Brownfields 2025

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AUGUST 5–8, 2025 | CHICAGO, ILLINOIS

Brownfields 201 - Unlocking Potential: Managing Brownfields Assessment and Cleanup

Dawn Farver, US Environmental Protection Agency Region 3

Beth Grigsby, Kansas State University – Technical Assistance to Brownfields

Scott Nightingale, Kansas State University – Technical Assistance to Brownfields

EPA | ICMA

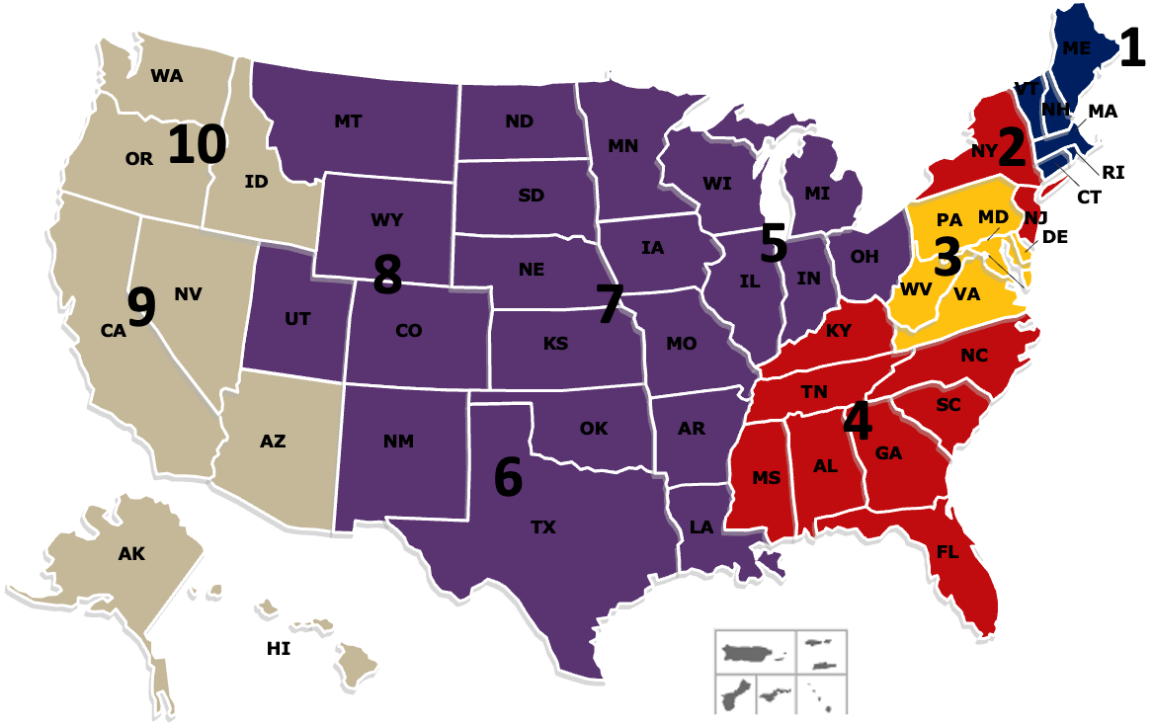
TAB Technical Assistance to Brownfields | Kansas State University

Managing Brownfield Assessment and Cleanup

Kansas State University Technical Assistance to Brownfields Program
Beth Grigsby, Assistant Regional Director for EPA Region 5
August 2025

ksutab.org

Technical Assistance to Brownfields (TAB)



TAB Service Providers

University of Connecticut EPA Region 1

New Jersey Institute of Technology (NJIT)

EPA Regions 2 & 4

Mid-Atlantic TAB EPA Region 3

Kansas State University – EPA Regions 5, 6, 7 & 8

Center for Creative Land Recycling (CCLR)

EPA Regions 9 & 10

Our Speakers Today

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Brownfields 201: Managing Brownfield Assessment and Cleanup

Brownfields University

Tuesday August 5, 2025

12:00 pm – 2:00 pm CDT

Time	Topic	Duration (min)
12:00	Welcome and Introduction - Beth Grigsby, KSU TAB	5
12:05	Liability, All Appropriate Inquiry, and Phase I - Dawn Farver, US EPA Region 3	40
12:45	Phase II and Recognized Environmental Conditions - Beth Grigsby, KSU TAB	35
1:20	Further Site Investigation, Reuse and Cleanup Planning - Scott Nightingale, KSU TAB	40
2:00	Adjourn	

We Want to Hear Your Feedback

Please provide feedback on today's event:

- Click this link
  https://kstate.qualtrics.com/jfe/form/SV_8CwVFBBeYCig6HA

- Scan this QR image from your smartphone

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Liability/Risk/AAI and Phase I Environmental Site Investigations

Dawn Farver, PhD, PE
Region 3 Brownfields Project Officer

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All Appropriate Inquiries (AAI)

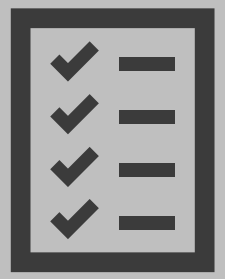
- The process of evaluating a property's environmental conditions and assessing potential liability for any contamination.
- A Phase I Environmental Site Assessment (ESA)
- A necessary step to obtain protection from potential liability for past contamination at a property, under the Comprehensive Environmental Response, Compensation, and Liability Act (CERCLA)

Source: https://www.epa.gov/brownfields/brownfields-all-appropriate-inquiries

AAI in Perspective

- All Appropriate Inquiries (AAI) often is the first step in a continuum of property investigations
  - AAI / Phase I
  - Phase II / Sampling and Analysis
  - Additional Site Characterization
- Investigate environmental contamination at a property so that contamination can be properly addressed to protect public health and the environment

Presentation Goals



- Familiarize you with AAI Requirements
- Provide overview of how AAI impacts Brownfields Grant Process
- Provide overview of technical requirements of what constitutes an AAI-compliant Phase I ESA and what is good practice within the industry
- Review AAI reporting requirements

CERCLA LIABILITY AND AAI

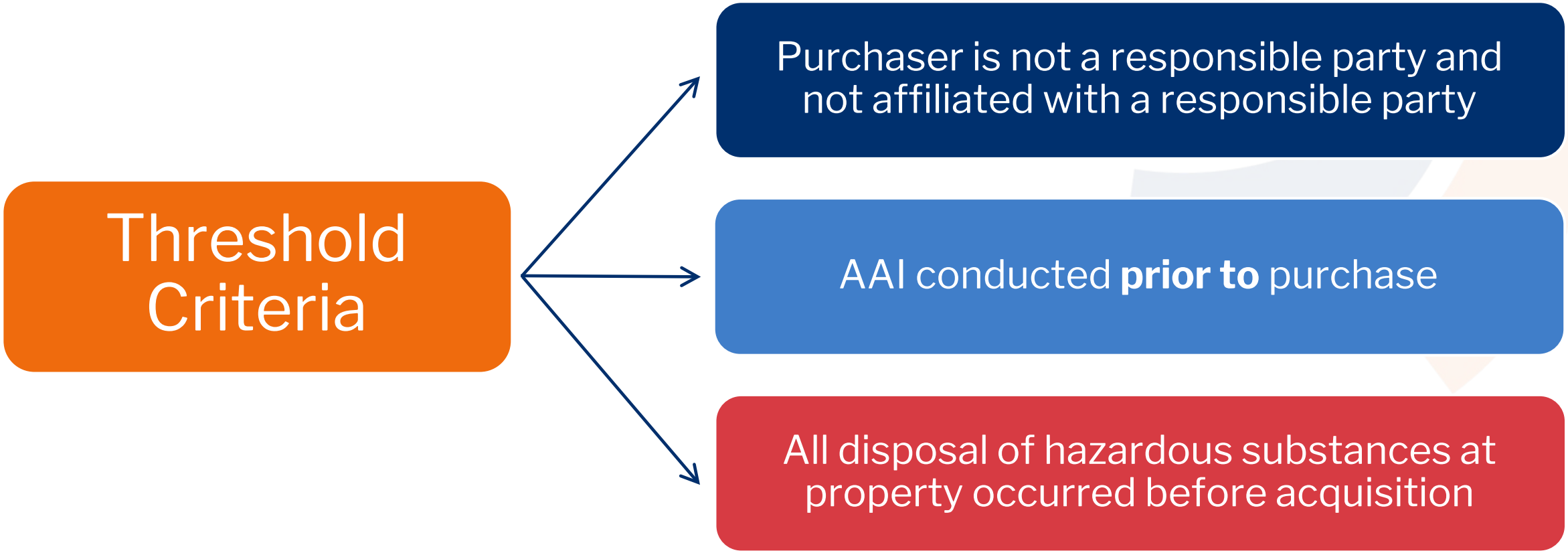
Liability under CERCLA

- **Prior to the 2002** amendments to CERCLA, property owners could be held strictly, and jointly and severally, liable for contamination at a property
  - **Strict liability:** without fault or culpability
  - **Joint and Several liability:** current and past owners can be held accountable individually or collectively
- Any owner within a property's chain of title could be held liable for contamination at a property, regardless of whether any particular owner caused the contamination.

2002 Brownfields Amendments to CERCLA

- Small Business Liability Relief and Brownfields Revitalization Act – Amended CERCLA
  - Provided liability protections for certain property owners:
    - Innocent landowners (amended 1986 provisions)
    - Contiguous property owners (codified EPA contaminated groundwater policy)
    - Bona fide prospective purchasers (can purchase with knowledge of contamination)
  - Amended the All Appropriate Inquiries provisions of CERCLA
- Eligible entities need to establish a defense from CERCLA liability to be eligible for site-specific assessment grants and direct cleanup grants under EPA's Brownfields Program
- Parties receiving Brownfields assessment grants must conduct assessments in compliance with AAI

Statutory Requirements for CERCLA Liability Protections



Continuing Obligations

- Required **following acquisition** of property:
  - Comply with land use restrictions
  - Do not impede effectiveness or integrity of institutional controls
  - Take “reasonable steps” to stop on-going releases
  - Prevent or limit human and environmental exposure to any previous releases
  - Provide cooperation, assistance, and access to property
  - Comply with CERCLA information requests and subpoenas

How Does AAI Affect Brownfields Grantees?

- Threshold Criteria for Brownfields Grant Applicants
  - **Grantees are prohibited from using brownfields grant monies to address contamination for which the grantee is the responsible party**
  - Potential grantee may need to demonstrate that it is not responsible for contamination and is protected from CERCLA liability to be eligible for a grant
- Recipients of Brownfields Assessment Grants
  - Must conduct Phase I assessments in compliance with AAI
- Liability Determinations
  - Parties seeking protection from CERCLA liability **must conduct AAI prior to purchasing property**
- Targeted Brownfields Assessment (TBA)
  - In most cases, TBAs should be performed in compliance with AAI or ASTM E1527-21 to ensure prospective property owner's liability protection and ensure eligibility for future cleanup grant

How Does AAI Affect Brownfields Grantees?

ASSESSMENT GRANTS

Parties who receive grants under EPA's Brownfields program to perform site characterization and assessment of brownfields **must** conduct such activities in compliance with the standards and practices established by EPA for the conduct of all appropriate inquiries. (CERCLA section 104(k)(2)(B)(ii))

CLEANUP GRANTS

- Applicant must own property that is to be cleaned up with grant funding and **cannot be liable** for contamination at the property
- Applicants, including federally recognized tribes, must have completed a Phase I site assessment (AAI) and a Phase II assessment on the property to be eligible for a cleanup grant

PHASE I ENVIRONMENTAL SITE ASSESSMENTS

What is a Phase I Environmental Site Assessment (ESA) or All Appropriate Inquiries (AAI)?

- Initial assessment of a site to identify potential presence of environmental contamination or Recognized Environmental Conditions (RECs) or conditions indicative of releases or threatened releases of hazardous substances.
- Conducted for real estate transactions, site discovery, CERCLA liability protection, Brownfields grants, assess business environmental risk concerns
- **ASTM *Standard Practice for Environmental Site Assessment:*** *Phase I Environmental Site Assessment Process* (E1527-21)
- Does not delineate contamination or quantify risk

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When: Must AAI be Performed?

Any party seeking liability protection must perform AAI **before** acquiring the property (before date of title transfer)

AAI must be conducted or updated within *one year* ***prior*** to date of acquisition

Interviews, records review, site inspection, and the environmental cleanup lien search must be conducted or updated within the 180 days prior to the date of acquisition

What: The Purpose of AAI

- Identify previous owners and operators
- Identify previous land uses
- Identify types and quantities of hazards substances used
- Identify previous waste management practices
- Look at the property / observe current conditions
- Understand uses and conditions of surrounding properties
- Identify conditions that are indicative of releases, or threatened releases, of hazardous substances – Identify Recognized Environmental Conditions (RECs)

Who: Can Perform AAI

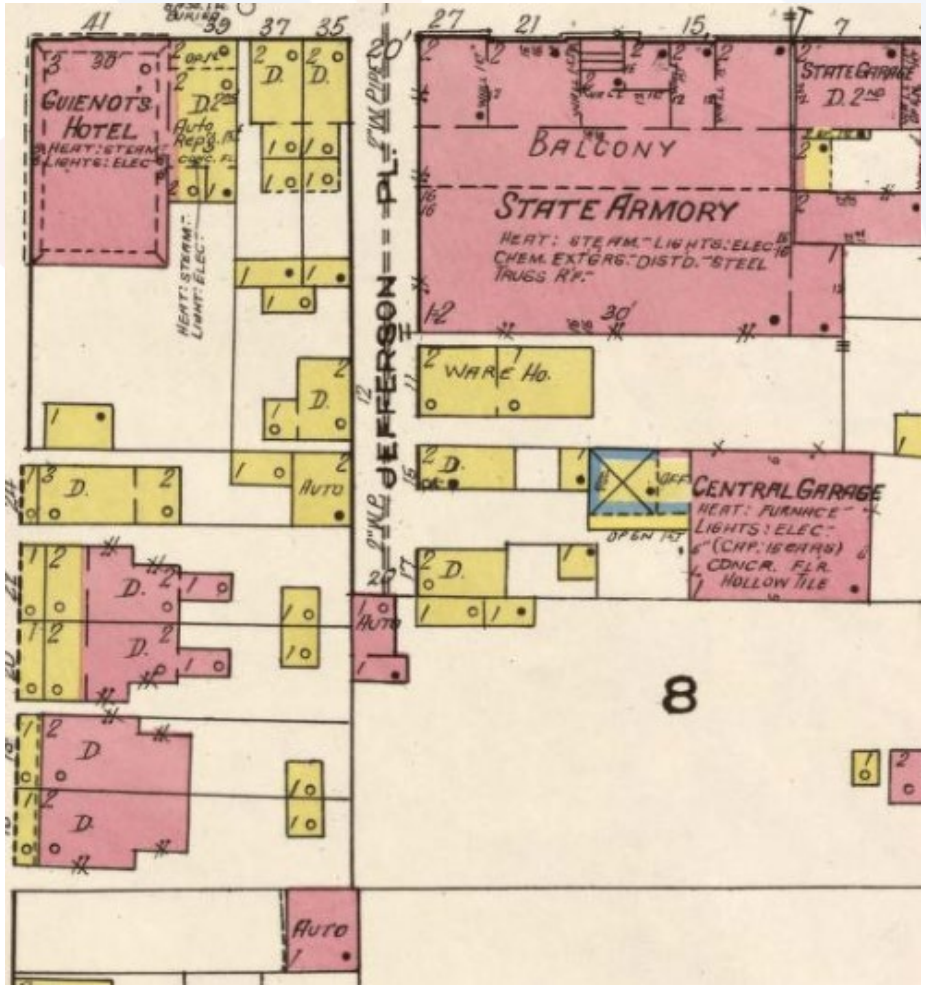
- Person who supervises or oversees the conduct of AAI must meet the **definition of Environmental Professional (EP)** in the AAI regulation:
  - "…someone who possesses the specific education, training, and relevant experience necessary to exercise professional judgment to develop opinions and conclusions regarding conditions indicative of releases or threatened releases of hazardous substances on, at, in, or to a property."
- Person who does not qualify as an EP may assist in the conduct of AAI if he or she is under the supervision or responsible charge of an EP
- **Person meeting definition of EP is required to sign AAI-compliant reports and attest that the investigation was done in compliance with the regulation**

All Appropriate Inquiries Environmental Professional Factsheet

Ok, fine. I get it. I need to do a Phase I Environmental Site Assessment. Now what?

Mandatory AAI Activities:

- **Ask the right questions:** Interview present and past owners, operators, and occupants
- **Review:** Historical sources of information (40 CFR 312.24(a))
- **More Review:** Federal, state, tribal and local government records for the subject and nearby or adjoining properties (40 CFR 312.26(b) and (c))
- **Even More Review:** Activity and use limitations
- **Take a look around:** Visual inspections of the facility and adjoining properties for obvious presence or likely presence of contamination
- **Identify:** Data Gaps
- **Document:** Findings in a written report signed by an EP



Common Interview Questions

- Have investigations/remedial actions occurred?
- What permits do you have and have there been violations?
- Have any known spills/releases occurred?
- Has site been subject to any EH&S regulatory action?
- Has site been subject to any EH&S complaints or lawsuits?
- Are there any active/abandoned septic systems?
- Are there any wells at the site? Use?
- Does the property have any ASTs or USTs? How many? Ages?
- Where does stormwater discharge to?
- Does facility discharge air pollutants? Have air pollution controls?

Common Historical Sources of Information

- Aerial photographs
- Fire insurance maps
- USGS topographic maps
- Local street directories
- Building department records
- Chain of title documents
- Property tax records
- Tribal records
- Zoning/land use records
- Newspaper archives
- Internet sites
- Community organizations
- Local libraries
- Historical/cultural societies

Aerial Photographs

April 16, 1995

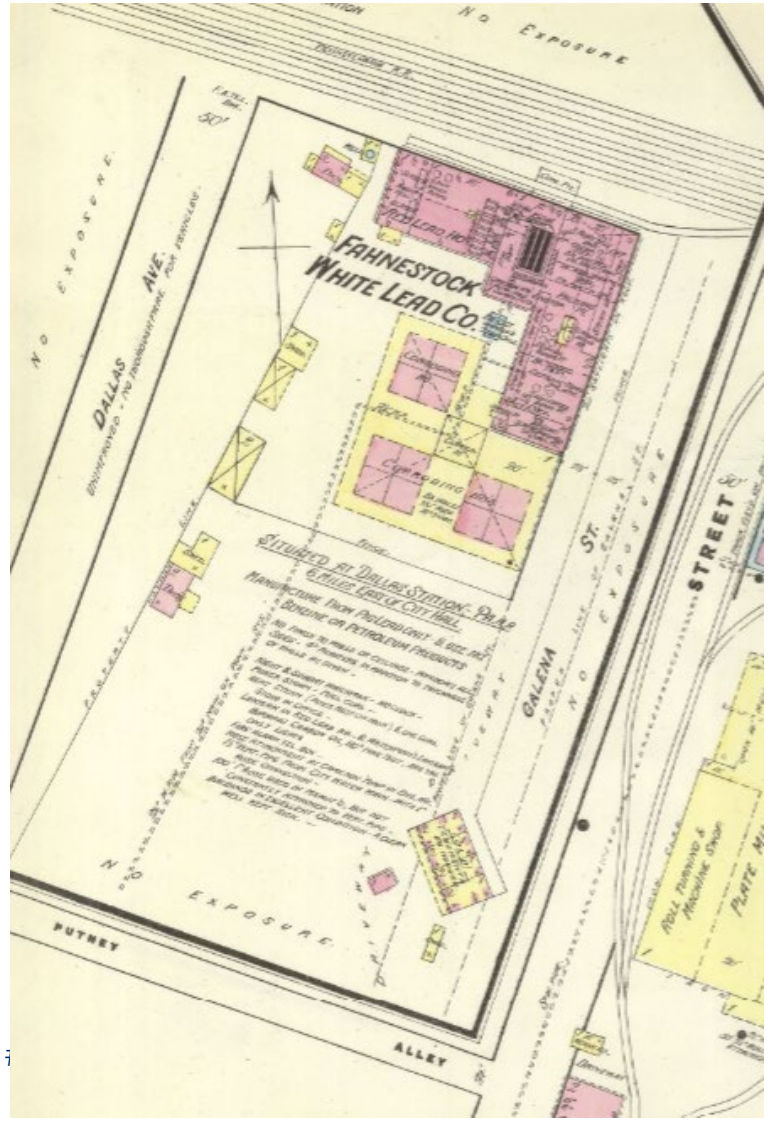
December 31, 2002

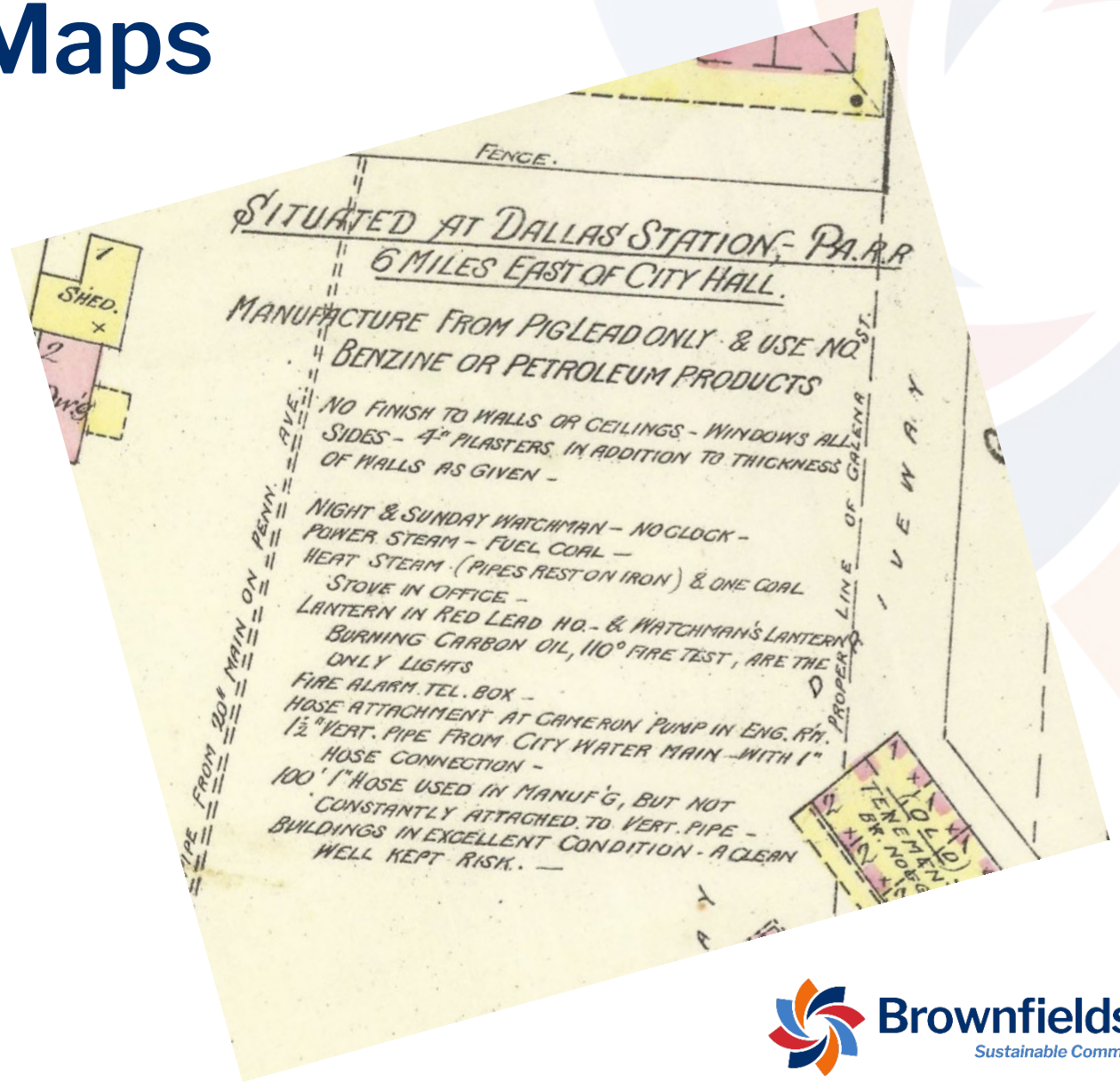
July 5, 2007

June 18, 2010

Source: https://earth.google.com/

Fire Insurance Maps





Source: https://digital.libraries.psu.edu/

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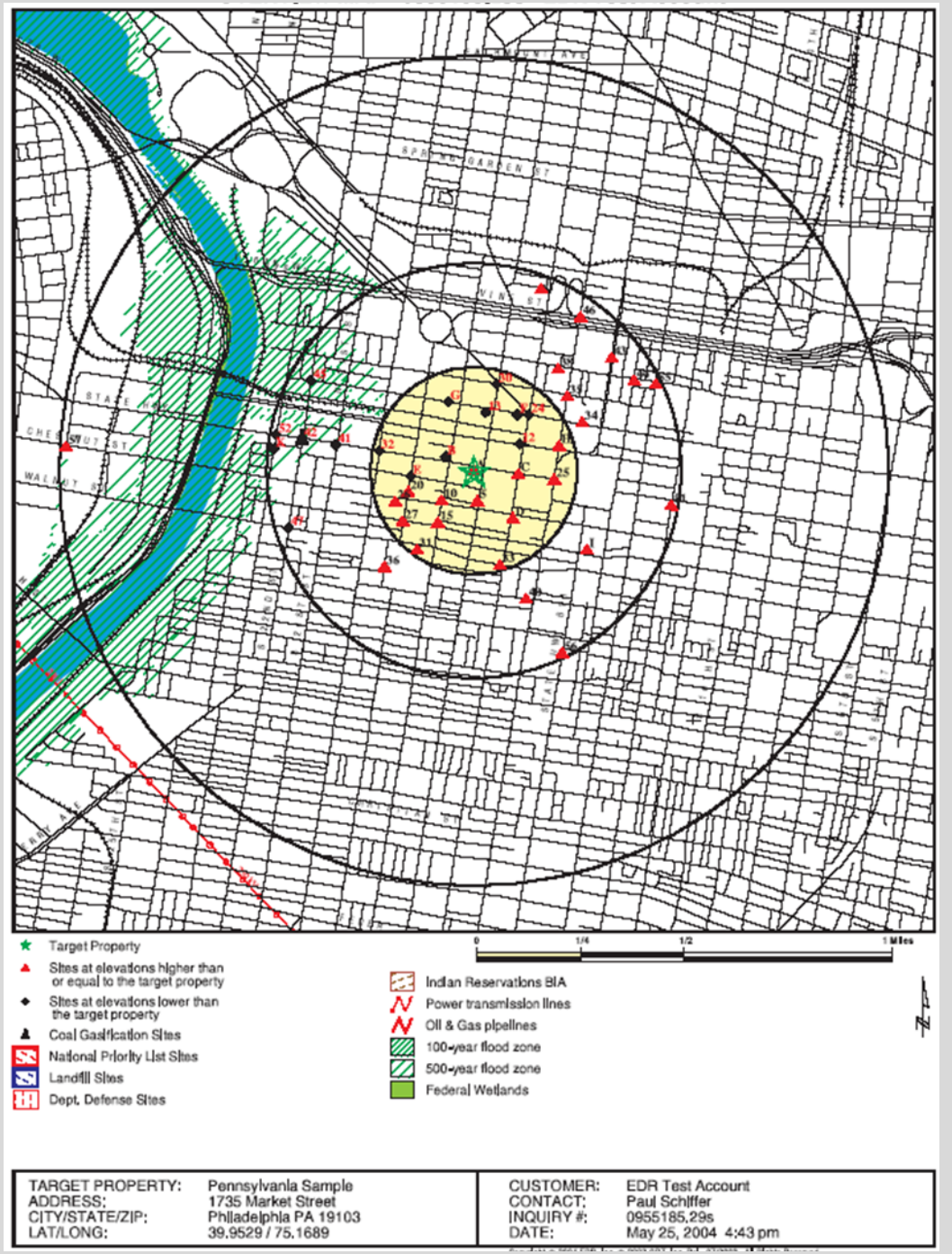
Environmental Records Search



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Records Review: Principal Contaminants

- Review list of commonly known contaminants and related sources:

Common Sources	Related Contaminants
Petroleum/Fuels/Fuel Oils	Benzene, Ethylbenzene, Toluene, Xylene (BTEX); MTBE; PAHs
Dry Cleaning	PCE/TCE
Commercial Solvents	Acetone, Carbon Tetrachloride, Chloroform, Bromoethane, Methylene Chloride, TCE, PCE, TCA, Vinyl Chloride
Combustion	PAHs; Dioxins/Furans
Pesticides/Herbicides	DDT; Lindane; Aldrin; Dieldrin; Malathion
Electrical Transformers	Polychlorinated Biphenyls (PCBs)
Paint and Building Materials	Lead, Asbestos, PCBs
Non-Stick/Waterproof Coatings; Stain Repellents; AFFF	PFOA, PFOS*

Per- and Polyfluoroalkyl Substances (PFAS)

- On April 17, 2024, EPA designated two per- and polyfluoroalkyl substances — perfluorooctanoic acid (“PFOA”) and perfluorooctanesulfonic acid (“PFOS”), including their salts and structural isomers, as **hazardous substances** under section 102(a) of the Comprehensive Environmental Response, Compensation, and Liability Act (“CERCLA”).
- Consequently, to meet the minimum requirements for Phase Is, every Phase I must now include specific inquiries into the presence and history of PFAS use or disposal at the site.

Visual Inspections/Site Reconnaissance

- **General Site Setting:**
  - Current/past uses of subject property
  - Current/past uses of adjoining properties
  - Description of structures
  - Topography - condition of ground surface/pavement
  - Soil staining, stressed vegetation, discolored water
  - New gravel or paved areas, evidence of remediation
  - Nearby water bodies
  - Discharge of storm water runoff
  - Proximity to sensitive receptors (wetlands, wildlife refuge)
  - Proximity to residential/heavily populated areas, schools, etc.
  - Roads, railroad, rights-of-way

Visual Inspections/Site Reconnaissance

- **Interior and Exterior:**
  - Hazardous substances and petroleum products
  - Storage tanks, drums, containers
  - Odors
  - Pools of liquid
  - PCBs
  - Heating/cooling – fuel sources
  - Stains and corrosion
  - Drains and sumps
  - Solid waste & wastewater treatment
  - Septic systems, pits, ponds, and lagoons
  - Wells (dry, injection, public supply, monitoring, abandoned)

PHASE I ENVIRONMENTAL SITE ASSESSMENT REPORTING

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Minimum Reporting Requirements

- AAI regulations require results of the inquiry to be documented in a written report (312.21(c))
- **At a minimum**, the written report must include:
  - Environmental Professional's opinion as to whether the inquiry identified conditions indicative of releases or threatened releases of hazardous substances (312.21(c)(1)),
  - Identification of significant **data gaps** – if the data gaps affect the EP's ability to draw conclusions regarding environmental conditions (40 CFR 312.21(c)(2)),
  - Qualifications of the EP (40 CFR 312.21(c)(3) and 312.21(d)),
    - Declaration that person(s) signing meet definition of EP,
    - Declaration that AAI was developed and performed in conformance with the standards and practices set forth in 40 CFR Part 312, and
  - Signature of the EP (312.21(d)) – **All Reports MUST be signed and dated!**

Minimum Reporting Requirements: EP Opinion

- *"We have performed a Phase I Environmental Site Assessment in conformance with the scope and limitations of ASTM Practice E1527-21 of [insert address or legal description], the subject property. Any exceptions to, or deletions from, this practice are described in Section [ ] of this report. This assessment has revealed no recognized environmental conditions, controlled recognized environmental conditions, or significant data gaps in connection with the subject property,"* ***OR***
- *"We have performed a Phase I Environmental Site Assessment in conformance with the scope and limitations of ASTM Practice E1527-21 of [insert address or legal description], the subject property. Any exceptions to, or deletions from, this practice are described in Section [ ] of this report. This assessment has revealed the following recognized environmental conditions, controlled recognized environmental conditions, and/or significant data gaps in connection with the subject property:" (list).*

Minimum Reporting Requirements: Data Gaps

- **Significant data gaps** must be identified and discussed ***IF*** they affect the ability of the environmental professional to identify conditions indicative of releases (40 CFR 312.21(c)(3))
- The significance of the data gaps must be discussed
- Common data gaps
  - Unknown site usage during certain time periods
  - Inability to conduct visual inspection
  - Inability to interview the key site manager, regulatory officials, etc.
  - Data from previous site investigation not available for review

Minimum Reporting Requirements: Qualifications and Signatures

- Environmental Professional **must** place the following statements in the document:
  - *"[I, We] declare that, to the best of [my, our] professional knowledge and belief, [I, we] meet the definition of Environmental Professional as defined in § 312.10 of 40 C.F.R. § 312"*
  - *"[I, We] have the specific qualifications based on education, training, and experience to assess a property of the nature, history, and setting of the subject property. [I,We] have developed and performed the all appropriate inquiries in conformance with the standards and practices set forth in 40 C.F.R. Part 312."*
- **EP who oversaw the work must sign and date the document**

Phase I Site Assessment Checklist for Grantees

Grantees **must** complete, sign, date, and submit the checklist with each Phase I ESA conducted using EPA Brownfields grant funds

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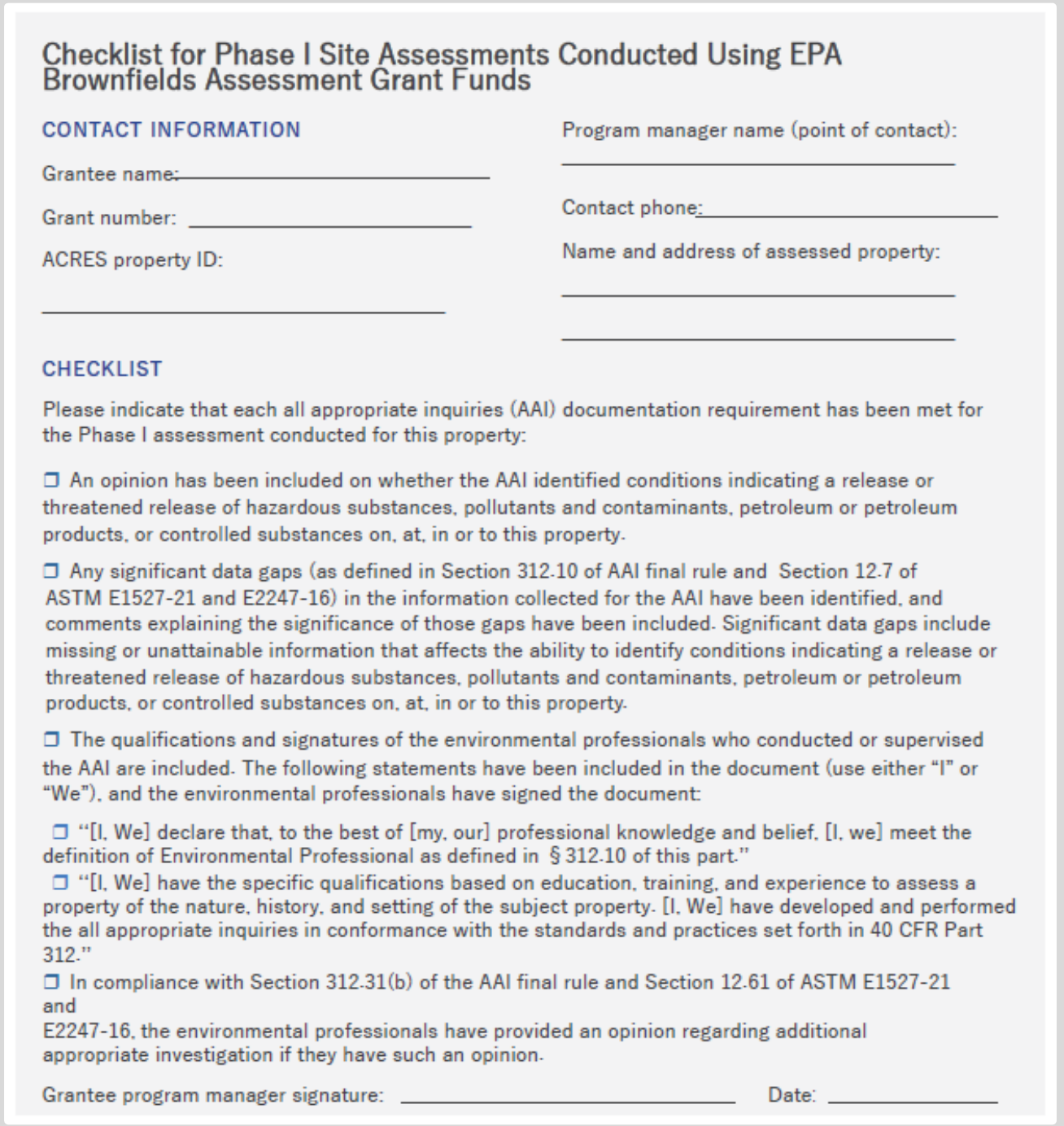


Checklist for Phase I Site Assessments Conducted Using EPA Brownfields Assessment Grant Funds

CONTACT INFORMATION

Grantee name: _____

Grant number: _____

ACRES property ID:

_____

Program manager name (point of contact):

_____

Contact phone: _____

Name and address of assessed property:

_____

_____

CHECKLIST

Please indicate that each all appropriate inquiries (AAI) documentation requirement has been met for the Phase I assessment conducted for this property:

❒ An opinion has been included on whether the AAI identified conditions indicating a release or threatened release of hazardous substances, pollutants and contaminants, petroleum or petroleum products, or controlled substances on, at, in or to this property.

❒ Any significant data gaps (as defined in Section 312.10 of AAI final rule and Section 12.7 of ASTM E1527-21 and E2247-16) in the information collected for the AAI have been identified, and comments explaining the significance of those gaps have been included. Significant data gaps include missing or unattainable information that affects the ability to identify conditions indicating a release or threatened release of hazardous substances, pollutants and contaminants, petroleum or petroleum products, or controlled substances on, at, in or to this property.

❒ The qualifications and signatures of the environmental professionals who conducted or supervised the AAI are included. The following statements have been included in the document (use either "I" or "We"), and the environmental professionals have signed the document:

❒ "[I, We] declare that, to the best of [my, our] professional knowledge and belief, [I, we] meet the definition of Environmental Professional as defined in § 312.10 of this part."

❒ "[I, We] have the specific qualifications based on education, training, and experience to assess a property of the nature, history, and setting of the subject property. [I, We] have developed and performed the all appropriate inquiries in conformance with the standards and practices set forth in 40 CFR Part 312."

❒ In compliance with Section 312.31(b) of the AAI final rule and Section 12.61 of ASTM E1527-21 and
E2247-16, the environmental professionals have provided an opinion regarding additional appropriate investigation if they have such an opinion.

Grantee program manager signature: _____ Date: _____

Phase I ESA Possible Outcomes

01

No Recognized Environmental Conditions (RECs) identified and data are complete and timely

No further assessment or study needed

02

Significant data gaps exist, additional information needed to determine if RECs are present

Conduct additional Phase I activities and update Phase I report OR Conduct Phase II

03

RECs are present and require investigation to determine potential risks and if remedial actions are necessary

Conduct Phase II ESA

Phase I Reports: Common Issues

- Missing Environmental Professional signature or declaration of qualifications
- Deviation from required language in required statements
- Missing declaration of conformance with AAI/ASTM
- Opinion is vague or no discussion of appropriateness of additional investigations
- Expired shelf life (> 1 year old)
- No or limited owner/occupant interviews
- Minimal discussion of site visit or site characteristics
- No aerial photos, fire insurance (Sanborn) maps, site photos
- No search for cleanup liens or institutional controls
- Incomplete references
- Difficult to read – overly technical

Useful Resources/Links

EPA Brownfields and Land Revitalization	https://www.epa.gov/brownfields
Brownfields All Appropriate Inquiries	https://www.epa.gov/brownfields/brownfields-all-appropriate-inquiries
Cleanups in My Community	https://www.epa.gov/cleanups/cleanups-my-community
Environmental Protection in Indian Country	https://www.epa.gov/tribal
Envirofacts	https://enviro.epa.gov/

TAB Technical Assistance to Brownfields | Kansas State University

Phase II Environmental Site Assessment

Kansas State University Technical Assistance to Brownfields Program
Beth Grigsby, Assistant Regional Director for EPA Region 5
August 2025

First Things First: Tips on Selecting a QEP or Consultant

Scope of Work for Your Brownfields Project or EPA Brownfields Initiative:

If your community doesn't have much or any experience conducting technical RFP/RFQ reviews, TAB can assist by assist you:

- TAB can provide scope assistance, and assist you with developing an RFPQ
- TAB can also provide a review of the RFPQ to ensure it meets federal procurement guidelines

Evaluation of the RFP/RFQ should consider:

- A contractor's experience with respect to the scope of work;
- A Contractor's safety record
- A Contractor's Management of their subs: Laboratory, UST removal, drilling companies

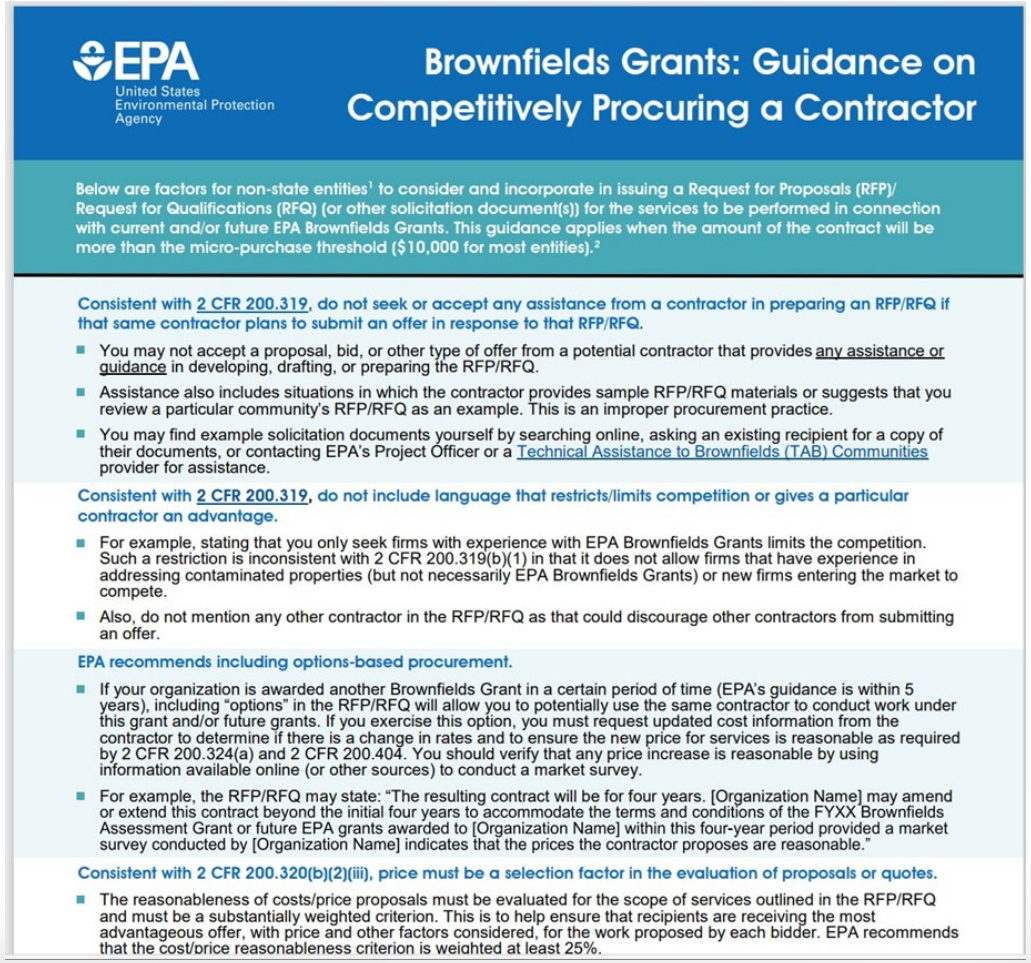
Competitive Procurement required for EPA Brownfields Grants!

If this is an EPA Brownfields Grant, and you do not have experience with federal procurement regulations, this EPA online guide describes the financial transactions covered by competitive procurement requirements

Brownfields Grants: Guidance on Competitively Procuring a Contractor (epa.gov)

Or take advantage of the training webinar found at the Financial and Grants Management training webpage.

https://www.epa.gov/grants/epa-grants-webinars



EPA United States Environmental Protection Agency

Brownfields Grants: Guidance on Competitively Procuring a Contractor

Below are factors for non-state entities[1] to consider and incorporate in issuing a Request for Proposals (RFP)/ Request for Qualifications (RFQ) (or other solicitation document(s)) for the services to be performed in connection with current and/or future EPA Brownfields Grants. This guidance applies when the amount of the contract will be more than the micro-purchase threshold ($10,000 for most entities).[2]

Consistent with 2 CFR 200.319, do not seek or accept any assistance from a contractor in preparing an RFP/RFQ if that same contractor plans to submit an offer in response to that RFP/RFQ.

- You may not accept a proposal, bid, or other type of offer from a potential contractor that provides any assistance or guidance in developing, drafting, or preparing the RFP/RFQ.
- Assistance also includes situations in which the contractor provides sample RFP/RFQ materials or suggests that you review a particular community's RFP/RFQ as an example. This is an improper procurement practice.
- You may find example solicitation documents yourself by searching online, asking an existing recipient for a copy of their documents, or contacting EPA's Project Officer or a Technical Assistance to Brownfields (TAB) Communities provider for assistance.

Consistent with 2 CFR 200.319, do not include language that restricts/limits competition or gives a particular contractor an advantage.

- For example, stating that you only seek firms with experience with EPA Brownfields Grants limits the competition. Such a restriction is inconsistent with 2 CFR 200.319(b)(1) in that it does not allow firms that have experience in addressing contaminated properties (but not necessarily EPA Brownfields Grants) or new firms entering the market to compete.
- Also, do not mention any other contractor in the RFP/RFQ as that could discourage other contractors from submitting an offer.

EPA recommends including options-based procurement.

- If your organization is awarded another Brownfields Grant in a certain period of time (EPA's guidance is within 5 years), including "options" in the RFP/RFQ will allow you to potentially use the same contractor to conduct work under this grant and/or future grants. If you exercise this option, you must request updated cost information from the contractor to determine if there is a change in rates and to ensure the new price for services is reasonable as required by 2 CFR 200.324(a) and 2 CFR 200.404. You should verify that any price increase is reasonable by using information available online (or other sources) to conduct a market survey.
- For example, the RFP/RFQ may state: "The resulting contract will be for four years. [Organization Name] may amend or extend this contract beyond the initial four years to accommodate the terms and conditions of the FYXX Brownfields Assessment Grant or future EPA grants awarded to [Organization Name] within this four-year period provided a market survey conducted by [Organization Name] indicates that the prices the contractor proposes are reasonable."

Consistent with 2 CFR 200.320(b)(2)(iii), price must be a selection factor in the evaluation of proposals or quotes.

- The reasonableness of costs/price proposals must be evaluated for the scope of services outlined in the RFP/RFQ and must be a substantially weighted criterion. This is to help ensure that recipients are receiving the most advantageous offer, with price and other factors considered, for the work proposed by each bidder. EPA recommends that the cost/price reasonableness criterion is weighted at least 25%.

Curly: “Do you know what the Secret to beginning a Successful Brownfield Redevelopment is?”

Mitch: “No, what?”

Curly: “Just one Thing”:

SITE ACCESS!!!!!

City Slickers, 1991

Purpose of a Phase II

- Evaluates the **recognized environmental conditions (RECs)** identified in the Phase I ESA

- Assesses whether there has been a release of a hazardous substance

- Goal is to determine if environmental cleanup of the property/site will be necessary

Phase II ESA: Non-Scope Considerations (Not RECs)

• The Phase I ESA focuses on identifying hazardous substances and petroleum products as defined by CERCLA (Comprehensive Environmental Response, Compensation, and Liability Act).

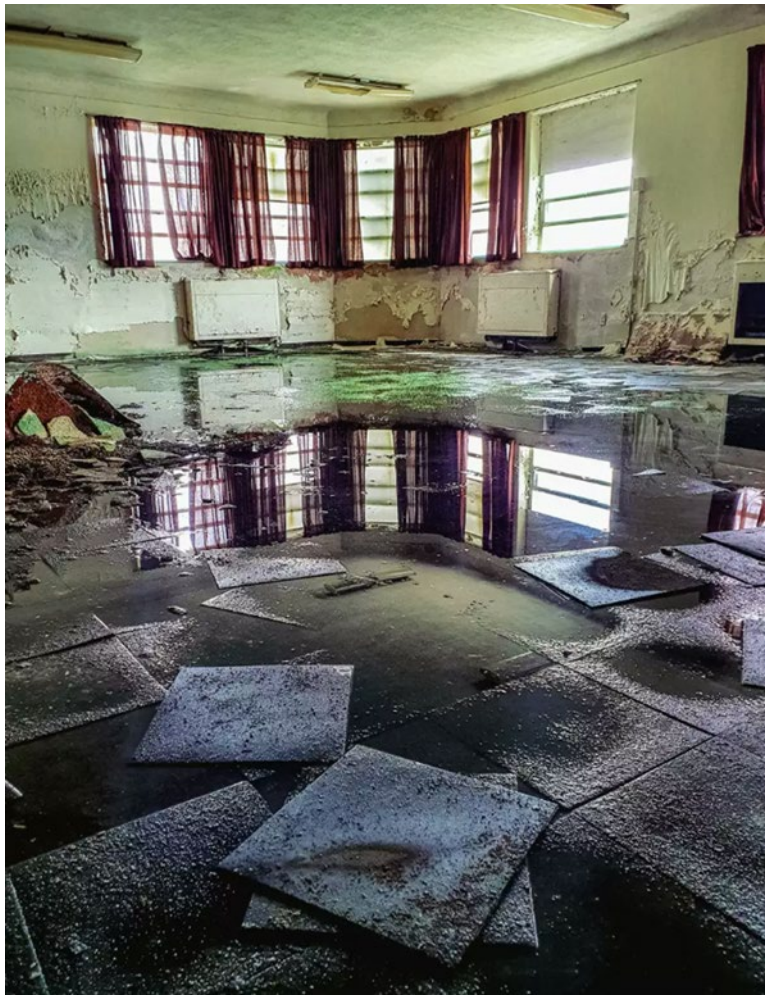
Business Environmental Risk:

•Risk that can have a material environmental or environmentally-driven impact on the business associated with the current or planned use of a parcel.

•May involve addressing one or more of the “non-scope considerations” :

Asbestos
Radon
Lead Based Paint
Wetlands
Cultural or historic resources
Health & Safety (OSHA)
Ecolological/Endangered Species
Indoor Air Quality

RECs?



RECs?

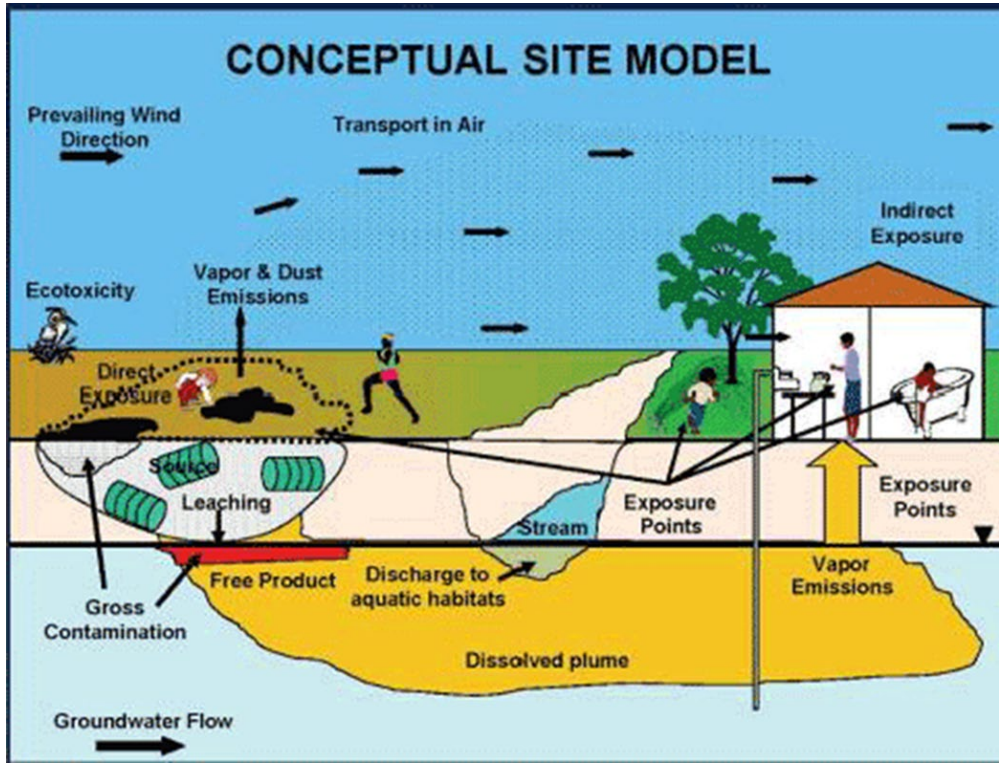
Phase II ESAs

Purpose: to further investigate RECs identified in Phase I ESA; confirm the presence or absence of contamination.

- ASTM Standard No. E1903 – general framework
  - Ensure the scope meets your needs and state or federal requirements
- Collect and analyze samples of environmental media
  - Soil - Waste materials
  - Groundwater - Surface water
  - Indoor Air
- May also include non-invasive geophysical survey, test trenching, etc. to investigate underground objects—tanks, drums, vaults
- Scope should be tailored to the site, its intended future use, and with the cleanup authority in mind

Basic Contaminant Concepts

- Contaminant Media (Soil, Water, Groundwater, Air)
- Fate & transport of Contaminants
- How geology might affect contamination, sampling, and cleanup
- Persistence & types of contaminants (natural attenuation, metals vs organics)
- When contaminants become a concern (completed pathways, elementary toxicology)

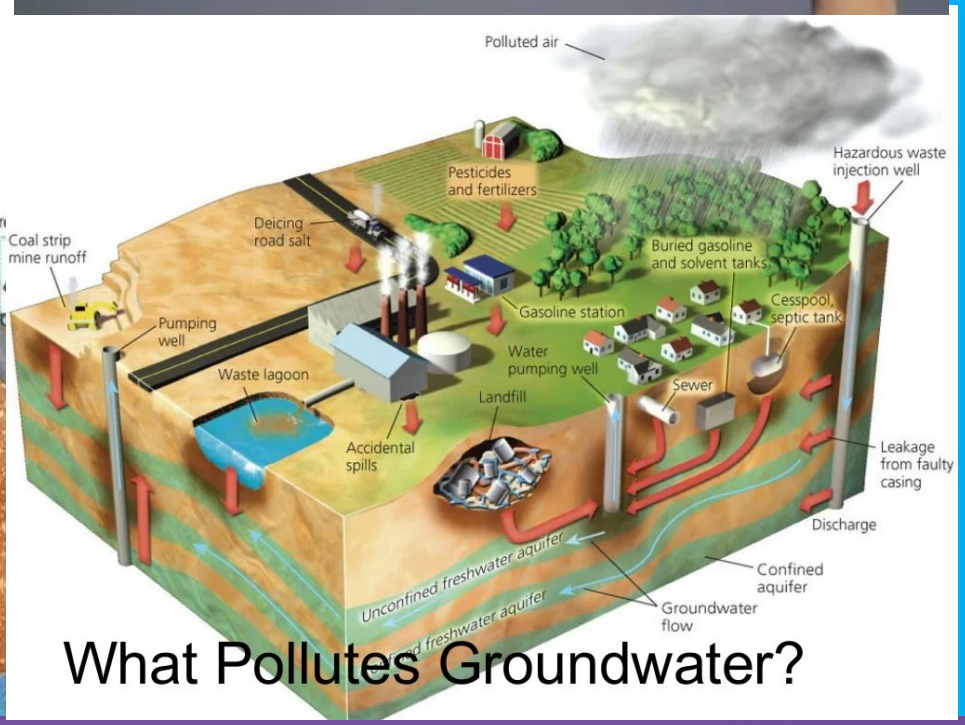


Air

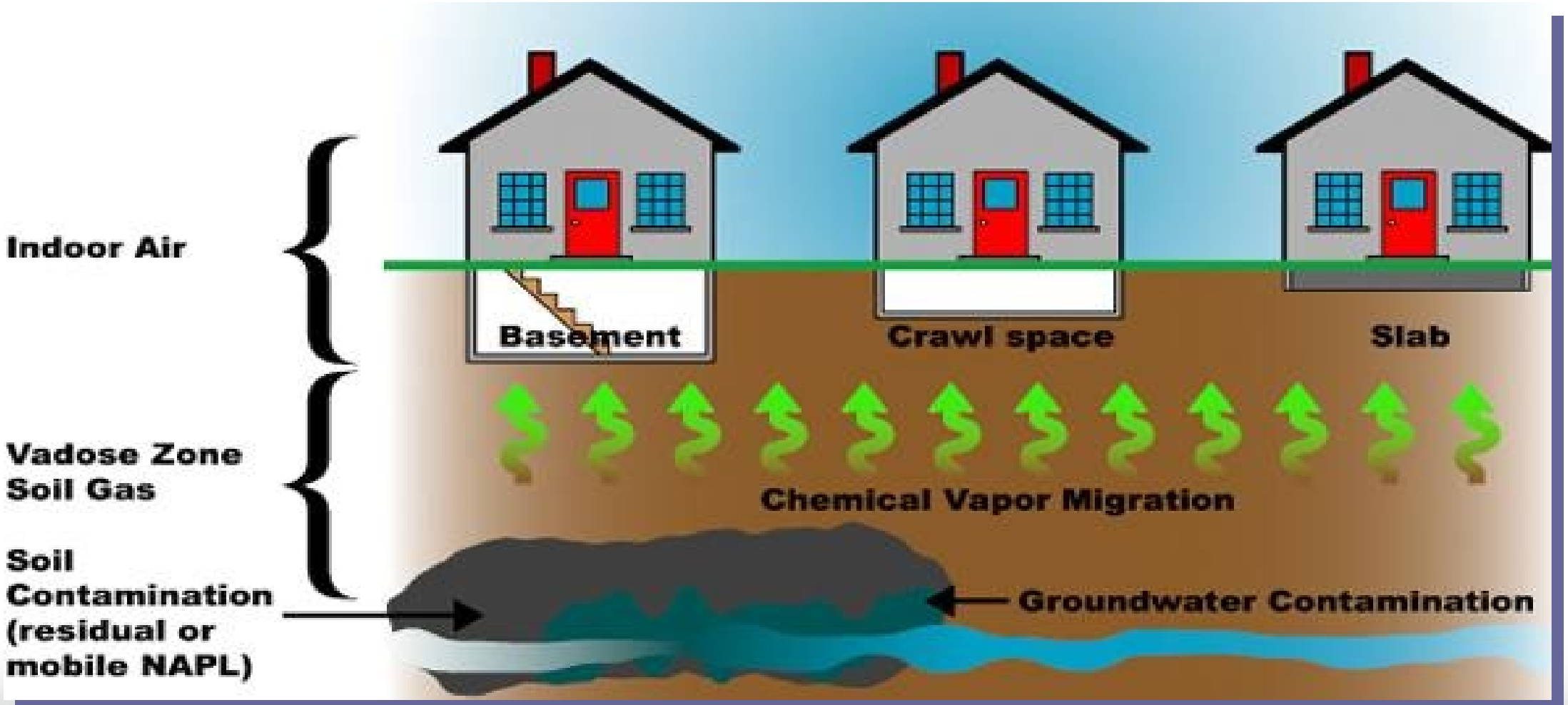
Soil

Groundwater

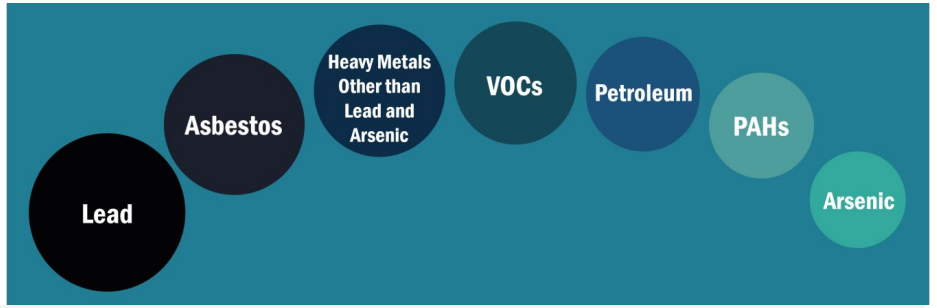
Surface Water



Vapor Encroachment/Intrusion



Environmental Contaminants Often Found at Brownfield Sites



Contaminant	Substance Type	Examples of Past Uses
1. Lead (Pb)	Metals	Mining, fuel, paint, inks, piping, batteries, ammunition
2. Asbestos	Fiber in rock	Mining and processing, piping, insulation, fire proofing, brakes
3. Heavy Metals other than Lead and Arsenic	Metals	Metal fabrication, plating, mining, industry/ manufacturing
4. Volatile organic compounds (VOCs)	Manmade chemicals	Industry and commercial product solvents, degreasers, paint strippers, dry cleaning
5. Petroleum	Oil, hydrocarbon compounds	Drill and refining, fuel, chemical and plastic production
6. Polycyclic aromatic hydrocarbons (PAHs)	Hydrocarbon compounds, combustion byproduct	Coal tar, creosote, soot, fire, industry/ manufacturing byproduct
7. Arsenic (As)	Metals	Pesticides, agriculture, manufacturing, wood preservative

Source EPA.gov
Environmental Contaminants Often Found at Brownfield Sites

Why Care about Site Contamination?

- **Financial Implications**
  - Lower property values
  - Borrower may default on loan - foreclosure
  - Tenant losses, lease complications

- **Liability Considerations**
  - Joint and several liability under CERCLA (Comprehensive Environmental Response, Compensation & Liability Act) – a.k.a., “Superfund”

Hand Auger Sampling

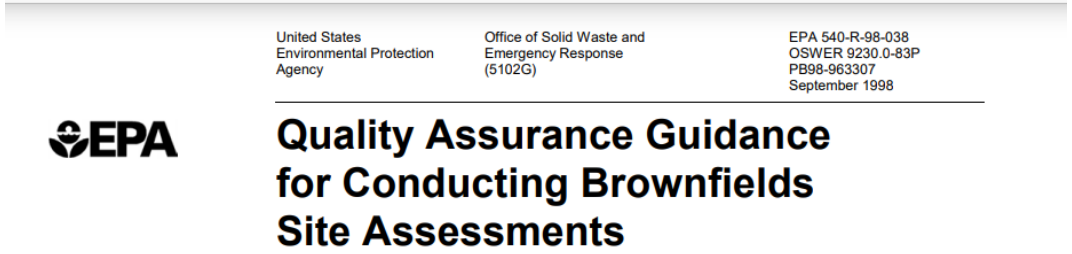
Backhoe Sampling

Geoprobe Sampling

Before data collection begins

Must Establish

1. For EPA Grants- the Required Quality Assurance Project Plan (QAPP)
2. Data Quality Objectives (DQOs)
3. Field Sampling Plan (FSP) (e.g., site-specific Phase II field plan)


United States Environmental Protection Agency | Office of Solid Waste and Emergency Response (5102G) | EPA 540-R-98-038 OSWER 9230.0-83P PB98-963307 September 1998

EPA

Quality Assurance Guidance for Conducting Brownfields Site Assessments

[Quality Assurance Guidance for Conducting Brownfields Site Assessments from September 1988]

QAPP: Standard Operating Procedures (SOPs)

- Detailed instructions for the methods used to carry out routine procedures.
  - Collection of various environmental media samples (e.g., soil, groundwater, surface water, sediment, soil-gas, indoor air, etc.)
  - Installation of monitoring wells or temporary wells
  - Decontamination of sampling equipment
  - Chain of custody, evaluation and validation of data, and collection of quality control samples, etc.
- Your hired consultant likely already has SOPs for sampling and analytical procedures which may be adopted or adapted, as necessary, to fit your specific project needs.
- SOPs should be appended to the QAPP and referenced throughout

Data Quality Objectives (DQOs)

What are DQOs?

- Key to understanding the objectives of the Phase II investigation.
- Develop DQOs for determining the type, quantity, and quality of data needed to reach defensible decisions or make credible estimates

Why are DQOs Important?

- Planning tool for the QAPP and FSP development
- Cost Management Tool and Assist to Clarify Goals
  - *Park or a Parking Lot? – Reuse planning has a direct impact on establishing appropriate DQOs.*
- Decision Identification

Data Quality Objectives (DQOs)

Developed by hired consultant with input from data user—that's you!

- What are the objectives of the Phase II?
- What data is needed to meet the objectives and goal of the investigation and make informed decisions?
- What are the spatial boundaries of the area and depth of sampling and do you have property access for the established boundaries?
- What action levels will be used to make decisions? Is the analytical approach appropriate to make an adequate comparison and to support decisions?
- Is there an effective sampling plan that meets performance criteria? Is the assessment timeline realistic and cost effective?
- IMPORTANT – work with the regulatory authority to ensure appropriate data collection

Phase II Sampling Plan

- Site-specific sampling plan developed to collect environmental samples and additional information (geotechnical or geophysical surveys, wetland delineation, etc.)
  - a.k.a → field sampling plan (FSP); sampling and analysis plan (SAP); site investigation work plan
- Don't be afraid to ask questions of your consultant
  - *Why are so many samples being collected? Are the proposed sample locations appropriate? Are groundwater wells necessary at this stage?*
- Include Health and Safety Plan
  - *Contractor specific*
- Site access agreements
- *Scope should be tailored to the site and its intended future use or to your State's Brownfield Program, Environmental Authority, or Tribal Authority*

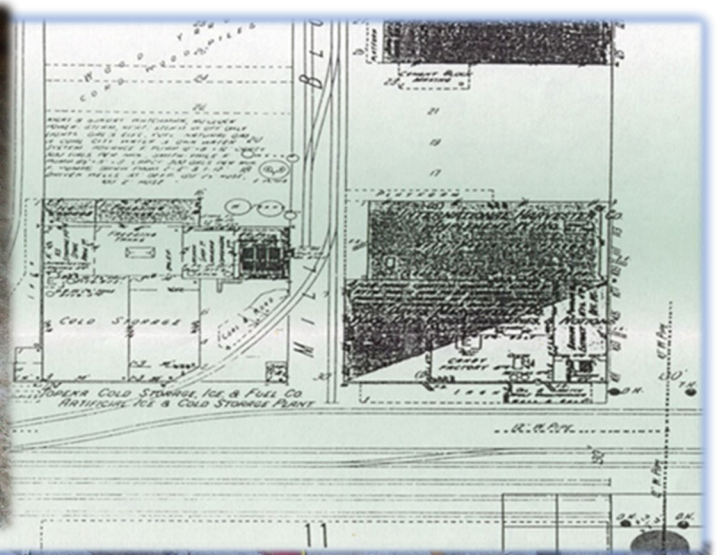
INVESTIGATION: PHASE II ASSESSMENTS

Phase II ESA

- What Are Your Recognized Environmental Conditions (REC)s?
- Presence/Absence
- What ‘s There?
- If It’s There—Where?

Phase II Characterization

- If It’s There-How Much?
- Extent/Delineation/ Quantification
- Feasibility Studies
- Cleanup Plan



BEST APPROACHES TO GAINING EXPERIENCE TO OVERSEE/MANAGE YOUR CONTRACTOR/CONSULTANT

- Make Time to learn…(if possible) AND ask lots of questions!
- Draw upon your organization's experience managing infrastructure projects and budgets: (Public Works, Engineers, Wastewater Treatment Operators, City Clerk-Treasurer, Accountant)--ask them for assistance
- Draw upon the experience of your County, Regional Entities, other Communities, and advocacy organizations—ask them for assistance on best practices *OR* partner with these organizations to utilize their expertise
- Take OSHA training courses such as Health Hazardous Awareness

https://www.osha.gov/safety-management/hazard-Identification

Underground Storage Tank Investigations


& GULDE
LAWYERS
CLARKSON & GULDE, P.C.
Is OPEN for Business
Entrance at Front of Building

BEST APPROACHES TO GAINING EXPERIENCE TO OVERSEE/MANAGE YOUR CONTRACTOR/CONSULTANT: ASK QUESTIONS!

Lots of questions! A good Consultant/Contractor should be willing to answer your questions!

- Ask for more detail on how and why activities cost what they do.
- Ask them to explain the maps and databases found in your Phase I report.
- Make sure you are present if meetings are scheduled with the State Brownfield Program or Tribal Environmental Authority about your projects!
- I'm overseeing the field tech's work—should I be wearing a white suit?
- How did you come up with these recommendations? Explain the process?
- Please explain your site-specific safety plan?
- Why are you over-budget and why wasn't I informed?

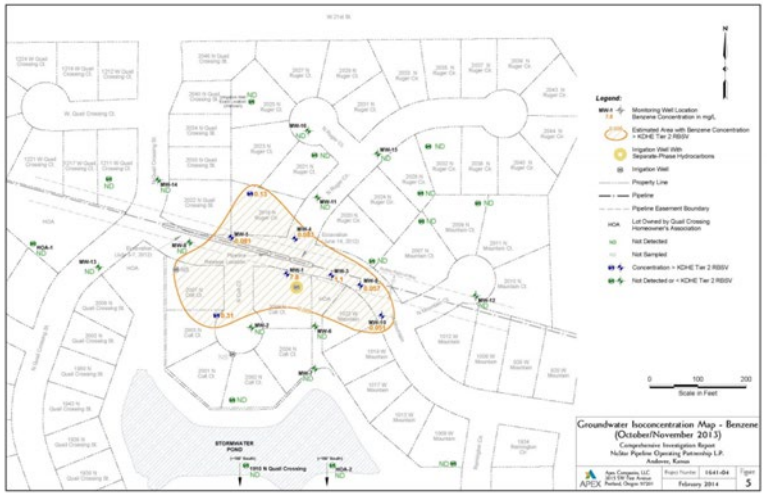
TAKE RESPONSIBILITY!

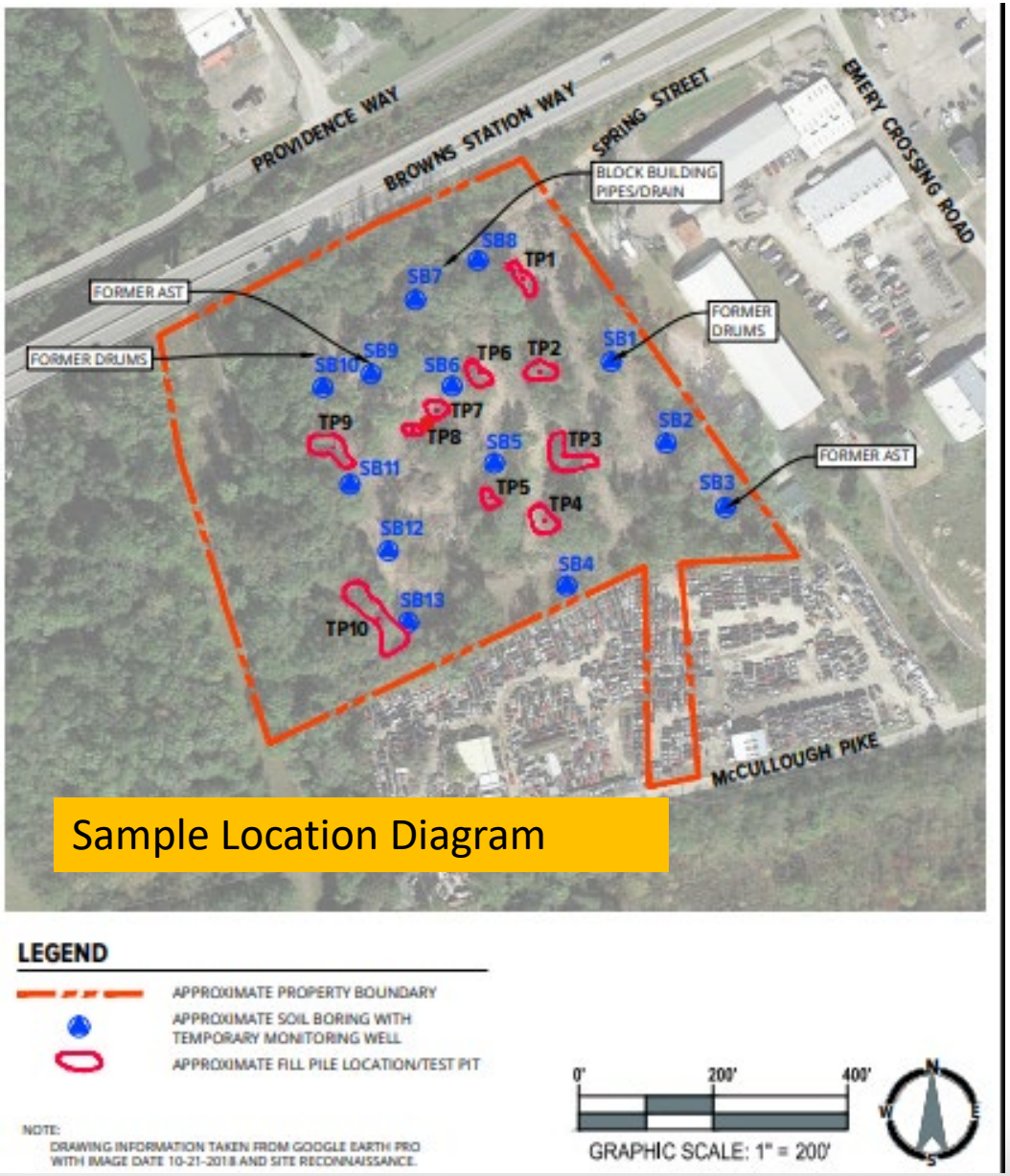
- You're the Face to the Community, the State and the EPA. Communicate the goals of your project.
- You are the Calm Face to community leaders, neighborhood, adjacent property owners. Work with your QEP to develop Fact Sheets about the project if needed.
- Work with your QEP to determine if activities (noise, numerous trucks, trenching, drilling) will disrupt activities in the neighborhood.
- Work with your property owner and QEP to determine any risks associated with the proposed investigation:
  - Caving walls, floors, steps…unsafe buildings
  - Dogs
  - Access to buildings, fenced areas
  - Sites needing police presence

Phase II ESA Report

- Description of methods and results
- Analytical results in tabular format, compared to regulatory objectives
  - Does reported data meet DQOs?
  - Was data collected in accordance with the QAPP?
- Site map with sample locations
- Conclusions
  - Additional sampling warranted?
  - Recommendations for next steps, if applicable
- Boring Logs with field screening data
- Laboratory Report/Chain of Custody forms
- Field Notes/Photos

Groundwater Isoconcentration Map – Benzene (October/November 2013)





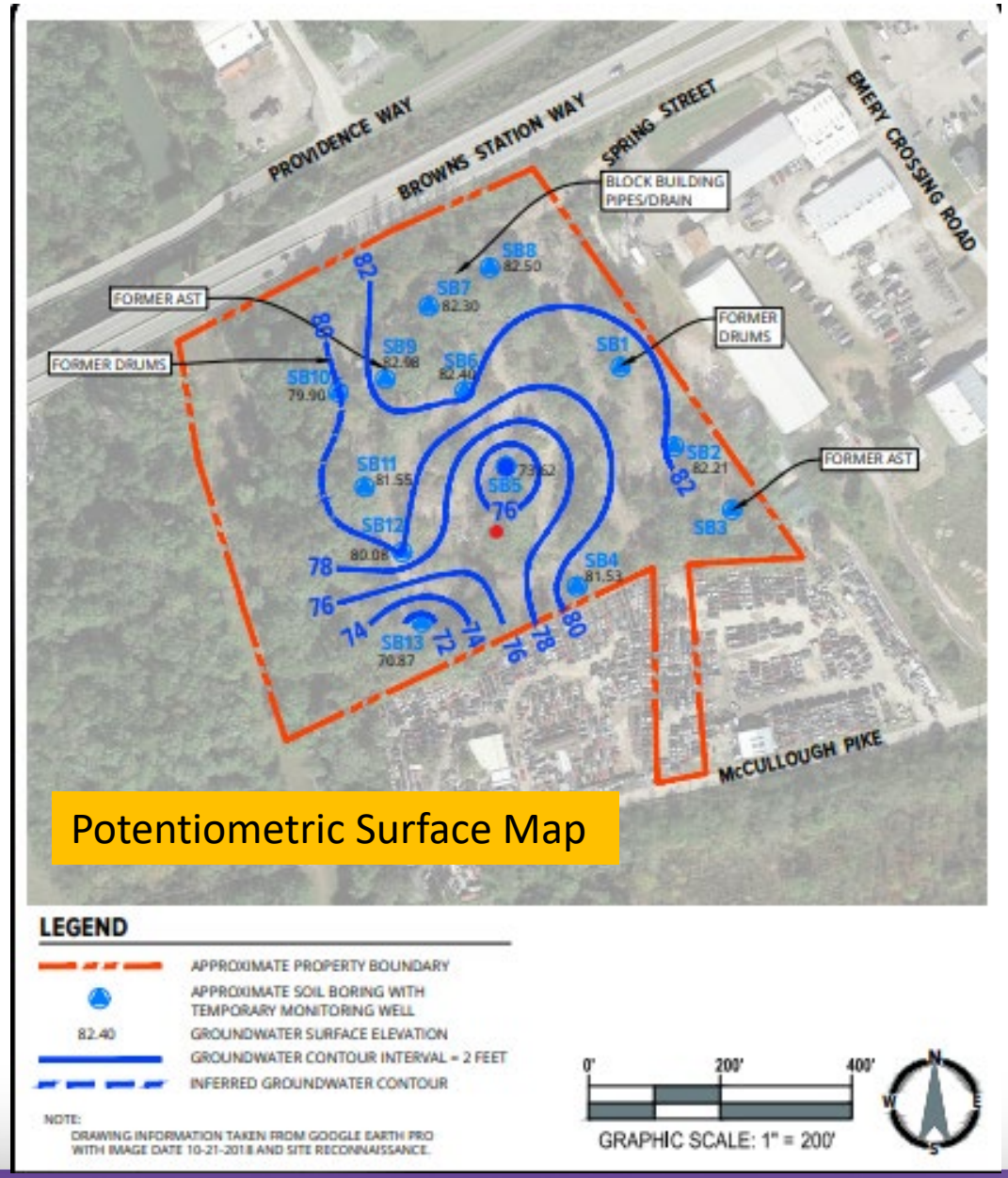
Sample Location Diagram

LEGEND

- APPROXIMATE PROPERTY BOUNDARY
- APPROXIMATE SOIL BORING WITH TEMPORARY MONITORING WELL
- APPROXIMATE FILL PILE LOCATION/TEST PIT

NOTE:
DRAWING INFORMATION TAKEN FROM GOOGLE EARTH PRO WITH IMAGE DATE 10-21-2018 AND SITE RECONNAISSANCE.

0' 200' 400'
GRAPHIC SCALE: 1" = 200'



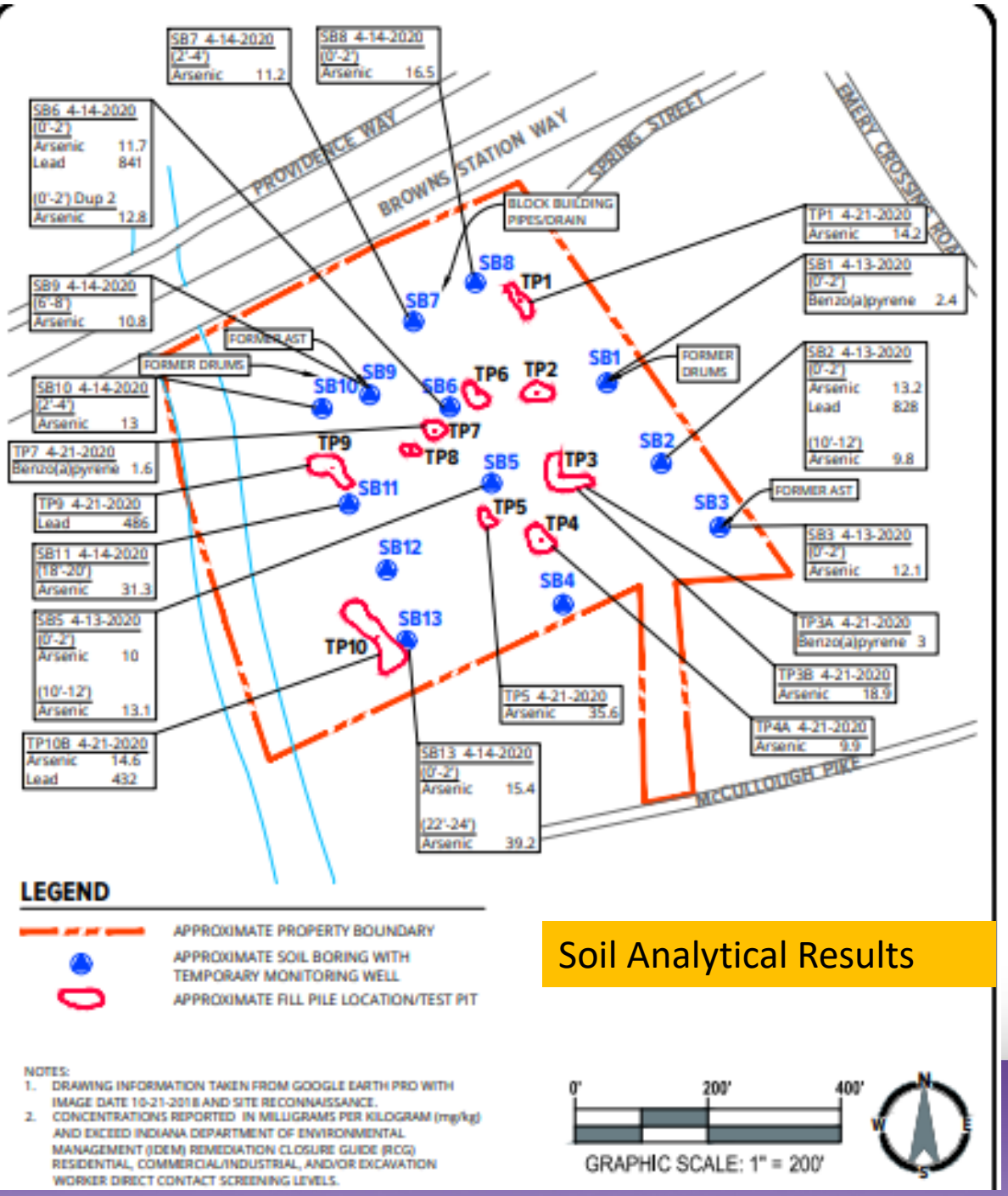
Potentiometric Surface Map

LEGEND

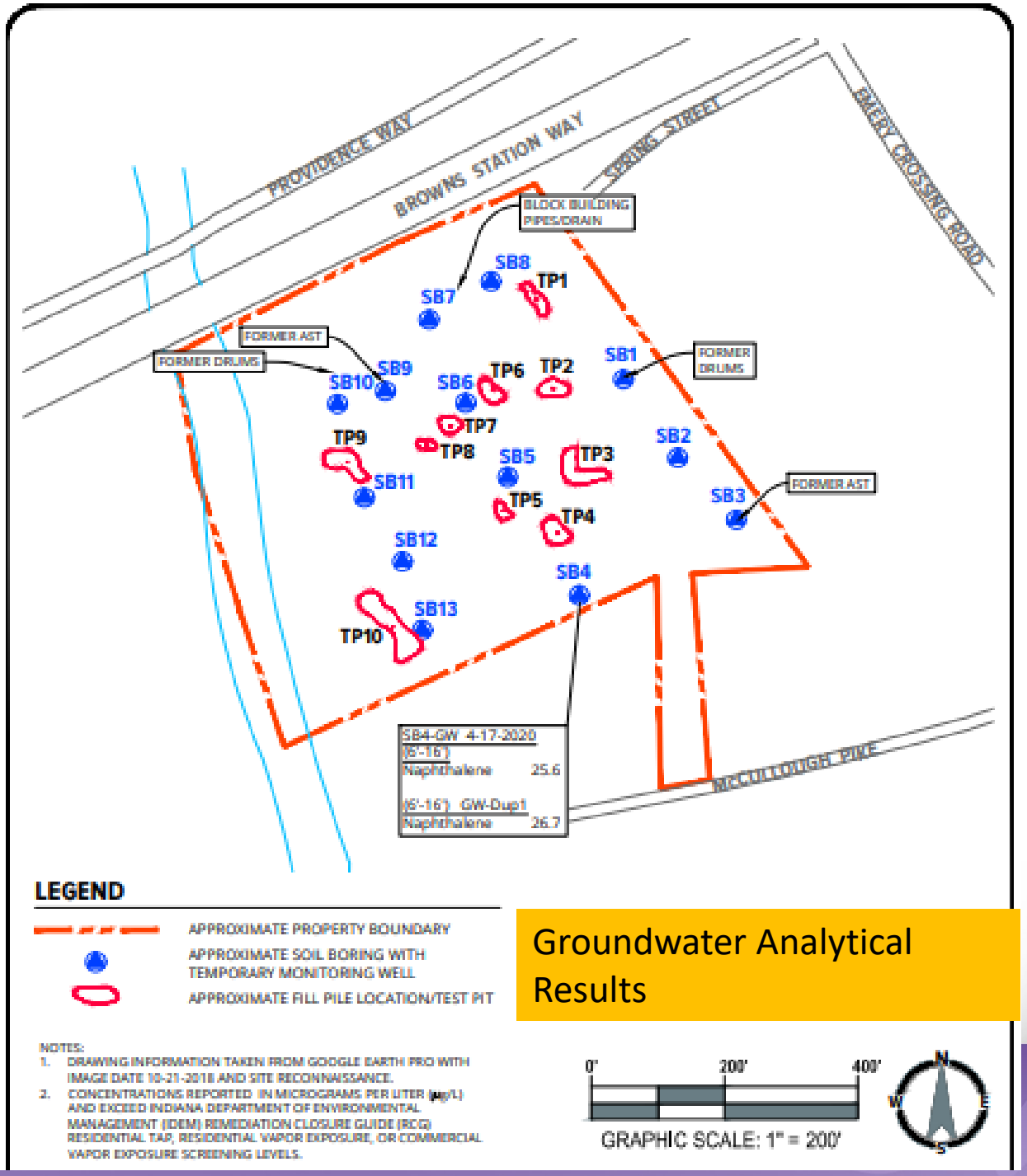
- APPROXIMATE PROPERTY BOUNDARY
- APPROXIMATE SOIL BORING WITH TEMPORARY MONITORING WELL
- 82.40 GROUNDWATER SURFACE ELEVATION
- GROUNDWATER CONTOUR INTERVAL = 2 FEET
- INFERRED GROUNDWATER CONTOUR

NOTE:
DRAWING INFORMATION TAKEN FROM GOOGLE EARTH PRO WITH IMAGE DATE 10-21-2018 AND SITE RECONNAISSANCE.

0' 200' 400'
GRAPHIC SCALE: 1" = 200'



Soil Analytical Results

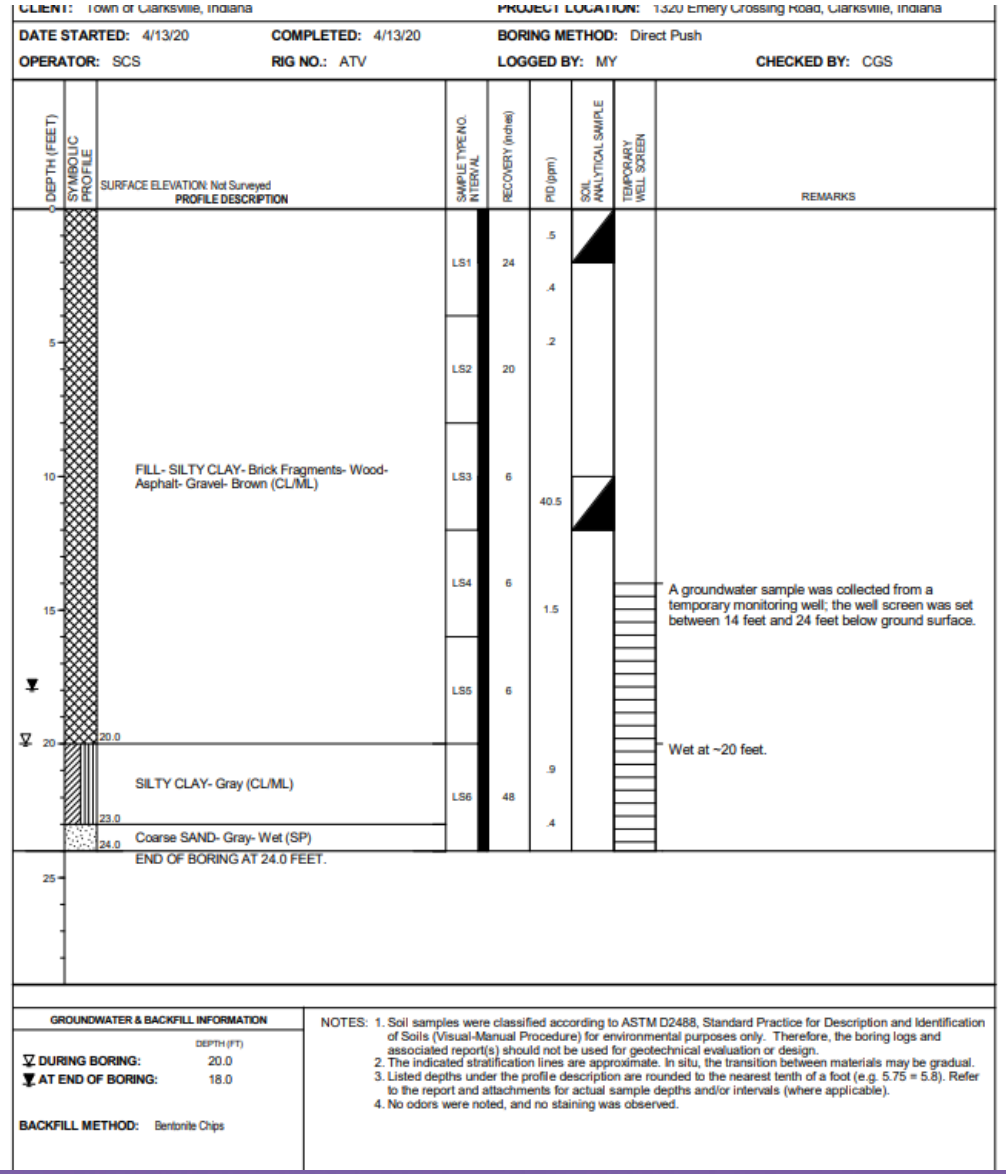


Groundwater Analytical Results

ANALYTE	CAS NUMBER	REMEDIATION CLOSURE GUIDE SCREENING LEVELS (mg/kg)*							CHEMICAL ANALYSES RESULTS (mg/kg)										
		DIRECT CONTACT RESIDENTIAL	DIRECT CONTACT COMMERCIAL / INDUSTRIAL	DIRECT CONTACT EXCAVATION	SOIL MIGRATION TO GROUNDWATER	DIRECT CONTACT COMMUNITY PARK	DIRECT CONTACT ATHLETIC FIELD	DIRECT CONTACT TRAIL	SAMPLE LOCATION	SB1	SB1	SB2	SB2	SB3	SB3	SB4	Dup 1	SB4	SB5	SB5
									SAMPLE DEPTH (ft. below grade)	(0-2)	(14-16)	(0-2)	(10-12)	(0-2)	(2-4)	(0-2)	(0-2)	(2-4)	(0-2)	(10-12)
									DATE COLLECTED	4/13/20	4/13/20	4/13/20	4/13/20	4/13/20	4/13/20	4/13/20	4/13/20	4/13/20	4/13/20	4/13/20
									RECOGNIZED ENVIRONMENTAL CONDITIONS	Former auto salvage operations.										
VOCs																				
1,2,4-Trimethylbenzene	95-63-6	220	220	220	1.6	NA	NA	NA		<0.0053	<0.0055	<0.0072	<0.0048	<0.0053	<0.0052	0.02	0.072	0.15	<0.0047	<0.0056
1,3,5-Trimethylbenzene	108-67-8	180	180	180	1.7	NA	NA	NA		<0.0053	<0.0055	<0.0072	<0.0048	<0.0053	<0.0052	<0.0054	0.15	0.072	<0.0047	<0.0056
Acetone	67-64-1	85,000	100,000	100,000	57	NA	NA	NA		<0.11	<0.11	0.2	<0.097	<0.11	<0.10	<0.11	<0.086	<0.12	<0.094	<0.11
Dichlorodifluoromethane	75-71-8	120	370	850	6	NA	NA	NA		<0.0053	<0.0055	<0.0072	<0.0048	<0.0053	<0.0052	<0.0054	<0.0043	<0.0058	<0.0047	<0.0056
Ethylbenzene	100-41-4	81	250	480	16	NA	NA	NA		<0.0053	<0.0055	<0.0072	<0.0048	<0.0053	<0.0052	<0.0054	0.007	0.0086	<0.0047	<0.0056
Styrene	100-42-5	870	870	870	2.2	NA	NA	NA		<0.0053	<0.0055	<0.0072	<0.0048	<0.0053	<0.0052	<0.0054	0.0067	<0.0058	<0.0047	<0.0056
Trichlorofluoromethane	75-69-4	1,200	1,200	1,200	66	NA	NA	NA		<0.0053	<0.0055	<0.0072	<0.0048	<0.0053	<0.0052	<0.0054	<0.0043	<0.0058	<0.0047	<0.0056
Xylene (Total)	1330-20-7	260	260	260	200	260	260	260		<0.011	<0.011	<0.014	<0.0097	<0.011	<0.010	0.017	0.081	0.063	<0.0094	<0.011
n-Hexane	110-54-3	140	140	140	210	NA	NA	NA		<0.0053	<0.0055	<0.0072	<0.0048	<0.0053	<0.0052	0.024	<0.0043	<0.0058	<0.0047	<0.0056
n-Propylbenzene	103-65-1	260	260	260	25	NA	NA	NA		<0.0053	<0.0055	<0.0072	<0.0048	<0.0053	<0.0052	<0.0054	0.011	0.0086	<0.0047	<0.0056
p-Isopropyltoluene	99-87-6	NE	NE	NE	NE	NA	NA	NA		<0.0053	<0.0055	<0.0072	<0.0048	<0.0053	<0.0052	<0.0054	0.0078	<0.0058	<0.0047	<0.0056
tert-Butylbenzene	98-06-6	180	180	180	31	NA	NA	NA		<0.0053	<0.0055	<0.0072	<0.0048	<0.0053	<0.0052	<0.0054	<0.0043	0.017	<0.0047	<0.0056
Other VOCs	CS	CS	CS	CS	CS	NA	NA	NA		<RL	<RL	<RL	<RL	<RL	<RL	<RL	<RL	<RL	<RL	<RL
PAHs																				
1-Methylnaphthalene	90-12-0	250	390	390	1.2	NA	NA	NA		0.14	<0.057	0.021	<0.0061	<0.0061	0.78	1.9	0.063	0.067	<0.0060	0.018
2-Methylnaphthalene	91-57-6	340	3,000	6,800	3.7	NA	NA	NA		0.16	0.078	0.026	<0.0061	<0.0061	0.97	2.5	0.072	0.072	<0.0060	0.023
Acenaphthene	83-32-9	5,000	45,000	100,000	110	NA	NA	NA		<0.030	<0.057	<0.0061	<0.0061	<0.0061	<0.0063	0.062	0.09	0.075	<0.0060	<0.0057
Acenaphthylene	208-96-8	NE	NE	NE	NE	NA	NA	NA		0.54	0.13	0.02	<0.0061	<0.0061	<0.0063	0.041	0.3	0.094	0.0061	0.0098
Anthracene	120-12-7	25,000	100,000	100,000	1,200	NA	NA	NA		1.2	0.061	0.016	<0.0061	<0.0061	<0.0063	<0.0053	0.46	0.21	0.018	0.019
Benzo[a]anthracene	56-55-3	15	210	12,000	2.1	NA	NA	NA		2.5	0.21	0.12	<0.0061	<0.0061	<0.0063	<0.0053	0.62	0.29	0.023	0.069
Benzo[a]pyrene	50-32-8	1.5	21	500	4.7	7	23	53		2.4	0.33	0.16	<0.0061	<0.0061	<0.0063	<0.0053	0.68	0.29	0.021	0.06
Benzo[b]fluoranthene	205-99-2	15	210	12,000	60	NA	NA	NA		2.6	0.42	0.27	<0.0061	<0.0061	<0.0063	<0.0053	0.88	0.38	0.029	0.1
Benzo[g,h,i]perylene	191-24-2	NE	NE	NE	NE	NA	NA	NA		1.6	0.56	0.12	<0.0061	<0.0061	<0.0063	0.0064	0.36	0.13	0.011	0.035
Benzo[k]fluoranthene	207-08-9	150	2,100	100,000	590	NA	NA	NA		1.7	0.16	0.1	<0.0061	<0.0061	<0.0063	0.011	0.31	0.12	0.0088	0.048
Chrysene	218-01-9	1,500	21,000	100,000	1,800	NA	NA	NA		2.3	0.22	0.16	<0.0061	<0.0061	0.043	0.1	0.56	0.28	0.021	0.091
Dibenz[a,h]anthracene	53-70-3	1.5	21	1200	19	NA	NA	NA		0.24	0.074	0.033	<0.0061	<0.0061	<0.0063	<0.0053	0.094	0.039	<0.0060	0.0094
Fluoranthene	206-44-0	3,400	30,000	68,000	1,800	NA	NA	NA		6.8	0.39	0.27	<0.0061	<0.0061	<0.0063	0.011	1.6	0.67	0.057	0.091
Fluorene	86-73-7	3,400	30,000	68,000	110	NA	NA	NA		0.096	<0.057	<0.0061	<0.0061	<0.0061	0.0064	0.016	0.34	0.16	0.011	<0.0057
Indeno(1,2,3-cd)pyrene	193-39-5	15	210	12,000	200	NA	NA	NA		1.4	0.31	0.11	<0.0061	<0.0061	<0.0063	<0.0053	0.33	0.13	0.0096	0.033
Naphthalene	91-20-3	53	170	3,100	0.11	NA	NA	NA		0.17	<0.057	0.026	<0.0061	<0.0061	0.34	0.99	0.2	0.24	<0.0060	0.021
Phenanthrene	85-01-8	NE	NE	NE	NE	NA	NA	NA		3.4	0.17	0.12	<0.0061	<0.0061	0.27	0.64	1.5	0.7	0.057	0.051
Pyrene	129-00-0	2,500	23,000	51,000	260	NA	NA	NA		5.6	0.36	0.22	<0.0061	<0.0061	0.01	0.017	1.2	0.57	0.047	0.097

Laboratory Analytical Results

Boring Logs



CLIENT: Town of Clarksville, Indiana
PROJECT LOCATION: 1320 Emery Crossing Road, Clarksville, Indiana
DATE STARTED: 4/13/20 COMPLETED: 4/13/20 BORING METHOD: Direct Push
OPERATOR: SCS RIG NO.: ATV LOGGED BY: MY CHECKED BY: CGS

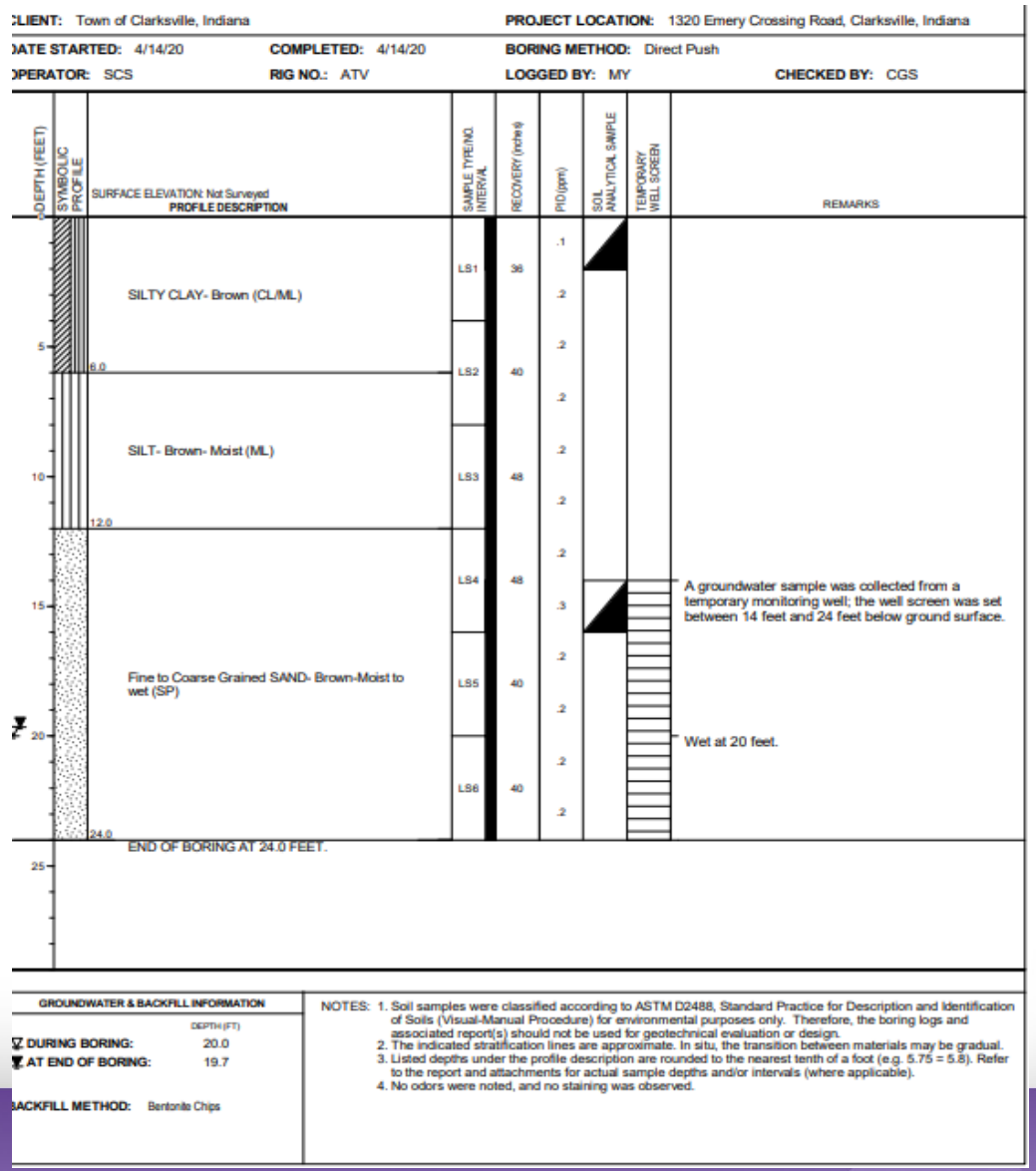
DEPTH (FEET)	SYMBOLIC PROFILE	SURFACE ELEVATION: Not Surveyed PROFILE DESCRIPTION	SAMPLE TYPE/NO. INTERVAL	RECOVERY (inches)	PID (ppm)	SOIL ANALYTICAL SAMPLE	TEMPORARY WELL SCREEN	REMARKS
0			LS1	24	.5			
					.4			
5			LS2	20	.2			
10		FILL- SILTY CLAY- Brick Fragments- Wood- Asphalt- Gravel- Brown (CL/ML)	LS3	6	40.5			
15			LS4	6	1.5			A groundwater sample was collected from a temporary monitoring well; the well screen was set between 14 feet and 24 feet below ground surface.
▽			LS5	6				
20		20.0						Wet at ~20 feet.
		SILTY CLAY- Gray (CL/ML)	LS6	48	.9			
		23.0 Coarse SAND- Gray- Wet (SP)			.4			
		24.0 END OF BORING AT 24.0 FEET.						
25								

GROUNDWATER & BACKFILL INFORMATION

	DEPTH (FT)
▽ DURING BORING:	20.0
▼ AT END OF BORING:	18.0

BACKFILL METHOD: Bentonite Chips

NOTES:
1. Soil samples were classified according to ASTM D2488, Standard Practice for Description and Identification of Soils (Visual-Manual Procedure) for environmental purposes only. Therefore, the boring logs and associated report(s) should not be used for geotechnical evaluation or design.
2. The indicated stratification lines are approximate. In situ, the transition between materials may be gradual.
3. Listed depths under the profile description are rounded to the nearest tenth of a foot (e.g. 5.75 = 5.8). Refer to the report and attachments for actual sample depths and/or intervals (where applicable).
4. No odors were noted, and no staining was observed.



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DEPTH (FEET)	SYMBOLIC PROFILE	SURFACE ELEVATION: Not Surveyed PROFILE DESCRIPTION	SAMPLE TYPE/NO. INTERVAL	RECOVERY (inches)	PID (ppm)	SOIL ANALYTICAL SAMPLE	TEMPORARY WELL SCREEN	REMARKS
0			LS1	36	.1			
		SILTY CLAY- Brown (CL/ML)			.2			
5					.2			
		6.0	LS2	40	.2			
		SILT- Brown- Moist (ML)			.2			
10			LS3	48	.2			
		12.0			.2			
			LS4	48	.3			A groundwater sample was collected from a temporary monitoring well; the well screen was set between 14 feet and 24 feet below ground surface.
15		Fine to Coarse Grained SAND- Brown-Moist to wet (SP)			.2			
▽			LS5	40				
20					.2			Wet at 20 feet.
			LS6	40	.2			
		24.0 END OF BORING AT 24.0 FEET.			.2			
25								

GROUNDWATER & BACKFILL INFORMATION

	DEPTH (FT)
▽ DURING BORING:	20.0
▼ AT END OF BORING:	19.7

BACKFILL METHOD: Bentonite Chips

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1. Soil samples were classified according to ASTM D2488, Standard Practice for Description and Identification of Soils (Visual-Manual Procedure) for environmental purposes only. Therefore, the boring logs and associated report(s) should not be used for geotechnical evaluation or design.
2. The indicated stratification lines are approximate. In situ, the transition between materials may be gradual.
3. Listed depths under the profile description are rounded to the nearest tenth of a foot (e.g. 5.75 = 5.8). Refer to the report and attachments for actual sample depths and/or intervals (where applicable).
4. No odors were noted, and no staining was observed.

Interpreting Phase II Results

- Evaluate the Phase II data to make decisions on clean up and next steps
- If sampling followed established DQOs will be able to make informed decisions
- Refer to Redevelopment goals
  - Match cleanup options – How clean is clean for your project? End use is important (Residential vs Commercial)
  - How do assessment results compare to state cleanup standards?
  - Transferred to another entity (e.g., park for trails) – specific requirements for testing?
  - Intended future use of the site. Are land-use restrictions; institutional/environmental use controls; or restrictive covenants appropriate?
  - Is additional sampling warranted?

Contaminants are rarely distributed evenly

- Neither horizontally, nor vertically
- Assessment estimates between available sample points

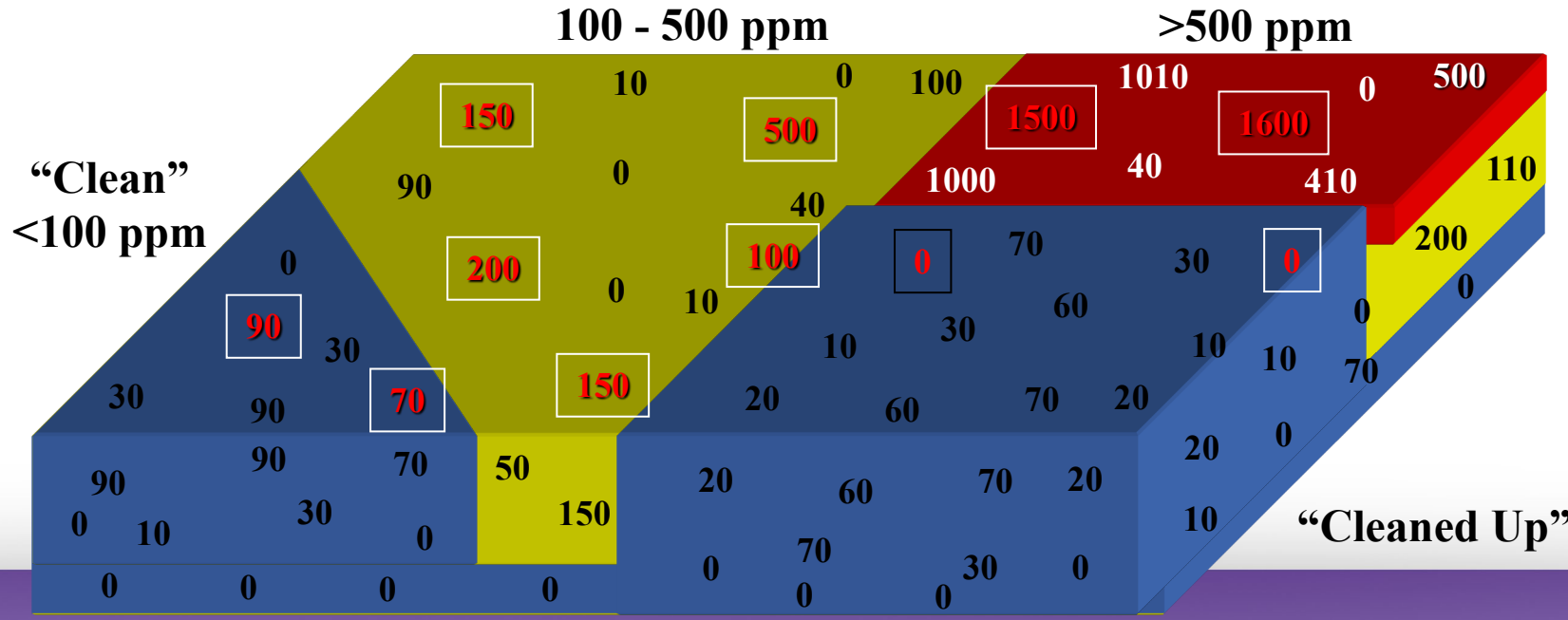


Image courtesy of Dave Koch, Terracon

Contaminants are rarely distributed evenly

- Limitations:
  - Results reflect condition at sample points only; can miss small pockets of contamination or interpret a broader area of contaminant impact
  - Generally intended to confirm or deny presence of contamination from specific, potential sources; not fully delineate extent
  - Cannot guarantee a “clean” site

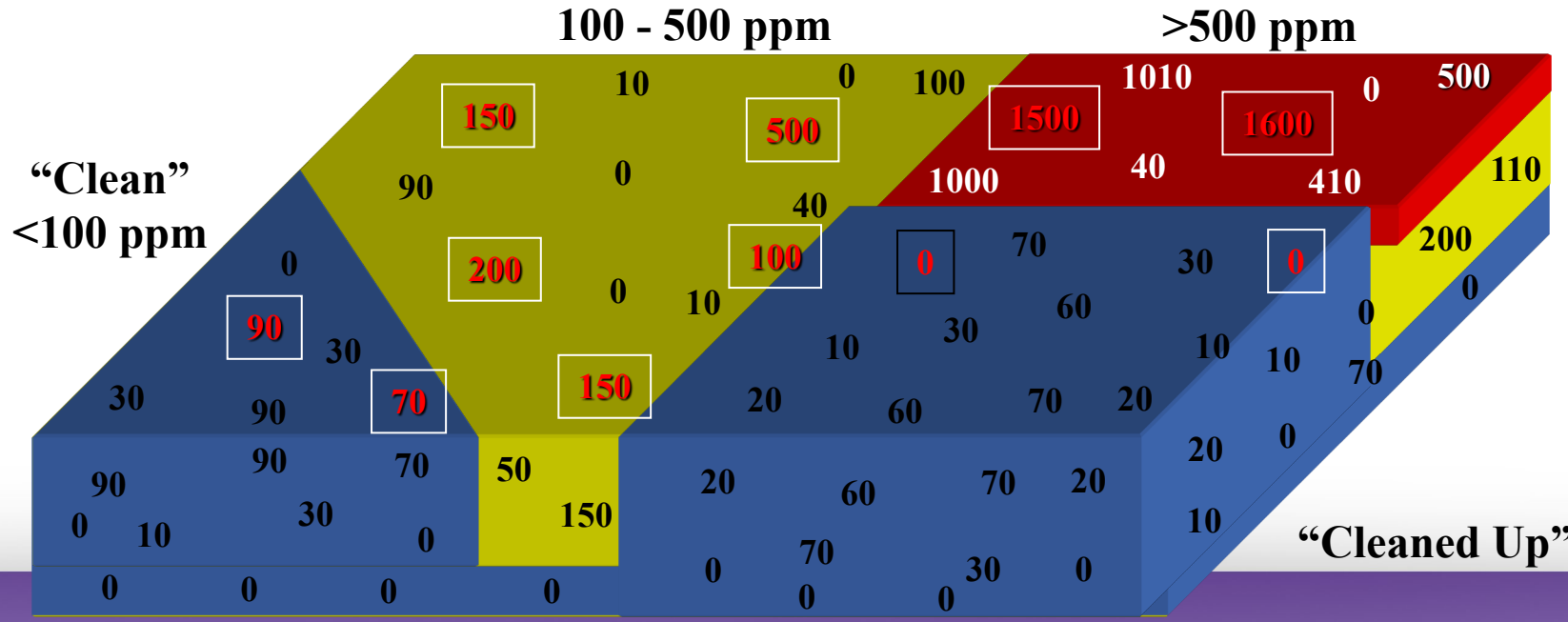
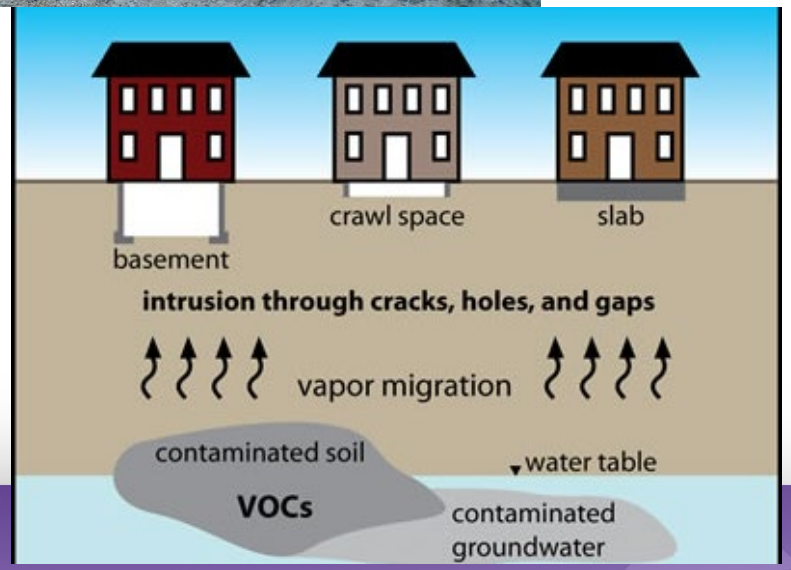


Image courtesy of Dave Koch, Terracon

What Are the Risks with Next Steps Towards Redevelopment?



Thank You

Thank you for joining us today. Please get in touch if you have any questions or comments: beth27@ksu.edu.

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TAB Technical Assistance to Brownfields | Kansas State University

Collaboration with States / Further Site Investigation / Reuse and Cleanup Planning

Brownfields University 201 – Managing Brownfields Assessment & Cleanup
2025 National Brownfield Conference; Chicago, IL; Aug 5, 2025
Scott Nightingale, KSU TAB Director for EPA Region 6

ksutab.org

Further Site Investigation

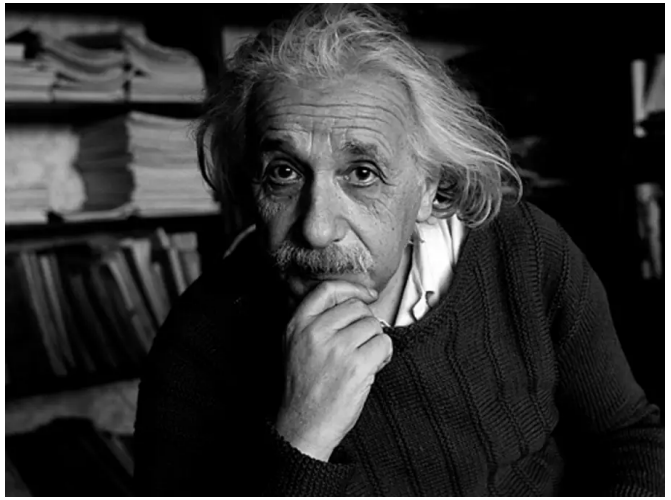
↓

Cleanup

↓

Property Reuse

Collaboration with State BF Programs -Knowledge of Process



- When is State involvement applicable?
- What will the State review?
- What are the timelines for State help?
- What is the process if other State Programs (ex. - VCP, UST) are involved?
- What external resources are available for assessment, cleanup, and redevelopment?
- What are some example BF success stories in the State?

Collaboration with State BF Programs -Direct Resources/Assistance

- Assessment Resources (TBAs, CWAGST)
- Cleanup Resources (from RLF, BIL, or 128(a) funds)
- Services, which could include:
  - Planning Assistance
  - Grant Application Review
  - Community Engagement
  - Surprising tasks, like Ground Penetrating Radar Surveys

Collaboration with State BF Programs -How/When to Approach

- Develop a partnership w/ State BF Program staff. The more familiar they are with your projects, the more they can advocate for your community and help you find resources.
- Reach out as soon as possible. “We may have information about a site, the environmental jurisdiction, and the whole assessment/cleanup process the communities don’t know that we know . . . Don’t Wait - Call the State!”

Further Site Investigation

Chronological ↓ ↑ Ideal Planning Order

Cleanup

Chronological ↓ ↑ Ideal Planning Order

Property Reuse

Further Site Investigation

Chronological ↓ ↑ Ideal Planning Order

Cleanup

Chronological ↓ ↑ Ideal Planning Order

Property Reuse

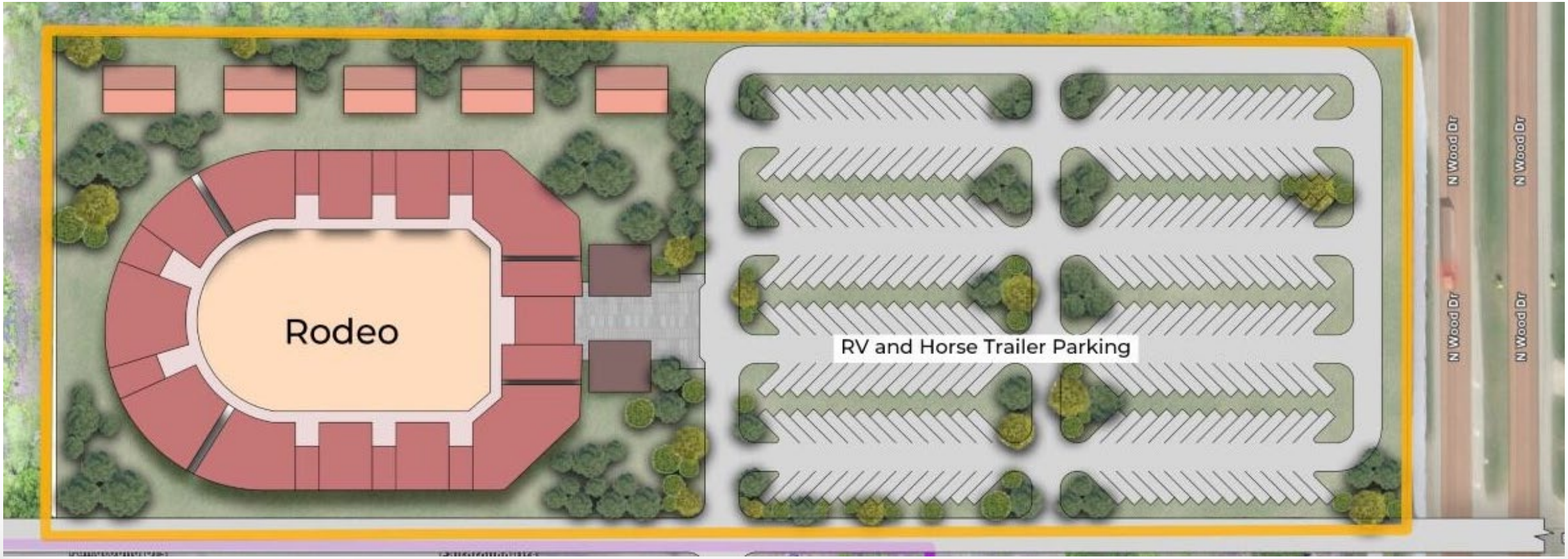
Reuse Planning - What we don't want

Reuse Planning - Housing/Residential

Reuse Planning - Commercial/Business

Reuse Planning - Recreation/Greenspace

Reuse Planning - Many Options



Reuse Planning Considerations #1 Community Priorities

- Factors can be monetary (sales tax base, jobs, etc.), quality-of-life, health concerns, or anything tied to public benefit.
- Community priorities are often decided by elected or administrative officials.
- Brownfields redevelopment is usually more successful if the public is involved (and invested) in selecting property reuse, providing input through community engagement activities.

Community Engagement

Reuse Planning Considerations #2 Economic Feasibility

- Cost for cleanup and redevelopment

vs.

- Available Funding - Public & Private

or

- Private Redevelopment Interest

Reuse Planning Considerations #3 Coordination with Existing Plans

- These plans can include demographic and financial projections relevant to evaluating reuse options.
- Multiple plan types exist, such as Downtown Master Plans, Land Use & Growth Plans, and Comprehensive Economic Development Strategies.
- Helpful plans can be produced at the City, County, Economic Development District, or State level.

Further Site Investigation

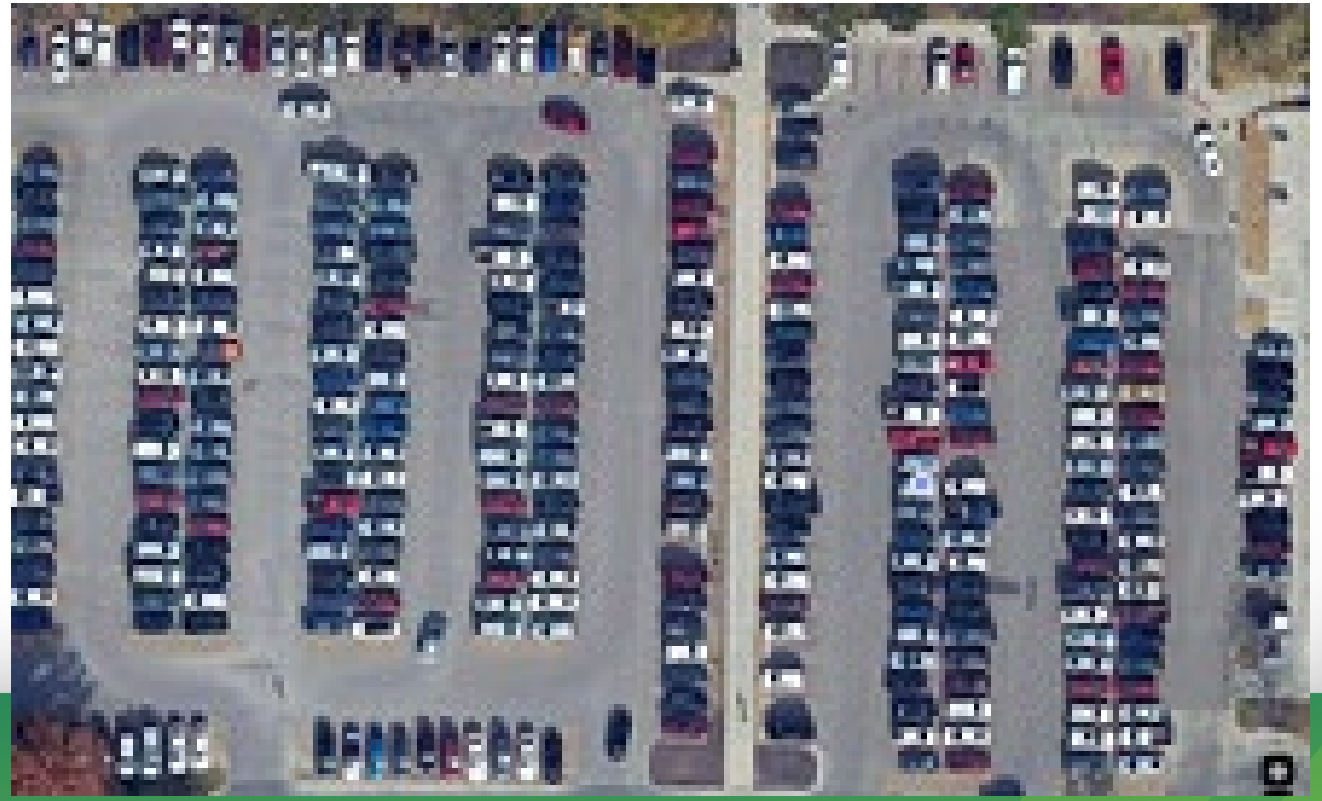
Chronological ↓ ↑ Ideal Planning Order

Cleanup

Chronological ↓ ↑ Ideal Planning Order

Property Reuse

Cleanup Planning Considerations
How "Clean" does a site need to be for the intended property reuse?



Cleanup Planning Considerations #1 Cleanup Goals

- Media of concern - soil, groundwater, building materials, etc.
- Requirements of the applicable State Program(s) – Voluntary Cleanup, Petroleum Storage Tanks, Dry Cleaning Trust Fund, others
- Most states have different cleanup standards for different land use scenarios. If the property reuse is in doubt, the default is the most conservative scenario (residential).

Cleanup Planning Considerations #2 Institutional & Engineering Controls

- Measures which eliminate (or reduce) exposure to contaminants at a property
- Examples of Institutional Controls include land use restrictions, required notification to excavating contractors of existing contamination, and prohibition of domestic wells.
- Examples of Engineering Controls include caps over contaminated soil and vapor barriers installed in buildings.

Cleanup Planning Considerations #3 Coordination with Site Reuse Prep

- Excavation
- Utility (Re)Placement
- Building Renovation or Demolition
- Engineering Controls

Further Site Investigation

Chronological ↓ ↑Ideal Planning Order

Cleanup

Chronological ↓ ↑Ideal Planning Order

Property Reuse

Further Investigation Considerations
#1 Focus on end goals
What additional work is needed . . .

- To provide information for an efficient Cleanup?
- To provide information for an ABCA/BF remedy selection?
- To meet regulatory requirements?
- To inform decisions on Property Reuse?

Further Investigation Considerations #2 Extra Contaminant Information

- Delineation of identified Phase II contaminants
  - Can help with Cleanup cost estimates
  - Is offsite contamination a concern?
- Additional chemicals
- Additional environmental media/pathways
  - Groundwater
  - Vapor Intrusion

Further Investigation Considerations #3 Structure Concerns

- Building materials testing
  - Asbestos
  - Lead-based paint
  - PCBs
- Structural Assessment

  Can be part of a Phase II assessment

Managing BF Assessment & Cleanup Extra Thoughts

- Establish relationships early w/ your State, EPA, and TAB.
- Be flexible → Through the BF process, there may be changes in community leadership, priorities, project costs, development opportunities, etc. Plan your projects knowing adjustments will likely be needed.
- Your QEP will provide expertise on assessments and cleanup activities. However, the community lead needs enough basic knowledge to relay information to the public.

Questions?

We Want to Hear Your Feedback

Please provide feedback on today's event:

- Click this link
  https://kstate.qualtrics.com/jfe/form/SV_8CwVFBBeYCig6HA

- Scan this QR image from your smartphone

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