RCRA Facilities Investigation Remedy Selection Track (FIRST)

Toolbox Orientation & Collaborative Learning Session

Feb 22-23, 2017
USEPA Region 2
Caribbean Environmental Protection Division
Guaynabo, Puerto Rico

RCRA FIRST

Welcome

Carmen Guerrero, Director
USEPA Region 2
Caribbean Environmental
Protection Division

9:00 – 9:15 AM	Wel ome, Safety Brief and Introdu tion Carmen Guerrero, Dire tor, Caribbean Environmental Protection Division David Cuevas-Miranda, PhD Lead Physical Scientist Caribbean Environmental Prote tion Division - US EPA-Region 2
9:15-9:30AM	Why We Are Here: The RCRA 2020 Universe /Lean Results/RCRA FIRST Paul Gotthold, Joel Hennessy, and Luis Pizarro EPA Region 3 ■ Overview of EPA Region 2 Caribbean Offi e CA Universe ■ the Region 3 and Region 7 Lean events – what happened? ■ New Perspectives on Business Process applied to RCRA CA
9:30-10:15 AM	Dis ussion of Root Cause(s) of Ineffi ien y / Group Exer ise/Survey Results ■ Root Causes – group exercise ■ Root Causes Revealed/ Introduction to the contents of the RCRA FIRST Toolbox
10:15-10:30AM	Break
10:30 AM-12:00 PM	Overview of the RCRA FIRST Approach / Introduction to the RCRA FIRST Toolbox ■ How to use the Toolbox resources to incorporate elements of RCRA FIRST into your corrective action process, including how to get started, and where within the pro ess tools are appli able/ addressing the root auses
12:00-1:00 PM	Lun h
1:00-2:00 PM	Major Tools – A Closer Look ■ RCRA FIRST Tools Explained ■ Highlighted: CAF Meeting, CAF Template, Elevation, RSP Meeting, RSP Template
2:00-2:30 PM	Case Studies of Su essful RCRA FIRST proje ts- Group Exer ise Set Up ■ California DTSC, Region3 Pennsylvania DEP ■ Set Up for Breakout Session
2:30-2:45 PM	Break
2:45- 3:30 PM	Exercise: Corrective Action Framework Meeting ■ Breakout Groups discuss Scenarios 1-4
3:30-4:00 PM	Presentations from Groups/Dis ussion of Out omes ■ Discussion and Q&A - Make Sense? Answers Revealed!
4:00-4:30 PM	Data Collection and Process Control- Review the Day ■ Measuring the Pro ess- Tra king Progress- Monitoring the Pipeline ■ Review the Day

9:00 – 9:15 AM	Welcome, Safety Brief and Introduction Recap Day 1- Preview Day 2
9:15-10:30 AM	Developing Effective Corrective Action Objectives Joel Hennessy, EPA Region 3 ▪ Understand how to improve Corrective Action Objectives to prevent process delays ▪ Group Discussion: walk through a scenario to develop Corrective Action Objectives
10:30-10:45 AM	Break
10:45 AM-12:00 PM	Exercise: Remedy Selection Process Meeting ▪ Breakout Groups develop Corrective Action Objectives
12:00-1:00 PM	Lunch
1:00-2:00 PM	Presentations from Groups/Dis ussion of Exer ise S enarios 1-4
2:00-2:30 PM	Case Studies of Su essful RCRA FIRST proje ts- Group Exer ise Set Up ▪ Examples of Effective Corrective Action Objectives ▪ Available Support- Follow Up ▪ Key Messages
	END of TRAINING
3:00 PM-5:00 PM	Fa ility CAF/RSP Meeting 3:00-5:00 (invitees only)

Introductions

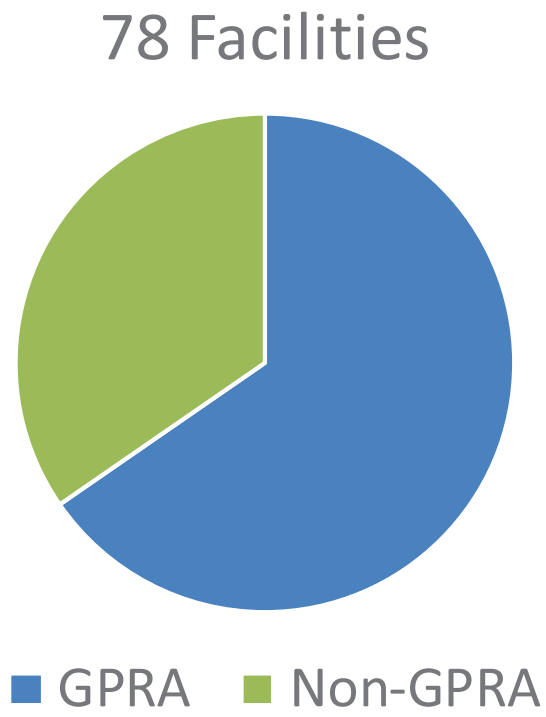
- Organization
  - 5 from PR EQB
  - 17 from Facilities/Consulting
  - 12 from EPA

  - Years of Corrective Action Experience
  - > 20 years…5
  - 10-20 yrs….29
  - 3-10 yrs……2
  - <3 years……3

The RCRA Corrective Action Process from Region 2-Caribbean: Perspectives and Opportunities

David N. Cuevas-Miranda, PhD
CEPD EPA Region 2

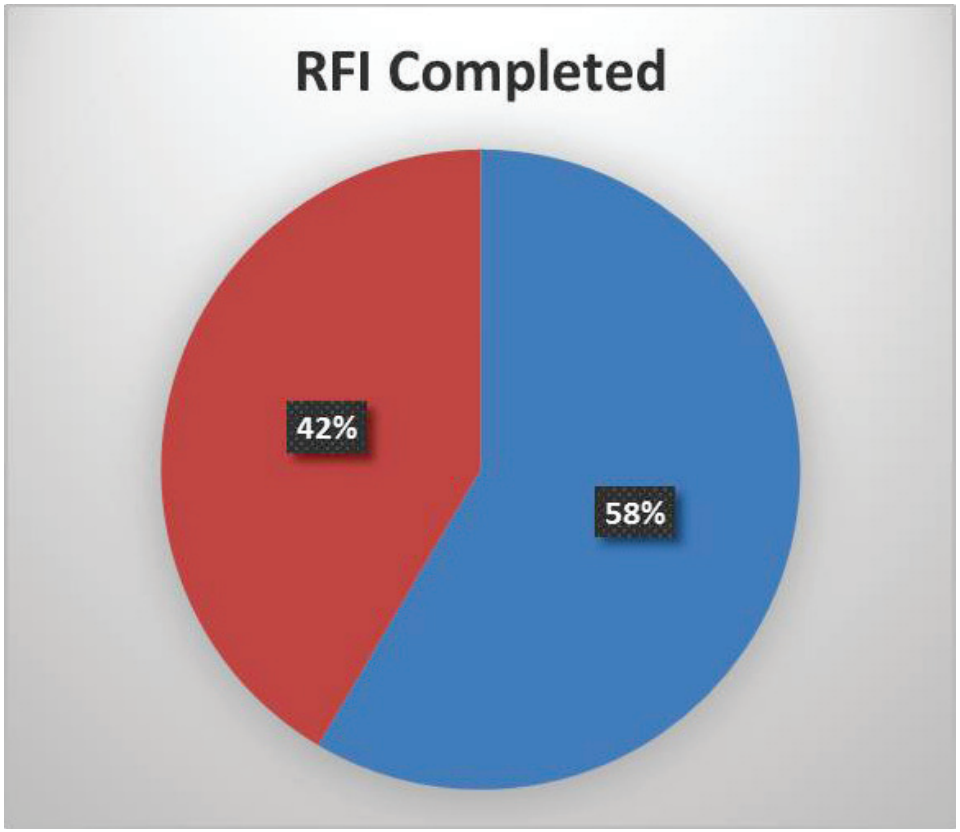
Region 2-Caribbean Corrective Action Universe



- 77 of the Sites are EPA lead
- PCB Horizons (former Digital), San Germán, PR- PREQB lead
- 51 Sites under the GPRA Universe
- Former Navy Facilities, Ceiba, PR- Managed in EPA-NY
- Hovensa, St. Croix – Managed in EPA-NY
- 27 Sites non-GPRA:
  - 23 were determined to be NFA or referred to other EPA authority (CERCLA).

RCRA Corrective Action Sites (GPRA) in Puerto Rico

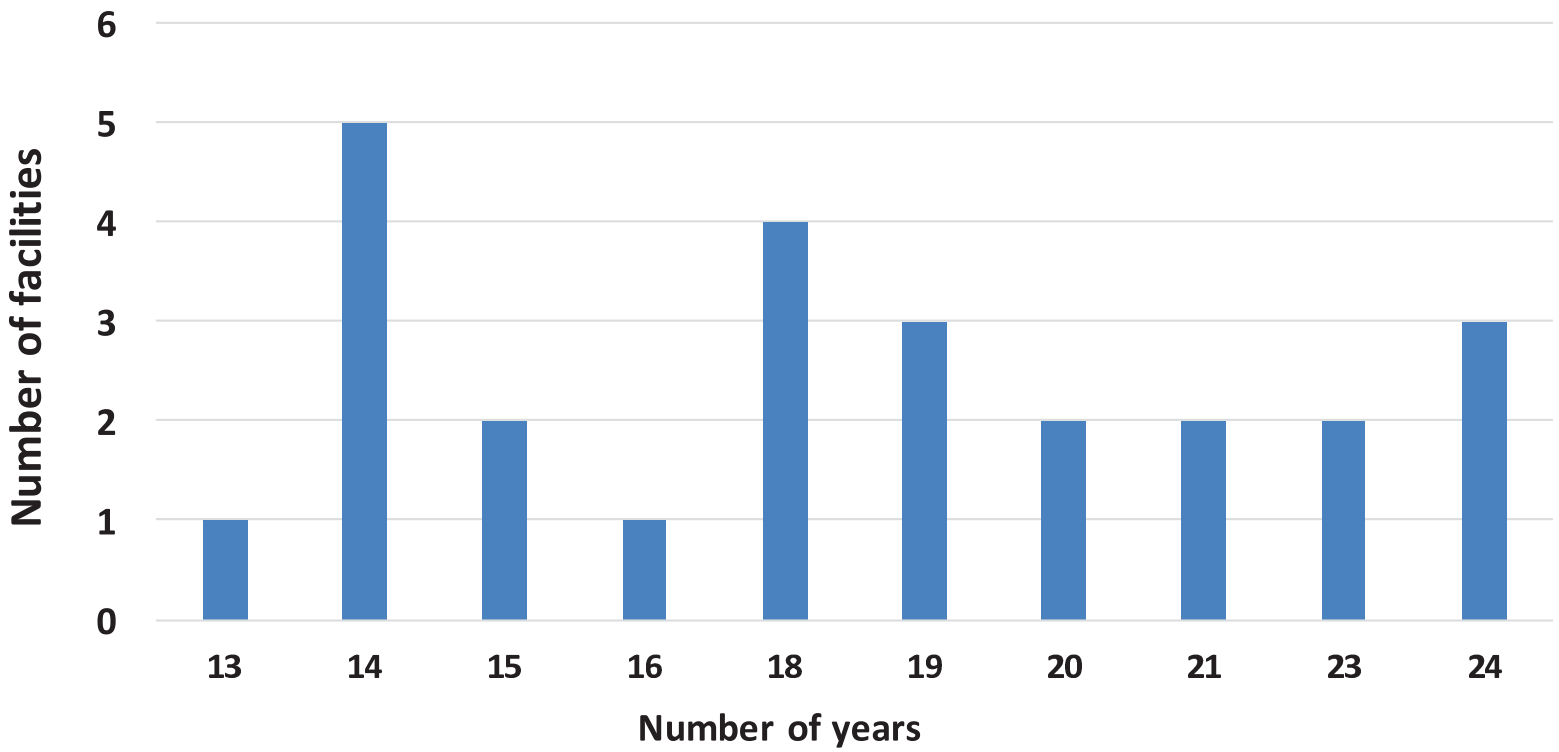
Status of Corrective Action



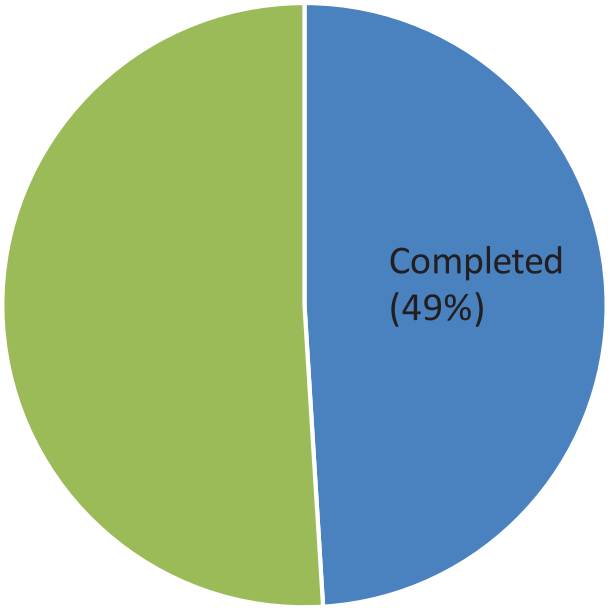
RCRA Facility Investigation (According to facility records)

- 31 out 53 Completed (58%)

Time to reach Remedy Implementation in PR



Progress of Remedy Construction CA550 (GPRA)

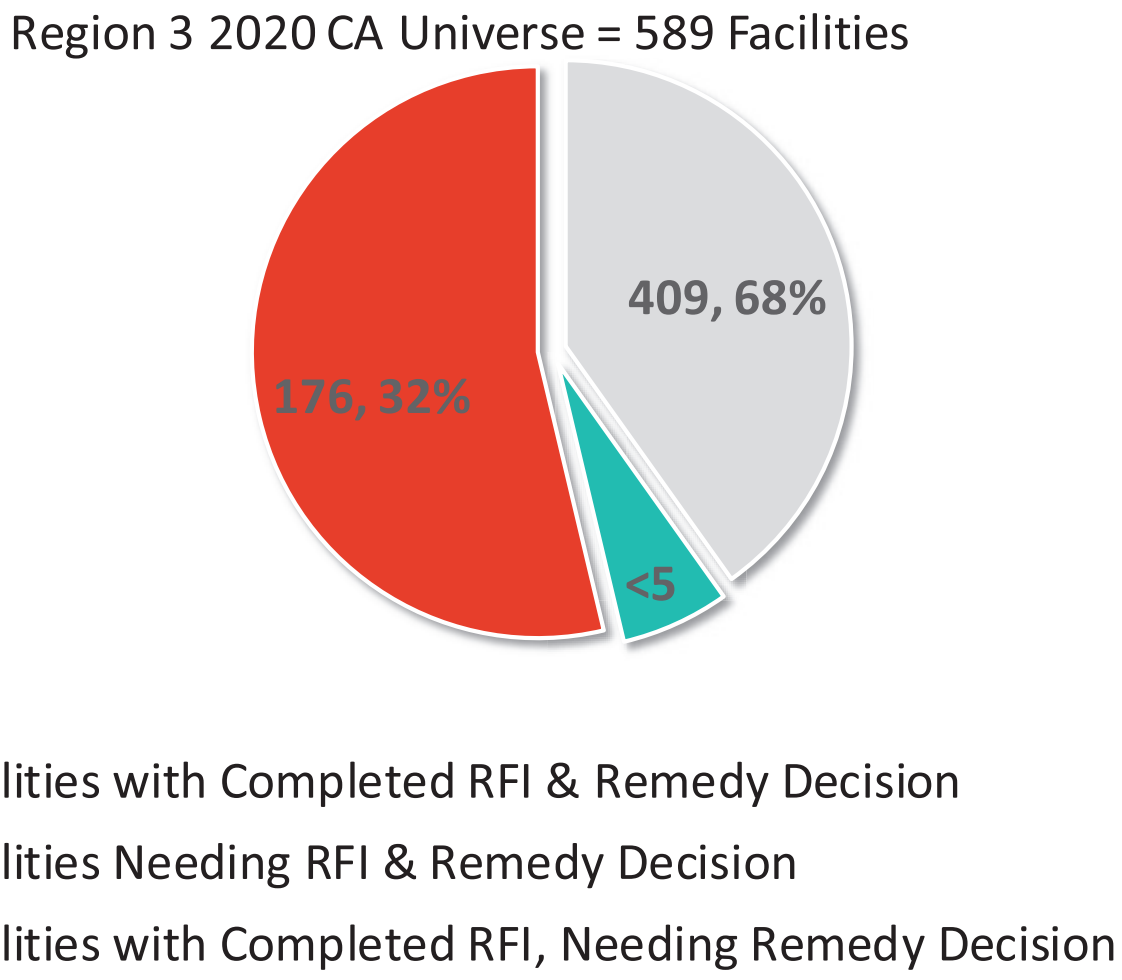


- 25 out of 51 facilities completed (49 %)
- Goal for FY2017: 53%
- US National Average: 64%; FY17 Goal 69%

Why We Are Here: The RCRA 2020 Universe and Opportunities with RCRA FIRST

Paul Gotthold, Associate Director, Office of PA Remediation, EPA Region 3

Region 3 2020 Corrective Action Universe: RFI and Remedy Decision



Region 3 RCRA FIRST : Origins and Results

Our name for these facilities is **Quinceañera Facilities**

We started using the RCRA FIRST approach in 2013…R3 had 83 Q and projected to have more than 100 by 2016…

Region 3 RCRA FIRST : Origins and Results

When asked to participate in 2013- why not? Region 3 was rolling!! Region 3 met or exceeded annual targets for 8 years running!!

2009 46 Remedy Selections
2010 26 Remedy Selections
2011 34 Remedy Selections
2012 39 Remedy Selections
2013 27 Remedy Selections
2014 33 Remedy Selections
2015 29 Remedy Selections
2016 25 Remedy Selections

Region 3 RCRA FIRST : Origins and Results

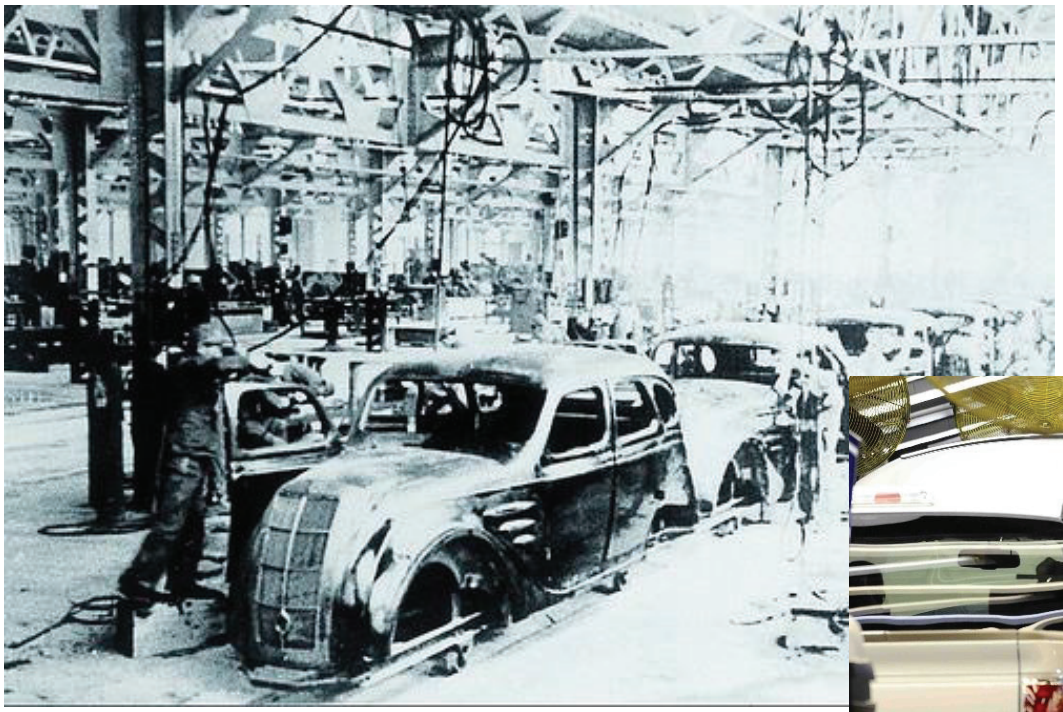
LEAN showed us the pipeline was filling up with unfinished investigations -

Number of Investigations over 15 years old with NO remedy selected:

2009 48
2010 56
2011 67
2012 76
2013 85
2014 94
2015 103….

Before RCRA FIRST : Lean Analysis

- What is Lean?



Most people give Toyota all the credit….but

A short video….

How Does Lean Work?

1. Focus on your customer.

Taxpayer getting cleanup value for $$?
Facilities spending too much to complete cleanups?
Cleanups take too long?

2. **Figure out how the work gets done.**

Before Lean, did we have a process map of RFI?
CMS?

3. Remove inefficiencies and waste.

Manage, improve, and smooth your process flow to eliminate non-valued-added activity

-wasted time,
-wasted movement
- waiting for approvals
-delays due to batching of work
- unnecessary steps
- duplication of effort
-errors and rework

How Does Lean Work?

CONTROL PLAN							
Process: RCRA RFI and RS PROCESSES		Prepared by: LEAN Event Participants				Prepared date: May 20, 2014	
		Approved by:				Approved date:	
		Owner:				Revision dat	
		Revision #: 0					
#	METRIC	6-Month Target Measure	Unit of Measure	Measure Method	Frequency of Measurement	Who Owns, Measures & Records	
Remedy Selection Process							
9	% of total facilities in RSP using CMS with Work Plan, CMS without Work Plan, and no CMS		% of each type of facility	Manual	Quarterly	Branch Chief	
10	# of days between *determination that RFI is adequate* until *CMS agreed upon*	150 days	# of days	Manual	Quarterly	Branch Chief	
11	% of total # of facilities that require joint elevation at time of *Remedy Selection Framework meeting*		% of facilities	Manual	Quarterly	Branch Chief	
12	% of total # of facilities that require joint elevation at time of *CMS Work Plan approval*		% of facilities	Manual	Quarterly	Branch Chief	
13	% of total # of facilities that require joint elevation at time of *CMS approval*		% of facilities	Manual	Quarterly	Branch Chief	
14	# of days between *CMS Agreed Upon* to *Approval of Remedy Selection* for CMS with Work Plan	425 days	# of days	Manual	Quarterly	Branch Chief	
15	# of days between *CMS Agreed Upon* to *Approval of Remedy Selection* for CMS without Work Plan	245 days	# of days	Manual	Quarterly	Branch Chief	
16	# of days between *CMS Agreed Upon* to *Approval of Remedy Selection* with no CMS	60 days	# of days	Manual	Quarterly	Branch Chief	

4. Track numbers and manage by evidence

5. Empower the people operating the process.

6. Go about all this in a systematic way. --

-Data will demand changes in the process.

-Being able to replicate the steps of process improvements is the key to the better outcomes i.e. time savings

Before RCRA FIRST : EPA Lean

Event Overview
Identify locations within the R I process where information needed for remedy decisions, made further downstrea (in current CMS process), can be incorporated and standardized without adding additional steps to the RFI process, thereby making it v n more effective. While defining additional inputs to the R I process give consideration to the 10 Remedy Selection Criteria used to support the Statement of Basis. Create a "Future State" CMS process based on the information, requirements, and operating rules that are determined to be necessary in order to streamline the process leading up to the issuance of State ent of Basis.
Problem Statement
Currently, reaching a remedy decision for corrective action takes an average of 5 years after the approval of the R I report and in 90% of the instances; a full Corrective Measure Study is required. It is unclear where and how information needed to mak and support remedy decisions should be incorporated into the R I process, however, lack of such information at the right ti e is thought to be the cause for the inefficiencies around the Corrective Measures Study process.
Goal Statement
▪ Reduce amount of time to reach remedy decision after approved RFI report by 90% (from current 5 yr. avg. to 180 days) ▪ Reduce the number of "full" CMS's required by 100% (from current 90% to only 10%), thereby increasing the number of "focused" CMS' ▪ Increase effectiveness of the R I process by incorporating information needed for streamlined process leading to the remedy decision and issuance of the Statement of Basis
Business Case
Reducing the amount of time it takes to reach a remedy decision and reducing the number of "full" CMS's required will eliminate the majority of steps in the current CMS process and ensure the remaining steps are value added. These process changes will result in desired business benefits including: ▪ Improve speed and rate by which remedies are implemented ▪ Increase ability for related 2020 goals to be achieved ▪ Improve job satisfaction and capacity for EPA PMs ▪ Reduce the number of reports generated by industry and consultants ▪ Provide industry and consultants ability to make more accurate projections around resources

Event Participants	
Name	Name
Don Lininger – R7	Tom Rhinehart - Chevron
Paul Gotthold – R3	Lori Littrell - BP
Donna Weiss – R3	Steve Kohm – EPA ORCR
Catheryn Blankenbiller – R3	Ernie Brown – EPA ORCR
Sandy Brunelli – State of Connecticut	Sonya Sasseville – EPA ORCR
Jean Underwood – Sate of Kansas	Brian Broderick - MWH
Ray LeClerc – State of California	Rob Anderson - Arcadis
Tom Ei - DuPont	Colleen Costello - Oxy
Lisa Gotto – R7	Chris Jump – R7
Steve Schaff – EPA R7 – LEAN Observer	Belinda Holmes – R7
Mary Godwin – Enforcement Office -	

Who? Becky Weber

What? Design Process (future state) to address root causes of delay

Where? Region 3 and Region 7 Region 2, Region 4, Region 10, Ohio, Michigan, 2 California, Washington, New York

Why? Investigations 15yrs + Is 2020 even possible?

When? February 4, 2013 to February 22, 2017

How? Analyse current process to find root cause of inefficiency

Region 3-Region 7 RCRA FIRST : Origins and Results

First RCRA First Event
Region 3 Participants

Lean Charter – Facility Investigations

LEAN Six Sigma Event — Project Charter

Process	RCRA Corrective Action Program: Investigation Process and Corrective Measure Study Process		
Process Sponsors	Becky Weber / R7 & Wayne Naylor / R7	**Event Location**	EPA Potomac Yard
Event Date	February 4th – February 8th 2013	**Conference Room #**	North Room 4120
Event Facilitator - Lead	Karissa Wright	**Event Facilitator– Assist.**	Michele Benchouk

Event Overview

Improve the performance of the RCRA Corrective Action Program by identifying key issues and discovering ways to increase the efficiency and capacity of its "investigation" process and by increasing the awareness and understanding of the Corrective Measure Study Process (CMS) in order to position it for improvement efforts.

Problem Statement

Currently, processes used within the RCRA's Corrective Action Program are time intensive and prohibitive to achieving associated 2020 goals. The investigation portion of the corrective action process is believed to take the majority of the current average, 8 years, to reach a remedy decision. This avg. is nearly 5 times the desired time of 18 months. Lead time of the CMS process has not been quantified, but is also time consuming causing frustration.

Goals: Event Outputs

Investigation (RFI) Process:

- Defined and documented "As Is" process
- Defined Baseline of Process Stats / Metrics
- Identification of Key Outputs, Inputs and key Barriers to a successful process
- Identified Root Causes
- Defined / Documented "To Be" process
- Recommendations to address identified root causes

Corrective Measure Study Process:

- Defined and documented "As Is" process
- Defined Baseline of Process Stats

Event Out Brief and Final Report

- Close out briefing to management and leadership teams (HQ presence and VTC participation) – *Friday, Feb. 8th*
- Event Summary Report (to be submitted post event) – *Friday, Feb.15th*

Business Case

- Support achievement of the 2020 goals surrounding implementation of final remedies at facilities requiring corrective action by improving efficiencies of core RCRA processes.
- Address select concerns of GAO report (July 2011) through more consistent, less time intensive processes with reduced oversight and more accurate completion projections of facilities requiring corrective action
- Provide a template work plan / methodology, capable of replication, for improving additional core process supporting the RCRA Corrective Action Program.

Simplified to : develop, review , approve RFI workplans in 90 days

Simplified to : complete facility investigations within 48 months

The Project Charter captured problem statement, business case & goals CMS

Process	RCRA Corrective Action Program: **Corrective Measures Study Process (CMS)**		
Process Start Point	Contact Consultant / Begin Scoping	**Event Location**	EPA Potomac Yard
Process End Point	Issue final remedy decision		
Event Champion:	Becky Weber – R7	**EVENT POC**	Scott Bowles
Process Owners:	Don Lininger and Paul Gotthold	**Event Facilitator - Lead**	Karissa Wright
Event Date:	May 19th – 22nd	**Event Facilitator– Assist.**	Chris Ludwa

Event Overview

Identify locations within the RFI process where information needed for remedy decisions, made further downstream (in current CMS process), can be incorporated and standardized without adding additional steps to the RFI process, thereby making it even more effective. While defining additional inputs to the RFI process give consideration to the 10 Rem… Selection Criteria used to support the Statement of Basis. Create a "Future State" CMS process based o… requirements, and operating rules that are determined to be necessary in order to streamlin… issuance of Statement of Basis.

Problem Statement

Currently, reaching a remedy decision for corrective action ta… and in 90% of the instances; a full Corrective Measure Study i… to make and support remedy decisions should be incorporated i… the right time is thought to be the cause for the inefficiencies ar…

Goal Statement

- Reduce amount of time to reach remedy decision after ap… 180 days)
- Reduce the number of "full" CMS's required by 100% (fro… number of "focused" CMS'
- Increase effectiveness of the RFI process by incorporating in… …ocess leading to the remedy decision and issuance of the Statement of Basis

Business Case

Reducing the amount of time it takes to reach a remedy decision and reducing the number of "full" CMS's required will eliminate the majority of steps in the current CMS process and ensure the remaining steps are value added. These process changes will result in desired business benefits including:

- Improve speed and rate by which remedies are implemented
- Increase ability for related 2020 goals to be achieved
- Improve job satisfaction and capacity for EPA PMs
- Reduce the number of reports generated by industry and consultants
- Provide industry and consultants ability to make more accurate projections around resources

Reduce time from RFI Approval to Rem Selection to 1-2 years
Reduce the number of full CMS cycles to 10% of projects

LEAN Analysis of RFI – CMS Process

Guess how many of the following transaction occur in the RFI process?

RFI Hand-Offs: 44 to 11

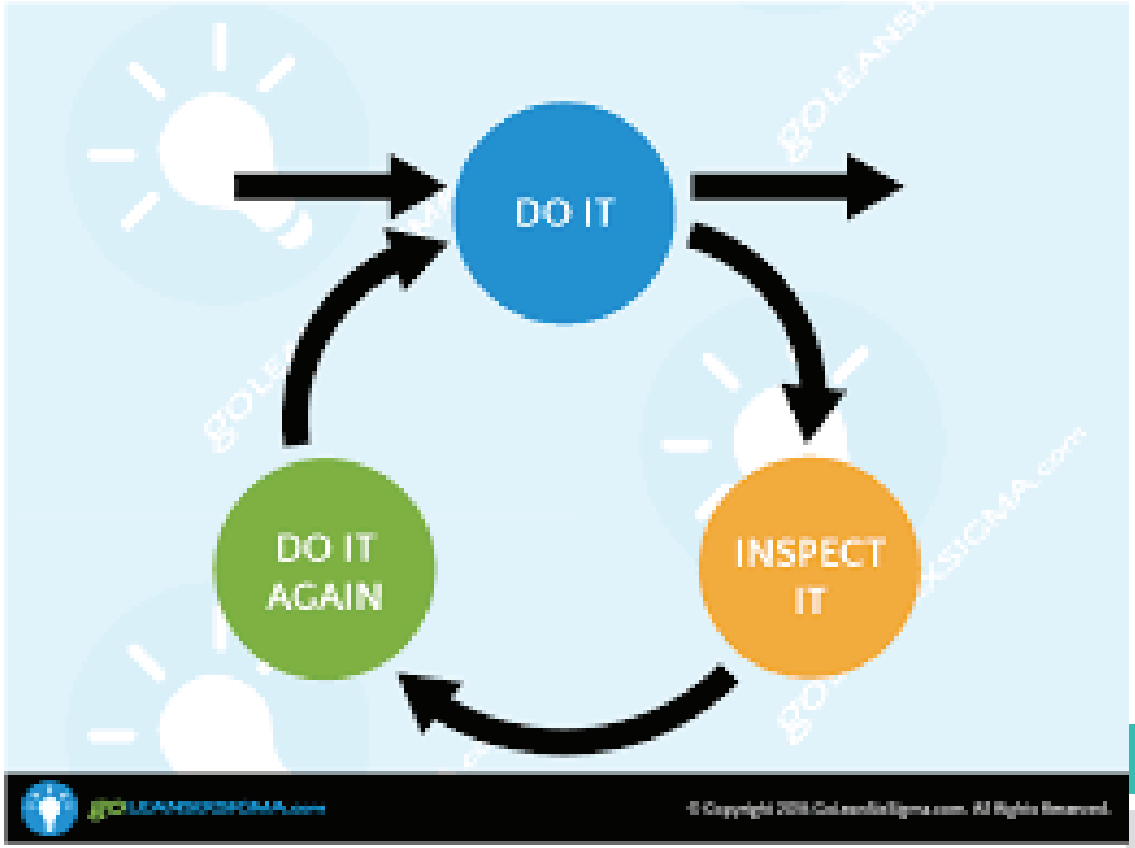
CMS Hand-Offs: 23 to 17

LEAN Analysis of RFI Process

Guess how many of the following transaction occur in the RFI process?

RFI Loops – Re-Do:
24 to 2

CMS Loops-Re-Do:
30 to 0



LEAN Analysis of RFI Process

Guess how many of the following transaction occur in the RFI process?

RFI Approvals: 33 to 7

CMS Approvals: 26 to 5

LEAN Analysis of RFI Process

Guess how many of the following transaction occur in the RFI process?

RFI Documents: 94 to 15

CMS Documents: 75 to 8

LEAN Analysis of RFI Process

Guess how many of the following transaction occur in the RFI process?

Average time in RFI process: 15 years to 54 months

Average time in CMS process: 72 months to 12-24 months

LEAN Analysis of RFI Process

Guess how many of the following transaction occur in the RFI process?

Total Value Added Processes:

RFI : 10% to 51%

CMS: 51% to 97%

RFI Process Lean Event Results

As Is

RCRA RFI Process		
Process Stats	**Current Process**	**Future Process**
# of Hand-offs - Internal to Agency	44	11
# of Review / Approvals	33	7
# of Loopbacks /Re-sos	25	2
# of Documents generated	94	15
Total Avg. wait time in process	4.6 years	0.4 years
Total Avg. work time per process steps	14.8 years	4.7 years
TOTAL Avg. Cycle Time in Process	19.4 years	5.1 years
% Value Add activity in Process	10%	51%

To Be

Remedy Selection Process Lean Event Results

As Is

Remedy Selection Process		
	Current Process	TO BE Process
*# of Hand-offs**	23	17
# of Reviews / Approvals	26	5
# of Loopbacks / Re-dos / Re-submissions	30	0
# of Documents Generated	75	8
# of Decision Points	9	4
Total avg. work time per step		
Total avg. wait time within steps and between steps	2,464 days	352 - 717 days**
Total avg. cycle time in process	6.75 years	1 -2 years
*% Improvement in time***	75 - 85% **	
% of Value Add activity in end to end process	20%	97%
* "Types" of Hand-offs have been added together (internal to agency, external to agency and internal to industry		
** Range has been calculated and provided for the "3" potential paths within the process		

To Be

Root Cause Exercise

Question 1: must discuss pain points first
get some dots
Why does it take 10-15 years to complete an RFI?

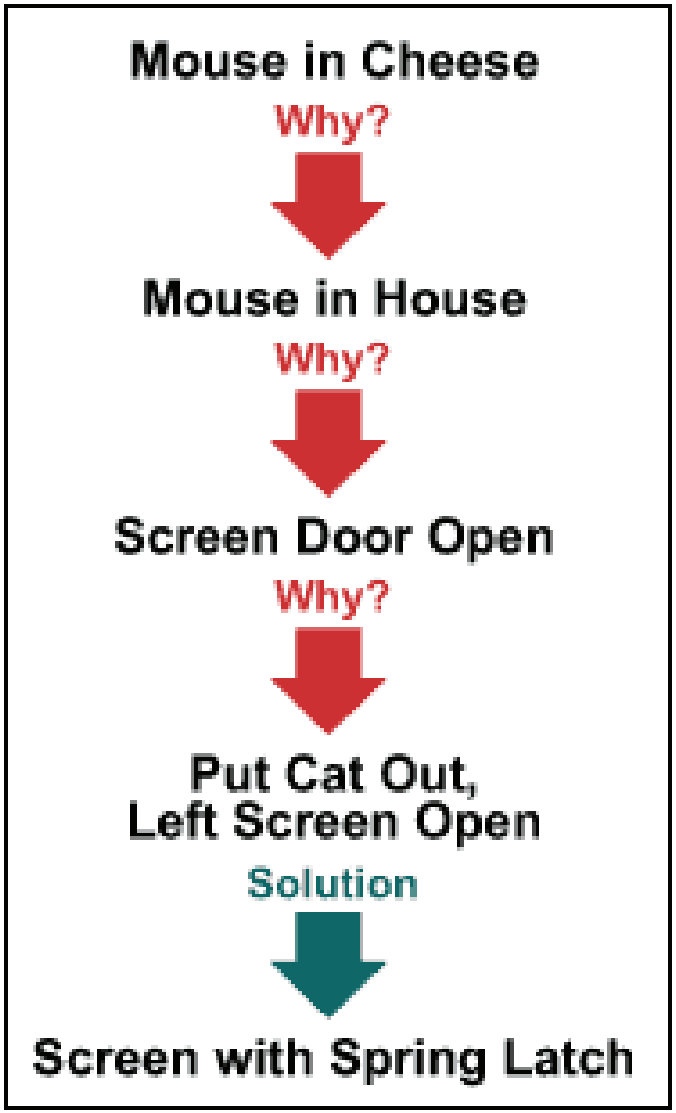
Question 2:

Why can't we select a remedy in less than
6 years?

Louis cK bit whys apply to the number one issue in the survey

"Project manager changeover (all parties) requires revisiting decisions"

FIVE WHY's



The LEAN technique to find root causes…

Applied to some of the pain points

Root Causes identified in Region 3/7 Lean Events

1. Projects require too many approval steps
2. Overall strategies are not discussed early in the process
3. Project manager changeover (all parties) requires revisiting decision
4. No one person is responsible for project quality
5. Poor documentation and record-keeping
6. Poorly defined data quality objectives
7. Site conceptual model misunderstood by either party
8. Competing objectives among parties
9. Tolerance for uncertainty is not discussed
10. Lack of defined product standards
11. **No common, upfront understanding on investigation or remedy selection objectives**
12. **No simple way to elevate issues for resolution**

Same Root Causes Grouped

- **No common, upfront understanding on investigation or remedy selection objectives**
  - Overall strategies are not discussed early in the process
  - Poorly defined data quality objectives
  - Site conceptual model misunderstood by either party
  - Competing objectives among parties
- **No simple way to elevate issues for resolution**
  - Projects require too many approval steps
  - Project manager changeover (all parties) requires revisiting decision
  - No one person is responsible for project quality
  - Tolerance for uncertainty is not discussed
- **Other Issues**
  - Poor documentation and record-keeping (from Lean Events)
  - Funding (Agency side; acknowledged but not listed)
  - Budgets (Facility side; acknowledged but not listed

Survey Results: Top Root Causes of Delay

TOP 3

1. No common understanding or overall strategy (29%)
2. Too many approval steps (8%)
3. Project manager changeover (all parties) requires revisiting decisions (6%)

R2 Carribean Survey Comments

- “Lack of understanding of RFA, RFI by installation and consultants.”
- “many sites change hands and no one knows who is responsible.”
- “In my experience, these are the most frequently encountered, specially documentation and recordkeeping.).”
- “Local agency (EQB) does not follows certain EPA approved corrective actions such as RBCA.”
- “The understanding of the project is poor, the QAPP is not appropriate.”

Key Messages

- Its All about OBJECTIVES
- Tools 13 OF THEM!
- Elevare, Elevare, Elevare
- Set Process Targets

Questions?

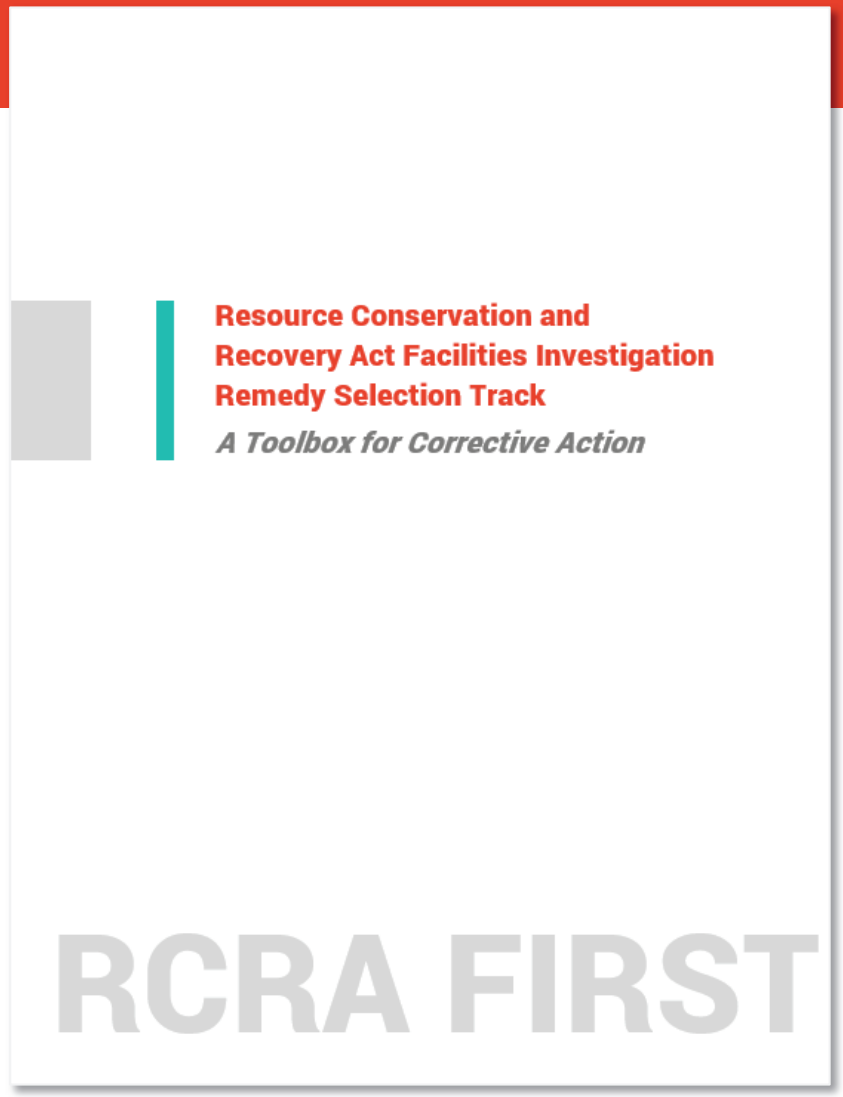
Morning Break
10:15-10:30

Overview of the RCRA FIRST Approach

Paul Gotthold

Toolbox Purpose

- Assist EPA Regions and partners to take advantage of efficiency and quality gains from RCRA FIRST
- RCRA FIRST is an approach to *managing* RCRA corrective action projects. **The legal and technical foundation of the program remains the same.**

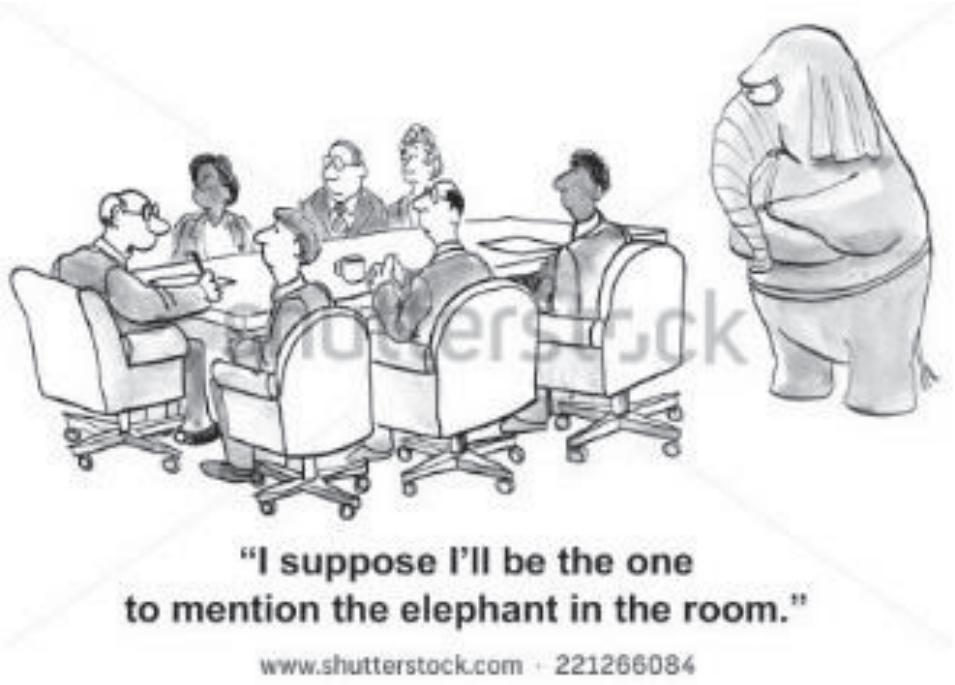


Toolbox Contents

- **SECTION I:** Introduction and Overview
- **SECTION II:** RCRA FIRST Tools for the Investigation Planning Phase
- **SECTION III:** RCRA FIRST Tools for the Investigation Completion Phase
- **SECTION IV:** RCRA FIRST Tools for the Remedy Selection Phase
- **Section V:** Metrics for Measuring Performance of the RCRA FIRST Approach
- **Section VI:** Best Practices for the RCRA FIRST Toolbox
- **Section VII:** Process Management
- **Section VIII:** Conclusion
- **Appendix A:** RCRA FIRST Tools
- **Appendix B:** "Root Causes" of Delay in RCRA Corrective Action
- **Appendix C:** Case Studies

Four Key Improvements with RCRA FIRST

- Mutual Development of RFI objectives *before workplan is prepared*
- Mutual Development of Corrective Action Objectives prior to remedy selection
- Elevation of issues when needed and engagement of stakeholders
- Three paths to remedy and time frames established:
  1. No Corrective Measures Study (CMS)
  2. Limited CMS
  3. Full CMS



RCRA FIRST TOOLS

- **RCRA FIRST TOOL 1:** Model Corrective Action Framework Meeting Agenda
- **RCRA FIRST TOOL 2:** Corrective Action Framework Template
  - *Example: Corrective Action Framework for a New RFI*
- **RCRA FIRST TOOL 3:** Elevation Process
- **RCRA FIRST TOOL 4:** RCRA Facility Investigation Data Sufficiency Evaluation
- **RCRA FIRST TOOL 5:** Conceptual Site Model Iterative Evaluation/Update Tool
  - *Example: Corrective Action Framework Meeting Agenda for a Stalled RFI*
- **RCRA FIRST TOOL 6:** Template Agenda for Remedy Selection Process Meeting
  - *Example: RSP Meeting Agenda for Remedy Selection including Interim Measures*
- **RCRA FIRST TOOL 7:** Developing Corrective Action Objectives
- **RCRA FIRST TOOL 8:** Post-Remedial Care Considerations
- **RCRA FIRST TOOL 9 :**Remedy Selection Process Document (RSPD) Template
- **RCRA FIRST TOOL 10:** Control Plan
- **RCRA FIRST TOOL 11:** Communications Plan
- **RCRA FIRST TOOL 12:** Project Manager Transition Checklist

Using the RCRA FIRST Toolbox

Paul Gotthold

Three Phases

Investigation Planning

- Discuss and Agree on Measurable Objectives
- Develop Framework for the Corrective Action investigation
- Approve RCRA Facility Investigation (RFI) Workplan

Investigation Completion

- Implement RFI Workplan
- Develop and Approve RFI Report

Remedy Selection

- Confirm Measurable Corrective Action Objectives
- Conduct a Corrective Measures Study (CMS), a Limited CMS, or No CMS, As Needed
- Select and Finalize Remedy

Investigation Planning Phase: Overview

Purpose

- Understand goals and expectations for the RCRA facility investigation – develop measurable RFI objectives
- Develop RFI workplan within 6 months
- Approve the RFI Workplan within 90 days

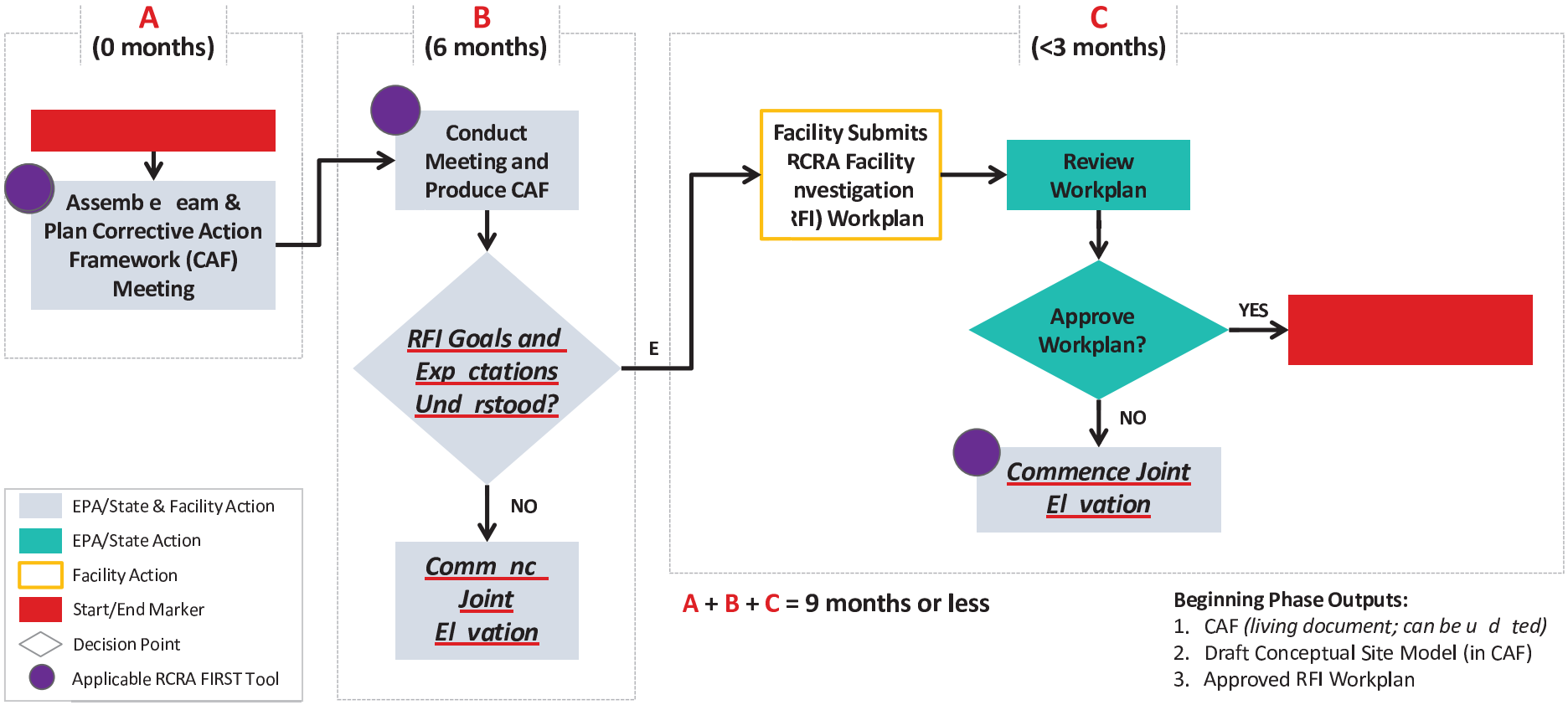
Key Steps

- Conduct a **Corrective Action Framework (CAF) meeting**
- Produce a **Corrective Action Framework (CAF) document**
  - Document Measurable Objectives
  - Draft Conceptual Site Model
- Commence **Joint Elevation** if understanding on goals cannot be reached and/or if the RFI Workplan is not approved

Investigation Planning Phase Tools

- **RCRA FIRST TOOL 1:** Model Corrective Action Framework Meeting Agenda
- **RCRA FIRST TOOL 2:** Corrective Action Framework Template
  - *Example: Corrective Action Framework for a New RFI*
- **RCRA FIRST TOOL 3:** Elevation Process

Investigation Planning Phase: Process Map



A + B + C = 9 months or less

Beginning Phase Outputs:

1. CAF *(living document; can be u d ted)*
2. Draft Conceptual Site Model (in CAF)
3. Approved RFI Workplan

Applicable Tools: *1,2, and Possibly Tool 3*

Objectives:

Start to *Approved* RFI Workplan in 9 months

Workplan submit to *approval* 90 days

Goals of the CAF Meeting

- **No common, upfront understanding on investigation or remedy selection objectives**

- Critical decisions are shifted to the start of the corrective action process – *Impasses are elevated*
- Stakeholder conversation occurs early in the process
- Parties reach a common understanding of the physical setting, constraints, current conditions, and site conceptual model (including data gaps) or elevate
- Regulatory agency and the facility develop a **Corrective Action Framework**
- **Schedule established and measured with a control plan**

Corrective Action Framework

About the CAF

- Formalizes outcomes of CAF meeting
- Guides workplan approval and subsequent investigation
- Includes a form to develop a Conceptual Site Model
- Template in Toolbox (Appendix A Tools)

Major Sections

I. CAF Meeting Participants
II. Site Characterization
III. Conceptual Site Exposure Model
IV. RFI Workplan
V. Interim Measures
VI. Goals and Expectations
VII. Other Potential Issues

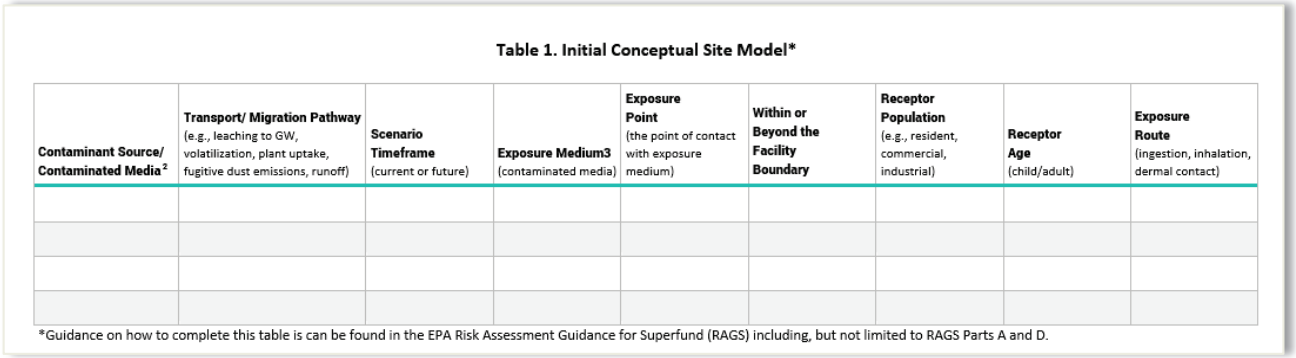


Table 1. Initial Conceptual Site Model*

Contaminant Source/ Contaminated Media[2]	**Transport/ Migration Pathway** (e.g., leaching to GW, volatilization, plant uptake, fugitive dust emissions, runoff)	**Scenario Timeframe** (current or future)	**Exposure Medium3** (contaminated media)	**Exposure Point** (the point of contact with exposure medium)	**Within or Beyond the Facility Boundary**	**Receptor Population** (e.g., resident, commercial, industrial)	**Receptor Age** (child/adult)	**Exposure Route** (ingestion, inhalation, dermal contact)

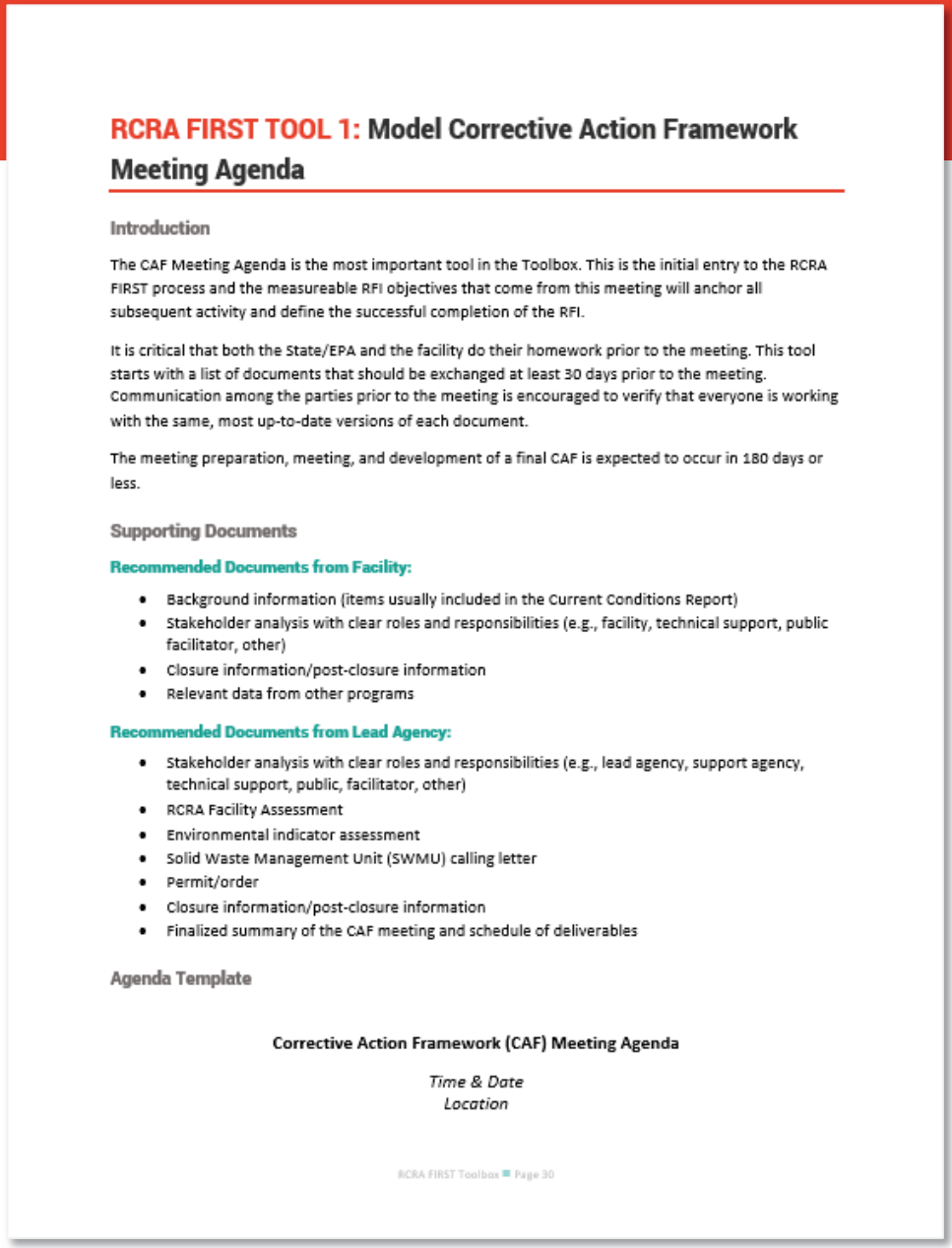
*Guidance on how to complete this table is can be found in the EPA Risk Assessment Guidance for Superfund (RAGS) including, but not limited to RAGS Parts A and D.

Screenshot from the CAF Template (Toolbox Appendix A; pp. 30-37)

CAF Tools

- **TOOL 1: Model Corrective Action Framework Meeting Agenda**
- **TOOL 2: Corrective Action Framework Template**
  - *Example Corrective Action Framework for a New RFI*

Each template is adaptable to adjust for conditions or concerns specific to a facility



RCRA FIRST TOOL 1: Model Corrective Action Framework Meeting Agenda

Introduction

The CAF Meeting Agenda is the most important tool in the Toolbox. This is the initial entry to the RCRA FIRST process and the measureable RFI objectives that come from this meeting will anchor all subsequent activity and define the successful completion of the RFI.

It is critical that both the State/EPA and the facility do their homework prior to the meeting. This tool starts with a list of documents that should be exchanged at least 30 days prior to the meeting. Communication among the parties prior to the meeting is encouraged to verify that everyone is working with the same, most up-to-date versions of each document.

The meeting preparation, meeting, and development of a final CAF is expected to occur in 180 days or less.

Supporting Documents

Recommended Documents from Facility:

- Background information (items usually included in the Current Conditions Report)
- Stakeholder analysis with clear roles and responsibilities (e.g., facility, technical support, public facilitator, other)
- Closure information/post-closure information
- Relevant data from other programs

Recommended Documents from Lead Agency:

- Stakeholder analysis with clear roles and responsibilities (e.g., lead agency, support agency, technical support, public, facilitator, other)
- RCRA Facility Assessment
- Environmental indicator assessment
- Solid Waste Management Unit (SWMU) calling letter
- Permit/order
- Closure information/post-closure information
- Finalized summary of the CAF meeting and schedule of deliverables

Agenda Template

Corrective Action Framework (CAF) Meeting Agenda

Time & Date
Location

RCRA FIRST Toolbox ■ Page 30

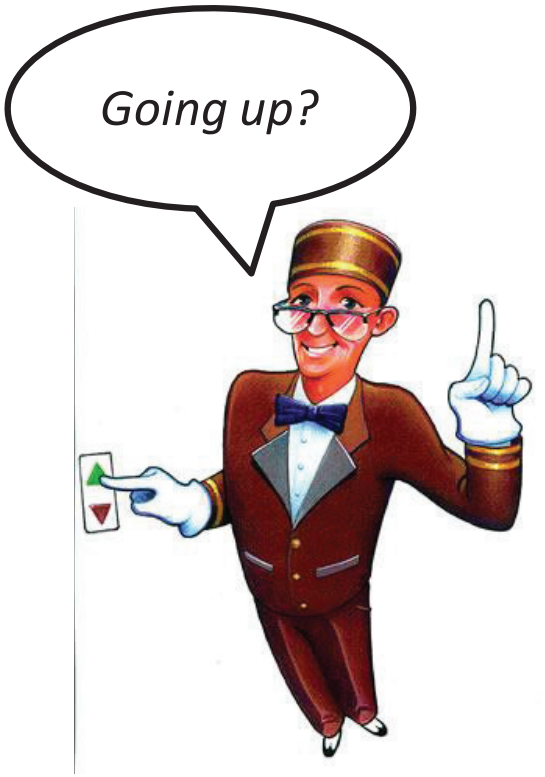
Screenshot from the CAF Template (Toolbox Appendix A; pp. 30-37)

Elevate Issues!

No simple way to elevate issues for resolution ?

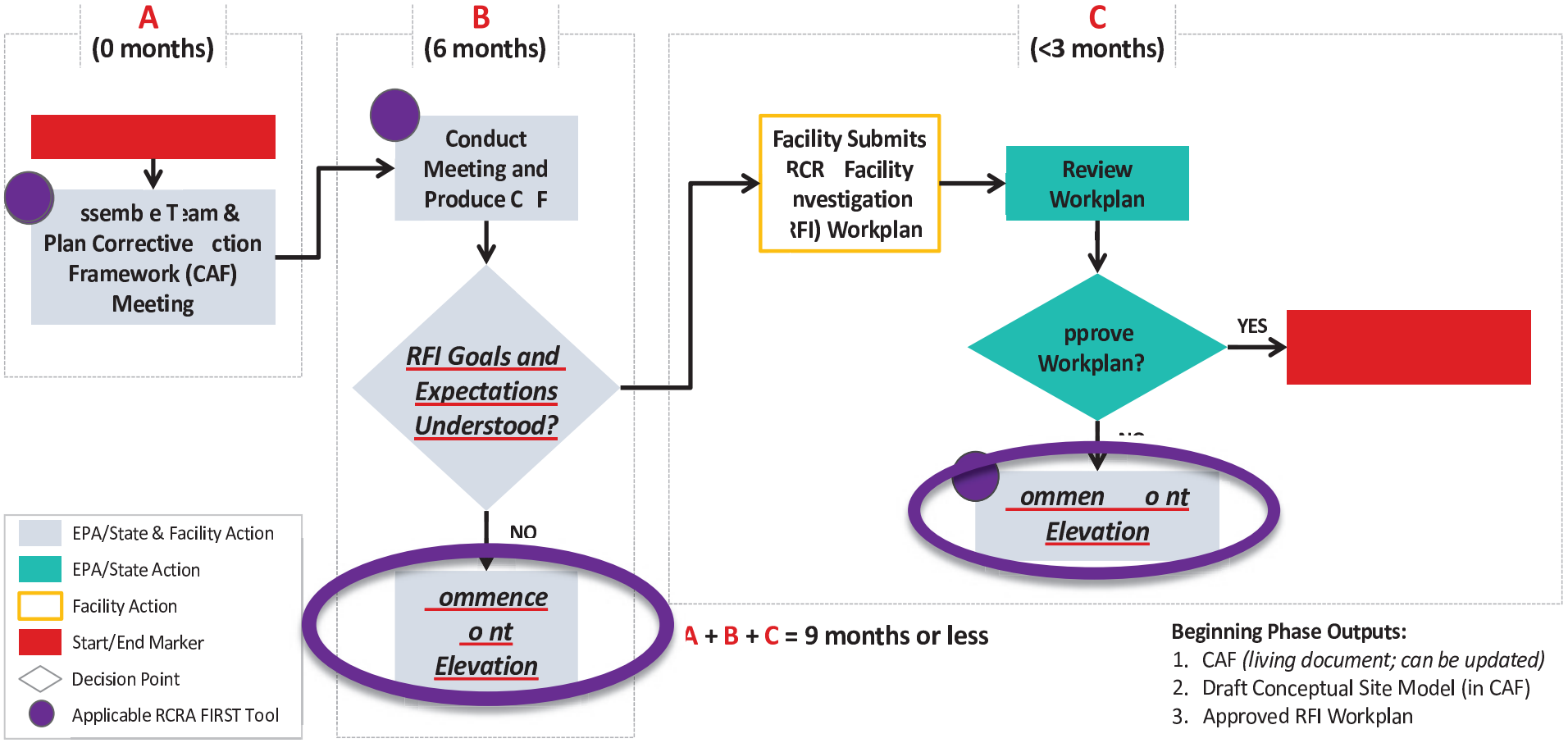
Elevate Issues that Cannot be Resolved

- Commence **Joint Elevation** if understanding on the extent of sampling and proper site characterization cannot be reached
- The initial **CAF Meeting** should identify who from each organization will participate in the joint elevation process



TOOL 3: Joint Elevation Process

Elevation is not failure; elevation moves projects forward! The **Elevation Process Tool (Tool 3)** outlines a step-by-step process to elevate issues for quick resolution.



A + B + C = 9 months or less

Beginning Phase Outputs:

1. CAF *(living document; can be updated)*
2. Draft Conceptual Site Model (in CAF)
3. Approved RFI Workplan

Applicable Tools: *1,2, and Possibly Tool 3*

Three Phases

Investigation Planning

- Discuss and Agree on Measurable Objectives
- Develop Framework for the Corrective Action investigation
- Approve RCRA Facility Investigation (RFI) Workplan

Investigation Completion

- Implement RFI Workplan
- Develop and Approve RFI Report

Remedy Selection

- Confirm Measurable Corrective Action Objectives
- Conduct a Corrective Measures Study (CMS), a Limited CMS, or No CMS, As Needed
- Select and Finalize Remedy

The Problem: Endless or Stalled RFIs

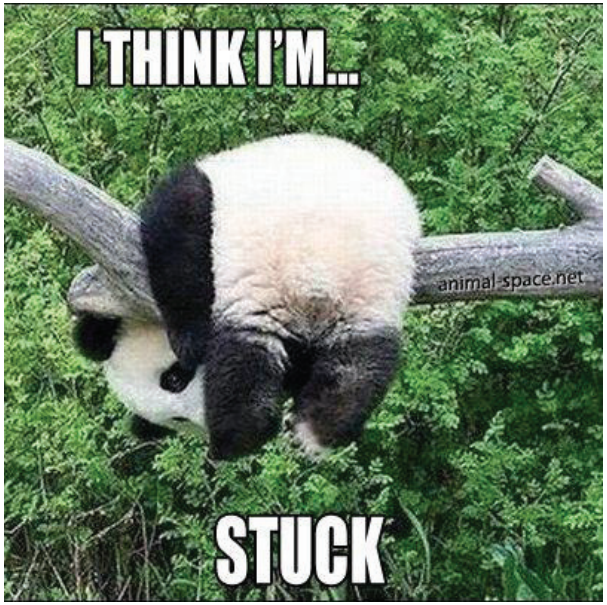


Image source: http://www.memes.com/img/89250

Sound familiar?

An RFI can stall when…

- No one agrees what "sufficient" data means
- Parties are engaged in multiple revisions of the RFI workplan
- Decisions wait for the completion of the draft/final report process

The Solution: Reset

Reset a Project with a Supplemental CAF Meeting

- Return to CAF tools to uncover issues delaying the RFI process after approval of the RFI workplan
- The Toolbox includes an example of a **CAF Meeting Agenda for a Stalled RFI**
- Meeting objectives include:
  - Agree on the scope of remaining sampling to support a final remedy decision
  - Agree on Constituents of Concern
  - Agree on approach to complete facility investigation
  - Agree on schedule to complete facility investigation

Investigation Completion/Stalled RFI Phase: Overview

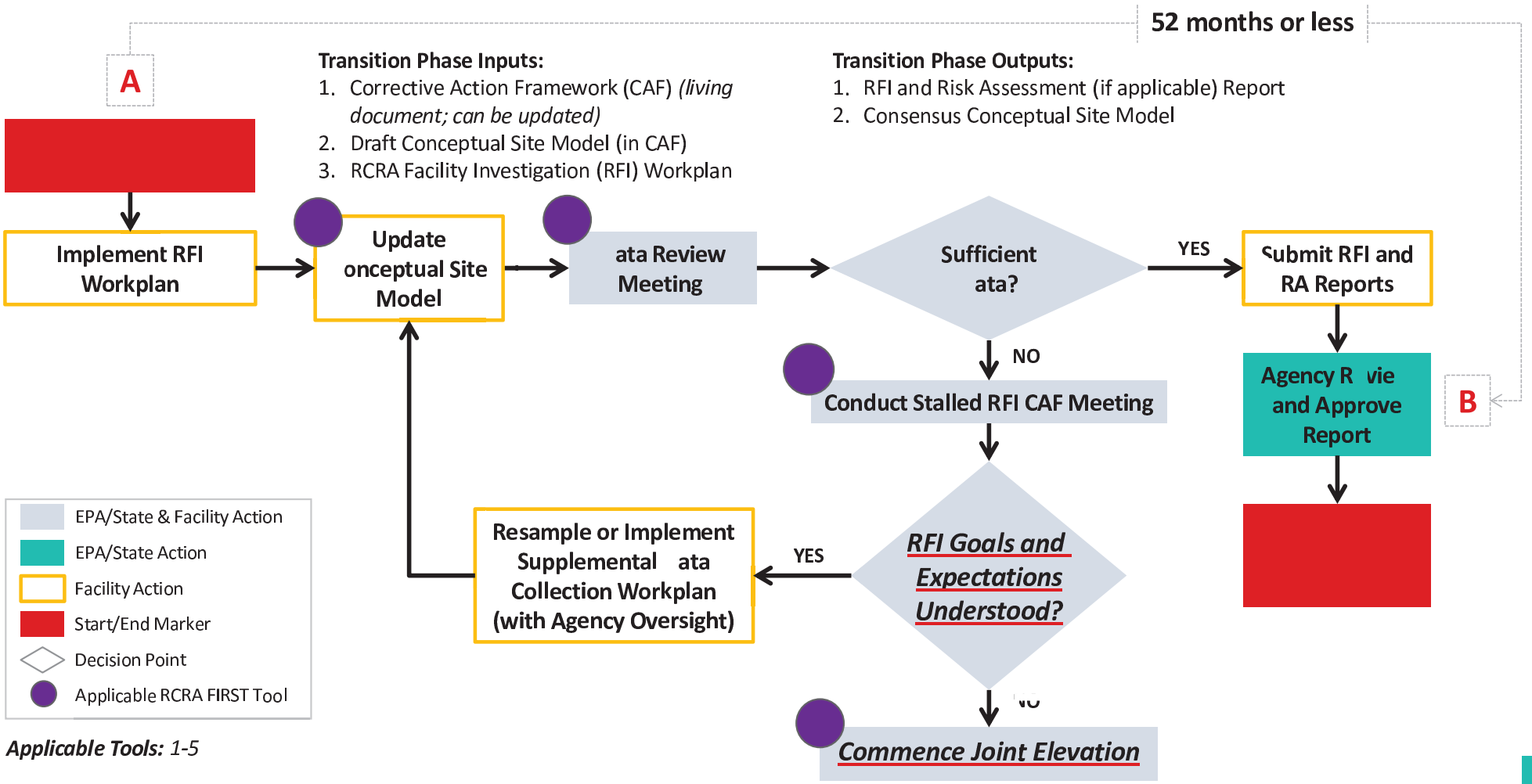
Purpose

- Confirm sufficient data for remedy selection *DATA REVIEW MTG*
- Agree on the extent and source of contamination
- Prevent unnecessary rounds of sampling (as discussed at the RFI Lean Event)
- R3 is using this phase for "Stuck" Investigations
- Approve the RFI Report!

Investigation Completion/Stalled RFI Phase Tools

- **RCRA FIRST TOOL 4:** RCRA Facility Investigation Data Sufficiency Evaluation
- **RCRA FIRST TOOL 5:** Conceptual Site Model Iterative Evaluation/Update Tool
  - *Example: Corrective Action Framework Meeting Agenda for a Stalled RFI*

Investigation Completion Phase: Process Map



Applicable Tools: *1-5*

(Simplified Version)

Is the Data Sufficient?

Taking another round of samples is often the **compromise response** to more fundamental problems, including:

- **Vague understanding** about the extent of contamination
- **Differing opinions** on the source of contamination
- **No idea** on when investigation is DONE

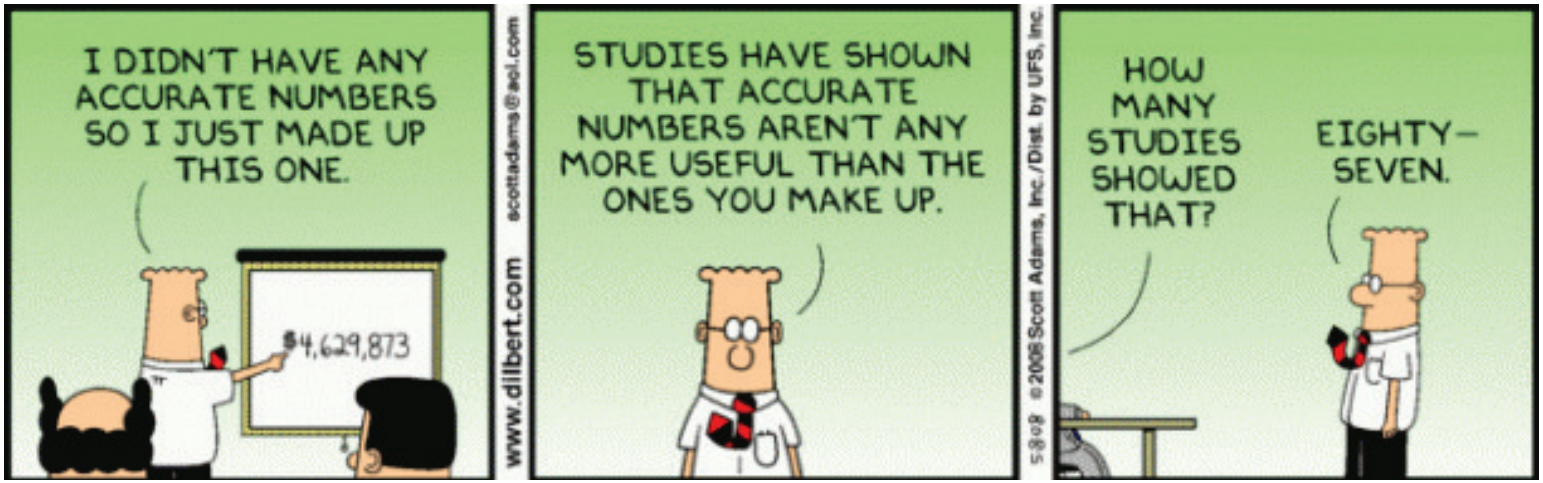


Image source: https://www.themuse.com/advice/your-sunday-comic-strip-7-amazing-dilbert-cartoons

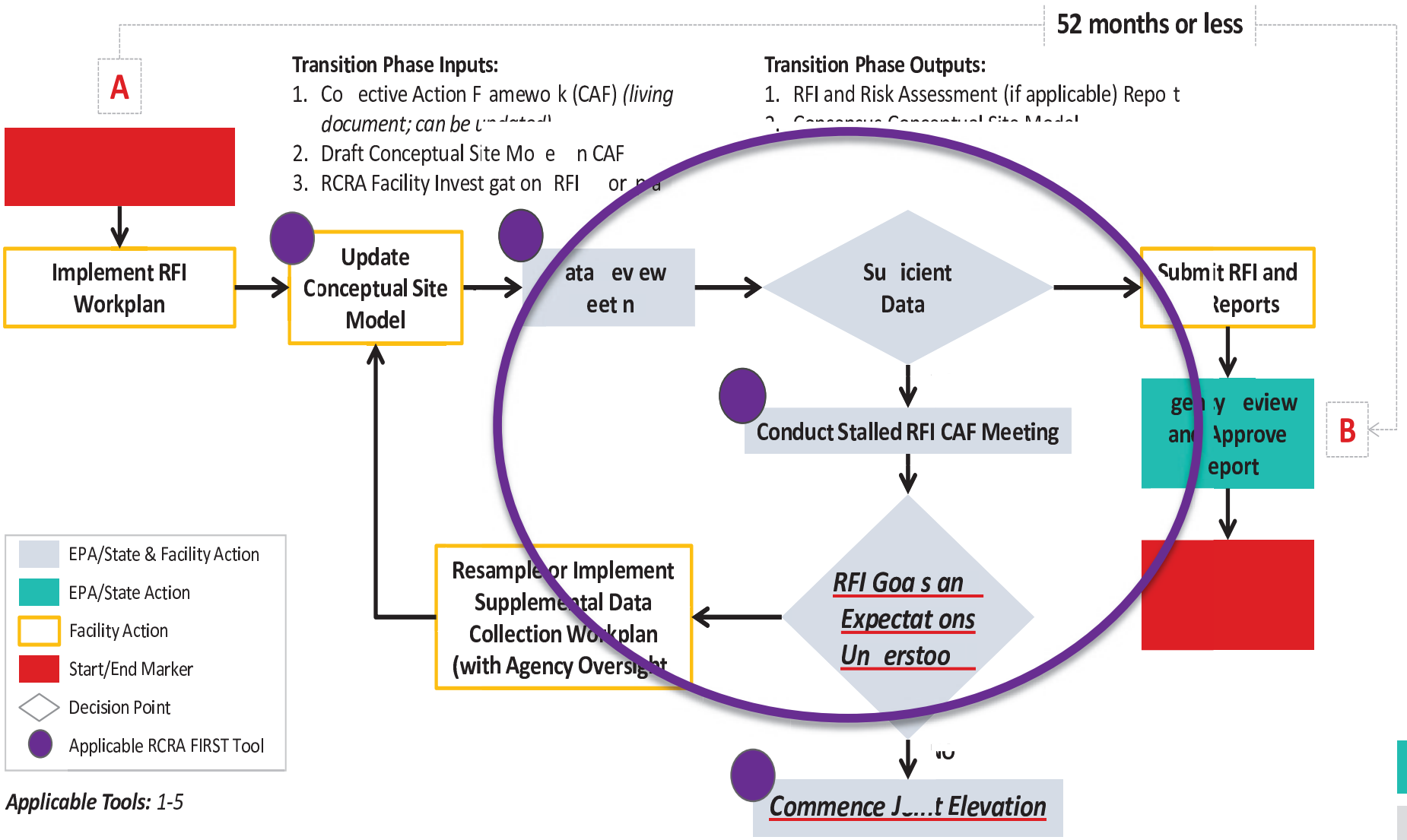
The Conceptual Site Model (CSM)

- Insufficient data for the CSM is a root cause of delay in RFI process
- No consensus on pathway/exposure prior to investigation – root cause
- **CAF Template** includes the following form to guide completion of a CSM:

Contaminant Source/ Contaminated Media	**Transport/ Migration Pathway** (e.g., leaching to GW, volatilization, plant uptake, fugitive dust emissions, runoff)	**Scenario Timeframe** (current or future)	**Exposure Medium** (contaminated media)	**Exposure Point** (the point of contact with exposure medium)	**Within or Beyond the Facility Boundary**	**Receptor Population** (e.g., resident, commercial, industrial)	**Receptor Age** (child/adult)	**Exposure Route** (ingestion, inhalation, dermal contact)

[1] The contaminant source/contaminated media can include the sources of releases (e.g., tanks, spills, landfills, lagoons, etc.), as well as the media directly impacted by those releases.
[2] The exposure medium may be the primary contaminated source/contaminated media or media impacted from contaminants that have been transported or migrated from the primary source.

Data Review – Specific Step



Applicable Tools: 1-5

Three Phases

Investigation Planning

- Discuss and Agree on Measurable Objectives
- Develop Framework for the Corrective Action investigation
- Approve RCRA Facility Investigation (RFI) Workplan

Investigation Completion

- Implement RFI Workplan
- Develop and Approve RFI Report

Remedy Selection

- Confirm Measurable Corrective Action Objectives
- Conduct a Corrective Measures Study (CMS), a Limited CMS, or No CMS, As Needed
- Select and Finalize Remedy

Remedy Selection Phase: Overview

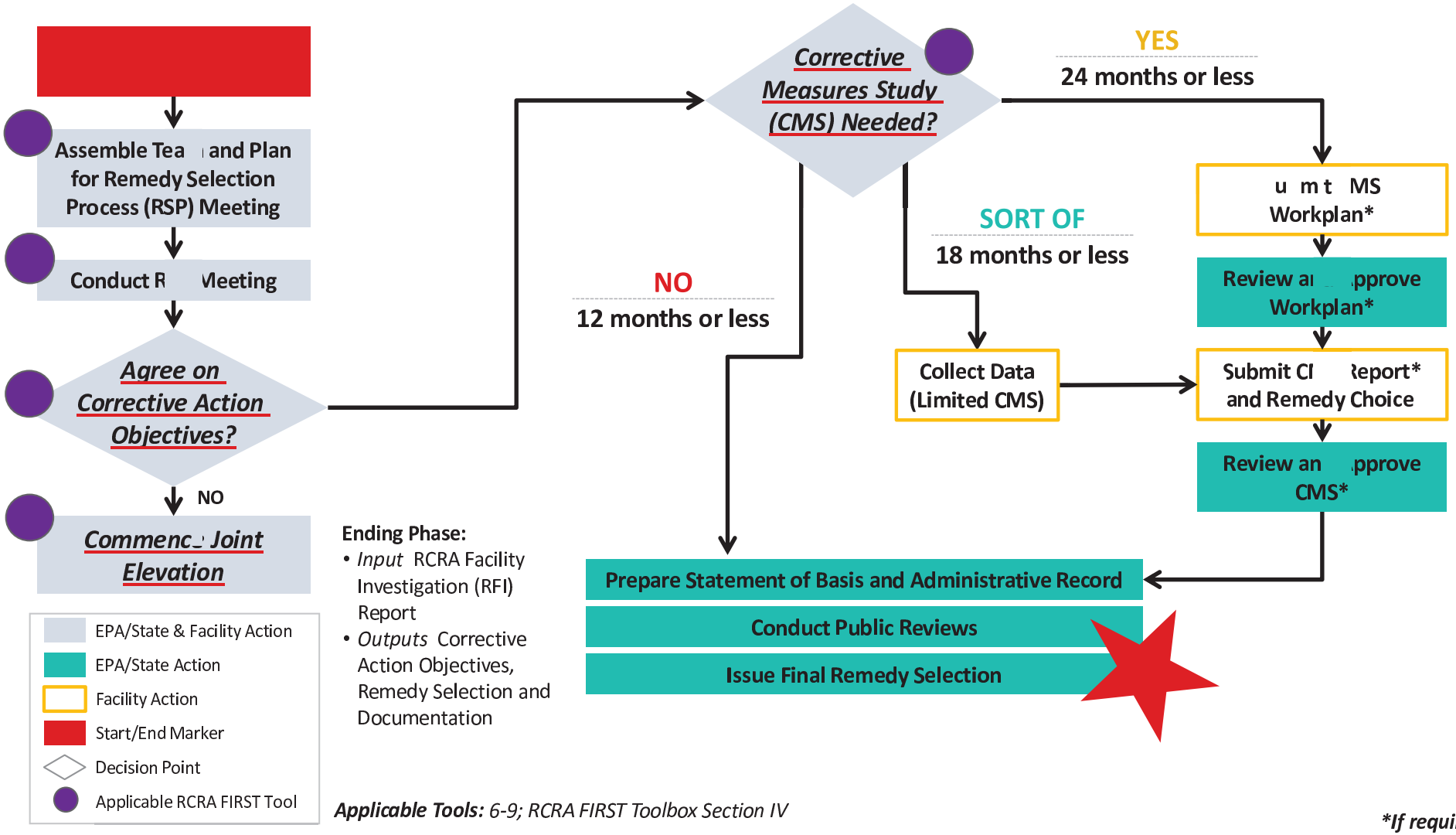
Purpose

- Reach a common understanding on Corrective Action Objectives (who-what-when-where)
- Proceed on one of three paths of additional analysis prior to remedy selection:
    1. **No Corrective Measures Study (CMS)**
    2. **Limited CMS**
    3. **Full CMS**
- Finalize the proposed remedy and supporting documents through the traditional public review process

Remedy Selection Tools

- **RCRA FIRST TOOL 6:** Template Agenda for Remedy Selection Process Meeting
    - *Example: RSP Meeting Agenda for Remedy Selection including Interim Measures*
- **RCRA FIRST TOOL 7:** Developing Corrective Action Objectives
- **RCRA FIRST TOOL 8:** Post-Remedial Care Considerations
- **RCRA FIRST TOOL 9:** Remedy Selection Process Document (RSPD) Template

Remedy Selection Phase: Process Map



Ending Phase:

- *Input* RCRA Facility Investigation (RFI) Report
- *Outputs* Corrective Action Objectives, Remedy Selection and Documentation

Applicable Tools: *6-9; RCRA FIRST Toolbox Section IV*

If required

(Simplified Version)

TOOL 6: Remedy Selection Process (RSP) Meeting

- Confirm the RFI report and validity of the Conceptual Site Model
- Develop measureable corrective action objectives
- Discuss remedial strategy
  - Threshold criteria
  - Balancing Criteria
  - Identify alternatives
  - Identify data gaps
- Reach an understanding on the remedy selection path (No CMS, Limited CMS, or Full CMS)
- Improve efficiency using the **Template Agenda for the Remedy Selection Process Meeting**
  - Toolbox Appendix A also includes an **Example RSP Meeting Agenda for Remedy Selection Including Interim Measures**

Evaluating Cleanup Options

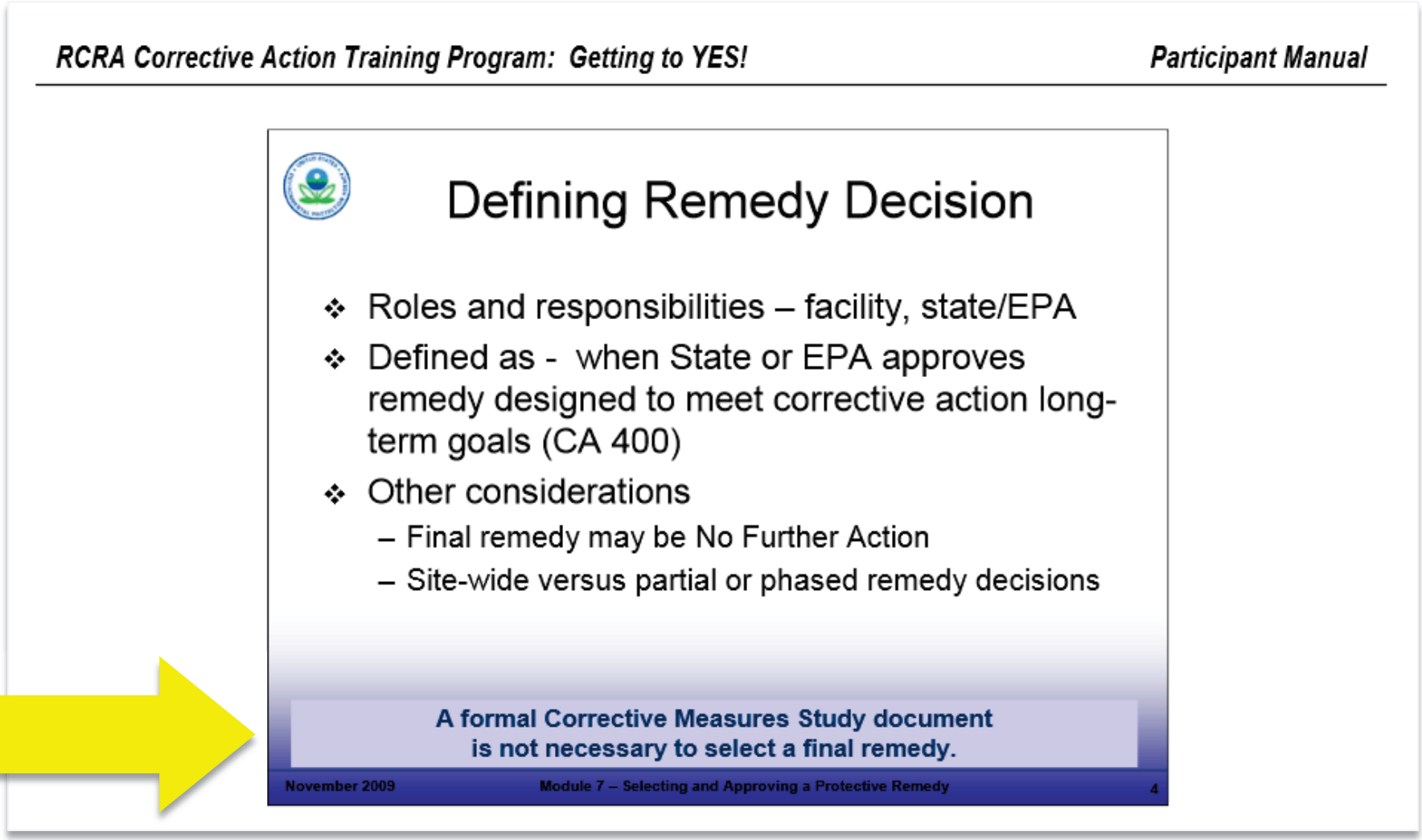
Threshold Criteria

1. Remedy must protect human health and the environment, based on reasonably anticipated land use
2. Attain media cleanup objectives
3. Control sources of release(s)

Balancing Criteria

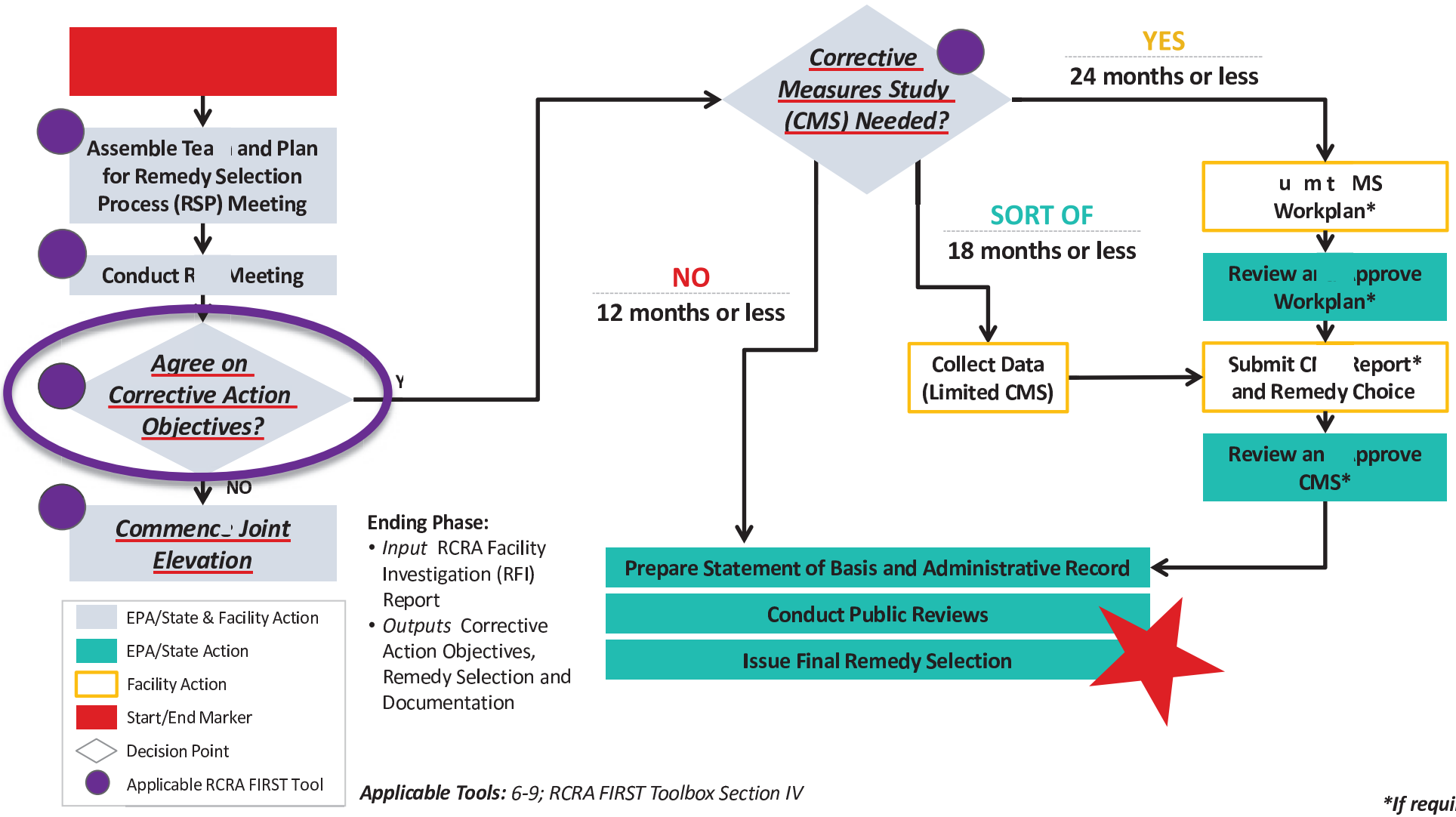
1. Long-term effectiveness
2. Reduction in waste volume, mobility, toxicity
3. Short-term effectiveness
4. Implementability
5. Cost
6. Community acceptance
7. State acceptance

Is a Corrective Measures Study Always Needed?



Module 7, Slide 4 of EPA's RCRA Corrective Action Training, "Getting to Yes! Strategies for Meeting the 2020 Vision" (November 2009)

Corrective Action Objectives in the Remedy Selection Process



Ending Phase:

- *Input* RCRA Facility Investigation (RFI) Report
- *Outputs* Corrective Action Objectives, Remedy Selection and Documentation

Applicable Tools: *6-9; RCRA FIRST Toolbox Section IV*

**If required*

The Corrective Measures Study

A CMS is not required.

- A CMS is useful when regulatory agencies must choose among alternative remedies
- **A CMS is not likely to be needed in several cases:**
  1. Low risk facilities
  2. Excavation/removal remedies
  3. Presumptive remedies/remedies proven effective in similar cases

Why are CMS done so often?

- Project managers or facilities think a CMS is required, but **it is not required**
- Failure to establish or understand mutual goals

RSP Meeting Expected Outcomes

- **Common understanding of:**
  - Roles and responsibilities
  - Current conditions and site conceptual model
  - Remedy selection process, including need for CMS Report, CMS Workplan, or need for additional data collection, and identification of site-specific remedial alternatives
  - Scope of reports and workplans if necessary
- Identification and concurrence of corrective action objectives, including point of compliance and risk-based management strategy
- Summary of the RSP meeting and a finalized **RSP document** with a schedule of deliverables

TOOL 8: RCRA Post-Remedial Care

- Post-remedial care considerations will impact remedy selection
  - Many remedies will require engineering and/or institutional controls to prevent continued exposures (e.g., ongoing remediation of groundwater contamination)
- The **RCRA Post-Remedial Care Tool** is designed to help project managers discuss with facilities how post-remedial care contributes to achieving the Corrective Action Objectives. It includes:
  - Background on RCRA Post-Remedial Care
  - Discussion Points for the RSP Meeting
  - References for Stakeholder Awareness and Long-Term Stewardship

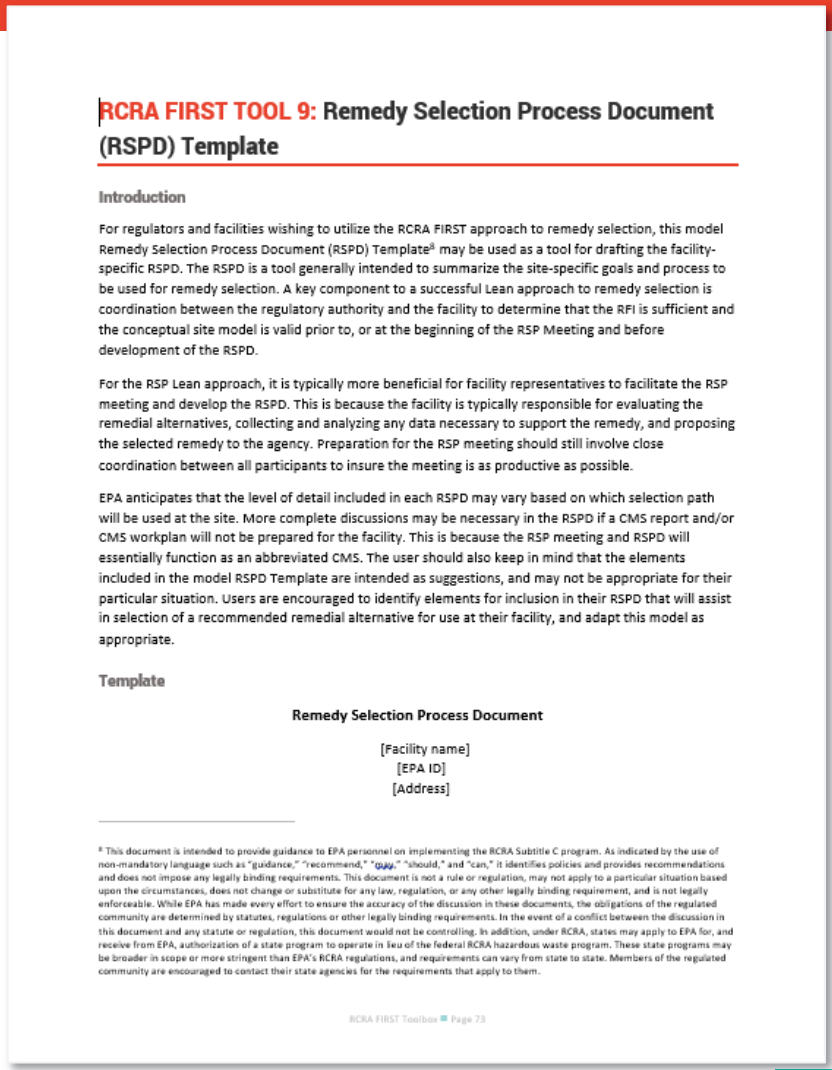
RCRA Post-Remedial Care Tool available in Toolbox Appendix A, pp. 71-72

TOOL 9: Remedy Selection Process Document (RSPD) Template

Purpose of the RSPD

- Summarizes site-specific goals and process for remedy selection as agreed upon in the RSP Meeting
- When a CMS report and/or CMS workplan is not necessary, the RSPD essentially functions as an abbreviated CMS

Adapt the RSPD template as appropriate for the facility



RCRA FIRST TOOL 9: Remedy Selection Process Document (RSPD) Template

Introduction

For regulators and facilities wishing to utilize the RCRA FIRST approach to remedy selection, this model Remedy Selection Process Document (RSPD) Template[8] may be used as a tool for drafting the facility-specific RSPD. The RSPD is a tool generally intended to summarize the site-specific goals and process to be used for remedy selection. A key component to a successful Lean approach to remedy selection is coordination between the regulatory authority and the facility to determine that the RFI is sufficient and the conceptual site model is valid prior to, or at the beginning of the RSP Meeting and before development of the RSPD.

For the RSP Lean approach, it is typically more beneficial for facility representatives to facilitate the RSP meeting and develop the RSPD. This is because the facility is typically responsible for evaluating the remedial alternatives, collecting and analyzing any data necessary to support the remedy, and proposing the selected remedy to the agency. Preparation for the RSP meeting should still involve close coordination between all participants to insure the meeting is as productive as possible.

EPA anticipates that the level of detail included in each RSPD may vary based on which selection path will be used at the site. More complete discussions may be necessary in the RSPD if a CMS report and/or CMS workplan will not be prepared for the facility. This is because the RSP meeting and RSPD will essentially function as an abbreviated CMS. The user should also keep in mind that the elements included in the model RSPD Template are intended as suggestions, and may not be appropriate for their particular situation. Users are encouraged to identify elements for inclusion in their RSPD that will assist in selection of a recommended remedial alternative for use at their facility, and adapt this model as appropriate.

Template

Remedy Selection Process Document

[Facility name]
[EPA ID]
[Address]

[8] This document is intended to provide guidance to EPA personnel on implementing the RCRA Subtitle C program. As indicated by the use of non-mandatory language such as "guidance," "recommend," "may," "should," and "can," it identifies policies and provides recommendations and does not impose any legally binding requirements. This document is not a rule or regulation, may not apply to a particular situation based upon the circumstances, does not change or substitute for any law, regulation, or any other legally binding requirement, and is not legally enforceable. While EPA has made every effort to ensure the accuracy of the discussion in these documents, the obligations of the regulated community are determined by statutes, regulations or other legally binding requirements. In the event of a conflict between the discussion in this document and any statute or regulation, this document would not be controlling. In addition, under RCRA, states may apply to EPA for, and receive from EPA, authorization of a state program to operate in lieu of the federal RCRA hazardous waste program. These state programs may be broader in scope or more stringent than EPA's RCRA regulations, and requirements can vary from state to state. Members of the regulated community are encouraged to contact their state agencies for the requirements that apply to them.

RCRA FIRST Toolbox ■ Page 73

The RSPD Template tool is available in the Toolbox Appendix A, pp. 73-77

Tool 10: RCRA FIRST Control Plan

- Developed at both Lean Events
- Uses *project* –specific data to measure the effectiveness of the *process*
- Allows *owners* to identify trouble spots, bottlenecks, pain points
- Data leads to a picture of the process -necessary for ***continuous improvement*** of the process

Why Measure Performance?

- Regions 3 and 7 set a goal to reduce time any facility is active in the RCRA CA process by 73%
- **Do the changes in the RCRA FIRST approach make it possible to achieve these results?**

You must also manage the process pipeline, not just projects

Image source: http://www.runnersworld.com/running-tips/97-ways-run-personal-record

Tool 11: RCRA FIRST Communication Plan

RCRA FIRST COMMUNICATIONS PLAN						
Process/ Focus Area: **RCRA Facility Investigation Process and Remedy Selection Process**			Prepared by: [NAME]		Prepared date: [DATE]	
			Approved by: [NAME]		Approved date: [DATE]	
			Revision #: [#]		Revision date: [DATE LAST REVISED]	
			Process Owner: [NAME]			
RFI						
ID	**Communication**	**Purpose**	**Participants/ Recipients**	**Documents Needed in Advance**	**Step # in Process**	**RCRA FIRST Tool(s)**
A	**Corrective Action Framework Meeting**	Agree on RFI Objectives, framework of Investigation, Potential IMs, and CAF for the facility	**CO-CHAIR: STATE/EPA PM and FACILITY PM** (PM manager, tech support (e.g., hydrogeologist, toxicologist); State (PM manager, tech support); Facility PM manager, o/o?)	Background documents (CCR/DCC/RFA); current and future land use; receptors; aquifer designation; community concerns; permit; map; graphical description of data	3,4	▪ Corrective Action Framework Meeting Agenda ▪ Corrective Action Framework Template ▪ Elevation Tool
B	***Workplan* Dialogue and Information Exchange**	Clarify issues as they appear in workplan development, identify and record decisions	**STATE/EPA PM and FACILITY PM;** Technical Support	Facility-specific CAF (and background documents	6-9	*Facility-specific* Corrective Action Framework

Tool 12: RCRA FIRST Project Manager Transition Checklist

Step 1: Receive RCRA FIRST Orientation

*To be completed within **1-7 business days** from the first day in the position and must be completed prior Step 2*

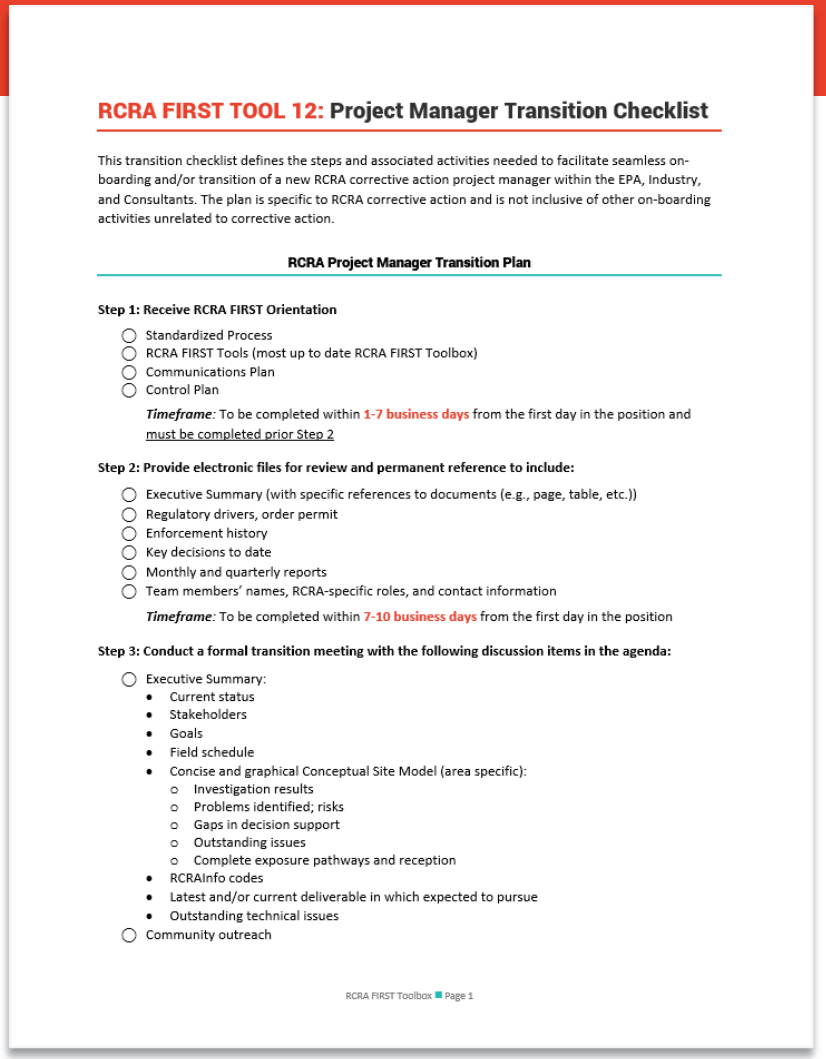
Step 2: Provide electronic files for review and permanent reference

*To be completed within **7-10 business days** from the first day in the position*

Step 3: Conduct a formal transition meeting

- Transition Meeting is to take place at the site
- Preceding Project Manager is to attend via conference if unable to attend in person
- The direct supervisor of the RCRA Project Manager is to chair the meeting

*To be completed within **14-30 business days** from the first day in the position*



RCRA FIRST TOOL 12: Project Manager Transition Checklist

This transition checklist defines the steps and associated activities needed to facilitate seamless on-boarding and/or transition of a new RCRA corrective action project manager within the EPA, Industry, and Consultants. The plan is specific to RCRA corrective action and is not inclusive of other on-boarding activities unrelated to corrective action.

RCRA Project Manager Transition Plan

Step 1: Receive RCRA FIRST Orientation

- ◯ Standardized Process
- ◯ RCRA FIRST Tools (most up to date RCRA FIRST Toolbox)
- ◯ Communications Plan
- ◯ Control Plan

Timeframe: To be completed within **1-7 business days** from the first day in the position and must be completed prior Step 2

Step 2: Provide electronic files for review and permanent reference to include:

- ◯ Executive Summary (with specific references to documents (e.g., page, table, etc.))
- ◯ Regulatory drivers, order permit
- ◯ Enforcement history
- ◯ Key decisions to date
- ◯ Monthly and quarterly reports
- ◯ Team members' names, RCRA-specific roles, and contact information

Timeframe: To be completed within **7-10 business days** from the first day in the position

Step 3: Conduct a formal transition meeting with the following discussion items in the agenda:

- ◯ Executive Summary:
  - Current status
  - Stakeholders
  - Goals
  - Field schedule
  - Concise and graphical Conceptual Site Model (area specific):
    - Investigation results
    - Problems identified; risks
    - Gaps in decision support
    - Outstanding issues
    - Complete exposure pathways and reception
  - RCRAInfo codes
  - Latest and/or current deliverable in which expected to pursue
  - Outstanding technical issues
- ◯ Community outreach

(NEW!) RCRA FIRST Tool 13!

Ocean Lab Brewing Co

Questions?

Lunch!!
12:00 – 1:00

A Closer Look At Major Tools

1. CAF agenda and template
2. RSP agenda and template

Slides of tools details and anecdotal experiences

A Closer Look At Major Tools

1. CAF agenda and template
2. RSP agenda and template

Slides of tools details and anecdotal experiences

A Closer Look At Major Tools

1. CAF agenda and template
2. RSP agenda and template

Slides of tools details and anecdotal experiences

A Closer Look At Major Tools

1. CAF agenda and template
2. RSP agenda and template

Slides of tools details and anecdotal experiences

A Closer Look At Major Tools

1. CAF agenda and template
2. RSP agenda and template

Slides of tools details and anecdotal experiences

Tips for Success: CAF & RSP Meeting Prep

- Tailor meeting agendas and CAF/RSPD templates to the needs of each facility and share agendas with the facility beforehand
- Conduct a pre-meeting with internal agency staff before the CAF and RSP meetings with the facility
  - Think about your position on critical agenda and template items in advance
  - Go over the agenda with your technical team before the meeting (This takes longer than you think!)
- Plan to reach out to stakeholders, and provide the facility with your thoughts ahead of meetings

Other Tips for Success

- Involve known stakeholders from the beginning – discuss with them once objective have been determined
- Everyone should inform and involve their management – elevation of obstacles is encouraged
- Invite the facility to use the RCRA FIRST approach even if they have already started (or can't get out of) the RFI process
- Do not avoid difficult issues: unaddressed issues are a root cause of inefficiency in corrective action
- Multiple meetings may be necessary
- Both the regulator and the facility should have the remedy in mind during the RFI – think about setting up an RSP meeting as soon as it makes sense

A Closer Look At Major Tools

1. CAF agenda and template
2. RSP agenda and template

Slides of tools details and anecdotal experiences

A Closer Look At Major Tools

1. CAF agenda and template
2. RSP agenda and template

Slides of tools details and anecdotal experiences

Region 3 RCRA FIRST : Origins and Results

Solvay Example (CAF to RFI)

- Region 3 first RCRA FIRST pilot
- No real movement from 2004 until 2013
- CAF meeting 3/13/13
- RFI workplan rec'd 4/12/13
- Approved in 32 days -- in the field by June 1, 2013
- Data review meeting held 2/9/2014. Move forward with remedy development while supplemental work proceeded
- RFI report approved 7-16-2015

CAF meeting to RFI approval in 28 months – RF Target 48 months

Region 3 RCRA FIRST : Origins and Results

Solvay Example (RFI to RS)

- Remedy Selection meeting held February 14, 2015 – Corrective Action Objectives agreement same day
- Limited CMS submitted 7/16/2015 – Approved 12/7/2015
- Draft Statement of Basis public notice May 2016

Solvay time form RFI approval to Remedy Selection: 7 months
(Target time: < 13 months)

Solvay total time in RCRAFIRST process:
38 months
(Target time 73 months)

RCRA FIRST IN ACTION
A CASE STUDY:
Univar USA Bonnie Beach Site
City of Commerce, California

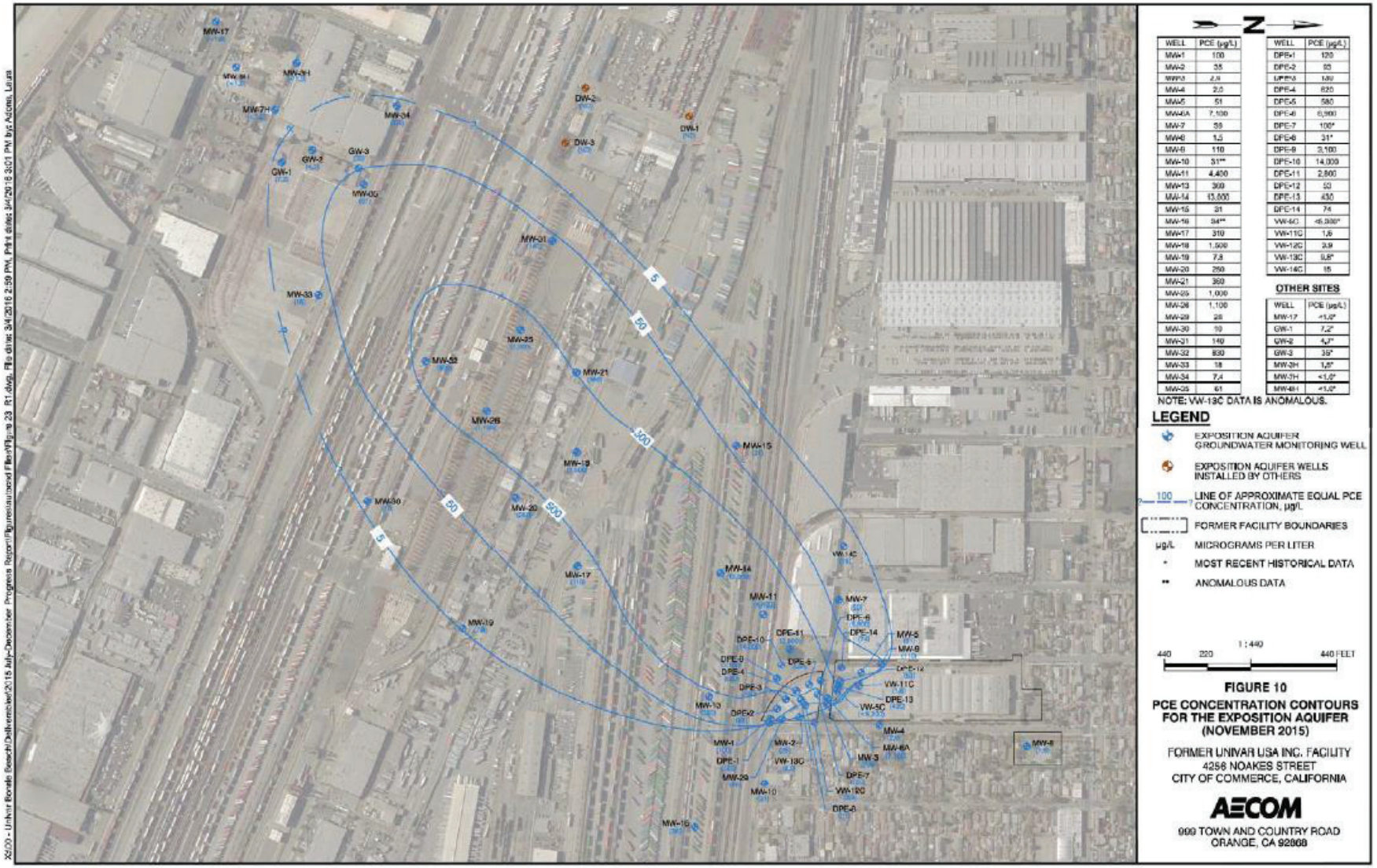
RCRA FIRST Training: May 9, 2016

Mark Metcalf

Project Background

- Interim status facility – no longer operating
- Chlorinated solvent releases
- Corrective Action Consent Agreement dated 1995
- Multiple phases of RCRA Facility Investigation (RFI)
- Large operating interim measure has removed significant amounts of source contamination
- But no final remedy selected to contain off-site groundwater plume
- RFI phase nearing completion

Project Map


N
WELL | PCE (µg/L)
MW-1 100
MW-2 55
MW-3 2.9
MW-4 2.0
MW-5 51
MW-6A 7,100
MW-7 59
MW-8 1.5
MW-9 110
MW-10 31**
MW-11 4,400
MW-13 300
MW-14 13,000
MW-15 31
MW-16 94**
MW-17 310
MW-18 1,500
MW-19 7.8
MW-20 250
MW-21 360
MW-25 1,000
MW-26 1,100
MW-28 28
MW-30 19
MW-31 140
MW-32 830
MW-33 18
MW-34 7.4
MW-35 61
WELL | PCE (µg/L)
DPE-1 120
DPE-2 55
DPE-3 180
DPE-4 820
DPE-5 580
DPE-6 6,900
DPE-7 100*
DPE-8 31*
DPE-9 3,100
DPE-10 14,000
DPE-11 2,800
DPE-12 53
DPE-13 430
DPE-14 74
VW-6C 45,000*
VW-11C 1.6
VW-12C 3.9
VW-13C 9.8*
VW-14C 15
OTHER SITES
WELL | PCE (µg/L)
MW-17 <1.0*
GW-1 7.2*
GW-2 4.7*
GW-3 35*
MW-3H 1.6*
MW-7H <1.0*
MW-8H <1.0*
NOTE: VW-13C DATA IS ANOMALOUS.
LEGEND
EXPOSITION AQUIFER GROUNDWATER MONITORING WELL
EXPOSITION AQUIFER WELLS INSTALLED BY OTHERS
100 LINE OF APPROXIMATE EQUAL PCE CONCENTRATION, µg/L
FORMER FACILITY BOUNDARIES
µg/L MICROGRAMS PER LITER
* MOST RECENT HISTORICAL DATA
** ANOMALOUS DATA
1:440
440 220 440 FEET
FIGURE 10
PCE CONCENTRATION CONTOURS FOR THE EXPOSITION AQUIFER (NOVEMBER 2015)
FORMER UNIVAR USA INC. FACILITY
4256 NOAKES STREET
CITY OF COMMERCE, CALIFORNIA
AECOM
999 TOWN AND COUNTRY ROAD
ORANGE, CA 92868

Interim Measure:
Dual Phase Extraction System

Challenges for Site Investigation

- Large, complex site
- Complex Conceptual Site Model (CSM)
- Multiple aquifers and multi-media contamination
- Two large railroads above groundwater plume
- Difficult site access issues

RCRA 2020 to RCRA FIRST

Unless we do something different, we will not meet GPRA Goals or EPA's RCRA 2020 Vision

- Univar site entering remedy selection phase
- Remedy selection for a complex site can take from three or more years to complete.
- EPA's RCRA 2020 Vision: 95% of sites should meet Remedy Construction Complete EI by 2020
- At Univar, GWM and RCC Environmental Indicators not met
- **Decision made in Fall 2015 to utilize RCRA FIRST to help streamline the CMS phase of project**

Univar Remedy Selection Process (RSP) Meeting in Feb. 24-25, 2016 – RCRA FIRST

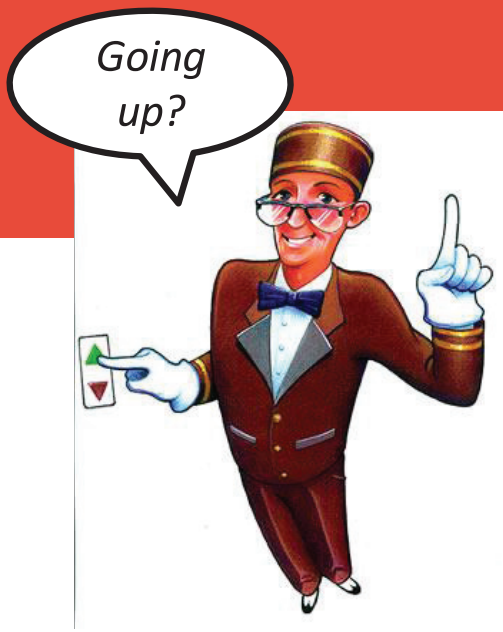
RSP Meeting scheduled based on RCRA FIRST approach to kick-off the Remedy Selection phase. Key components included:

- In-person, 2-day meeting
- Invite key decision-makers
- Elevate difficult decisions
- Third Party Facilitator (EPA)
- Site visit to project area
- Conceptual Site Model (CSM) discussion
- Agreement on Corrective Action Objectives (CAOs)
- Clear goals/path forward
- Documentation of meeting minutes

In-Person Meeting: Benefits

- Builds relationships and trust between DTSC and RP
- Increased, effective, and open communication
- More conducive to decision making
- Encouraged even if travel is required (the Univar example required cross-country travel)

Invite Key Decision Makers and Elevate Issues



The importance of ensuring that the correct people participate in the meeting(s) cannot be overstated:

- Include the full project teams
  - Univar project manager
  - AECOM technical consulting team
  - DTSC project manager, hydrogeologist, unit supervisor
- Include upper level managers, including those with spending and/or decision-making authority:
  - Univar Head of Remediation Division
  - DTSC Branch Chief

Third Party Facilitator

- DTSC invited Don Lininger (EPA Region 7) to facilitate the Univar RSP meeting
- The participation of a facilitator is not essential, but may be a significant benefit, as follows:
  - Knowledgeable of RCRA FIRST
  - Neutral third party
  - Can help to refocus the discussion when necessary

Day 1: Site Visit (Feb. 24, 2016)

Site visit to Univar project area held on Day 1 of RSP:

- Allowed for interaction between the project teams
- Ensured that everyone is familiar with the site area
- Provided context prior to discussion of CSM and CAOs
- Allowed upper management, who are not involved in the project on day-to-day basis, to see the project area
- Reiterated that project goal is the cleanup of the site for the greater good of the surrounding community and environment

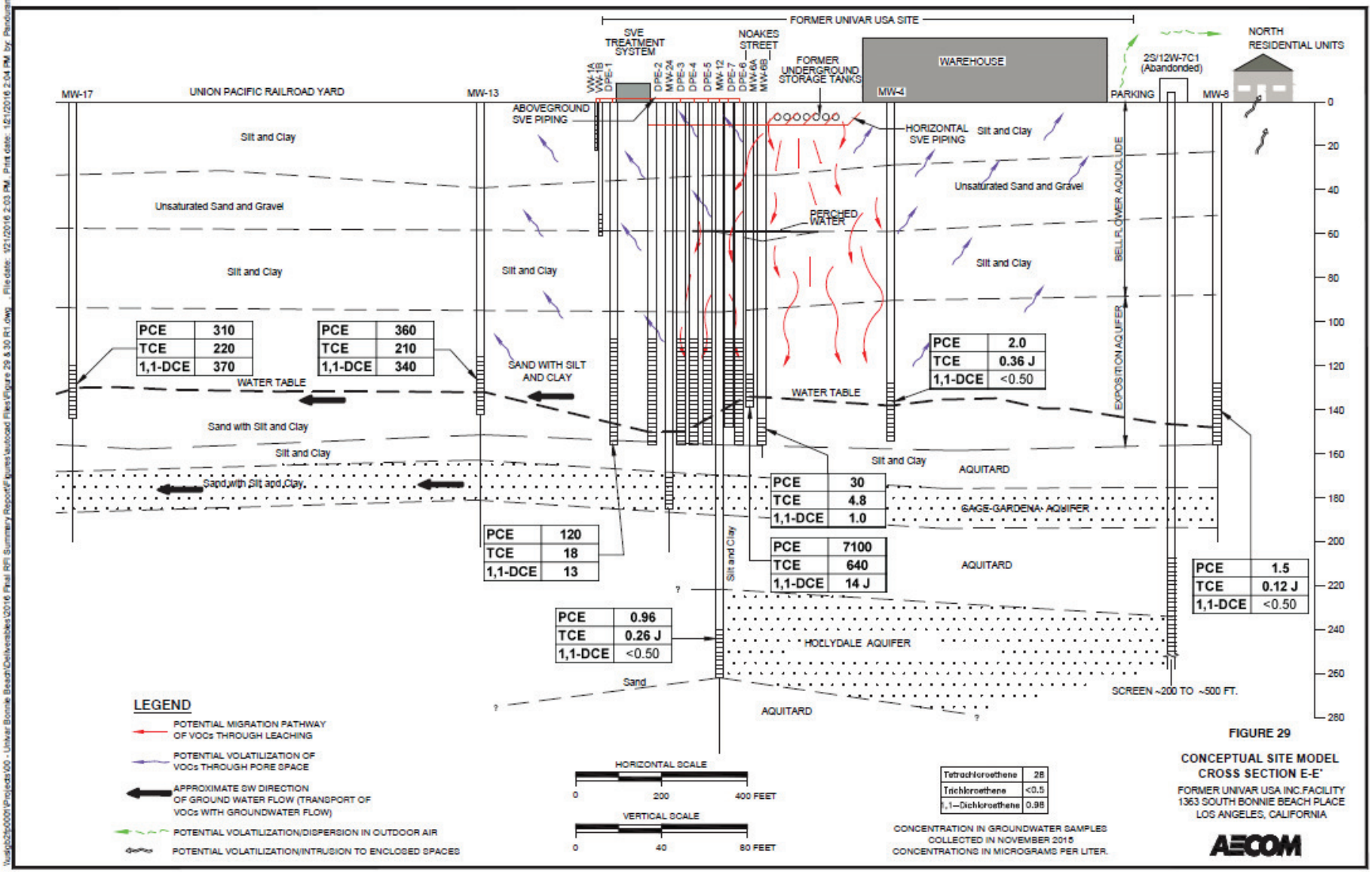
Site Visit (Feb. 24, 2016)

Site Visit (Feb. 24, 2016)

Day 1 RSP Meeting: Conceptual Site Model and Corrective Action Objectives

- RSP meeting agenda applied RCRA FIRST Toolbox example
- Meeting held at DTSC Cypress Office
- Ray LeClerc addressed group
- Don Lininger RCRA FIRST presentation
- Univar / AECOM presentation on RFI summary report and overview of Conceptual Site Model (CSM)
- DTSC presentation on Corrective Action Objectives (CAOs)
- Collective discussion on application of CAOs to Univar site
- Adjourn to hotel for further informal discussions

Conceptual Site Model



Corrective Action Objectives Discussion

- Discussion of media-specific CAOs (i.e. cleanup to MCL's, etc.)
- Aquifer use classifications
- Current and future land use
- Possible permit requirements
- Restoration of groundwater resource throughout aquifer
- Timeframes for achieving CAOs

Day 2 Breakthrough: Presumptive Remedy & No CMS

- Day 1 review of CSM and CAOs helped define project imperative
- DAY 2: Univar proposed presumptive remedy
  - Line of pump and treat wells at downstream edge of plume.
  - Continued source control with DPE system
- DTSC agreed to forego traditional CMS, provided that remedy:
  - Meets threshold criteria
  - Meets media-specific Corrective Action Objectives
  - Continues to control sources of release

Setting Clear Goals & Project Schedule

It is important to set an ambitious goal to focus the team and provide a clear path forward:

- DTSC and Univar agreed to aspirational goal of completed Final Statement of Basis by Dec. 1, 2016
- Both parties agreed to develop a project schedule to meet this aggressive goal

Documentation

Univar RSP draft meeting minutes were prepared within a week after the meeting:

- Document decision points
- Document action items
- Review the draft minutes prior to concluding the meeting
- Finalize the minutes at a subsequent meeting
- Documentation is critical to ensure follow through on action items, and to prevent revisiting decisions at future meetings

Univar RCRA FIRST RSP Meeting
Key Takeaways

- Benefits of presumptive remedy / No CMS approach
  - Streamlined approach
  - Cost savings
  - No need to do pilot studies for multiple remedial alternatives
  - Time savings
  - Earlier implementation of remedy
- RCRA provides significant flexibility in how the program is implemented
  - Full-blown CMS is not required by RCRA
  - CMS requirement in CACA can be modified by mutual consent
  - See RCRA FIRST Toolbox pp. 12-13 to decide if CMS is necessary

Univar RCRA FIRST RSP Meeting
Key Takeaways (cont.)

- Two-day meeting was crucial to make project breakthrough
- Staying in same hotel allowed for informal discussions
- Knowledgeable facilitator was very helpful
- Setting an aggressive goal forces accountability on both sides
- Benefits of RCRA FIRST Remedy Selection Process meeting:
  - Allowed for a project reset
  - Avoided multiple rounds of back and forth conference calls
  - Provided opportunity to elevate and resolve difficult decisions
  - Helped build trust between DTSC and Univar
  - Will allow us to meet GWM and RCC EI's for Univar before 2020

Questions ?? / Discussion

Please Share Your Feedback and Results

For more information or to share examples or success stories, contact:

Paul Gotthold

Office of Pennsylvania Remediation

U.S. EPA Region 3

1650 Arch Street

Philadelphia, PA 19103

215-814-3410

800-352-1973

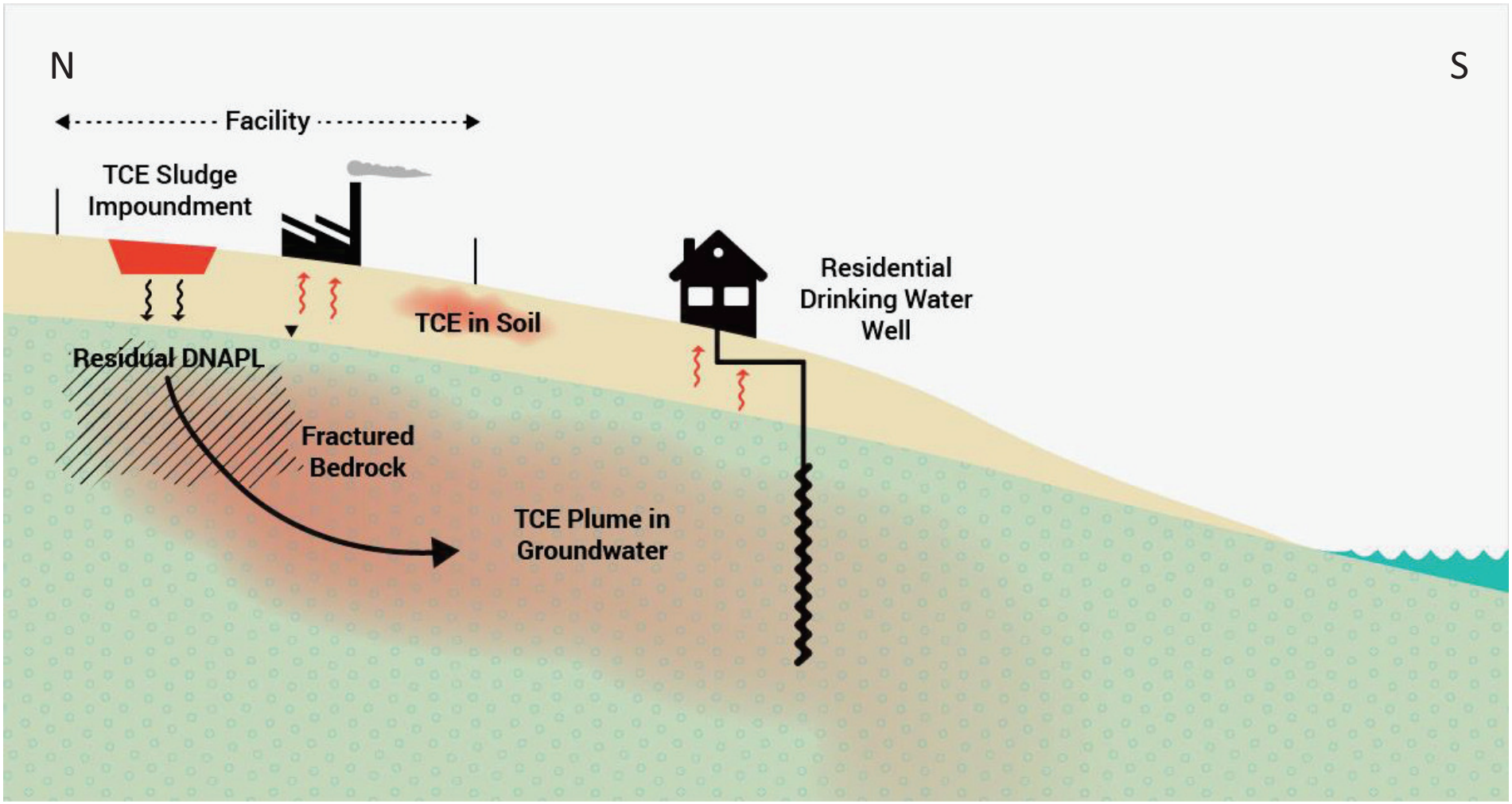
gotthold.paul@epa.gov

Afternoon Break
2:30-2:45

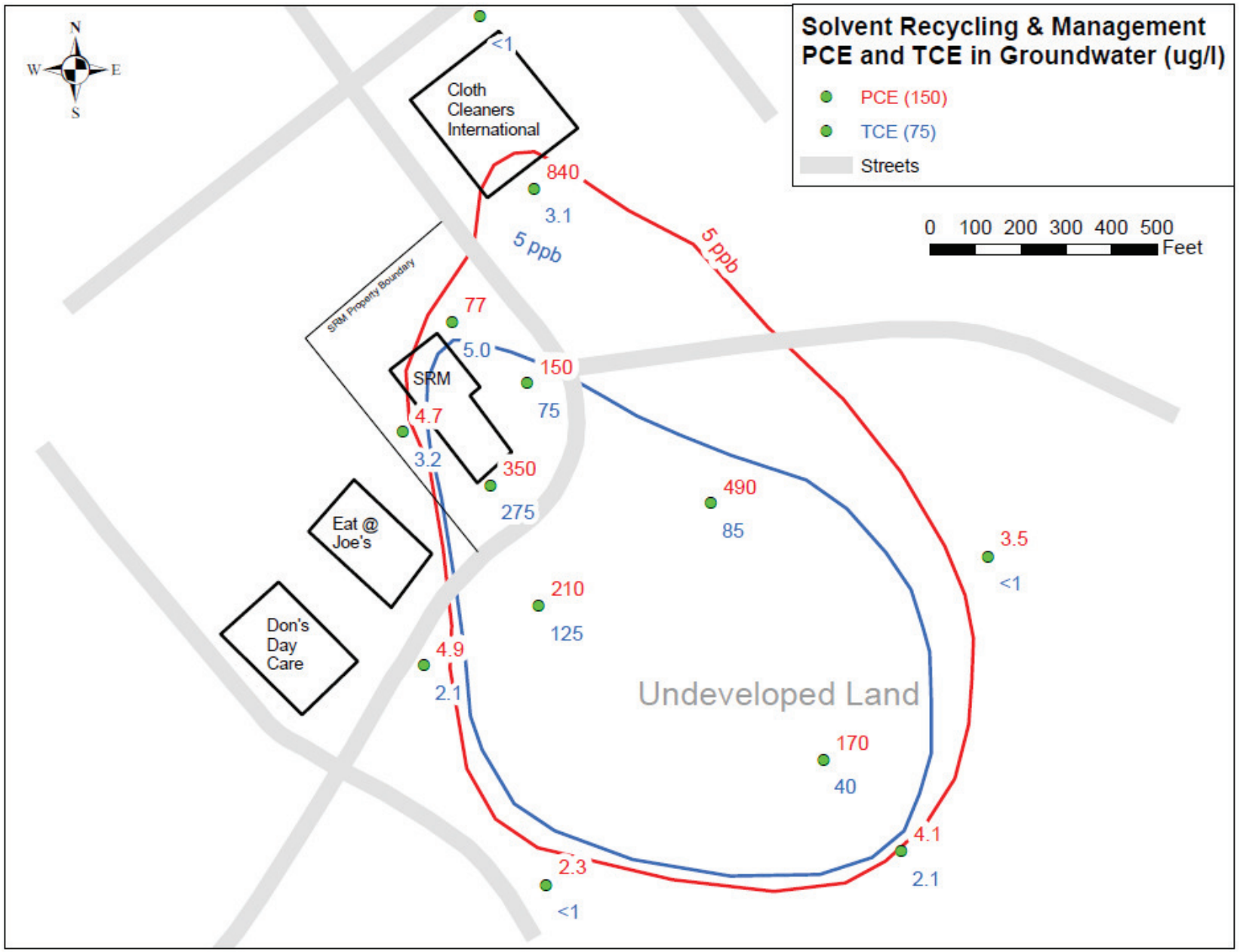
Breakout Exercise:
Corrective Action Framework Meeting

- Breakout groups, 1-4
- Review 4 scenarios
- You are in a Corrective Action Framework Meeting for a "stuck" facility:
  - Identify root causes of delay/pain points
  - Identify specific data gaps (if any)
  - What RCRAFirst Tools would help "unstick" the process?
  - Is the site ready to move to remedy selection process?
  - What needs to happen to move to remedy selection?

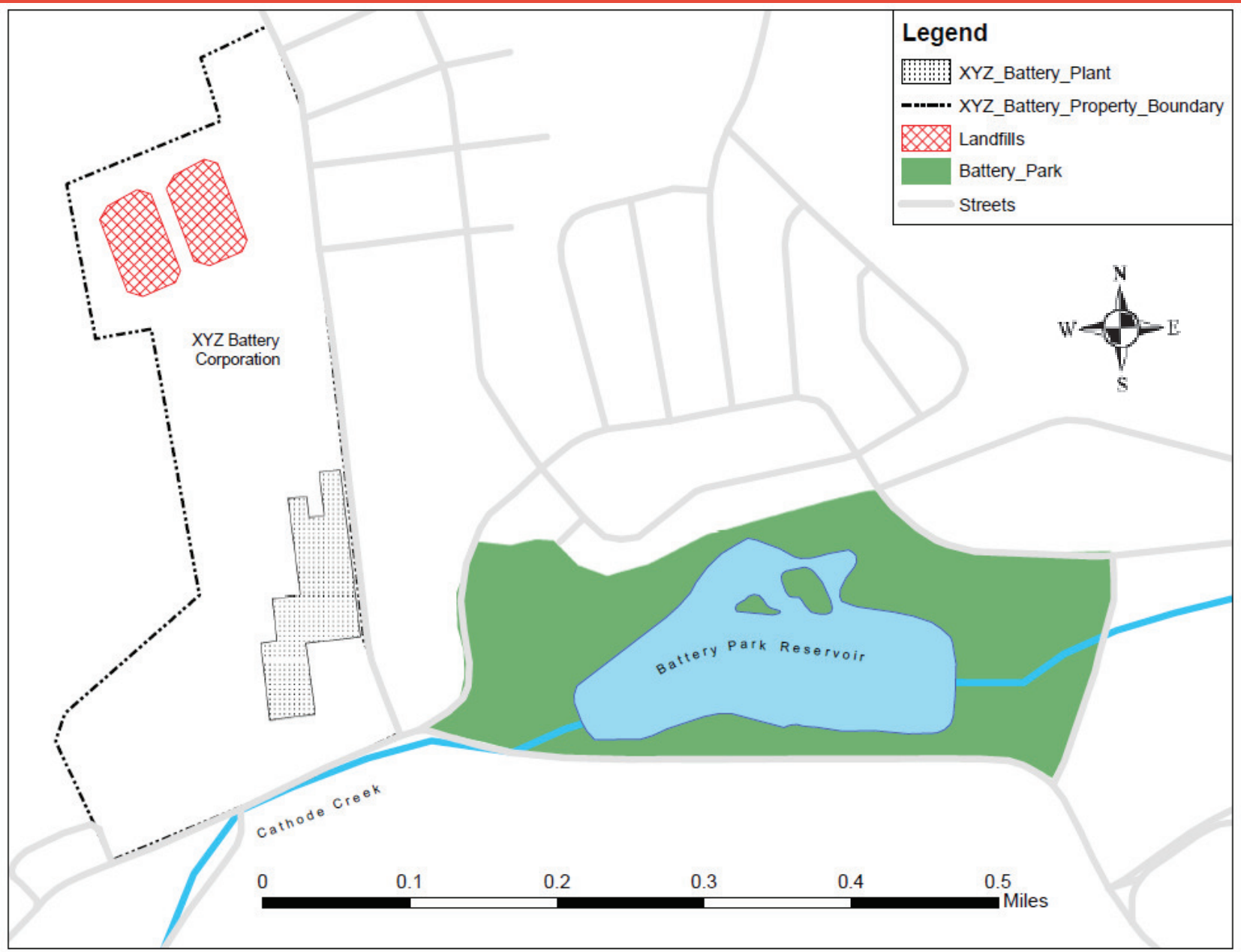
Scenario 1
Dynamic Degreasers, Inc.



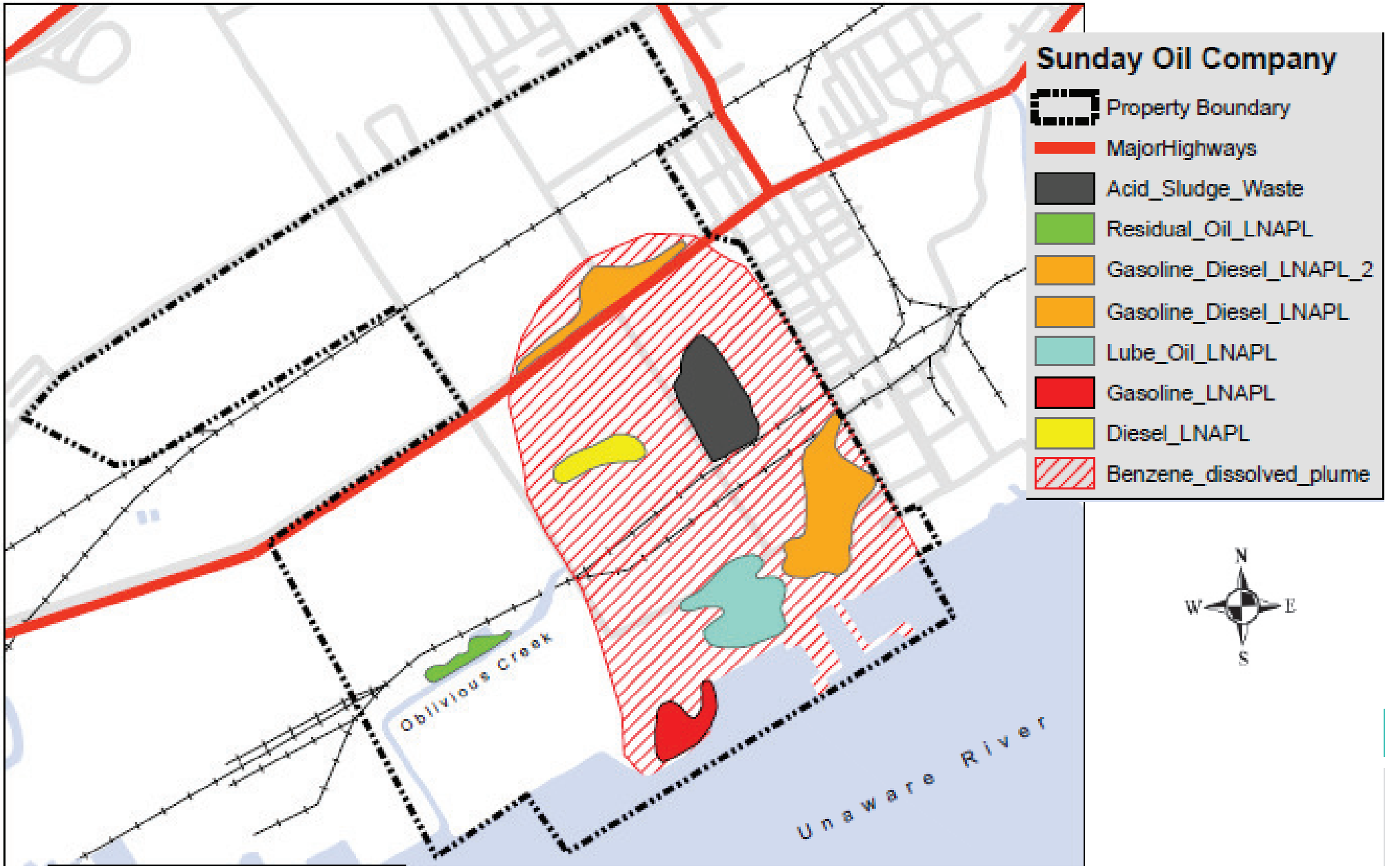
Scenario 2
Solvent Recycling & Management



Scenario 3
XYZ Battery Corporation



Scenario 4
Sunday Oil Company



What type is your scenario?

- The Hard Decision…
- Inactive Too Long…
- Perfection is the Enemy of Progress…
- Kick the Can…

The Importance of Process Control

Use the flow map
Show the data set
Track each project

Tool 10: RCRA FIRST Control Plan

RCRA FIRST CONTROL PLAN						
PROCESS: RCRA Facility Investigation and Remedy Selection Processes			Prepared by: [NAME]			Prepared Date: [DATE]
			Approved by: [NAME]			Approved Date: [DATE]
			Owner: [NAME]			Revision Date: [DATE]
			Revision #: [#]			
	Control Point ID	Metric	Unit of Measure	Target Measure of Performance	Current Quarter Status	Recovery Action
	RFI					
PROCESS METRICS	1	% of Facilities with signed CAF at CAF meeting adjournment	% of Facilities	20%		ID what part of CAF meeting is ineffective and repair
	2	% of Facilities with signed CAF within 3 weeks of meeting adjournment	% of Facilities	25%		ID what part of CAF meeting is ineffective and repair
	2a.	% of Facilities where initial CAF disagreement results in 1st level escalation	% of Disagreements	5%		ID what part of CAF meeting is ineffective and repair
	3	% of total RFI Workplans that achieve approval on first submission	% of Workplans	75%		ID which areas of the RFI Workplan required rework and repair process
	3a.	% RFI Workplans requiring elevation to be approved	% of Workplans	5%		ID the areas of common disagreement and repair process
		% approved RFI				

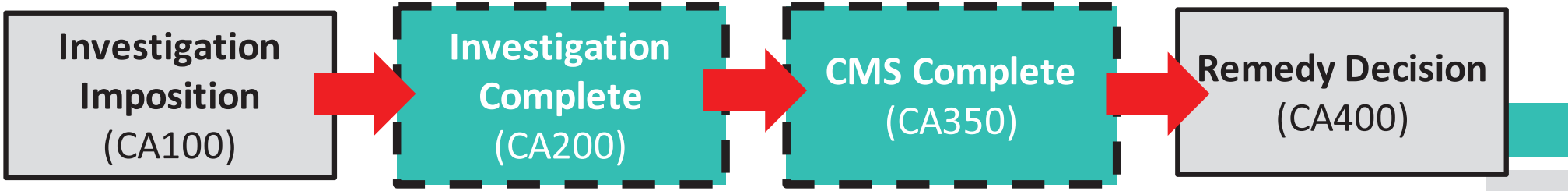
- Take data directly from the RCRA Info codes
- Spreadsheet being tested now to automate Control Plan
- R3 has entered facility data for remaining universe and is tracking from FY14 forward
- *Designates an Owner*

Project Management Measures

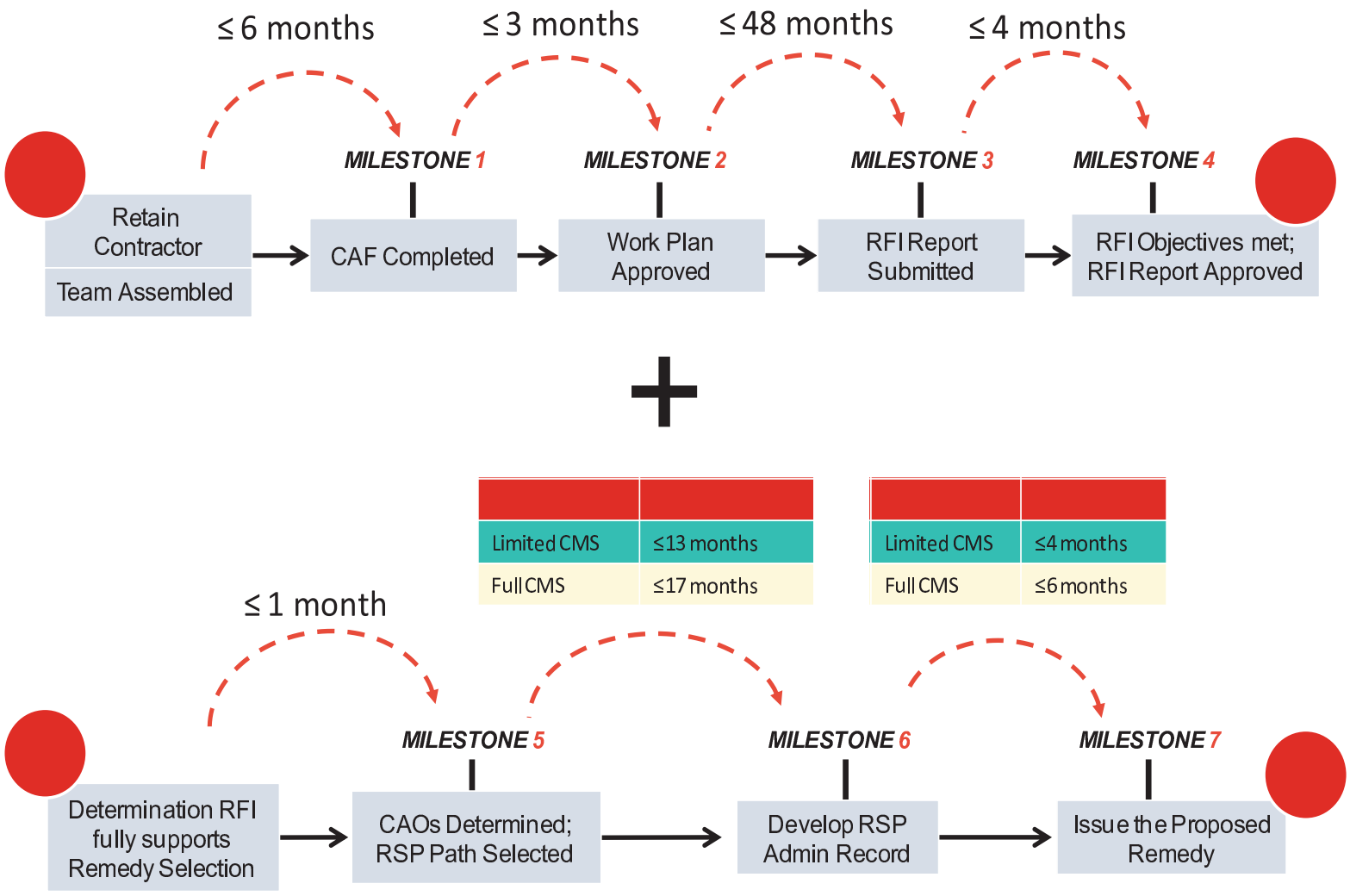
After a facility investigation implementation, and before remedy decision, regions should consider enhancing project management tracking tools.

- Current nationally required (toward a GPRA Rem. Const. bean):

- Need for consistent tracking:



RCRA FIRST Toolbox Timeline



= RCRA FIRST

Key Process Milestones

1. CAF completed
2. RFI workplan approved
3. RFI report submitted
4. RFI objectives met-RFI report approved
5. Corrective Action Objectives
6. Remedy selection path determined
7. Remedy selection
8. Proposed remedy issued

RCRA FIRST Tracking System

- New “locally defined codes” in RCRAInfo to track CAF and RSP meetings
- Track join elevation in notes field to determine where disputes occur
- Timeline varies based on path to proposed remedy:
  1. No CMS: 12 mo. or less
  2. Limited CMS (data gathering/test study): 18 mo. or less
  3. Full CMS: 24 mo. or less

RCRA FIRST Codes to Consider

RCRA Facility Investigation

FIRST Process Step (RFI)	RCRAInfo Event Code	Time Goal [Months]
Start RFI Process	CA100	6
CAF Meeting Prep		
Conduct CAF Meeting	***CAF101***	
CAF Developed	***CAF102***	
Workplan Received	CA110	3
Workplan Approved	CA150	
orkplan Impleme ted	CA180	≤48
Data Meeting	***CAF181***	
RFI Report Submitted	*CA190*	
RFI Approved	CA200	≤4

Remedy Selection Process

	FIRST Process Step (RSP)	RCRAInfo Event o e	Total Time [Years]
Full CMS	RFI Approved	CA200	2
	RSP Meeting Prep	***CAF201***	
	Conduct RSP Meeting	***CAF202***	
	RSP Meeting Summary Finalized	***CAF203***	
	CMS workplan received	CA260	
	CMS workplan modified	CA270	
	CMS workplan approved	CA300	
	CMS report submitted	CA340	
	CMS report approved	CA350	
	Develop Statement of Basis	CA380	
	Final Remedy Decision	CA400	

Remedy Selection Process Control Plan:

- Should be used as a tool to manage and continuously improve the efficiency of the Remedy Selection Process
- Captures defined process metrics used to measure and manage efficiency throughout the RS process
- Needs to be owned by a single assigned person, ideally the process manager / owner who will oversee RS process performance

CONTROL PLAN

Process: RCRA RFI and RS PROCESSES			Prepared by: LEAN Event Participants				Prepared date: May 20, 2014	
			Approved by:				Approved date:	
			Owner:				Revision date:	
			Revision #: 0					
	#	METRIC	6-Month Target Measure	Unit of Measure	Measure Method	Frequency of Measurement	Who Owns, Measures & Records	Recovery Action
	Remedy Selection Process							
	9	% of total facilities in RSP using CMS with Work Plan, CMS without Work Plan, and no CMS		% of each type of facility	Manual	Quarterly	Branch Chief	
	10	# of days between *determination that RFI is adequate* until *CMS agreed upon*	150 days	# of days	Manual	Quarterly	Branch Chief	
	11	% of total # of facilities that require joint elevation at time of *Remedy Selection Framework meeting*		% of facilities	Manual	Quarterly	Branch Chief	
	12	% of total # of facilities that require joint elevation at time of *CMS Work Plan approval*		% of facilities	Manual	Quarterly	Branch Chief	
	13	% of total # of facilities that require joint elevation at time of *CMS approval*		% of facilities	Manual	Quarterly	Branch Chief	
	14	# of days between *CMS Agreed Upon* to *Approval of Remedy Selection* for CMS with Work Plan	425 days	# of days	Manual	Quarterly	Branch Chief	
	15	# of days between *CMS Agreed Upon* to *Approval of Remedy Selection* for CMS without Work Plan	245 days	# of days	Manual	Quarterly		
	16	# of days between *CMS Agreed Upon* to *Approval of Remedy Selection* with no CMS	60 days	# of days	Manual	Quarterly	Branch Chief	

Snapshot Only

*Once the Control Plan is being used to manage the process, additional opportunities for improvement will become visible, thus the plan will require periodic updates in order to stay relevant in serving as the preferred tool for managing and continuously improving the **RFI** and **Remedy Selection** processes.*

Region 3 RCRA FIRST : Origins and Results

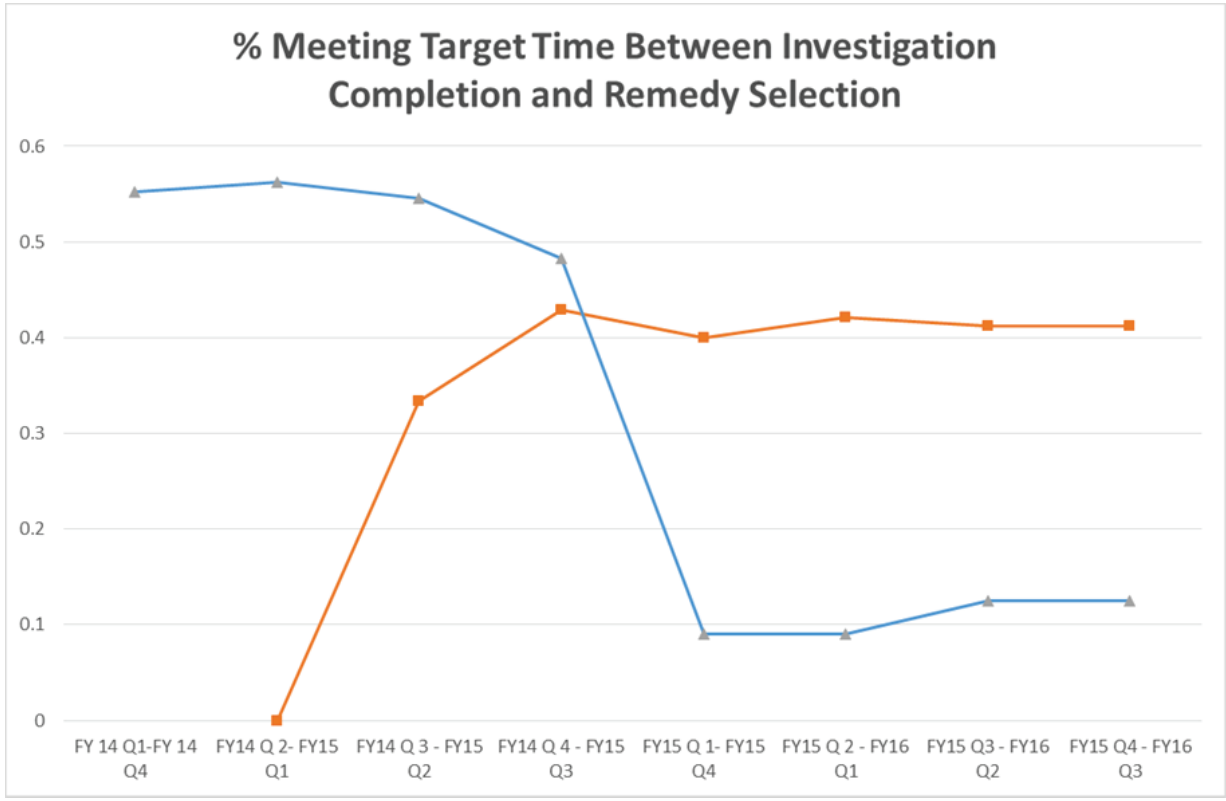
In 2014- we applied RCRA FIRST….

Our data show that the number of Q's has stabilized at 75…and the trend is downward…

Our "process" pipeline is reacting to the controls we have established… and we are awesome

Region 3 RCRA FIRST : Control Plan Outputs the new days

Timeframe	% Meeting Target
FY 14 Q1-FY 14 Q4	57
FY14 Q2- FY15 Q1	54
FY14 Q3- FY15 Q2	53
FY14 Q4- FY15 Q3	45
FY15 Q1- FY15 Q4	27
FY 14 & FY 15	43

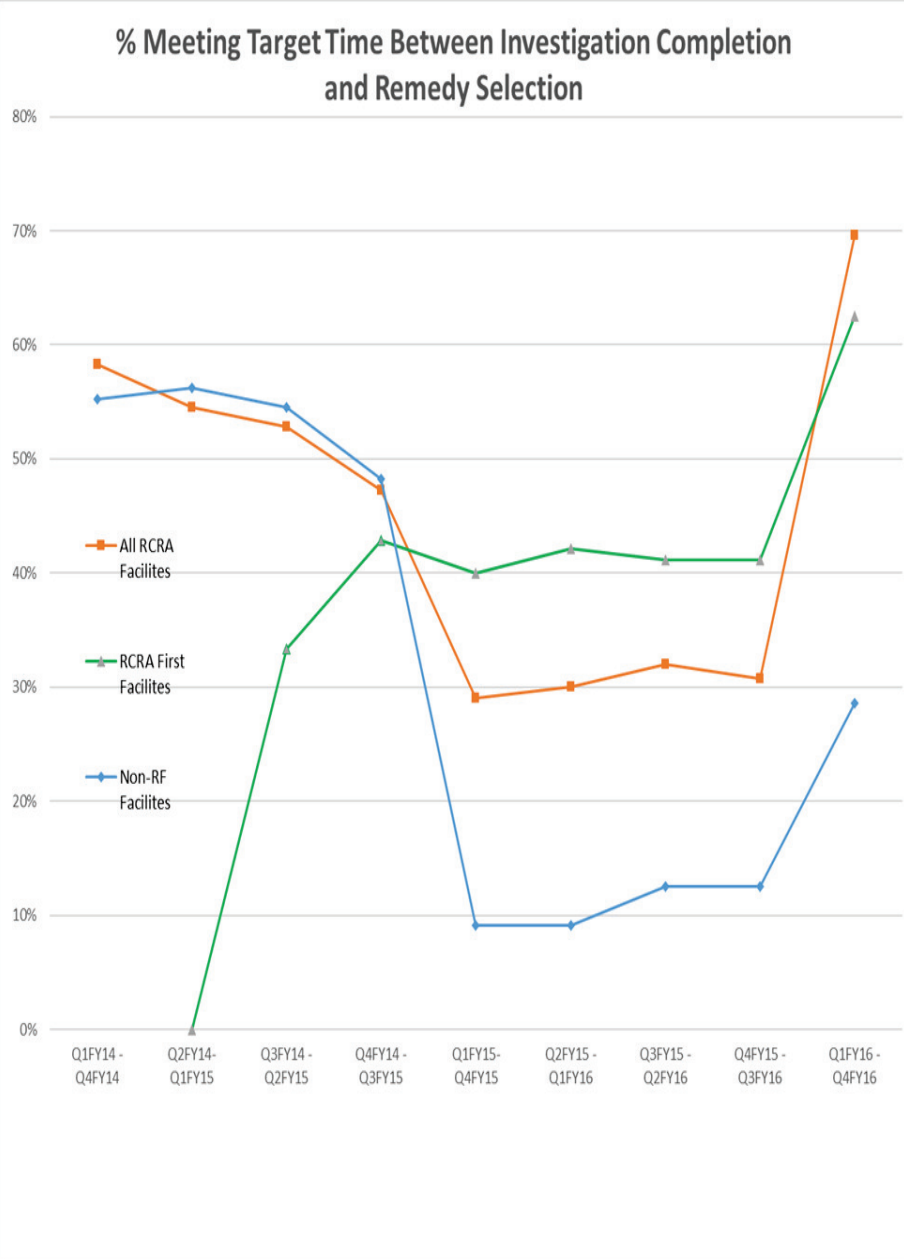


Region 3 RCRA FIRST : Origins and Results

In 2014- we applied RCRA FIRST….

Our control plan allows us to look at our progress in meeting the new Lean goals

and we are awesome…



Process Management Structure Elements II:
A Communications Plan for strategic exchange of information among stakeholders

A Communications Plan will:

- Ensure all stakeholder groups are receiving the information they need to fulfill their needs & responsibilities
- Keep the process moving by transferring information
- Establish and maintain a shared focus among stakeholders
- Help stakeholders get the support they need from their managers and leaders

Communications Plan: RCRA RFI and Remedy Selection Processes

	Process/ Focus Area: RCRA Facility Investigation Process and Remedy Selection Process		Prepared by:				Prepared date: May 20, 2014	
			Approved by:				Approved date:	
			Revision #:				Revision date:	
			Process Owner:					
	Communication	*Purpose/ Topics for Discussion*	*Participants/ Recipients*	*Documents Needed*	*Forum*	*Frequency*	*Chair*	*Effectiveness Measures/ Indicators*
	RFI Process							
1	Corrective Action Framework Meeting	Gain agreement on framework of Investigation, Potential IMs, and Corrective Action Framework for the facility	EPA (PM, manager, tech support (e.g., hydrogeologist, toxicologist); State (PM, manager, Legal, tech support); Facility (PM, manager, o/o?)	Background documents (CCR/DCC/RFA)*; current and future land use; receptors; aquifer designation; community concerns; permit; map; graphical description of data	At the facility (1-2 days)	At the onset and recurring as needed	Agency PM and Facility PM	1) % of total # facilities with signed "framework agreement" at CAFA meeting adjournment; 2) % of total facilities that sign agreement within 3 weeks of meeting adjournment; and 3) % time approvable Work Plan submitted in accordance to initial schedule
2	*Work Plan* Dialogue and Information Exchange	Conduct progressive decisions identified and made	Agency and Facility PMs, Technical Support	CAFA (Corrective Action Framework) and site inspection documents.	Ongoing / Various forums	On-going / As needed	PM either party	1) % of total RFI Work Plans that achieve approval on FIRST submission; 2) % with elevation; 3) % without elevation; and 4) % elevated beyond Level I
	Remedy Selection Process							
7	Remedy Selection Framework (RSF) Kickoff Meeting	Reach agreement on approaches for selecting the final remedy	Agency and Facility PMs; Agency and Facility Supervisors; Agency and Facility Technical Support (hydrogeologist, risk assessor, etc.); Agency and Facility Legal; Support Agency	RFI*, RFI summary*, Remedy Selection Tools (to be developed)*, list of preferred remedies*	In person meeting	Once	PM either party	agreement
8	CMS Work Plan (WP) or Data Collection WP Meeting**	Define scope of CMS WP or Data Collection WP	Agency and Facility PMs; RP; SME; first line managers	Draft Work Plan	Telecom	As needed	PM either party	1) % of CMS Work Plans that achieve approval on first time submission; 2) % of Data Collection that achieve approval on first time submission
9	Remedy Selection	Select the preferred	Agency and Facility PMs; first line		In person		PM either	1) % of CMS Reports that achieve approval on first time submission, 2) % of total # of facilities with agreement on preferred alternative at

Snapshot Only

A Communications Plan will ensure that defined, critical points of communication are maintained and information needed at specified points is exchanged so that decisions can be made and activity

RCRA FIRST Training Day 2 Corrective Action Objectives

Developing Effective Corrective Action Objectives

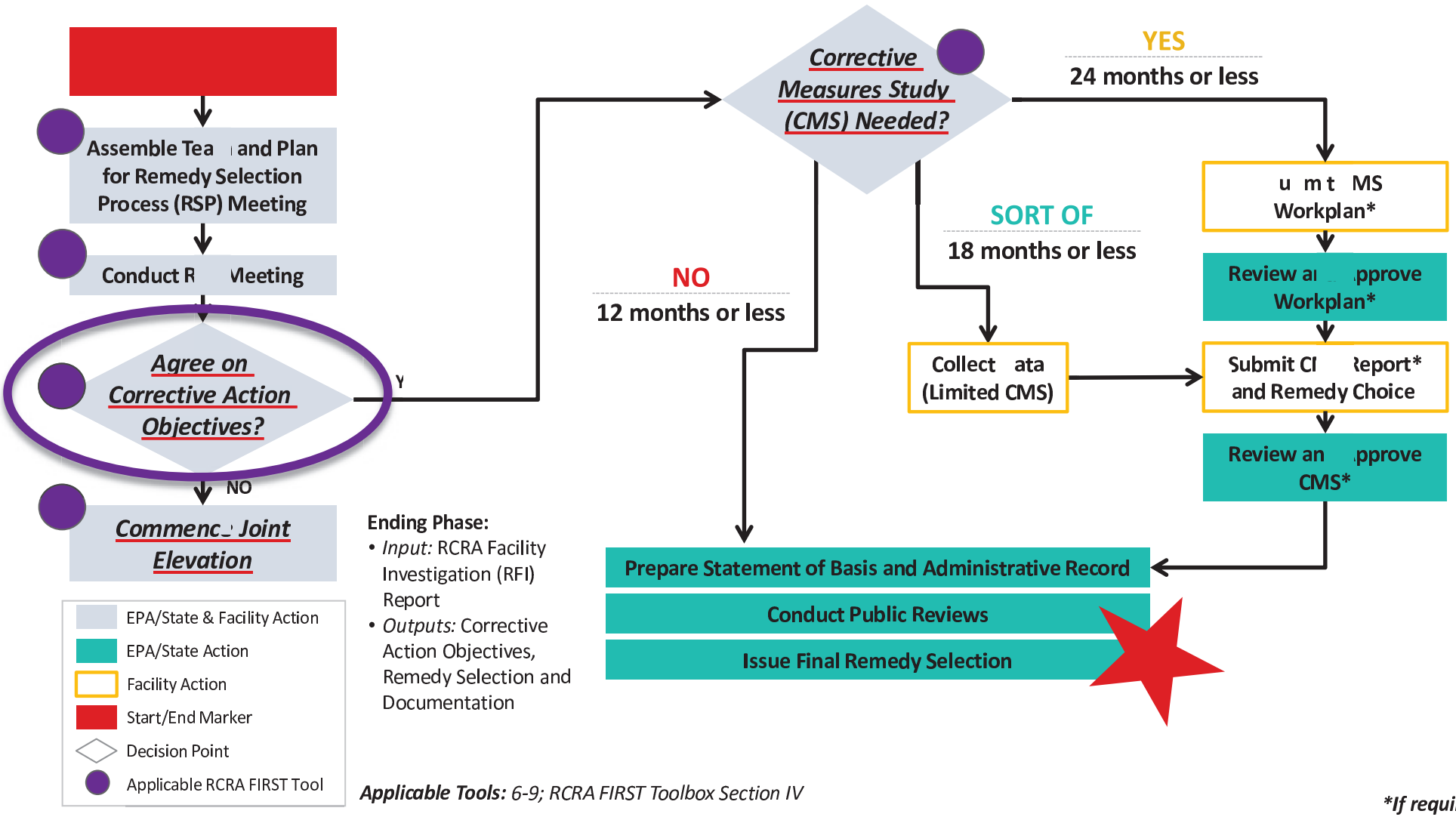
Joel Hennessy, Land & Chemicals Division, EPA Region 3

Objectives
for RCRA Facility Investigations

- Identify and delineate contaminant source areas
- Determine nature and extent of contamination, for example:
  - Groundwater - horizontal and vertical extent to below MCLs, or tapwater based RSLs.
  - Soil - determine extent to below residential soil RSLs.
- Identify current and potential routes of exposure, for example:
  - Vapor intrusion
  - Drinking water
  - Dermal Contact
  - Inhalation
- Identify current and potential receptors, human and ecological
- Develop and refine Conceptual Site Model (CSM)

*These are **RFI Objectives** – next, we'll discuss **Corrective Action Objectives***

Corrective Action Objectives in the Remedy Selection Process



Ending Phase:

- *Input:* RCRA Facility Investigation (RFI) Report
- *Outputs:* Corrective Action Objectives, Remedy Selection and Documentation

Applicable Tools: *6-9; RCRA FIRST Toolbox Section IV*

**If required*

Corrective Action Objectives *for Remedy Selection*

- Medium-specific or unit-specific goals that a cleanup alternative must achieve
- As specific as possible, but…
- Not so specific that the range of alternatives that can be developed is unduly limited, e.g.:
  - Remove all soil contaminated with lead > 400 mg/kg
  - Prevent residential exposure to lead in soils > 400 mg/kg

Corrective Action Objectives
Should Specify:

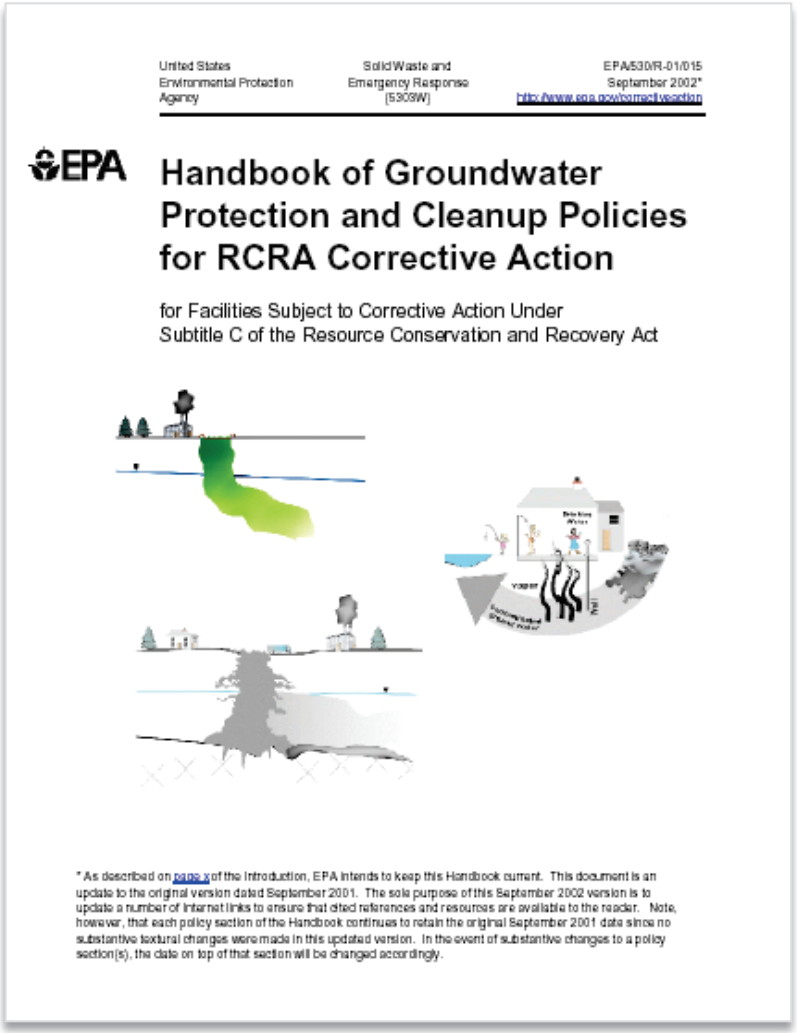
- The contaminant(s) of concern
- Exposure route(s) and receptor(s)
- An acceptable contaminant level or range of levels for each exposure route

Corrective Action Objectives
Developed from:

- EPA law, policy, and guidance
- Threshold Criteria: Protect HH&E, Achieve Media Cleanup Objectives, Control Sources
- Site Conceptual Model
- Current uses and exposures
- Reasonably expected future uses and exposures
- Resource values (ecological, groundwater, etc.)

Media Cleanup Objectives
"What, Where, When"

- Cleanup Levels/performance metrics
- Point of Compliance
- Time Frame



United States Environmental Protection Agency | Solid Waste and Emergency Response (5303W) | EPA530/R-01/015 September 2002*
http://www.epa.gov/correctiveaction

EPA

Handbook of Groundwater Protection and Cleanup Policies for RCRA Corrective Action

for Facilities Subject to Corrective Action Under Subtitle C of the Resource Conservation and Recovery Act

* As described on page x of the Introduction, EPA intends to keep this Handbook current. This document is an update to the original version dated September 2001. The sole purpose of this September 2002 version is to update a number of Internet links to ensure that cited references and resources are available to the reader. Note, however, that each policy section of the Handbook continues to retain the original September 2001 date since no substantive textural changes were made in this updated version. In the event of substantive changes to a policy section(s), the date on top of that section will be changed accordingly.

What: Groundwater Cleanup Level

Goal: Return Groundwater to Maximum Beneficial Use

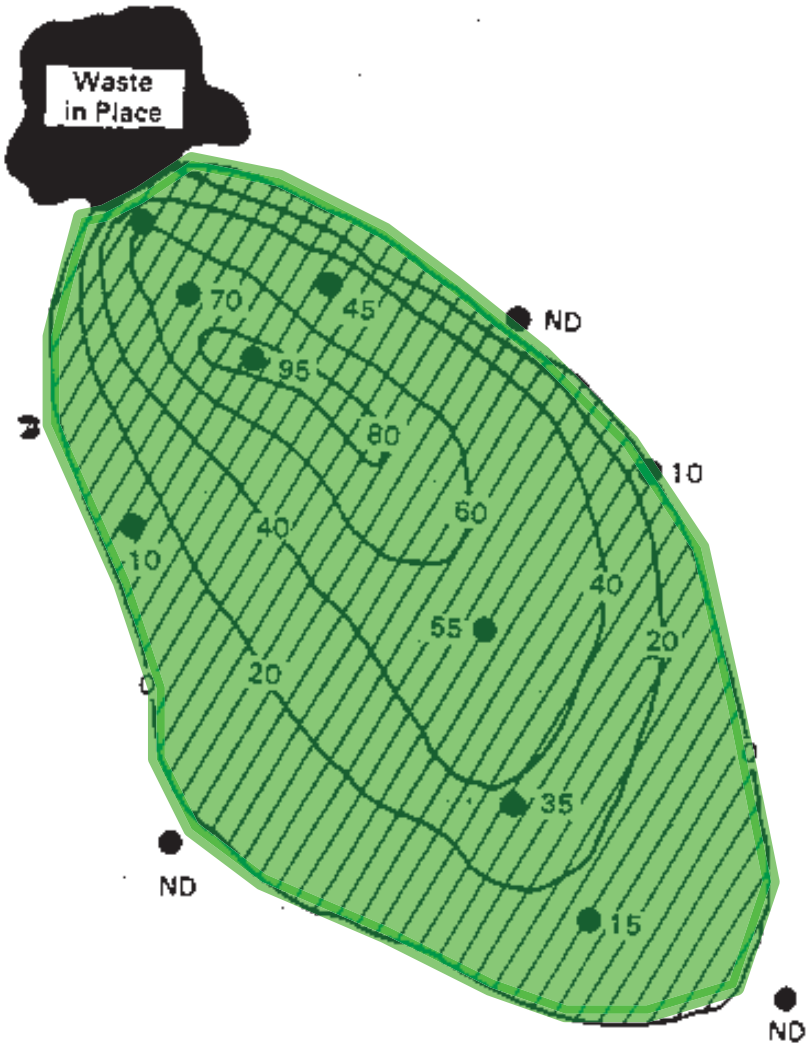
- Maximum beneficial use: of all the reasonably expected uses, the use that results in the lowest cleanup level
- Usually means drinking water levels, i.e., MCLs. If no MCLs, then use tapwater RSLs – stay in the cancer risk range of 10^{-4} to 10^{-6} (but watch out for non-carcinogenic effects)
- Could be something other than drinking water use (e.g., if not usable as a drinking water aquifer, based on aquifer characteristics such as yield, TDS, etc. ***and*** is not actually being used for drinking water)
- Could be a background concentration (naturally occurring) or because of other sources not part of the facility

Where: Groundwater Point of Compliance

Goal: Return Groundwater to Maximum Beneficial Use

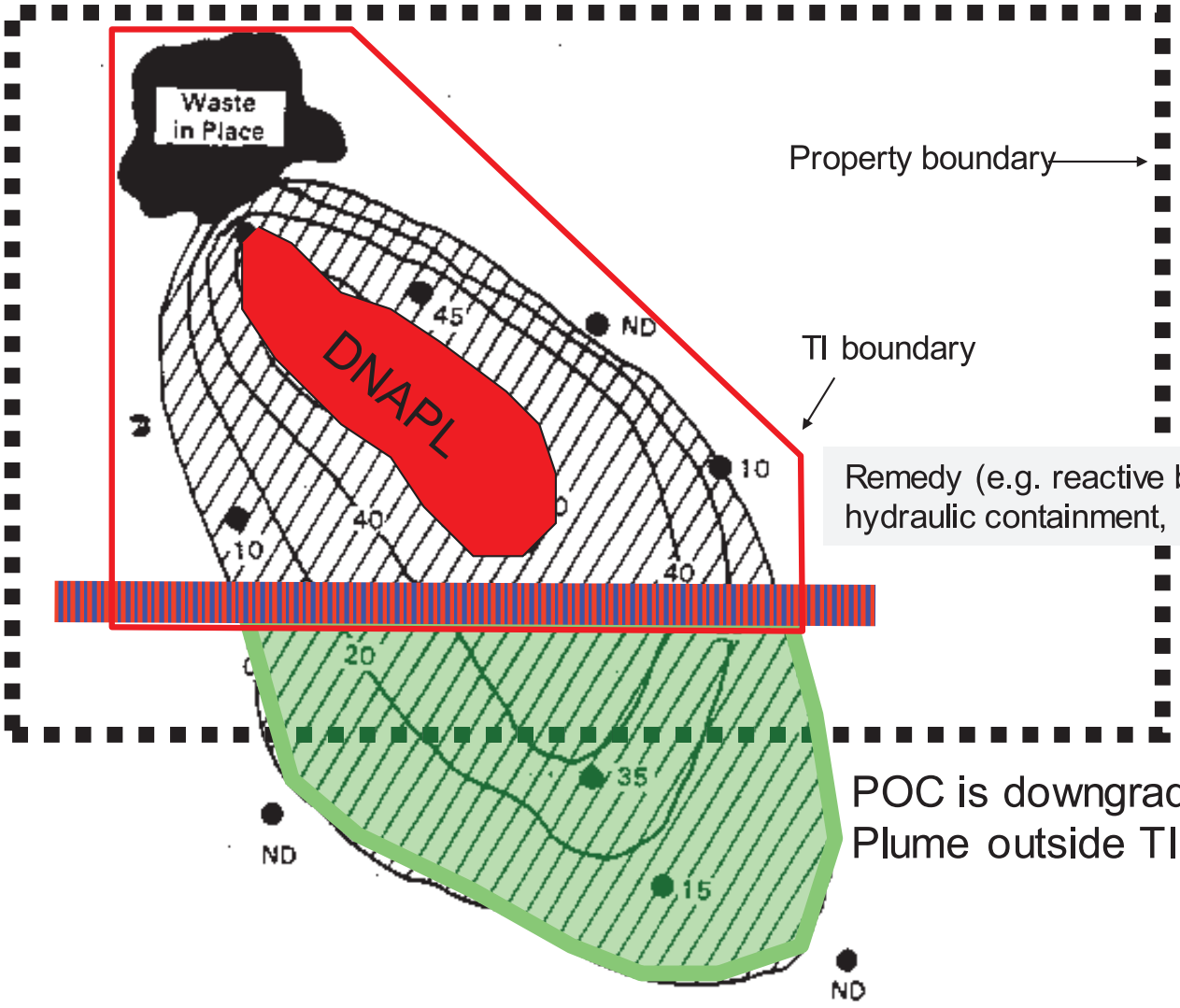
- Clean it all up (throughout the plume)
- Clean it up to a unit boundary when waste left in place
- Clean up some of it, because it can't all be cleaned up (e.g., technical impracticability)

RCRA Point of Compliance
Final Cleanup Goals



POC is throughout the area of contaminated GW, or, when waste left in place, at and beyond the waste management unit, regardless of property boundary location

RCRA Point of Compliance
Technical Impracticability

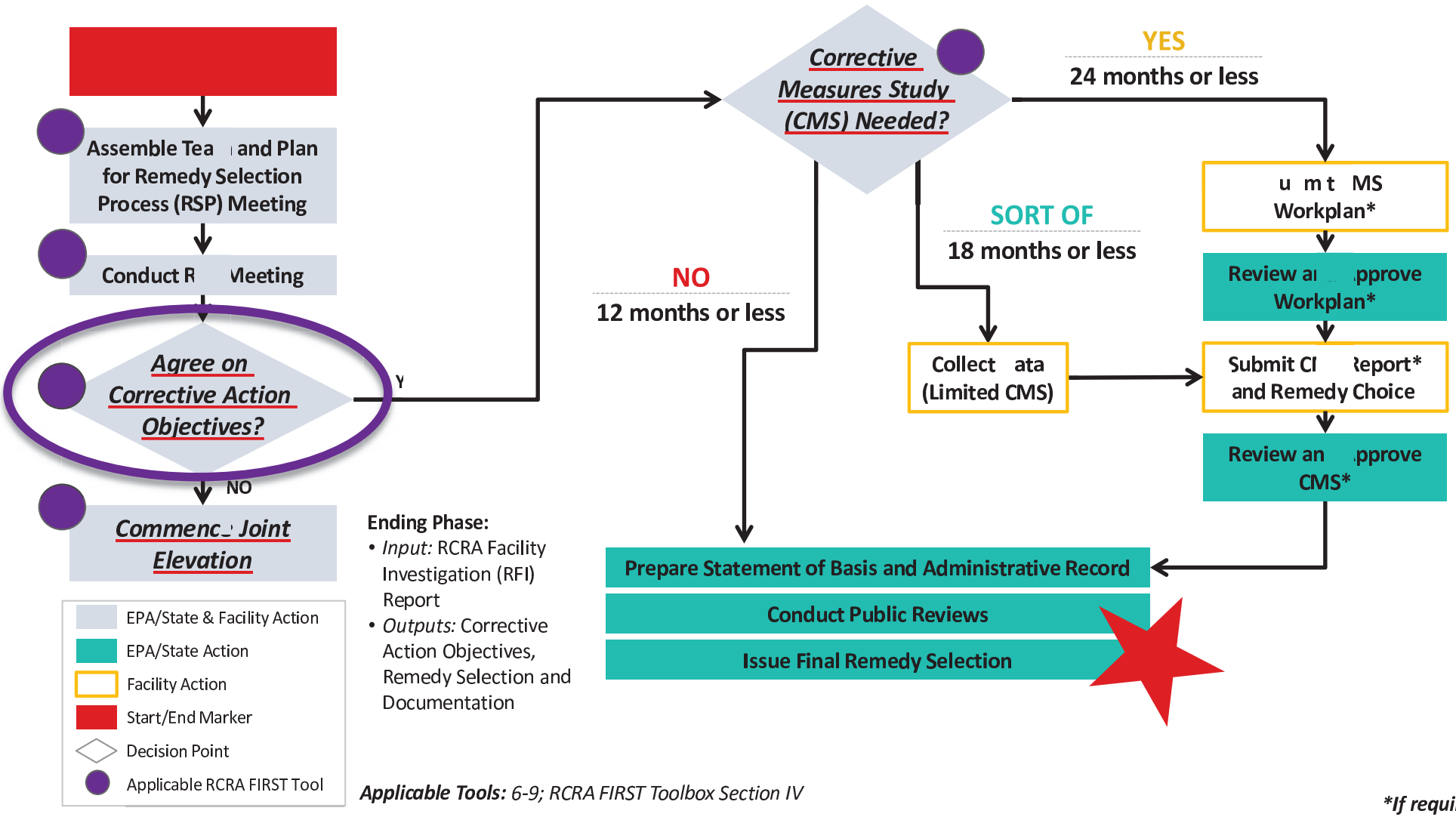


POC is downgradient limit of the TI zone:
Plume outside TI Boundary to meet MCLs

When: Cleanup Time Frame

- Should be reasonable, linked to specific goals, and based on facility-specific conditions; can also be thought of as priority or sequencing:
  - **Short-term:** Addressing ongoing risks from current exposures should have highest priority
  - **Intermediate:** Source control actions; achieve milestones; implement controls
  - **Final:** Achieve media cleanup levels at the point of compliance; restoration of the resource

Corrective Action Objectives in the Remedy Selection Process



Ending Phase:

- *Input:* RCRA Facility Investigation (RFI) Report
- *Outputs:* Corrective Action Objectives, Remedy Selection and Documentation

Applicable Tools: *6-9; RCRA FIRST Toolbox Section IV*

**If required*

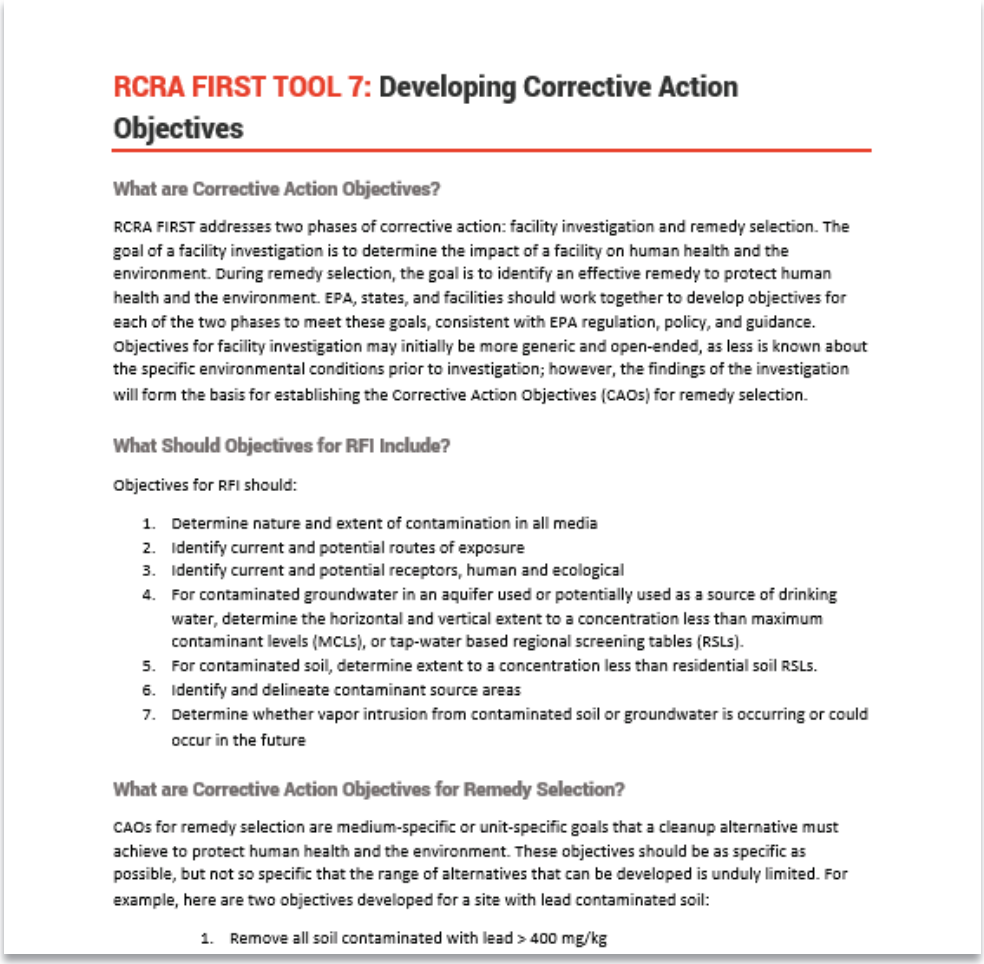
Document the Corrective Action Objectives

Record corrective action objectives in this form based on the environmental media and impacts relevant to the facility. For each objective, indicate the relative priority / time frame for completion on a 1-4 scale: ***1 = Short-term; 2 = Intermediate; 3 = Long-term final cleanup; 4 = Existing control in place.***

Environmental Media	**Corrective Action Objectives**				
	Human Health Residential	Human Health Non-Residential	Ecological Receptors	Cross-media Transfer	Resource Restoration
Groundwater					
Soil					
Surface Water					
Air					
Waste					
Other					

TOOL: Developing Corrective Action Objectives

- Available in Appendix A of the Toolbox
- Based on elements from this presentation
- Includes blank objectives chart as well as references to RCRA and CERCLA guidance



RCRA FIRST TOOL 7: Developing Corrective Action Objectives

What are Corrective Action Objectives?

RCRA FIRST addresses two phases of corrective action: facility investigation and remedy selection. The goal of a facility investigation is to determine the impact of a facility on human health and the environment. During remedy selection, the goal is to identify an effective remedy to protect human health and the environment. EPA, states, and facilities should work together to develop objectives for each of the two phases to meet these goals, consistent with EPA regulation, policy, and guidance. Objectives for facility investigation may initially be more generic and open-ended, as less is known about the specific environmental conditions prior to investigation; however, the findings of the investigation will form the basis for establishing the Corrective Action Objectives (CAOs) for remedy selection.

What Should Objectives for RFI Include?

Objectives for RFI should:

1. Determine nature and extent of contamination in all media
2. Identify current and potential routes of exposure
3. Identify current and potential receptors, human and ecological
4. For contaminated groundwater in an aquifer used or potentially used as a source of drinking water, determine the horizontal and vertical extent to a concentration less than maximum contaminant levels (MCLs), or tap-water based regional screening tables (RSLs).
5. For contaminated soil, determine extent to a concentration less than residential soil RSLs.
6. Identify and delineate contaminant source areas
7. Determine whether vapor intrusion from contaminated soil or groundwater is occurring or could occur in the future

What are Corrective Action Objectives for Remedy Selection?

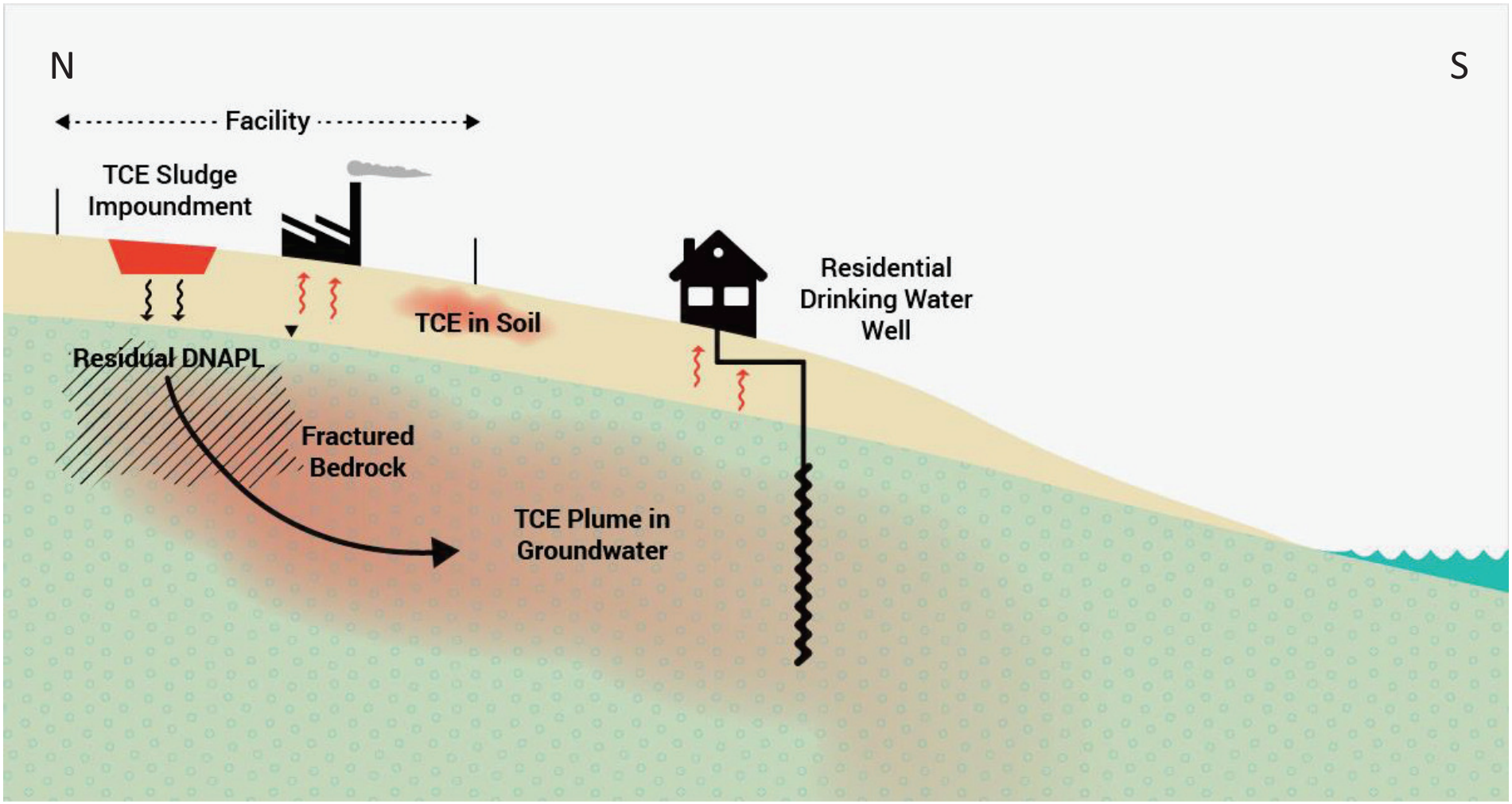
CAOs for remedy selection are medium-specific or unit-specific goals that a cleanup alternative must achieve to protect human health and the environment. These objectives should be as specific as possible, but not so specific that the range of alternatives that can be developed is unduly limited. For example, here are two objectives developed for a site with lead contaminated soil:

1. Remove all soil contaminated with lead > 400 mg/kg

Group Exercise:
Dynamic Degreasers, Inc.

- You are in a **Remedy Selection Process Meeting** and your task is to work together to develop specific Corrective Action Objectives that everyone can agree to
- Use the RCRA FIRST guidance and tools to develop effective objectives and work around challenges that arise

Dynamic Degreasers, Inc.
Conceptual Site Model (CSM)



Dynamic Degreasers, Inc.
Risk Screening Table

Risk Screening Table for Group Exercise

Contaminant	Indoor Air Residential	Indoor Air Industrial	OSHA PEL (TWA)	Soil Residential	Soil Industrial	Tapwater MCL	Soil to GW (DAF 1, MCL)
TCE	0.48 ug/m^3 (10^{-6})	3 ug/m^3 (10^{-6})	100 ppm (535 mg/m^3)	0.94 mg/kg (10^{-6})	6 mg/kg (10^{-6})	5 ug/l	0.0018 mg/kg
	2.1 ug/m^3 (HI = 1)	8.8 ug/m^3 (HI = 1)		4.1 mg/kg (HI = 1)	19 mg/kg (HI = 1)		

10^{-6} = cancer risk
HI = non-cancer Hazard Index
PEL = Permissible Exposure Level (time weighted average) under OSHA for workplace exposure
MCL = Maximum Contaminant Level under the Safe Drinking Water Act
DAF = Dilution Attenuation Factor

Environmental Media	Corrective Action Objectives				
	Human Health Residential	Human Health Non Residential	Ecological Receptors	Cross-media Transfer	Resource Restoration
Groundwater					
Soil					
Surface Water					
Air					
Waste					
Other					

Dynamic Degreasers, Inc.
RCRA FIRST Elevation

- If RSP Meeting fails to agree on Corrective Action Objectives, the RCRA FIRST approach *requires elevation*
- Elevation is automatic at any decision point where consensus cannot be reached
- A one-page elevation form should be completed to initiate the elevation process:
  - First section (problem statement) should be written by both parties
  - Subsequent two sections outline each party's position
  - *The elevation form is available as a tool in Appendix A (Tool 3)*

RCRA FIRST ELEVATION – SUMMARY OF ISSUES

Date:	2/23/2017	**Scheduled for Resolution By:**	2/23/2017 **within 30-60 days of form date*
Date of Scheduled Meeting or Call:	2/23/2017		

Problem Statement (only one statement permitted)

TCE was detected in indoor air in both manufacturing areas and in office space up to 98 ug/m^3 at Dynamic Degreasing, Inc. (DDI). EPA's RSL for industrial indoor air based on a carcinogen 10^{-6} level is 3 ug/m3, and is 8.8 ug/m^3 based on non-cancer effects (HI = 1). The OSHA PEL time weighted average for TCE is 100 ppm (535 mg/m^3). EPA and DDI need to agree on what the indoor air cleanup level at the facility should be to move the project forward to the CMS.

Description of Agency or State Position

EPA's position is that office workers do not use TCE and should not be expected to be covered by OSHA for exposure to TCE, therefore PELs are not appropriate as CAOs for office workers, and industrial RSLs should apply.

Description of Facility Position

DDI's position is that office workers are covered by OSHA, therefore OSHA PELs apply as indoor air CAOs.

Resolution/Next Step

Anticipated Date:	2/23/2017

In a meeting on 02/23/2017, the Elevation Points of Contact for EPA and DDI met and agreed to the following: The CAO for TCE in indoor air in the manufacturing area of the building where TCE is used will be the OSHA PELs for TCE of 100 ppm (535 mg/m^3). The CAO for TCE in indoor air in the office space of the building (all non-manufacturing areas) will be 8.8 ug/m3. This will be achieved via engineering controls (positive pressure ventilation), and verified via annual indoor air sampling.

Dynamic Degreasers, Inc.
RCRA FIRST Elevation

RCRA FIRST ELEVATION – SUMMARY OF ISSUES			
Date:	2/23/2017	**Scheduled for Resolution By:**	2/23/2017 **within 30-60 days of form date*
Date of Scheduled Meeting or Call:	2/23/2017		

Problem Statement (only one statement permitted)

TCE was detected in indoor air in both manufacturing areas and in office space up to 98 ug/m^3 at Dynamic Degreasing, Inc. (DDI). EPA's RSL for industrial indoor air based on a carcinogen 10^{-6} level is 3 ug/m3, and is 8.8 ug/m^3 based on non-cancer effects (HI = 1). The OSHA PEL time weighted average for TCE is 100 ppm (535 mg/m^3). EPA and DDI need to agree on what the indoor air cleanup level at the facility should be to move the project forward to the CMS.

Description of Agency or State Position

EPA's position is that office workers do not use TCE and should not be expected to be covered by OSHA for exposure to TCE, therefore PELs are not appropriate as CAOs for office workers, and industrial RSLs should apply.

Description of Facility Position

DDI's position is that office workers are covered by OSHA, therefore OSHA PELs apply as indoor air CAOs.

Dynamic Degreasers, Inc.
RCRA FIRST Elevation

Resolution/Next Step	
Anticipated Date:	2/23/2017

In a meeting on 02/23/2017, the Elevation Points of Contact for EPA and DDI met and agreed to the following: The CAO for TCE in indoor air in the manufacturing area of the building where TCE is used will be the OSHA PELs for TCE of 100 ppm (535 mg/m^3). The CAO for TCE in indoor air in the office space of the building (all non-manufacturing areas) will be 8.8 ug/m3. This will be achieved via engineering controls (positive pressure ventilation), and verified via annual indoor air sampling.

Breakout Exercise:
Remedy Selection Process Meeting

1. Break into groups; review the scenario; develop CAOs
2. Choose one group member to record the Corrective Action Objectives and one group member who will present the results to the larger group
3. As you work, note any questions or reflections that arose in your discussions about the scenario, RCRA FIRST tools, and objectives. **Please consider these questions:**
   - Are the Corrective Action Objectives specific (what, where, and when)?
   - How do the Corrective Action Objectives, as drafted, maintain flexibility for remedy selection?
   - Which issues proved most difficult to reach agreement in the group discussion?
   - What strategies could you use in an actual project to address these issues?

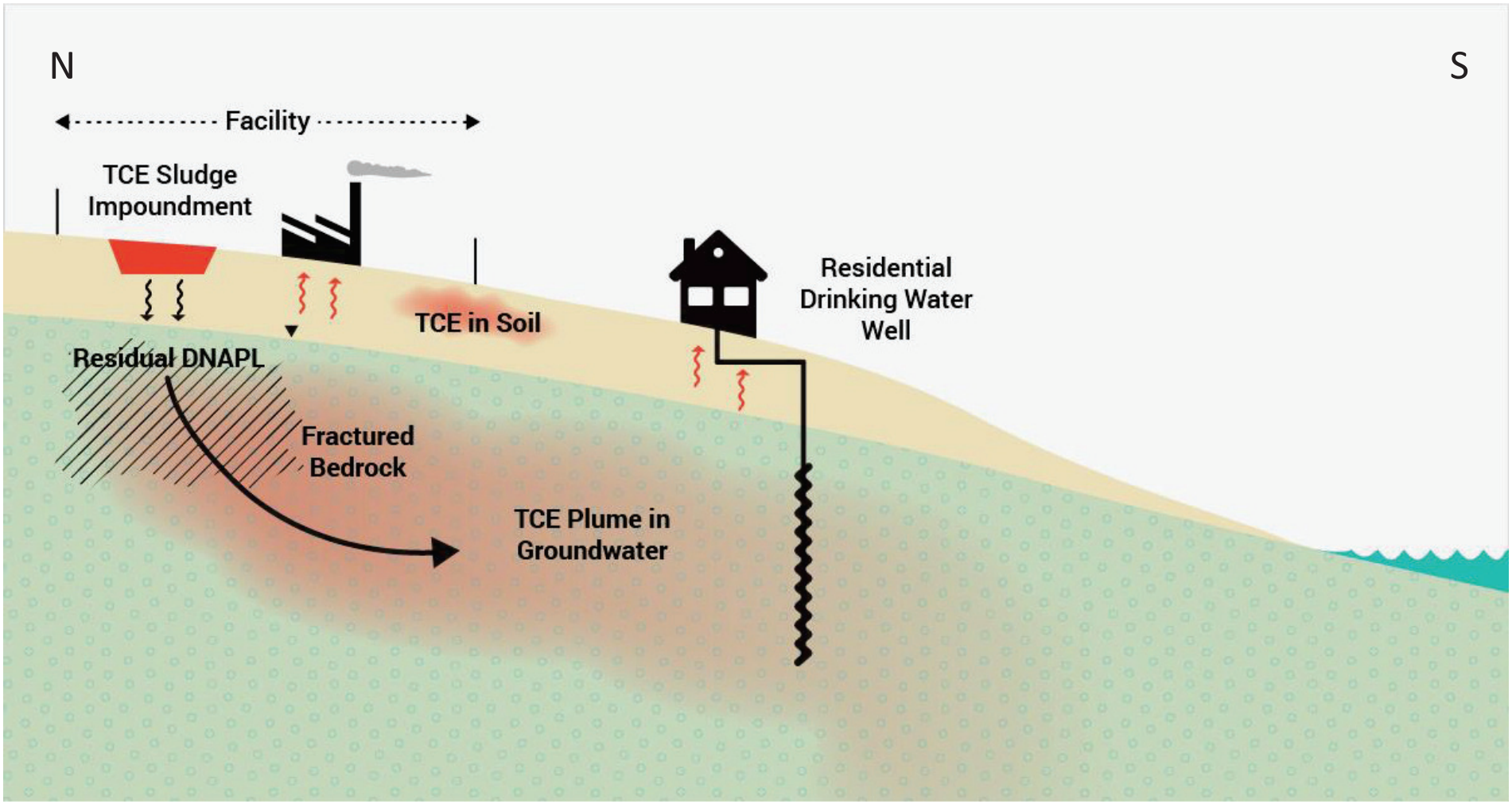
Morning Break
10:30-10:45
Return to Breakout Group

Lunch
12:00-1:00

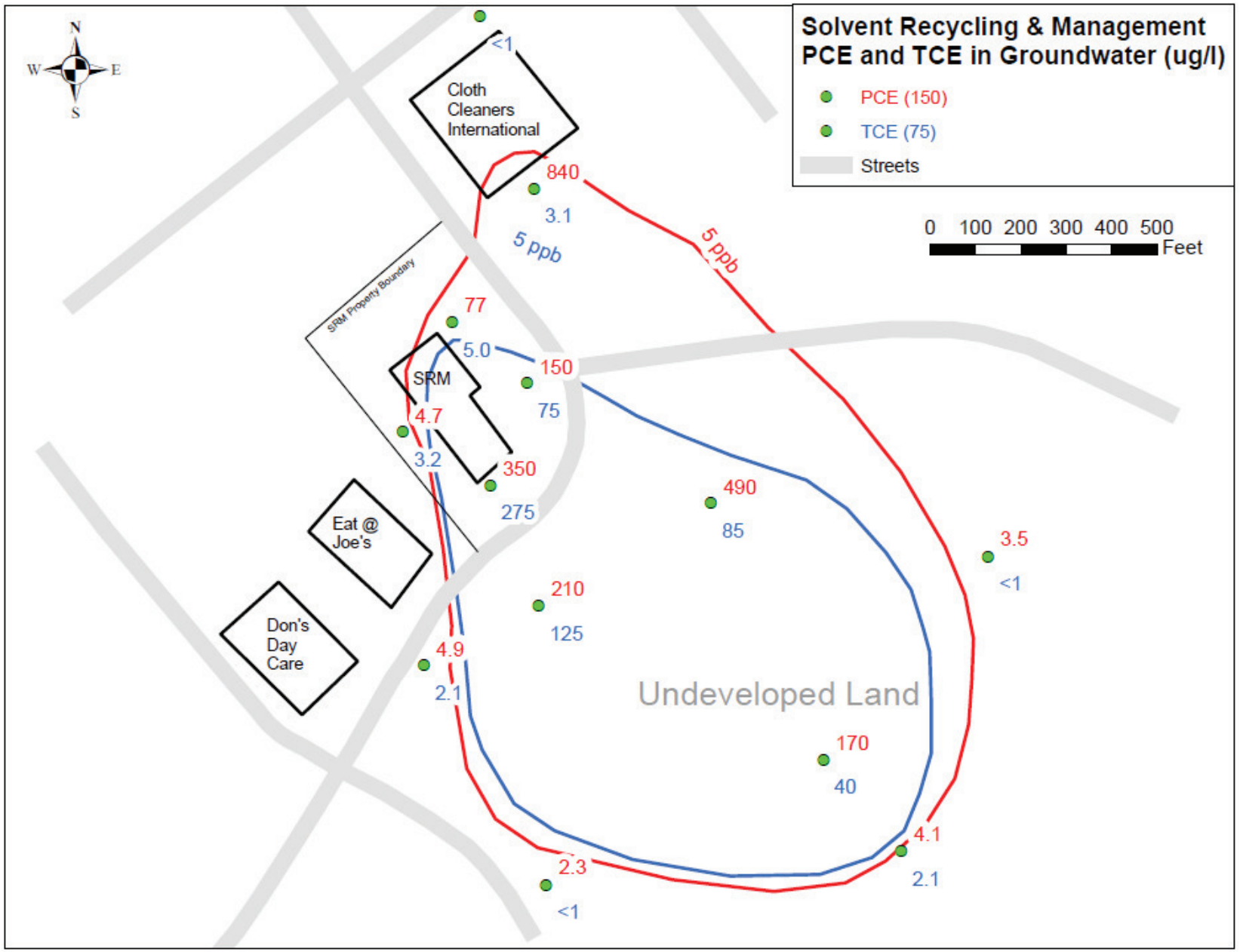
Presentation/Discussion

Scenarios 1-4

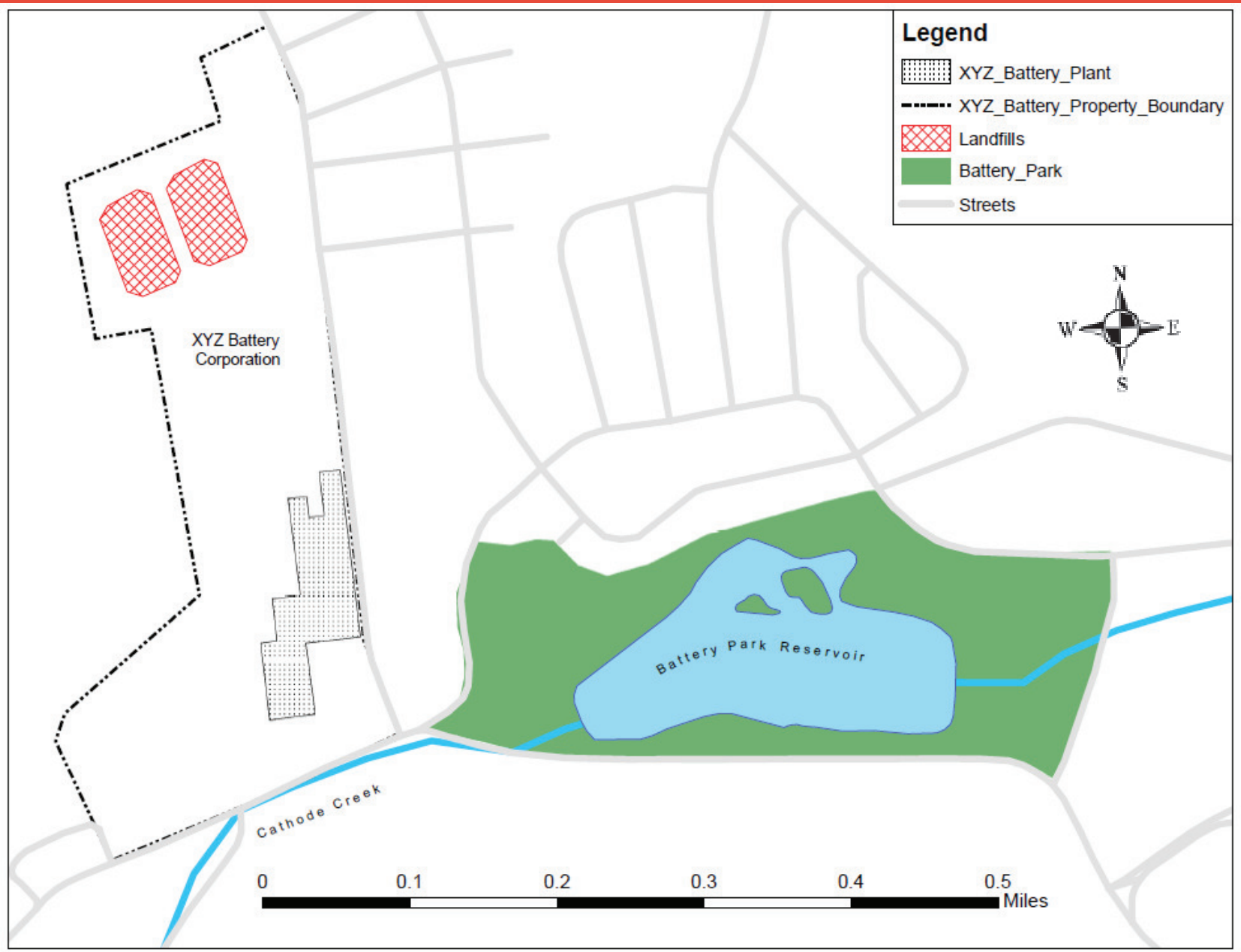
Scenario 1
Dynamic Degreasers, Inc.



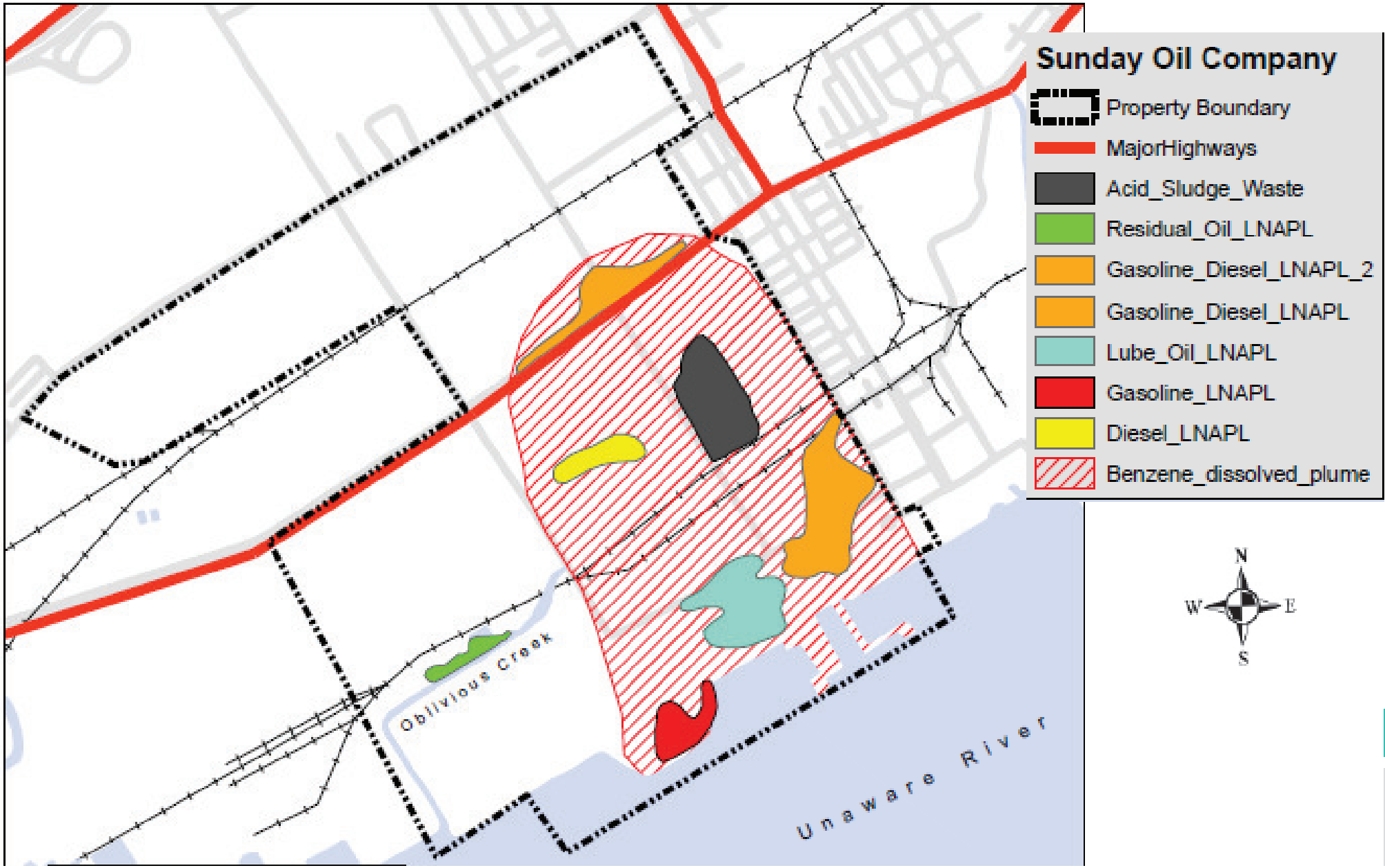
Scenario 2
Solvent Recycling & Management



Scenario 3
XYZ Battery Corporation



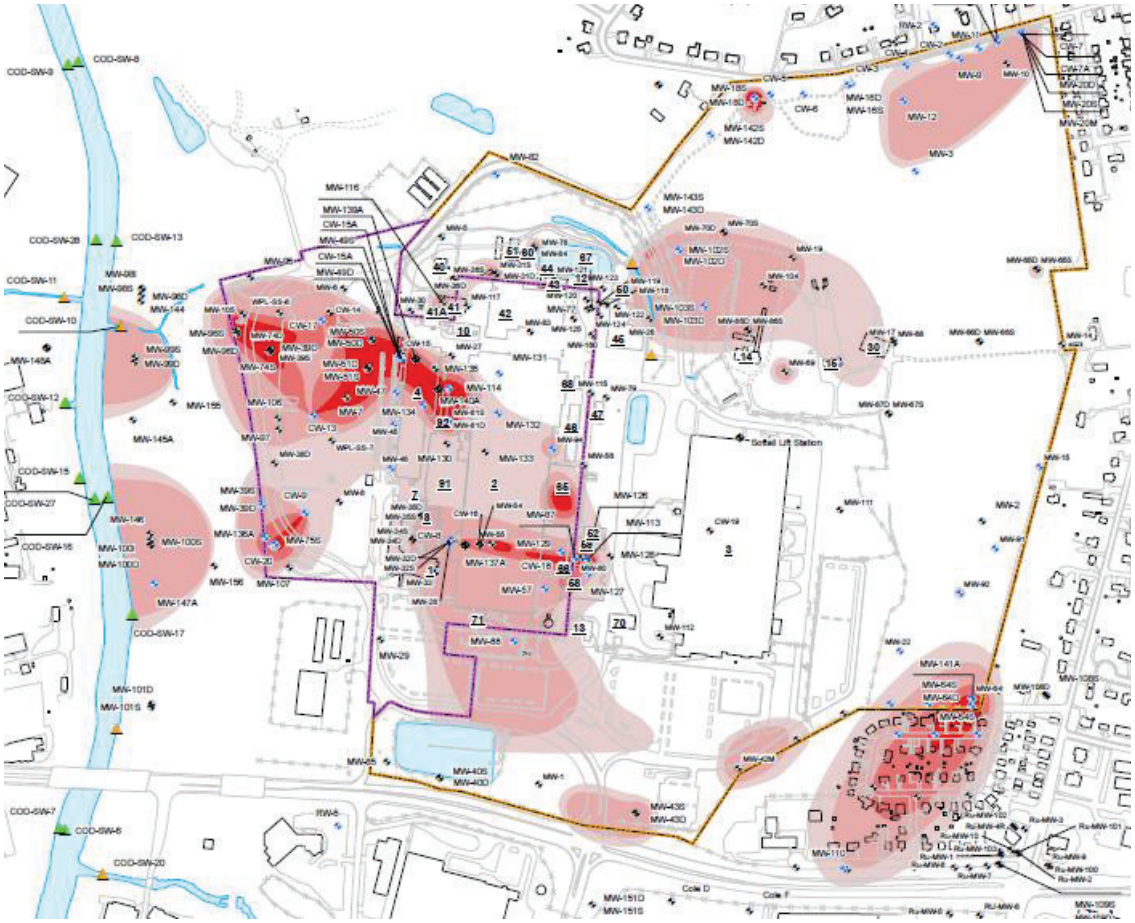
Scenario 4
Sunday Oil Company



Example Objectives – Bad and Good

Region 3 RCRA FIRST:
RSP Meeting

Harley-Davidson



- Chlorinated solvents in GW, Soil, SW
- Complex geology karst/folds/faults
- Ongoing P&T to contain plume
- RFI mostly complete
- Decided to have RSP Meeting to develop CAOs
- RSP meeting held Jan 31, 2017
- HD shared their CAOs (filled out chart) prior to meeting
- By working methodically through the chart, all the hot-button issues were brought up and discussed
- Next step – finalize agreement on CAOs, how/when to fill data gaps, followed by focused CMS

Reflections and Key Takeaways

- What did you learn today?
- How do you plan to incorporate the RCRA FIRST approach in your program?
- What tools do you find most useful?
- Did you achieve your goal for the day?
- Additional questions, reflections, or feedback?

Thank You!

Paul Gotthold

Office of Pennsylvania Remediation
U.S. EPA Region 3
215-814-3410
gotthold.paul@epa.gov

Joel Hennessy

Office of Technical and Administrative Support
U.S. EPA Region 3
215-814-3390
hennessy.joel@epa.gov

Luis Pizarro

U.S. EPA Region 3
215-814-3444
Pizarro.Don@epa.gov

RCRA FIRST