NPDES Compliance Using EMS Implementation

EFCOG Environmental Protection Subgroup

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Denny Hjeresen, LANL

BACKGROUND

- LANL Currently has 15 EPA Permitted Outfalls
  - Key sanitary waste, computing, high energy physics facilities
- Discharges permitted under Clean Water Act (NPDES)
  - New Permit issued in August 2008
  - Currently compliant, but new rigorous enforceable limits phasing in:
    - Metals, pH, WET - August 2010
    - PCBs - August 2012 (extremely low limit - .00064 υg/l)
- Outfalls Contribute to the Migration of Legacy Contaminants
  - Due to the large volume of water that is discharged
  - Need to mitigate the major contributors
- DOE Order 430.2b
  - Requires water conservation (Project more than meets 2015 16% goal)

Institutional Response Organized Through EMS

- **Issues Identified Through EMS Process**
- **Key point: Integrating Compliance with EMS**
  - Sustainability requirements stress water conservation - lack the WHY
  - Providing the business case for sustainability requirements
- **Cross-laboratory team developed roll-up plan to address all discharges and prioritize requirements**
  - Extensive discussions with facility owners
  - Walk-down of facilities conducted
- **Raised awareness of water *system* as an institutional issue**
  - One of 5 Lab-wide Environmental Objectives in EMS
  - EMS Objective for Involved Organizations
  - Included in Director's Improvement Goals
  - Included by DOE/NNSA Site Office as Performance Measures for Fee
  - Integrated into SWEIS Mitigation Action Plan

Business Case: Project Protects Mission

Performance Metrics

- New NPDES Permit has stringent new limits on temperature, toxicity, metals and PCBs
- Applies to mission critical facilities and infrastructure
- Outfalls drive existing groundwater contaminants
- DOE Orders 430.2b and 450.1 require energy and water conservation
  - LANL discharging ~154 M GPY via 15 outfalls
  - SERF saves ~110 M GPY (~4400 households)
  - Significant operational energy savings
  - Meets all NNSA water conservation goals

Business Case

- Institutional strategy to close outfalls rather than costlier “Treat to Meet” point source approach
- Comprehensive strategy for all outfalls rely directly on SERF expansion
  - State-of-the-Art engineering as long-term solution
- SERF expansion the critical (only) path and lynchpin to regulatory compliance
- ~$15 M capital cost of SERF expansion offset by energy, water and regulatory cost savings

Policy/Legal Milestones

- 31 months into 36 month implementation
- Compliance deadlines of August 2010 (toxicity/metals) and August 2012 (PCB’s)
- NPDES fines of $25k per day per violation and Water Quality Standards of $10k per day
- 80 exceedances of new permit conditions to date (FY09)
  - Key mission facilities will be out of compliance
- Increased EPA focus on enforcement
- Minor delays in other projects may be tolerable by EPA if SERF showing progress

Consequences

- Financial Exposure - 33 USC1319(d)
  - Fines and penalties
  - Compliance fines will be unallowable
- Compounds existing citizen’s lawsuits on ground and surface water contamination and permit negotiations/appeals
- Instigates new compliance order from EPA with associated legal costs
- Alternative point source treatment at each outfall will be more expensive than existing strategy
- Potential shutdown of critical facilities (SIGMA, TA55, SCC/LDCC, RLWTF, DARHT, LANSCE)

Project Implementation

- Engineering recommendations:
  - Reduce or eliminate discharges to achieve compliance.
  - Organized into five projects (geographic)
  - Centralize treatment by routing to existing and expandable facilities:
    - SERF – Industrial
    - SWWS – Sanitary
    - RLWTF – Radioactive
  - Overall project hinges on SERF expansion
    - Major line item - $13 M
    - Currently no other viable approach to PCB compliance given large volumes
    - Little conservation available with local on-site treatment

Status Summary

Group 1 – SERF, Power Plant, SCC, LDCC	Group 2 – TA55 CT, RLWTF, TA35 NHMFL	Group 3 – LANSCE and LEDA	Group 4 – CMR and Sigma	Group – DARHT CT
Interim Compliance Approach				
Bring SERF on line at current capacity Update SCC/LDCC control system	NHMFL-Tank storage with on site RO/IX filtration RLWTF – IX for metals, study WET	In-line metals sampling w/auto COC adjustment. Fully implemented Dec 2009	Sigma - Tank storage with on site RO/IX filtration	Sanitary connection to SWWS
Long-term Compliance and Conservation				
3X expansion of SERF capacity ($10-14 M)	Re-route RLW effluent to evaporative tanks	Robust treatment system (Cost TBD)	TBD	Met by interim solution