

Facing Challenges in Permitting and Procuring a ClosureTurf® System at a Municipally- Owned Landfill

by:

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and

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Presentation Agenda

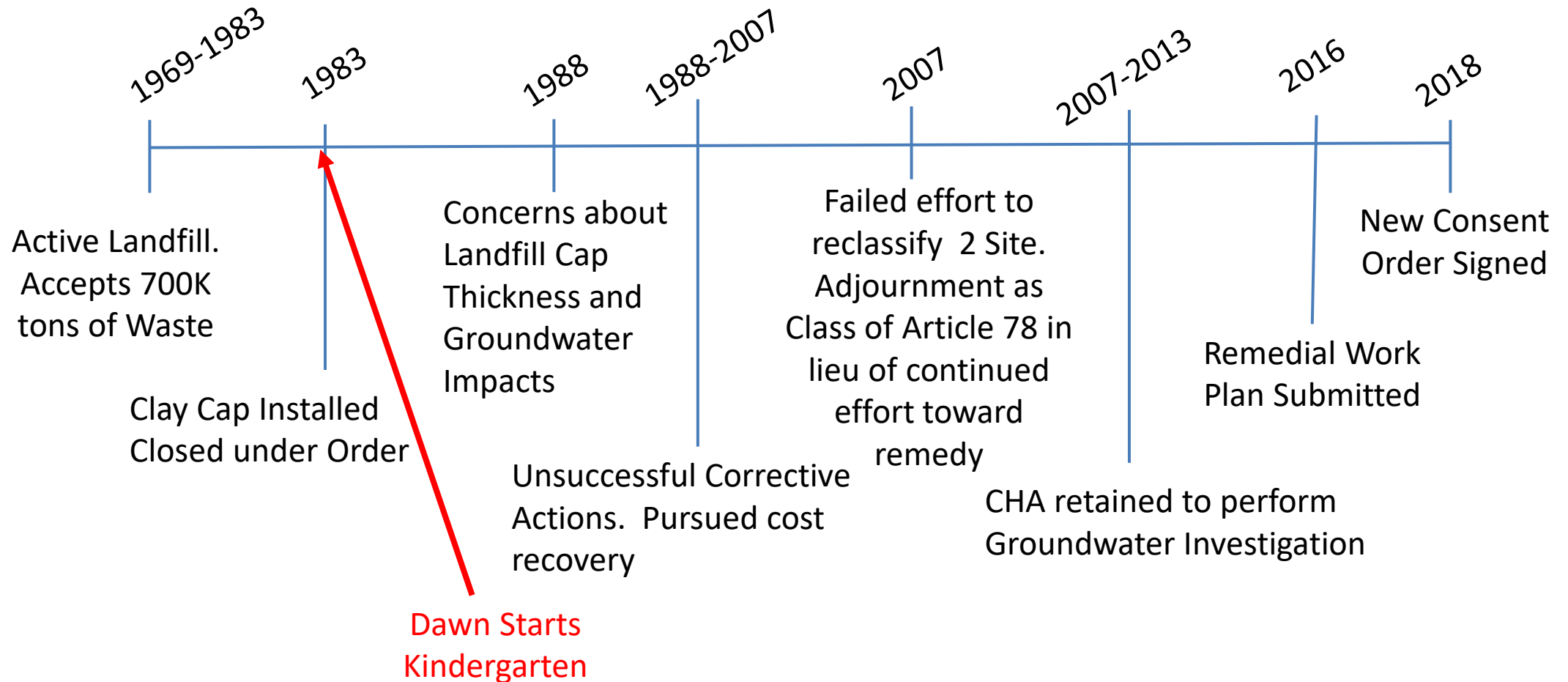
- Site History for Landfill No. 1
- Physical Attributes of Landfill No. 1
- Not Being First
- DEC Negotiations
- Variance Request
- Procurement Hurdles
- Field Application



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Site History for Landfill No. 1

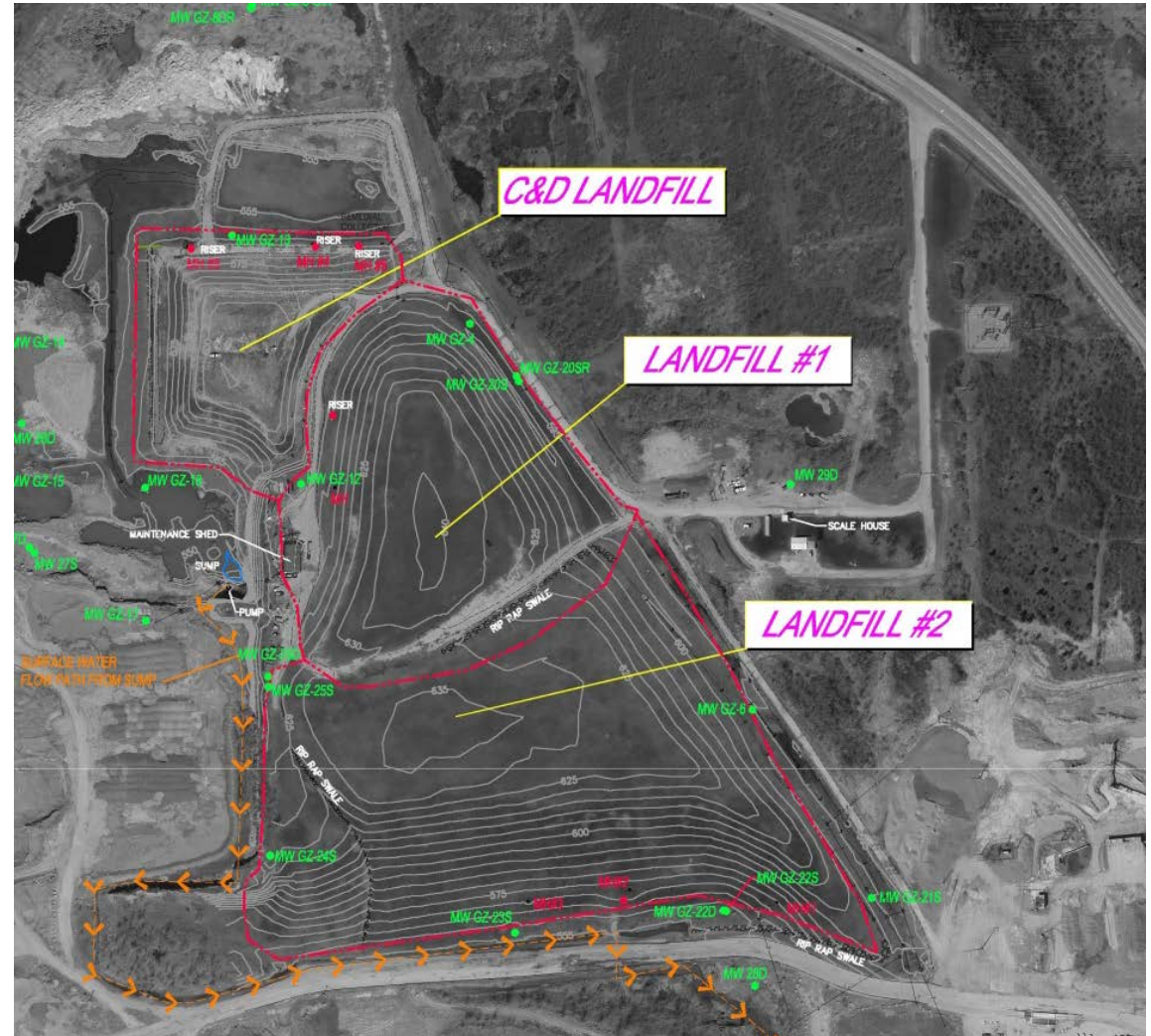


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Physical Attributes of Landfill No. 1

- 19 acre landfill
- Constructed in mined out portion of limestone rock quarry
- Unlined/ No leachate collection system
- Clay Cap Installed, but...
 - Frequent leachate outbreaks,
 - Offsite gas migration and groundwater impacts identified,
 - Waste found outside capped limits
- No power or sewer connection



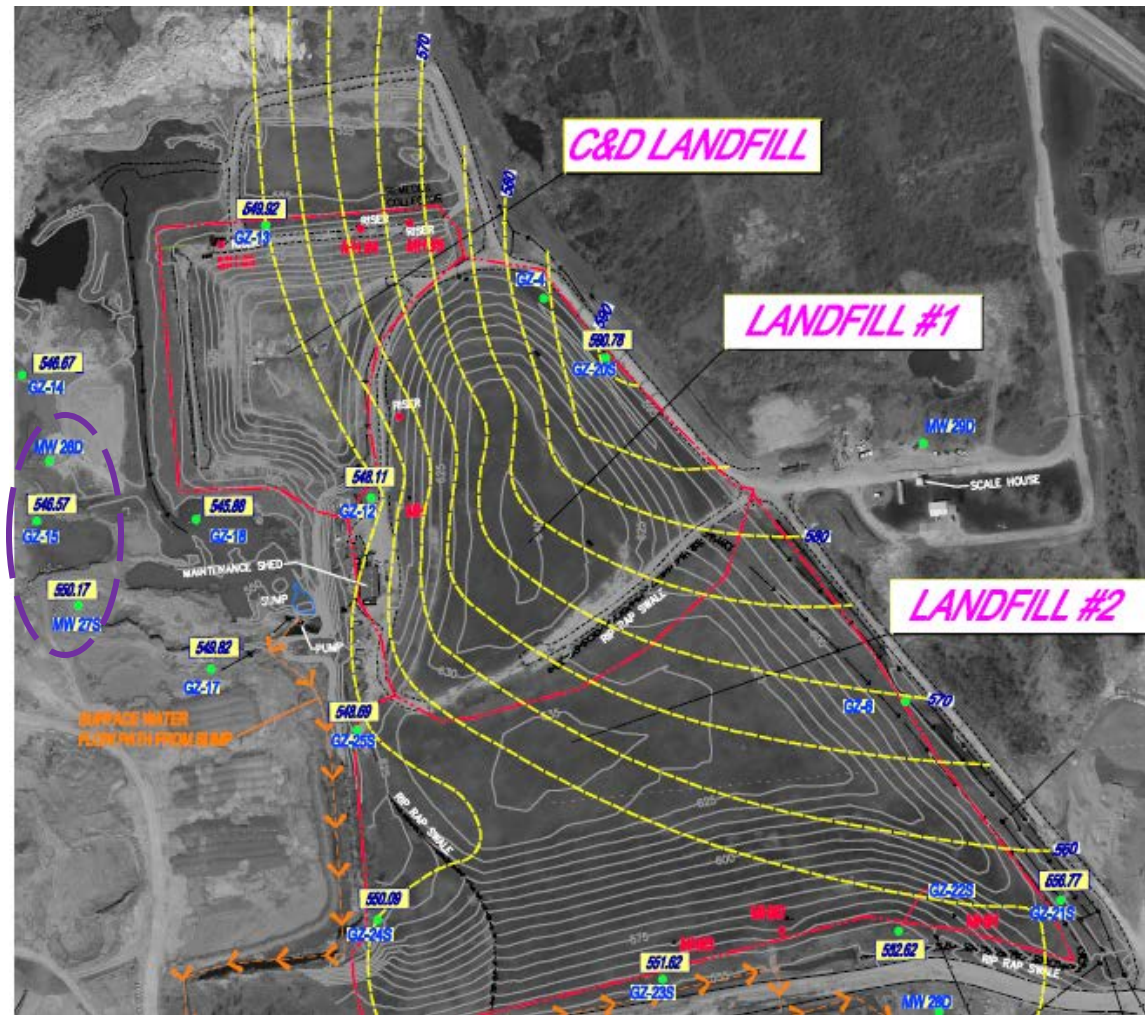
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Generally a Nightmare to Manage!!



Hydrogeologic Investigation

- Groundwater occurs in two bedrock formations
- Hydraulic gradient to west in both
- Impacts identified in monitoring wells at landfill footprint
- 2014 Investigation identified minor impacts in new monitoring wells installed 800 ft beyond footprint



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ALTERNATIVE ANALYSIS

CHA performed a preliminary evaluation of several alternatives to address the existing groundwater impacts. These included:

- Enhancing existing clay cap vs. new HDPE Membrane cap
- Groundwater MNA vs. Groundwater Extraction or Groundwater Barrier
- Capping Waste Outside of Cap vs. Waste Removal

Proposed Remedy for Landfill No. 1

- Repair Existing Clay Cap
- Areas in Red are <24 inches of clay
- Strip vegetation and topsoil, add clay, and restore vegetative layer
- Preferred Option due to limited resources from a publicly operated special district

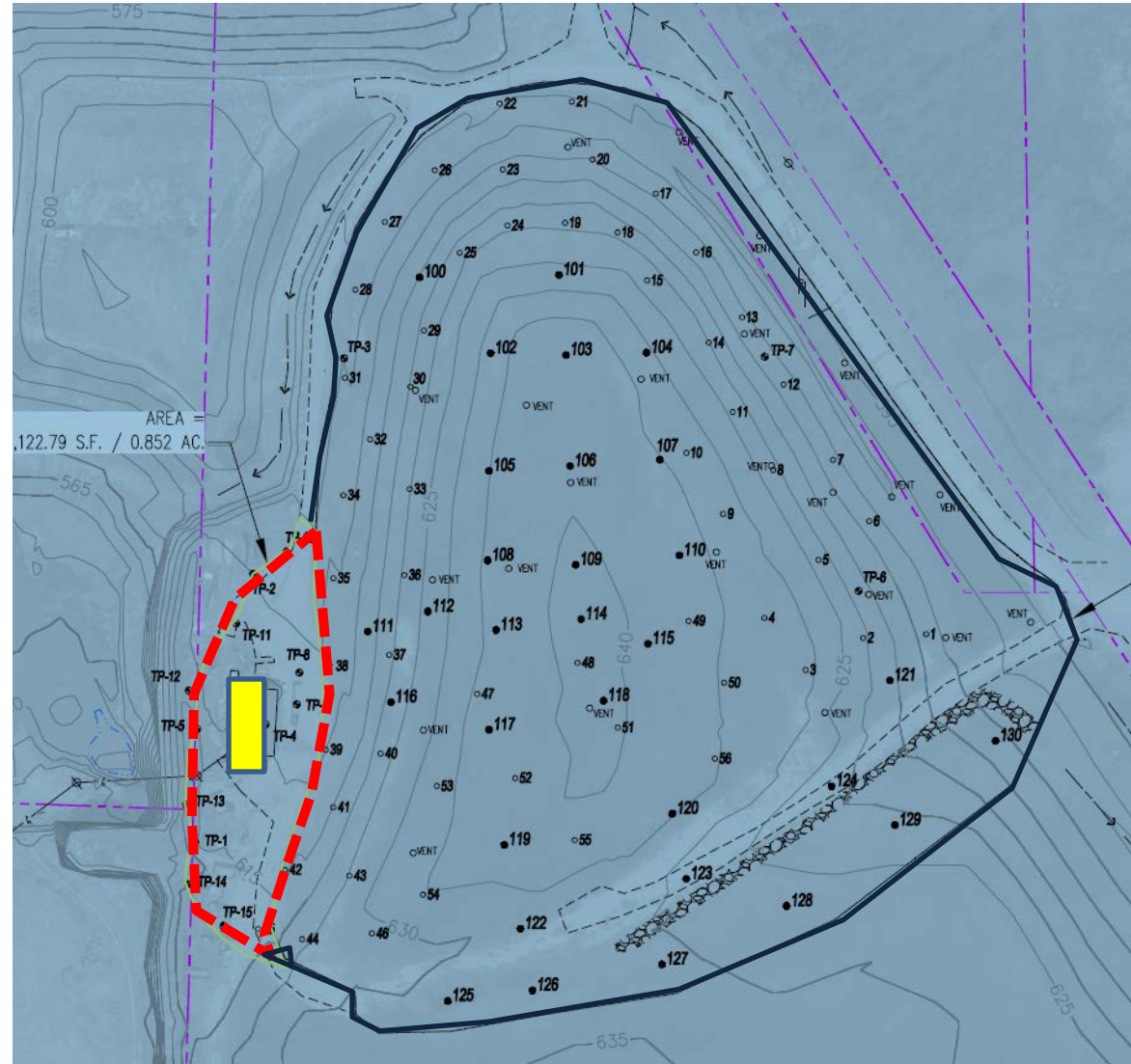


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Proposed Remedy for Landfill No. 1

- Remove Maintenance Building
- Grade to match existing landfill side slopes
- Add clay cap and vegetative layer.

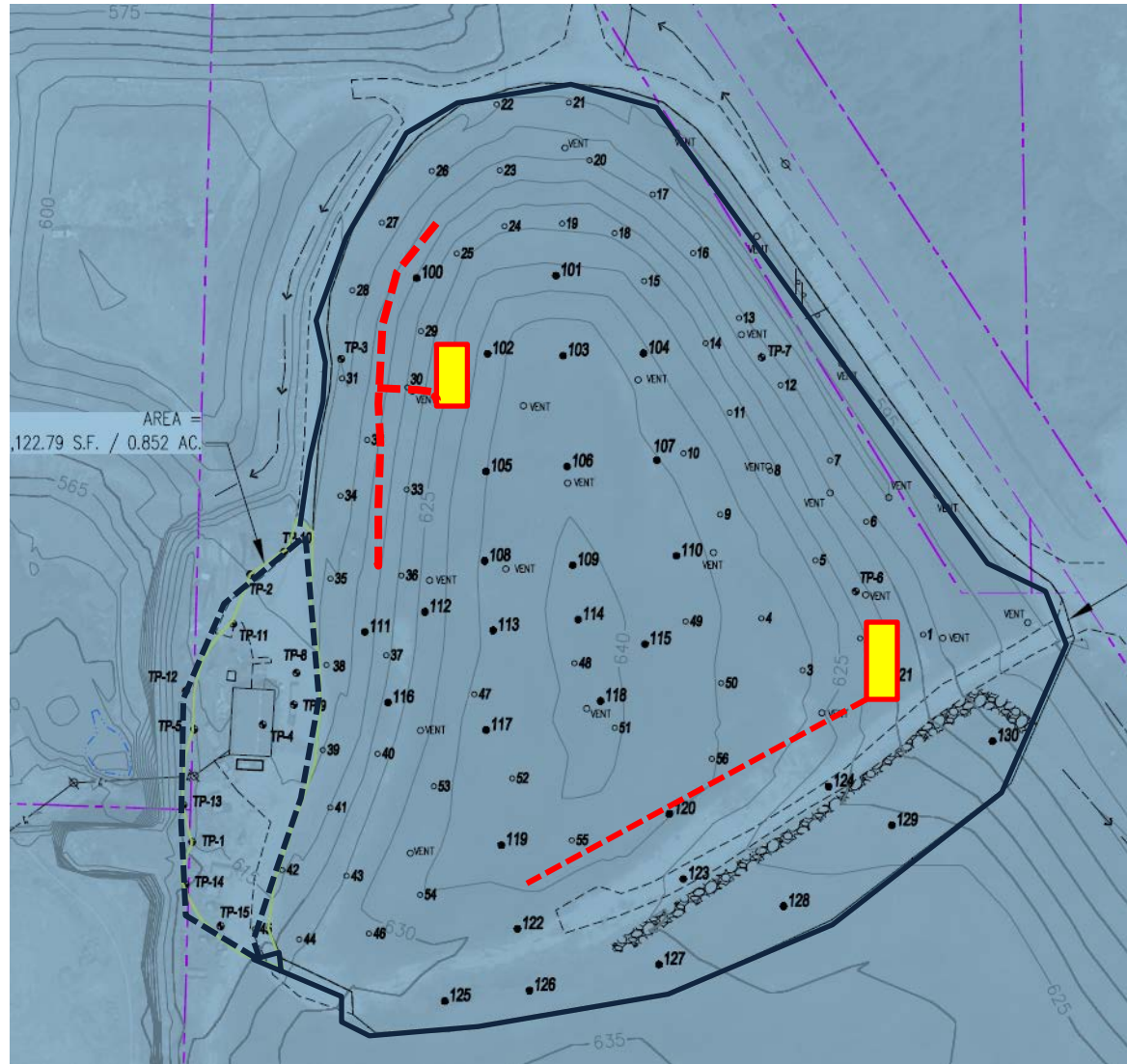


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Proposed Remedy for Landfill No. 1

- Control Leachate Seeps with additional leachate collection lines and storage tanks.



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Proposed Remedy for Landfill No. 1

Address Groundwater Impacts:

- *Enhance Cap*
- *Cap Waste beyond existing cap*
- *Add Leachate Infrastructure*
- *Implement Monitored Natural Attenuation*

Why MNA:

- *Attenuation already observed*
- *Contamination in deep bedrock fractures*
- *No nearby receptors*
- *Land downgradient of landfill owned by Quarry*



DEC Response to Proposed Remedy

- *Rejected Enhancement of Clay Cap*
- *Accepted Capping Waste Outside of Cap*
- *Accepted Addition of Leachate Infrastructure*
- *Conditional Acceptance of MNA depending on NCRDD approach to landfill capping*

REJECTED



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Sometimes It Does Not Pay to Be First

NCRDD Consider Closure Turf® for C&D Landfill Closure in 2016

- At that time, it had not been permitted in NY on a MSW Landfill
- Landfill closure was only 4.5 acres
- Was not going to be cost beneficial to conduct the permitting and then use ClosureTurf®
- Installed HDPE membrane cap with standard barrier protection layer.



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Was This the Time Right for Closure Turf® ?

- DEC Region 9 stressed they could accept MNA if geomembrane cap was used.
- But this was significant cost increase over proposed remedy
- No on site borrow area for barrier protection layer soils
- First floated potential to use Closure Turf®

Clay Cap Repair - \$1.9M (This is just too small)

Part 360 Geombrane Cap - \$3.8M (This is too big)

Closure Turf Cap - \$3.0M (ahh, just right)



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Variance Request

- DEC Required Variance to Part 360 Regs to use Closure Turf®
 - Gas Venting Layer
 - Barrier Protection Layer
 - Geomembrane (proposed 40 mil LLDPE)
 - Topsoil
- DEC provided example of accepted variance
- Watershed Geo provided all technical info needed.
- Variance Submitted before new Part 360 Regs enacted.



Procurement at a Virginia MSW Landfill

- Accomack County VA purchased membrane and turf from Watershed Geo on a Sole Source Basis.
- Used National Joint Powers Alliance (NJPA) as mechanism for materials purchase
- Accomack County competitively bid earthwork, placement of membrane, turf, and sand infill.
- Watershed Geo requires General Contractors sublet work to licensed installer.
- Initially thought that might be restrictive but there are about 20 licensed installers available.
- Project was potentially subject to schedule delays associated with material delivery not under GC's control, but ultimately no issues.



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Procurement Hurdles for Niagara County

- Getting around the Municipal Bidding rule of thumb; if request is >50% materials a bid is required.
- Niagara County would have to make accommodations to procure.
- Could not piggyback on NJPA contract because the procurement method was RFP.

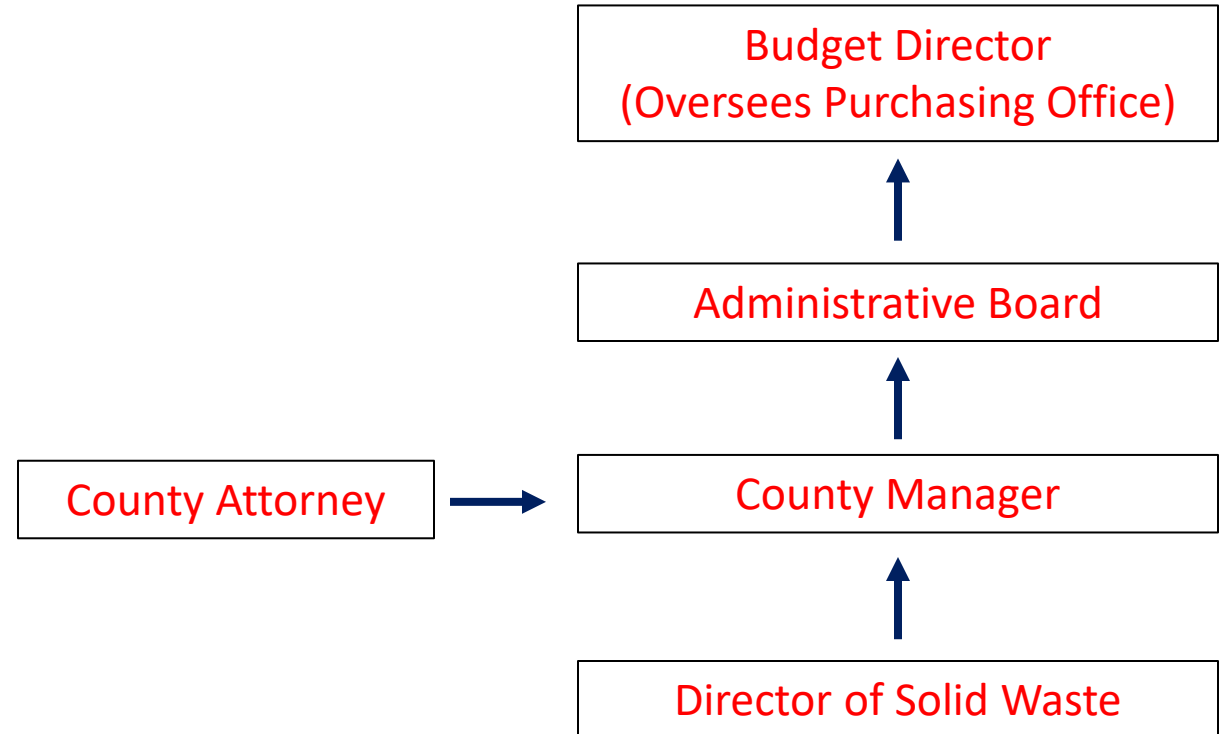


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Procurement Hurdles for Niagara County

- Proprietary with 2 US Patents qualifies them as Sole Source. Need to make sure the procurement record is completely documented and consists of a memo advising “this is the best option” and letter from manufacturer addressing it’s sole source status.
- NCRDD had Attorney prepare memo and Watershed Geo submit a letter.



Field Application (VA Site)

- Completion of Cap was faster
- Avoided problems with placement of BPL and topsoil layer.
- Used Armor Fill to implement benchless slope design
- Curing of Armor Fill is temperature dependent so cold temps were a factor.
- Owner was very happy with outcome!



Field Application (Niagara County)

- Variance Approval submitted Nov. 2017
- Approval came in April 2018.
- Design will occur in Summer 2018.
- Will bid work late fall 2018.
- Start Construction Spring **2019**



Questions??

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