REMEDIATION ROUNDTABLE

November 12, 2013

www.ct.gov/deep/remediationroundtable

AGENDA

- Various Updates
- Risk Evaluation Assessment
- Future Transformation RSR Amendments
- Municipality Liability Relief
- Stormwater Construction Permit
- RCRA Ecological Risk Assessment
- Groundwater Technical Impracticability

UPDATES

2013 Fall Transformation Roll Out:

- Wave 1 RSR amendment Fact Sheets
- Wave 2 Public Discussion Drafts on proposed regulations
  - RSR Amendments – Remediation lead
  - Release Reporting – MMCA lead
  - Soil Reuse – MMCA lead
- Risk Assessment Evaluation initiated – RFP posted -> dedicated webpage

UPDATES

Wave 1 Guidance Documents (late November)

- Incidental Releases -2(b)(4), 2(c)(4)(D) and 3(f)
- Inaccessible Soil definition – fill under pavement
- PMC Exemption 80% rule – 2(c)(4)(C)

UPDATES

Wave 2 Public Discussion Drafts

- Group 1 (August)
  - Alternative GWPC Areas
  - Monitored Natural Attenuation
  - Engineered Controls
- Group 2 (late November)
  - Institutional Controls
  - Sediment

UPDATES

Wave 2 Public Discussion Drafts

- Group 3
  - Alternative PMC - self-implementing
  - Additional Exposure Category Criteria - Recreational Use
  - Early Exit – pending discussions with ER&SP

UPDATES

Wave 2 Public Discussion Drafts

- Draft Discussion Documents on web
- Please send in your feedback
  DEEP.RemediationRoundtable@ct.gov
  OR DEEP.cleanup.transform@ct.gov

UPDATES

Remediation Website

- ELUR Application – Lean Team Grand Finale! (September)

ELUR Application

- Municipal Brownfield Liability Relief Program Fact Sheet and Application (October)

Municipal BLR Program

- All NEW Verification Forms (November)

LEP Verification Forms

UPDATES

Remediation Website

- In-situ Chemical Oxidation General Permit for Public Notice (November)
  - Public meeting: 25 November 2013 in Phoenix auditorium from 3 - 5 PM

Draft ISCO GP

- Technical Impracticability Fact Sheet (November)

TI Fact Sheet

- 95%UCL Guidance Document for Public Comment (late November)

UPDATES

Questions / Comments

Please state your name and
speak loudly.

Submit comments to
DEEP.remediationroundtable@ct.gov

www.ct.gov/deep/remediationroundtable

Risk Evaluation Update

CHERYL CHASE
DIRECTOR
INLAND WATER RESOURCES DIVISION

Risk Evaluation Update

Risk-Based Decision Making

PA 13-308 signed July 2013 requires the Commissioner of Energy and Environmental Protection, in consultation with the Commissioner of Public Health to evaluate risk-based decision making related to the remediation of contaminated sites and make recommendations for statutory and regulatory changes based on the consideration of such evaluation.

Risk Evaluation Update

Risk-Based Decision Making Steps

- Workgroup established August 2013
- RFP Drafted by workgroup
- Funding: DECD has agreed to fund
- OPM Authorization: received 10/18/13
- RFP release: 11/7/13
- Deadline for submittals: 12/6/13

DEEP Risk Evaluation Webpage

RISK EVALUATION UPDATE

Questions / Comments

Please state your name and
speak loudly.

Submit comments to
DEEP.remediationroundtable@ct.gov

www.ct.gov/deep/remediationroundtable

Transformation RSR Amendments

Wave 2

JAN CZECZOTKA
ASSISTANT DIRECTOR
REMEDIATION DIVISION

WAVE 2 RSR AMENDMENTS

- Goal of RSR amendments is to support the Transformation into forming ONE unified program
  - Remediation compliance from start to finish
    - Early Exits
    - Self-implementing options
    - Site-specific approaches
    - Institutional Controls
    - Tiered Exits A, B, C

CLEANUP TRANSFORMATION ROADMAP

WAVE 2 RSR AMENDMENTS

Discussion Documents Introduced May Roundtable

EARLY EXITS

- Develop framework for Early Exits

ALT GWPC

- Developing Map of GA Areas Where an Alternative GWPC is Potentially Eligible for Use
- Working with DPH on Alternative GWPC

ICs

- Create list of all current and new EUR types to categorize them into specific institutional controls
- Consult with DPH on any risk concerns with Institutional Controls

WAVE 2 RSR AMENDMENTS

Discussion Documents Introduced August Roundtable

ECs

- Developing self-implementing DEC options
- Soliciting ideas for self-implementing PMC options

MNA

- Developing concept for self-implementing MNA compliance point

WAVE 2 RSR AMENDMENTS

Discussion Documents

PMC

- Provide a self-implementing site-specific alternative
- Developing potential self-implementing options

SEDIMENT

- Developing a new section of the RSRs considering Transformation Workgroup's suggestions

WAVE 2 RSR AMENDMENTS - PMC

- Purpose:
  - Establish soil PMC that will not cause groundwater to exceed applicable groundwater criteria
  - Develop self-implementing options for evaluating the soil leaching pathway to groundwater using:
    - Soil-Water partitioning (SWP) equations with default values
    - Site-specific parameters
    - Unsaturated zone fate and transport models
    - Other leaching procedures

WAVE 2 RSR AMENDMENTS - PMC

- General Requirements and Limitations
- Additional options for consideration:
  1. SWP Equation: Fixed parameter 3-phase partitioning model
  2. SWP Equation: Variable parameter 3-phase partitioning model
  3. Unsaturated Zone Leaching Models: SESOIL and VLEACH
  4. Other leaching procedures to develop site-specific PMC

WAVE 2 RSR AMENDMENTS - PMC

- Fixed SWP equation assumptions:
  - Assumes soil column is contaminated from surface to water table (no assumed attenuation in vadose zone)
  - Assumes that groundwater impacts are < GWPC
  - Use default soil characteristics

Self-implementing options not considered applicable or protective if groundwater is impacted > applicable criteria

WAVE 2 RSR AMENDMENTS - PMC

- Variable SWP equation assumptions:
  - Assumes soil column is contaminated from surface to water table (no assumed attenuation in vadose zone)
  - Assumes that groundwater impacts are < GWPC
  - Using site-specific soil characteristics

Self-implementing options not considered applicable or protective if groundwater is impacted > applicable criteria

WAVE 2 RSR AMENDMENTS - PMC

- Unsaturated Zone Leaching Models: SESOIL and VLEACH:
  - Assumes soil column is uncontaminated below the release area (attenuation in vadose zone)
  - Assumes no measureable impact to groundwater
  - Uses site-specific soil characteristics

MULTI-LEVEL EXIT CLASSES

PMC

C1/C2	B1/B2	A
➢ Soil Cleanup Complete	➢ Soil Cleanup Complete	➢ Soil Cleanup Complete
➢ Groundwater Remedy Operational	➢ Groundwater Cleanup Complete	➢ Groundwater Cleanup Complete
➢ Long-term Maintenance	➢ Land-Use Controls ➢ Long-term Maintenance	➢ Unrestricted Reuse

INCREASING LEVEL OF CLEANUP

WAVE 2 RSR AMENDMENTS - Sediment

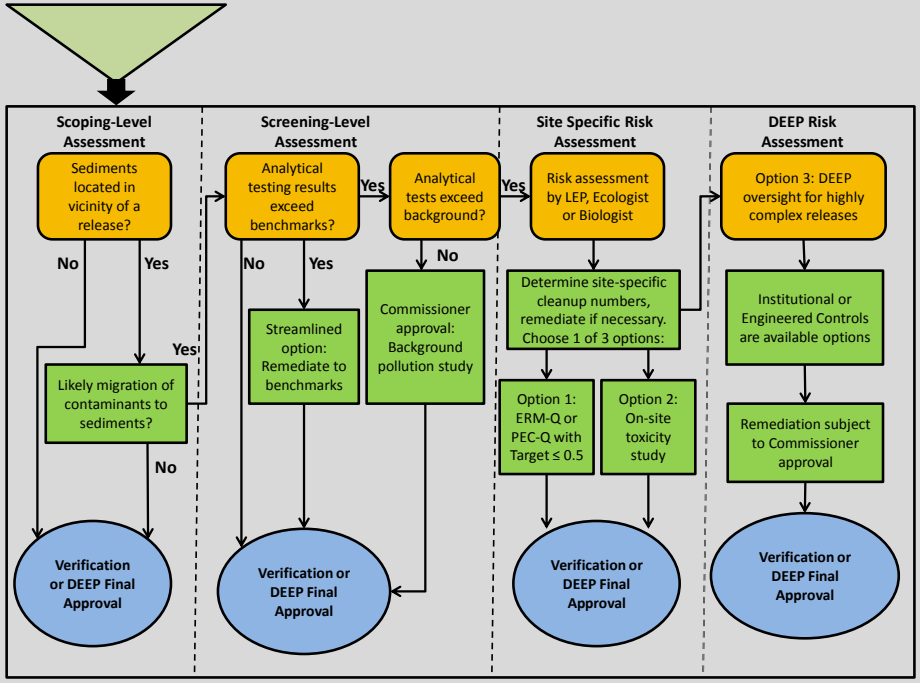
- Purpose: to provide a consistent, defined approach that is flexible, cost effective and protective of HH and Env
- Designed to fit transformed remediation program
- Address stakeholder concerns
  - Clarifies requirements for eco-assessment
    - When, how and to what extent

WAVE 2 RSR AMENDMENTS - Sediment

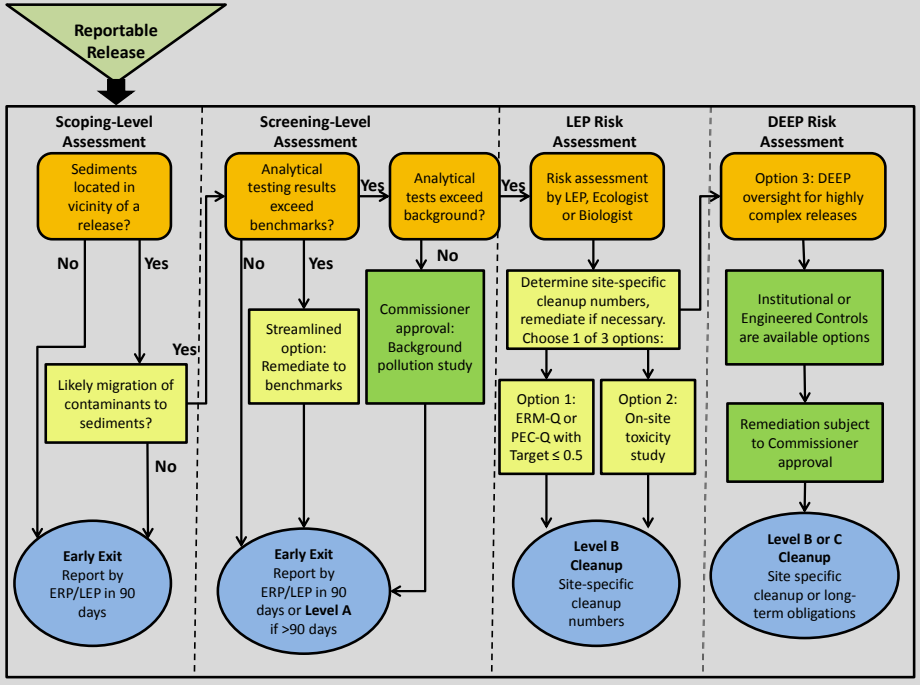
- Flexibility in remedial options
- Self-implementing compliance options
- Fits into tiered exit concept
- Specific requirements to address chemicals that bioaccumulate
- APS will be addressed similar to soil

WAVE 2 RSR AMENDMENTS - Sediment

Current State



Future State



Key: Commissioner Approval | Self Implementing

WAVE 2 RSR AMENDMENTS - Sediment

3 Self-Implementing Options:

- Cleanup to conservative screening values as a streamlined option
- On-site toxicity study to determine cleanup values
- Using hazard quotients (ERM-Q or PEC-Q) to determine cleanup values

WAVE 2 RSR AMENDMENTS - Sediment

- Applicable to all Exit Classes
  - Self-implementing options available in Early Exit, Class A and Class B2
  - Commissioner's approval only option for class B1 (need ELUR) and Class C (need engineered control)

MULTI-LEVEL EXIT CLASSES

SED

SED

SED

C1/C2	B1/B2	A
➢ Soil Cleanup Complete	➢ Soil Cleanup Complete	➢ Soil Cleanup Complete
➢ Groundwater Remedy Operational	➢ Groundwater Cleanup Complete	➢ Groundwater Cleanup Complete
➢ Long-term Maintenance	➢ Land-Use Controls ➢ Long-term Maintenance	➢ Unrestricted Reuse

INCREASING LEVEL OF CLEANUP

WAVE 2 RSR AMENDMENTS

Wave 2 Public Discussion Drafts

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  - Alternative GWPC Areas
  - Monitored Natural Attenuation
  - Engineered Controls
- Group 2 (late November)
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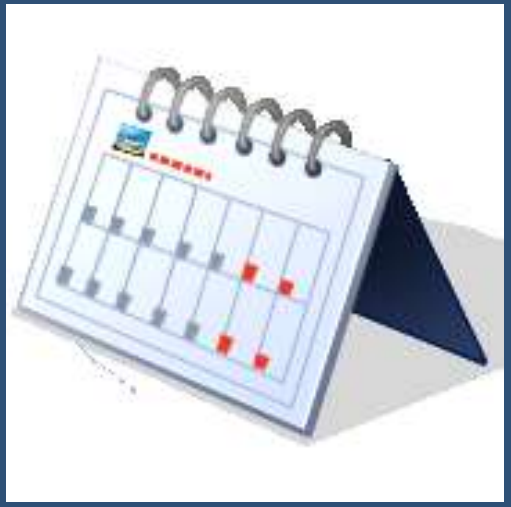
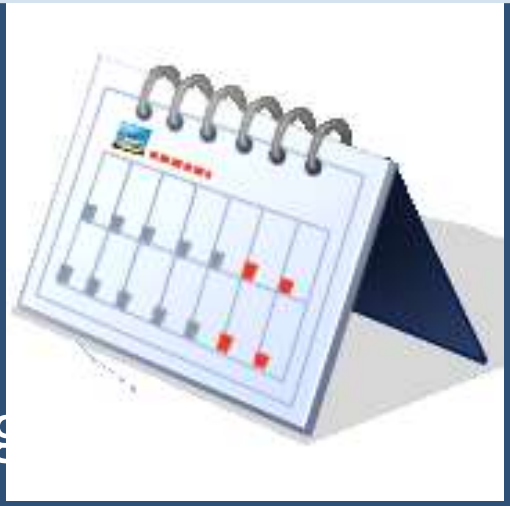
  - Sediment



WAVE 2 RSR AMENDMENTS

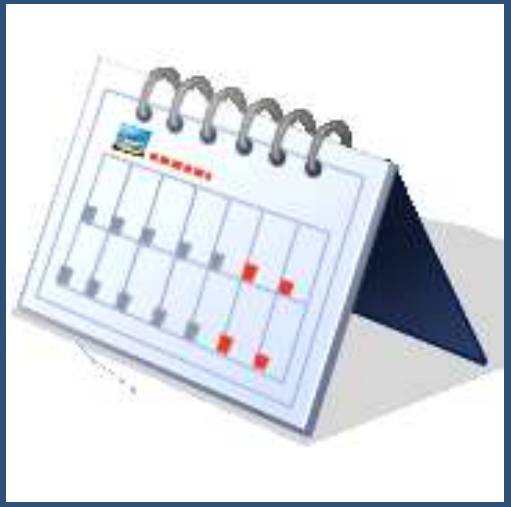
Wave 2 Public Discussion Drafts



- Group 3
  - Applicability
  - Alternative PMC - self-implementing
  - Additional Exposure Category Criteria - Recreational Use
  - Early Exit – pending discussions with ER&SP
- Group 4 ?

WAVE 2 RSR AMENDMENTS

Feed back to date = 1



WAVE 2 RSR AMENDMENTS

Feedback opportunities prior to formal Public Hearing Draft:

- Information Sessions – TBA
- E-mailboxes for your feedback

  DEEP.RemediationRoundtable@ct.gov

  OR DEEP.cleanup.transform@ct.gov

Draft Discussion Documents – Alt GWPC, MNA, EC

Questions / Comments

Please state your name and
speak loudly.

www.ct.gov/deep/remediationroundtable

Municipal Brownfield Liability Relief Program

GRAHAM STEVENS
OFFICE DIRECTOR
CONSTITUENT AFFAIRS/ LAND MANAGEMENT

Municipal Brownfield Liability Relief

- Section 30 of Public Act No. 13-308 created new program
- Designed to provide municipalities with comfort to serve vital role of facilitating redevelopment and cleanup of brownfields
- Municipalities in a unique position to shepherd these properties through pre-development stages and find a developer

Benefits

- Provides state and third party liability relief for any pre-existing contamination
- Municipalities do not have to file under Property Transfer Act when they acquire
- Municipality is not responsible for conducting site investigation and remediation
  - Must act as good stewards of land

Applicability

- Program open to any municipality or any of the following entities established by a municipality to address redevelopment:
  - economic development agencies
  - nonprofit economic development corporations
  - nonstock corporation or limited liability company

Application

- Program is application based
- Simple process focused on applicant certifications
  - intend to acquire title to such brownfield for the purpose of redeveloping or facilitating redevelopment
  - did not establish or create a facility or condition at or on such brownfield that can reasonably be expected to create a source of pollution
  - are not affiliated with any person responsible for such pollution
  - are not otherwise required to remediate such pollution

Stewardship Obligations

- Once in the program – applicants must:
  - comply with Significant Environmental Hazard statute
  - make good faith efforts to minimize the risk to public health and the environment
  - submit a plan and schedule that outlines what steps are being proposed to facilitate redevelopment and cleanup

Facilitate Redevelopment & Cleanup?

- Marketing a property for redevelopment
- Applying for funding assistance
  - For planning, investigation, cleanup, or design functions
- Conducting site preparations (e.g., demolition, infrastructure improvements, removal of bulky wastes, securing the property)
- Conducting investigations or targeted hot spot remedial actions

Application and factsheet available at:
www.ct.gov/deep/remediation

Municipal BLR Program

Questions / Comments

Please state your name and
speak loudly.

www.ct.gov/deep/remediationroundtable

Stormwater Construction Permit

CHRISTOPHER STONE
SANITARY ENGINEER III
WATER PERMITTING & ENFORCEMENT
DIVISION

CT STORMWATER PROGRAM

Construction* Stormwater Permitting and Site Remediation

Rain Happens!

* Exposing soil <u>is</u> construction

Connecticut Department of Energy and Environmental Protection

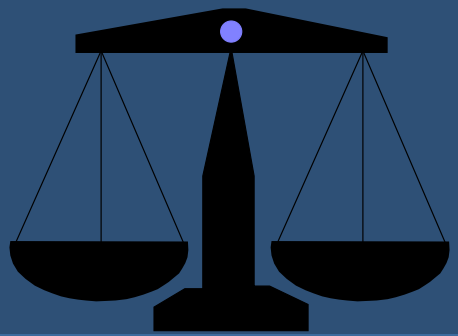
CHRIS STONE

CT STORMWATER PROGRAM

Program goals

- Conduct consistent detailed review of plans without additional staff

- Ensure proper plan implementation
- Comply with public notice requirements
- Focus on enforcement to address non-compliance issues



CT STORMWATER PROGRAM

Permit Modifications

Major changes to permit

- Qual. Prof. (QP) review
- Public availability & comment
- Impaired waters & anti-degradation
- Turbidity monitoring
- Emphasis on endangered species
- Low Impact Dev. performance standards

CT STORMWATER PROGRAM

Qualified Professional Program

Plan Review Certification

- Step 1 – Design by QP
- Step 2 – Review by QP
  - District or consultant
  - Degree of independence
- Step 3 - submit registration <u>with</u> QP cert.
- Step 4 - QP inspect within 90 days

CT STORMWATER PROGRAM

Impaired Waters & TMDLs

Impaired Waters Controls

- DEEP provides list of impaired
- Construction controls
  - disturbed area <3 ac. at once and stabilized w/in 30 days of dist; or
  - retain 2-year storm; or
  - Meet TMDL requirements
- Other TMDL requirements

CT STORMWATER PROGRAM

Turbidity Monitoring

Outfall Turbidity Monitoring

- No Benchmark or Effluent Limit
- Normal working hours
- Monitor once per month
- 3+ grabs per storm
- Submit average of results on form
- Remediation Plan may require added parameters

CT STORMWATER PROGRAM

Retention Performance Standard

Performance Standards

Redeveloped sites >40% impervious

- Retain ½ Water Quality Volume (WQV) & treat full WQV
- If unable, retain & treat to WQV

All Other development

- new dev, redev <40%, HQ, impervious
- design to retain WQV
- If unable, retain & treat to WQV

CT STORMWATER PROGRAM

Remediation Stormwater Issues

- Remedial Plan addresses Const. GP
- Qual. Prof. has remediation experience
- Engineered controls must meet GP
- Infiltration issues & alternatives
- Address impaired/TMDL issues

Questions / Comments

Please state your name and
speak loudly.

www.ct.gov/deep/stormwater

Contact Chris Stone at chris.stone@ct.gov

www.ct.gov/deep/remediationroundtable

RCRA Corrective Action: Tools for Facilitating Ecological Risk Assessment

STEPHANIE CARR
SENIOR ENFORCEMENT COORDINATOR
TOXICS AND PESTICIDES UNIT
EPA REGION 1

Issues

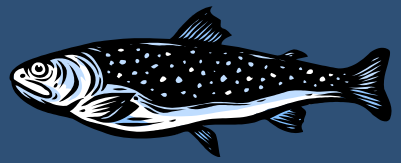
Ecological risk assessment:

- Often occurs later in a remediation project than is optimal
- Requires up-front planning, including a Quality Assurance Project Plan and Field Sampling and Analysis Plan
- Can require a lengthy time-frame:
  - Inherently iterative
  - Considers multiple pathways and receptors
  - Requires agency input

Tools for Facilitating Ecological Risk Assessment

1. Ecological Receptor Exposure Pathway Scoping Checklist

2. Considerations for Assessing Ecological Risks reference document



STEPHANIE CARR

Scoping Checklist

- Developed in June 2008, updated Fall 2013 by EPA Region I with input from CT DEEP
- Objective: Tool for identifying complete exposure pathways for ecological receptors
- Designed for use with RCRA Corrective Action projects as an initial “scoping” step in performing ecological risk assessment

Scoping Checklist Format

Includes:

- Questions on:
  - Affected media
  - Migration pathways
  - Habitat types
- Decision tree on all potential ecological exposures to each impacted site medium

Scoping Checklist Outcomes

- Complete exposure pathways identified: Checklist findings focus further ecological risk assessment (checklist is not a substitute for an ERA)
- No complete exposure pathways identified (UNLIKELY) : Completed checklist documents that ecological exposure pathways were evaluated

Eco Considerations Reference

- Discusses issues in which we frequently see problems in ecological risk assessments

- Purpose: To make the process more efficient by providing feedback on these issues up front

Eco Considerations Topics

1. Importance of up-front planning
2. Separation of the Screening Level and Baseline Ecological Risk Assessment stages (SLERA & BERA)
3. Selection of data for use in an ERA
4. Background/reference location data

Eco Considerations Topics (cont'd)

5. Use of Acid Volatile Sulfides – Simultaneously Extracted Metals (AVS-SEM) analysis
6. Handling non-detect values in a risk assessment
7. Evaluation of groundwater discharge to surface water
8. Determining appropriate depth for soil and sediment evaluation

Eco Considerations Topics (cont'd)

9. Water Samples: filtered vs. unfiltered and hardness considerations
10. Carrying constituents that bioaccumulate or biomagnify through the SLERA

Eco Considerations Reference

Please send suggestions for future revisions to the EPA Region I RCRA Corrective Action Program

www.epa.gov/epawaste/hazard/correctiveaction/contacts/index.htm

CT Eco Risk Guidance and Support

- CTDEEP is also developing guidance and tools to assist with Ecological Risk Assessment
- CT DEEP guidance is designed to be:
  - Tailored to CT Remediation Programs
  - Consistent with goals of Transformation Process
  - Complementary to EPA guidance

Questions / Comments

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speak loudly.

www.ct.gov/deep/remediationroundtable

Groundwater Technical Impracticability Workgroup Report

MAURICE HAMEL
ENVIRONMENTAL ANALYST 3
REMEDIATION DIVISION

ANDREW ZLOTNICK, LEP
SENIOR VICE PRESIDENT
FUSS & O'NEILL

Work Group

- Meeting monthly since April 2011
- 7 LEPs, 3 Attorneys, 4 DEEP Staff

What will be available online:

- ✓ Fact sheet (with Flow Chart)

- ✓ Draft Guidance Document

  (November - December)

STATUS OF THE PROGRAM

- 6 Sites approved for TI Variance
- 4 Approved since 2010
- 21 Sites received initial screen since 2010
- 13 of those preparing supplemental submissions

TECHNICAL IMPRACTICABILITY VARIANCE

Section 22a-133k-3(e)(2)

- Variance for groundwater contamination which is not technically feasible to be remediated to the applicable criteria
- Not a waiver for source area remediation

TI VARIANCE OVERVIEW

Characterize Fully

Understand Sources

Remediate as Required

Establish Plume Stability

Identify and Protect Receptors

Provide Long-term Certainty

KEY TERMS

- *Technically Practicable -*

  Greatest degree of remediation that can be achieved using sound engineering and hydrogeologic practices

- *Prudent -*

  Reasonable degree of remediation after taking into consideration cost, in light of societal and environmental benefits

TI SCENARIOS

Residual Source

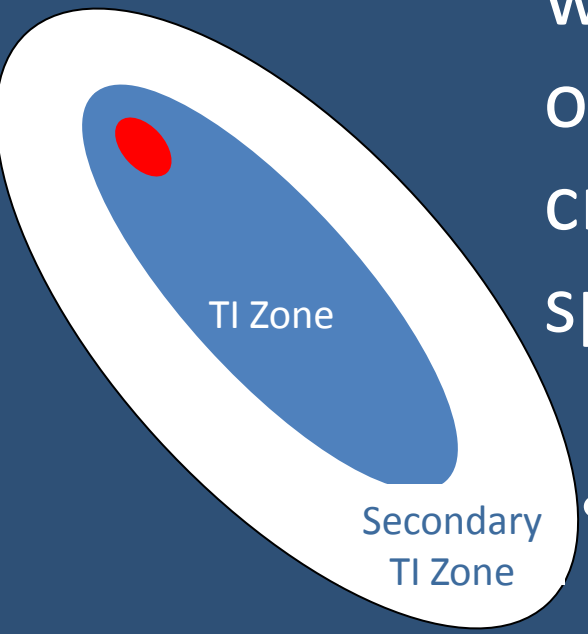
- DNAPL
- Some LNAPLs
- Solid
- Sorbed

Persistent Plume

- Steady state or slowly diminishing plume
- Will not dissipate within a reasonable time frame

Both scenarios may be applicable at some sites

TI ZONES



- **TI Zone** - Area covered by TI Variance where groundwater quality would otherwise be exceeding applicable criteria – for a plume resulting from a specific release and specified COCs

- **Secondary TI Zone** - Area beyond TI Zone where changes in pumping, drainage or recharge could cause plume to expand beyond TI Zone

SOURCE REMEDIATION REQUIREMENTS

- Goal for sources contributing to the plume
  - Limit extent of plume
  - Limit duration of long-term care
  - Ensure steady state or declining plume
- Plume management is not an alternative to addressing the source
- Remediate other sources not contributing to TI plume

PLUME CONTROL REQUIREMENTS

Evaluate and implement to the extent *"technically practicable"*

- Commonly accepted and proven technologies
- No consideration of cost

Once determined to be impracticable to fully remediate

- Apply the concept of "prudent" to remedial approach
- Reduce permanent mass loading on environment
- Reduce plume to limit area of permanent impairment

TI APPLIES TO GROUNDWATER

- Source Remediation may leave residuals
  - NAPL under Section 2(g)
  - Sorbed contaminants below watertable
- Groundwater impacts
  - Naturally attenuate / MNA
  - TI Variance to groundwater criteria under Section 3(e)(2)

LONG-TERM RESPONSIBILITIES

- Land Use Controls and Monitoring
- Monitoring program to gauge effectiveness
- Triggers for performing maintenance or re-evaluating
- A program for assessing and implementing contingency
- Financial assurance for continued operation of the systems
- 5 Year Status Review Reporting 
- Respond to changes that may threaten receptors

A TI VARIANCE IS NOT …

- A determination that no further action is feasible
- A waiver for the remediation of PMC soils
- A GB reclassification
- A waiver of complete remediation and monitoring for other release areas
- A substitute for Monitored Natural Attenuation at sites that can achieve compliance within a "reasonable timeframe"

WHY TIs ARE USEFUL?

* Provide a remedial endpoint balanced with protection of HH&E
* Allow clear definition of long-term obligations
* May be suitable to support

  Final Verification and Form II filing
* Enable transfer of property and reassignment of post-remedial obligations

Questions / Comments

Please state your name and
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REMEDIATION ROUNDTABLE

E-mail: DEEP.remediationroundtable@ct.gov

Web: www.ct.gov/deep/remediationroundtable

THANK YOU

Next meeting: February 11, 2014

Schedule and agenda on website
www.ct.gov/deep/remediationroundtable

Submit comments to Carl Gruszczak at
DEEP.remediationroundtable@ct.gov