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2018 Long-Term Stewardship Conference

Long-Term Stewardship of Three Evapotranspirative Covers, 15 years

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Track 2.2: Understanding the Post-Closure Changes of
Engineered Disposal Cell Covers, Part 1



Other Contributors



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Dedication:

To Mike and Robert who have remained with all 3 covers since design and construction
To their invaluable knowledge and earnest stewardship

Acknowledgement:

NNSA 533: Richard Dasher and Tom Longo
NNSA Sandia Field Office: Steve Black and David Rast

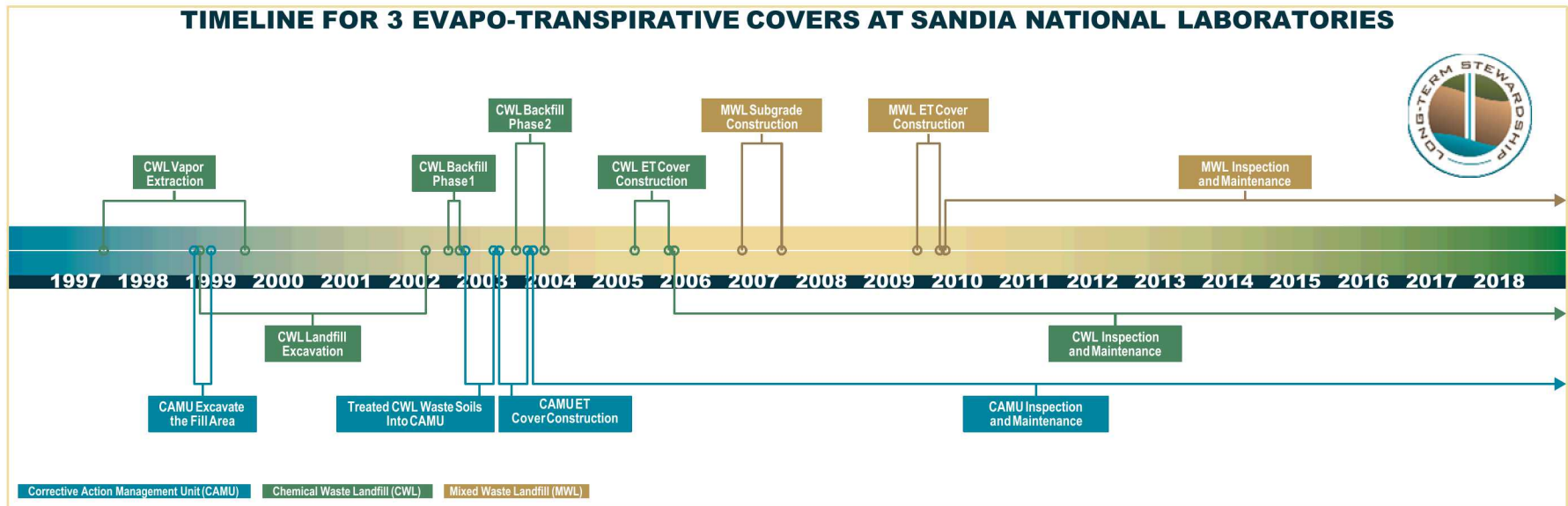


Sandia has 3 Evapotranspirative Covers



Size Range: 2.2 – 4.1 acres

ET Cover Maintenance since 2003



- 2003 Corrective Action Management Unit (CAMU)
- 2005 Chemical Waste Landfill (CWL)
- 2009 Mixed Waste Landfill (MWL)

ET Cover Layers



Biointrusion Crushed Rock
1 – 6 inch, no organics or friable fragments

Custom Seed Mix



Bio-intrusion Layer 1.25 ft	Filter Sand Pea Gravel 0.7 ft	Backfill of Clean Fill Soil Replaceable Soil
Subgrade	Bedding Sand	
Original unexcavated Landfill	Treated Soils Stored in Lined RCRA C	
MWL	CAMU	CWL



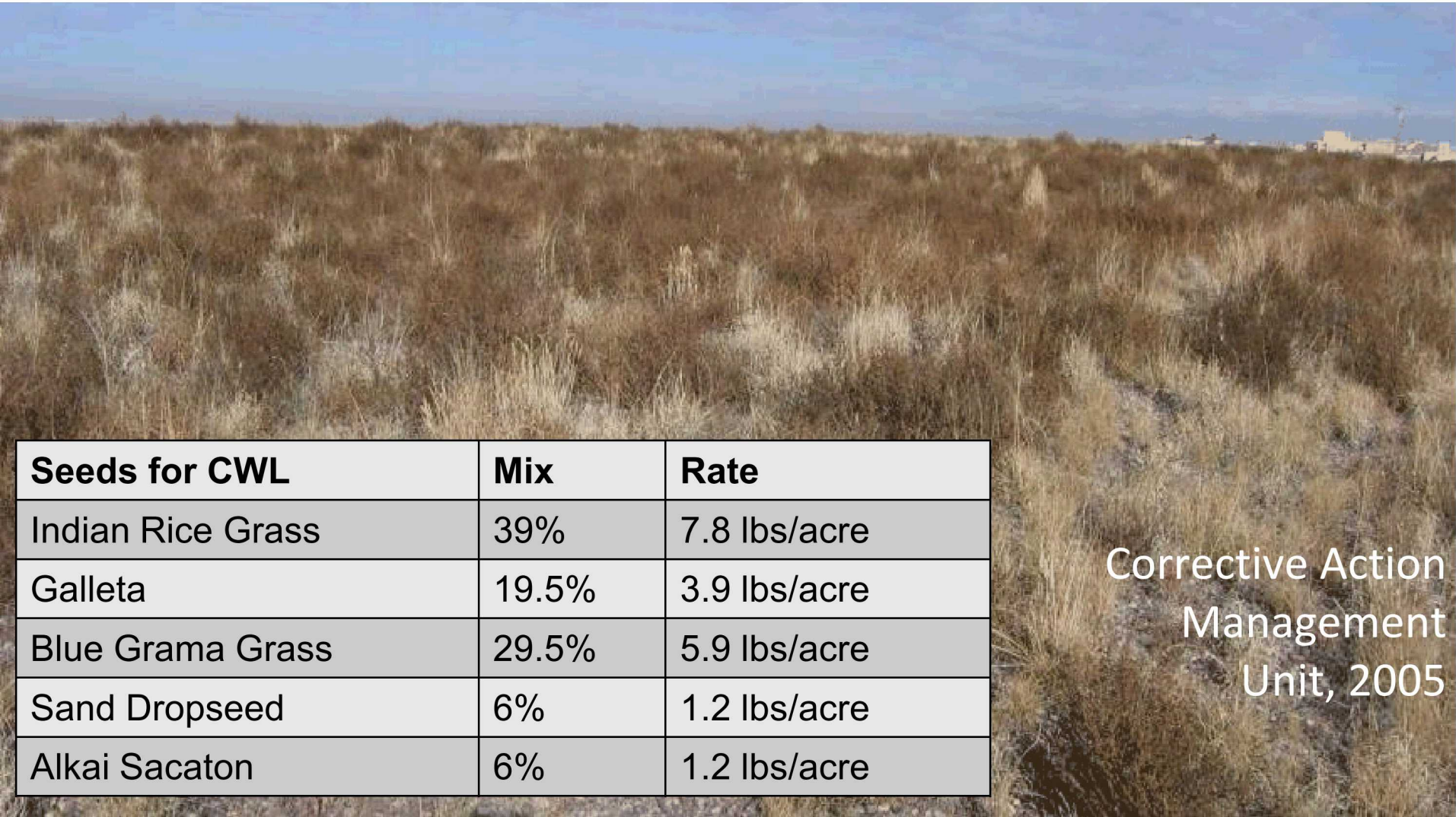
Pre-cover installation
Excavation backfilled to 4 ft bgs

ET Cover Construction at Chemical Waste Landfill



Post-cover installation
Drainage swales/revegetation not completed
Restoration of asphalt road in progress

Seed Mix Changes and Gravel Mulch

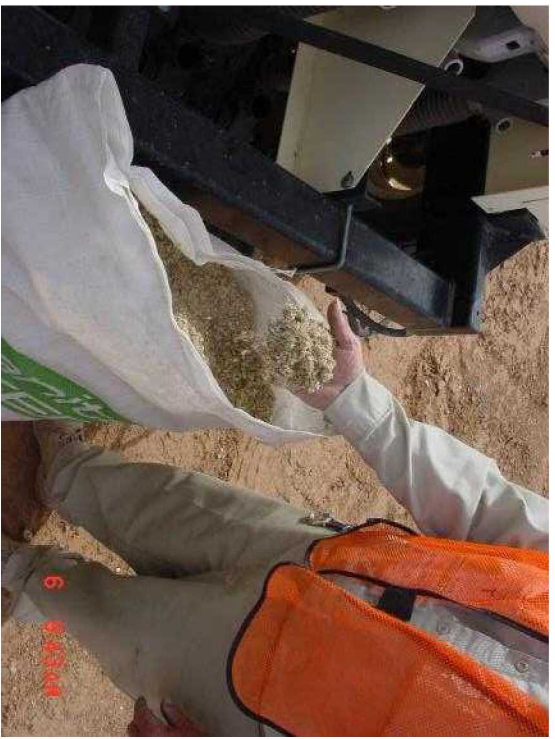


Corrective Action
Management
Unit, 2005

Seeds for CWL	Mix	Rate
Indian Rice Grass	39%	7.8 lbs/acre
Galleta	19.5%	3.9 lbs/acre
Blue Grama Grass	29.5%	5.9 lbs/acre
Sand Dropseed	6%	1.2 lbs/acre
Alkai Sacaton	6%	1.2 lbs/acre

Minor seed mix adjustments for MWL and Increased the Seed Rate. 7

Chemical Waste Landfill



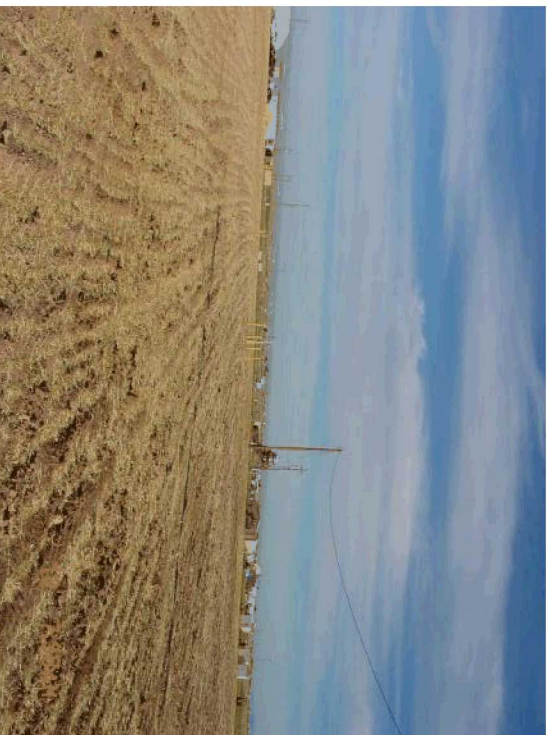
Seed mix



Seeding



Mulching, Crimping



Prevent Wind Erosion

Achieve Vegetation Specification within 5 years



Supplemental Watering
was needed for
2 of the 3 covers



Mixed Waste Landfill





1-2 years
Heavy Weed
Coverage



Mixed Waste Landfill



Inspection and Maintenance



Permits Requirements

- Quarterly Inspections
- Maintenance within 60 calendar days
- Maintenance Summary Reports

Operations

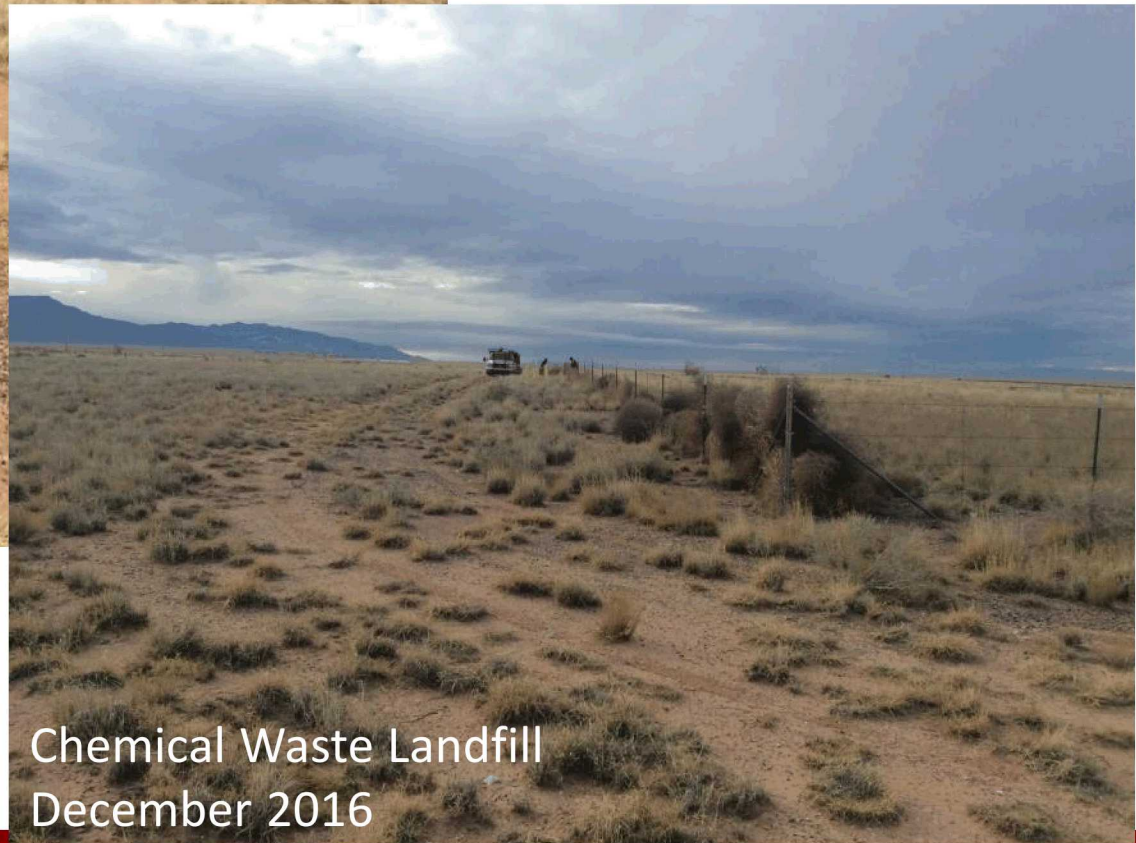
- Sandia LTS staff perform Inspections
- Maintenance Subcontract
 - Lesson Learned: Standard 'Facilities' services and practices, not a fit
 - Ordering Agreement: Small Business – Environmental (NAICS 562910)
 - Satisfies Grass Maintenance Needs
 - Satisfies Reporting Needs
 - Satisfies Compliance Timeliness



Mature Covers

Primary Maintenance:

- Clearing Fences of Wind-Blown Weeds



Chemical Waste Landfill
December 2016

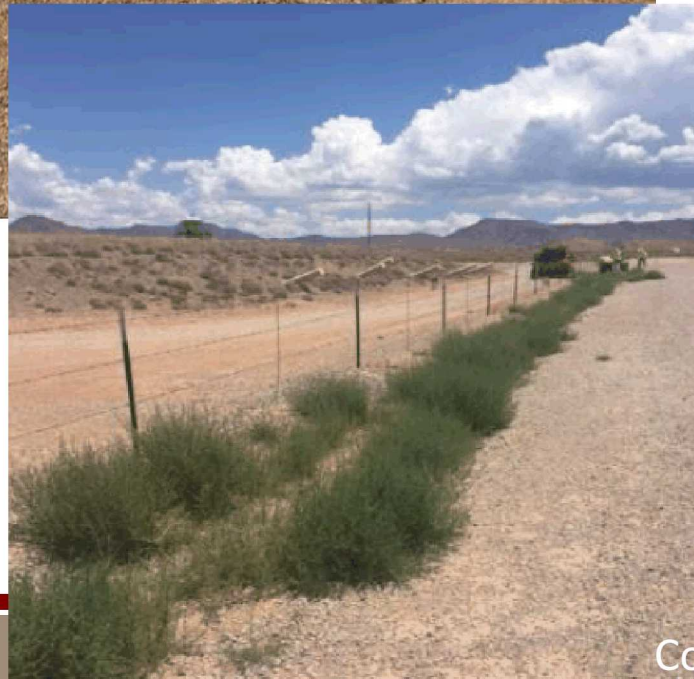


Buffer Area:
Herbicide 3 ft outside
Perimeter Only

1 Pre-emergent
Herbicide Application
at CWL



Scheduling
Preventive
Maintenance





Mature Cover:
Still Hand-Pulling
Weeds, But
Fewer Weeds



Hand-Raking
Grass Clumps



Best Practices

Erosion Controls



