Remediation Roundtable

March 28, 2017

Connecticut Department of Energy and Environmental Protection: Remediation Division

Roundtable Webinar

- Basic directions provided on listserv email
- Detailed directions on website
  - www.ct.gov/deep/remediationroundtable

Agenda

- Updates:
  - Wave 2 RSR and EUR Progress
  - Property Transfer Act Compliance Initiative
  - Roundtable Tips
- Presentations:
  - Draft Monitored Natural Attenuation Guidance Concepts
  - Concurrence memo for ISCO ITRC Guidance
  - Concurrence memo for Vapor Intrusion ITRC Guidance
  - Overview of the DQA/DUE Process

Announcements

- Property Transfer filing forms
- EPOC Verification/Audit course

- NEW ITRC ISCO Concurrence Memo
- NEW QA/QC Lab Communication Guidance

Website Updates

- Engineered Controls Guidance page
- Improved Brownfields pages – updates to main page, contacts, State and Fed info pages, and NEW Brownfields Success Stories page and Funding Sources page
- NEW Site Characterization page

Questions or Comments?

Please Speak into Microphone
and State Your Name

www.ct.gov/deep/remediationroundtable

Deputy Commissioner Robert Kaliszewski

Transformation - Wave 2 RSR and EUR Progress Update

Robert Bell
Assistant Director
Remediation Division

Wave 2 RSR and EUR Amendment Progress

- ✓ April 2016- Wave 2 Conceptual Language posted
  - ✓ 4 Question and Answer Sessions
    - E2 Monthly Meeting
    - DEEP Headquarters, Hartford
    - Kellogg Environmental Center, Derby
    - Connecticut Environmental Forum Monthly Meeting
- ✓ August 2016- Revised RSR Wave 2 Conceptual Language posted
- ✓ December 2016 and January 2017- conducted briefings with DEEP Commissioner, Department of Public Health, Department of Economic and Community Development and Department of Transportation

Questions or Comments?

Please Speak into Microphone
and State Your Name

www.ct.gov/deep/remediationroundtable

Property Transfer Act Compliance Initiative

Claire Quinn
Compliance & Enforcement Coordinator
Remediation Division

Property Transfer Act – Statutory Requirements

COI

- Due 2 years after acknowledgement date
- Using prescribed form for sites filing after 7/1/2007

RAP

- Due 3 years after acknowledgement date
- Using prescribed form for sites filing after 7/1/2007

Verification

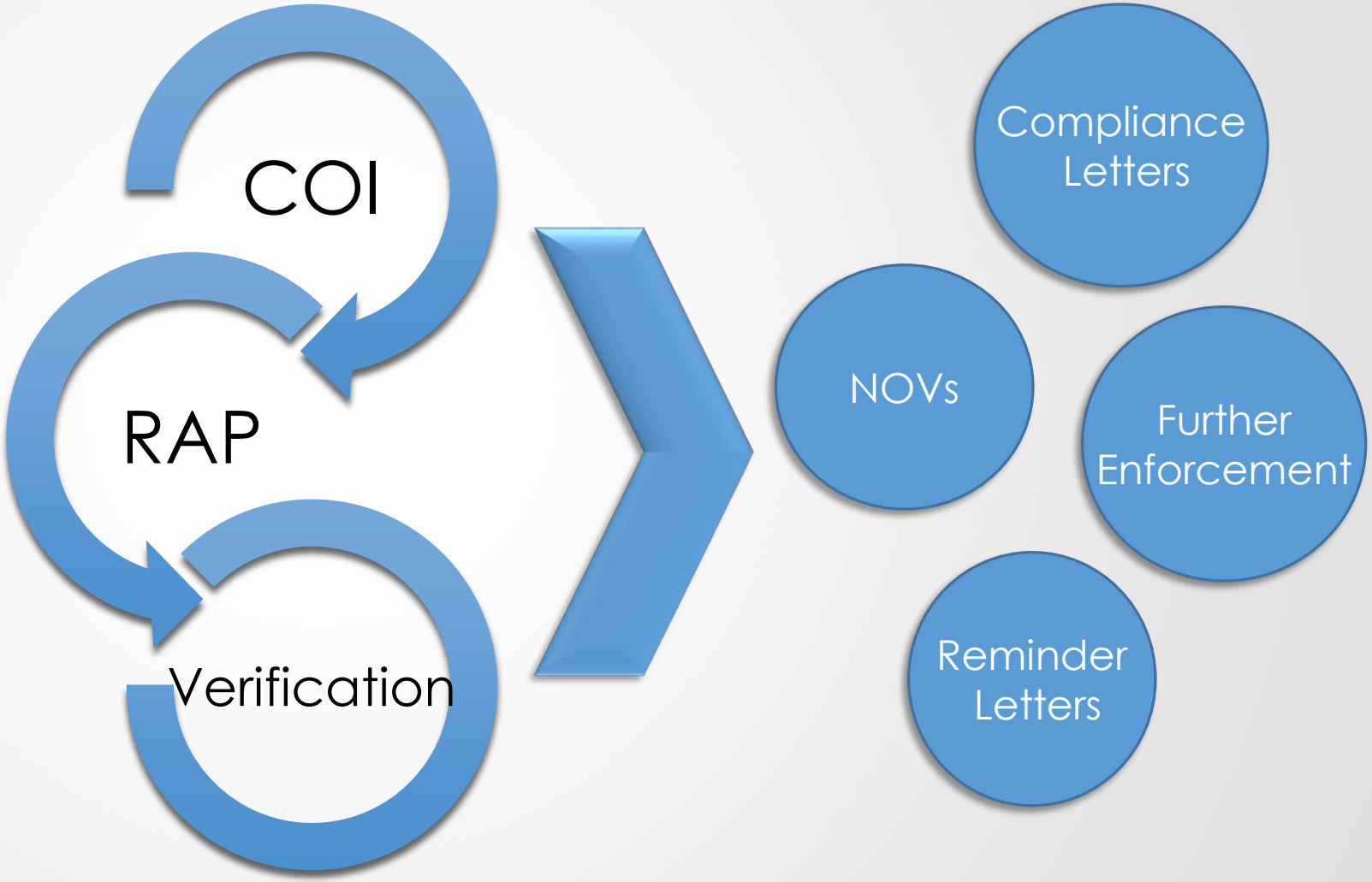
- Due 8 years after acknowledgement date
- For sites filing after 10/1/2009

Property Transfer Act Compliance Initiative

- New, ongoing initiative
- Continual process tracking compliance status of all Property Transfer filings
- COI and RAP non-compliance letters sent beginning 2015
- Issuing NOVs for past-due COIs and RAPs
- Will pursue further enforcement when necessary for compliance
- Similar process will begin for Verifications next year

Property Transfer Act Compliance Initiative

As milestones for each site become due, compliance status is reviewed.



Questions or Comments?

Please Speak into Microphone
and State Your Name

www.ct.gov/deep/remediationroundtable

Roundtable Tips

Roundtable Tips
Environmental Land Use Restriction
Do's and Don'ts

Amy Richardson
Environmental Analyst
Remediation Division

#4: Tables and Figures

If alternative language is proposed, complete the following:

Explain why alternative language is needed:

The proposed alternative language is:

If pertinent to the Application, enter additional information below (optional): ← **Optional**

.

✓ Insert electronic copies of tables and figures below. ← **This is not optional - must insert data**

✓ Insert electronic copies of **extra Forms** as needed (found on the Environmental Land Use Restrictions webpage). **These will be included in the final ELUR** package

- Please submit most current site sampling data to explain that the appropriate restriction(s)are selected

#5: Table 1. Land Title Analysis

Part V. Land Title Analysis (Table 1) AND A-2 Survey Analysis and Property Owner Affidavit Analysis (Table 2) ✱

This section is currently not locked to allow the applicant to copy and insert more rows as needed. Since the page is unprotected, the check boxes will not be filled when clicked on. For each response, please delete the check box and enter an X in its place.

Note: These tables have been designed in landscape orientation. If you view the tables in Print-Preview, or print, and the page appears to be cut-off, ensure that the printer properties of the default printer selected is set at landscape and paper size is set to 8 ½" x 14" (Legal).

Table 1. Land Title Analysis✱

Table 1. Land Title Analysis✱

☐ There were no items found on the title search or Optional Preliminary Certificate of Title.

or

☒ The following items were found on the title search or the Optional Preliminary Certificate of Title.

Is this an interest in Land?
☐YES
☐NO

Will the interest be released?
☐YES
☐NO

Will a subordination be obtained?
☐YES If obtained, attach to Application.
☐NO, a waiver of the subordination requirement is requested.
Rationale for waiver:
☐ Interest is located outside of the ELUR Subject Area(s)
☐Other:

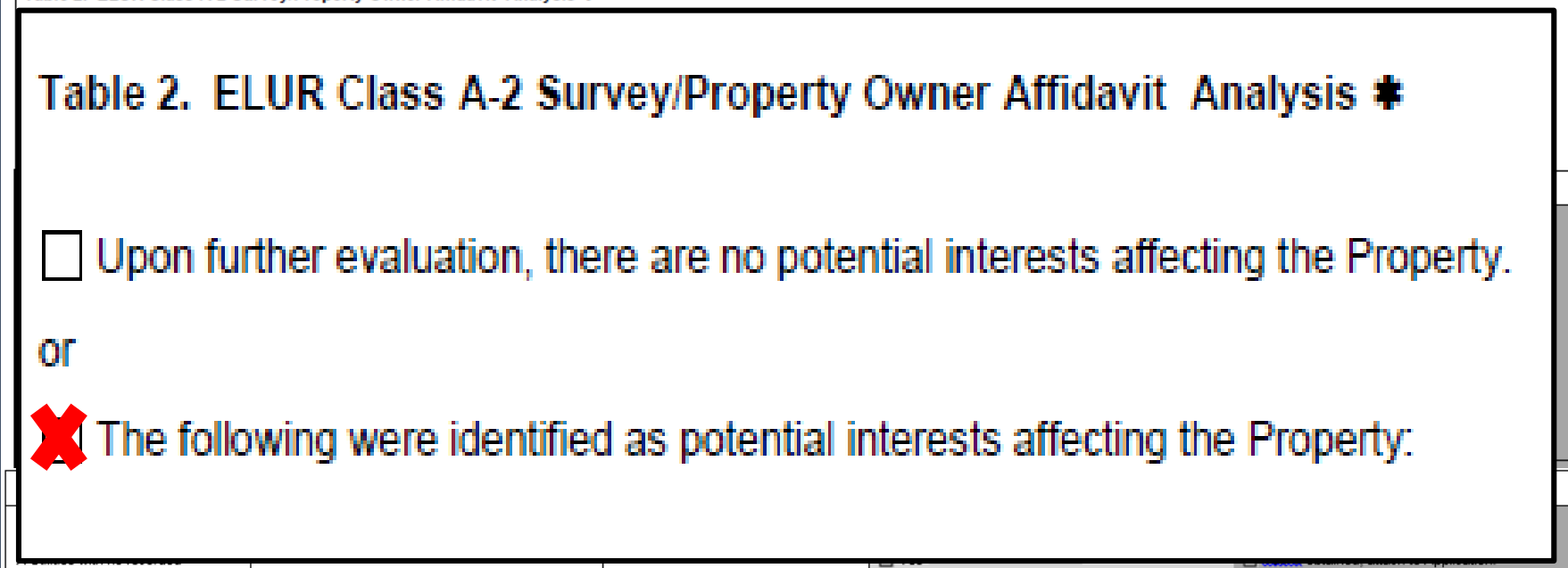
- Most contain between 1-7 general exceptions need to be included on Table 1
- Most often there are items on the Title Search in addition to the general exceptions

#6: Table 2. Class A-2 Survey/ Property Owner Affidavit Analysis

This section is currently not locked to allow the applicant to copy and insert more rows as needed. Since the page is unprotected, the check boxes will not be filled when clicked on. For each response, please delete the check box and enter an X in its place.

Note: These tables have been designed in landscape orientation. If you view the tables in Print-Preview, or print, and the page appears to be cut-off, ensure that the printer properties of the default printer sele set at landscape and paper size is set to 8 ½" x 14" (Legal).

Table 2. ELUR Class A-2 Survey/Property Owner Affidavit Analysis ✱



easement
☐ Boundary Line Dispute
☐ Other:

X☐ Item is located inside of the ELUR Subject Area(s) A .

X☐ No, rationale:
X☐ Item is located outside of the ELUR Subject Area(s) B & C which are areas of no soil disturbance .
☐ Item subject to Section 16-237 of the CGS– notice of recorded ELUR to be provided to utility.
X☐ Property Owner is responsible for the item.
☐ Other:

☐ No, explain:

- Utilities such as electricity, public water, sewer, natural gas, etc., are potential interests
- Exceptionally rare cases have no unrecorded easements/utilities on site

#7: When Residential Criteria = Industrial/ Commercial Criteria

- When a substance has the same Residential and Industrial Criteria, there is no basis for requesting a Residential Restriction. A Residential Restriction is not appropriate.
- Where Industrial/Commercial Direct Exposure Criteria is exceeded, an *Exposure of Inaccessible Soil* Restriction is necessary
- Where Industrial/Commercial volatilization criteria is exceeded, a *Building* Construction Restriction is necessary

	Example Contaminant	Residential (ppb)	I/C (ppb)
Direct Exposure Criteria	Benzo(a)pyrene	1	1
	Arsenic	10	10
	Beryllium	2	2
	Chromium, Hexavalent (Cr+6)	100	100
Volatilization Criteria	Vinyl Chloride	2	2
	Methylene Chloride	50,000	50,000
	MTBE	50,000	50,000

#8: Subordination Documents

- Statutory Authority: CGS 22a-113o(b)
- We ask for draft subordination documents to ensure subordinations meet requirements of the statute
- If the interests are not "irrevocably subordinated" the subordination cannot be accepted
- Improper subordinations will render ELUR invalid

9: Certification of Completeness Forms
(and other signatory forms)

Section G. Certification of Completeness of ELUR Application Form

All of the following documents can be found on the Environmental Land Use Restrictions webpage. *

Not optional → ✓ Insert electronic copy of signed Property Owner Certification below.

Not optional → ✓ Insert electronic copy of signed Preparer Certification for all Sections (except Section F) below.

Not optional → ✓ Insert electronic copy of signed Preparer Certification for Section F below.

✓ Insert electronic copy of signed Optional Statement by Licensed Environmental Professional Form below.

Printed Name (not necessary to sign YET)	Must Be Signed Upon Submittal
Declaration Document Grantor Signature Block	Duly Authorized Agent/Signatory
Property Owner Affidavit	Certification of Completeness

Questions or Comments?

Please Speak into Microphone
and State Your Name

www.ct.gov/deep/remediationroundtable

#10: Property Transfer Schedules

The schedule is the first statutory milestone.

RE: Acknowledgement of Receipt
of complete Form III and ECAF

Dear :

I am writing to acknowledge receipt of a Form III, fee payment in the amount of $3,000.00 and Environmental Condition Assessment Form (ECAF) received on *. These documents were submitted pursuant to Connecticut General Statutes (CGS) §22a-134(a-e) regarding the * transfer of * located at * in *, Connecticut from * to *. This filing has been assigned REM ID No. *.

Please note that significant changes were made to the Property Transfer Law during the 2009 Regular Session of the General Assembly. Public Act 09-235 made changes to CGS §§22a-134 and 134a.

The Property Transfer Law now provides for automatic delegation to a licensed environmental professional (LEP) to oversee the investigation of the parcel and verify that the establishment has been remediated in accordance with the State Remediation Standard Regulations, §22a-133k-1 through 3 (RSRs). This delegation is automatic unless within 75 days of the date of this letter, you are notified in writing that the Commissioner's review and approval of the investigation and remediation is required. Please be aware that although the Form III is considered complete, the ECAF may still be under technical review and you may be required to provide additional information (i.e., receptor survey, well monitoring analyses, etc.) in order for the Commissioner to

1. Submit to the Commissioner within 75 days of the date of this letter, a schedule for the investigation of the parcel and remediation of the establishment. The schedule shall include the name of the licensed environmental professional that will be retained to oversee such activities at the establishment, and shall provide that you (as certifying party) will take the following actions.

3. Submit to the Commissioner within 2 years of the date of this letter the final investigation report, approved in writing by an LEP. The "Completion of Investigation Transmittal Form" [1] shall be used to submit the required documentation to the Commissioner.

4. Post public notice of remediation prior to the initiation of remediation, in accordance with CGS §22a-134a(i). Since a forty five (45) day comment period is required pursuant to the RSRs(regulations at 22a-133k-1(d)(2)), the public notice of remediation should be published far enough in advance of the submittal of the Remedial Action Plan (RAP) to allow adequate time for any comments on the proposed remediation and any response to such comments to be incorporated into the Remedial Action Plan. Submit A copy of the public notice to DEP immediately following publication of said notice.

1 All forms referenced in this letter are available at www.ct.gov/DEP/Remediation

Questions or Comments?

Please Speak into Microphone
and State Your Name

www.ct.gov/deep/remediationroundtable

Draft Monitored Natural Attenuation Guidance Concepts

Anthony Gyasi
Environmental Analyst
Remediation Division

MNA PUBLIC DISCUSSION DRAFT DOCUMENT

- MNA Public Discussion Draft Document
  August 8, 2013
- Established the requirements of monitored natural attenuation (MNA) of groundwater as a remedial option
- Stakeholder and public discussions input occurred between Fall 2012 and Summer 2013

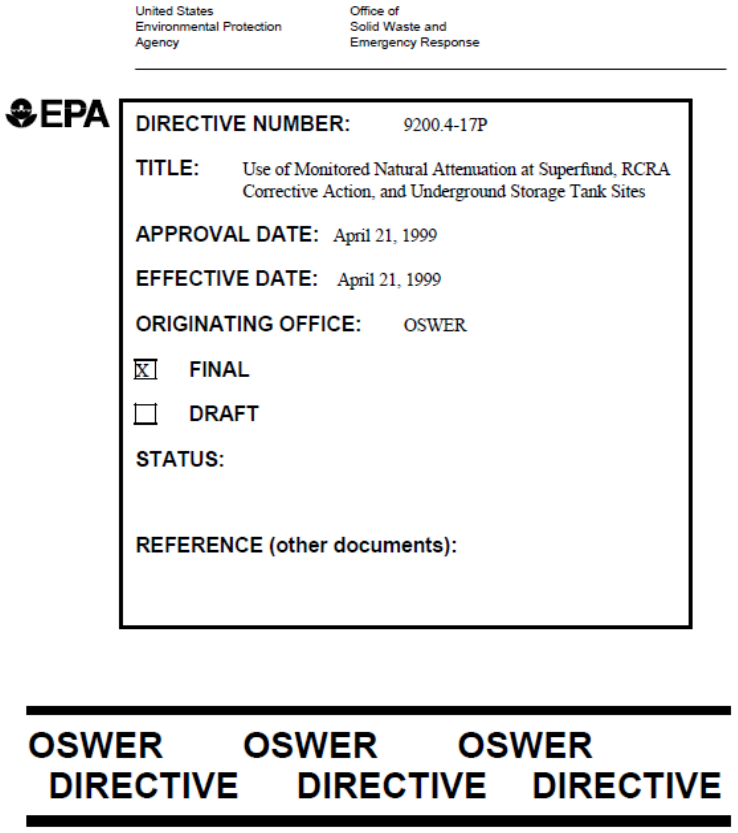
RSR WAVE 2 CONCEPTUAL LANGUAGE

- Monitored Natural Attenuation (MNA): Monitoring the natural attenuation of a groundwater plume to applicable criteria that occurs within a reasonable timeframe after completion of the remediation of all source areas and determination of a diminishing state groundwater plume

- Under 22a-133k-3(g)(1):
  - Monitoring shall be designed to determine: (H) Whether natural attenuation is occurring in groundwater to achieve criteria within a reasonable timeframe if the groundwater remedy relies upon natural attenuation

MNA: 1999 USEPA DIRECTIVE

- Not a default or presumptive remedy at any contaminated site
- Must be protective of human health and the environment and be capable of achieving site-specific remediation objectives within a timeframe that is reasonable compared to other alternatives



United States Environmental Protection Agency | Office of Solid Waste and Emergency Response

EPA

DIRECTIVE NUMBER: 9200.4-17P

TITLE: Use of Monitored Natural Attenuation at Superfund, RCRA Corrective Action, and Underground Storage Tank Sites

APPROVAL DATE: April 21, 1999

EFFECTIVE DATE: April 21, 1999

ORIGINATING OFFICE: OSWER

[X] FINAL

[ ] DRAFT

STATUS:

REFERENCE (other documents):

OSWER DIRECTIVE | OSWER DIRECTIVE | OSWER DIRECTIVE

APPLICABILTY

- Form III/RAP-TF: MNA Remedial Option. RAP must present expected data/information that supports MNA remedial approach with estimated timeframe for achieving compliance

- Form IV filing: Requires LEP verification of complete investigation and RSR compliance (except for ELUR, GW compliance monitoring, and/or MNA). Verification requires presentation of data/information that supports MNA remedial approach with estimated timeframe

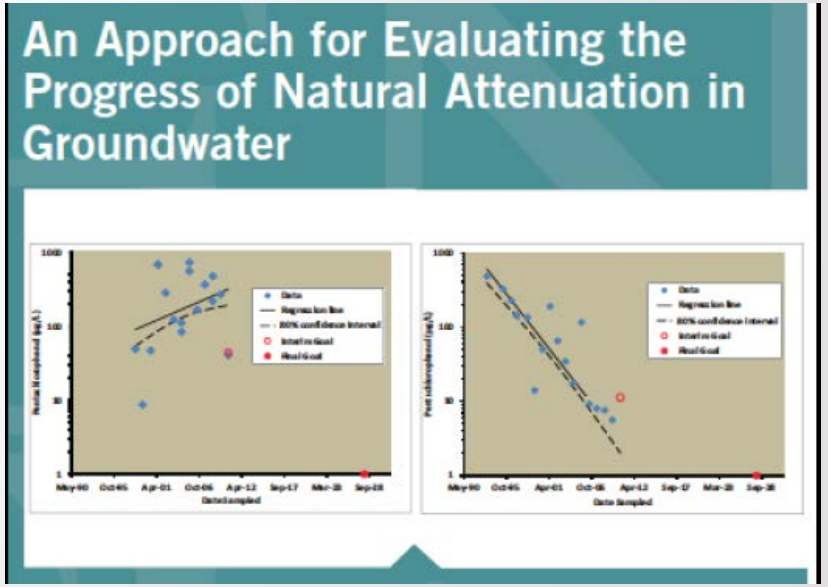
- Interim Verifications: Requires LEP Verification of complete investigation and RSR compliance, except for ongoing GW remedy (e.g., MNA). Verification requires presentation of data/information that supports MNA remedial approach with estimated timeframe

TIMEFRAME & ATTENUATION RATES ESTIMATION

- MNA Public Discussion Draft Document proposed a timeframe not exceeding 20 years
- Documentation of attenuation rate estimates and assurance that the rate is adequate for compliance objectives
- Extrapolation
- Mass Balance Model

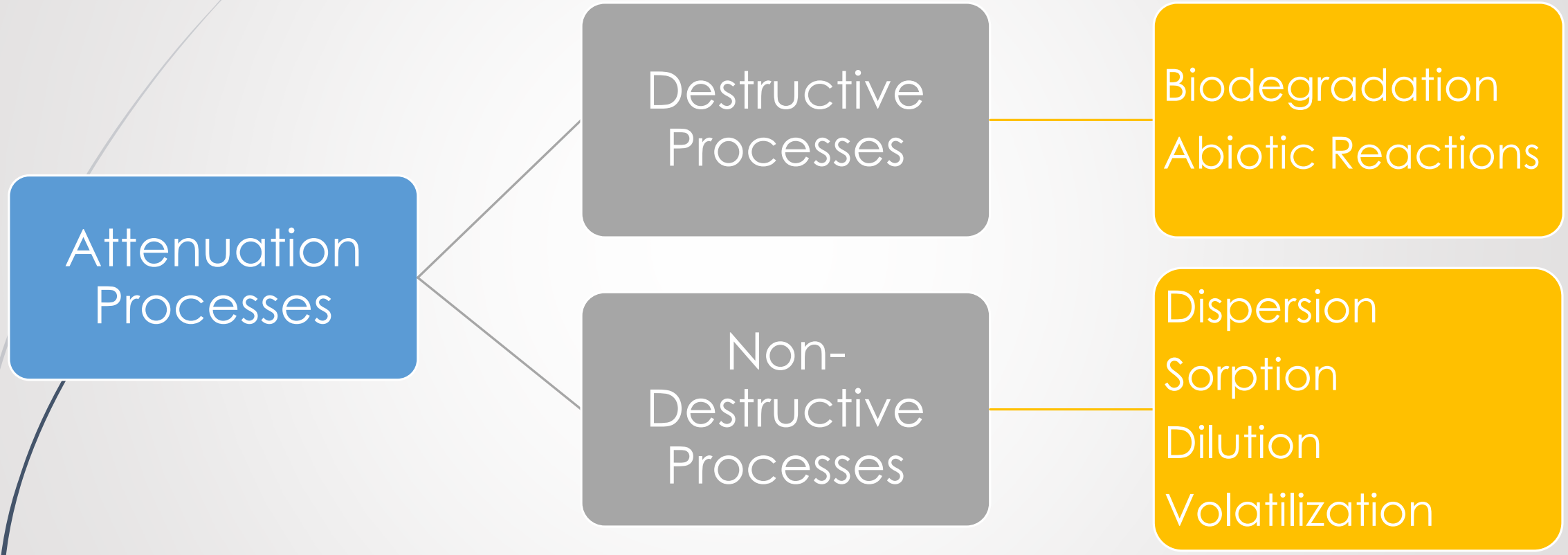
$$k_{source}(per\ year) = \frac{Mass\ Discharge\ (kg/yr)}{Mass\ (kg)}$$

- Statistics can help (Mann-Kendall Statistics)



EPA Statistics Guidance for Remediation Timeframe Evaluation

MNA: EVIDENCE NEEDED

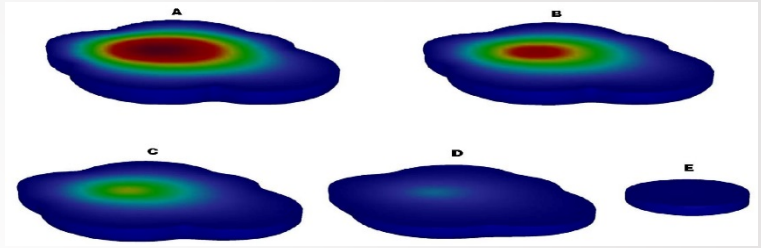


MNA: EVIDENCE NEEDED (Cont'd)

- Demonstrating that MNA is an effective remedy should be made using multiple lines of evidence (LOEs)
  - Primary LOE
    - Demonstration of Mass Loss & Diminishing Plume
  - Secondary LOE
    - Geochemical data that documents geochemical "footprints" of the type of attenuation occurring
  - Tertiary LOE/Other LOE(OLOE)
    - Predictive modeling or microcosm data/microbial studies indicative that microorganisms at the site are capable of and have the potential to degrade contaminants
- Multiple LOEs reduces uncertainties associated with a single piece of evidence and **increases confidence that MNA is suitable**

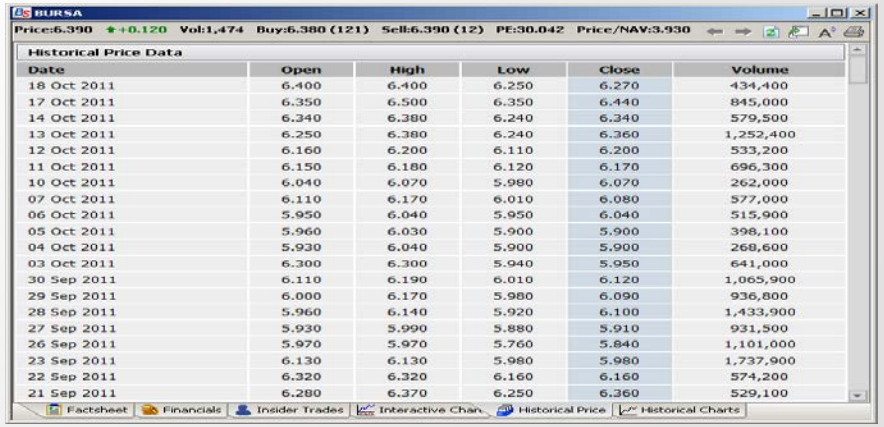
Primary LOE Examples

- **What?**: Define Groundwater Plume Status as ***Diminishing***



- ***How?*** Evaluation of historical concentrations with time & plume distance

- ***When?*** Always apply based on sufficient body of data
  - **(Adamson, D.T. and Newell, C.J., 2014)**


BURSA

Price:6.390 +0.120 Vol:1,474 Buy:6.380 (121) Sell:6.390 (12) PE:30.042 Price/NAV:3.930

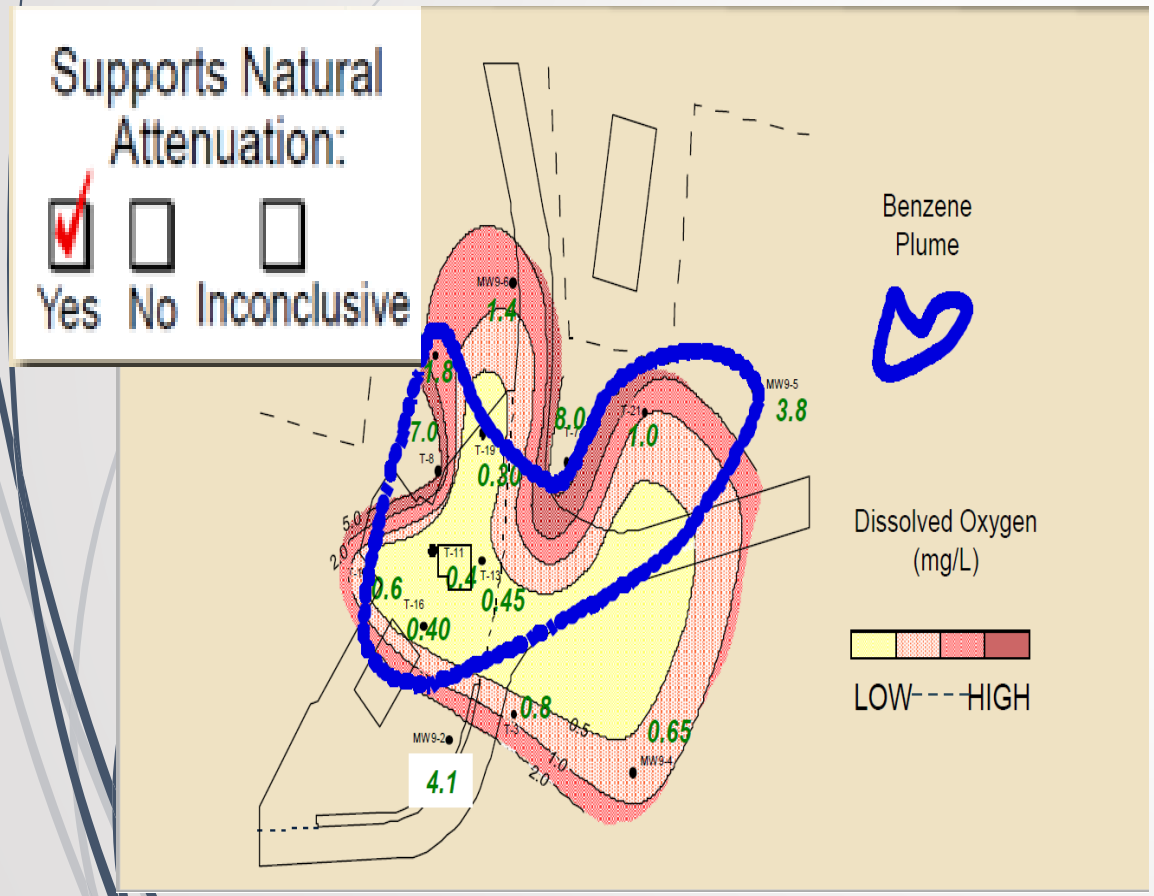
Historical Price Data

Date	Open	High	Low	Close	Volume
18 Oct 2011	6.400	6.400	6.250	6.270	434,400
17 Oct 2011	6.350	6.500	6.350	6.440	845,000
14 Oct 2011	6.340	6.380	6.240	6.340	579,500
13 Oct 2011	6.250	6.380	6.240	6.360	1,252,400
12 Oct 2011	6.160	6.200	6.110	6.200	533,200
11 Oct 2011	6.150	6.180	6.120	6.170	696,300
10 Oct 2011	6.040	6.070	5.980	6.070	262,000
07 Oct 2011	6.110	6.170	6.010	6.080	577,000
06 Oct 2011	5.950	6.040	5.950	6.040	515,900
05 Oct 2011	5.960	6.030	5.900	5.900	398,100
04 Oct 2011	5.930	6.040	5.900	5.900	268,600
03 Oct 2011	6.300	6.300	5.940	5.950	641,000
30 Sep 2011	6.110	6.190	6.010	6.120	1,065,900
29 Sep 2011	6.000	6.170	5.980	6.090	936,800
28 Sep 2011	5.960	6.140	5.920	6.100	1,433,900
27 Sep 2011	5.930	5.990	5.880	5.910	931,500
26 Sep 2011	5.970	5.970	5.760	5.840	1,101,000
23 Sep 2011	6.130	6.130	5.980	5.980	1,737,900
22 Sep 2011	6.320	6.320	6.160	6.160	574,200
21 Sep 2011	6.280	6.370	6.250	6.360	529,100

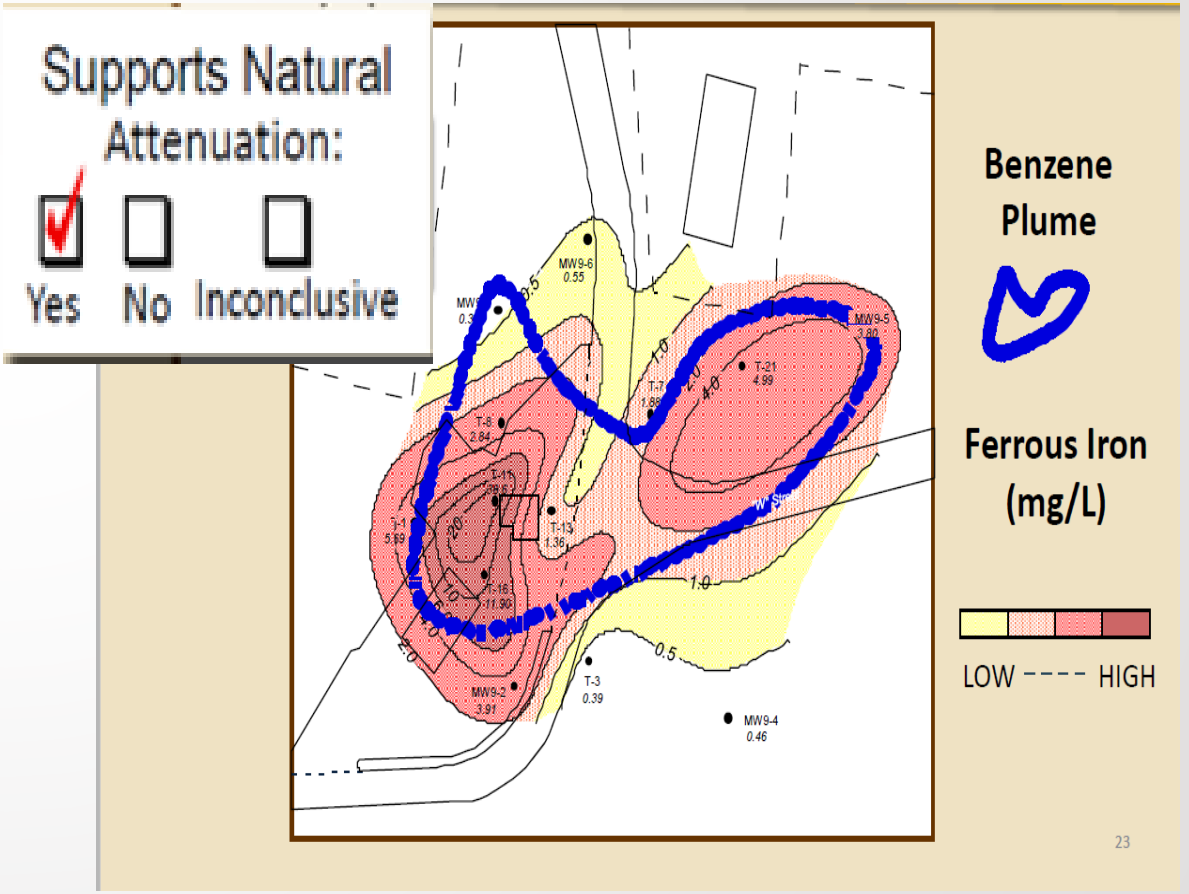
Factsheet | Financials | Insider Trades | Interactive Chart | Historical Price | Historical Charts

Secondary LOE Examples

Dissolved Oxygen Example

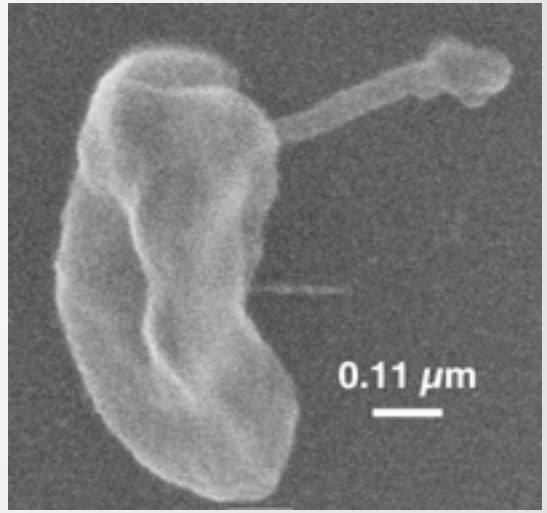


Ferrous Iron Example



Tertiary LOE/OLOE Examples

- Includes all assessments not included in the first 2 LOEs
- Especially needed if the first 2 LOEs are inconclusive and/or to reduce uncertainty
- Predictive modeling, OLOE, etc.
- Microbial studies provide strong evidence of degradation
  - Shows that key *organisms* are present (e.g., *Dehalococcoides, Dehalobacter*)
  - Shows that key *enzymes* are present (e.g., vcrA-vinyl chloride reductase)
  - Establish the relative abundance of petroleum degrading microbial strains



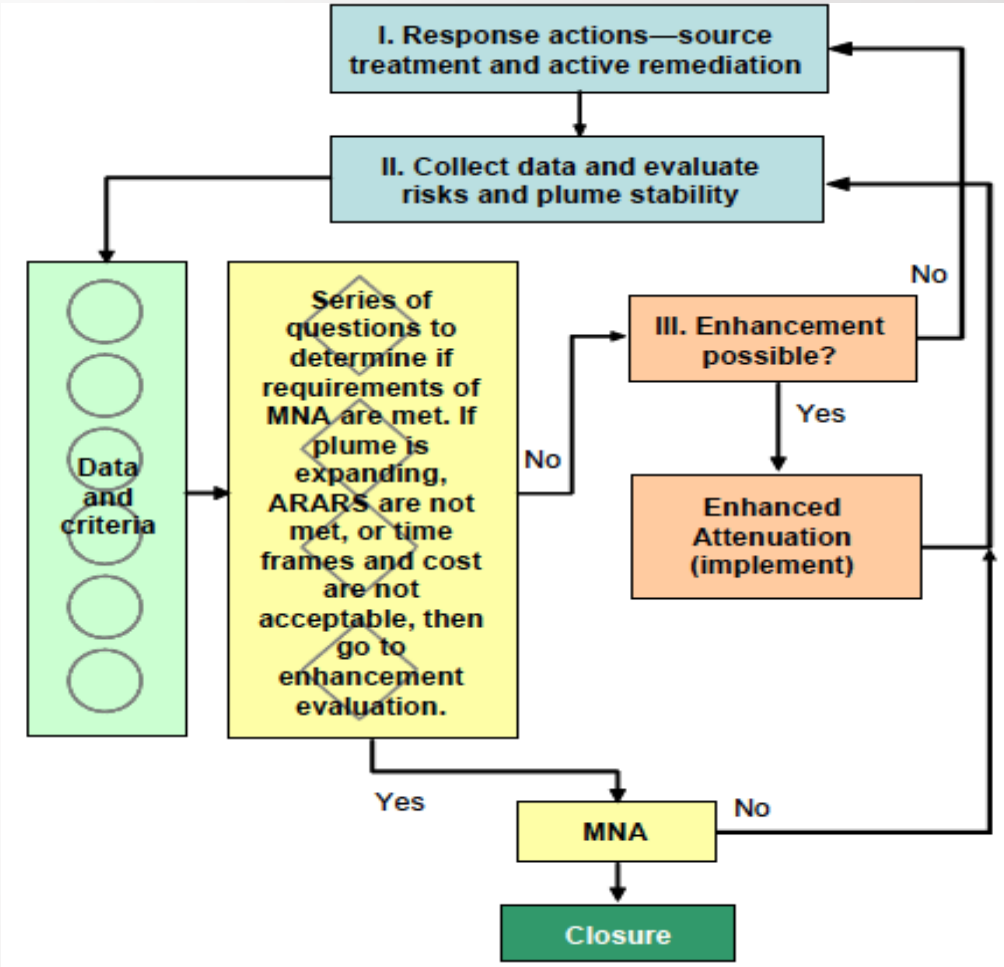
Our Friend, Dehalococcides (Apkarian and Taylor)

What's Next: MNA Guidance Document

- Are the Risks Acceptable?
- Is the Plume Diminishing?
- Are Conditions Sustainable?
- Is the Remediation Timeframe Acceptable?

NO?

- Enhanced Remedy Needed



(ITRC MNA Decision Flowchart)

RESOURCES

- MNA Public Discussion Draft Document
  - http://www.ct.gov/deep/lib/deep/site_clean_up/remediation_regulations/discussiondraft_mna.pdf
- Rates Estimation
  - Adamson, D.T., and Newell, C.J. (2014). Frequently Asked Questions about Monitored Natural Attenuation in Groundwater. ESTCP Project ER-201211. Environmental Security and Technology Certification Program, Arlington, Virginia. (https://clu-in.org/download/techfocus/na/NatAtt-FAQs-2014.pdf)
  - http://www.newmoa.org/events/docs/227_203/Adamson-Newell_MNA_Sept2016_AsGiven.pdf
  - USEPA (2011): An Approach for Evaluating the Progress of Natural Attenuation in Groundwater. (https://clu-in.org/download/techfocus/na/NA-approach-for-eval-2011.pdf)
- A Decision Flowchart for the Use of Monitored Natural Attenuation and Enhanced Attenuation at Sites with Chlorinated Organic Plumes (March 2007)
  - http://www.itrcweb.org/Documents/EACODecisionFlowchart_v1.pdf

Questions or Comments?

Please Speak into Microphone
and State Your Name

www.ct.gov/deep/remediationroundtable

Concurrence Memo for ITRC Guidance

Kenneth Feathers
Supervising Sanitary Engineer
Remediation Division

Concurrence Memo Background

Interstate Technology Regulatory Council

- ITRC www.ITRCweb.org
- Public-private coalition
  - EPA, DoD, DoE, States, Tribal
  - Consultants, Academics
- Fosters use of innovative environmental technologies
- Goal to reduce compliance costs and maximize cleanup efficacy

INTERSTATE TECHNOLOGY & REGULATORY COUNCIL
Advancing Environmental Solutions

- ITRC produces documents and training on technical topics
- Authoring technical teams include representatives from all sectors of environmental practice
- Documents reflect national consensus on good technical practice when using emerging remedial approaches
- Except for classroom training all materials are available free on the internet:

  www.itrcweb.org

Evolving Technology

- ITRC documents address quickly evolving technical practices
- Older ITRC guidance
  - May be archived and not on internet
  - May be superseded by an update
  - Will not reflect recent advances
  - May have an advisory

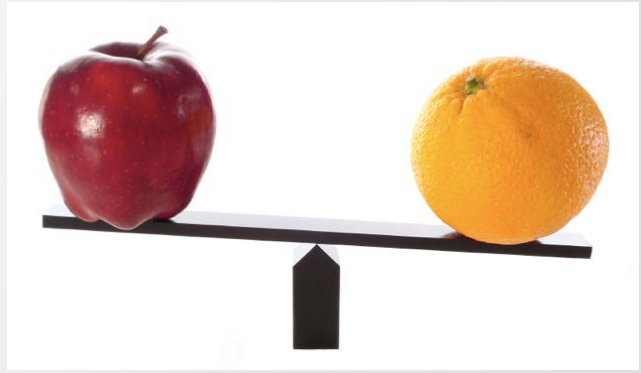
- Many aspects of these documents are dated but still relevant
- Need to use older guidance prudently
  - Professional judgement
  - Knowledge of recent developments – science, technology, regulations

Value of ITRC Guidance

- When issued may be first widely available resource
- Consensus guidance - technically focused
- Guidance assists/educates DEEP reviewers
- Same guidance available to environmental practitioners
- Establishes common understanding for:
  - Site-specific review and approval
  - Further technical dialogue regarding alternative approaches
- May allow expedited site specific acceptance/approval

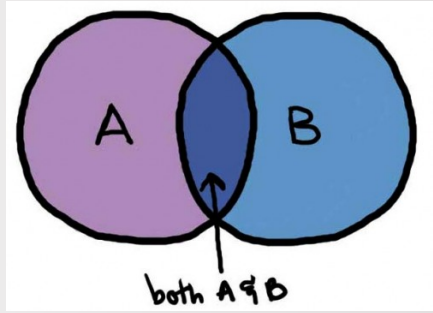
General Considerations for Guidance Use

- ITRC guidance is focused on the Federal remedial approach
  - Cleanup is based on site specific risk assessment
  - Project Manager regulator selects technology – formal process
  - Direct regulator involvement
- In Connecticut approach differs
  - Cleanup usually to numeric RSR criteria
  - LEP selects technology
  - LEP project management periodically reviewed by DEEP



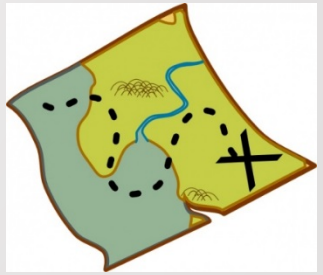
Why Concurrence Letters?

- Connecticut statutes and regulation are unique
  - Law defines framework for ITRC guidance use
  - May have aspects outside guidance conceptual scope
  - Not all available guidance fit into CT framework
- DEEP concurrence letters explain how law and guidance interrelate
- Allow providing additional guidance quickly and with less DEEP resource expenditure
- DEEP silence does not reflect negatively on the value of an ITRC guidance document



DEEP Concurrence Objective

- Review and specifically endorse selected ITRC technical guidance
- Provide guidance on applicability of ITRC guidance to CT RSRs
- Guidance not regulation – alternative equivalents also acceptable
- DEEP Concurrence:
  - Establishes DEEP acceptance of guidance topic and approach
  - Identifies issues DEEP will consider in site specific reviews



What's Next?

- DEEP has identified several ITRC guidance as candidates
- Expect concurrences this year on
  - In-situ remedial technologies
  - Vapor intrusion
  - DNAPL investigation and remediation topics
- Longer timeframe for some concurrences
  - Interrelationship with pending Wave 2 changes
  - Coordination with other DEEP divisions

Concurrence Memo for ISCO ITRC Guidance

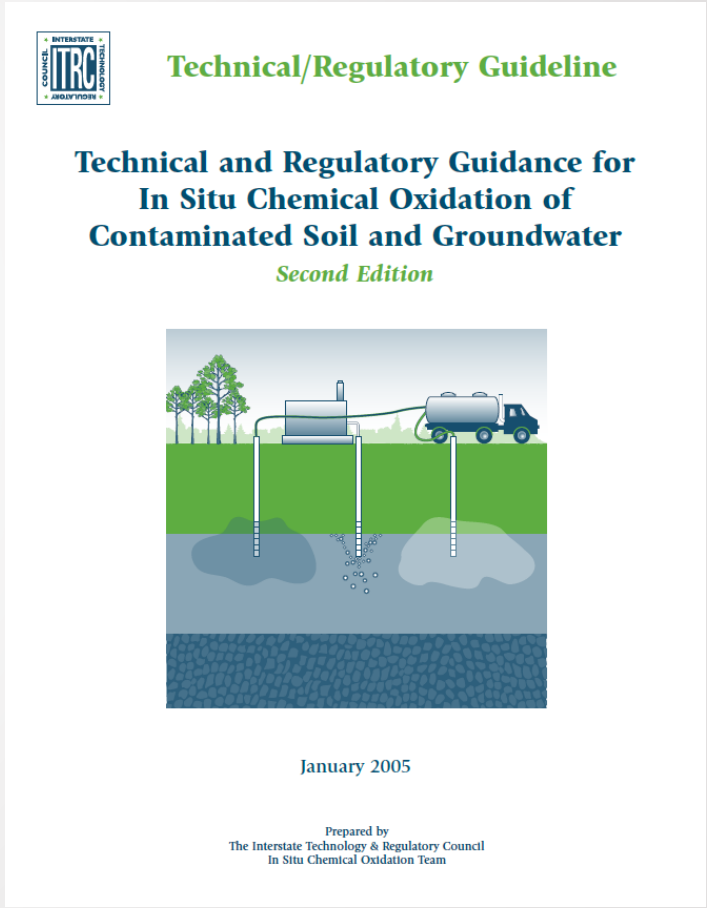
DEEP Concurrence: ITRC ISCO Guidance

- ITRC: *Technical and Regulatory Guidance for In Situ Chemical Oxidation of Contaminated Soil and Groundwater*, *Second Edition*, January 2005

http://www.itrcweb.org/GuidanceDocuments/ISCO-2.pdf

- Concurrence letter issued October 2016

http://www.ct.gov/deep/lib/deep/site_clean_up/guidance/general_permit/itrcconcurrance_isco_201610.pdf



In-Situ Chemical Oxidation (ISCO)

- What it is
  - Introduction of chemical oxidants into subsurface
- What it does
  - Decompose organic chemicals
  - Stabilize some inorganic substances
- Why use it
  - Addresses only polluting substance, without moving soil
  - Less site disturbance
- Recent Developments
  - Additional chemical formulations and delivery methods

CT Regulatory Framework

- ISCO is a discharge to the waters of the state
- Permit required under CGS 22a-430
- General Permit issued 6/30/2014
- Permit provides framework for use of ISCO technology within CT
- GP Developed using ITRC guidance as a resource
- Conditions in GP reflect interrelationship of guidance and state regulatory framework

General Permit - Zone of Influence

- GP requires delineation of the zone of influence (ZOI)
  - Where aquifer chemistry is affected
  - Composite zone of all injection points and effect of GW flow
- GP requires monitoring ZOI
  - Identify injection stays in location permitted
  - Includes focus on potential receptors
  - Trigger response if permit/ZOI violated

General Permit - Monitoring

- GP governs where in conflict with ITRC
- Monitor ZOI
- Limited process monitoring also required
- Guidance-described performance monitoring not required by GP
- Monitor until aquifer returns to stability
- Monitoring includes introduced chemicals
- GP Appendix defines chemical specific CoCs
- RCP analytical methods recommended

General Permit - Conditions

- No endorsement of a product
- No guarantee of success
- Success is dependent on issues discussed in guidance
  - Selection of appropriate chemistry
  - Adequate site specific characterization
  - Appropriate implementation
  - Well defined goals and metrics for measuring
  - Remember to also incorporate recent advances in ISCO technology

Remedial Design - Characterization

- Additional Characterization may be needed for design
  - 3D flow
  - Microstratigraphy
  - Sorption
  - Preferential paths
  - Potentially affected infrastructure

- Remedy chemical - specific characterization
  - secondary mobilization
  - competing oxygen demands
  - GP Appendix

Design Considerations

- Outside-in injection sequence to limit out-migration beyond ZOI
- Tracers may require separate permits
- All constituents being injected must be identified
- Registration documentation should include
  - Provision for additional stages as appropriate
  - Provision for scale-up from pilot
  - Work plan modification approach for next phases
    - Include monitoring data from prior stages in design
    - May require some process/performance monitoring

Verification Considerations

- Methodologies in guidance for design characterization may not provide data suitable for verification
- Identify that effects of injection have stabilized
- Revised CSM due to injection – ID data gaps
- Essentially need focused re-characterization combined with performance monitoring data
- Verify no untreated zones between injection points
- GP – injected chemicals must also meet criteria
- In effect, GP defines injection itself as an additional AOC

Questions or Comments?

Please Speak into Microphone
and State Your Name

www.ct.gov/deep/remediationroundtable

Concurrence Memo for Vapor Intrusion ITRC Guidance

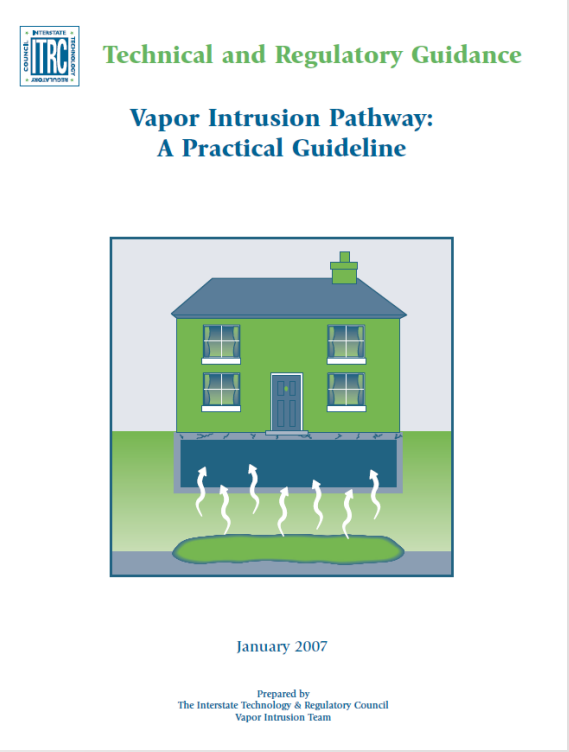
Carl Gruszczak
Environmental Analyst
Remediation Division

ITRC Vapor Intrusion Guidance

- *Vapor Intrusion Pathway: A Practical Guideline*

  http://www.itrcweb.org/documents/vi-1.pdf

- Concurrence Memo
  - Work in progress
  - Expected to be finalized soon

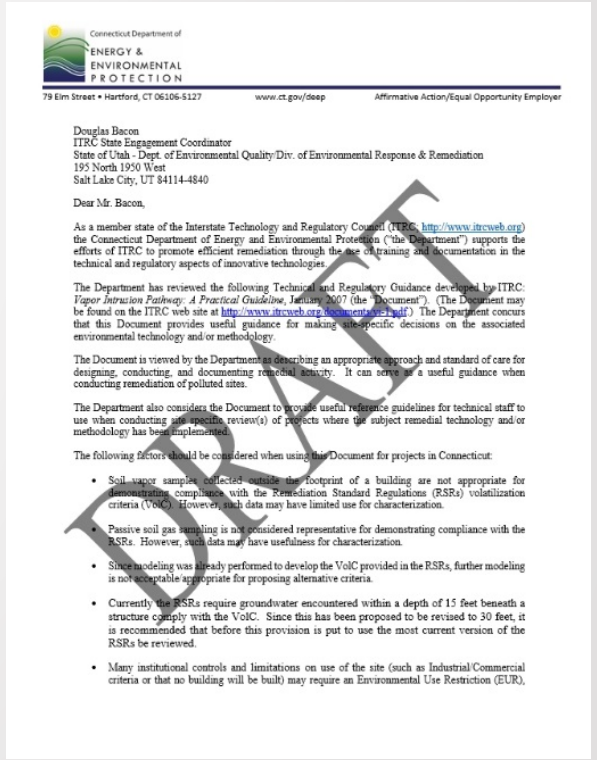


Vapor Intrusion History

- RSR Volatilization Criteria (VolC) concepts date from 1995/1996
- ITRC Vapor Intrusion Guidance from January 2007
- There is also EPA Vapor Intrusion Guidance from June 2015

Conditions on ITRC VI Concurrence

- Concurrence document is still DRAFT
- Following slides contain a preliminary list of expected conditions
  - Final list of conditions will be in the concurrence



Connecticut Department of
ENERGY & ENVIRONMENTAL PROTECTION

79 Elm Street • Hartford, CT 06106-5127 www.ct.gov/deep Affirmative Action/Equal Opportunity Employer

Douglas Bacon
ITRC State Engagement Coordinator
State of Utah - Dept. of Environmental Quality/Div. of Environmental Response & Remediation
195 North 1950 West
Salt Lake City, UT 84114-4840

Dear Mr. Bacon,

As a member state of the Interstate Technology and Regulatory Council (ITRC, http://www.itrcweb.org) the Connecticut Department of Energy and Environmental Protection ("the Department") supports the efforts of ITRC to promote efficient remediation through the use of training and documentation in the technical and regulatory aspects of innovative technologies.

The Department has reviewed the following Technical and Regulatory Guidance developed by ITRC: *Vapor Intrusion Pathway: A Practical Guideline*, January 2007 (the "Document"). (The Document may be found on the ITRC web site at http://www.itrcweb.org/documents/sl-3.pdf.) The Department concurs that this Document provides useful guidance for making site-specific decisions on the associated environmental technology and/or methodology.

The Document is viewed by the Department as describing an appropriate approach and standard of care for designing, conducting, and documenting remedial activity. It can serve as a useful guidance when conducting remediation of polluted sites.

The Department also considers the Document to provide useful reference guidelines for technical staff to use when conducting site-specific review(s) of projects where the subject remedial technology and/or methodology has been implemented.

The following factors should be considered when using this Document for projects in Connecticut:

- Soil vapor samples collected outside the footprint of a building are not appropriate for demonstrating compliance with the Remediation Standard Regulations (RSRs) volatilization criteria (VoIC). However, such data may have limited use for characterization.
- Passive soil gas sampling is not considered representative for demonstrating compliance with the RSRs. However, such data may have usefulness for characterization.
- Since modeling was already performed to develop the VoIC provided in the RSRs, further modeling is not acceptable/appropriate for proposing alternative criteria.
- Currently the RSRs require groundwater encountered within a depth of 15 feet beneath a structure comply with the VoIC. Since this has been proposed to be revised to 30 feet, it is recommended that before this provision is put to use the most current version of the RSRs be reviewed.
- Many institutional controls and limitations on use of the site (such as Industrial/Commercial criteria or that no building will be built) may require an Environmental Use Restriction (EUR),

DRAFT

List of Potential Conditions

Investigation:

- Exterior Soil Gas Sampling
  - not allowed for compliance by regulation
- Passive Soil Gas Sampling
  - not supported for compliance at this time

List of Potential Conditions

Compliance:

- Modeling
  - already used to develop VoIC criteria
  - can use the RSR Alt. VoIC provision
- Applicability Depth
  - currently 15' (proposed 30')
- Indoor Air Sampling
  - is an RSR option, but should be last resort

List of Potential Conditions

Site-specific Conditions:

- Institutional Controls and Land Use Limitations
  - RSRs require an Environmental Use Restriction to use
- OSHA Standards
  - not applicable for Vapor Intrusion evaluation from environmental sources

List of Potential Conditions

Mitigation:

- Demonstration of Mitigation Effectiveness
  - should be demonstrated with system performance, not indoor air
- Mitigation Decommissioning
  - requires groundwater VoIC compliance; or if soil vapor is used, conditions need to have returned to equilibrium with system turned off

List of Potential Conditions

Mitigation cont'd:

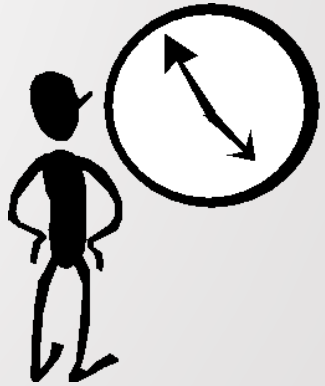
- Passive Barriers
  - not sufficient for mitigation on their own
  - useful as part of a mitigation system

Other Technical Concerns:

- Site Characterization Guidance Document
- Reasonable Confidence Protocols

Concurrence Current Status

- Working on ensuring a consensus before final approval



Questions or Comments?

Please Speak into Microphone
and state your name

www.ct.gov/deep/remediationroundtable

Overview of the Data Quality Assessment and Data Usability Evaluation (DQA/ DUE) Process

Allison Forrest-Laiuppa

Environmental Analyst

Site Assessment and Support Unit

Lisandro Suarez

Environmental Analyst

Water Planning and Management Division

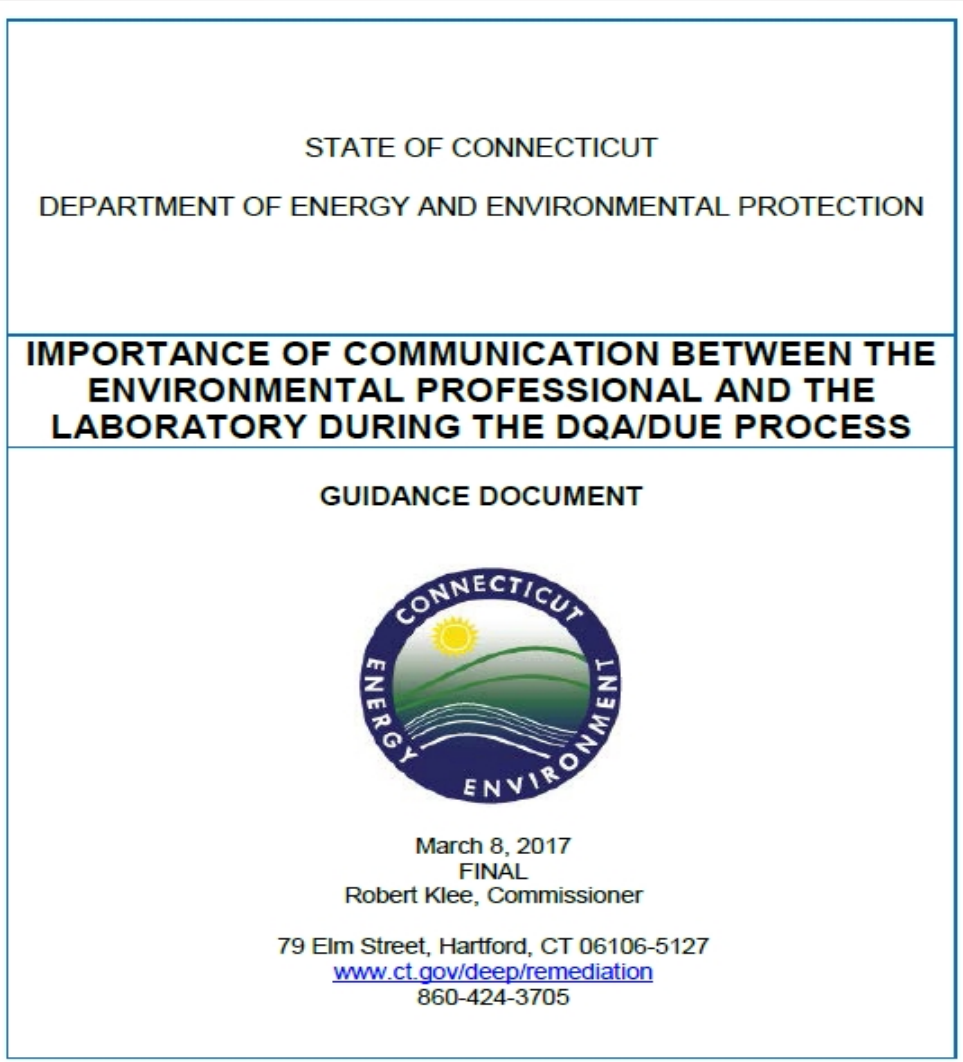
Training Announcement

Training on May 9, 2017:

Laboratory Data Quality Assessment and Data Usability Evaluation For Environmental Investigation and Remediation Projects

Please email DQA/DUE issues for the Panel Discussion to: Allison.Forrest-Laiuppa@ct.gov

Guidance Document: DQA/DUE Communication



STATE OF CONNECTICUT

DEPARTMENT OF ENERGY AND ENVIRONMENTAL PROTECTION

IMPORTANCE OF COMMUNICATION BETWEEN THE ENVIRONMENTAL PROFESSIONAL AND THE LABORATORY DURING THE DQA/DUE PROCESS

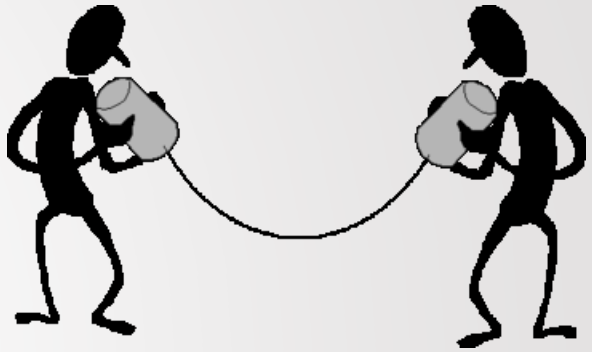
GUIDANCE DOCUMENT

March 8, 2017
FINAL
Robert Klee, Commissioner

79 Elm Street, Hartford, CT 06106-5127
www.ct.gov/deep/remediation
860-424-3705

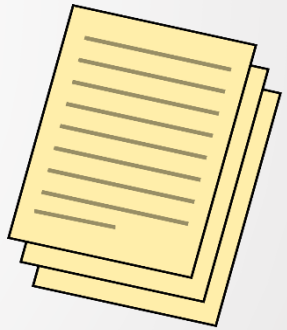
Environmental Professional's Responsibility

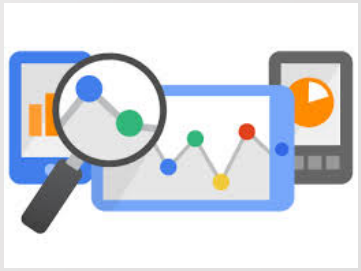
- During Project Setup:
  - QAPP/RCPs
  - Project Objectives and CSM
    - Source and number of samples
    - Sampling methods, sample handling & QC requirements
  - Communicate with laboratory
    - Request appropriate sampling containers, preservation, holding times, and archiving of samples
    - Request appropriate reporting limits & RCP method
  - Provide a Chain of Custody and properly preserved samples within holding times



Laboratory's Responsibility

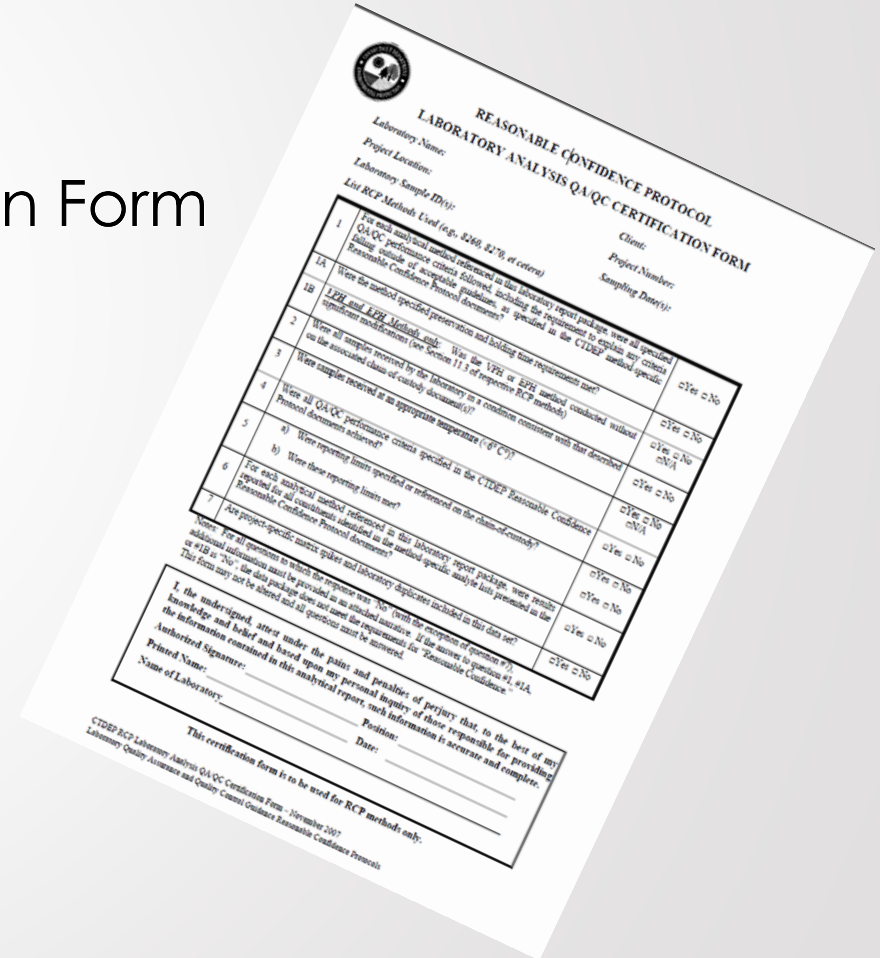
- The Lab provides the Environmental Professional and others with:
  - Sample containers with preservative
  - Sign off on Chain of Custody
  - Laboratory Data with QA/QC information





Laboratory's Responsibility

- The Lab provides the Environmental Professional and others with:
  - Laboratory Analysis QA/QC Certification Form
    - 7 questions with signature
  - Narrative of non-conformances
  - Answer questions when asked



REASONABLE CONFIDENCE PROTOCOL
LABORATORY ANALYSIS QA/QC CERTIFICATION FORM

Laboratory Name:
Client:
Project Location:
Project Number:
Laboratory Sample ID(s):
Sampling Date(s):
List RCP Methods Used (e.g., 8260, 8270, et cetera)

1	For each analytical method referenced in this laboratory report package, were all specified QA/QC performance criteria followed, including the requirement to explain any criteria falling outside of acceptable guidelines, as specified in the CTDEP method-specific Reasonable Confidence Protocol documents?	☐Yes ☐No
1A	Were the method specified preservation and holding time requirements met?	☐Yes ☐No
1B	VPH and EPH Methods only: Was the VPH or EPH method conducted without significant modifications (see Section 11.3 of respective RCP methods)	☐Yes ☐No ☐N/A
2	Were all samples received by the laboratory in a condition consistent with that described on the associated chain-of-custody document(s)?	☐Yes ☐No
3	Were samples received at an appropriate temperature (<6° C)?	☐Yes ☐No ☐N/A
4	Were all QA/QC performance criteria specified in the CTDEP Reasonable Confidence Protocol documents achieved?	☐Yes ☐No
5	a) Were reporting limits specified or referenced on the chain-of-custody?	☐Yes ☐No
	b) Were these reporting limits met?	☐Yes ☐No
6	For each analytical method referenced in this laboratory report package, were results reported for all constituents identified in the method-specific analyte lists presented in the Reasonable Confidence Protocol documents?	☐Yes ☐No
7	Are project-specific matrix spikes and laboratory duplicates included in this data set?	☐Yes ☐No

Notes: For all questions to which the response was "No" (with the exception of question #7), additional information must be provided in an attached narrative. If the answer to question #1, #1A or #1B is "No", the data package does not meet the requirements for "Reasonable Confidence." This form may not be altered and all questions must be answered.

I, the undersigned, attest under the pains and penalties of perjury that, to the best of my knowledge and belief and based upon my personal inquiry of those responsible for providing the information contained in this analytical report, such information is accurate and complete.

Authorized Signature:
Position:
Printed Name:
Date:
Name of Laboratory:

This certification form is to be used for RCP methods only.

CTDEP RCP Laboratory Analysis QA/QC Certification Form – November 2007
Laboratory Quality Assurance and Quality Control Guidance Reasonable Confidence Protocols

Environmental Professional's Responsibility

- Upon Receiving Data Package:
  - Review Laboratory Data Package for completeness in a timely manner
    - Review RCP Certification Form
    - Review Narrative and Chain of Custody for any QA/QC issues
    - Communicate with laboratory if there are any issues with the package
  - Review and evaluate the laboratory data and non-conformances in a timely manner
    - Communicate with laboratory if there are any questions

Environmental Professional's Responsibility

- Perform/Document DQA/DUE Process
  - Review QA/QC
    - Look beyond narrative and review laboratory data
  - Assess the quality of the data
  - Evaluate the usability of the data
  - Demonstrate and document an understanding of the quality and usability of the data for reporting purposes

Questions or Comments?

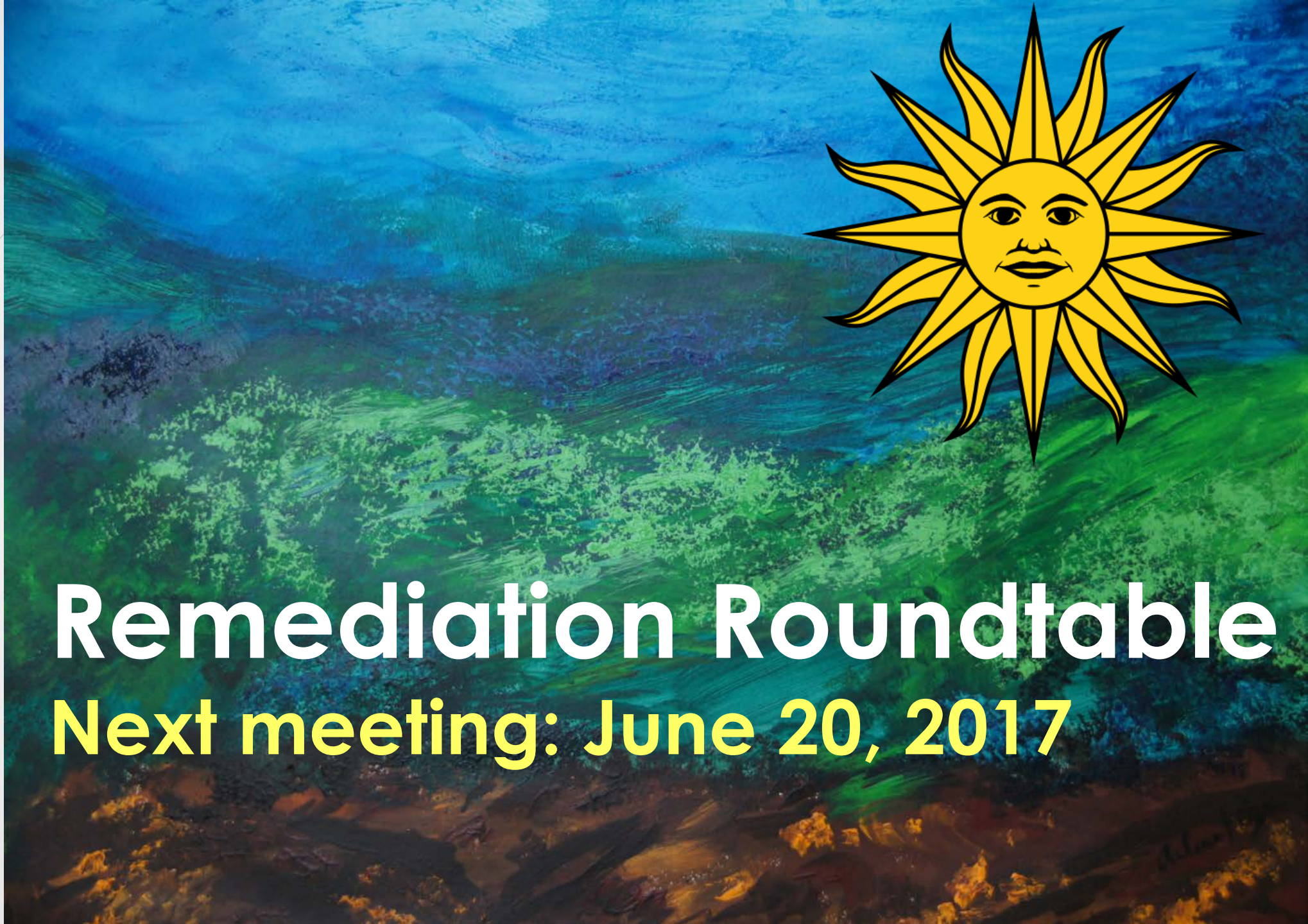
Please Speak into Microphone
and state your name

www.ct.gov/deep/remediationroundtable

Remediation Roundtable

E-mail: DEEP.remediationroundtable@ct.gov

Web: www.ct.gov/deep/remediationroundtable



Remediation Roundtable

Next meeting: June 20, 2017