



Clean Fill

CT DEP November 2008



Managing Contaminated Soil, Sediments, and Aggregates

Today's topics

- Where we've been
- Why we are proposing changes
- What changes are being proposed
- Where we are going

Stakeholder Involvement To Date

Open workshop sessions

March 5, 2007 ...key concepts for general permit

April 9, 2007 ...at DOT

June 18, 2007 ...re-use types and controls

December 13, 2007 ...focus on aggregates

November 19, 2007 ...draft regulation revision

January 10, 2008 ...draft general permit

Paused GP development to revise regulations

November 14, 2008 ---draft regulation revision

Revision of “Clean Fill” Definition

Goal: Streamline redevelopment by simplifying reuse of non-hazardous fill materials

Problem

Different practices within and between construction industry and remediation industry results in varied and inefficient disposal and reuse decisions.

Current state

- Material often shipped long distances to avoid reuse issues.
- Declining capacity of landfills in CT & MA limits future options of reusing soil as cover material.
- CT construction industry currently views marginally contaminated materials as “clean fill” for reuse creating unlevel field for remediation sites (brownfields) managing as waste or via RSR Reuse approval process.
- CT RSRs 1996 version allows for reuse if soil meets RSR criteria.

Where we could go—ways to simplify reuse

- **Define bright line for reuse:** clarify point at which solid waste management regulations apply
- Eliminate or minimize sampling at receiving site
- Balance reuse concerns with limited disposal capacity and reduced greenhouse gas emissions for net environmental benefit

What we need to do to address the problem

Revise Solid Waste Management Regulations to limit “clean fill” definition and establish “regulated fill” definition

Establish permit for recycling/reuse facility

Provide simple option to send excess soil, sediments, asphalt, brick, concrete, to recycling facility

Create General Permit for specific reuses

[reuse as road sub-base, reuse in asphalt, reuse in manufactured soil after treatment, reuse in DOT right-of-way, etc.]

Beneficial Use of

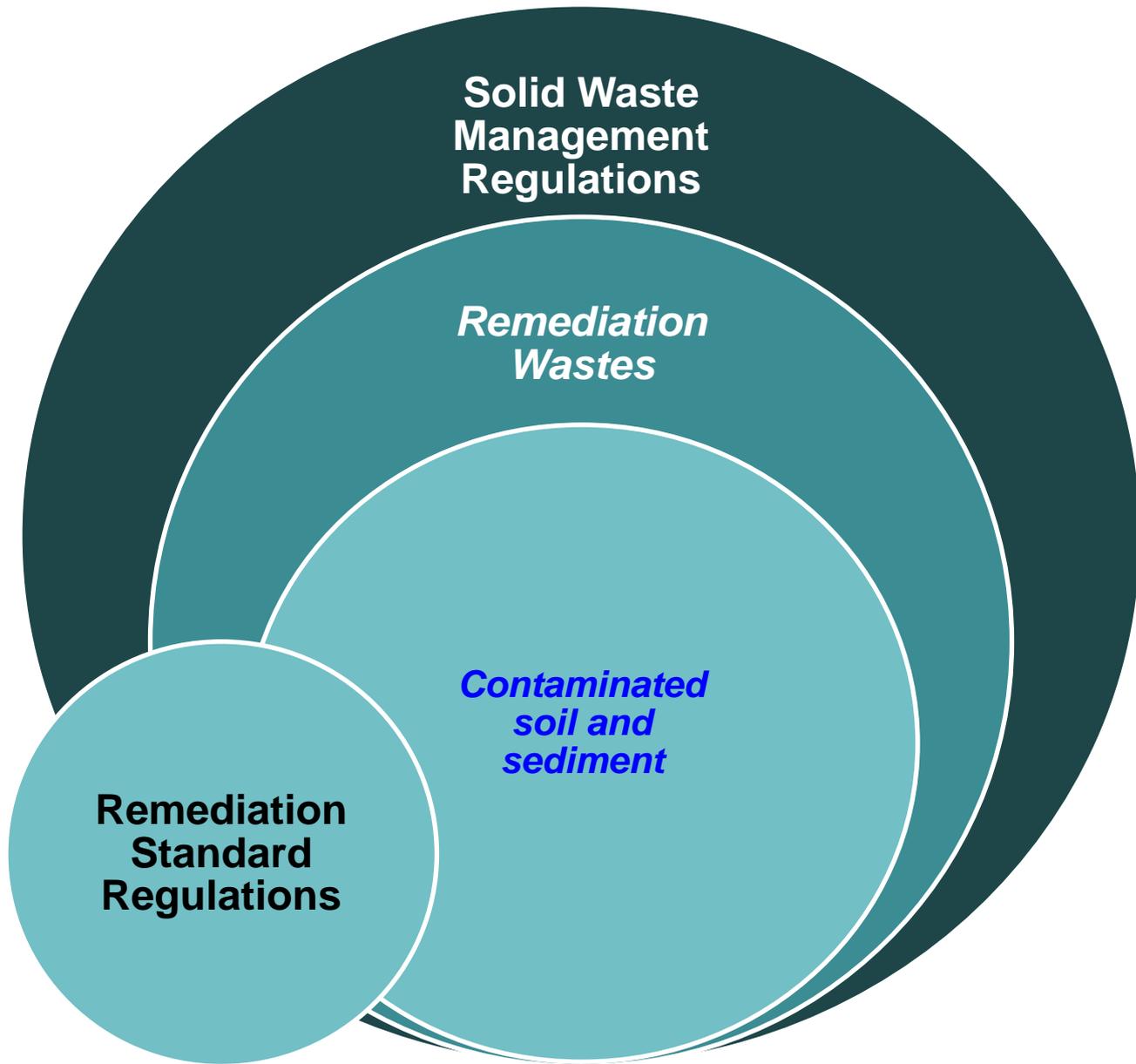
Contaminated Soil & Sediments/Regulated Fill

as...

- Soil or fill--if soil/sediment meets criteria
- Cover material at landfills
- Feedstock to asphalt/aggregate plants
- Aggregate in road structure/sub-base
- Manufactured soil [after treatment and testing]

What we heard from you during development of Beneficial Use GP

- “The requirement that the **receiving site** contain concentrations that are at least 50% of the concentrations in the regulated fill being transferred is **too restrictive...**”
- “The requirement that a minimum number of samples be taken at the site of proposed reuse doesn’t take into account size of receiving site; ..Multi-year construction schedules, unanticipated delays ...may result in **need for re-sampling, at additional expense, in order to meet the one-year** timeline prior to reuse.”
- “**Transportation cost** is a significant factor in dredging projects and we always look for a nearby disposal site..If the sediment meets the GA PMC why not allow [materials to be placed in a GA area].”
- “It seems impractical and it would be **expensive to sample at receiving sites, especially since the material to be used would meet GA PMC criteria.**”
- “...**unclear why reuse of polluted material meeting GA PMC/Res DEC would not be allowed to be reused in GA/GAA areas.**”
- “...**reuse of materials which comply with the RSRs ...may not be eligible for management** under this permit solely because of rigid application of the Water Quality Standard’s anti-degradation policy...The current RSRs are extremely stringent and are deemed to be protective of human health and the environment...”



**Solid Waste
Management
Regulations**

*Remediation
Wastes*

*Contaminated
soil and
sediment*

**Remediation
Standard
Regulations**

Current (1996) Regulatory Framework

- **Clean Fill**

- “Natural Soil” = no detectable contaminants, rock
- Brick, Ceramics, Concrete, Asphalt Paving Fragments
 - *Must be “virtually inert” and not pose a fire hazard or threat to groundwater*
- Polluted soil *reused per RSR re-use rules*
 - *submit map to CT DEP; meet RSR criteria; anti-degradation*

- **Solid Waste**

- Polluted soil *not* reused per RSR re-use rules
- Mismanaged “clean fill” materials [asphalt, brick, concrete] not inert
- “Contaminated dredge spoils” [“contaminated” not defined]
- No clear path to reuse or recycling

Connecticut Department of Environmental Protection Management of Contaminated Environmental Media Frequently Asked Questions

What are contaminated environmental media?

Contaminated environmental media are actively managed (excavated, dredged, pumped, or otherwise collected) rocks, soil, sediments, groundwater, or surface water that have been affected by a release of a substance. Upon excavation, dredging, or other manner of collection, contaminated environmental media are subject to waste management regulations. Contaminated environmental media include actively managed "polluted soil" as defined by Connecticut's Remediation Standard Regulations ("RSR")¹.

How are contaminated environmental media regulated?

Contaminated environmental media in the ground (in-situ) are not solid wastes and therefore cannot be Resource Conservation and Recovery Act ("RCRA") hazardous wastes. However, since contaminated environmental media may pollute the waters of the state, the contamination must be treated and/or removed. Upon removal from the ground, whether for remedial, construction, or other purposes, the ex-situ media must be characterized² and managed accordingly as hazardous waste, solid waste, or clean fill.

How do I categorize contaminated environmental media?

The categories of contaminated environmental media are

Contaminated environmental media that:	Manage as:	Applicable regulations
Exhibit a RCRA HW Characteristic or Listed constituents exceed "contained-in" levels	RCRA Hazardous waste	CT Hazardous Waste Management Regulations
Exceed RSR criteria and cannot or will not be re-used per RSR re-use requirements	Solid waste	CT Solid Waste Management Regulations
Meet the RSR criteria for a receiving site and will be re-used per the RSR ³	Clean fill	"Clean fill" definition in CT Solid Waste Management Regulations CT Remediation Standard Regulations

¹ "Polluted soil" means soil affected by a release of a substance at a concentration above the analytical detection limit for such substance in accordance with RCSA 22a-133k-1(a)(45).

² "Characterized" means to have conducted a hazardous waste determination pursuant to RCSA 22a-449(c)-102(a)(2)(A) and (B), incorporating with changes 40 CFR 262.11.

³ Any soil excavated from a release area that is intended to be re-used shall be managed in accordance with RCSA 22a-133k-2(h) Use of Polluted Soil and Reuse of Treated Soil.

When would media need to be managed as hazardous waste?

Contaminated environmental media are managed as hazardous wastes when the media exhibit a hazardous waste characteristic if the media contain RCRA-listed hazardous constituents above "contained-in" levels. Refer to the Department's "[Contained-in Policy](#)," dated May 2002. Contaminated environmental media must be characterized as soon as possible after collection or excavation. In some circumstances, existing analytical data acquired during site investigation may be used for waste characterization purposes.

If during the investigation of a contaminated property it is determined that environmental media contain hazardous waste (i.e.,

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Regulatory Revisions Goal

Revise “clean fill” definition and
create “regulated fill” definition
to distinguish between
“natural soil” and
contaminated soil, sediments, and
construction materials.

Material/Media	Manage As: <i>Current</i>	Manage As: <i>Proposed</i>
Street Sweeps	<i>Solid Waste</i>	Regulated Fill if reused; Solid Waste if disposed
Asphalt paving fragments	<i>Solid Waste or</i> If demonstrate that is inert and does not pose groundwater threat: <i>Clean Fill</i>	Exempt if direct reuse, otherwise - Regulated Fill
Brick, ceramics, concrete	<i>Solid Waste or</i> If demonstrate that is inert and does not pose groundwater threat: <i>Clean Fill</i>	Exempt if direct reuse, otherwise - Regulated Fill
Dredged sediments—marine-all	Special wastes [“contaminated dredge spoils”]	Regulated Fill
Dredged sediments—freshwater--contaminated	Special wastes [“contaminated dredge spoils”]	Regulated Fill
Polluted soil -Above GA PMC, Res DEC	<i>Solid Waste or (Conditionally)</i> <i>Clean fill if reused per RSR rules</i>	Regulated Fill
Polluted soil & freshwater sediments -Below GA PMC, Res DEC	<i>Solid Waste or (Conditionally)</i> <i>Clean fill if reused per RSR rules</i>	<i>Conditional fill</i> (Can only reuse at residential-type property or property without drinking water well if below 50% of GA PMC and Res DEC.)
Natural soil [soil, stones, rocks]	<i>Clean fill</i> (no detections)	<i>Clean fill</i> <i>if natural soil and/or from quarry</i>

Proposed

- **Clean Fill** *[used per 22a-209d-1]*
 - Natural Soil
 - Soil, sediments, rock, stone
 - From quarries, banks, borrow pits, etc.
 - From households
- **Conditional Fill** *[may be reused per 22a-209d-1]*
 - Soil below GA PMC and Res DEC for general use
 - Soil below approximately 50% of RSR criteria for sensitive receptors
 - if reused at schools, residential property, if on-site supply well, etc.

Definitions

Existing “Clean Fill”

“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 (45) 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.]*

Proposed “Clean Fill”

(12) “Clean fill” means:

- (a) **Natural soil** *as defined in this section; or*
- (b) **Earthen materials** *consisting only of soils, stones or rocks, or a mixture or combination of such materials, which are:*
 - **Raw materials excavated or extracted** *from a borrow pit, earthen bank, gravel bank, mine or quarry; or*
 - **Excavated from a single residential real property** *composed of four residential units or fewer and not affected by a release of petroleum products, oils, chemicals or by any other polluting substance;*

Proposed

Regulated fill

***[may be reused or recycled
per an authorization or permit (22a-209-18)]***

- Excavated soil and freshwater sediments
above GA PMC and Residential DEC
- Dredged marine sediments
- Used brick, concrete, ceramics
- Used asphalt
- “Urban fill”
- Street sweeps

Definitions—New— “Regulated Fill”

- (41) **“Regulated fill” means** any one or a mixture of the following, which is or will be used, reused or recycled as fill, including as structural fill, or as a grading material:
- A. **Earthen materials**, other than clean fill, consisting only of soil, stones or rocks that have been excavated, or sediments dredged from fresh water, any of which are known or may reasonably be expected to contain one or more substances at concentrations **exceeding either**:
 1. Any Residential Direct Exposure Criterion in Appendix 1 of this section which is excerpted from Appendix A to sections 22a-133k-1 to 22a-133k-3, inclusive, of the Regulations of Connecticut State Agencies; or
 2. Any **GA Pollutant Mobility Criterion** in Appendix 2 of this section which is excerpted from Appendix D to sections 22a-133k-1 to 22a-133k-3, inclusive, of the Regulations of Connecticut State Agencies;
 - B. **Sediments** dredged from salt water;
 - C. **Used brick, ceramic or concrete**, any of which are from construction, remodeling, repair or demolition operations or activities except when such materials are being or will be used, reused or recycled pursuant to section 22a-209d-1 of the Regulations of Connecticut State Agencies;
 - D. **Used asphalt or bituminous concrete** except when any such materials are being or will be used, reused or recycled pursuant to section 22a-209d-1 of the Regulations of Connecticut State Agencies; or
 - E. **Sand, waste and other debris from street sweeping activities**;

Fill Materials

– Clean fill

- Soil, dredged sediments, and rocks
- Use and re-use unrestricted; due diligence expected

– Conditional fill

- Property owner, local officials, or DEP can request certification that fill is **not** regulated fill.

– Regulated fill

- Urban fill, contaminated dredged sediments, brick, concrete, asphalt
- Specific uses and re-uses identified
- If mismanaged = solid waste enforcement

Definitions—New— “Conditional Fill”

(13) “Conditional fill” means any of the following or any mixture or combination of only the following - earthen material consisting only of **soil, stones or rocks** that have been excavated, **or sediments dredged from fresh water** - that:

(a) are known or may reasonably be expected to contain one or more substances **at concentrations at or below:**

1. all of the **Residential Direct Exposure Criteria** included as Appendix 1 to this section which is excerpted from Appendix A to sections 22a-133k-1 to 22a-133k-3, inclusive, of the Regulations of Connecticut State Agencies; and
2. all of the **GA Pollutant Mobility Criteria** included as Appendix 2 to this section which is excerpted from Appendix D to sections 22a-133k-1 to 22a-133k-3, inclusive, of the Regulations of Connecticut State Agencies;

(b) **are used, reused or recycled as fill, including structural fill, or as a grading material;** and

(c) **are used in compliance with section 22a-209d-1** of the regulations of Connecticut state agencies;

(NEW) Section 22a-209-18.
REGULATED FILL
USE, REUSE AND RECYCLING

(a) Regulated fill shall be managed only as provided for in this section.

(1) No person shall use, reuse or recycle regulated fill unless such fill:

*A. Is **used or reused beneficially** in compliance with a valid and effective written **authorization or permit** issued by the commissioner; or*

*B. Is **recycled at a facility** in compliance with a valid and effective written **authorization or permit** issued by the commissioner to the owner or operator of any such recycling facility.*

(2) No person shall accumulate or store regulated fill for longer than three years before using, reusing or recycling such fill. Any person accumulating or storing such fill shall prevent erosion of such fill by implementing and maintaining sedimentation and erosion control measures, including, but not limited to, dust control measures.

(3) Any person accumulating, storing, using, reusing or recycling regulated fill shall comply with all other applicable requirements regarding such fill.

(NEW) 22a-209d-1(b)
CATEGORIES AND REQUIREMENTS
(for conditionally exempt solid wastes)

Provided the requirements of this section applicable to a material listed in the subdivisions to this subsection have been complied with, any such material shall not be considered a solid waste.

If the requirements of this section applicable to a material have not been complied with, any such material shall be a solid waste and shall be subject to all of the requirements applicable to the management of a solid waste.

22a-209d-1(b) CATEGORIES AND REQUIREMENTS (for conditionally exempt solid wastes)

- 1. CLEAN FILL.** *No person shall use clean fill, except in a lawful manner or for any lawful purpose.*

- 2. USED BRICK, CERAMIC, OR CONCRETE.** *Any person reusing or recycling used brick, ceramics or concrete, or any mixture of combination of only such materials shall:*
 - A. Determine that such materials are:**
 - i. clearly recognizable as containing only bricks, ceramics, or concrete;**
 - ii. visibly free of oil, adhesives, stains, and paint; and**
 - iii. free of contaminants,** *including, but not limited to, oils, paint, lead, mercury and PCBs, based on knowledge of the source of the material or on representative sampling and analyses of such material. The basis for compliance with this subclause shall be maintained, in writing, for three years by any person claiming that used brick, ceramics or concrete meets the requirements of this subclause. This three year period shall begin when it is first determined that any such material meets the requirements of this subclause; and*

 - B. Use, reuse or recycle such materials as a construction or grading material and not for any other purpose.**

***(b) CATEGORIES AND REQUIREMENTS
(for conditionally exempt solid wastes)***

3. RECLAIMED ASPHALT PAVEMENT. *Any person reusing or recycling excavated bituminous concrete or asphalt pavement, including millings, shall ensure that:*

*A. such concrete or pavement is reused **as bituminous concrete or asphalt pavement** or is recycled by being added **as an ingredient to asphalt mix**; and*

*B. such **material is used, reused or recycled within two years** of its excavation.*

Proposed
Conditionally Exempt Solid Waste
[if used per 22a-209d-1]

- Clean Fill
- **Clean** brick, concrete, ceramics reused directly in construction or grading
- Reclaimed asphalt **directly reused as roads, bridges, and incidental construction**

(4) CONDITIONAL FILL.

Any person who generates, manages, accumulates, collects, stores, uses, reuses, recycles, sells, or offers for sale material claiming that it is conditional fill:

- (A) shall determine, **based upon knowledge of the material's source or based upon representative sampling and analyses** of such material, that all material claimed to be conditional fill meets the requirements of subsection (a)(2)(A)(i) and (ii) of this section [i.e., is below the Residential DEC and the GA PMC]. Notwithstanding the foregoing, any person that places, deposits, uses, reuses or recycles material claimed to be conditional fill, at any property, as provided for in subparagraph (D)(i) or(ii) of this subdivision, shall determine that such material meets the requirements of subsection (a)(2)(A)(i) and (ii) of this section based only upon representative sampling and analyses of such material;*
- (B) shall **maintain written records** regarding the basis for any determination made pursuant to subparagraph (a) of this subdivision. Such records shall include, but need not be limited to, a written description of the source of material claimed to be conditional fill or any written data from representative sampling and analyses of such material. Such records shall be kept for a minimum period of three years from the date of the excavation, transfer or sale of such fill material;*
- (C) shall provide written documentation that material claimed to be conditional fill meets the requirements of this section, **if** within three years of excavation, storage, accumulation or placement of such fill, such documentation is **requested** by the commissioner, a regional or municipal land use official, or a property owner on which such fill material is accumulated, stored, placed, used, reused or recycled. Such **written documentation shall be provided** no later than seven business days from the date of such request; and*

Conditional fill, continued

(D) shall use, reuse, or recycle such material as fill, including structural fill, or as a grading material only and not for any other purpose, except that such person shall not place, deposit, use, reuse or recycle material claimed to be conditional fill at:

(i) any property that includes a residence, dwelling, twelfth grade or lower level school, day care center, playground, or outdoor recreational area if such material contains any substance that exceeds any numeric criteria identified in Appendix 3 to this section [note: approx. 50% of RSR Residential Direct Exposure criteria for inorganic substances]; or

(ii) any property served by an on-site drinking water supply well if such material contains any substance that exceeds any numeric criteria identified in Appendix 4 to this section [note: approx. 50% of RSR soil criteria].

However, the additional requirements of subclauses (i) and (ii) of this subdivision shall not apply if the placement, use, reuse or recycling of material claimed to be conditional fill

(1) is approved in writing by the commissioner, or

*(2) occurs at a **mixed-use development**. For purposes of this subdivision mixed-use development shall mean a development containing one or more multi-family or single family dwelling units or a twelfth grade or lower level school, day-care center, playground or outdoor recreational area and one or more commercial, public, institutional, retail, office or industrial uses.*

Summary of Proposed Solid Waste Regulatory Revisions *November 2008*

- **Clean Fill** [*used per 22a-209d-1*]
 - Natural Soil
 - Soil, sediments, rock, stone
 - From quarries, banks, borrow pits, etc.
 - From households
- **Conditional Fill** [*may be reused per 22a-209d-1*]
 - Soil below GA PMC and Res DEC for general use
 - Soil below approximately 50% of RSR criteria for sensitive receptors
 - if reused at schools, residential property, if on-site supply well, etc.
- **Regulated fill** [*may be reused or recycled per 22a-209-18*]
 - Excavated soil and freshwater sediments above GA PMC and Residential DEC
 - Dredged marine sediments
 - Used brick, concrete, ceramics
 - Used asphalt
 - Street sweeps
- **Conditionally Exempt Solid Waste** [*if used per 22a-209d-1*]
 - Clean Fill
 - Clean brick, concrete, ceramics reused directly in construction or grading
 - Reclaimed asphalt directly reused as asphalt
- **Special Wastes** [*Solid Waste*]
 - Any of the above materials when **discarded instead of reused**
 - Other solid wastes identified in the definition of “special wastes”

Soil/Fill Management:

Where we are going

- **Clarify Clean Fill** management practices and policy
 - Change definitions to recognize reality of regulated fill, historic fill
 - Continue to allow on-site reuse as soil per RSR re-use rules [Remedial Action Plan must address reuse on site and soil brought from off-site]
- **Regulatory & Statutory changes** under consideration
 - Clean fill regulatory revision
 - Beneficial Use Determination statutory revision
- **General Permit for Beneficial Use of Regulated Fill**
 - Simplify ability to reuse soil and dredged sediment for common uses that are specifically pre-determined
 - Potentially allow reuse as soil without specific map and approval if below most stringent clean-up standard

Soil Management changes: *Series of 3 General Permits*

- Logical Sequence of Issuance:
 - **Staging and Transfer**
 - allows stockpiling for characterization, treatment, and consideration of re-use options rather than disposal
 - *issued September 2006*
 - **Beneficial Use**
 - to define demand and possibilities for untreated and treated re-used materials
 - *under development*
 - **Treatment**
 - of soil to simplify process
 - *-Next- after issuance of Beneficial Use General Permit*



Remediation Standard Regulations

Spill Reporting Regulations

Remediation Programs
Site Characterization Guidance
Reasonable Confidence Protocols
Brownfields Agreements
Stewardship Permits



Remediation Waste Management
Soil Management –Series of General Permits
Solid Waste Management Regulations



Waste Management Hierarchy for Soil: Reduce, Reuse, Recycle

Reduced

Generation
[Spill prevention
and response]

Reused as soil

[reuse per Remedial
Action Plan or through
General Permit]

Recycled through beneficial reuse

[reuse per General Permit
Or Regulation]