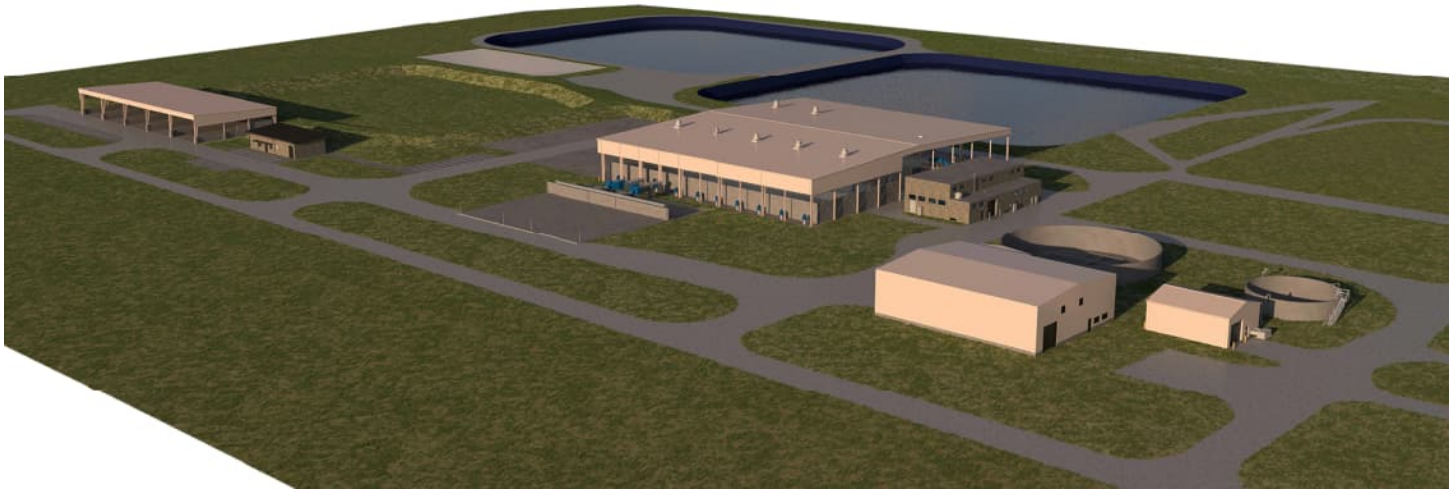
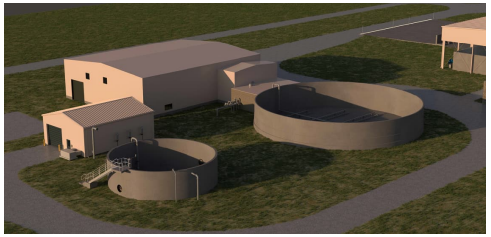


Jacobs

Haikey Creek Biosolids Improvements Update - PFAS Implications



RMUA Board Meeting

March 11, 2026

Haikey Creek Biosolids Improvements Project – Presentation Outline

- Project Purpose
- Background
- Scope of Work
- Schedule
- Construction Cost Estimate Summary
- Update on Current Status of PFAS on National Level
- Status of 4 Current Bills in Oklahoma Legislature
- Project Benefits
- Recommendation

Purpose

- Departmental Strain & Public Safety -
  - Currently transporting 6,000-gal tankers at minimum 10 trips/day (Mon-Sat) from HCWWTP to Southside WWTP 40 miles round trip
- Pressure on SSWWTP -
  - Currently there is added loading to SSWWTP thickener/overall process, alleviate future capacity issues and allow growth in SSWWTP basin
- Closing the Loop/Sustainability -
  - Haikey Creek WWTP becomes self-sufficient through biosolids stabilization component

Background

- Began biosolids upgrade evaluation in 2021
- After narrowing down 40+ options through fatal flaw analysis, a detailed criteria evaluation of 16 potential technology options was performed
- Eliminated 9 of the 16 options that scored the worst in that exercise
- Performed detailed cost evaluations on 7 options (capital, O&M, Life Cycle)
- After applying non-monetary criteria to cost, the top 3 options selected for further consideration were:
  - Anaerobic Digestion
  - Thermal Drying
  - Composting
- COT and COBA staff toured representative technologies of these top 3 options
- The RMUA project team recommended dewatering and composting for full scale design
- 2023-Awarded $9.6 M grant from US Department of Agriculture for 20% of capital cost for building a fertilizer manufacturing (dewatering and composting) facility. Grant Agreement executed – Jan 27, 2026
- 2024 design began for dewatering and composting facilities (100% design submission end of this month)

Scope of Work

- Facilities:
  - Full Rehab of Dewatering Building
  - Office Building
  - Composting Building
  - Biofilters
  - Finished Compost Storage Building
  - Sludge Mixing Building
  - Sludge Tank
  - RAS/WAS
- Equipment: Centrifuges, Front-End Loader, Screen
- Scum Collection
- Sitework – Roads, Gates, Drainage, etc.
- Yard Piping
- Electrical / I&C

Project Schedule

- 95% Design: Dec 2025
- USDA Grant Execution: Jan 2026
- 100% Design: Mar 2026
- Signed/Sealed Plans: May 2026
- Advertise: May – Jun 2026
- Bid Opening: July 2027
- Construction: Jan 2027 – Jan 2029

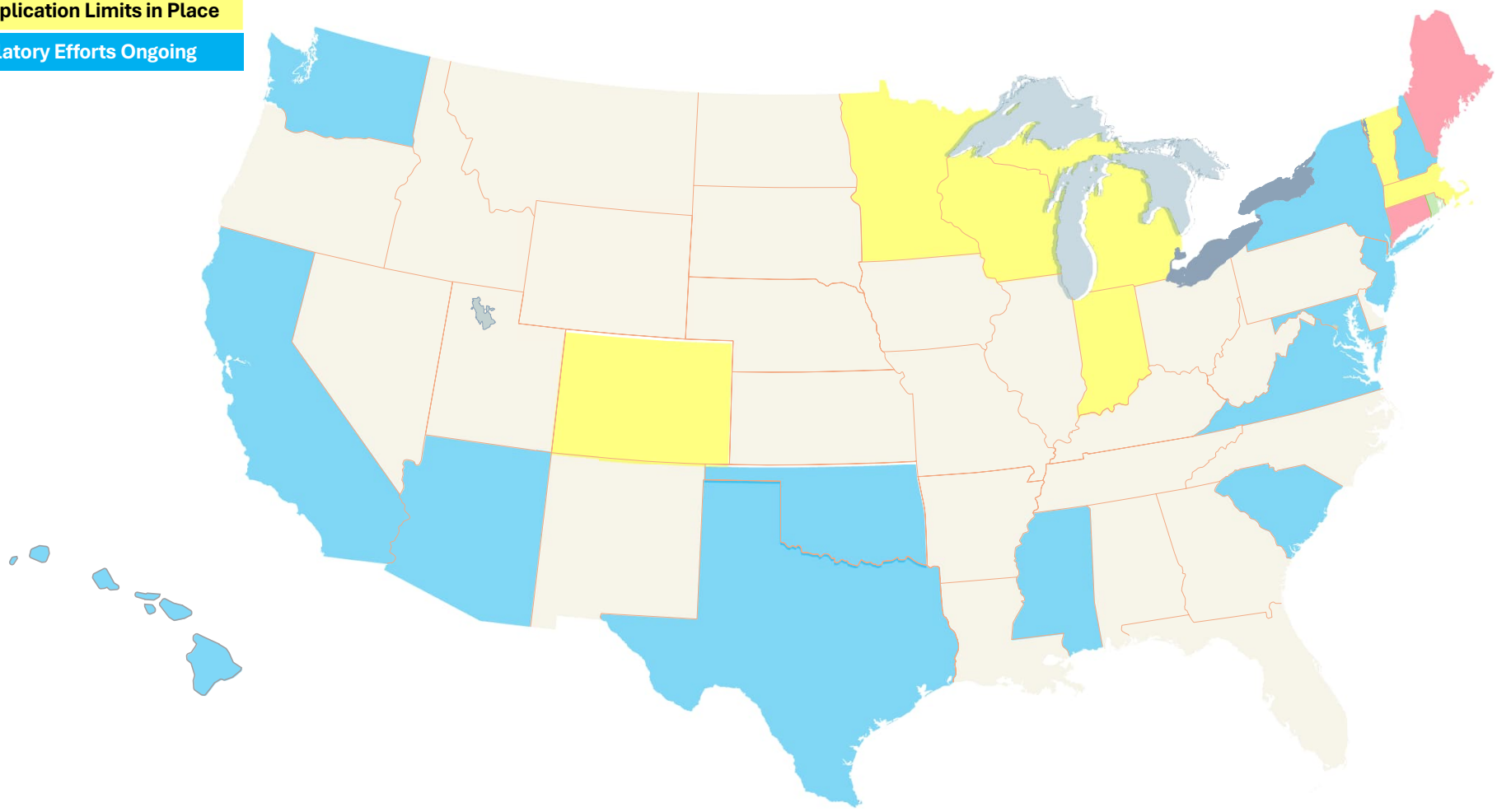
Construction Cost Estimate Summary

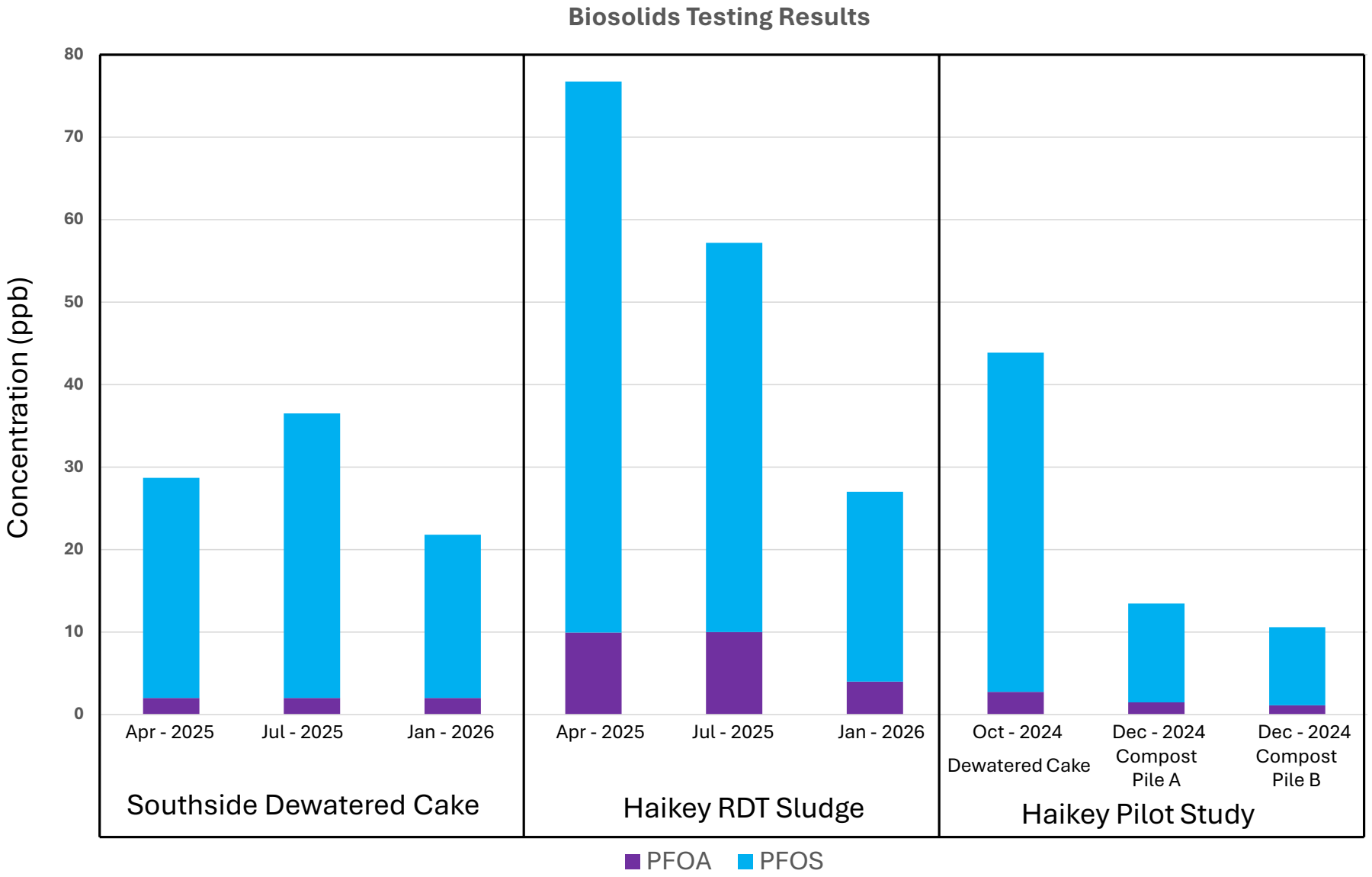
- RMUA Project Budget: $49.6M
- Engineer's 95% OPCC: $52.6M
- Value Engineering: Material Change, slab thickness, removal of divider walls, include four (4) additive alternate bids and prioritize them.
- Additive Alternatives:
  - Centrifuge
  - Front End Loader
  - Scum System
  - Finished Compost Storage Bldg. Bays
- Updated OPCC:
  - Base Bid $49.4M
  - Add Alt. Bids $3.2M

State Regulatory Activity on PFAS in Biosolids

LEGEND

- Ban on Land Application
- Land Application Limits in Place
- Regulatory Efforts Ongoing




Biosolids Testing Results
Concentration (ppb)
80
70
60
50
40
30
20
10
0
Apr - 2025
Jul - 2025
Jan - 2026
Apr - 2025
Jul - 2025
Jan - 2026
Oct - 2024
Dewatered Cake
Dec - 2024
Compost
Pile A
Dec - 2024
Compost
Pile B
Southside Dewatered Cake
Haikey RDT Sludge
Haikey Pilot Study
PFOA
PFOS

Biosolids Bills for 2026 Session

- SB 1799: Statewide Prohibition & PFAS Remediation
- SB 1818: Transparency and Public Disclosure
- SB 2141: PFAS-Safe Biosolids & Farmland Protection
- HB 3403: Biosolids Research Pilot Program

SB 1799: Statewide Prohibition & PFAS Remediation

- Sponsor: Senator Shane Jett
- Key Points
  - Prohibits land application, spreading, sale, or distribution of sludge, septage, and sludge-derived materials except for limited exemptions.
  - Requires DEQ to develop a long-term plan to end all septage land application by **Feb. 1, 2027.**
  - Requires Oklahoma Department of Agriculture, Food, and Forestry (ODAFF) to create PFAS removal, remediation, and recovery plans.
  - **Emergency clause: takes effect immediately.**

SB 1818: Transparency and Public Disclosure

- Sponsor: Senator Shane Jett
- Key Points
  - Requires labeling of products containing or produced with biosolids.
  - Requires disclosure when crops were grown on biosolid-treated land.
  - Public signage required at biosolid-use properties.
  - DEQ must publish a public map of biosolid application sites.
  - DEQ must provide agritourism businesses written notice **at least 60 days** before any biosolid land application within four miles of the business location.

SB 2141: PFAS-Safe Biosolids & Farmland Protection

- Sponsor: Senator Randy Grellner
- Key Points
  - Requires PFAS testing (EPA Method 1633) before land application.
  - Creates a four-tier PFAS regulatory matrix determining allowable land application use or prohibition.
    - **Tier 1 (<20 ppb):** Allowed under normal biosolids rules with only routine PFAS monitoring.
    - **Tier 2 (20–50 ppb):** Allowed but at reduced rates set by the environmental agency, with written notice to landowners and local authorities.
    - **Tier 3 (50–100 ppb):** Heavily restricted, enhanced recordkeeping, and a required PFAS source-reduction plan; DEQ may further limit or suspend use.
    - **Tier 4 (>100 ppb):** Prohibited; material must go to alternative disposal or treatment; mandatory source-reduction plan.
  - Requires landowner consent after receiving PFAS test results.
  - DEQ maintains a public PFAS database and mapped locations.

PPB = Parts per Billion

HB 3403: Biosolids Research Pilot Program

- Sponsor: Representative Kenton Patzkowsky
- **Feb. 9, 2026:** Passed the Appropriations and Budget Natural Resources Subcommittee
- Key Points
  - Establishes a 5-year research pilot program through DEQ and OSU.
  - Studies nutrient content, PFAS, pathogens, soil health, crop yield, and groundwater.
  - Annual reports required containing findings and recommendations.
  - Creates a revolving fund for research support.

Project Benefits

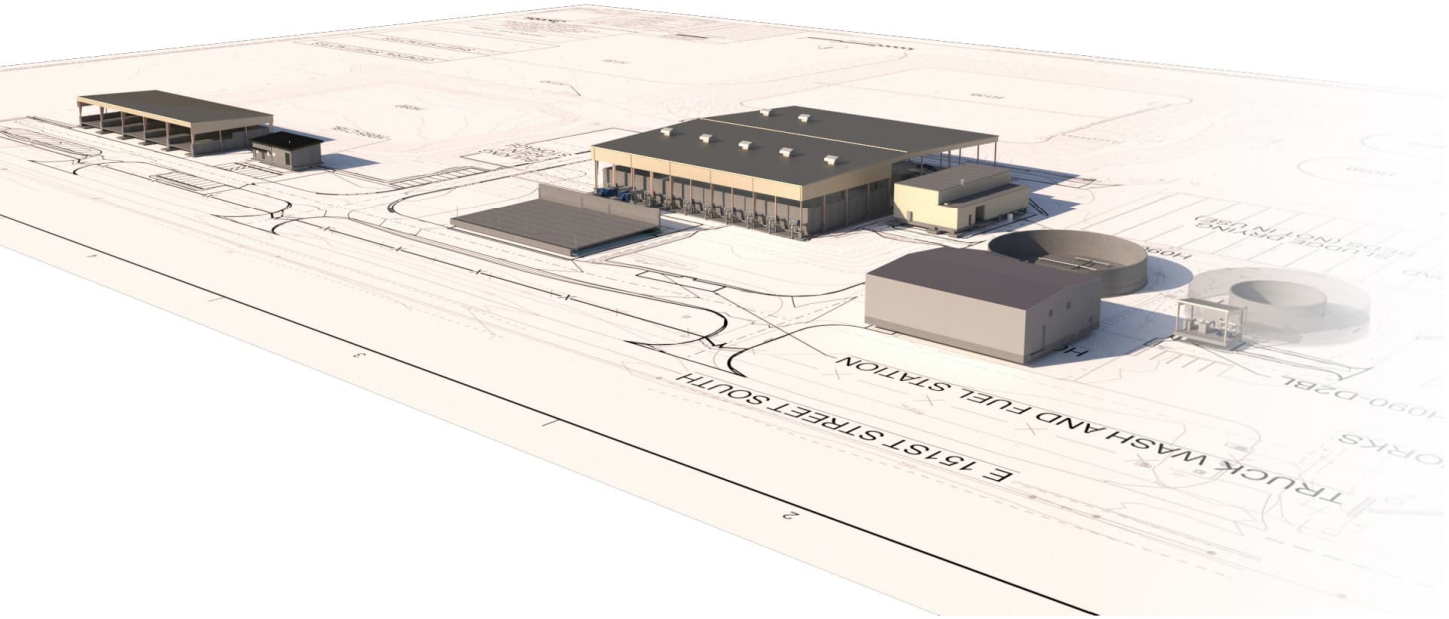
- Costs for landfilling and other solids handling & dewatering technologies are cost prohibitive (RMUA Board Update Jun 11, 2025)
- Decreased PFAS Impact – Dilutes PFAS concentrations with addition of wood chips.
- Odor reduction – Smell is currently the #1 complaint about land application of Class B biosolids
- Public Perception and Accessibility – Promotes continuous improvement of solids processing. Provides a beneficial return or reuse product to the community. Class A Fertilizer reaches wider customer base.
- Customer Service – Landowners access fertilizer when best for them

Recommendation

- USDA Grant Agreement has been executed
- COT, COBA have secured funding
- COT and COBA staff recommend moving forward with biosolids improvements design, bidding, and construction award as approved in the FY26 CIP
- PFAS removal technologies can be added after drying or composting (if required)
- Continue closely monitoring state legislation
  - Ongoing outreach with legislators and public
- Risks of waiting:
  - Loss of $9.6M grant with USDA
  - Permit violations at Haikey from not being able to reliably waste solids
  - Higher capital costs

Jacobs

Thank you!

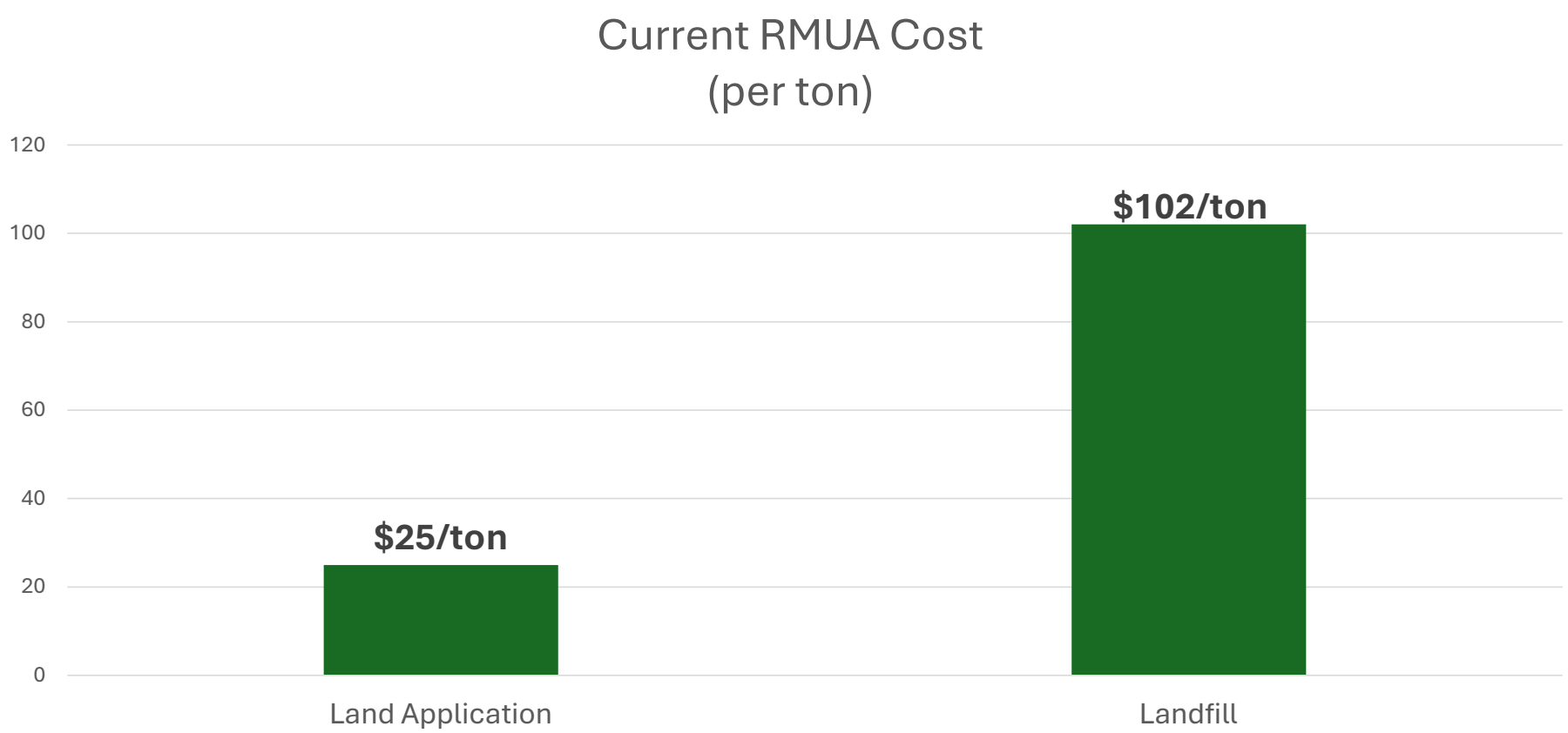


Haikey Creek Biosolids Improvements Update - PFAS Implications

RMUA Board Meeting

March 11, 2026

Current Unit Cost to Landfill vs. Land Application



Estimated Capital Cost of Composting vs. Drying vs. Incineration

Biosolids Improvements Option	Estimated Capital Cost
Solids Handling, Dewatering and Composting	**$43M - $52M**
Solids Handling, Dewatering and Thermal Drying	**$58M - $67M**
Solids Handling, Dewatering and Thermal Drying with Incineration	**$104M - $120M**

Note: Budgetary cost estimates provide range from midpoint to +15%

PFAS Biosolids Testing Results

Southside Dewatered Cake			
	4/2025	7/2025	1/2026
PFOA (ppb)	<2.00	<2.00	<2.00
PFOS (ppb)	26.7	34.5	19.8
PFNA (ppb)	<2.00	1.36	0.703
PFHxA (ppb)	2.53	3.17	<2.00

Haikey Creek RDT Sludge			
	4/2025	7/2025	1/2026
PFOA (ppb)	<9.95	<9.99	<4.00
PFOS (ppb)	66.8	47.2	23.0
PFDA (ppb)	6.98	6.82	4.67

Haikey Pilot Compost Project (10/2024)		
	Dewatered Cake	Finished Compost
PFOA (ppb)	2.76	1.47
PFOS (ppb)	41.1	12.0
PFBA (ppb)	<1.43	0.67
PFBS (ppb)	<0.83	0.38
PFHxA (ppb)	<0.95	2.75
PFHxS (ppb)	0.97	0.19
PFNA (ppb)	1.76	0.63
PFDA (ppb)	10.10	2.88

			Proposed Changes to 95% Estimate					Revised Estimate			
Facility	Facility Name	95% Estimate	Proposed Change	Ok to Implement Change	Addition	Deduction	Option	Base Bid	Options	Base Bid + Options	Notes
5	Sitework	$ 4,745,065	Change Composting Screening and Storage surfacing from concrete to asphalt			$ -		$ 4,745,065	$ -	$ 4,745,065	Discuss with Cost Estimating
7	Yard Piping	$ 3,046,320						$ 3,046,320	$ -	$ 3,046,320	
8	Site Electrical	$ 743,696						$ 743,696	$ -	$ 743,696	
40	RAS/WAS	$ 1,003,165						$ 1,003,165	$ -	$ 1,003,165	
50	Scum Collection	$ 486,267	Option entire scope				$ (486,267)	$ -	$ 486,267	$ 486,267	
70	WAS Pumps and RDT	$ 193,049						$ 193,049	$ -	$ 193,049	
	Gravity Thickener	$ -						$ -	$ -	$ -	
90.1	Dewatering Building	$ 10,022,238	Option 1 centrifuge	Yes			$ (903,586)	$ 8,997,486	$ 903,586	$ 9,901,072	
			Odor Control Duct: Change from stainless steel to aluminum	Yes		$ (121,166)					
90.2	Sludge Mixing	$ 2,427,516						$ 2,427,516	$ -	$ 2,427,516	
90.3	Sludge Tank No 1	$ 1,182,510						$ 1,182,510	$ -	$ 1,182,510	
90.4	Sludge Tank No 2	$ 223,419						$ 223,419	$ -	$ 223,419	
95.1	Operations Building	$ 2,423,727						$ 2,423,727	$ -	$ 2,423,727	
95.2	Composting Building	$ 17,275,765	Change slab on grade from 12" thick to 8" thick	Yes		$ (731,679)		$ 15,860,691	$ -	$ 15,860,691	
			Delete Wall on Gridline 6 (assumed delete 80% for cost calculation)	Yes		$ (421,979)			$ -		
			Odor Control Duct: Change from stainless steel to aluminum	Yes		$ (261,416)			$ -		
95.3	Biofilter	$ 3,673,338	Change slab on grade from 12" thick to 8" thick	Yes		$ (240,912)		$ 2,448,705	$ -	$ 2,448,705	
			Delete slab on each side of fans, only keep below fans	Yes		$ (173,313)					
			Process pipe: Change Foul Air from Stainless Steel to HDPE	Yes		$ (510,414)					
			Odor Control Duct: Change from stainless steel to aluminum	Yes		$ (473,308)			$ -		
95.4	Finished Compost Storage	$ 3,871,738	Change slab on grade from 12" to 8"	Yes		$ (237,165)		$ 1,955,848	$ -	$ 3,259,747	
			Delete interior divider walls	Yes		$ (374,825)			$ -		
			Option 2 Bays (Base bid 3 bays)	Yes			$ (1,303,899)		$ 1,303,899		
	Additions to 95% Estimate	$ -	Increase Owner's Allowance from $250k to $1M		$ 750,000			$ 750,000	$ -	$ 750,000	
			Equipment - Screen		$ 505,414			$ 505,414		$ 505,414	
			Equipment - Front End Loader		$ 500,000			$ 500,000		$ 500,000	Verify equipment costs
			Equipment - Front End Loader		$ 500,000		$ (500,000)		$ 500,000	$ 500,000	Verify equipment costs
			Special Inspection and Testing		$ 250,000			$ 250,000	$ -	$ 250,000	Placeholder
			RMUA Design Support while project was on hold		$ 50,000			$ 50,000			
			Value Engineering Design Support								
			Jacobs Services During Construction		$ 1,700,000			$ 1,700,000	$ -	$ 1,700,000	Placeholder
			Jacobs Programming		$ 460,000			$ 460,000	$ -	$ 460,000	Placeholder
Total		**$ 51,317,811**			**$ 4,715,414**	**$ (3,546,177)**	**$ (3,193,752)**	**$ 49,466,610**	**$ 3,193,752**	**$ 52,610,361**	

Available funds:	**$ 49,600,000**

Summary of Additive Alternate Priority

Priority	Facility #	Facility Name	Component	Base Bid	Add Alt.
1	90.1	Dewatering Building	Centrifuge	2	1
2			Equipment: Front-End Loader	1	1
3	50	Scum Collection	Scum Collection	none	entire scope
4	95.4	Finished Compost Sorage Bldg.	Bays	3	2

Priority 1 indicates the highest priority additive alternate.
For example, if the base bid does not exceed budget, then priority #1 should be the 1st item that should be awarded as it is most important.