

Remediation Roundtable

October 17, 2017





Remediation Roundtable Webcast

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





Remediation Roundtable Agenda

- ▶ **Announcements**
- ▶ **Updates**
 - ▶ DECD CT Land Bank
 - ▶ Roundtable Tips
 - ▶ Declaratory Ruling
- ▶ **Presentations**
 - ▶ Sediment Dredging Case Study
 - ▶ Characterization of Remediation Waste - Overview of Key Concepts
 - ▶ Portion Verifications: Applicability & Requirements



Announcements

2018 Meeting Dates



Tuesday - March 13th

Tuesday - June 19th

and

Tuesday - October 16th



Website Updates

- ▶ [CT Brownfield Inventory List](#) updated
- ▶ [Concurrence memo for Vapor Intrusion ITRC Guidance](#)
- ▶ ELUR electronic submittal through email at DEEP.ELUR@ct.gov, not through file transfer



Questions or Comments?

Please Speak into Microphone
and State Your Name

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DECD Connecticut Land Bank

Tim Sullivan

Deputy Commissioner

Department of Economic and Community
Development



CT Land Bank Web Links

- ▶ The enabling legislation [Public Act 17-214](#)
- ▶ [Link to application for organizations that want to become a certified Connecticut brownfields land bank](#)



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Remediation Roundtable Tips





Tip #12. On-Site Reuse of Polluted Soils

- ▶ Whenever reusing polluted soil (soil with any pollutant detected above analytical reporting limit), sampling data is needed to evaluate the appropriateness of using the material in a location that is not already affected by a release
- ▶ Variances and exceptions that apply to the soil in place do not apply for soil reuse evaluation



Tip #12. On-Site Reuse of Polluted Soils

- Reuse of polluted soil [22a-133k-2(h)(3)(D)]
Any such soil in which the concentration of any substance exceeds the **pollutant mobility criteria applicable to a GA area** is not placed over soil and ground water which have not been affected by a release at the parcel at which placement is proposed
- Definition of pollutant mobility criteria [22a-133k-1(a)(46)]
"Pollutant mobility criteria" means the concentrations identified in **Appendix B** to sections 22a-133k-1 through 22a-133k-3 of the Regulations of Connecticut State Agencies **or any alternative pollutant mobility criteria approved by the Commissioner** pursuant to subsection 22a-133k-2(d) of the Regulations of Connecticut State Agencies



Tip #12. On-Site Reuse of Polluted Soils

PMC Variances and Exemptions excluded from Soil Reuse evaluation:

- ➔ Coal/Wood Ash - 22a-133k-2(c)(4)(B)
- ➔ 80% Infiltration - 22a-133k-2(c)(4)(C)
- ➔ Incidental Sources- 22a-133k-2(c)(5)
- ➔ WSPF - 22a-133k-2(f)(1)





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Tip #13. Asphalt Millings Tip

- ▶ From [Guidance Document for Exemptions for Incidental Sources](#)
11. In the context of these provisions, **ground-up asphalt used for a sub-base** to the pavement **is considered to be part of the "normal paving ... of a consolidated bituminous concrete surface"**
- ▶ From [Guidance Document for Rendering Soil Inaccessible Using Pavement](#)
5. The new category (C) in the definition specifically refers to "polluted fill." **Polluted fill in this context includes the material installed as sub-base** for the pavement, or other fill material that may be less than two feet below the pavement, and thus could not previously be considered inaccessible without establishing an Engineered Control



Tip #13. Asphalt Millings Tip

Therefore:

- ➔ When asphalt millings are used as sub-base for pavement they **can be** considered part of the normal paving (incidental source)
- ➔ When asphalt millings are used as sub-base for pavement that is rendering soil inaccessible, they **can be** considered to be polluted fill
- ➔ Use of asphalt millings as sub-base for pavement **does not** automatically constitute polluted fill or a release area



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Tip #14. Schedule Extension Requests

- ▶ A schedule extension can be requested for Certifying Parties under the Property Transfer Act to address circumstances that warrant an extension of time
- ▶ The Department will review a request in terms of whether the Certifying Party has made continuous, best efforts to complete milestones by the applicable deadlines, yet will have significant difficulty meeting deadlines due to circumstances beyond the control of the Certifying Party
- ▶ No schedule will be deemed extended unless and until the Department issues an approval of a request in writing



Tip #14. Schedule Extension Requests

Request Requirements:

- ▶ Submit in writing, by letter addressed to the Supervisor of the relevant District (including REM ID #)
- ▶ Submit prior to the expiration of the schedule deadline
- ▶ Must be signed and sent from the Certifying Party or the LEP of record (copying all Certifying Parties)



Tip #14. Schedule Extension Requests

Request should contain:

- ▶ the reason(s) for the extension request
- ▶ all actions taken so far to complete the milestone
- ▶ a brief summary of results obtained so far
- ▶ circumstances beyond the control of the Certifying Party that caused significant delay
- ▶ all additional actions needed to complete the milestone
- ▶ a proposed schedule containing calendar dates to complete the remaining actions
- ▶ any additional information the Certifying Party deems relevant to the request for an extension



Tip #14. Schedule Extension Requests

- ▶ The Department may request supplemental documentation
- ▶ While a request is under review, the Certifying Party should continue to take all actions necessary to meet the existing schedule
- ▶ An approval of any one schedule deadline does not extend any subsequent schedule deadline, unless the subsequent deadline is also expressly extended in the Department's approval

[Schedule Extension Webpage](#)



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Tip #15. Data Quality Assessment and Data Usability Evaluation

Why Should DQA and DUE be Performed?

- ▶ Provides confidence that the laboratory analytical data is of sufficient quality to support the decisions being made
- ▶ Provides an accurate and consistent means to assess environmental impacts to land, water and human health
- ▶ Reduces uncertainty and risk (human health, financial, environmental)



Tip #15. Data Quality Assessment and Data Usability Evaluation

- When should the DQA/DUE be performed?
- The DQA/DUE should be performed throughout the course of the project
 - When decisions are being made
 - **Any time data is collected to be used for any reason**



Tip #15. Data Quality Assessment and Data Usability Evaluation

How should the DQA/DUE be presented?

- ▶ Can be done in many ways, in a way that makes sense for the project, including:
 - ▶ Text summaries
 - ▶ Worksheets
 - ▶ Notes on lab sheets
- ▶ Which ever way you choose, include the documentation in the report
- ▶ Without documentation, the DQA/DUE never happened!



DQA/DUE Quiz



Tip #15. Data Quality Assessment and Data Usability Evaluation

When should the DQA/DUE be done?

- a) When the report is submitted to DEEP
- b) When the report is not submitted to DEEP
- c) When the site is being Verified
- d) When doing regulated UST work
- e) When doing unregulated UST work
- f) Whenever analytical laboratory data is received
- g) All of the above

For More info go to the [QA/QC Webpage](#)



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Declaratory Ruling Update

Robert Bell

Assistant Division Director

Remediation Division

*Declaratory Ruling can be viewed on the [DEEP Website](#)



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Sediment Dredging Case Study

Carolyn Fusaro
Environmental Analyst
Remediation Division



Background

- Exide's former battery manufacturing facility
- Located adjacent to Mill River, in Fairfield
- RCRA Corrective Action – DEEP lead
- Investigations started in 1980s
- Remediation completed at upland parcel in 2013
- Remediation of lead-impacted sediment in the Mill River required



Stakeholders

- DEEP – Remediation, Water Permitting and Enforcement, Land and Water Resources, Water Planning, and Fisheries
- Other Agencies – US EPA, Army Corp of Engineers, and Dept. of Agriculture/Bureau of Aquaculture
- Town of Fairfield - First Selectman, staff, and Commissions (including Conservation, Harbor Management, Shellfish)
- Local advocacy group (FairPLAN) and local residents
- Exide Group Inc and their representatives – TRC Environmental Corporation, CCA LLC, Shipman & Goodwin LLP, and Adamant Accord



Mill River Study Areas

Photo by
G. Steadman





Sediment Remediation

- Hydraulic cutterhead dredge to remove lead-impacted sediment
- Dewater sediment upland in geotextile tubes
- On-site wastewater treatment with discharge to the Mill River in accordance with NPDES permit
- Utilized engineered controls and best management practices to remove sediment in an environmentally protective manner



Hydraulic Cutterhead Dredge





Cutterhead and Piping





Dredge Operator and Control System





Final Confirmation Sediment Samples

Study Area	Maximum Lead Concentration Before Dredging (mg/kg)	Average Lead Concentration After Dredging (mg/kg)
I	3,600	127
II	170,000	117
III	3,000	139
IV	1,300	89
V	6,200	208



Sediment Management & Processing





Sediment Dewatering Process





Wastewater Treatment System





Monitoring Requirements

- Turbidity Monitoring
- NPDES Permit Monitoring
- Dredge Cell Confirmation Sampling
- Stormwater Inspections
- Air Monitoring
- Vector Inspections
- Fish Passage and Recreational Use Inspections



Turbidity Monitoring & Controls





Treated Water Discharge





Water Treatment Plant Results

Parameter	Average Value Detected in Effluent	NPDES Permit Limit
Total Lead Concentration	0.0116 mg/L	0.15 mg/L
Grams of Lead	14.2 grams/day	122 grams/day

- ▶ Less than 8% of permitted lead concentration discharged back to Mill River



Waste Characterization Sampling



Photo by TRC



Load Out of Dewatered Sediment



- ▶ 1,154 truckloads dewatered sediment transported off-site for disposal at out of state permitted facilities



Restoration



Photo by
G. Steadman



Photo by TRC



Summary

- ▶ ~27,000 cubic yards dredged sediment dewatered on site (39 geotextile bags) and transported off site for disposal at permitted facilities
- ▶ 11.6 acres of surface area dredged, average depth = 2.3 feet
- ▶ ~100 million gallons of wastewater treated on site and discharge into Mill River
- ▶ 447 final confirmation sediment samples collected
- ▶ 103,550 person work hours of site activities performed safely, with no lost time incidents



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Characterization of Remediation Waste



Overview of Key Concepts

Ross Bunnell

Senior Sanitary Engineer

Waste Engineering and Enforcement Division

Characterization of Remediation Waste: Applicable Laws & Regulations

- Hazardous Waste Regulations [40 CFR 260 - 279]
- Solid Waste/Special Waste Regulations & Statutes [CGS § 22a-207 & 208a, RCSA § 22a-209]
- Also relevant: Remediation Standard Regulations
 - Requirements for the Use of Polluted Soil and Reuse of Treated Soil [RCSA Section 22a-133k-2(h)]
 - “Polluted soil” = “soil affected by a release of a substance at a concentration above the analytical detection limit for such substance”
 - Specifies how soil excavated from and/or treated at a release area during remediation must be managed



Important Waste Characterization Concepts

- Point of Generation
- Listed vs. Characteristic waste
- “Contained-in” Policy for Contaminated Environmental Media
- “Area of Contamination” Policy
- Requirements for treatment
- Land Disposal Restrictions (“LDRs”)



Point of Generation



- General Principle: A waste that is placed into storage or disposal prior to the effective date of RCRA is not a waste until it is removed from storage or disposal. As a result:
 - Environmental media that was contaminated with hazardous waste before the effective date of RCRA is not hazardous waste as long as it is in the ground
 - Once it is removed from the ground (e.g., dug up or pumped out), it is “generated” and becomes a waste – and potentially a hazardous waste
- This does not apply to environmental media that was contaminated with hazardous waste after the effective date of RCRA
- “Effective date of RCRA” is 11/19/1980 for most wastes. Could be later for wastes that were added to the definition of HW after 11/19/1980

Listed vs. Characteristic Waste:

Characteristic Waste

- Characteristic Hazardous Waste - waste that is hazardous by virtue of a characteristic that it exhibits:
 - Ignitability (D001): liquids with a flash point < 140 , ignitable solids, ignitable compressed gases, DOT oxidizers
 - Corrosivity (D002): liquids with a pH ≤ 2.0 or ≥ 12.5
 - Reactivity (D003): react with water, explosives, some cyanide and sulfide bearing wastes
 - Toxicity (D004 - D043): fail TCLP test for one or more constituents
 - Contaminated environmental media containing these wastes is only hazardous if it exhibits a characteristic



Listed vs. Characteristic Waste:

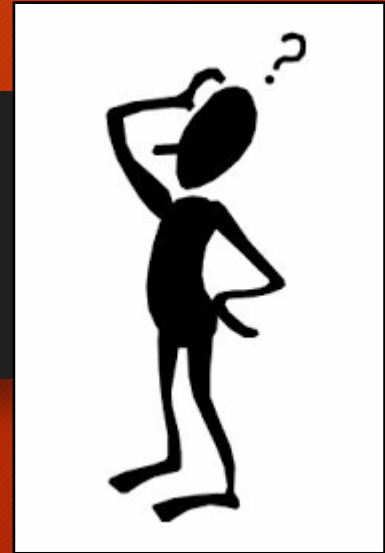
Listed Waste

- Listed Hazardous Waste - waste that meets a certain definition or "listing." The most common listings include:
 - Listed Spent Solvents (F001 - F005)
 - Metal Finishing Wastes (F006 - F019)
 - Spill & Container Residues of Commercial Chemical Products ("U" and "P" Codes)
 - Must be unused
 - Must be the commercially pure grade of the chemical, or a product which contains the chemical as the "sole active ingredient"
- "Contained-in" Principle:
 - Contaminated environmental media that contains listed HW is itself a listed hazardous waste (after the point of generation)



Listed vs. Characteristic Waste:

Listed Waste (Cont.)



- What if you don't know what the source of the contaminant was?
 - If, after good faith efforts to determine whether or not the source contaminant is listed, documentation is unavailable or is inconclusive, it is not necessary to assume that it is listed
- What if you don't know when the contamination happened?
 - Similar approach
 - If, after good faith efforts to determine date of contamination, you are unable to do so because documentation is unavailable or inconclusive, it is not necessary to assume that the contamination is listed
- "Documentation" = manifest data, DEEP inspection reports, company & town records, former employees, etc.

“Contained-in” Policy for Contaminated Environmental Media



- EPA policy allows states to establish health-based criteria by which contaminated environmental media may be considered to no longer contain listed hazardous waste
- CT DEEP has established such criteria
- Timing of “contained-in” determination is important:
 - If performed before “generation” → was never a hazardous waste
 - If performed after “generation” → was a hazardous waste up until the determination was completed
 - Important for applicability of LDRs (more on this later)
- Caution: Other states may require approval of a “contained-in” determination prior to disposal in their state

“Area of Contamination” Policy

- Interpretation created by EPA and supported by CT DEEP
- AOC = a single, contiguous area of continuous contamination
- Policy allows certain activities to occur within the AOC without triggering “generation” and the associated RCRA treatment and LDR requirements:
 - Consolidation of waste within the AOC
 - In-situ treatment within the AOC
- Does not cover:
 - Movement of waste outside the AOC
 - Movement of waste between AOCs
 - Ex-Situ treatment



Requirements for Treatment of Contaminated Environmental Media



- General rule: Treatment of hazardous waste requires a RCRA permit
- Some notable exceptions:
 - Treatment of waste that has been “contained-out” (no longer HW)
 - Treatment in accordance with the AOC Policy (not generated yet)
 - Treatment by generators in RCRA tanks, containers, or containment buildings
 - Treatment in RCRA-exempt wastewater treatment units
 - Treatment in authorized CAMUs or TUs
- Treatment of non-hazardous media would require a permit under CGS §22a-454 if conducted by a third-party entity engaged in the business of such treatment
 - Example: mobile soil treatment company
- Air or Water permits may also be required in some cases

Land Disposal Restrictions ("LDRs") [40 CFR 268]



- Ensure the safe disposal of hazardous wastes and residuals from the treatment of hazardous waste
- Apply ("attach") at the point of generation, and continue to apply even after a waste is treated and rendered non-hazardous
- Hazardous waste may not be placed on the land (on or off-site) unless and until it meets applicable LDR standards
- LDR standards are based on hazardous waste code(s), and can be based on a concentration or a specified treatment technology
- Contained-in Policy:
 - If waste is "generated" before it is "contained out" → LDRs apply
 - If waste is "generated" after it is "contained out" → LDRs do not apply

Alternative LDR Treatment Standards For Certain Types of Hazardous Waste



- Contaminated Soil [40 CFR 268.49]:
 - Must achieve 90% reduction in contaminant concentration; and,
 - Cannot exceed 10 x Universal Treatment Standard
- Hazardous Debris [40 CFR 268.45]:
 - “Debris” is > 60 mm (~ 2 ½ in.) in size and either a manufactured object, plant or animal matter, or natural geologic material
 - Crushed drums, building materials, piping, etc.
 - Can be treated by any of several allowed technologies- Examples:
 - High-temperature metals recovery
 - Microencapsulation
 - Macroencapsulation

Solid Waste/Special Waste



- RCSA § 22a-133k-2(h) - the Commissioner may authorize polluted soil that is not hazardous waste to be disposed of as special wastes as defined in RCSA § 22a-209-1
- A special waste may only be disposed of at a solid waste facility that is specifically authorized to accept that type of special waste
 - Special Waste Plan (e.g. Manchester Landfill)
 - Special Waste Disposal Authorization

Clean Fill



- Exempt from solid waste regulations [RCSA §22a-209-3]
 - “Clean fill” means (1) natural soil (2) rock, brick, ceramics, concrete, and asphalt paving fragments which are virtually inert and pose neither a pollution threat to ground or surface waters nor a fire hazard and (3) polluted soil as defined in subdivision [49] of subsection (a) of section 22a-133k-1 of the Regulations of Connecticut State Agencies which soil has been treated to reduce the concentration of pollutants to levels which do not exceed the applicable pollutant mobility criteria and direct exposure criteria established in sections 22a-133k-1 through 22a-133k-3 of the Regulations of Connecticut State Agencies and which soil is reused in accordance with R.C.S.A. subdivision (3) of subsection (h) of section 22a-133k-2 of such regulations
- Regulations under way to better define “clean fill,” etc.

Solid/Waste Special Waste (Cont.)

- Alternatives to management of non-hazardous contaminated media as special waste at a solid waste facility:
 - Soil/sediment: management at a soil treatment facility permitted under CGS §22a-454
 - Groundwater: management at a waste management facility permitted under CGS Section 22a-454
 - Groundwater: management under a DEEP Wastewater Discharge permit (e.g. individual permit, MISC General Permit or the General Permit for Diversion of Remediation Groundwater)



Waste Characterization Should Be an Integral Part of Site-wide Project Management

- Tempting to focus on cleanup and worry about characterization later
- Allows Law of Unintended Consequences to kick in
- Can miss opportunities to minimize disposal cost
 - Timing of “Contained-in” determinations
 - Contaminated soil management and staging
 - In-situ treatment vs. ex-situ
- Can result in a need for unexpected approvals/permits, causing delays and cost overruns



Questions?



Ross Bunnell, Senior Sanitary Engineer
DEEP Waste Engineering & Enforcement Division
79 Elm Street
Hartford, CT 06106-5127

Phone: (860) 424-2374

Email: ross.bunnell@ct.gov



Portion Verifications: Applicability & Requirements

Robert Robinson

Supervising Environmental Analyst

Remediation Division



Form III – Portion Verification

- Requirements to support a Portion Verification are no different than Final Form III Verification
 - Complete characterization
 - RSR compliance
 - There are additional documentation requirements to identify the Portion



Form III – Portion Verification

- May only apply to 1 Rem#
- Designate a particular date for compliance
 - Date of Form III Filing
 - Date of complete Phase II
 - Whichever is later
 - Date you signed and sealed verification

Portion Verifications



Type	Property	Business Only
Form I	X	X
Form II	X	X
Form III	Final	X
	Portion	X
	Interim	X
Form IV	Supporting	X
	Final	X
133y	Property	
133x	Property	
	Portion	
	Interim	
	Release Area	
BRRP	Property	
	Portion	
	Interim	
RCRA	Final	



Portion Verifications: Most Proper Application

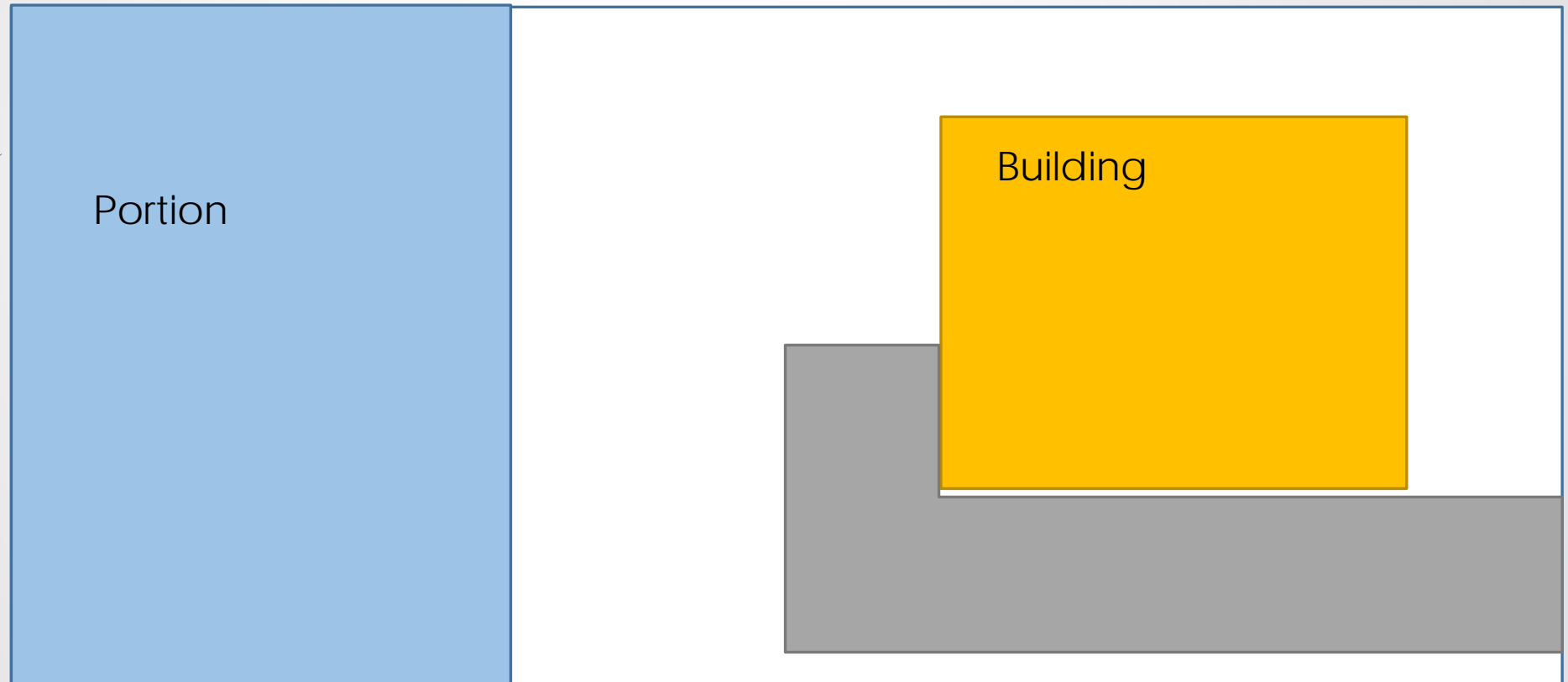
The Department's understanding of the Legislature's original intent to provide the option for a Portion Verification was:

1. Remediate and verify a transferrable lot of land of the original parcel; +/or
2. Provide ability to cut liability of Transferor (CP) from operational issues related to transferee, +/or
3. Mark a stepped progress towards site remediation



Portion Verifications: Most Proper Application

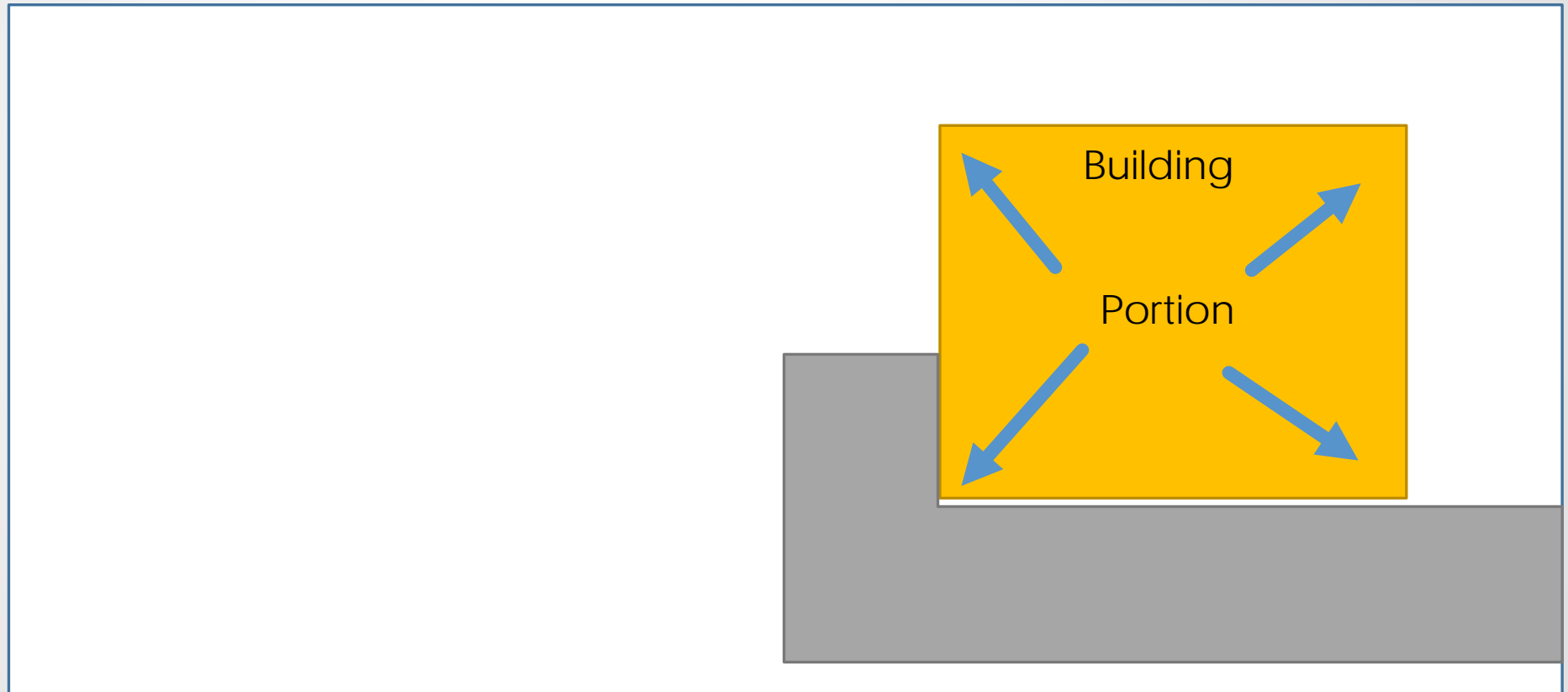
Back forty





Portion Verifications: Most Proper Application

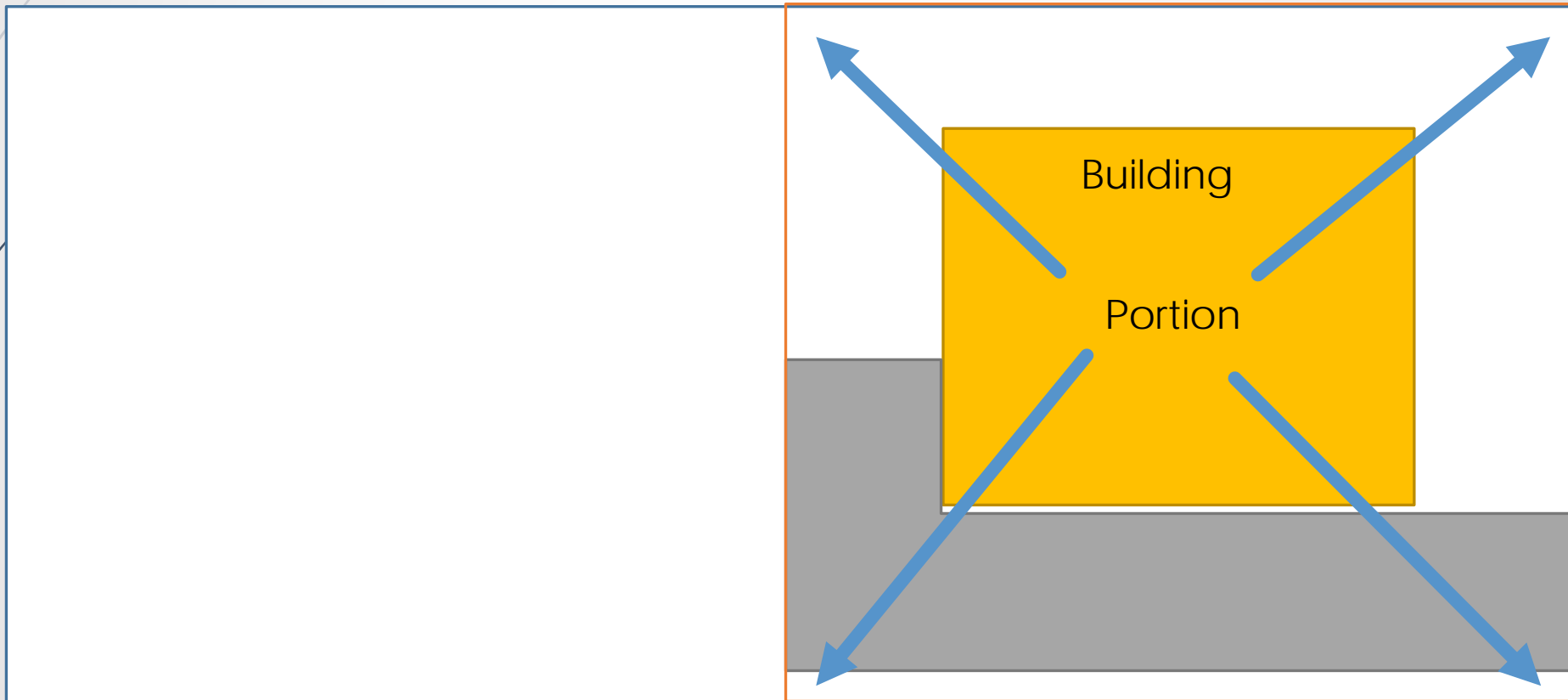
- Footprint of the building





Portion Verifications: Most Proper Application

- Area of active transference operations



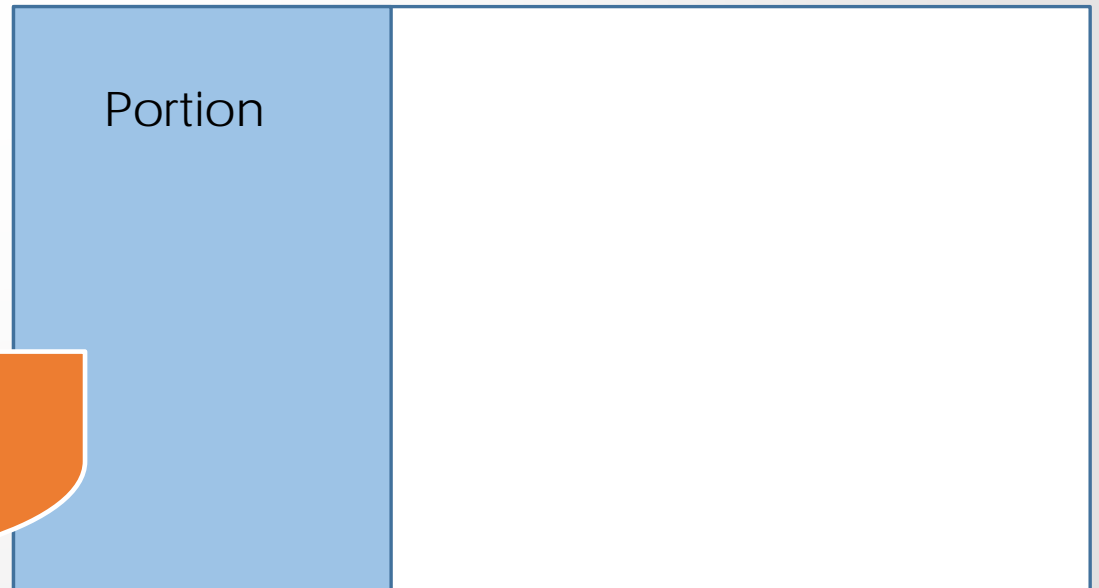


Portion Verifications: Improper Application

The portion of the Establishment or the property [**meaning any release(s) or release areas within such portion**] must meet full compliance with the RSRs

Not acceptable:

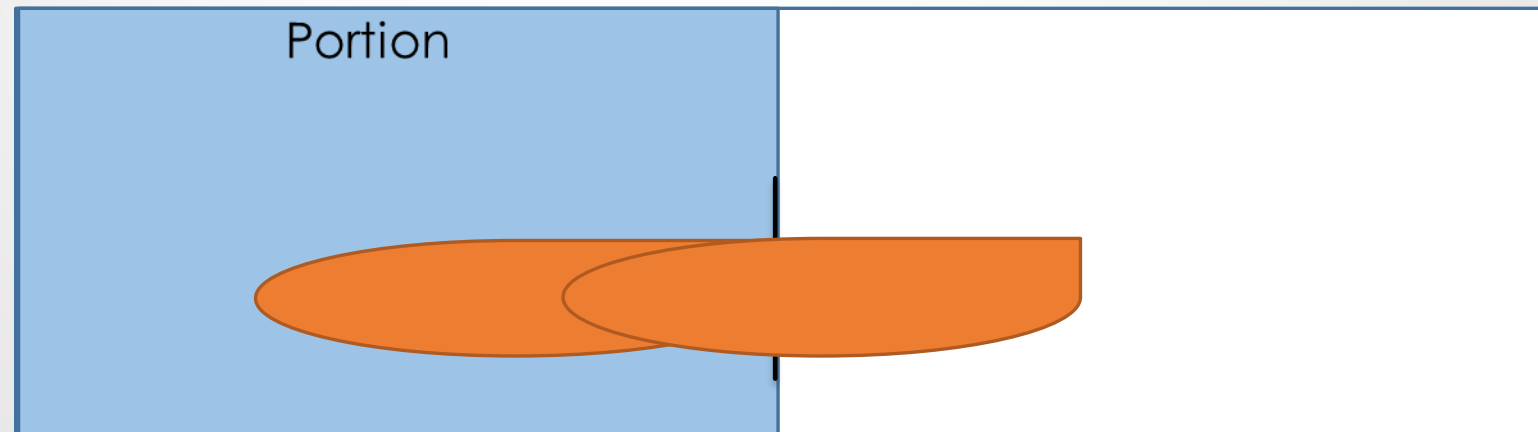
- Plume migrating from portion has not been addressed





Portion Verifications: Improper Application

- ❑ Plume present in Portion. LEP attributes to an on-site release outside of the Portion, so groundwater compliance not pursued or achieved
- The Upgradient Policy does not apply to the on-site release
The Background Concentration for Groundwater (22a-133k-1(a)(5)) does not apply

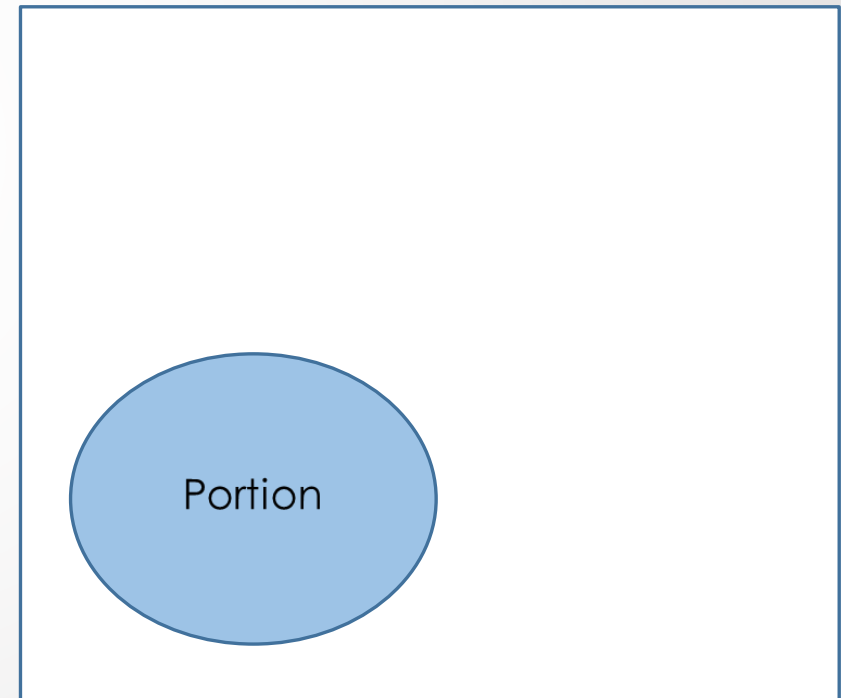




Portion Verifications: Improper Application

- ❑ Round hole in square peg approach

How would a survey be completed?





Portion Verifications: Improper Application

- ❑ Multiple portion approach



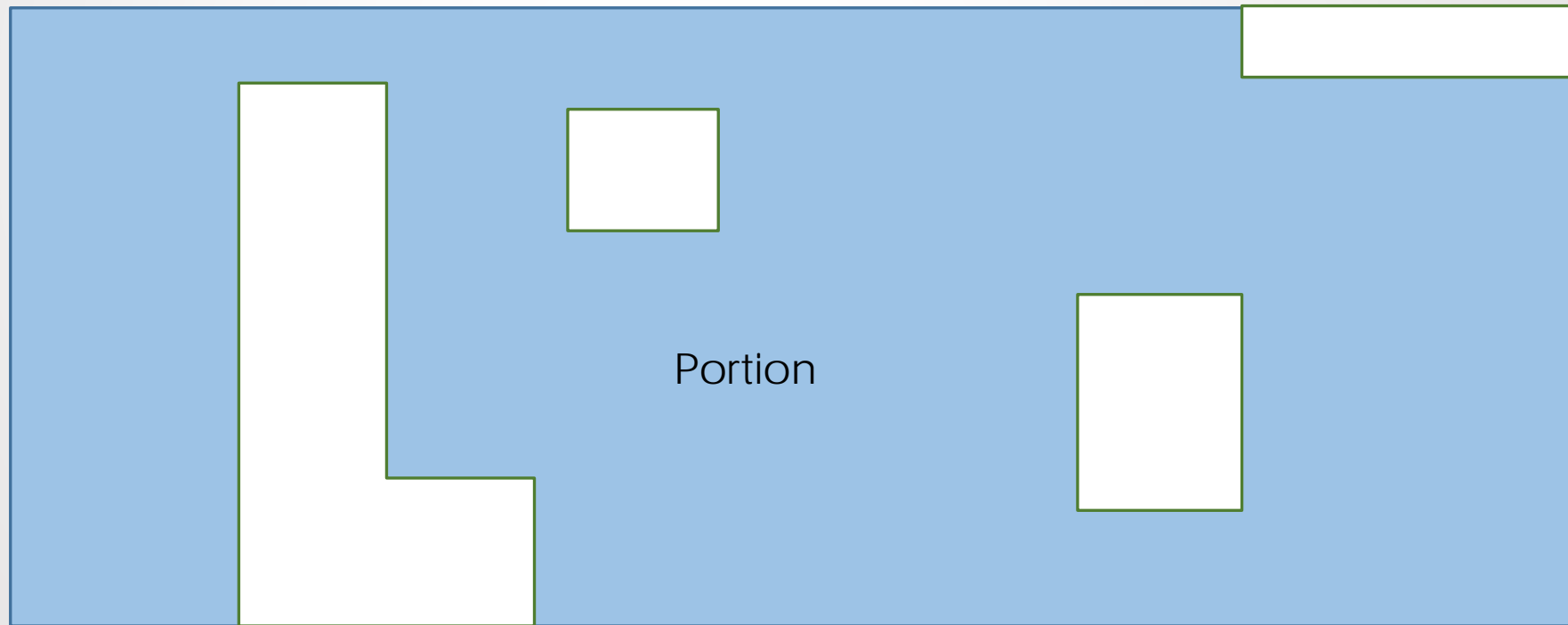
CGS:

- §22a-134a(g)(2)(A)
- §22a-133x(4)
- §32-769(j)(2)(C)
- specifically reference the remediation for a portion of the property



Portion Verifications: Audit Flag

- Swiss cheese approach





Portion Verifications: Obligations

Property Transfer Form III [22a-134a]

- The Form III filing will remain open**, and the Certifying Party will remain obligated by law to comply with all applicable requirements of 22a-134a until a Final Form III Verification is submitted for the entire establishment
 - The physical and environmental relationship of the Portion to the entire establishment is to be discussed in Final Verification

Voluntary Remediation [22a-133x]

- There are no further VRP obligations of the applicant; however, a Portion Verification will not support a future filing of a Form II for the entire property



Portion Verifications: Obligations

BRRP

- ❑ Unlike the 'Portion' options provided in 134a and 133x, all of the investigation and initiation of remediation milestones for the entire property that was originally accepted into the BRRP must be met prior to the submittal of a Portion Verification
- ❑ The eligible party must demonstrate to the satisfaction of the DEEP Commissioner that they will complete the remediation of the remainder of the property originally accepted into the BRRP in accordance with the remediation schedule



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Next meeting: March 13, 2018