techniques with each project participant prior to the start of sample collection. Absolutely no lead-based paint samples will be collected over the heads of or in near proximity to non-project personnel.

- Heating tool and extension cord
- Tape measure or template
- Chisel
- Chipping hammer or scraper (lead paint samples from metal structures)
- Face shield or chipping goggles
- Sample containers (preferably sturdy, clear plastic vials)
- Sample labels
- Laboratory chain of custody for paint chip sample analysis
- Cut-resistant gloves
- Hardhat
- Steel- or composite-toe safety boots

4.3 Mold Sampling Equipment Requirements

Mold analysis will be conducted by collecting tape lift samples. The Site Safety Officer will review sample collection techniques with each project participant prior to the start of sample collection. Absolutely no mold samples will be collected over the heads of or in near proximity to non-project personnel.

- Transparent tape
- Sample retention sheet
- Laboratory chain of custody for mold sample analysis
- Flashlight
- Cut-resistant gloves
- Hardhat
- Steel- or composite-toe safety boots

4.3 Guano Sampling Equipment Requirements

Bulk materials of bat/bird guano/debris will be aseptically sampled by trained staff and transferred to appropriately labeled sterile containers. Additionally, air samples will be collected

on 37-millimeter cassettes containing sterile filter media at flow rates between 3 liters/minute (l/m) and 15 l/m. Target air volumes will range from 540 liters and 1800 liters. The air samples will be shipped under COC to a laboratory accredited by the AHIA® Laboratory Accreditation Programs, LLC under EMLAP and is Texas licensed Mold Analysis Laboratory under the TMARR for analysis. Analysis of the bulk and air samples will be conducted by PCR for both qualitative and quantitative information on the concentrations of the avian pathogens *Histoplasma capsulatum*, *Cryptococcus neoformans* and *Chlamydia psittaci*.

- Utility knife
- Sterile sample containers (preferably rigid, sealable plastic bottles)
- Sample labels
- Laboratory chain of custody for paint chip sample analysis
- Sampling pumps
- 37 millimeter sterile media cassettes
- Flashlight
- Cut-resistant gloves
- Hardhat
- Steel- or composite-toe safety boots

5.0 PERSONAL PROTECTIVE EQUIPMENT

5.1 Hazardous Material Inspection and Sample Collection

The Terracon Project Safety Officer will ensure that all project personnel mobilize the following personal protective equipment to the project site on each day of sample collection:

- Poly laminated Tyvek protective coveralls
- Half face or full face air purifying respirator equipped with HEPA cartridges
- Cut-resistant impermeable gloves (nitrile or latex).
- Tyvek boot covers or washable outer footwear
- ANSI specification Safety eyewear

If fiber release appears likely during asbestos sampling activities, sampling personnel will upgrade to **LEVEL C** personal protective equipment as itemized above. Personnel will remove protective clothing before proceeding out of the building at the project site.

6.0 SAMPLING GUIDELINES AND PRECAUTIONS

6.1 Asbestos Sampling Guidelines and Precautions

- Collect samples of each type of ACM identified during the visual survey. This includes but is not limited to pipe wrapping and elbows, ceiling tiles, floor tiles and mastic, sprayed or troweled on surfacing materials.
- Samples of surfacing material (sprayed or troweled fireproofing material), should be collected in a statistically random manner that is representative of a homogenous area. At least 3 samples should be collected from each homogeneous area of 1,000 ft² or less. At least 5 bulk samples should be collected from each homogeneous area that is greater than 1,000 ft.² but less than or equal to 5,000 ft.². At least 7 bulk samples should be collected from each homogeneous area that is larger than 5,000 ft.².
- At least 3 bulk samples should be collected from each homogeneous area of thermal system insulation (pipe lagging and boiler system insulation) and miscellaneous suspect ACM.
- Areas to be sampled will be misted with detergent-amended water *prior* to sample collection. Minimal misting force should be used to reduce the potential for fiber release.
- Use water mister to rinse sampling tools in the sample container after sample collection.
- Assign a sample number to each sample collected. Affix a sample label or indelibly mark the sample container with the sample number and seal the sample container.
- Repair pipe lagging or other disturbed areas with spray adhesive and duct tape as appropriate to prevent potential fiber release.

6.2 Lead-Based Paint Sampling Guidelines and Precautions

- Identify areas with coated or prepared surfaces. This includes building materials, components and fixtures finished with a coating such as paint, stain and varnish. Wallpaper can mask prepared surfaces and should be included in the survey. Some ceramic tiles have a lead-containing glaze and should also be assessed, particularly where required by state or local regulatory agencies.
- Select appropriate materials and locations to be sampled. When sampling painted interior surfaces, representative samples must be obtained per client instruction or in

general compliance with the most current revision of the Department of Housing and Urban Development *Guidelines for the Evaluation and Control of Lead-Based Paint Hazards Housing*, June 1995 revision.

- Conduct paint-chip sampling on selected surfaces. Document descriptions of each surface sampled on the field log.
- Use tape measure or template to delineate proper sample size. Use heating tool to loosen paint coating. Remove coating with chisel, chipping hammer or scraper. Transfer sample to sample container.
- Assign a sample number to each sample collected. Affix a sample label or indelibly mark the sample container with the sample number and seal the sample container.

6.3 Mold Sampling Guidelines and Precautions

- Evaluate building materials for areas of suspect mold contamination. Select appropriate materials and locations to be sampled.
- Use transparent tape to collect tape lift sample of suspect mold contamination. Transfer tape, contaminated side down, to the sample retention sheet. Log sample location information on laboratory chain of custody.
- Assign a sample number to each sample collected. Affix a sample label or indelibly mark the sample retention sheet with the sample number.

6.4 Guano Sampling Guidelines and Precautions

- Collect bulk samples of suspect guano.
- Assign a sample number to each sample collected. Affix a sample label or indelibly mark the sample container with the sample number and seal the sample container. Log sample location information on laboratory chain of custody.
- Collect air samples on 37-millimeter cassettes containing sterile filter media at flow rates between 3 liters/minute (l/m) and 15 l/m. Target air volumes will range from 540 liters and 1800 liters.
- Assign a sample number to each sample collected. Affix a sample label or indelibly mark the sample container with the sample number and seal the sample container. Log sample location information on laboratory chain of custody.

7.0 HAZARD ASSESSMENT

7.1 Chemical Hazards

Asbestos is a recognized human carcinogen. It causes asbestosis, cancer of the lungs and digestive tract and mesothelioma. Asbestosis is a lung disorder characterized by a diffuse interstitial (between cell) fibrosis. The onset of asbestosis probably depends upon the asbestos dust concentration, the morphology of the fiber and length of exposure. Cigarette smoking is strongly implicated as a co-carcinogenic among asbestos workers. The OSHA Permissible Exposure Limit for asbestos is 0.1 fiber per cubic centimeter (0.1f/cc) of air.

Sample team members are advised to practice proper personal hygiene throughout the course of this project. Wash hands frequently during the course of sample collection and always prior to drinking, eating, smoking or any other activity which could increase the likelihood of hand to mouth transfer of site contaminants.

7.2 Physical Hazards

7.2.1 Ladders

Asbestos sampling activities may involve the use of ladders to gain access to overhead structures. Personnel will ensure that proper ladder or other suitable means of access (cherry picker, scaffold, etc.) is used to obtain access to elevated areas. Ladders will be inspected prior to use. Spreaders will be fully extended on all step ladders and firmly positioned prior to use. Where footing is uncertain, a sample team member will hold or otherwise secure ladders while in use by another sample team member. Personnel must always face ladders during both ascent and descent. Extension ladders will be placed at an angle of no more than one fourth of its working length. Sample team personnel will not walk on steeply pitched roof surfaces and will not walk on low pitched roofing surfaces while wet. Remain on designated roof walkways wherever present.

7.2.2 Personnel Lifts (“Cherry Pickers”)

If elevated sample collection is required which precludes the safe use of extension ladders, sample team personnel may be required to use basket lifts (manlift, cherry picker). No Terracon personnel will attempt to operate or position personnel lift until they are trained in the proper use of the equipment. Personnel being elevated in a cherry picker basket will be secured at all times with a safety belt and safety lanyard. Lanyards used in basket lifts will not exceed 6 feet in length.

7.2.3 Confined Space Entry

No sample team member will enter any pit, shaft, or tunnel which has limited means of egress, the potential for an oxygen deficient or toxic atmosphere or which was not designed for human occupancy. Pipe tunnels accessible from a utility room in which personnel may stand can be entered to a maximum of 6 feet from the tunnel entrance if, and only if, a stand-by team member remains at the tunnel entrance in continuous visual and verbal communication with the sample team member. Terracon personnel will mobilize adequate portable lighting during the course of this assessment. Confined space entry is not anticipated during the course of this asbestos sampling project. If entry to pipe tunnels, pits, tanks or other structure which could be defined as a confined spaces becomes necessary during the course of this project, the Site Health and Safety Officer will contact the Terracon Corporate Health and Safety Manager to discuss conditions and to obtain a task-specific confined space entry addendum to this plan and confined space entry permits. No personnel will enter confined spaces until the addendum and any rescue, air monitoring or other equipment required for the task has been received, and personnel are briefed in site hazards, precautions, and safe work practices.

7.2.4 Electrical Contact Hazards

Asbestos sample team members will be continuously cognizant of potential electrical contact hazards during asbestos sample collection activities. A visual assessment of each work space will be made prior to sample collection and electrical contact hazards will be evaluated. Unguarded junction boxes, exposed wiring, knife switches, etc. will be avoided in collection of bulk samples of suspect materials.

8.0 DECONTAMINATION

Decontamination as part of abatement activities are not planned as part of this project.

9.0 SITE CONTROL

Samples of suspect ACM will not be collected in the presence of non-project personnel. Sample team members will ensure that non-project participants are well clear of proposed sample collection areas prior to obtaining bulk ACM samples. Terracon will coordinate sampling activities with the site representatives to prevent sample collection in occupied structures.

If unauthorized personnel attempt to enter a sampling area, sample team member will immediately curtail bulk sample collection activities and request that the individual leave the project area. If unauthorized personnel refuse to leave the sample collection area, immediately contact the

Terracon Site Health and Safety Officer. Sample collection activities will continue only after unauthorized personnel have left the project site.

10.0 EMERGENCY RESPONSE

This section describes emergency planning procedures which will be implemented during assessment activities at project site. The Project Safety Officer will remind all personnel of the provisions of this section during daily site safety briefings. It is the responsibility of the Site Safety Officer to mobilize emergency equipment required by this section.

10.1 First Aid Requirements

The Project Safety Officer will ensure that a first aid kit is mobilized to the site on each day of sampling activity.

10.2 Emergency Contact/Notification System

The following list provides names and telephone numbers for emergency contact personnel. In the event of a medical emergency, personnel will take direction from the Project Safety Officer and notify the appropriate emergency agency.

EMERGENCY TELEPHONE NUMBERS		
<u>Organization</u>	<u>Contact</u>	<u>Telephone Number</u>
Hospital	Wadley Regional Medical Center	(903) 798-8000
Ambulance Service		911
Fire Department		911
Facility Representative	Holly Wall	903-798-3934
Project Manager	Greg Calhoun	214-630-1010
Terracon Safety & Health Mgr.	Mark Huddleston	913-577-0419

10.3 Route to Emergency Facility

The Terracon Corporate Health and Safety Manager will be contacted following all site emergencies. Medical emergencies will be taken to Wadley Regional Medical Center. The route to the facility from the site is: See attached map

10.4 Emergency Medical Treatment Procedures

Any person who becomes ill or injured during the course of this project must be decontaminated to the maximum possible extent. If the injury or illness is minor, full decontamination should be completed and first aid administered prior to transport. If the patient's condition is serious, at least partial decontamination should be completed prior to transport of the injured site worker.

If rescue is required from an area of obvious fiber release, Terracon personnel will inform rescue personnel of site contaminants and will assist emergency personnel in transporting the injured employee if requested. Terracon personnel will don the appropriate personal protective equipment prior to entering sites with signs of obvious fiber release.

10.5 In the Event of Fiber Release

In the event that small amounts of suspect asbestos containing materials such as thermal system insulation, sprayed on or troweled-on surfacing materials, ceiling texture, etc. are released during the course of sampling, sampling team members will immediately evacuate the area and don Level C personal protective equipment. The area of potential ACM release will then be approached and suspect materials will be thoroughly wetted with detergent-amended water, slowly and deliberately swept to a centralized pile, re-wetted, double bagged in asbestos disposal bags and sealed with duct tape. Affected surfaces will be re-wetted and swabbed with clean cloths or paper towels. Used wipes will be placed in asbestos disposal bags which will be containerized pending proper removal and disposal in an approved disposal facility.

ACKNOWLEDGMENT OF INSTRUCTION

I understand that this project will involve asbestos sampling in the building located at 203 & 205 W Broad Street, Texarkana, Texas. Asbestos activities outlined in this Plan could expose project participants to physical hazards and potential chemical hazards (see plant specific job hazard analysis attached). Potential fiber releases will be controlled by deliberate collection techniques and wet sampling methods. If potential fiber releases appear likely, sampling personnel will upgrade to Level C personal protective equipment as specified in this Health and Safety plan. I have read this Health and Safety plan and have received instructions for procedures to be followed. I understand that if at any time I have questions concerning health and safety precautions at this site, I am to contact the Site Health and Safety Officer. The Site Health and Safety Officer will contact the Terracon Corporate Health and Safety Manager at (913) 577-0419.

ASBESTOS SURVEY
TERRACON PROJECT NO. 94137464B

Name: (Please Print)	Signature	Date
_____	_____	_____
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_____	_____	_____
_____	_____	_____

Site Safety briefing performed by: _____ Date _____

Level of PPE: D Dmod (Stand-by) C (Stand-by)

HAZARDLINE

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NEW YORK, NEW YORK 10036

FORMAT EDITING: TERRACON ENVIRONMENTAL, INC.--CONTENT UNCHANGED

CHEMICAL NAME

ASBESTOS

CHEMICAL FORMULA

VARIES

SYNONYMS

CHRYBOTILE, CROCIDOLITE, ACTINOLITE, AMOSITE, ANTHOPHYLLITE, TREMOLITE

PERMISSIBLE EXPOSURE LIMIT AND TOXICOLOGY

0.1 FIBER/CC

TUMORIGENIC DATA (RTECS)

MUTAGENIC DATA (RTECS)

CERCLA HAZARD RATINGS

TOXICITY -- 3 IGNITABILITY -- 0 REACTIVITY -- 0 PERSISTENCE -- 3

OSHA CARCINOGEN

KNOWN HUMAN CARCINOGEN (NTP)

ACGIH A1-CONFIRMED HUMAN CARCINOGEN

HUMAN SUFFICIENT EVIDENCE FOR CARCINOGENICITY (IARC GROUP-1)

ANIMAL SUFFICIENT EVIDENCE FOR CARCINOGENICITY (IARC GROUP-1)

TOXICOLOGY

ASBESTOS MAY BE IRRITATING TO THE EYES, SKIN AND MUCOUS MEMBRANES. THERE IS INSUFFICIENT DATA TO QUANTIFY THE TOXICITY. POISONING MAY AFFECT THE LUNGS. REPEATED OR PROLONGED EXPOSURE TO ASBESTOS MAY CAUSE ASBESTOSIS, AN INTERSTITIAL FIBROSIS OF THE LUNG TISSUE WHICH MAY DEVELOP FULLY WITHIN 7-9 YEARS, BUT ONSET IS TYPICALLY DELAYED 20-40 YEARS AFTER THE FIRST EXPOSURE. THE INITIAL SYMPTOM IS A PROGRESSIVE EXERTIONAL DYSPNEA. OCCUPATIONAL EXPOSURE TO CHRYBOTILE, AMOSITE, MIXTURES CONTAINING CROCIDOLITE, AND OTHER FORMS OF ASBESTOS HAS RESULTED IN A HIGH INCIDENCE OF LUNG CANCER AND PLEURAL AND PERITONEAL MESOTHELIOMAS. GASTROINTESTINAL CANCERS WERE INCREASED IN WORKERS EXPOSED TO AMOSITE, CHRYBOTILE, OR MIXED FIBERS CONTAINING CROCIDOLITE. THE LATENT PERIOD FOR MESOTHELIOMAS IS 3.5-30 YEARS; FOR LUNG CANCER, 15-30 YEARS.

THE THRESHOLD LIMIT VALUE WAS ESTABLISHED BASED ON HEALTH EFFECTS DATA. SMOKING ENHANCES THE RISK OF LUNG CANCER.

IHL-HMN TCLO: 1.2 FIBERS/CC/19 YRS-C

ASBESTOS (CONT'D)

PHYSICAL DESCRIPTION

FIBERS OR FILAMENTS WHICH MAY BE WHITE, BLUE, BROWN, GRAY, GREEN OR YELLOW IN COLOR.

CHEMICAL AND PHYSICAL PROPERTIES

MOLECULAR WEIGHT: VARIES

BOILING POINT AT 1 ATM, F: NOT AVAILABLE

SOLUBILITY IN WATER, G/100 G WATER AT 20°C: INSOLUBLE

FLASH POINT, CLOSED CUP, F (OR OPEN CUP IF 0C): NONCOMBUSTIBLE SOLID

VAPOR PRESSURE @ 20°C, MMHG: NOT AVAILABLE

MELTING POINT, F: >1832°F (>1000°C)

UPPER EXPLOSIVE LIMIT IN AIR, % BY VOLUME: NONFLAMMABLE

LOWER EXPLOSIVE LIMIT IN AIR, % BY VOLUME: NONFLAMMABLE

SPECIFIC GRAVITY: 2.4-3.3

ROUTE OF ENTRY INTO BODY

INHALATION, INGESTION, SKIN OR EYE CONTACT

SYMPTOMS

EYE IRRITATION, SKIN IRRITATION, MUCOUS MEMBRANE IRRITATION, COUGHING, CHEST PAIN, LUNG FIBROSIS, DYSPNEA, DECREASED VITAL CAPACITY, TACHYPNEA, PULMONARY RALES, CYANOSIS, ANOREXIA, WEAKNESS, WEIGHT LOSS, FINGER CLUBBING, FATIGUE, DERMATITIS, CONJUNCTIVITIS, GASTROINTESTINAL IRRITATION, PLEURAL MESOTHELIOMA, UREMIA MESOTHELIOMA, LUNG CANCER, GASTRO-INTESTINAL CANCER, LARYNX CANCER

ORGANS AFFECTED BY THE SUBSTANCE

LUNGS

RESPIRATORY SYSTEM

GASTROINTESTINAL

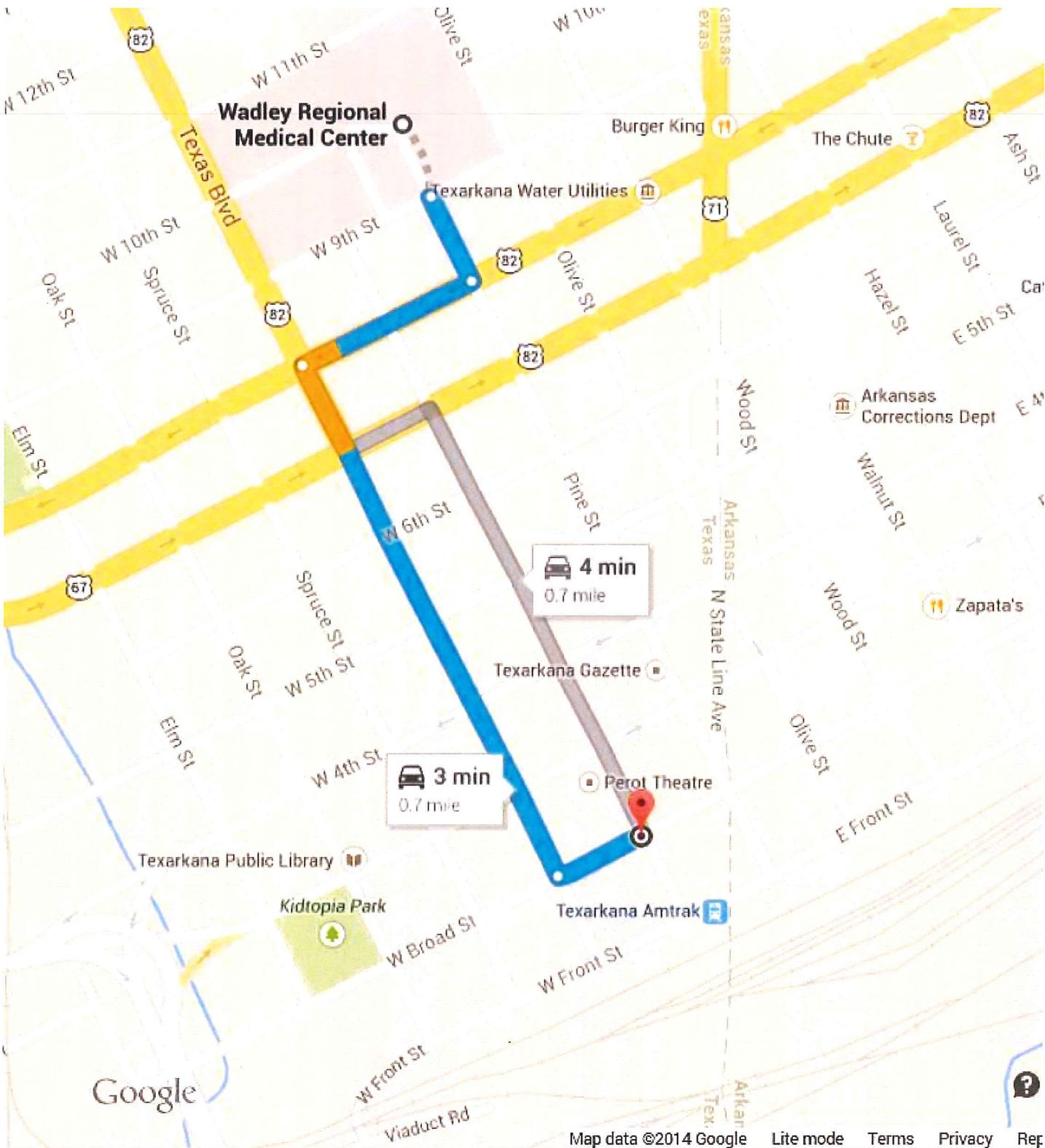
SKIN

LEAK AND SPILL PROCEDURES

REPORTABLE QUANTITY (RQ): 1 LB. (0.454 KG)

A REPORTABLE QUANTITY OF ONE POUND APPLIES TO THIS SUBSTANCE

ESTABLISHED BY SECTIONS 101(14) AND 102(B) OR ADJUSTED UNDER SECTION 102(A) OF THE COMPREHENSIVE ENVIRONMENTAL RESPONSE, COMPENSATION AND LIABILITY ACT OF 1980 (CERCLA). SECTIONS 103(A) AND 103(B) REQUIRE THAT PERSONS IN CHARGE OF A VESSEL OR FACILITY FROM WHICH A HAZARDOUS SUBSTANCE HAS BEEN RELEASED IN A QUANTITY EQUAL TO OR GREATER THAN THE REPORTABLE QUANTITY FOR THAT SUBSTANCE IMMEDIATELY NOTIFY THE NATIONAL RESPONSE CENTER (800) 424-8820; IN THE WASHINGTON, D.C. METROPOLITAN AREA (202)426-2675.



Google

APPENDIX B: SURVEY PROTOCOLS



STANDARD OPERATING PROCEDURE for EPA Brownfield Grant Projects

E.3000

BULK SAMPLING OF SUSPECT ASBESTOS-CONTAINING MATERIAL (ACM)

Last Review or Revision: June 2010

I. PURPOSE

The purpose of this standard operating procedure (SOP) is to provide information on the hazards of asbestos and procedures to follow to sample suspect materials for laboratory analysis. The following guidelines contained in this document apply to Terracon personnel who engage in bulk sampling of suspect ACM and are designed to provide standardization with respect to sample collection. This procedure should ensure that potential asbestos-containing material samples are collected in a manner which allows for accurate analysis of the material and that sampling personnel are protected against potential asbestos fiber releases through controlled sampling techniques or appropriate personal protective equipment.

The objective of bulk sampling building materials and components suspected to contain asbestos is to characterize the items that contain asbestos in quantities equal to or greater than 1% or other content limit as specified by local or state guidelines. By characterizing the locations and quantities of asbestos-containing materials (ACM), exposure hazards can be greatly reduced.

II. BACKGROUND AND REFERENCE

Asbestos has been a common component used in several building materials because of its strength enhancing and fire resisting properties. However, asbestos has been recognized as a human carcinogen and respiratory hazard. Due to its health hazards, building inspections and asbestos bulk sampling is requested for schools and many public or commercial properties prior to building renovation or demolition activities. Therefore, identifying, locating and quantifying materials containing asbestos is essential in the effort to prevent worker exposure to asbestos and prevent environmental contamination.

As a consequence of inhalation of asbestos fibers, a body of federal and state regulations has been developed. Federal regulations pertaining to asbestos are included in AHERA (Asbestos Hazard Emergency Response Act) US EPA 40 CFR 763, Subparts E, F; NESHAP (National Emissions Standards for Hazardous Air Pollutants (EPA 40 CFR 61); OSHA Asbestos Standards (29 CFR 1910.1001 and 29 CFR 1926.1101), and ASHARA (Asbestos School Hazard Abatement Reauthorization Act). Many states and local authorities have additional requirements including state-specific licensing and certification.

Terracon will comply with applicable federal, state and local regulations when conducting asbestos-related services.

III. EQUIPMENT

The minimum equipment necessary to conduct bulk sampling of suspect materials, in addition to the personal protective equipment outlined below in the Health and Safety Section, is listed below.

- Utility Knife, Chisel, Hammer, Screwdriver, Coring Tool
- Duct Tape
- Sample Containers (preferably ziplock-style clear plastic bags)
- Sample Labels and Indelible Marker
- Spray Atomizer containing Detergent Amended Water, Paper Towels/Wet Wipes
- Spray Adhesive
- Roof Patch Kit (if necessary)
- Measuring Wheel
- Camera
- Flashlight
- Field ACM Sample Log

IV. CERTIFICATION

Individuals conducting asbestos sampling must have the certifications listed below. Copies of these certifications and licenses should be taken to the site during the sampling event.

- United States Environmental Protection Agency Building Inspector training (and refresher training, if applicable)
- Asbestos Inspector State-license for the state of the project location (where necessary)

In addition, Terracon requires company-based training courses and hands-on experience of employees prior to commencing asbestos-related field services. Each employee must also receive respirator training, be medically monitored and successfully pass a fit-test utilizing issued respirator(s).

V. HEALTH AND SAFETY

Asbestos has been recognized to cause asbestosis, cancer of the lungs and digestive tract and mesothelioma. Asbestosis is a lung disorder characterized by a diffuse interstitial (between cell) fibrosis. The onset of asbestosis probably depends upon the asbestos dust

concentration, the morphology of the fiber and length of exposure. Cigarette smoking is strongly implicated as a co-carcinogenic among asbestos workers.

Under the OSHA asbestos standards, the employer has an obligation to protect employees against exposure to asbestos fibers in excess of 0.1 fibers per cubic centimeter of air (0.1f/cc). Personnel engaged in asbestos-related activities (including building inspections) must be trained, medically cleared and fit-tested for respiratory protection. Therefore, enrollment in a medical surveillance program in compliance with the OSHA asbestos and respiratory protection standards is mandatory. Terracon employees are not permitted to engage in asbestos-related activities unless they are enrolled in the Terracon medical surveillance program and have been medically cleared for respirator use by a physician.

The following safety and health protocols apply to Terracon personnel who engage in asbestos-related services. The guidelines contained in this document are based upon potential health hazards from exposure to asbestos fibers and physical hazards which may be encountered on survey project sites. Field activities will be performed in accordance with the procedures outlined in this document and applicable federal/state health and safety regulations.

Terracon personnel will use professional judgment during sample collection to prevent exposure to other building occupants. If unauthorized personnel attempt to enter a sampling area which could reasonably pose a fiber release hazard, the inspector will curtail bulk asbestos sample collection activity and request that the individual(s) leave the work area. If unauthorized personnel refuse to leave the work area, immediately contact the Project Safety Officer and/or a client representative. Sample collection activities should recommence only after unauthorized personnel have left the work area.

In the event that minor amounts of suspect asbestos containing materials such as thermal system insulation, sprayed-on or trowled-on surfacing materials, ceiling texture, etc. are released during the course of sampling, sampling team members will immediately evacuate the area and don Level C personal protective equipment. The area of potential ACM release will then be approached and suspect materials will be thoroughly wetted with amended water, slowly and deliberately swept to a centralized pile, re-wetted, and containerized in heavy mil asbestos disposal bags. Affected surfaces will then be re-wetted and swabbed with clean cloths or paper towels. Used wipes will be disposed of as asbestos-containing waste.

In the event that large quantities of potential ACM is released during sample collection activities, personnel will immediately evacuate the area and notify the Project Safety Officer and the client representative. The Project Safety Officer will request that the area be sealed until a properly attired response team can be mobilized to the area with a high efficiency particulate air filter (HEPA) vacuum and other equipment necessitated by site conditions.

If suspect materials are in deteriorated condition and fiber release appears likely, or if sampling must be conducted overhead and/or above drop ceilings, personnel will upgrade to Level C personal protective equipment as itemized above. Level C personal protective

equipment should be donned before moving drop ceiling panels, attic access panels, etc. where friable fireproofing or thermal system insulation are known to be present.

The indicated personal protective equipment shall be mobilized to asbestos sampling project sites on each day of sample collection and utilized, if necessary:

- Tyvek (standard) protective coveralls
- Half face or full face air purifying respirator equipped with HEPA (P-100) cartridges
- Impermeable gloves (nitrile or latex).
- Tyvek boot covers or washable outer footwear

Additional Health and Safety protocols such as those established by the owner/operator of the project site and Terracon's company policy regarding ladder safety, confined space entry and electrical hazards shall be followed.

VI. SAMPLING HAZARDS

a. Elevated Surfaces

Asbestos building inspections may include roofing materials and ceiling spaces containing suspect ACM. Appropriate ladders or other suitable devices (e.g., manlifts) will be used for gaining access to elevated sampling locations. Ladders will be inspected prior to use. Spreaders will be fully extended on all step ladders and firmly positioned prior to use. Where footing is uncertain, a sample team member will hold or otherwise secure ladders while in use by another sample team member. Personnel must always face ladders during both ascent and descent. Extension ladders will not be positioned more than one-quarter of their working length from buildings, walls, etc. (4:1 pitch). Sample team personnel will not walk on steeply pitched roof surfaces and will not walk on low pitched roofing surfaces while wet. Remain on designated roof walkways wherever present. Terracon personnel will visually inspect roofs prior to beginning sample collection activities and will avoid all areas which appear to be structurally unsound.

b. Confined Space Entry

Terracon asbestos inspectors will not enter any pit, shaft, tunnel, etc. which has limited means of egress, the potential for an oxygen deficient or toxic atmosphere or which was not designed for human occupancy without first developing a written safety plan which includes a confined space entry permit and procedures. Readily accessible spaces such as pipe tunnels in which personnel may stand can be entered to a distance where continuous visual and verbal communication can be maintained with another sample team member.

Adequate portable lighting must be utilized during sample collection in tunnels and similar spaces. No Terracon or sample team member may attempt to walk through a pipe tunnel,

etc. beyond the sight of a stand-by team member unless written confined space entry procedures have been prepared for the project.

c. Electrical Contact Hazards

Personnel will remain cognizant of the location and condition of electrical wiring during the collection of bulk asbestos samples. A visual assessment of each work space will be made prior to sample collection and electrical contact hazards will be evaluated. Unguarded junction boxes, exposed wiring, knife switches, etc. will be avoided during the collection of bulk ACM samples, and coring tools will not be used in near proximity to electrical switches or receptacles.

VII. PROCEDURES FOR BULK SAMPLING OF SUSPECT ACM

The primary purpose of this section is to identify the methods and techniques of controlled sampling, sampling site control and use of appropriate personal protective equipment to protect Terracon personnel and members of the general public from exposure to asbestos fibers during sampling activities. Adherence to these procedures should enhance personnel safety during sample collection activities and aid in the suitability of samples for analysis. Field activities will be performed in accordance with the procedures outlined in this document and applicable federal/state health and safety regulations.

Protocols for inspection and bulk sampling are defined in AHERA regulations. These are applicable for any type of survey; for example, a school, an area prior to renovation, a building prior to demolition and inspections undertaken to rebut the OSHA presumption that certain materials contain asbestos.

An accredited Building Inspector must perform the inspection. A summary of AHERA sampling protocols is as follows:

1. Visually inspect the building interior and/or exterior and identify locations of suspect ACM. Identify homogenous areas of friable and non-friable suspect ACM. Document locations, condition, classification and estimated quantities of each suspect material. It is recommended to depict locations of materials on a building diagram and take photographs of sampled materials.
2. Touch each suspect ACM to determine its friability.
3. Collect representative samples of suspect ACM. Terracon recommends a minimum of three (3) samples of each material be collected from each homogeneous area. However, specific materials may require additional samples such as surfacing material and insulation

as described below. Judgment should be used on the need for and quantity of additional sample collection.

Surfacing materials: Collect, in a statistically random manner, at least 3 bulk samples from each homogenous area of 1,000 sq. ft. or less, at least 5 bulk samples from each homogenous area that is greater than 1,000 sq. ft. but less than or equal to 5,000 sq. ft., and at least 7 bulk samples of each homogenous area larger than 5,000 sq. ft.

Thermal System Insulation (TSI): Collect, in a randomly distributed manner, at least three bulk samples from each homogeneous area of TSI; collect at least one bulk sample from each homogeneous area of patched TSI if the patched section is less than 6 linear or square feet; collect bulk samples from each insulated mechanical system where cement or plaster is used on tees, elbows, etc. in a manner sufficient to assess whether the material is ACM.

If fiber release appears likely, wet methods will be employed in the collection of suspect ACM samples. Water amended with a minimum of 10% commercially available window cleaning solution or other suitable surfactant should be used to moisten materials prior to sampling. Bulk asbestos samples will not be collected over the heads of, or in near proximity to, non-project personnel. Respiratory protection is not required when sampling non-friable suspect materials or materials below the breathing zone which are adequately wetted with amended water.

4. Bulk ACM samples should be immediately placed in sample containers and sealed while the materials are wet. If collecting samples of friable ACM or normally non-friable materials which are in deteriorated condition, precautions must be taken to prevent the release of fibers to the work area. Precautions include aggressively wetting the surface or potentially isolating the material (e.g. glove bagging) prior to disturbance.

5. Reusable sampling equipment will be gently rinsed with amended water. Dry the equipment with paper towels to be disposed of as contaminated materials.

6. The following decontamination sequence should be used following sample collection activities requiring Level C personal protective equipment:

- Remove coveralls slowly turning the outside inward.
- Place in heavy mil asbestos disposal bag.
- Remove gloves and shoe covers (if utilized)
- Remove respirator and carefully dispose of respirator cartridges in asbestos disposal bag.
- Securely seal protective clothing and any potentially contaminated disposable sampling equipment in heavy mil asbestos disposal bags.
- Do not smoke or eat with soiled hands.



STANDARD OPERATING PROCEDURE for EPA Brownfield Grant Projects

E.4000 SAMPLING OF POTENTIAL LEAD-BASED PAINT

Last Review or Revision: June 2010

I. PURPOSE

The purpose of this standard operating procedure (SOP) is to provide information on the hazards of lead-based paint (LBP) and describe procedures for identification and proper LBP sampling techniques. The following procedures for sampling potential LBP using a direct reading instrument and paint chip collection are designed to provide standardization with respect to location and number of samples collected and method of labeling sample locations. In addition, this procedure should ensure that potential LBP samples are collected in a manner which allows for accurate analysis of the material. Finally, this procedure will help to ensure that sampling personnel are protected against potential lead dust releases through controlled sampling techniques or appropriate use of personal protective equipment.

The objective of sampling coated (i.e., painted, pigmented or stained) surfaces for LBP (LBP) is to characterize materials and components that contain lead in surface coatings and compare them to established limits such as the Environmental Protection Agency (EPA) or Housing Urban Development (HUD) standards and guidelines such as at quantities greater than 1.0 milligram per square centimeter (mg/cm^2) or 0.5% by weight or other regulated quantity as specified by state or local authority. By characterizing the locations and quantities of LBPs, exposure hazards can be greatly reduced.

II. BACKGROUND AND REFERENCE

Lead is a toxic heavy metal which may cause blood, kidney and nervous system disorders if inhaled or ingested. Metallic lead and lead contained in dusts are not readily absorbed through the skin. However, skin contact with potentially contaminated site materials should be avoided.

The United States EPA and HUD have established an action level for LBP of 1.0 milligram per square centimeter (mg/cm^2) or 0.5% by weight. Coatings with quantities equal to or greater than these values are considered LBP. The Occupational Safety and Health Administration (OSHA) does not establish a LBP quantity but regulates the amount of lead that can become airborne and either inhaled or ingested by setting limits for air concentrations of 0.05 milligram per cubic meter (mg/m^3) of air over a work shift and blood values of 50 micrograms per deciliter of blood.

Lead was a common ingredient in paint until 1978 when the Consumer Product Safety Commission (CPSC) banned the sale of LBP for use in residences in quantities greater than 0.06% by weight. However, some industrial paints still contain lead today and are used in several applications. Lead can be introduced into the air by sanding or abrading surfaces containing LBP, and inhalation or ingestion of the dust is possible. Ingestion of lead can occur when children consume deteriorated paint chips, children place exposed toys or body parts into their mouths or when industrial workers exposed to lead-containing dust eat or smoke without washing their hands.

The lead content of paint can be determined with direct-reading instrumentation or by analysis of a bulk paint chip sample. An X-ray fluorescence (XRF) type analyzer is recommended to obtain direct readouts of lead content in coated surfaces. The XRF analyzes for lead by atomic absorption spectroscopy (AAS). Results are in milligrams of lead per square centimeter. Paint chip sample analysis is performed by inductively coupled plasma-atomic emission spectrometry (ICP-AES) in accordance with EPA SW-846 Method 6010B. Results are typically reported as lead percent per paint chip weight.

When sampling for LBP in buildings classified under the United States Department of Housing and Urban Development (HUD) or other child occupied-facilities (i.e., publicly and privately owned-housing, public buildings, daycares, etc.), procedures stated in the most current revision of the Department of Housing and Urban Development *Guidelines for the Evaluation and Control of Lead-Based Paint Hazards Housing*, June 1995 revision will be used.

Lead is also regulated by the Occupational Safety and Health Administration (OSHA) and the EPA. Occupational exposure to lead occurring in the course of construction work, including maintenance activities, painting, renovation and demolition, is subject to OSHA standard (29 CFR 1926.62), Lead Exposure in Construction. Construction work covered by 29 CFR 1926.62 includes any repair or renovation activities or other activities that disturb in-place, lead-containing materials. Employers must assure that no employee will be exposed to lead at concentrations greater than 0.05 mg/m³ averaged over an eight-hour period without adequate protection.

The Resource Conservation and Recovery Act (RCRA) provides the EPA with the authority to regulate the waste status of demolition or renovation debris, including lead-containing materials. Specific notification and testing requirements must be addressed prior to transporting, treating, storing or disposing of hazardous wastes. Lead containing wastes are considered hazardous waste under RCRA if Toxicity Characteristic Leachate Procedure (TCLP) results exceed 5 milligrams per liter (mg/L). EPA exempts from most RCRA requirements those generators whose combined hazardous waste generation is less than 100 kilograms (kg) per month.

III. EQUIPMENT

LBP analysis can be conducted by using a direct reading XRF analyzer or by collecting paint chip samples. Equipment necessary to conduct both methods is listed below.

For direct reading sampling:

- X-ray fluorescence (XRF) analyzer and accessories
- XRF result field log (optional if downloading software is used)

For paint chip sampling:

- Heating tool and extension cord
- Tape measure or template
- Chisel
- Chipping hammer or scraper (lead paint samples from metal structures)
- Face shield or chipping goggles
- Sample containers (preferably sturdy, clear plastic vials)
- Sample labels
- Laboratory chain of custody for paint chip sample analysis

IV. CERTIFICATION

Individuals conducting LBP inspection services should have the certifications listed below. Copies of these certifications and licenses should be taken to the site.

- EPA lead inspector and risk assessor certification
- As applicable, local- or State-licensed lead inspector/risk assessor (required for HUD projects)
- Manufacturer training certification for the XRF analyzer

V. HEALTH AND SAFETY

The OSHA personal exposure limit (PEL) for lead is 0.05 milligram per cubic meter (mg/m^3) and the action level is $0.03 \text{ mg}/\text{m}^3$. The primary route of exposure of lead is through inhalation of contaminated dusts or by accidental ingestion; however, collection of small sample volumes required for analysis is not expected to generate significant dust. Although, if painted surfaces are being disturbed and dust is generated in the vicinity, personnel will take protective measures as indicated below. Project activities may be conducted in Level D personal protective equipment modified as specified below.

- Lead sampling activities will be performed in Level D personal protective equipment to include standard work uniform, safety footwear and hard hat if overhead hazards are present.

- Protective goggles or a full face shield will be worn during chipping hammer operations.
- Protective gloves should also be worn during lead chip sampling to prevent abrasion and contact with site materials. Half face disposable dust/fume/mist respirators (3M 9920 "surgical style" masks) or half-face air purifying respirators equipped with HEPA filter cartridges will be worn if dusty conditions develop on-site.

Due to the potential of accidental ingestion when working in areas with lead dust, do not smoke or eat with soiled hands. Wash thoroughly before eating, drinking or smoking. Shower thoroughly as soon as possible upon leaving the site.

The XRF analyzer contains a radioactive source and should be transported and used according to the manufacturer's instructions. Personnel utilizing the equipment shall have the proper training and certifications required for use of the equipment.

VI. PROCEDURES FOR XRF ANALYSIS

1. Identify areas with coated or prepared surfaces. This includes building materials, components and fixtures finished with a coating such as paint, stain and varnish. Wallpaper can mask prepared surfaces and should be included in the survey. Some ceramic tiles have a lead-containing glaze and should also be assessed, particularly where required by state or local regulatory agencies.
2. Select appropriate materials and locations to be sampled. When sampling painted interior surfaces, representative samples must be obtained per client instruction or in general compliance with the most current revision of the Department of Housing and Urban Development *Guidelines for the Evaluation and Control of Lead-Based Paint Hazards Housing*, June 1995 revision.
3. Calibrate the XRF unit according to the manufacturer's instructions before and after the survey. This involves taking calibration sample readings from a known source provided by the manufacturer.
4. Conduct XRF sampling on selected surfaces. Document descriptions of each surface sampled on the XRF result field log or using the manufacturer's software. Record results on the XRF result field log if software is not used.

If results yield 1.0 mg/cm² (inconclusive), then a paint chip sample should be collected using the applicable procedures indicated in the following section.

If results indicate the presence of lead in quantities greater than 1.0 mg/cm², it is recommended that a photograph depicting the material and location be taken.

VII. PROCEDURES FOR PAINT CHIP SAMPLING

1. Identify areas with prepared surfaces. This includes building materials, components and fixtures finished with a coating such as paint, stain and varnish. Wallpaper can mask prepared surfaces and these areas should be included in the survey.
2. Select appropriate materials and locations to be sampled. When sampling painted interior surfaces, representative samples must be obtained per client instruction or in general compliance with the most current revision of the Department of Housing and Urban Development *Guidelines for the Evaluation and Control of Lead-Based Paint Hazards Housing*, June 1995 revision.
3. A heating tool and chisel is recommended to collect representative samples of painted surfaces, but a knife, chipping hammer or paint scraper may also be used. Minimum force should be used to prevent the generation of dusts and particles. Wear protective goggles, abrasion resistant gloves and/or particulate respirator as appropriate to the task.

Check with the analytical laboratory you will use to determine minimum sample size required. A two square inch (2 in²) sample is recommended for each sample. The sample size should be documented on the sample log. Some laboratories conducting toxic characteristic leaching procedures (TCLP) analysis may request up to ten grams (10 g) per sample. Lead-based paint samples must be removed down to the bare substrate to ensure each layer of paint has been collected. Use a brush or mini-vacuum to clean up residual material and place it in the sample container.

4. Assign a sample number to each sample collected. Affix a label or mark the sample container indelibly with a sample identification number. Seal the sample container securely. Document descriptions and locations of each surface sampled on a field log. It is recommended that a photograph depicting the material and location be taken.
5. Send results and chain or custody to an American Industrial Hygiene Association (AIHA) accredited laboratory for analysis.

- Wash hands, face and forearms thoroughly before eating, drinking smoking or using toilet facilities.
- Shower thoroughly as soon as possible upon leaving the project site.

7. Bulk sample analysis for asbestos content is performed by polarized light microscopy (PLM). The analytical testing procedure is based on U.S. Environmental Protection Agency (EPA) methods and National Voluntary Laboratory Accreditation Program (NVLAP) requirements. Terracon will use NVLAP accredited and appropriately licensed laboratories for analysis of asbestos bulk samples. Samples will be controlled with the analytical laboratory through chain of custody documentation.



STANDARD OPERATING PROCEDURE for EPA Brownfield Grant Projects

E.4020 AVIAN PATHOGEN SAMPLING - AIRBORNE (Bat and Pigeon Droppings)

Last Revision/Review: July 2014

Reviewer / Office: RAG/Dallas

Objective and Application

Indoor air sampling requires the participation / review of a Terracon industrial hygienist (IH) in selecting methods and scoping work. Engaging an IH is encouraged for when sampling for airborne contaminants. For direction to local or regional assistance, contact the Chair of the Industrial Hygiene Practice Resource Group on the Terracon Environmental Services Webpage. Click [here](#) if viewing electronically.

The following procedure is for collection of samples for the determination of the avian pathogens *Histoplasma capsulatum*, *Cryptococcus neoformans* and *Chlamydia psittaci* by the Polymerase Chain Reaction (PCR) analytical method. The PCR method is qualitative for *H. capsulatum* and quantitative for *C. neoformans* and *C. psittaci*. For *H. capsulatum*, EMLab P&K (1501 W. Knudsen Drive, Phoenix, AZ) utilizes the National Institute of Occupational Safety and Health (NIOSH) two-stage PCR method as published by T. M. Reid and M. P. Schafer, *Molecular and Cellular Probes*, (1999) 13:269-273. The PCR method for *C. neoformans* and *C. psittaci* is a proprietary real time analytical developed by EMLab P&K using species-specific sequences published in Genbank for PCR primers (single strand of DNA specific for the species of interest) and probes (fluorescent molecules attached to primers to allow detection).

Equipment

The following equipment and supplies will be needed for this testing:

- Air monitoring cassettes are obtained from EMLab P&K. The sterile, 37 millimeter (mm) three piece cassettes contain a polycarbonate filter with a 0.4 micrometer pore size.
- Rotometer or other flowmeter accurate to 0.1 L/min. Flowmeters used for calibration of air sample pumps will be calibrated against a primary standard on a quarterly basis.
- Air monitoring pump (battery operated or ac powered depending on application) capable of providing 10 to 15 L/min flow rate for ambient air samples and a 1 to 4 L/min flow rate for personal air samples.
- Cassette holders (SKC Model 225-1).
- Vinyl tubing to connect pump to cassette holder.
- Cassette stand or other means to fix cassette in place as appropriate for ambient air sample testing locations. Cassette holders affix to the lapel or similar location in the personal breathing zone (PBZ) when collecting personal air samples.
- Chain of Custody.

Procedures

Label cassette and record laboratory identification number on chain of custody. For ambient air samples, select a location for the sample that is subject to ambient air flow and representative of the location(s) to be tested. For personal air samples, clip the cassette/cassette holder to the individual's lapel, shoulder or other location in the PBZ and secure with duct tape as needed. Secure the low flow personal pump to the workers belt or similar location. A location protected from precipitation should be selected. Excessive moisture will interfere with sample analysis and could affect the flow rate.

Assemble sampling pump, tubing and stand in sample collection location. The cassette should be placed in the cassette holder and the tubing from the pump attached to the base of the cassette holder at the nipple. The joint between the tubing and cassette may be reinforced with tape if site conditions make this necessary. Cassette must be tilted downward at a 45° angle from horizontal. Cassette and pump should be placed so that the sample does not have to be moved after sample calibration.

A short section of vinyl tubing should be used to connect the flowmeter to the inlet port of the cassette holder. An adapter fitting may be needed to connect the tubing to the cassette. If a rotometer is used for flow calibration, the instrument must be held upright for accurate readings. Turn on the pump and measure the flow rate. Using the flow control on the pump, adjust the flow to the desired reading between 10 and 15 L/min for ambient air samples and 1.0 and 4.0 L/min for personal air samples. Record the sampling start time and beginning flow rate. The target total air sample volume for ambient and personal air samples is generally 1,400 L to 1,800 L. For personal samples collected while workers are physically disturbing Bat/Bird guano or related debris and visible emissions are observed, the target total air sample volume may be adjusted to 360 L to 720 L.

After completion of the sample collection, inspect the pump and cassette for any problems that may affect the sample validity and record any problems noted. Measure the post collection flow rate using the procedure described above. The average of the two flow rates will be used by the laboratory to calculate the sample volume. Turn off the pump and cap the inlet and outlet ports on the 37 mm filter cassette. Record the sampling completion time and ending flow rate.

Documentation

In addition to chain of custody documentation, the following must be provided to the laboratory performing sample analysis:

- Average flow rate (average of beginning and ending readings)
- Sample duration
- Filter number
- Requested analytical method (Avian Pathogens by PCR)

The following additional information must be collected for Terracon project files:

- Sample date
- Sample times
- Sample location
- Activities performed by during the sampling
- Wind orientation (upwind, downwind, etc.)
- Weather conditions

Attached or Referenced Supporting Information

- Industrial Hygiene Technical Manual – Chapter II: Standard Methods for Sampling Air Contaminants
- EMLab P&K, 1501 W. Knudsen Drive, Phoenix, AZ



STANDARD OPERATING PROCEDURE for EPA Brownfield Grant Projects

E.4022 AVIAN PATHOGEN SAMPLING – BULK MATERIAL (Bat and Pigeon Droppings)

Last Revision/Review: July 2014
Reviewer / Office: RAG/Dallas

Objective and Application

Bulk sample collection of potentially hazardous materials requires the participation / review of a Terracon industrial hygienist (IH) in selecting methods and scoping work. Engaging an IH is encouraged when sampling for microbial contaminants. For direction to local or regional assistance, contact the Chair of the Industrial Hygiene Practice Resource Group on the Terracon Environmental Services Webpage. Click [here](#) if viewing electronically.

The following procedure is for the collection of bulk samples of Bat/Bird guano and related debris for the determination of the avian pathogens *Histoplasma capsulatum*, *Cryptococcus neoformans* and *Chlamydiaophila psittaci* by the Polymerase Chain Reaction (PCR) analytical method. The PCR method is qualitative for *H. capsulatum* and quantitative for *C. neoformans* and *C. psittaci*. For *H. capsulatum*, EMLab P&K (1501 W. Knudsen Drive, Phoenix, AZ) utilizes the National Institute of Occupational Safety and Health (NIOSH) two-stage PCR method as published by T. M. Reid and M. P. Schafer, *Molecular and Cellular Probes*, (1999) 13:269-273. The PCR method for *C. neoformans* and *C. psittaci* is a proprietary real time analytical developed by EMLab P&K using species-specific sequences published in Genbank for PCR primers (single strand of DNA specific for the species of interest) and probes (fluorescent molecules attached to primers to allow detection).

Personal Protective Equipment (PPE)

Because the target microorganisms are inherently hazardous/pathogenic, PPE is required for the collection of bulk samples. Bulk sample collection disturbs the matrix being sampled and may result in aerosolization of pathogenic spores or other viable propagules and proper dermal and respiratory protection is required during sample collection.

The following PPE will be needed for this testing:

- Prior to sample collection, don Tyvek disposable coveralls, safety glasses, nitrile or latex gloves and respiratory protection. Depending on the level of substrate disturbance or visible airborne dust/emissions in the general sample collection area either an N-95 or N-100 respirator will be worn during sample collection. If a full face respirator is worn, safety glasses are not required.

Equipment

The following equipment and supplies will be needed for this testing:

- Sterile sample containers obtained from EMLab P&K. The sterile sample containers are typically 100 to 250 milliliter plastic bottles.
- Pre-cleaned metal bulk sample collection spatulas or an equivalent single use sterile bulk sample device. Metal spatulas must be pre-cleaned with 70% isopropyl alcohol, flamed with a Bunsen burner, Bic® lighter, or equivalent flame source, cooled in air and then stored in zip-lock bags or similar clean containers. To avoid cross contamination, use only one bulk collection device per sample.
- Appropriate marking pens to label containers or pre-printed labels to affix to the containers.
- Chain of Custody.

Procedures

Don the required PPE. Locate Bat/Bird guano or related debris that will be sampled and note the location in field notes and/or on a floor plan.

Label sample containers and record laboratory identification number on chain of custody.

With one hand, scoop approximately 10-100 milligrams (1-5 level tablespoons) of the Bat/Bird guano or related debris with the single use bulk sample collection device and promptly transfer to the sterile, lab supplied bulk sample container in the other hand. The bulk sample device and the sterile bulk sample container should not be placed on the ground or other surfaces near the sample location during sample collection. The pre-labeled sterile bulk sample container should be sealed and placed in a zip-lock bag prior to transfer to the laboratory.

If only sampling from one Bat/Bird guano or related debris location, collect a minimum of two samples.

Prepare a blank sample by opening the bulk sample container for 5-10 seconds in the immediate sample collection location, then sealing the container. Label accordingly.

Each metal spatula used to collect the bulk material should be transferred to a separate zip-lock bag and the bag sealed. After completion of the sample collection, re-clean the metal spatulas by placing the metal spatulas in a solution of non-ionic detergent amended with household bleach (Joy liquid dishwashing soap and 1 cup household bleach/gallon water) and soak for 24 hours. The metal spatulas may then be final cleaned as previously described. Sterile single use disposable bulk sample devices should be placed in a separate zip-lock bag and discarded.

Documentation

In addition to chain of custody documentation, the following must be provided to the laboratory performing sample analysis:

- Sample location
- Requested analytical method (Avian Pathogens by PCR)

The following additional information must be collected for Terracon project files:

- Sample date
- Sample times
- Sample location
- Activities performed by during the sampling
- Wind orientation (upwind, downwind, etc.)
- Weather conditions

Attached or Referenced Supporting Information

- Industrial Hygiene Technical Manual – Chapter II: Standard Methods for Sampling Air Contaminants
- EMLab P&K, 1501 W. Knudsen Drive, Phoenix, AZ



STANDARD OPERATING PROCEDURE for EPA Brownfield Grant Projects

E.4030 BIOAEROSOL SAMPLING, TOTAL (Airborne Mold Spores)

Last Revision/Review: July 2014
Reviewer / Office: RAG/Dallas

Objective and Application

Bioaerosol sampling requires the participation / review of a Terracon industrial hygienist (IH) in selecting methods and scoping work. Engaging an IH is encouraged when sampling for airborne contaminants. For direction to local or regional assistance, contact the Chair of the Industrial Hygiene Practice Resource Group on the Terracon Environmental Services Webpage. Click [here](#) if viewing electronically.

An airborne biogenic particle, such as a fungal spore, is a bioaerosol. Fungal spores are ubiquitous in the environment, and have specific requirements for survival, germination, and growth. Although fungal bioaerosols have not been conclusively associated with adverse health effects commonly noted in typically building-related complaints (e.g., mucous membrane irritation, headache, and fatigue), they are known in the medical literature to be associated with common allergies, or more serious respiratory disease. Some studies, and case histories have shown correlations between allergy, or more serious respiratory symptoms, and fungal contamination of heating, ventilating, air conditioning (HVAC) systems.

The spore trap sampling method used for total bioaerosol sampling is capable of determining total fungal spore concentrations per cubic meter of air (spores/m³). Bioparticulate such as pollen grains, insect exoskeletons, or fungal spores that require specific substrates in order to germinate and/or produce taxonomically identifiable reproductive structures (e.g., Ascospores and Basidiospores) are detected by this technique. While many fungal spores can be identified by this method, others, which are morphologically similar, cannot be positively assigned a genus designation and are grouped based on similar spore morphology (e.g. *Aspergillus/Penicillium*, *Drechslera/Bipolaris*). High variability in fungal spore concentrations will exist in different geographic locations, during different seasons, and weather patterns, and over the course of a given day. As a general rule, indoor fungal spore concentrations in an HVAC-supplied building are typically less than, but qualitatively similar to, fungal spore concentrations found in the outside environment. To assist in the interpretation of bioaerosol sampling results, a comparative sampling strategy is employed.

Equipment

The following equipment and supplies will be needed for this testing:

- Bioaerosol sample cassettes are obtained directly from laboratory supply companies or from the laboratory that will analyze the air samples. Allergenco-D™ or Air-O-Cell™ bioaerosol sample cassettes are recommended.
- Rotometer or other flowmeter accurate to 0.1 L/min. Flowmeters used for calibration of ac powered air sample pumps will be calibrated against a primary standard on a quarterly basis.
- a) Air monitoring pump (ac powered) capable of providing 15 L/min flow rate; b) Buck BioAire Bioaerosol Sampling Pump, Model B520 with rotometer for calibration; c) Zefon Bio-Pump Plus with rotometer for calibration; d) or equivalent battery operated air sampling devices capable of using the Allergenco-D™ or Air-O-Cell™ sample cassettes at a flow rate of 15 L/min.
- Vinyl tubing to connect air sampling cassette to ac powered air monitoring pump.
- Gloves, 1 gallon zip-lock bags, alcohol based hand wash, marker pen, field sampling logs, extension cords and camera.
- Cassette stand or other means to fix cassette in place as appropriate for ac powered air monitoring pump applications.
- Chain of Custody (COC).

Sample Collection Considerations

The bioaerosol sampling cassettes are designed to operate at a recommended flow rate of 15 L/min. It is important not to run the sampling pumps at lower flow rates for longer times to achieve the recommended air volume, as lower flow rates may result in a loss of some spores and the accumulation of others in a non-uniform manner. Higher flow rates may damage the spores.

The sampling time is dependent on the density of particulate in the environment. It is important not to overload the sample, otherwise it will be impossible to assess the types of spores, pollen and particulates that are present. The following table represents typical sample times to attain a sharply defined sample trace with good dispersion of the spores:

Environmental Conditions	Sampling time at 15 L/min
Drywall renovation or heavy industrial dust	1 minute
Dusty, dirty, visible particles in the air	3 minutes
Indoor environment, high activity and personnel present	5 minutes
Outdoors (collect a minimum of 2 outdoor samples)	5 minutes

Sampling Procedures

1. Prior to sampling, calibrate the pump to 15 liters per minute.
2. Record sampling location on field data sheet.
3. Wash hands with alcohol based hand wash. Don clean nitrile (or latex) gloves.
4. Inspect cassette for quality control mark indicating that sampling cassette has been inspected by manufacturer and approved for use.
5. Remove and retain tape seal covering outlet.
6. Attach the outlet (round hole) to the supplied tubing adapter (available from bioaerosol cassette supplier), or use standard ½" PVC tubing (for use with high volume pumps only).

Using a sampling stand, the cassette should be located approximately 4 to 5 feet above the floor surface.

7. Remove and retain tape seal covering inlet.
8. Start the sampling pump, and record sampling start time. Sample for an appropriate period of time (see table above).
9. Stop the sampling pump and seal inlet with the original tape. Record sampling stop time. Remove cassette from tubing, and reseal outlet with the original tape. Label sample and place into 1 gallon zip lock bag.
10. Repeat steps 1-9 for remaining samples to be collected.
11. A minimum of 2 samples should be collected in complaint area(s) and the outdoor environment. A comparative sample should be collected in a non-complaint area and duplicate samples at the building exterior, preferably adjacent to the air handling system's air intake or main point of egress. The outdoor environment should be sampled prior to entering the building and again at the end of the site assessment. It is recommended that sample field blanks should be included with the samples submitted to the laboratory.
12. At the conclusion of the sampling event complete a COC detailing client name and information, project name or number, sample number(s), description of area, volume of air collected, date of sample collection and date of shipment. Specify sample analysis and turnaround time. Maintain original and submit the copy to the laboratory with the samples.
13. To reduce shipping damage, it is recommended that the samples be placed in a corrugated shipping box to ensure safe arrival at the laboratory.

QUALITY CONTROL SUGGESTIONS

1. Initial air sampling should be performed prior to disturbance of mold and mold contaminated materials by investigative and surface/bulk sampling activities.
2. An effective interpretation is based on the comparison of indoor and outdoor samples. Outdoor control samples will help demonstrate whether spore amplification is occurring indoors.
3. Obtain an indoor control sample from a non-complaint area for comparison.
4. Sending a blank cassette for analysis is a good practice. The recommended industry practice for the number of field blanks is to provide two field blanks for each lot of bioaerosol sampling cassettes.
5. Flow rate is critical for accurate results. Remember to calibrate the pump at 15 L/min prior to sampling.
6. Never use cassettes that are damaged, expired, or do not have the manufacturers quality control mark.

Documentation

In addition to chain of custody documentation, the following must be provided to the laboratory performing sample analysis:

- Sample duration and flow rate
- Sample number
- Requested analytical method (total bioaerosol analysis)

The following additional information must be collected for Terracon project files:

- Sample date
- Sample times
- Sample location
- Activities performed during the sampling
- Wind orientation (upwind, downwind, etc.)
- Weather conditions

Attached or Referenced Supporting Information

- American Conference of Governmental Industrial Hygienist: Bioaerosols, Assessment and Control, 1999.
- Terracon Mold Practice Guidelines.



E.4033 FUNGAL GROWTH (MOLD) – SURFACE/BULK COLLECTION

Last Revision/Review: July 2014
Reviewer / Office: RAG/Dallas

Objective and Application

Bulk sample collection of potentially hazardous materials requires the participation / review of a Terracon industrial hygienist (IH) in selecting methods and scoping work. Engaging an IH is encouraged when sampling for microbial contaminants. For direction to local or regional assistance, contact the Chair of the Industrial Hygiene Practice Resource Group on the Terracon Environmental Services Webpage. Click [here](#) if viewing electronically.

Because many building materials can provide a source of nutrients for fungal growth, water is the limiting factor in minimizing the potential for fungal growth. Therefore, visible fungal growth, excessive dirt and water-damaged building materials should not be observed. When these conditions are observed, it indicates a need to conduct additional assessment, cleaning, and/or remediation activities.

Tape lift and bulk sampling are techniques used for direct examination. A direct exam allows for the immediate determination of the presence of fungal growth as well as what types of fungi are present. The criteria to establish fungal growth on the substrate sampled is microscopic confirmation of fungal somatic and reproductive structures. Direct examinations should only be used to sample visible or suspect fungal growth in a contaminated area. Most surfaces naturally collect a mixture of fungal spores that are normally present as background debris in the environment.

The direct exam is inexpensive and can be performed quickly. It is a useful test for initial site sampling. Direct examination of a surface indicates the fungi present in a given sample location.

Health problems related to indoor microbial growth are generally caused by the inhalation of substantial numbers of airborne spores, sometimes over a long period of time. The presence of biological contamination on a particular surface is not a direct indication of what may be in the air.

Equipment

The following equipment and supplies will be needed for this testing:

- Gloves, 1 gallon zip-lock bags, alcohol based hand wash, marker pen, field sampling logs and camera.
- Tape lift kit(s) may be obtained from the laboratory, or standard clear “Scotch” tape may be used.

- Chain of Custody (COC).

SAMPLING PROCEDURE

Tape Lift:

1. Wash hands with alcohol based hand wash. Don clean nitrile (or latex) gloves.
2. Remove tape applicator from slide provided in the tape lift kit or remove a few inches of clear tape from tape roll. Avoid touching the sticky side of the tape.
3. Apply the designated area of the lift kit tape applicator or central inch of tape to the sample area. Apply light pressure to the non-adhesive side.
4. Pull the lift kit tape applicator or tape off of the surface with slow, steady pressure, holding the tape edges only.
5. Apply sticky side of the lift kit tape applicator to the slide provided in the lift kit. For tape method, gently apply sticky side of the tape to a field sampling log, ensuring that there are no folds or creases in the tape. Do not fold tape onto itself.
6. Label samples and place into 1 gallon zip lock bag.
7. Record sampling location on COC. Photograph sample location.
8. Repeat steps 1-7 for remaining samples to be collected.
9. At the conclusion of the sampling event complete a COC detailing client name and information, project name or number, sample number, description of area, date of sample collection and date of shipment. Specify sample analysis and turnaround time. Maintain original and submit the copy to the laboratory with the samples.
10. To reduce shipping damage, it is recommended that the samples be placed in a corrugated shipping box to ensure safe arrival at the laboratory.

Bulk:

1. Wash hands with alcohol based hand wash. Don clean nitrile (or latex) gloves.
2. Collect a small sample of the suspect material and place in a clean zip lock bag and close.
3. Prepare sample label and place on the 1 gallon zip lock bag.
4. Record sampling location on field data sheet. Photograph sample location.
5. Repeat steps 1-4 for remaining samples to be collected.
6. At the conclusion of the sampling event complete a COC detailing client name and information, project name or number, sample number, description of area, date of sample collection and date of shipment. Specify sample analysis and turnaround time. Maintain original and submit the copy to the laboratory with the samples.
7. To reduce shipping damage, it is recommended that the samples be placed in a corrugated shipping box to ensure safe arrival at the laboratory.

Documentation

In addition to chain of custody documentation, the following must be provided to the laboratory performing sample analysis:

- Sample location
- Requested analytical method (fungal identification)

The following additional information must be collected for Terracon project files:

- Sample date
- Sample times
- Sample location
- Activities performed by during the sampling
- Wind orientation (upwind, downwind, etc.)
- Weather conditions

Attached or Referenced Supporting Information

- American Conference of Governmental Industrial Hygienist: Bioaerosols, Assessment and Control, 1999.
- Terracon Mold Practice Guidelines.

APPENDIX C: SITE ACCESS AGREEMENT

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**APPENDIX C
CONCEPTUAL DRAWING
OF
WASTE PROCESSING STATION**

BUILDING INTERIOR

WASTE ASSESSMENT &
PROCESSING AREA

C S D

ASBESTOS
"BAG-OUT"

MOLD & AVIAN
WASTE "BAG-OUT"

LEAD
"BAG-OUT"

CONCEPTUAL DRAWING
NOT FOR CONSTRUCTION

Commercial Building
203/205 W Broad Street
Texarkana, Texas

Conceptual Drawing

Project #: 94137464B

Drawing: #1

Drawn by: GSEC Date: 2/25/16



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