

**Sediment Management Standards  
Chapter 173-204 WAC  
Rule Revisions**

**SMARM**

**May, 2013**

# Happy Anniversary!

- 25 years: SMARM Silver Anniversary.
- 22 years: SMS Rule Anniversary
- 21 years: SMS Rule Revision Anniversary (kind of )



# Goals For Today

- Provide a summary of the Sediment Management Standards (SMS) rule changes.
- Provide an update on Ecology's rule implementation plans.
- Hear your feedback on finalizing the cleanup guidance.



# SMS Rule Adoption



# Supporting Documentation

- **Rule Language:**
  - OTS version: Official rule with rule sections that had changes (underline and strikeout).
  - Reader Friendly version: Includes all rule sections with (underline and strikeout).
  - Formatted version: Stay tuned for a clean copy.
- **Concise Explanatory Statement:** Includes all rule changes, comments received, and Ecology's responses.
- **Environmental Impact Statement:** Includes different alternatives Ecology considered for the revised rule, environmental impacts, and the preferred alternative.
- **Cost Benefit Analysis:** Includes analysis of the costs and benefits of the rule revisions.
- **Sediment Cleanup Users Manual II:** Published in 1991. Being updated to  
5 reflect revised rule, new policies, and science.

# SMS Rule Chapter 173-204 WAC

- Part I      General Information
- Part II     Definitions
- Part III    Sediment Quality Standards
- Part IV    Sediment Source Control
- **Part V     Sediment Cleanup Standards**
- Part VI    Sampling and Testing Plans/Recordkeeping
- 1991 rule Parts I – VI promulgated under: WPCA, MTCA, Puget Sound Water Quality Authority Act, Pollution Disclosure Act, Water Resources Act, and SEPA
- 2013 rule Part V promulgated under MTCA and is not to be used for Clean Water Act purposes.

# Part V Cleanup Process Under the New Rule

- WAC 173-204-510: Identify sediment station clusters of potential concern.
- WAC 173-204-520: Conduct hazard assessments to identify cleanup sites.
- WAC 173-204-530: Evaluate stations clusters of potential concern.
- WAC 173-204-540: Determine appropriate site cleanup authority.
- WAC 173-204-550: Conduct site investigation to characterize:
  - Nature and extent of contamination and cleanup boundaries.
  - Identify potentially liable person(s) and contamination sources.
  - Establish background concentrations.
- WAC 173-204-550: Identify bay-wide site, sediment cleanup units, and individual sites.
- WAC 173-204-560 through -564: Establish cleanup standards for different receptors.
- WAC 173-204-570: Select remedial actions.
- WAC 173-204-575: Cleanup action decisions.
- WAC 173-204-590: When necessary, authorize a site sediment recovery zone.
- Resolve potentially liable persons responsibilities at a cleanup site.

# WAC 173-204-500 Expectations

Original SMS Rule	New SMS Rule
Adopted under Clean Water Act and Model Toxics Control Act.	<b>Adoption Authority:</b> Adopted under Model Toxics Control Act.
SMS silent on this issue.	<b>Widespread Contamination:</b> Recognizes issue of ubiquitous contaminants from multiple diffuse sources resulting in large scale (baywide) cleanups.
SMS silent on this issue.	<b>Recontamination:</b> Recognizes issue of recontamination and allows a settlement for PLP responsibilities at a site by addressing their sources and all requirements in the Consent Decree.
Included site unit concept.	<b>Site Units:</b> Clarification of site unit role and how fits with concept of large scale (baywide) cleanups.
	<b>Restoration Time Frames/Cleanup Actions:</b> Emphasis on active cleanup and restoring site as soon as practicable. Recognizes large scale cleanups will require longer time frames and more use of passive cleanup actions.
	<b>Relationship between cleanup standards/actions:</b> Explains terminology and how each is related.
SMS silent; MTCA requirements apply <sup>8</sup>	<b>Grandfather Clause:</b> Cleanup sites with approved Cleanup Action Plans are not automatically subject to new provisions.

# WAC 173-204-505 Definitions – Apply to Part V Only

Original SMS Rule	New SMS Rule
<b>All definitions in 173-204-200.</b>	<b>Cleanup definitions moved from section 173-204-200 to -505.</b>
<b>Applicable Laws:</b> Included local, state, and federal laws.	<b>Applicable Laws:</b> Relevant/appropriate requirements may include tribal laws.
<b>Biologically Active Zone:</b> Silent.	<b>Biologically Active Zone:</b> Site specific flexibility to establish depth to accommodate freshwater environments and Abiotic factors.
	<b>Contaminant:</b> MTCA definition.
	<b>Natural Background:</b> MTCA definition.
	<b>Point of Compliance:</b> MTCA definition.
<b>Practicable:</b> Did not consider cost.	<b>Practicable:</b> MTCA definition, considers cost during remedy selection.
	<b>Regional Background:</b> Includes chemical concentrations from diffuse sources.
<b>Sediment:</b> Applicability not clear.	<b>Sediment:</b> Clarified applicability.
<b>Cleanup Standard:</b> Included concentration or level of biological effects.	<b>Sediment Cleanup Standard:</b> Concentration/effects & point of compliance.
9	<b>Technically Possible:</b> MTCA definition.

# WAC 173-204-510 - 173-204-530

## Identification and evaluation of cleanup sites

Original SMS Rule	New SMS Rule
Included a narrative standard – site specific development of criteria.	Includes freshwater numeric chemical and biological benthic criteria.
Included the human health narrative standard.	Clarifies how human health risk applies to identify & evaluate cleanup sites.
Included non-anthropogenic background.	Includes regional background to identify & evaluate cleanup sites.
Ranking of cleanup sites required SEDRANK.	Ranking of cleanup sites flexible.
Station clusters for human health must be a CSL exceedance for ANY three stations. Exceedances equate to identification of a cleanup site	Station clusters for human health and regional background must be a CSL exceedance for ALL three stations. Exceedances equate to potential identification of a cleanup site or area for further investigation.

# WAC 173-204-540

## Types of Cleanup Authority

Original SMS Rule	New SMS Rule
Included MTCA and WPCA authorities.	MTCA authority clarified as it applies to a release or threatened release.
Unique SMS terminology.	Terms clarified to be consistent with MTCA.
SMS not clear on CERCLA role or authority.	Role of CERCLA clarified.
	Partial cleanup subsection removed.
	Voluntary cleanup language changed to other party initiated cleanup.

# WAC 173-204-550 RI/FS

Current Rules: SMS and MTCA	New SMS Rule
RI/FS , Clean up Action Plans (CAP), and Sediment Recovery Zone (SRZ) process were mixed throughout multiple sections.	RI/FS process included in one section. SRZ and CAP requirements moved to one section (-590).
Remedy selection criteria was mixed with RI/FS and CAP criteria.	Remedy selection process in a separate section (-570).
	Terminology changes to be consistent with MTCA.
	MTCA requirements for a RI/FS work plan and report included: <ul style="list-style-type: none"><li>• Data gaps analysis.</li><li>• CSM (receptors and exposure pathways).</li><li>• Public participation requirements.</li></ul>
	RI/FS Report requirements added.
	Land use classification consideration added.
	Proposed cleanup levels and points of compliance.
12	Proposed monitoring plan and schedule.

# WAC 173-204-560 Cleanup Framework & Background

Current Rules: SMS and MTCA	New SMS Rule
<p>SMS only included non-anthropogenic background.</p>	<p>Regional Background:</p> <ul style="list-style-type: none"> <li>• How it fits into the two tier framework.</li> <li>• Definition.</li> <li>• Specific -560(5) parameters and caveats added:               <ul style="list-style-type: none"> <li>• Established by Ecology.</li> <li>• Ability to default to NB if necessary.</li> <li>• Ability to require PLPs to sample.</li> </ul> </li> <li>• Part of the Cleanup Screening Level framework.</li> </ul>
<p>MTCA natural background requirements apply under a one tier framework.</p>	<p>Natural Background:</p> <ul style="list-style-type: none"> <li>• How it fits into the two tier framework.</li> <li>• MTCA definition.</li> <li>• Part of the Sediment Cleanup Objective framework.</li> </ul>
<p>Station by station compliance approach.</p>	<p>Ability to use tissue to evaluate compliance.            Ability to use averaging approach for bioaccumulatives to evaluate compliance.</p>

# WAC 173-204-561 Human Health Risk

Current Rules: SMS and MTCA	New SMS Rule
SMS narrative Standard “No significant risks to human health” for SCO and CSL.	SCO/CSL established at different risk levels.
SMS silent on specific risk levels. MTCA risk levels apply.	Risk levels established: <ul style="list-style-type: none"> <li>• <math>10^{-6}</math> (SCO) or <math>10^{-5}</math> (CSL) for carcinogens.</li> <li>• Hazard quotient = 1 for non carcinogens.</li> </ul>
SMS silent on Reasonable Maximum Exposure (RME) scenario. MTCA RME requirements apply.	Risk assessment based on a Reasonable Maximum Exposure scenario.
SMS silent on fish consumption rates. MTCA default recreational scenario applies.	Fish consumption rate to be established based on default tribal exposure scenario.
SMS silent on exposure parameters. MTCA exposure parameters apply.	Exposure parameters of fish diet fraction and site use factors included; default based on tribal exposure scenario.
Silent on toxicity parameters. MTCA toxicity parameters apply.	Toxicity parameters through EPA – IRIS database.

# WAC 173-204-562 Marine Benthic Criteria

Original SMS Rule	New SMS Rule
Part V included Cleanup Screening Level (CSL) criteria.	Part V includes Sediment Cleanup Objective (SCO) as well as CSL criteria.
	Clarified minor adverse effects level as between SCO and CSL.
Detection limit included.	Clarified MDL requirements and included PQL.
TOC normalization narrative.	TOC normalization narrative and equation.
Biological criteria were in text format.	Biological criteria text removed and added in tabular format.
Performance standards in Part III.	Performance standards from Part III added.
Biological criteria: No larval reference performance standard.	Larval performance standard for reference added.
	Clarified other deleterious substances.

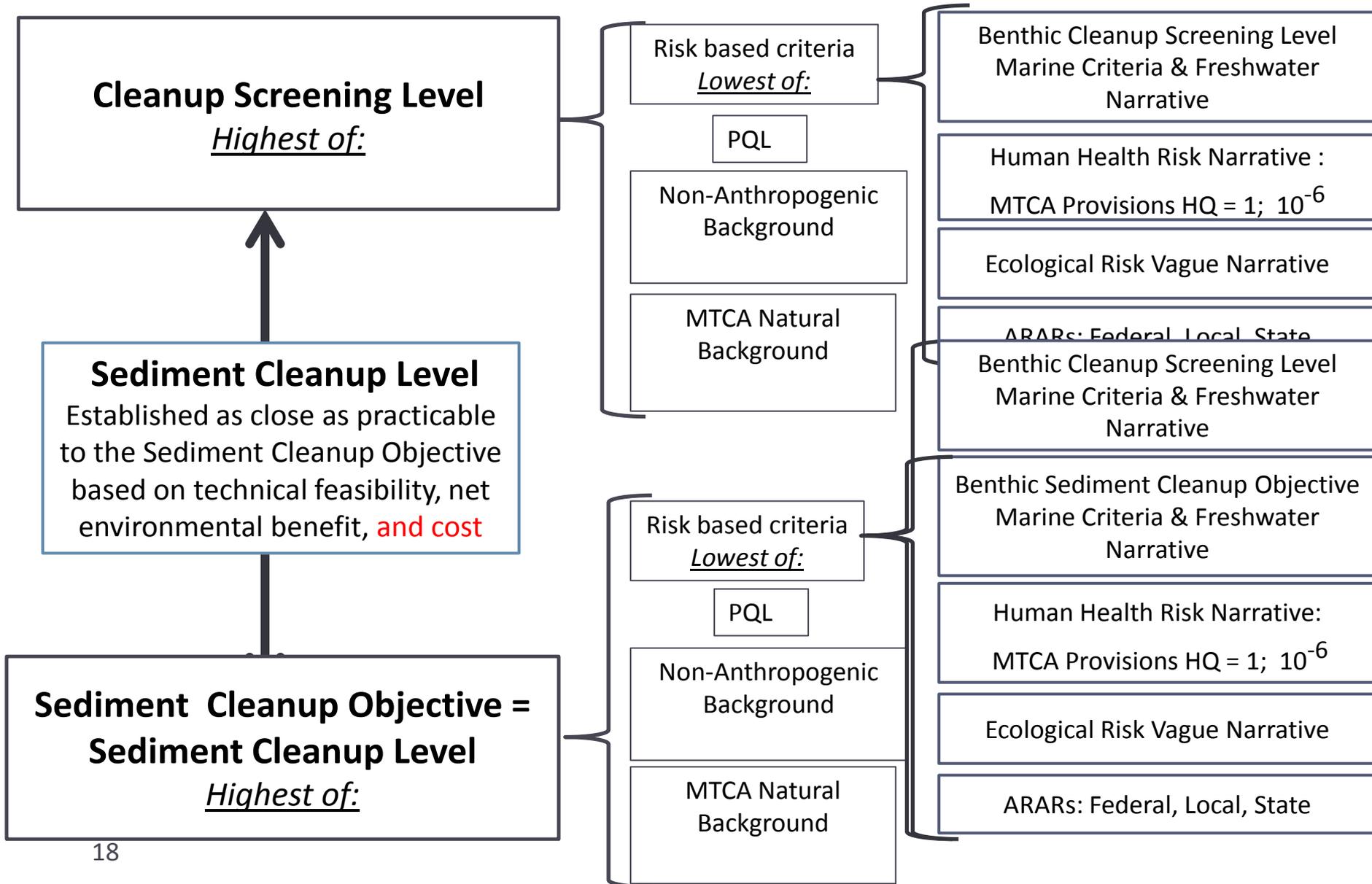
# WAC 173-204-563 Freshwater Benthic Criteria

Original SMS Rule	New SMS Rule
Freshwater narrative standard: Criteria established on a case by case basis.	Freshwater chemical benthic SCO and CSL criteria.
	Freshwater biological benthic SCO and CSL criteria.
	Allows flexibility to establish site specific criteria at certain types of sites (e.g. mining impacted).
	Framework mirrors the current marine benthic criteria: <ul style="list-style-type: none"> <li>• Biological override of chemistry</li> <li>• What is a SCO and CSL chemical and biological exceedance</li> </ul>
	Chemical criteria based on dry weight.

# WAC 173-204-564 Ecological Risk To Higher Trophic Levels

Original SMS Rule	New SMS Rule
Risks to higher trophic levels not clearly addressed.	Assessment process identified and consider: <ul style="list-style-type: none"><li>• Evaluation of species utilizing the site.</li><li>• Effects to reproduction, growth, survival.</li><li>• Species life history.</li></ul>
	Screening for bioaccumulatives included.
	SCO and CSL established at no adverse effects level.
	Coordination with Federal for ESA purposes included.

# Original Rule - Establishing Cleanup Levels



# New Rule WAC 173-204-560 Establishing Cleanup Levels

## Levels

**Cleanup Screening Level**  
WAC 173-204-560(4)  
*Highest of:*

**Sediment Cleanup Level**  
WAC 173-204-560(2):  
Adjusted upwards from Sediment  
Cleanup Objective based on  
**technical possibility & net adverse  
environmental impacts**

**Sediment Cleanup Objective**  
WAC 173-204-560(3)  
*Highest of:*

Risk based criteria  
*Lowest of:*

PQL

**Regional Background**  
WAC 173-204-560(5)

- Benthic Cleanup Screening Level**  
WAC 173-204-562 or -563
- Human Health Risk HQ = 1;  $10^{-5}$**   
WAC 173-204-561(3)
- Ecological Risk Narrative**  
WAC 173-204-564
- ARARs: Federal, State, Local, Tribal**

Risk based criteria  
*Lowest of:*

PQL

**Natural Background**  
WAC 173-204-560(2)

- Benthic Sediment Cleanup Objective**  
WAC 173-204-562 or -563
- Human Health Risk HQ = 1;  $10^{-6}$**   
WAC 173-204-561(2)
- Ecological Risk Narrative**  
WAC 173-204-564
- ARARs: Federal, State, Local, Tribal**

# WAC 173-204-570 Selection of Cleanup Actions

Original SMS Rule	New SMS Rule
Criteria in three separate SMS sections. MTCA criteria apply.	Criteria consolidated into one SMS section and includes MTCA requirements.
Net environmental effects, relative cost-effectiveness, and technical feasibility included.	Replaced with MTCA disproportionate cost analysis.
Restoration time frame of 10 years not clear as to when it started and what standard needed to be met.	10 year restoration time frame clarified to start “after completion of construction of active components”.
Sediment recovery zone required if sediment cleanup objective was not met.	Sediment recovery zone required if sediment cleanup level is not met within a 10 year restoration time frame.
Long term effectiveness evaluation not clear.	Sediment specific hierarchy for evaluating long term effectiveness.
MTCA requirements apply.	Use of permanent solutions to the maximum extent practicable.

# WAC 173-204-570 Selection of Cleanup Actions

## Minimum Requirements

- Protect human health and the environment.
- Comply with all applicable laws.
- Comply with sediment cleanup standards.
- Use permanent solutions to the maximum extent practicable.
- Provide for a reasonable restoration timeframe with preference for shorter timeframe.
- Where source control necessary, measures that are more effective in minimizing accumulation of contaminants caused by discharges.
- Sediment Recovery Zone must meet Section -590 requirements.
- Cleanup actions cannot rely exclusively on monitored natural recovery and institutional controls and monitoring where a more permanent cleanup action is technically possible to implement.
- Provide an opportunity for public review and comment.
- Provide adequate monitoring.
- Provide for periodic review.

# **WAC 173-204-570 Selection of Cleanup Actions**

## **MTCA Disproportionate-Cost Evaluation Criteria**

- Overall protectiveness of human health and the environment.
- The degree to which the alternative permanently reduces the toxicity, mobility, or volume of hazardous substances.
- The cost to implement the alternative.
- Long term effectiveness of the alternative.
- Short term risks to human health and the environment and ability to manage.
- Ability to be implemented.
- The extent community concerns have been addressed.

# WAC 173-204-575 Cleanup Action Decisions

Original SMS Rule	New SMS Rule
Not clear.	Approval mechanism under different authorities clarified.
Not clear or consistent with MTCA.	Public involvement requirements clarified.
	MTCA – Ecology issues Cleanup Action Plan incorporates decision into order or decree.
	CERCLA – EPA decision may be used by Ecology if: <ul style="list-style-type: none"> <li>• Decision consistent with SMS.</li> <li>• State concurs with decision.</li> <li>• Opportunity for public comment.</li> </ul>
	Public Involvement – Must provide public notice and opportunity for review and comment; can combine notices, hearings.

# WAC 173-204-590 Sediment Recovery Zones

Original SMS Rule	New SMS Rule
Sediment recovery zone required when the sediment cleanup objective (SCO) is not met.	Sediment recovery zone required when the sediment cleanup level, which could be above the SCO, is not met within restoration time frame.
	When a sediment recovery zone is applicable has been narrowed and better defined.
	Linked restoration time frame, applicable standards, practicability analysis, and sediment recovery zone requirements.
	Added renewal/extension process.
	More clearly tied to remedy selection process.

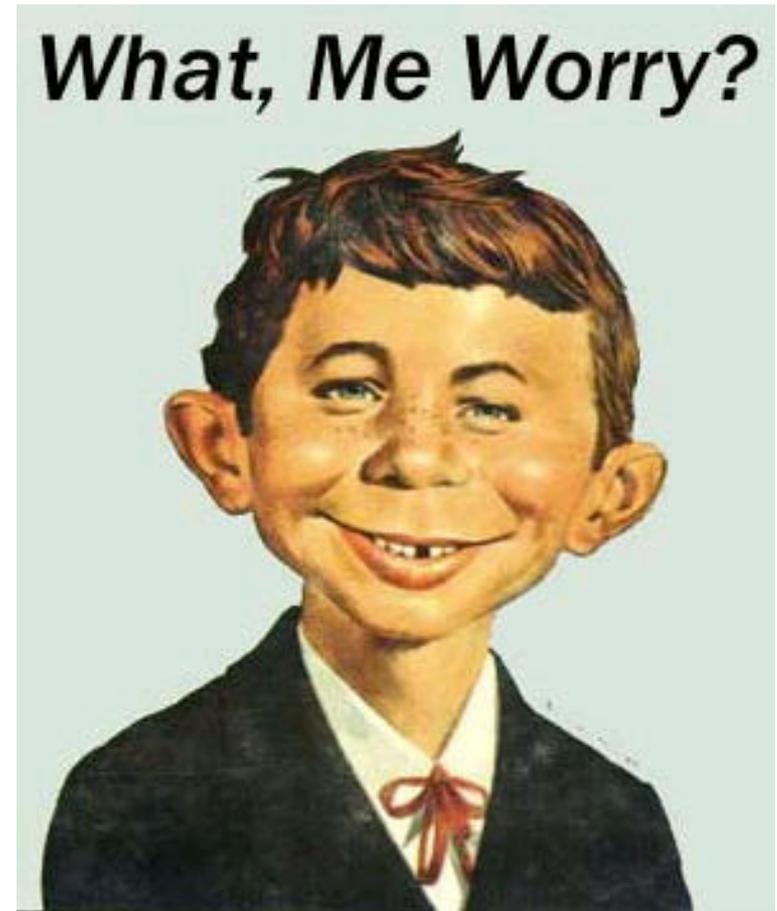


# Sediment Sites: Now What Do We Do With Them?

Ivy Anderson, Assistant Attorney General, Ecology Division

# Why Are Sediment Sites So Difficult?

- Upland component.
- Multiple potentially liable persons.
- Individual site within a larger site or commingled sites.
- “Bay-wide” or Watershed-wide problems.
- Limited remedial technologies.
- Source control and recontamination issues.
- Federal permitting, CERCLA and EPA involvement.



# When are Settlement Discussions Appropriate?

- Sediment Cleanup Unit vs. Site
  - Sediment cleanup unit settlement for a complete cleanup of that unit may be entered into with one or more of the PLPs.
  - De minimus settlement for the site with appropriate PLP(s) may be expedited.
  - Settlements for the site must be offered to all PLPs (no expedited settlement).
- Identification of the contaminant “release” is important to determine prior to settlement discussions.
  - In a sediment media you might have an extensive bay-wide or watershed-wide site and there is usually an upland component.
  - The *site* is distinguished from *the area needing to be cleaned up* – which is where contamination is located above the cleanup level.
- Knowledge about upland contribution to the sediment is important to determine the extent of the site which is upland and recontamination potential.
  - Could impact timing of in-water remediation work, as well as settlement for sediment cleanup units.

# How to deal with a large bay-wide site?

## Sediment Cleanup Units

- Units can be defined by a number of factors including:
  - Chemical signature, habitat features, physical features, development related projects.
- Ecology may enter into a settlement with one or more PLP(s) for complete cleanup of a unit.
- Benefits of settlement:
  - Incentivize a quicker cleanup.
  - Encourage PLPs to take an early look at source control.
  - Ability to focus cleanup in nearshore areas that typically pose higher risk to humans and the environment. This leads to a significant and faster reduction in overall risk.



# Settlement for Sediment Cleanup Units

- PLP may receive a partial consent decree for the site.
  - Consent decree is tailored to the sediment cleanup unit:
    - The PLP remains liable for the remainder of the larger site.
    - Consent decree for unit includes covenant not to sue and contribution protection.
  - For a complete cleanup of the unit need:
    - RI/FS and cleanup action plan detailing remedial action for the unit.
    - Cleanup level requirements.
    - Post-cleanup monitoring.
  - Consent decree will contain reopener.
    - Ecology reserves the right to institute legal or administrative actions to require the PLP to perform additional remedial actions at the unit (and pursue cost recovery) in certain circumstances.
    - Requirement for the PLP to fulfill their obligations at the remainder of the site.
- Ecology's policy: a PLP is not responsible for recontamination from sources out of the PLP's responsibility.
  - PLP has the burden to show they are not the source of recontamination.
  - If there is high risk of recontamination, Ecology is unlikely to settle.

# De minimus Settlement at a Bay-wide Site

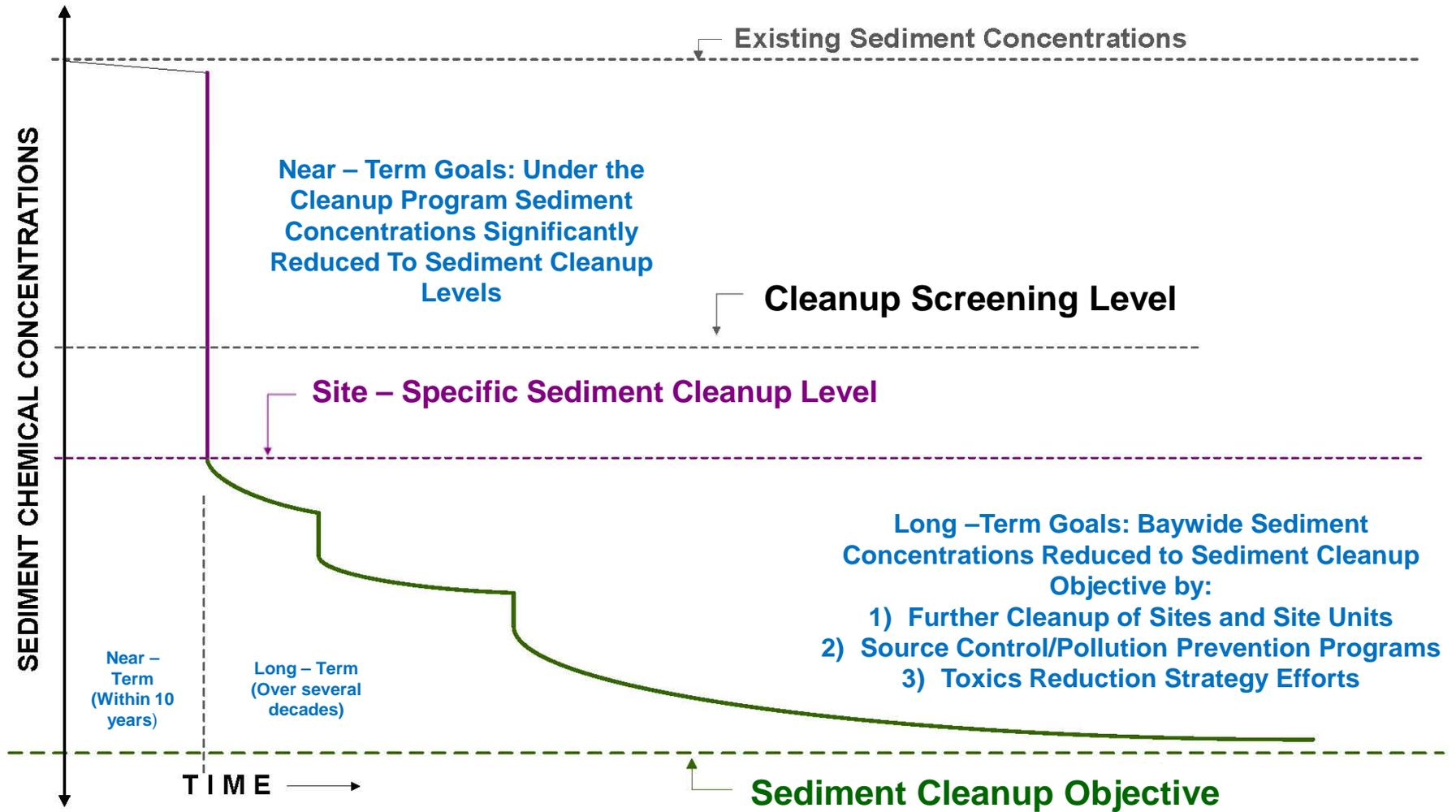
- When practical and in the public interest, Ecology may expedite a settlement with a person whose contribution is insignificant in amount and toxicity.
- Public comment (and public hearing if requested) allow for input from others regarding appropriateness of settlement.
- Payment via settlement could provide funds for bay-wide source control, cleanup actions, and long term bay-wide monitoring.
- Payment would go into a cleanup settlement account and may be spent only after appropriation. RCW 70.105D.130(1), (2)(a)(i)

# Settlement for a Bay-wide Site

- Settlement discussions will likely take place after site investigation, identification and cleanup of “hot spots”.
- Settlement would be offered to all PLPs at a site.
- Anticipate the PLPs determining allocation among themselves.
- PLP “credit” for sediment cleanup units or source control work needs to be determined.
- Anticipate remaining work at site is limited to source control and monitoring.
- Can there be a “cash out” option?
- Require PLPs to determine allocation of the costs.
- Payment to Ecology goes to State Toxics Control Account/require appropriation for use.
- How would the bay-wide work be done?
- All PLPs contribute funds for the remaining work and Ecology uses that funding (e.g., PSAMP monitoring, source control work).
- One PLP continues the bay-wide work with contribution to costs from other PLPs.



# How Cleanup Fits with Long Term SMS Goals





# Next Steps for the SMS Rule

- **Guidance**
  - Update to the Sediment Cleanup Users Manual II.
  - Biomass endpoint evaluation.
- **Implementation:**
  - Background:
    - Regional background sampling in select bays.
    - Natural background statewide establishment.
  - MyEIM updates to reflect freshwater criteria.
  - Internal Ecology staff training.
  - 303(d) policy update to reflect Part V as adopted under MTCA.
- **Process:**
  - Clean version of the revised rule.
  - Regional Sediment Evaluation Team coordination and updates as appropriate.
  - Science Panel: Considering a number of issues for guidance.

# Sediment Cleanup Users Manual II - Update

- Reorganization to follow the cleanup process and reflect the rule changes.
- Identify/evaluate stations clusters of potential concern and screening CoCs.
- Remedial investigation and field sampling to characterize:
  - Nature and extent of contamination.
  - Area for cleanup.
  - Identify potentially liable person(s) and contamination sources.
  - Establish sediment cleanup units.
  - Establish background concentrations.
- Field sampling methods.
- Chemical analysis and biological testing.
- QA/QC procedures.
- Establish cleanup standards:
  - Benthic chemical and biological criteria.
  - Evaluate human health risk.
  - Evaluate higher trophic level risk.
  - Establishing practical quantitation limit.
- Identify bay-wide site, sediment cleanup units, and individual sites.
- Establishing background.
- Remedy selection: DCA process, hierarchy of technologies.
- Sediment recovery zones.
- Compliance monitoring.

# Sediment Cleanup Users Manual II

## Issues Identified by Advisory Group

- Establishing regional and natural background concentrations.
- Establish cleanup standards: How technical possibility and net adverse environmental impacts works.
- Remedy selection:
  - DCA process.
  - Hierarchy of technologies.
  - How the practicability analysis works with remedy selection and how it integrates with cleanup levels determination.
- Compliance monitoring - Tissue analysis, area averaging.
- Freshwater criteria:
  - Determining alternate methods for mining sites.
  - Biomass endpoint development.
- Tribal regulations as “relevant and appropriate”.
- Identify bay-wide site, sediment cleanup units, and individual sites and resolving responsibilities at a site or unit.
- How the baywide strategy fits with overall sediment quality goals.
- Recontamination
- Source control and source identification

# Rule Implementation Timeline

February - June 2013

Summer 2013

Early Fall 2013

Winter 2013/2014

