Planning & Scheduling for CCR Compliance while Maintaining Facility Operations & Day to Day Compliance Requirements

WOCA 2015: Amy Huber, Senior Project Manager
May 6
Agenda

1. Complex Rule in a Complex Environment
2. Define the CCR Compliance Plan
3. Strategic Management of CCR Units
4. Timelines/Budgets and Process Management Tools
5. What Utilities Should Be Doing Now
Complex Rule in a Complex Environment
Why Are We Here Today?

- The final CCR Rule was published on April 17, 2015 and will be effective in October 14, 2015 – this is creating a sense of urgency for utilities.
- Other rules/projects competing for same limited resources.
- Where you are on the timeline?

Why Are We Here Today?
Life Lessons My Parents Taught Me

Prior Planning Prevents Poor Performance......

“The less you know about something the simpler it seems!”
The Internal Struggle - MW Generation & Compliance
Compliance Timeline
USEPA CCR Rule

New CCR Impoundments, landfills/landfill lateral expansions must demonstrate compliance prior to placing CCR materials.
Dissecting the Complexity for Manageability

• Assemble the Internal/External Team to develop a comprehensive overview of the rule with specific applicability to your situation

• Communicate the compliance criteria

• Identify the milestone time requirements and all critical path activities

• Identify the early, late and likely triggers for surface impoundment closures

• Identify magnitude of costs and years expected
What is the Spectrum of Industry Activity?

<table>
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<tr>
<th>NOTHING</th>
<th>CCR AUDITS &amp; PRE-PLANNING</th>
<th>ALTERNATIVES ANALYSIS &amp; COSTING</th>
<th>PREEMPTIVE ACTION</th>
<th>COMPLIANCE DEMONSTRATIONS</th>
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<td></td>
<td>GROUNDWATER CONCEPTUAL SITE MODELS (CSM)</td>
<td>GROUNDWATER DATA ANALYSIS &amp; STRATEGIC PLANNING</td>
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<td>GW COMPLIANT MONITORING NETWORK &amp; PROGRAM</td>
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**EFFECTIVE DATE**

10/14/2016
Defining a CCR Compliance Plan
Compliance Strategy-Path Forward

• There are 6 months between the Rule and the Effective Date, there is time to make facility changes- October 14, 2015

• There are likely pro-active compliance steps that you can take to better position your CCR Units and more importantly your overall CCR Compliance Strategy

• Planning is critical for utilities to manage day to day plant operations through CCR unit changes required by the rule
Compliance & Understanding Day to Day Operations

- CCR Landfills and Surface Impoundments have often been managed separate from plant activities
- Typically surface impoundments do not impact the daily operations of a coal fired unit
- Many CCR surface impoundments also provide source water for plant operations (Make-up water)
- CCR Surface Impoundments serve as wastewater treatment ponds
- Include people on the team who understand unit operations
- Site spatial constraints and restrictions
Compliance by “Definition”....from the Bottom Up or Top Down, What Does that Mean or Look Like?

3 STEP APPROACH

• 1st – Understand the Rule: What does it say, digest it, apply it

• 2nd – Apply the Rule: Identify & audit for compliance - Every known or potentially known CCR unit [Inventory/Status Designations, Applicability]
• 3rd – Strategic Planning for Compliance with the Rule (Does Unit Comply?)
  - Yes – Status Quo may be fine
  - No – What do we have to do “To Comply”
  - Maybe/Never - the answer is “what if we can’t”, or “if the cost is too high”, or “it doesn’t mesh with the rest of our overall CCR plan”, or if we did “we’d have to make a draconian change/shut-down” – Consider Alternate and/or Supporting Compliance Strategies
3rd Step - Strategic Compliance with the Rule

• Step 1-2 Prepare you for developing a comprehensive strategy

• Step 3A- Identifying all potential drivers of closure and likelihood of timing
  – Groundwater Compliance Triggers for “Unlined” ponds
  – Siting Criteria
  – Location Restrictions

• Step 3B- Identify all components of closure for all CCR units
  -Permits needed (agency notification)
  -Landfill space
  -Water Management Needs (additional or new pond)
3rd Step- Strategic Compliance (cont-
-)

• Implementation Strategy
Strategic Management of a CCR Unit
Multi-Use CCR Pond at very spatially limited and constrained site

Flow Diagram
The 3 Step Approach

✔ Step 1- Understand the Rule

✔ Step 2- Apply the Rule- What we know
  - CCR Surface Impoundment (34 acres- unlined) that is sub-divided into multiple units within one large permitted unit
  - Wet Bottom Ash Sluiced & Containment
  - Gypsum Slurry Ponds (qty 2)
  - Make-up water for FGD
  - One permitted Outfall
  - Limited Groundwater Data & Potential Early Closure Trigger
The 3 Step Approach

✓ Step 3- Strategy Development

- CCR Surface Impoundment may be triggered for closure by groundwater, earliest timeframe could be early 2018 after implementing first round of detection monitoring

- Developing options for closure beginning 2019 (3.5 years)

What needs to happen between 2015 -2019 to prepare the plant operations for maintaining the plant during transitions
Closing & Using- Maintaining Plant Operations

• Schedule Conflicts
• PTI’s required for Changes (New Ponds for Water Management)
• Separation of Waste Streams- what is needed?
• Scheduled Outage Management Timing
• Planning with Internal Plant Maintenance, Environmental, Engineering (and all other eager volunteers)
• Resource Constraints
Managing a Surface Impoundment for Closure

- NPDES Outfalls
- Source Water
- Flow Inputs/Outputs
Identify All Uses for the Surface Impoundment

- Identify all waste streams
- Identify all flows and uses if the impoundment provides source water
- Identify quantity of flow (determine intermittent, average and maximum daily flow volumes for each flow)
- Review NPDES Permits to determine if there are specific Outfall requirements (Key Compliance Points)
- Identify Future Needs/Requirements (ELG)
Use of Flow Diagrams
Determine how you will close?

• Water Management is key

• Sequenced Removal - Sequencing and Timing Important

• Can utilize all of the ponded ash to be removed via pre-planned reuse strategy – dependent on geography, market saturation, reuse sources (cement kilns, structural fills, etc.)

• Retrofits of ponds with composite liner possible, must meet siting criteria and other engineering requirements..

• Operational upgrades (e.g., dry conversion, water management, pond/discharge replacement, permit upgrades – not a small task)
Standard Closure Completion Timeframe Extensions

• **Landfills**
  – Can be extended twice
  – 1-year extensions

• **Impoundments**
  – Impoundments < 40 Acres
    • Can be extended once
    • 2-year extension
  – Impoundments > 40 Acres
    • Can be extended five times
    • 2-year extensions

• **Supported/Legitimate Delay Factors:**
  ✓ Weather Related
  ✓ Dewatering
  ✓ Material (Volume) Req’d
  ✓ State/Federal Permitting

** Unless inactive at effective date, then use the 30-month allowance (“Get out of jail option”)
Pond Closure Sequencing – Schedule Scenarios

**UWL Phase 1 Overfill Operational by 2019 Schedule (Pond Closure in 2016 & 2017)**

    - Grade ash and install cap in northern half of pond.
    - Grade ash and install cap in southern half of pond.
    - Perform UWL Ph. 1 Subgrade Prep. in northern half of pond.
  - Operate UWL Ph. 1 (2019)

**UWL Phase 1 Overfill Most Likely Scenario (Pond Closure in 2019 & 2020)**

- Construct New Stormwater and Leachate Pond (2018)
  - Pond Closure Process (2019 & 2020)
    - Grade ash and install cap in northern half of pond.
    - Grade ash and install cap in southern half of pond.
    - Perform UWL Ph. 1 Subgrade Prep. in northern half of pond.
  - Operate UWL Ph. 1 (2022)

**UWL Phase 1 Overfill Late Operational Timeline (Pond Closure in 2023 & 2024)**

- Assume CW triggers closure (required) (1/2017)
- Initiate “In Alternative CCR Disposal Capacity” Extension (1/2019)
- Alternative Timeline Extension Deadline (1/2023)
- Construct New Stormwater and Leachate Pond (2022)
  - Pond Closure Process (2023 & 2024)
    - Grade ash and install cap in northern half of pond.
    - Grade ash and install cap in southern half of pond.
    - Perform UWL Ph. 1 Subgrade Prep. in northern half of pond.
  - Operate UWL Ph. 1 (2026)
Process Management Tools
CCR Management Tools

- CCR Audits & Pre-Planning
- Alternatives Analysis & Costing
- Preemptive Action
- Compliance Demonstrations

- Groundwater Conceptual Site Models (CSM)
- Groundwater Data Analysis & Strategic Planning
- GW Compliant Monitoring Network & Program

- Compliance Zone Inventory
- Master Schedule
- Control Charts
- Status Designation

Effective Date: 10/14/2015
## Project Management Tools

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<tr>
<th>TASK</th>
<th>Timeframe</th>
<th>Description</th>
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<tr>
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<td>Emergency Action Plans &amp; Location Restrictions</td>
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**CCR Rule Effective**

**CCR Rule Published to Fed Reg**

**LIMITED WINDOW TO DEVELOP STRATEGIC PLAN & MAXIMIZE COST SAVING OPPORTUNITIES!!!**

**HOW WILL YOU SPEND YOUR TIME?**
MASTER SCHEDULES

STRATEGIC PLANNING TO:

1. Coordinates Multiple Required Tasks for each facility
2. Effective Communication to Management
3. Defines Potential Areas/Times of Resource Constraints
4. Defines Milestones & Lays out Critical Path

MEET COMPLIANCE DEADLINES

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### CCR COMPLIANCE CONTROL CHARTS

**Master Schedule used for short term and long term financial planning**

- Define Capital & O&M Projects
- Assists with Asset Retirement Obligations

#### Task List

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#### Budget Summary

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**BUDGET REMAINING**

- $150,000
- $100,000
- $0
- $0
What Utilities Should be Doing Now
So what can you do in the next 6 months?

• Determine what units are in/out (compliance zone inventory/status designation)

• Review Landfill Capacity & Useful Life, Identify Alternative Disposal Options if necessary

• Any potential closure triggers you can address?

• “Lined” vs. Unlined Impoundment?

• Proactive construction or closure activities

• Groundwater Monitoring Program

• Determine all flows and facility contributors (Flow Diagrams/Schematics)
Thank You for Attending!

Contact: Amy Huber (606) 584-3181
ahuber@haleyaldrich.com