Alberta Energy Regulator

Contamination Management

Regulatory Update and Information Session: Part 1

Adrian Kerry, Senior Specialist, RCM
Matthew Stewart, Senior Specialist, RCM

October 14, 2022

AER Disclaimer

This presentation is an overview of AER's requirements/processes and does not contain information on all AER requirements and expectations related to the specific subject matter.

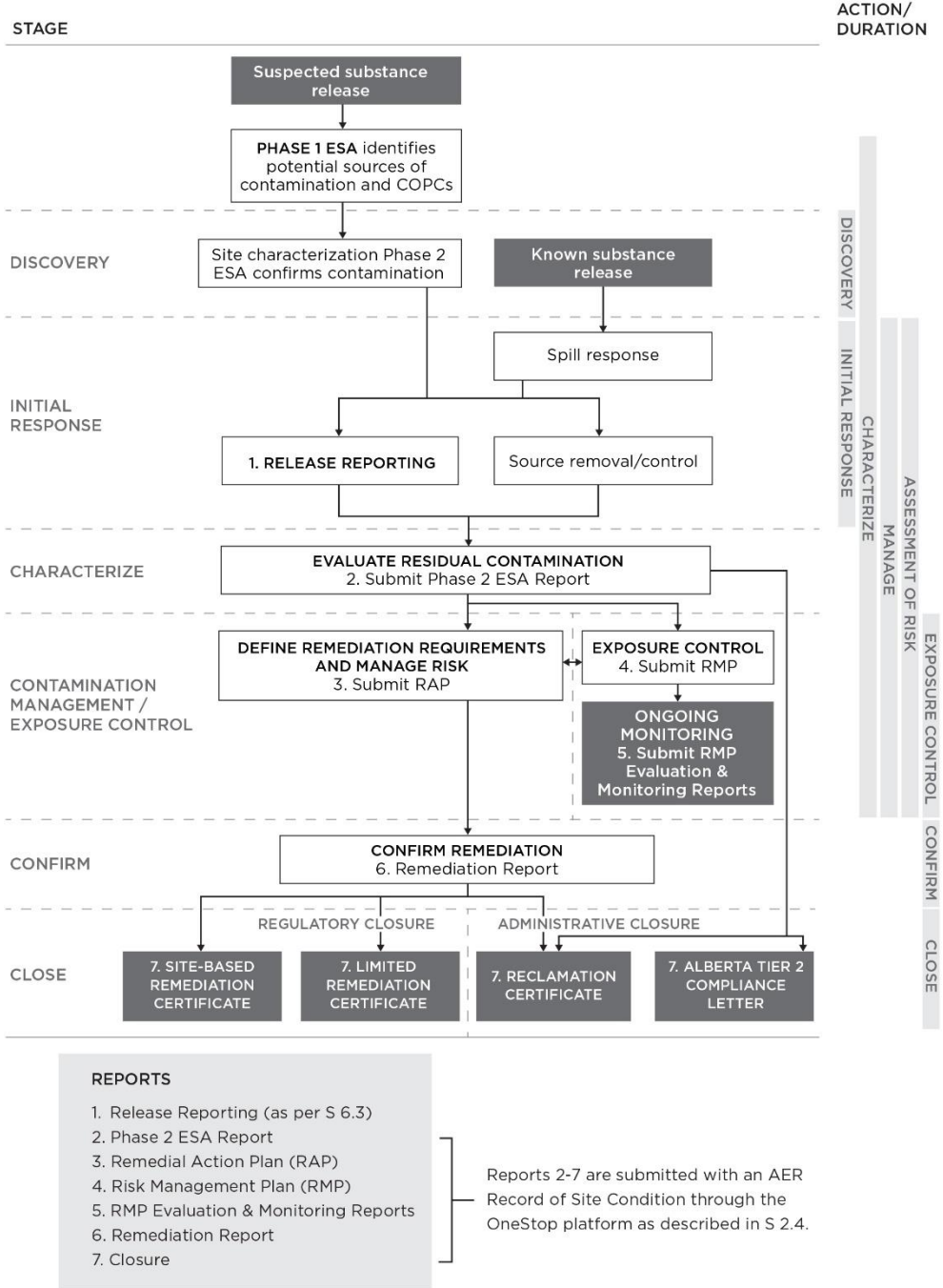
Presentations are intended for education/information purposes only and must not be used as a substitute for the applicable regulatory requirements.

Outline: Part 1

- Regulatory Requirements Refresher
- AER RoSC – Purpose, Content
- AER RoSC - Scope of Work
- AER RoSC – Data Analytics

Remediation Regulation

- Refresher
  - New Information re: impacts of a released substance
  - Phase 2 ESA or Remediation Report
  - RAP if remediation cannot be completed within 2 years
  - Closure tools – Remediation Certificates and Tier 2 Compliance Letters
- Manual 021: Contamination Management



REPORTS

1. Release Reporting (as per S 6.3)
2. Phase 2 ESA Report
3. Remedial Action Plan (RAP)
4. Risk Management Plan (RMP)
5. RMP Evaluation & Monitoring Reports
6. Remediation Report
7. Closure

Reports 2-7 are submitted with an AER Record of Site Condition through the OneStop platform as described in S 2.4.

Purpose of RoSC

- Risk-informed regulatory oversight
- Tracking progress over time
- Intent of Submission
- Reliability (Declarations)
- Compliance Assurance

RoSC Content

- RoSC “Site” definition
  - 1 to XX contaminated areas
  - 1 piece of land
  - 1 licensee
- Summarized CSM
- High-level RAP
- All “related entities” referenced
- RoSC Versioning (must submit information with current RoSC)

RoSC Scope of Work

- Summarize and evaluate all pertinent information in professional reports
- Describe current known site condition against applicable “standards”
- Determine if further remedial measures are required
- More information forthcoming on www.aer.ca

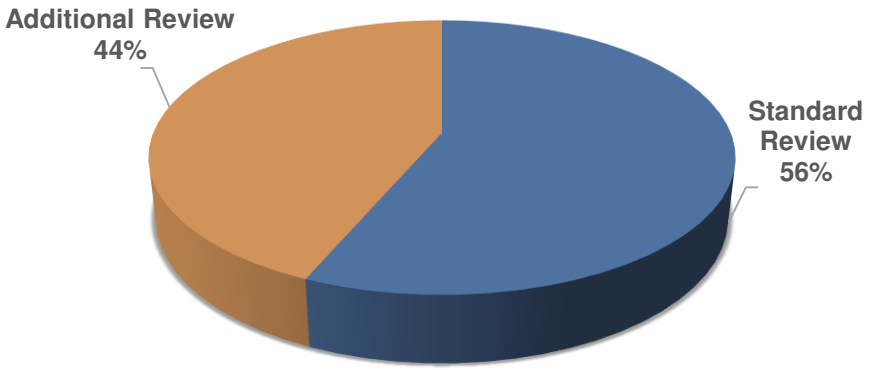
What is a CSU?

- An automatically generated number used for file management
- Supports:
  - Site submission consistency by encompassing all assets, FIS numbers, etc… that form the site
  - life-cycle oversight of a given site and tracking of contamination management progress over time
- Similar filing use as EPEA #

Data Source and Window

- All presented RoSC data is taken solely from inputs within the OneStop RoSC submissions since July 8, 2021 – September 30, 2022
- All information is publicly available through the OneStop Application Query Tool

OneStop RoSC Submissions



Month	Submission Count
Average/month	400
March 2022	1,250
April 2022	600
Total to Date	**6,200**

- Risk-informed decision making optimizes our resources
  - Updates to RoSC module (June 2022) to increase IDA efficiency
- Risk-based oversight includes verification tools and Audit Program

Data Source and Window (Slide 10)

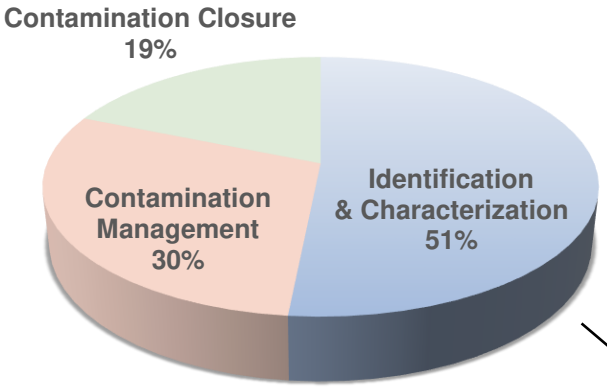
OneStop RoSC Return Rates

- As familiarity with new system and process increased – noticeable and steady decrease in return rate
  - Noticeable effect of AER training sessions (Oct 2021 and June 2022)
- Ongoing efforts to reduce return rates and SIRs

Data Source and Window (Slide 10)

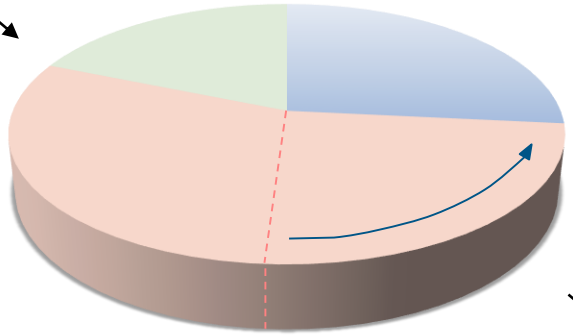
Tracking Progress Over Time

- Example showing anticipated intent of submission ratio changes as sites move through the lifecycle

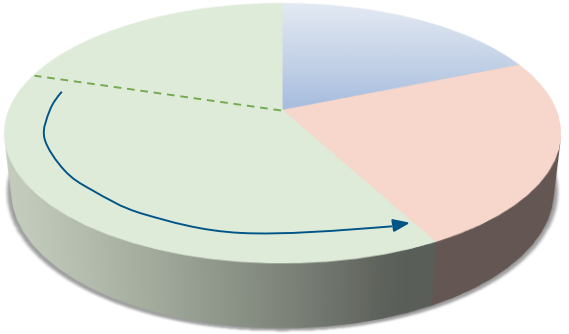


RoSCs July 2021-Sept 2022

Future state 1



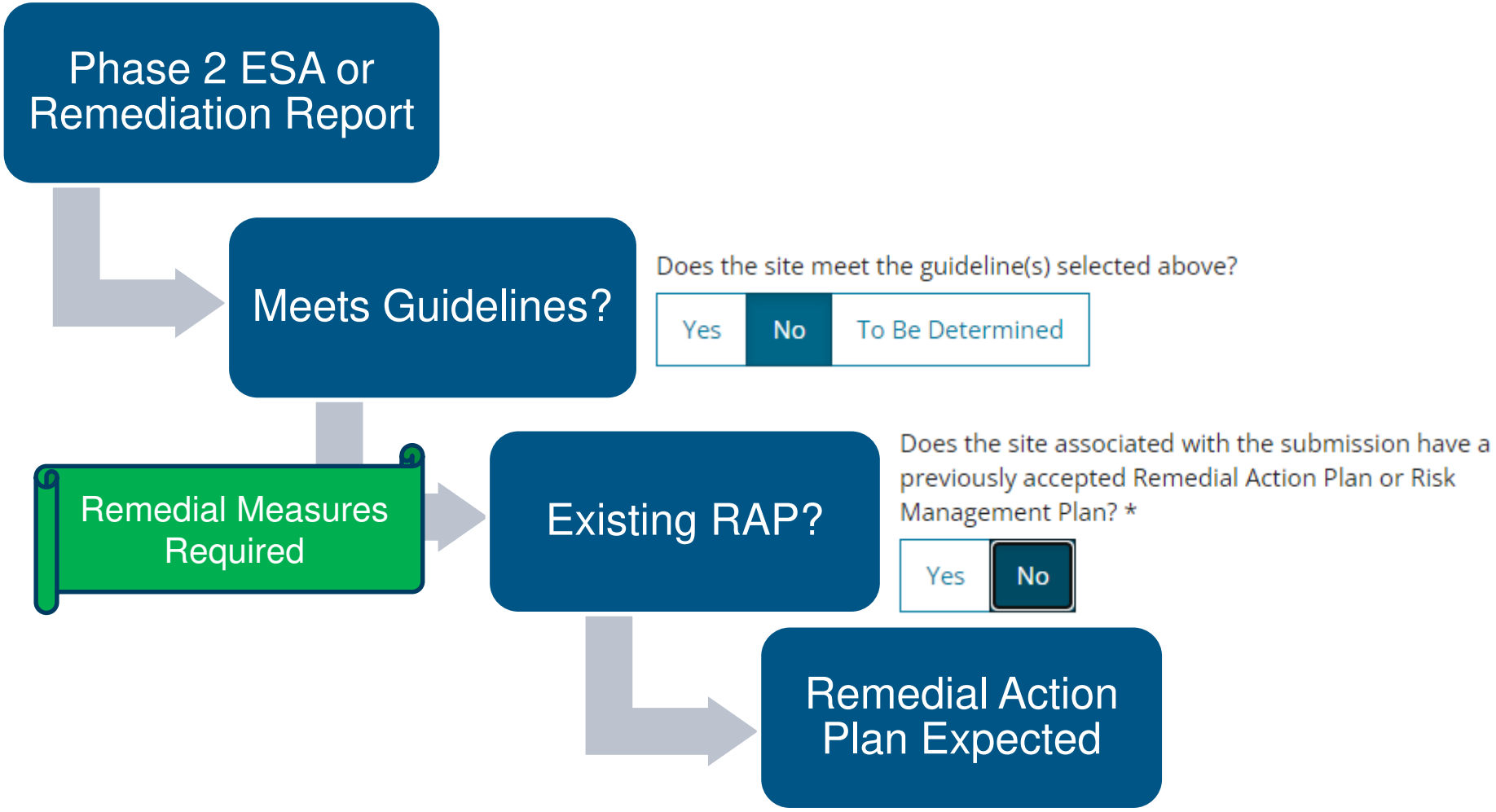
Future state 2



- Structured data can be filtered based on select criteria

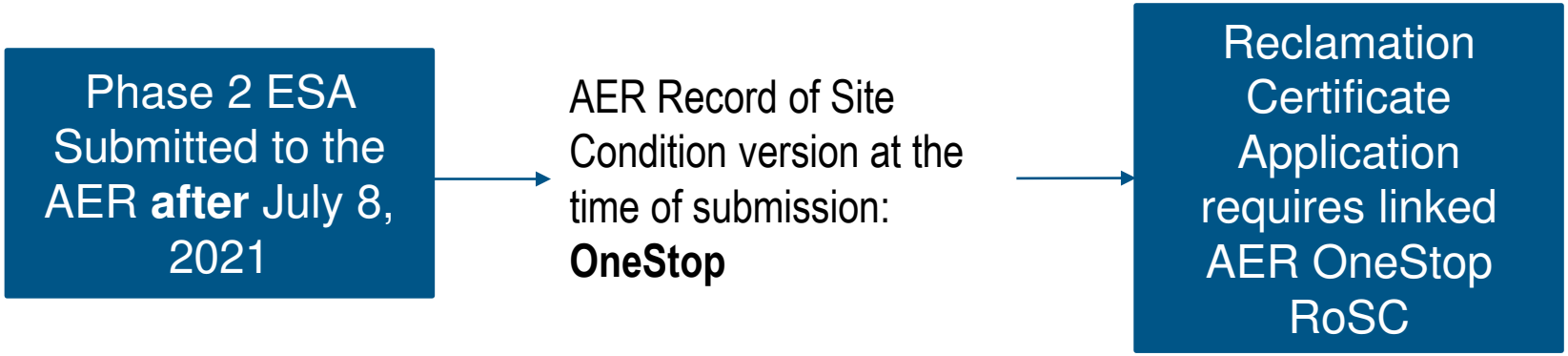
Data Source and Window (Slide 10)

Remedial Action Plan Tracking



Check *Remediation Regulation* requirements and ensure RAP submitted!

Reclamation Certificate Application Administrative Completion



AER expects the applicable RoSC version at the time of submission to be used

Data Source and Window (Slide 10)

RoSC Data: Looking Ahead

- Provincially awareness of RoSC submission process is high
  - Mandatory closure spends will continue to support contamination management submissions into the AER
- Critical to ensure RoSC submission is comprehensive, complete, and accurately reflects the known site condition
- Data driven, risk-based oversight

Alberta Energy Regulator

Contamination Management

Regulatory Update and Information Session: Part 2

Matthew Stewart, Senior Specialist, RCM
Sara Blacklaws, Senior Specialist, RCM

October 14, 2022

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Outline: Part 2

- RoSC - Data Analytics Continued
- Insight & Guidance
  - Compliance Assurance
  - Reporting Guidance
  - Chloride Delineation
  - Evaluating risk associated with Chloride

Insight: Compliance Assurance

- When RCM reviews submissions to evaluate compliance, we look to determine:
  - Is there evidence of a substance release?
  - If there was/is a release, were remedial measures taken?
  - Do remedial measures taken align with the expectations of policy?
  - Are remedial measures complete?

Insight: Compliance Assurance *(cont)*

- If we cannot reasonably ascertain compliance, can result in engagement, SIRs, returns, compliance actions.

Contamination Management Reporting Guidance

- Aim for Professional Reports to hit key regulatory questions with respect to contamination management compliance.
- Aim for ESAs to hit clear conclusive moments.
- Aim for clear, commensurate Reports, Plans and CSMs

Key Questions for Compliance

Source(s) Removed or Controlled

- What source removal/control activities have been done?
- Are there outstanding source removal/control activities to do?
- Is the plume stable or decreasing?

Characterization & Delineation

- What is the current state of delineation?
- Is the CSM commensurate and clear?
- Does delineation enable the proper assessment of all applicable exposure pathways and receptors?
- Have conservative assumptions been used where there is uncertainty?
- Is the timeline to complete delineation/characterization reasonable?

Key Questions…(cont'd)

Risk Assessment / Guideline(s) Applied

- What guidelines have been applied?
- Do guidelines applied meet the expectations of policy?
- Are all applicable receptors included in assessment?
- Is the CSM commensurate and clear?

Remediation Status

- What remedial activities have occurred to date?
- What is the remedial strategy?
- Is the timeline for remediation reasonable? Are there concerns regarding its success?
- Will risks be managed until remediation complete?

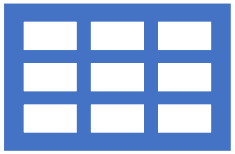
Management

- What is being done/needed to ensure no adverse effect or further adverse effect?
- Are there appropriate contingency plans?
- Can control be demonstrated?

Conclusive Moments

- Phase 1 ESAs:
  - What are all the APECs and CoPC identified?
  - What are you recommending **and why**?
- Phase 2 ESAs:
  - Evidence of CoPCs/substance release?
  - Guideline Exceedances Addressed
  - Is there further work to be done?
- Remediation Report
  - Is there further work to be done?

Clear, Concise, Commensurate



Simple CSM

- Site Plan, results identified by red and green (*ESA Standard*)
- Tables highlight guideline exceedance
- Simple Statements in Report

CSM's are updated as remedial measures are undertaken

Complex CSM

- Contaminant Distribution Contours
- Cross Sections, Depth Specific fig.
- Sample Locations with Legend (what is current versus outdated/removed)
- Tables, specific highlighting to represent what is of concern
- Concise statements/evidence to support clear interpretations & conclusions, logical order
- References to supporting reports

Clear, Concise, Commensurate

- **Commensurate** with the risk & complexity
  - If there are gaps in delineation (lab analytical), it may be reasonable to use alternative lines of evidence (CSM, interpretations) to supplement conclusion that delineation is adequate.
- **Clearly** identify what supports conclusion.
  - What is the basis of this conclusion, fact, opinion, interpretation?
  - Case by case, **would a reasonable professional agree**.

Chloride: Overlooked CoPC

- *Chloride is often a contaminant of concern identified in soil above the groundwater guideline, and not addressed or discussed.*
- *SCARG & Tier 1 Guidelines (since 2007)*
  - *Sufficient assessment/characterization carried out to address **any** potential contaminant of concern.*
  - *Delineation programs to allow **all applicable exposure pathways/receptors** to be properly assessed.*

Chloride: Delineation Objective

- Delineation to Tier 1 GW guideline
  - *Tier 1 note: A groundwater quality investigation is also strongly recommended when contaminant concentrations in soil are close to the groundwater protection guidelines*
- Authorized delineation to100 mg/kg if SST assessment completed*

Chloride: Risk Assessment

- *Tier 1*
  - *Including evidence representative of background*
- *Tier 2 Modification*
  - *Quantify dilution to FAL/DUA endpoints*
- *Tier 2 SST*
- *Tier 2 SSRA*
  - *Includes Minor Exceedance Justifications*

Chloride: SSRA using SST Model

- May be acceptable to complete a **SSRA** using the **SST model and SST assumptions.**
  - Would be considered Tier 2C/SSRA, case by case evaluation.
  - Can enable use of 100 mg/kg delineation objective, if appropriate.
  - Need to be clear on what is being modified and for what purpose, and the basis of why this is an appropriate use of the model.

Chloride: SSRA using SST Model, examples

- Data supporting **input** does not meet minimum data requirements but justified to be reasonable, conservative and appropriate for purposes of proper assessment.
  - E.g. background data, plume/root zone characterization.
  - Cautions with acceptability:
    - Empirical evidence to support low variability in soils and the CSM is simple
    - Not pushing boundaries of what a reasonable professional would agree with

Chloride: SSRA using SST Model, examples

- Adjusting impacted profile in SST
  - E.g. chloride only in rootzone, run comparable situation in SST to evaluate risk to groundwater pathways (impact 2-4 m, DUA at 4 m)
  - Cautions:
    - Delineation and Site Characterization Still Required
    - EC/SAR guidelines still apply
    - Evaluate all applicable pathways/receptors (CSM)

Chloride: SSRAs using SST Model (cont'd)

- Acceptance will consider:
  - Is the action commensurate with risk to the human heath and the environment?
  - Does the approach achieve same level of protection expected under Tier 1 & 2?
  - Did the approach fit within the SST Model?
  - Does the level of uncertainty present risk?
  - Is validation required?

Reminder: Be Clear, Concise, Commensurate, help the reviewer follow your line of thinking

Summary

- RoSC has specific purpose for AER Oversight and Compliance Assurance
- Work to complete an RoSC must be adequately scoped by industry
- Structured data allows for efficient demonstration and evaluation of compliance
- Clear, Concise, Commensurate & Conclusive

More Information

- Contamination Management inquiries: csusubmissions@aer.ca
- www.aer.ca
  - Release Reporting & Remediation Pages
  - Upcoming Training Events – November 2022
- Manual 021: Contamination Management
- OneStop Quick Reference Guides

More Information

- Subscribe to AER News Releases
  - Under “Providing Information” on www.aer.ca
- Upcoming activities
  - Variance Module in Reclamation Certificate Application ~Nov 2022
  - Mandate expansion
  - Liability Management Framework

Questions

Thank you