NAVIGATING THE PHASE II / RECAP PROCESS UNDER BROWNFIELDS

Louisiana Brownfields Conference

June 6, 2024

DEVELOPMENT OF THE SAMPLING AND ANALYSES PLAN

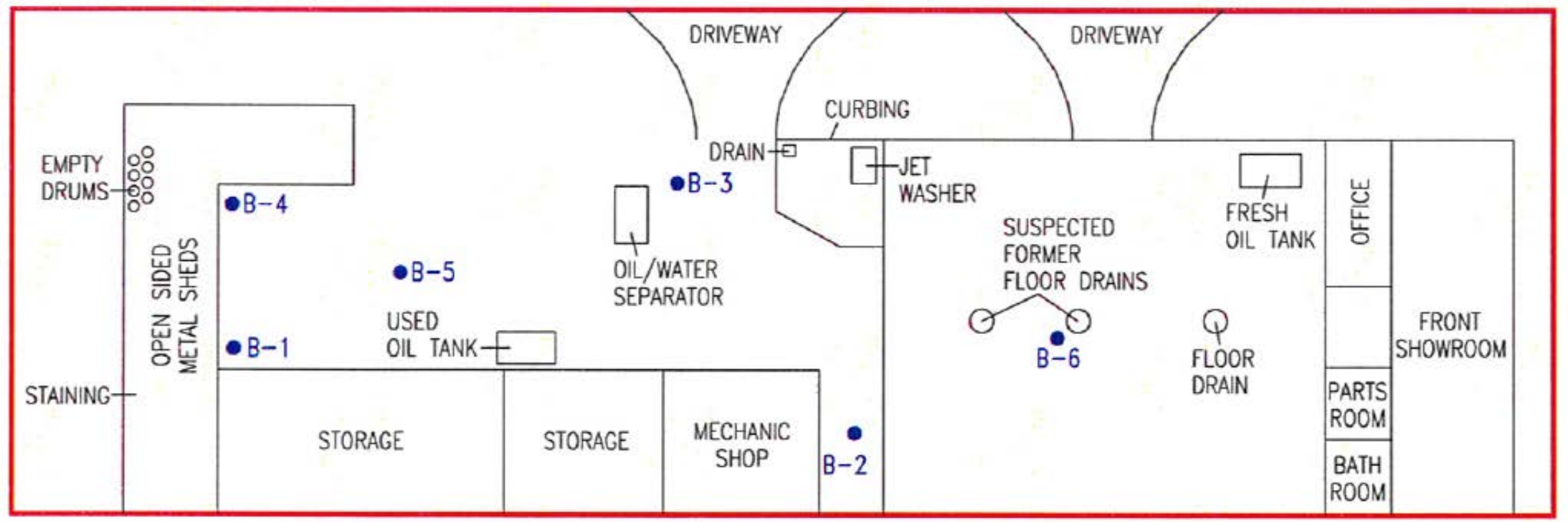
Determine Objectives

- Address Environmental Concerns
    - Verify RECs – has a release occurred
        - Example: Has a historical UST on the site caused contamination to soil and groundwater?
    - Define risks to human health or environment based on proposed redevelopment
        - Example: Is the property safe to use for residential use, or can an enclosed structure be constructed on it?
    - Other environmental concerns/business risks
        - Example: Is a building present that may be demolished or renovated? If so, asbestos and lead-based paint inspections may also be needed
- Identify applicable procedures, protocols, and requirements for sampling
    - ACM, Lead Based Paint
    - RECAP

DEVELOPMENT OF THE SAMPLING AND ANALYSES PLAN

- What media needs to be sampled (soil, groundwater, building materials)?
- What should samples be analyzed for?
    - Based on suspected sources/types of operations
    - Use Information gathered from Phase I ESA
- What locations should be sampled?
    - Where may have contaminants first entered the environment?
    - Where may have they moved to after (chemical behavior/geology/site conditions)?
    - What is the rationale for each sampling location?

SAMPLING LOCATION MAP

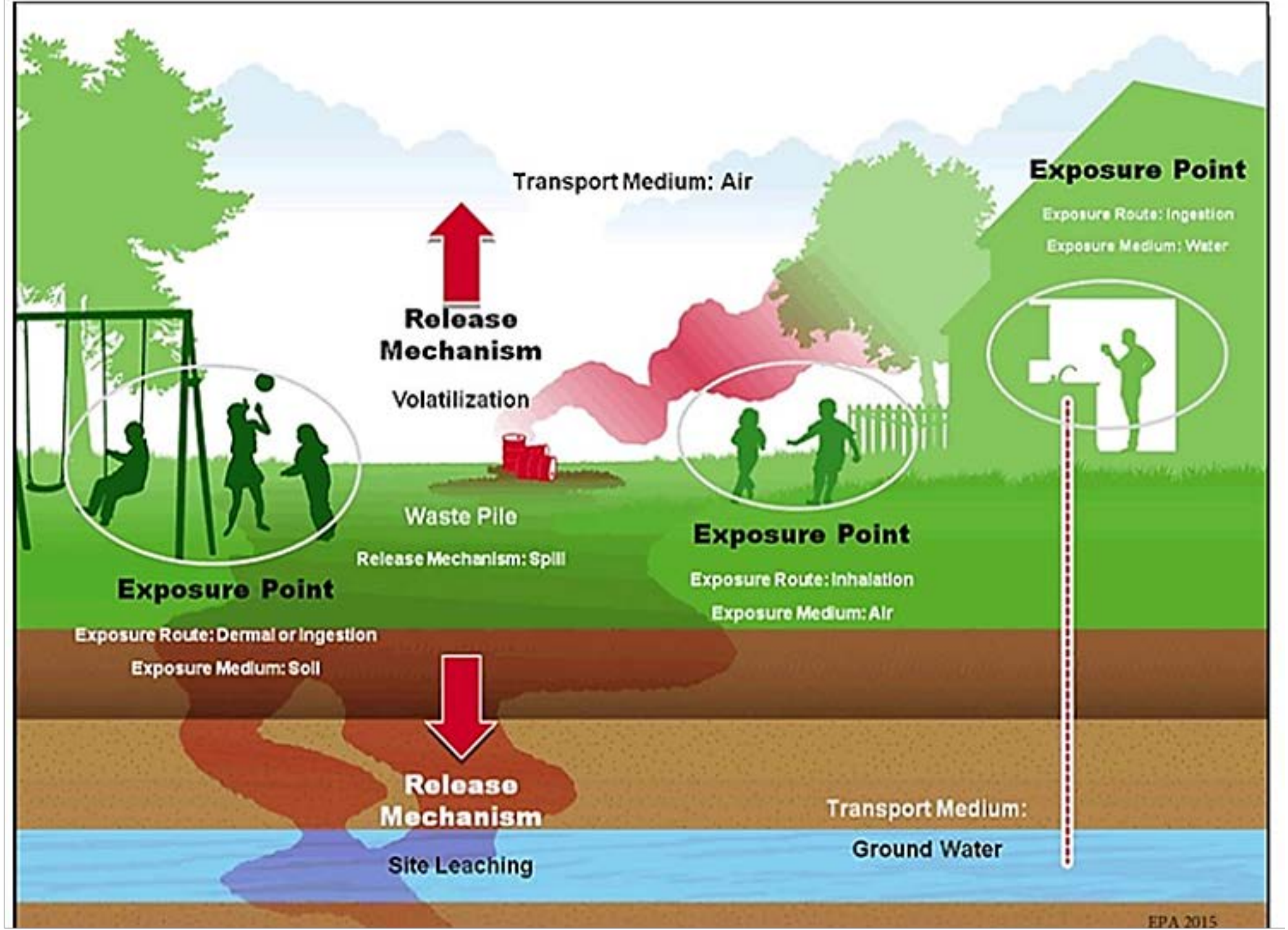


QUALITY ASSURANCE PROJECT PLAN

- If the Phase II is being funded with Brownfields grant money, a Quality Assurance Project Plan (QAPP) must be prepared and approved by EPA prior to sampling
- A QAPP is a formal planning document which describes how environmental sampling operations are planned, implemented, documented, and assessed during the life cycle of a project
- Similar to a Sampling and Analyses Plan (SAP) with additional EPA requirements/can be prepared with a SAP as a combined QAPP/SAP document
- QAPP needs to be approved and signed by the EPA Project Officer prior to sampling
- EPA's new Quality Assurance Project Plan Standard, April 3, 2024: CIO 2105-S-02.1

RESULTS ARE IN, WHERE DO I GO?

- LDEQ's Risk Evaluation/Corrective Action Program
  - LDEQ's primary statutory mandate for assessment and remediation activities
    - Establishes clear and consistent guidelines for the assessment and evaluation of releases to the environment
    - Provides framework for development of remediation standards
  - RECAP Standards – constituent concentration levels in impacted media that do not pose unacceptable risks to human health or the environment.


Transport Medium: Air
Exposure Point
Exposure Route: Ingestion
Exposure Medium: Water
Release Mechanism
Volatilization
Waste Pile
Release Mechanism: Spill
Exposure Point
Exposure Route: Inhalation
Exposure Medium: Air
Exposure Point
Exposure Route: Dermal or Ingestion
Exposure Medium: Soil
Release Mechanism
Site Leaching
Transport Medium:
Ground Water
EPA 2015

RECAP

- Tiered framework
  - Screening Option (SO)
  - Management Option 1 (MO-1)
  - Management Option 2 (MO-2)
  - Management Option 3 (MO-3)

- Higher the option, the more site-specific data can be used to develop RECAP Standards

SCREENING OPTION

- Soil and groundwater
- Non-industrial and industrial/commercial land use
- Generic; conservative default assumptions
- Screening Standards Table 1
- SO serves as a conservative screening step to identify chemicals and media requiring further assessment
  - Used for comparison to initial Phase II ESA results

LDEQ RECAP TABLE 1
SCREENING OPTION
SCREENING STANDARDS FOR SOIL AND GROUNDWATER

		SOIL_SSni		SOIL_SSi		SOIL_SSGW		GW_SS	
COMPOUND	CAS #	(mg/kg)	NOTE	(mg/kg)	NOTE	(mg/kg)	NOTE	(mg/L)	NOTE
Acenaphthene	83-32-9	3.7E+02	N	6.1E+03	N	2.2E+02	A	3.7E-02	N
Acenaphthylene	208-96-8	3.5E+02	N	5.1E+03	N	8.8E+01	A	1.0E-01	Q
Acetone	67-64-1	1.7E+02	N	1.4E+03	N	1.5E+00	A	1.0E-01	Q
Aldrin	309-00-2	2.8E-02	C	1.3E-01	C	1.1E+01	A	1.9E-03	Q
Aniline	62-53-3	2.4E+00	N	1.7E+01	N	6.5E-02	A	1.2E-02	C
Anthracene	120-12-7	2.2E+03	N	4.8E+04	N	1.2E+02	A	4.3E-02	W
Antimony	7440-36-0	3.1E+00	N	8.2E+01	N	1.2E+01	L1	6.0E-03	MCL
Arsenic	7440-38-2	1.2E+01	D	1.2E+01	D	1.0E+02	L	1.0E-02	MCL
Barium	7440-39-3	5.5E+02	N	1.4E+04	N	2.0E+03	L	2.0E+00	MCL
Benzene	71-43-2	1.5E+00	C	3.1E+00	C	5.1E-02	A	5.0E-03	MCL
Benz(a)anthracene	56-55-3	6.2E-01	C	2.9E+00	C	3.3E+02	A	7.8E-03	Q
Benzo(a)pyrene	50-32-8	3.3E-01	Q	3.3E-01	Q	2.3E+01	A	2.0E-04	MCL

MANAGEMENT OPTION 1

- Soil and groundwater
- Non-industrial and industrial/commercial land use
- Allows for the incorporation of certain site-specific data
  - Groundwater Classification
    - GW1
    - GW2
    - GW3
- Evaluation of soil and groundwater beneath an enclosed structure (i.e. vapor intrusion)
- MO-1 RECAP Standards are in Tables 2 and 3

LDEQ RECAP TABLE 2
MANAGEMENT OPTION 1
STANDARDS FOR SOIL
(mg/kg)

COMPOUND	CAS #	SOILni	NOTE	SOILi	NOTE	SOILGW1	NOTE	SOILGW2	NOTE	SOILGW3DW	NOTE	SOILGW3NDW	NOTE	SOILsat	SOILesni*	SOILesi*
Acenaphthene	83-32-9	3.7E+03	N	6.1E+04	N	2.2E+02	A	2.2E+02	X DF 2	2.5E+02	X DF3	3.2E+02	X DF 3	NA	7.3E+04	2.5E+05
Acenaphthylene	208-96-8	3.5E+03	N	5.1E+04	N	8.8E+01	A	8.8E+01	X DF 2	1.4E+02	X DF3	1.9E+02	X DF 3	NA	3.8E+04	1.3E+05
Acetone	67-64-1	1.7E+03	N	1.4E+04	N	1.5E+00	A	1.5E+00	X DF 2	8.5E+00	X DF3	1.8E+02	X DF 3	1.3E+05	6.6E+02	2.3E+03
Aldrin	309-00-2	2.8E-02	C	1.3E-01	C	1.1E+01	A	1.1E+01	F	1.1E+01	H	1.1E+01	H	NA		
Aniline	62-53-3	2.4E+01	N	1.7E+02	N	6.5E-02	A	6.5E-02	X DF 2	3.2E-02	X DF3	4.4E-01	X DF 3	1.0E+04		
Anthracene	120-12-7	2.2E+04	N	4.8E+05	N	1.2E+02	A	1.2E+02	X DF 2	1.2E+02	X DF3	1.2E+02	X DF 3	NA	1.0E+06	1.0E+06
Antimony	7440-36-0	3.1E+01	N	8.2E+02	N	1.2E+01	L1	1.2E+01	L1	1.2E+01	L1	1.2E+01	L1	NA		
Arsenic	7440-38-2	1.2E+01	D	1.2E+01	D	1.0E+02	L	1.0E+02	L	1.0E+02	L	1.0E+02	L	NA		
Barium	7440-39-3	5.5E+03	N	1.4E+05	N	2.0E+03	L	2.0E+03	L	2.0E+03	L	2.0E+03	L	NA		
Benzene	71-43-2	1.5E+00	C	3.1E+00	C	5.1E-02	A	5.1E-02	X DF 2	1.1E-02	X DF3	1.3E-01	X DF 3	9.0E+02	1.0E+00	2.5E+00
Benz(a)anthracene	56-55-3	6.2E-01	C	2.9E+00	C	3.3E+02	A	3.9E+00	X DF 2	1.6E-02	X DF3	1.6E-02	X DF 3	NA		
Benzo(a)pyrene	50-32-8	3.3E-01	Q	3.3E-01	Q	2.3E+01	A	2.3E+01	X DF 2	2.3E+01	X DF3	2.3E+01	X DF 3	NA		

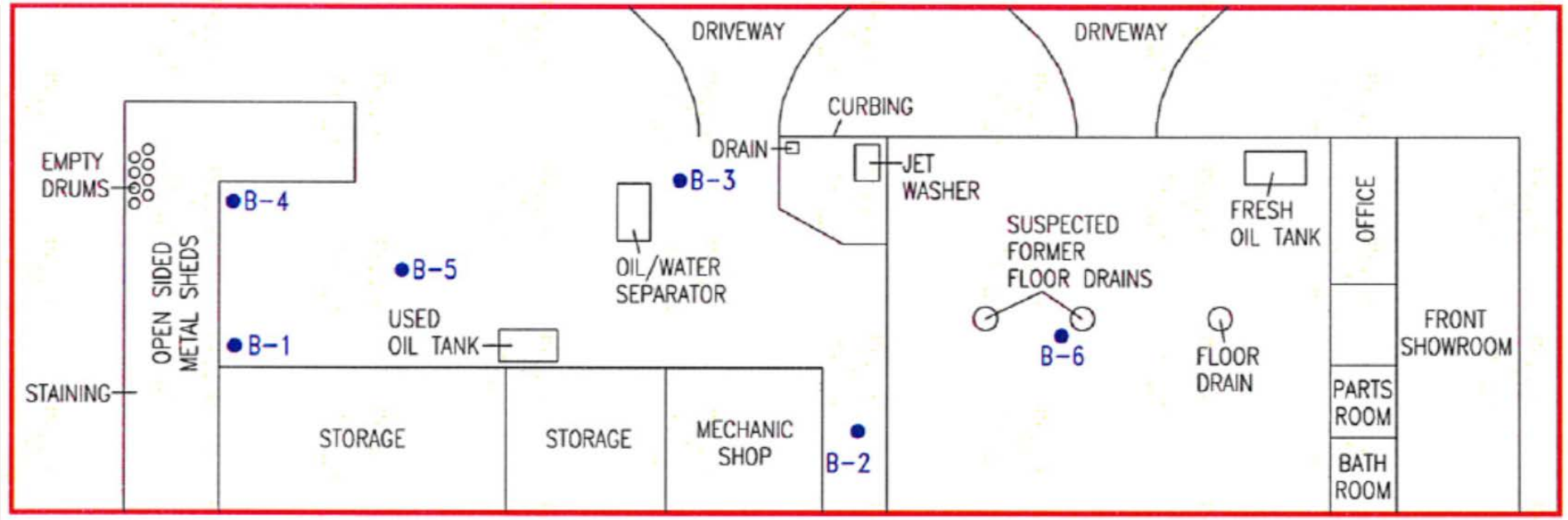
MANAGEMENT OPTION 2

- Soil and groundwater
- Non-industrial and industrial/commercial land use
- Allows for the incorporation of site-specific fate and transport soil properties
- Allows for the use of most current toxicity values
- MO-2 RECAP Standards are calculated by the submitter in accordance with Appendix H/spreadsheet
- https://www.deq.louisiana.gov/page/recap

MANAGEMENT OPTION 3

- All media (soil, groundwater, sediment, biota, etc.)
- All land uses
- Allows for the assessment of complex fate and transport and exposure pathways
- Allows for the incorporation of site-specific fate and transport data and site-specific exposure data
- Allows for the use of the most current toxicity values, default exposure parameters, and risk assessment method/protocols
- Appendix H

EXAMPLE



Sample Loc	B-1 (4-6)	B-1 (10-12)	B-2 (0-2)	B-3 (6-8)	B-3 (10-12)	B-4 (6-8)	B-5 (4-6)	B-6 (0-2)
Concentration of TPH-O	54	<20	<20	660	62	110	320	<20

EXAMPLE

Table 1 of RECAP – Screening Standards for TPH-ORO

- Soil SSni – 180 mg/kg
- SoilSSGW – 10,000 mg/kg
- RECAP Screening Standard will be lower of the two – **180 mg/kg**

LDEQ RECAP TABLE 1
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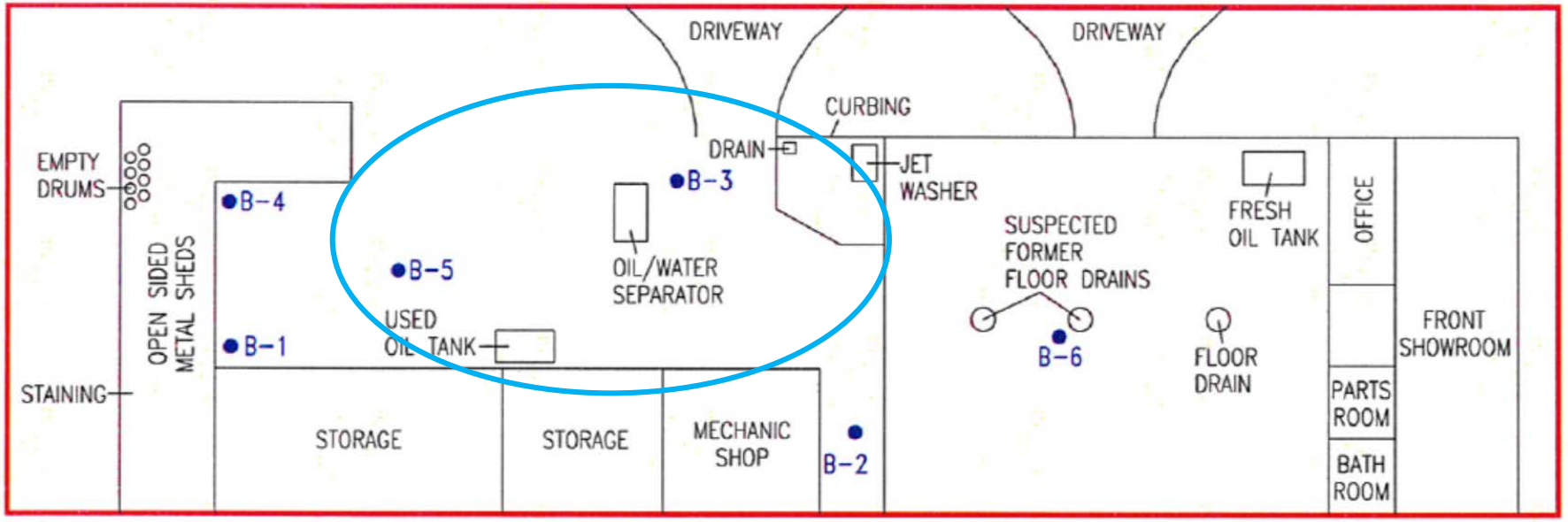
COMPOUND	CAS #	(mg/kg)	NOTE	(mg/kg)	NOTE	(mg/kg)	NOTE	(mg/L)	NOTE
TPH-GRO	NA	6.5E+01	N,I	5.1E+02	N,I	6.5E+01	A	1.5E-01	Q
TPH-DRO	NA	6.5E+01	N,I	5.1E+02	N,I	6.5E+01	A	1.5E-01	Q
TPH-ORO	NA	1.8E+02	N,I	2.5E+03	N,I	1.0E+04	O,T	1.5E-01	Q

Sample Loc	B-1 (4-6)	B-1 (10-12)	B-2 (0-2)	B-3 (6-8)	B-3 (10-12)	B-4 (6-8)	B-5 (4-6)	B-6 (0-2)
Concentration of TPH-O	54	<20	<20	**660**	62	110	**320**	<20

EXAMPLE



Sample Loc	B-1 (4-6)	B-1 (10-12)	B-2 (0-2)	B-3 (6-8)	B-3 (10-12)	B-4 (6-8)	B-5 (4-6)	B-6 (0-2)
Concentration of TPH-O	54	<20	<20	**660**	62	110	**320**	<20

VOLUNTARY REMEDIATION PROGRAM

- To return contaminated sites back to productive reuse
- Option for partial remediation for non-responsible parties
  - Institutional Controls
  - Engineering Controls
  - Requires Agreement with LDEQ & Conveyance Notice
- Certificate of Completion and Release of Liability
- Can include Funders

Non-VRP vs VRP: Investigation

Non-VRP Investigation	VRP Investigation	
▪ Sample where you think there's contamination	▪ Applicant defines the Area to be investigated (VRP Site) ▪ Sample where you think there's contamination ▪ Samples collected across the entire site (as defined in the application)	More $$
▪ Analyze samples for what you suspect might be there (based on potential source of release)	▪ Analyze samples for what you suspect might be there ▪ Also analyze for a wider variety of common contaminants	More $$
▪ May need to sample off site to define the extent of contamination	▪ Sampling confined to site boundaries	Less $$

Non-VRP vs VRP: Remediation

Non-VRP Remediation	VRP Remediation	
▪ Area to be remediated based on area exceeding cleanup standards (may be onsite and offsite)	▪ Area to be remediated confined to VRP property boundaries	Can save significant $$
▪ Remediation of all risks is required, e.g. any contamination that is above LDEQ standards needs to be remediated	▪ Remediation can be tailored for the intended future use of the site	Can save significant $$
▪ Engineering/ institutional controls generally not acceptable	▪ Engineering/Institutional controls may be used to prevent exposure to contamination	Can save significant $$

QUESTIONS???

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