

Leachate Generation at a Class I Landfill: When is it going to stop...? (2025 Update)

Presented at

SMITH+GARDNER
ENGINEERS

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Case Study: Waste Services of Decatur, Bath Springs, TN

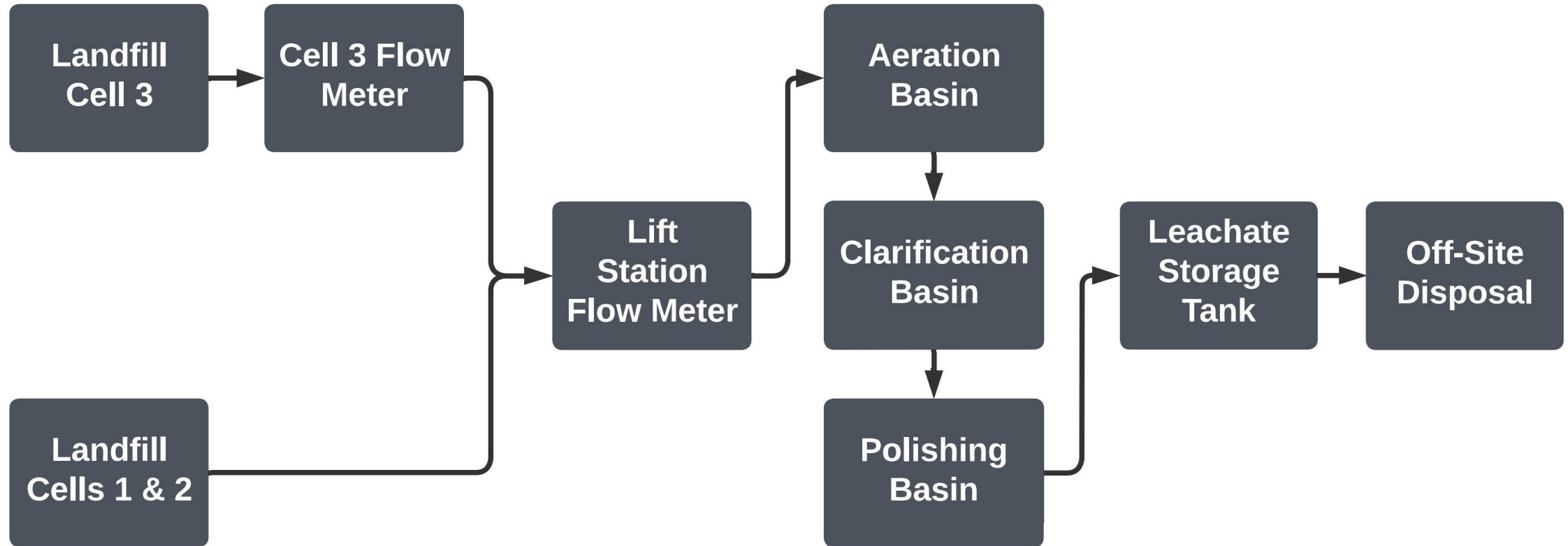
Final Site Closure and Post-Closure Care Period



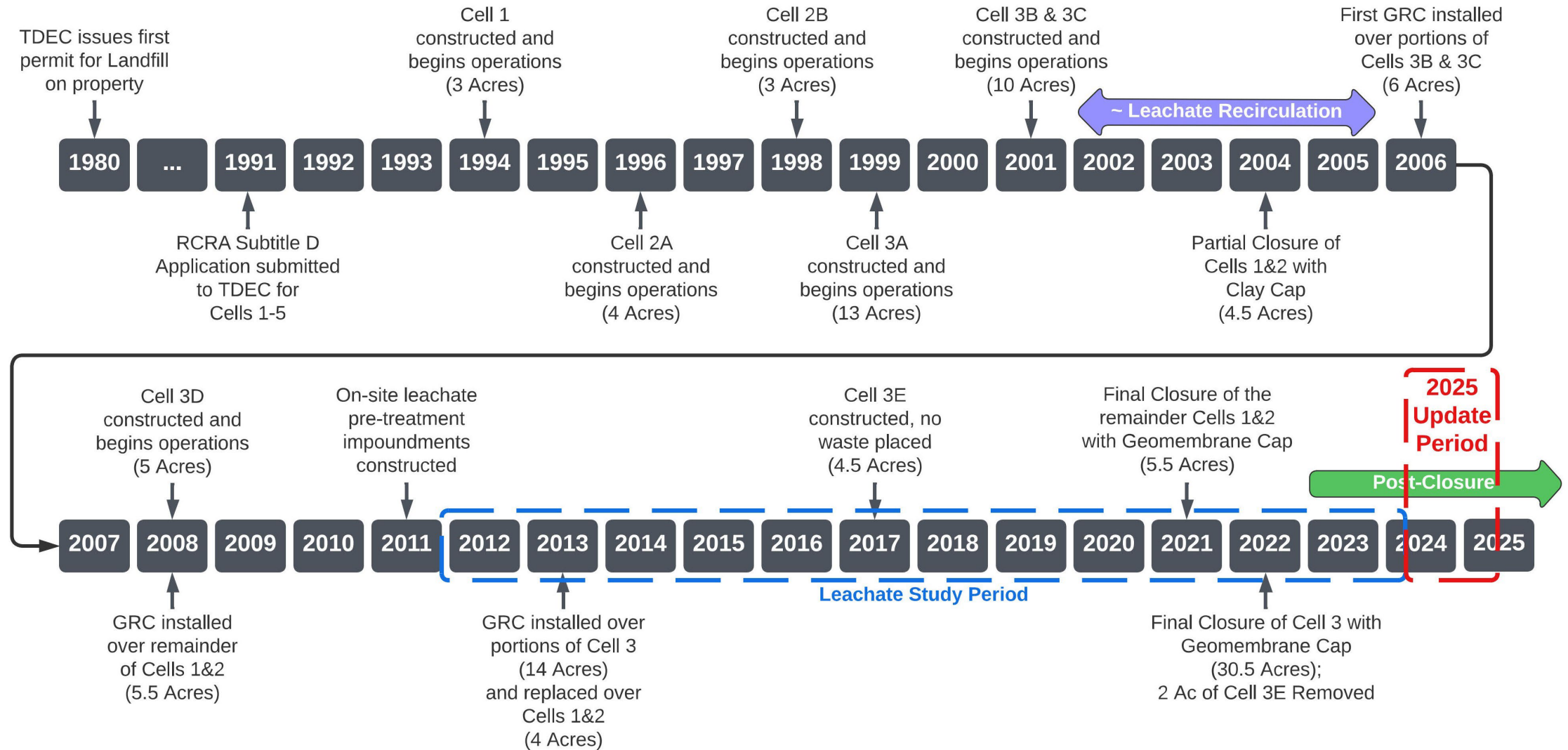
Overall Site Plan



Conceptual Leachate Management System



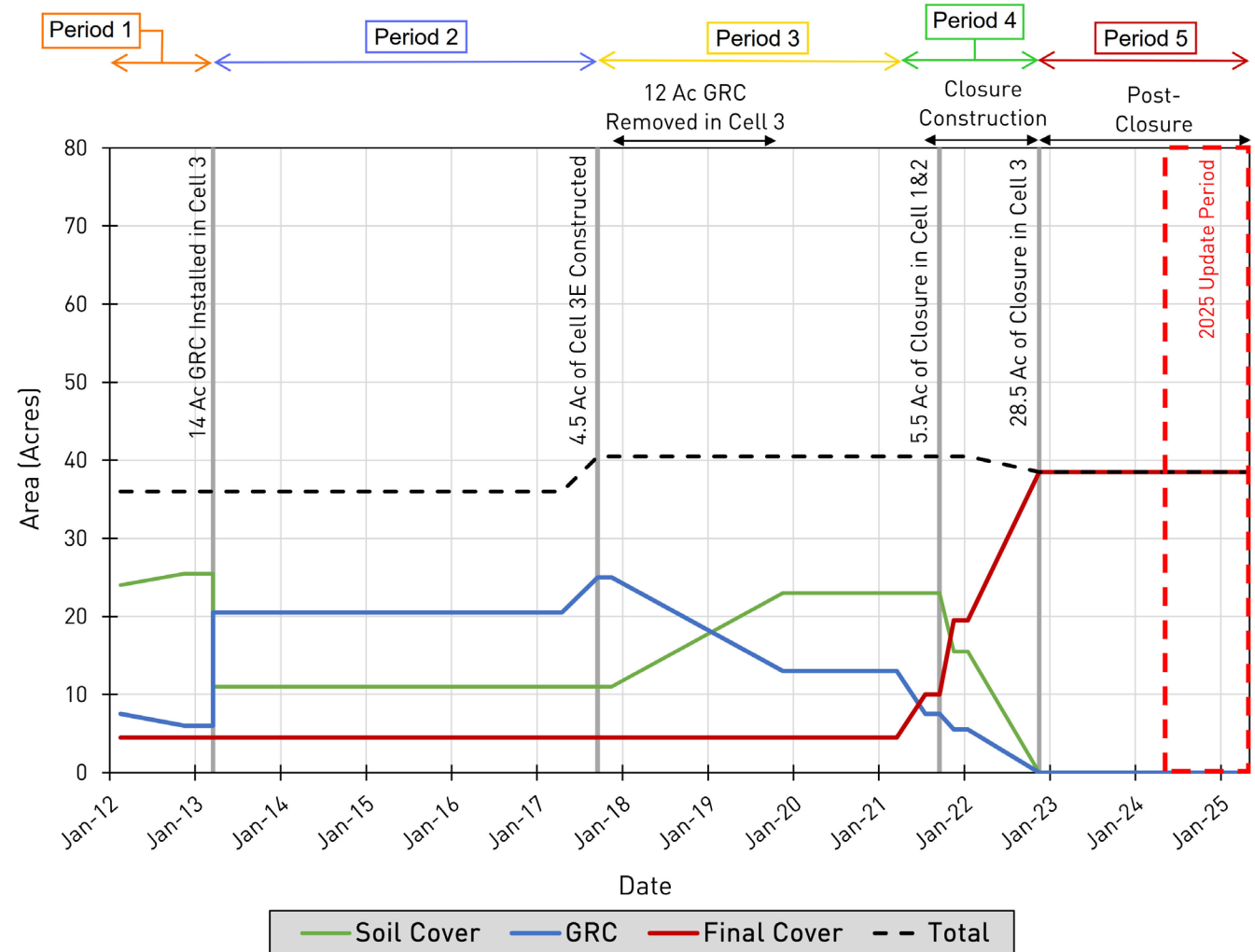
Site Timeline



Site Cover Summary

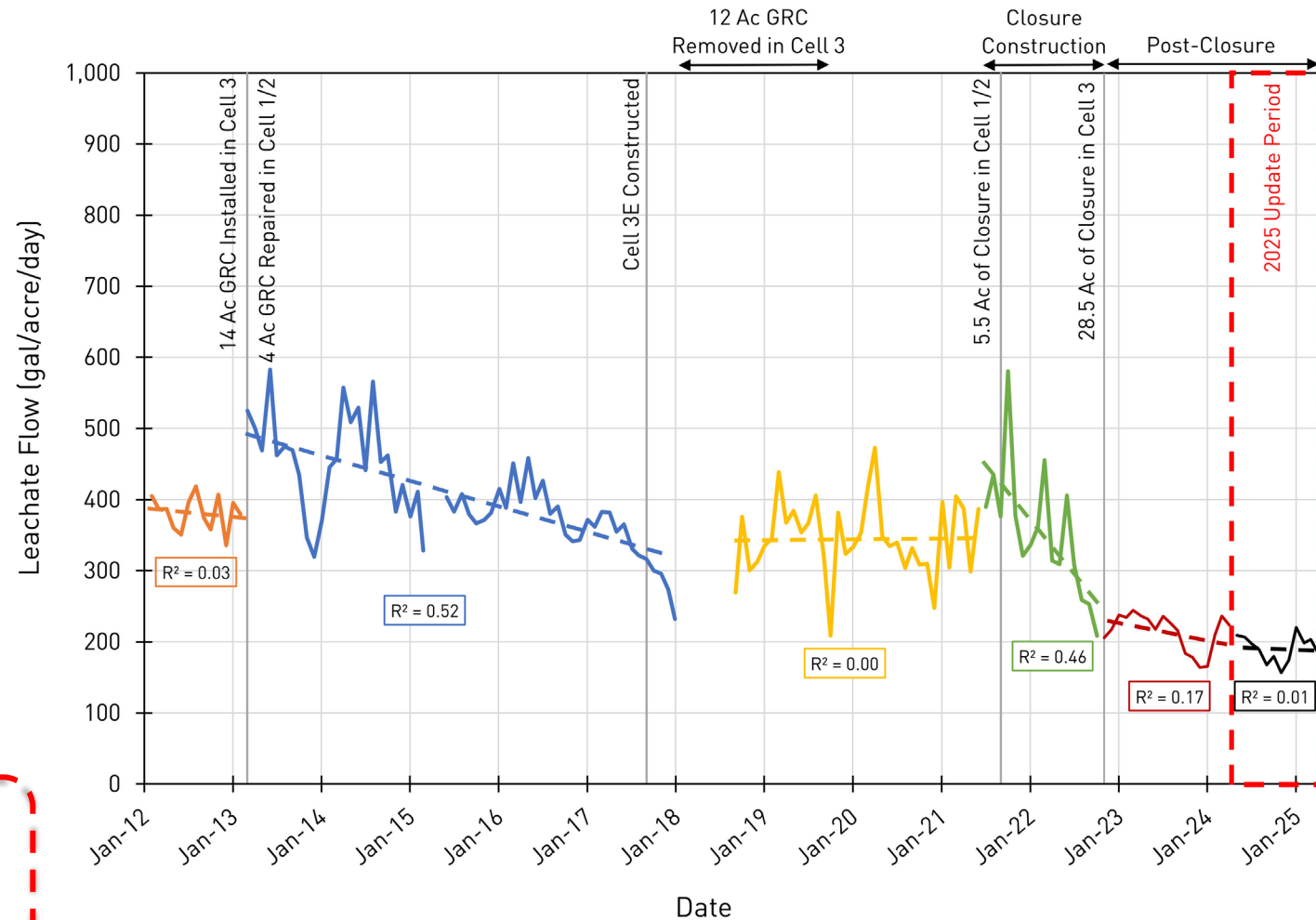
Cover conditions during the leachate study period can be divided into five (5) distinct periods dating back to 2012 when detailed leachate records begin:

- **Period 1: Minimal GRC (~30% total cover)**
- **Period 2: Increased GRC (~70% total cover)**
- **Period 3: Minimal GRC (~40% total cover)**
- **Period 4: Closure Construction**
- **Period 5: Post-Closure**

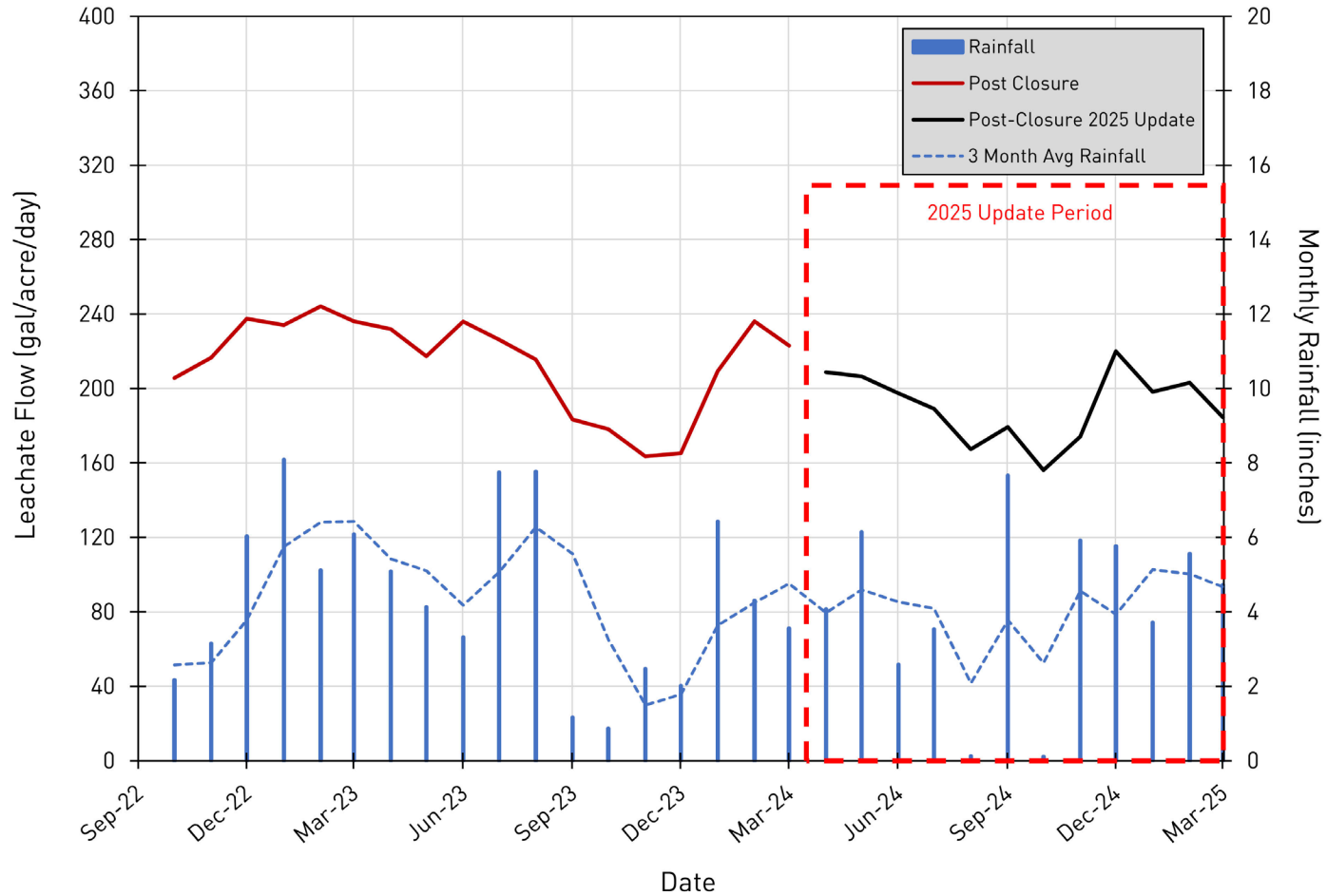


Total Leachate Generation

- **Period 1: Minimal GRC (~30% total cover)**
 - ~375 Gallon per Acre per Day (GPAD)
- **Period 2: Increased GRC (~70% total cover)**
 - Increased flow after installation to ~500 GPAD
 - Flow decrease to ~325 GPAD over 5 years
- **Period 3: Minimal GRC (~40% total cover)**
 - Returns to ~350 GPAD observed Pre-GCR
- **Period 4: Closure Construction**
 - Increased flow at beginning of construction activities to ~425 GPAD decreasing as construction is completed to ~225 GPAD over 1.5 years
- **Period 5: Post-Closure**
 - Moderate reduction in flow post-closure from ~225 GPAD to ~200 GPAD over 1.5 Years
- **Period 5: Post-Closure (2025 Update)**
 - Flow varies from ~150 GPAD to ~225 GPAD with an average flow of at ~200 GPAD



Impacts of Rainfall on Leachate Flow



Potential correlation with recent rainfall?

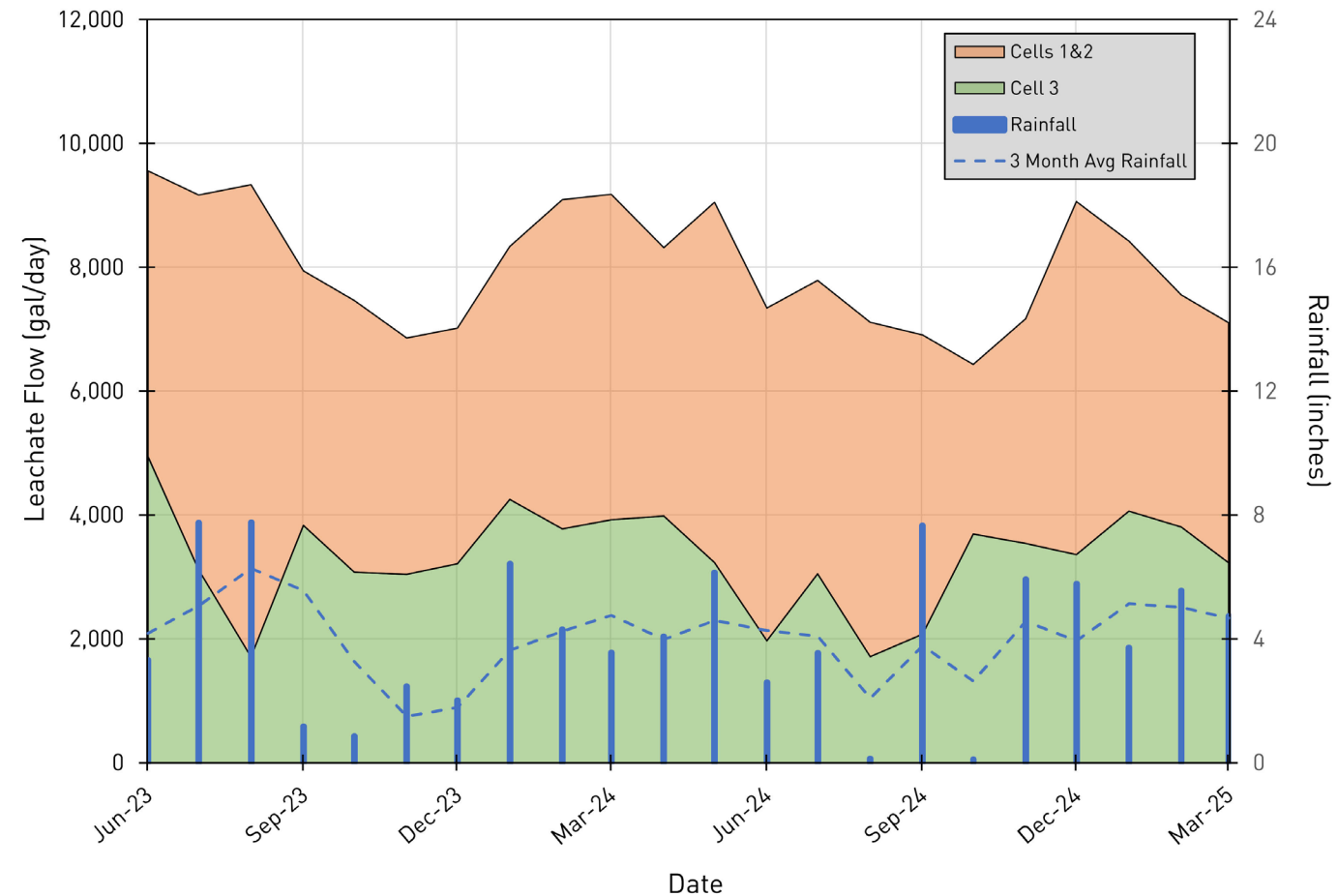
Leachate Flow By Cell

Cells 1&2

- 10 Ac Total Area
 - 5.5 Ac Geomembrane Cap
 - 4.5 Ac Clay Cap
- 25% of the Total Area
- 60% of Total Flow on Avg.

Cell 3

- 28.5 Ac Total Area
 - 28.5 Ac Geomembrane Cap
- 75% of the Total Area
- 40% of Total Flow on Avg.



Area Normalized Flow Rate

Cell 3

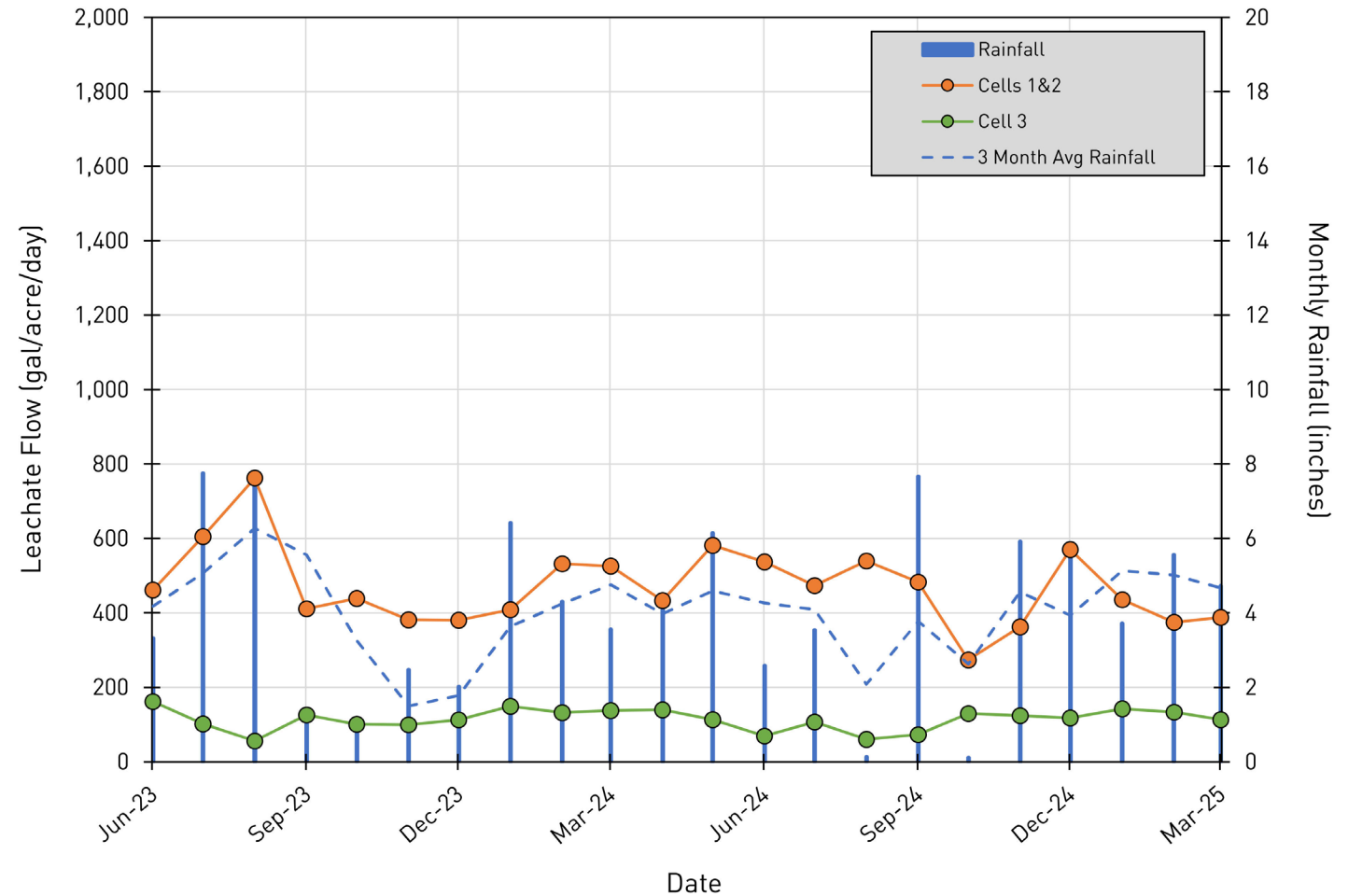
28.5 Ac Cap

- ~115 Avg. GPAD

Cells 1&2

10.0 Ac Cap

- ~470 Avg. GPAD



Area Normalized Flow Rate (Potential Clay Cap Contribution)

Cell 3

28.5 Ac Geomembrane Cap

- ~115 Avg. GPAD

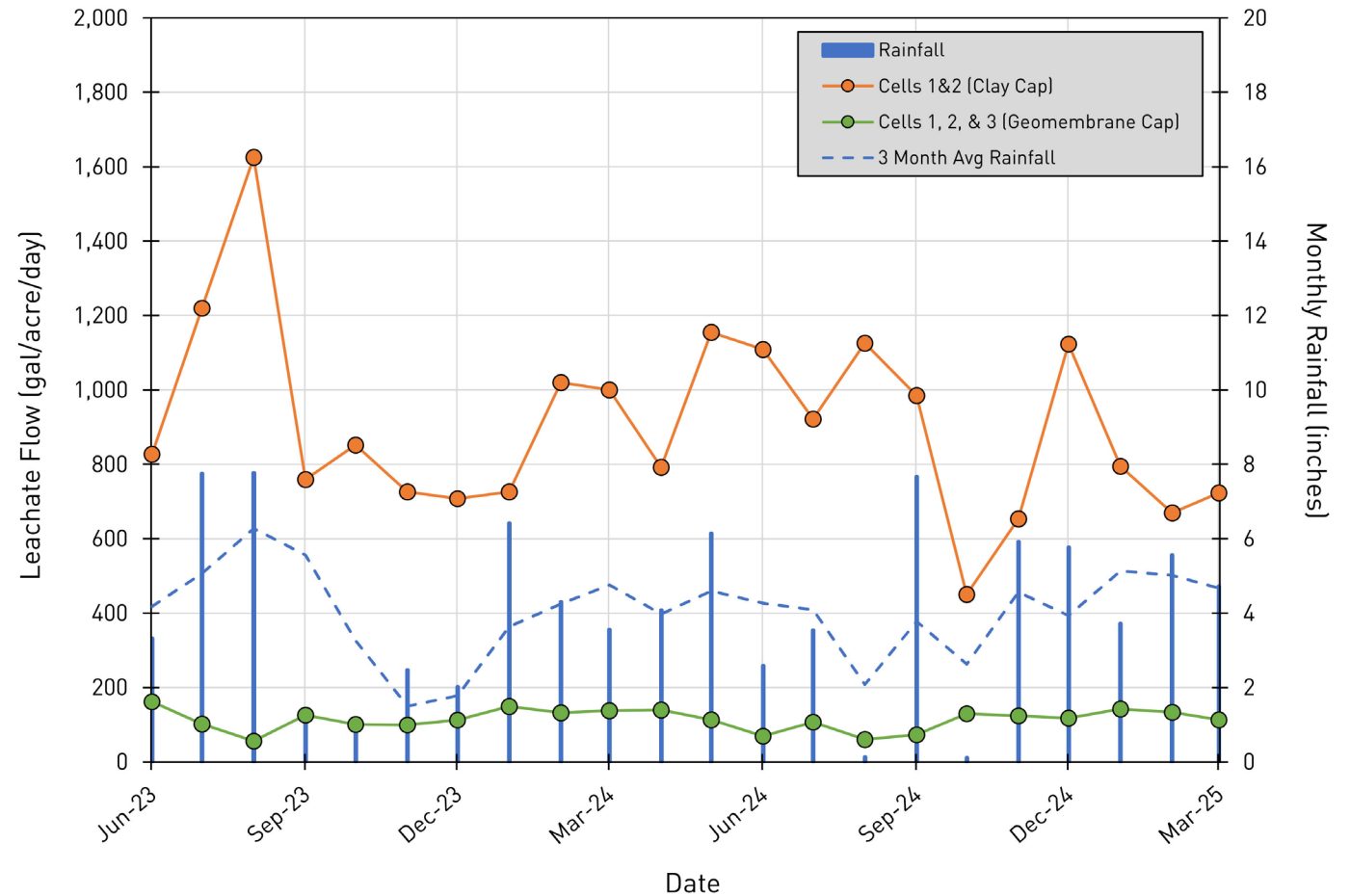
Cells 1&2

5.5 Ac Geomembrane Cap

- ~115 Avg. GPAD

4.5 Ac Clay Cap

- ~900 Avg. GPAD



To Be Continued...

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