



U.S. DEPARTMENT OF  
**ENERGY**

OFFICE OF  
**ENVIRONMENTAL  
MANAGEMENT**

# Subsurface Disposal Area (SDA) Cap Design *Update on Progress*

---

Nolan Jensen  
Project Manager  
June 21, 2018

# Objectives For Today

- Summarize Record of Decision Requirements
- Update you on our SDA Cap Design progress – our last visit was at the June, 2017 CAB Meeting.
- Provide a refresher on the SDA Cap and DOE's future plans for construction.

## ***Key Message:***

We are at the 30% Design point, with EPA and DEQ completing review of the 30% Design in May. The 90% Design is forecasted for Agency review and approval in November.

# CERCLA Record of Decision for the Subsurface Disposal Area (SDA)

- After extensive public comment (including by the CAB) on the proposed plan (issued October 2007) a CERCLA Record of Decision (ROD) was signed September 25, 2008.
- The ROD incorporated the fundamental requirements of the 2006 Agreement to Implement court order requiring exhumation of 6,238 m<sup>3</sup> (7,435 m<sup>3</sup> packaged) of 6 targeted waste types from a specific 5.69-acre footprint within the SDA.
- The major components of the selected remedy are as follows:
  1. Targeted waste retrieval removes targeted waste, reduces risk and dependence on the surface barrier and institutional controls.
  2. In situ grouting in specific areas (0.2 acres) reduces mobility of technetium-99 and Iodine-129 in the near-term to reduce future threats to the aquifer. **(completed 2010)**
  3. Vadose zone vapor vacuum extraction and treatment, which removes and treats organic solvent vapors from the vadose zone, coupled with targeted waste retrieval, addresses the greatest and most imminent threat to ground water.
  4. Evapotranspiration surface barrier (“the cap”) inhibits contaminant migration.
  5. Long-term institutional controls (surveillance, monitoring, maintenance, limited access, land-use restrictions) will ensure continued effectiveness.
- Once targeted buried waste exhumation is completed, the evapotranspiration surface barrier (cap) will be constructed. The cap is the final “active” component of the remedy selected in the CERCLA ROD.

# Summary of the two Previous SDA Cap Presentations to the CAB

- **February 2017** – Provided an Overview of the SDA Cleanup, including the selection of the SDA Cap in the September, 2008 Record of Decision.
- **June 2017** – Panel Discussion to introduce the Design Team and the design approach & schedule:
  - Nolan Jensen – DOE Project Manager
  - U.S. EPA and Idaho DEQ Design Oversight Representatives
  - Marc Jewett and Brandt Meagher – Fluor Idaho Design Coordinators
  - Jim Kelsey and Gundar Peterson – Daniel B. Stephens and Associates (Design Firm)
  - Dr. Craig Benson – National Expert and Advisor
- **June 2017** – Site Tour for the CAB: included the cap's Borrow Area
- **Key Points from June Meeting:** Identified the future presentations to the CAB -- 30% Design, 90% Design, and 100% Design progress points.

# Aerial View of RWMC and the SDA

(Looking Southeast – AMWTP on left)



RWMC consists of 97-acre SDA and the AMWTP waste processing facilities.

# What Will Final SDA Cap Look Like?

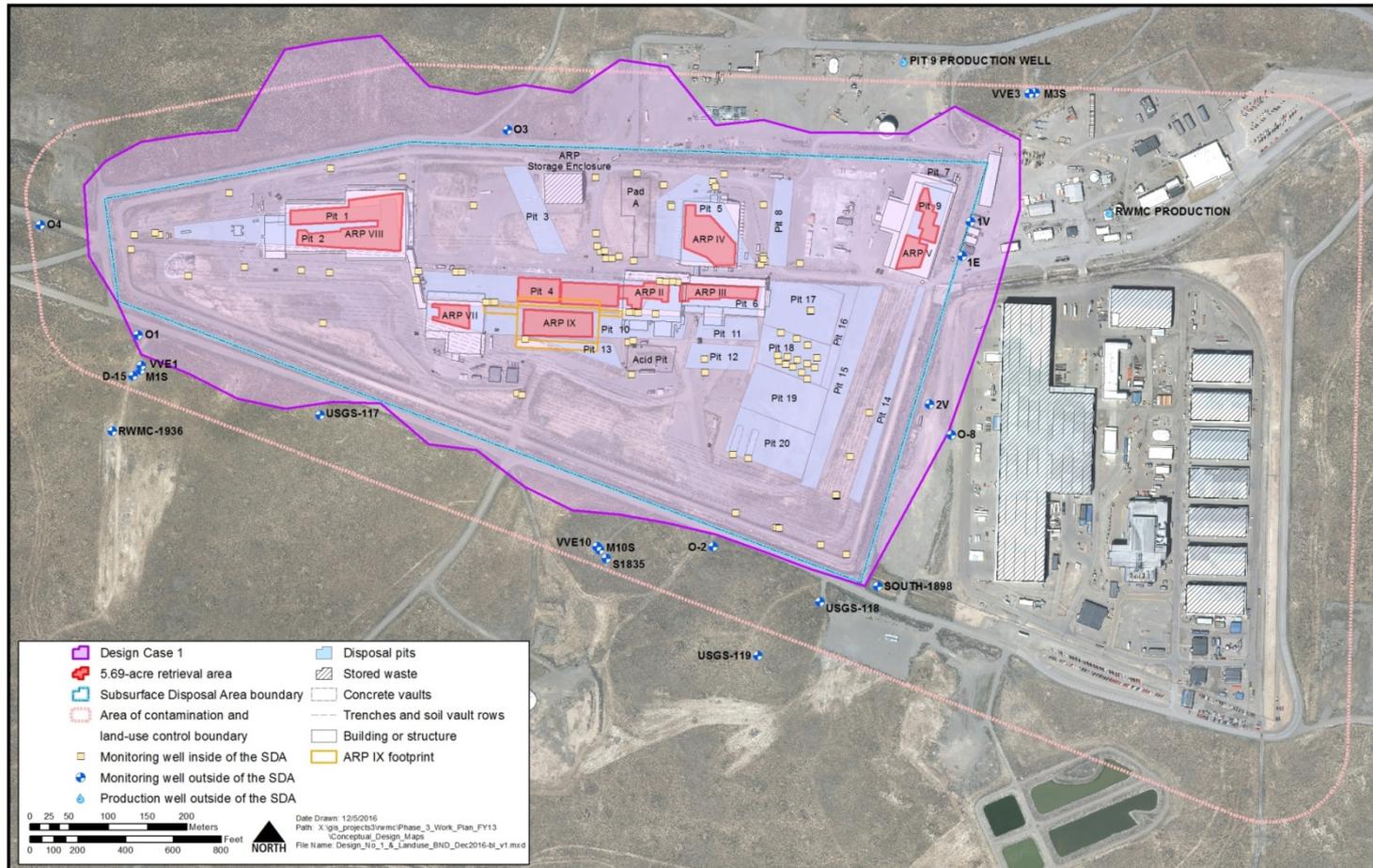
Today



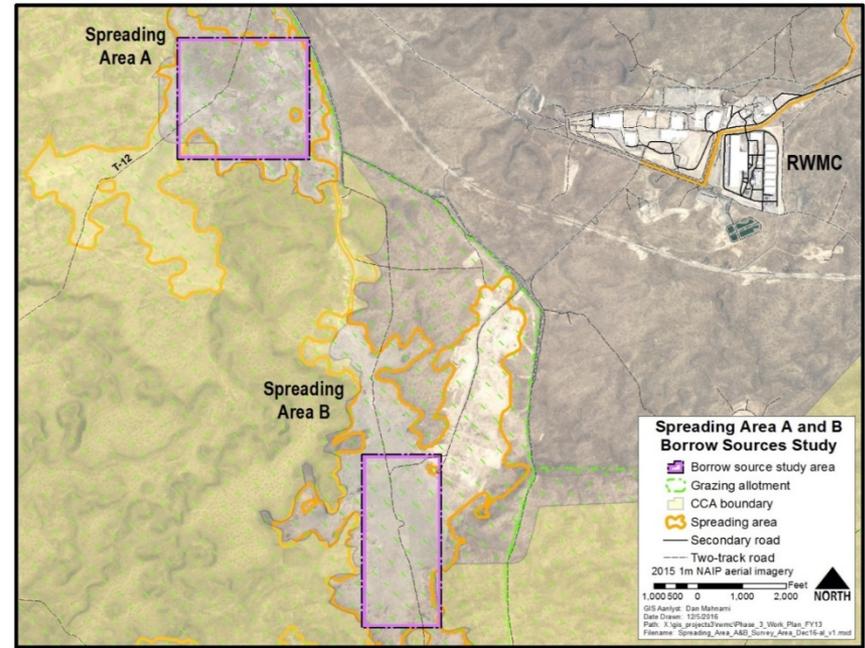
Full RWMC Closure



- Cap approved in the 2008 ROD is an Evapotranspiration (ET) style surface barrier – ideally suited for low rainfall desert environments.
- ET surface barriers employ natural desert vegetation – cap will blend and be nearly indistinguishable from today's desert landscape.
- Cap will be about one-half the height of the white ARP structures visible today.



- Shaded area identifies capped footprint over the SDA, at the time of the 2008 ROD.
- Red areas are targeted waste exhumation areas (5.69 acres).



Spreading Areas A & B -- located in ancient lake bed sediments about 1.5 miles southwest of RWMC. Initial borrow studies and cultural surveys are complete.

# Design Document Status

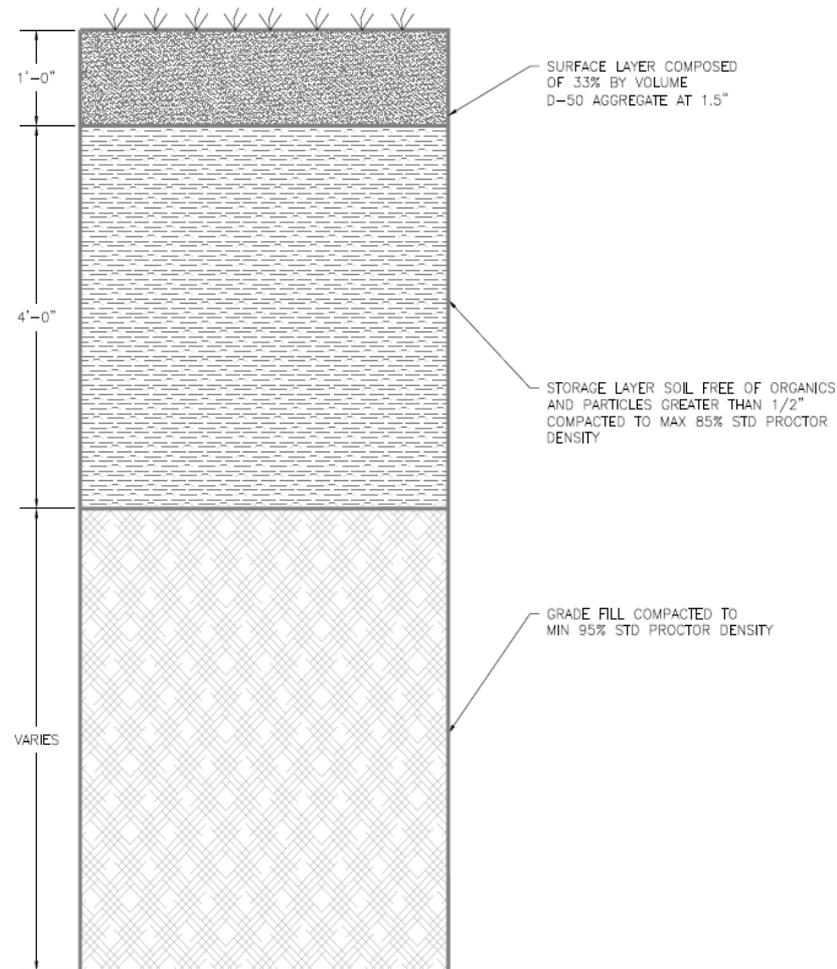
	Design Step	Completion Date	
1.	Borrow Area Field Studies	<i>Summer and Fall 2016</i>	✓
2.	Borrow Area Cultural Resources	<i>Summer and Fall 2016</i>	✓
3.	Design Firm Selected (DBS&A)	<i>February 2017</i>	✓
4.	Design Kickoff Mtg. with Regulators	<i>March 31, 2017</i>	✓
5.	Technical & Functional Requirements Document (T&FRD)	<i>Approved November 2017</i>	✓
6.	<b>30% Design: Regulatory Agency Review &amp; Approval</b>	<b>May 2018</b>	✓
7.	90% Design: to Agencies	<i>November 2018</i>	
8.	100% Design: Target Approval	<i>September 2019</i>	

# Key Metrics from the 30% Design

- Designing for an **unconstrained** long-term performance case -- assumes no mission-related encumbrances in the cap footprint -- all missions assumed complete and all infrastructure dismantled.
- Materials needed: **3.4 million cubic yards**
- Required truckloads: **189,000** (based on 18 cy per load)
- Required footprint: **150+ acres**
- ET barrier portion of the cap: **5 feet thick** – 30% design analysis shows this is needed to satisfy the ROD’s 1cm/year performance objective for water infiltration.
- Total required cover over waste materials: **10 feet**
  - Aligns with customary practice to address depths for burrowing animals and desert plant rooting.
  - Considers DOE Performance Assessment requirements – assumes hypothetical loss of institutional controls and an inadvertent future return to unrestricted/residential land use. **Ten feet** is a customary waste separation assumption for unrestricted land use.
  - Consistent with established 10-foot cap thicknesses at other DOE national sites.

***The next several slides show key drawings emerging from the 30% design.***

# 30% Design SDA Cap Profile



- Total thickness of the cover will be at least 10 feet.
- Preliminary modeling for the 30% Design indicates that the cover will meet the 1 cm/year infiltration objective established in the ROD.



- Figure shows the volume within the Grade Fill Layer available for placement of D&D waste and associated fill soil. Available volume is about 5 times the space/capacity needed to place the anticipated ARP D&D waste volume.
- Specific waste placement requirements will be included with the 90% design.



# Next Steps

- As discussed at the June 2017 meeting, the next CAB check-in points will be at the 90% and 100% design submittals to the Regulatory Agencies.
- The 90% submittal is targeted for November 2018.
- Questions regarding when DOE will construct the SDA Cap:
  - As discussed at the June 2017 meeting, DOE plans to construct the cap once buried waste exhumation is complete.
  - A regulatory milestone for cap completion of December 2028 was identified in the 2013 Work Plan.
  - A 5 to 7 year cap construction period was envisioned in the ROD.
  - The construction will be under a follow-on contract to the ICP CORE contract; the future contractor will develop the Remedial Action Work Plan and detailed construction plans.