

Putting Everything on the Table

SW Landfill Life Extension Study
Solid Waste Division
June 11, 2018



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Solid Waste Division Overview

- **Solid Waste Operations**
 - Manage 19 waste facilities
 - 11 Convenience Centers
 - 3 Multi-Material Recycling Facilities
 - 3 Household Hazardous Waste Facilities
 - **SOUTH WAKE LANDFILL (SWLF)**
 - East Wake Transfer Station
 - Landfill gas systems
 - Illegal dumping enforcement
 - Closed North Wake Landfill



Solid Waste Division Overview

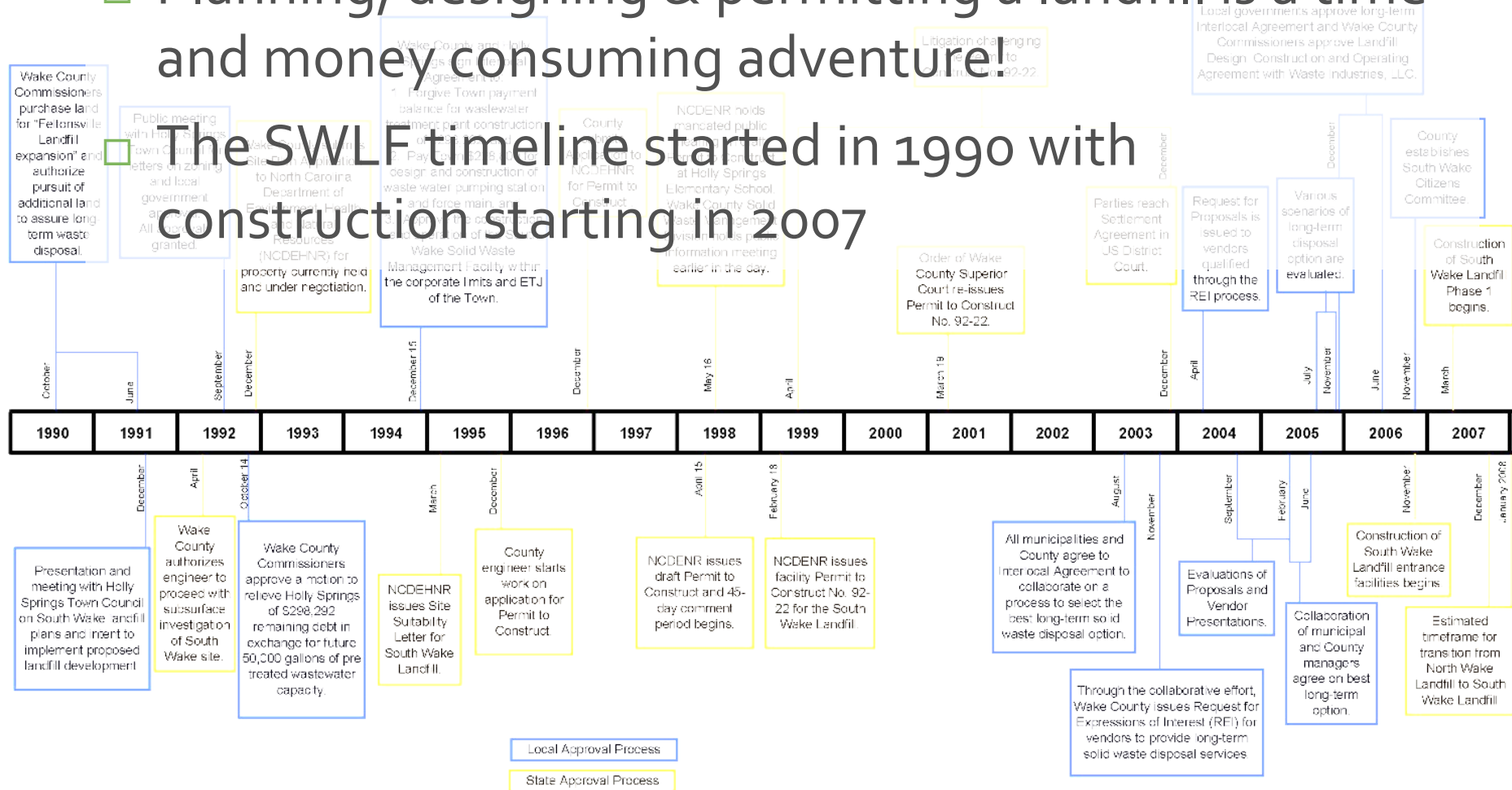
- **Solid Waste Outreach & Education**
 - Feed the Bin School Program
 - 86it Anti-Litter Campaign
 - Community Outreach
 - Facility Tours
 - Food Waste Reduction



South Wake Landfill Background

- Planning, designing & permitting a landfill is a time and money consuming adventure!

The SWLF timeline started in 1990 with construction starting in 2007



South Wake Landfill Background

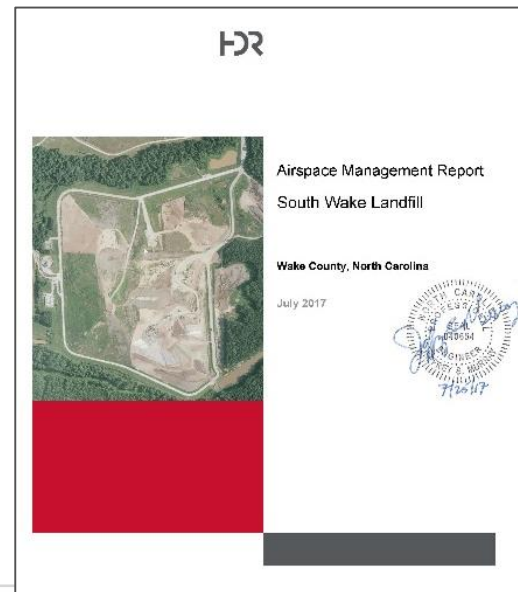
- **Phase 1A** (2008 to 2010)
- **Phase 1B** (2010 to 2015)
- **Phase 2A** (2015 – 2022?)
- **Phases 2B – 5** (2022 – 2040+)



South Wake Landfill Background

- Annual evaluation of airspace remaining
- SWLF projected to last until 2040 to 2048

Fiscal Year	Cumulative MSW Tons	Remaining Airspace
2017	3,943,987	1,788,786
2018	4,415,986	1,128,434
2019	4,900,986	455,910
2020	5,398,241	1,958,522
2021	5,900,469	1,274,957
2022	6,407,718	591,200
2023	6,920,041	4,744,232
2024	7,437,486	4,060,037
2025	7,960,106	3,375,599
2026	8,487,952	2,690,899
2027	9,021,077	2,005,922
2028	9,559,532	1,320,650
2029	10,103,373	635,066
2030	10,652,652	3,985,154
2031	11,207,423	3,298,896
2032	11,767,743	2,612,275
2033	12,333,665	1,925,275
2034	12,905,247	1,237,878
2035	13,482,544	3,974,068
2036	14,065,615	3,285,827
2037	14,654,516	2,597,138
2038	15,249,306	1,907,985
2039	15,850,044	1,218,350
2040	16,456,790	2,919,216
2041	17,069,603	2,228,566
2042	17,688,544	1,537,384
2043	18,313,674	3,806,651
2044	18,945,056	3,114,352
2045	19,582,752	2,421,468
2046	20,226,824	1,727,982
2047	20,877,338	1,033,878
2048	21,534,356	339,139



Wake Board of Commissioners

- **BOC developed strategic goals in following categories:**
 - Community Health
 - Economic Strength
 - Education
 - Great Government
 - Growth and Sustainability (GS)
 - Public Safety
 - Social and Economic Vitality
- **2018 BOC Strategic Goals & Objectives includes:**
 - GS 2.2 - Update comprehensive solid waste plan to EXTEND THE LIFE OF THE LANDFILL through recycling and technology, and improve strategies to reduce litter.

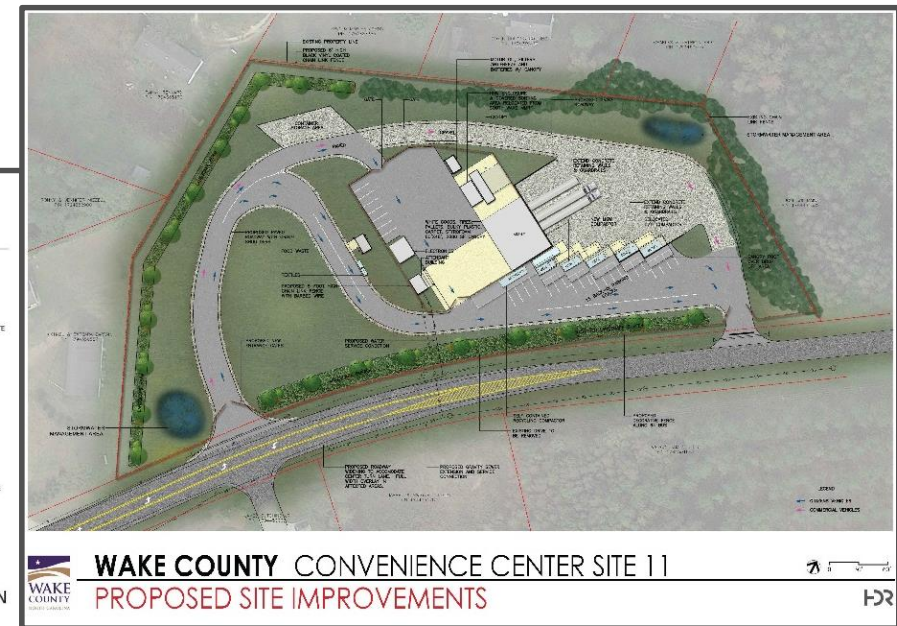
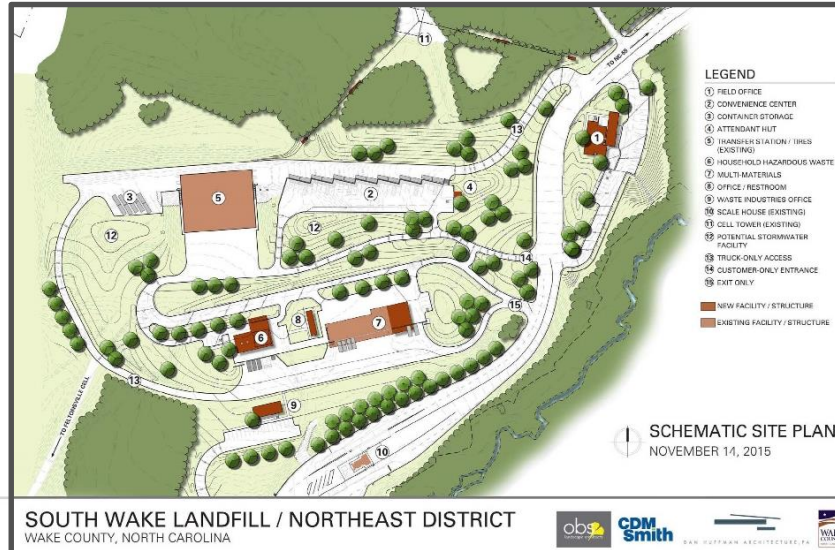
Events Impacting SWLF Life

- **Ongoing/Prior Impacts**

- ✓• Economic slow down (10-15% reduction in tonnage)
- ✓• Implementation of commingled recycling & large carts by all municipalities (5-10% reduction in tonnage)
- ✓• Separation of C&D Material at convenience centers
- ✓• Landfill density (beyond contract requirement)
- ✓• General focus on better recycling (O&E)
- ✓• NCSU study/modeling of Wake County SW
- ✓• Piloting organics separation at convenience centers

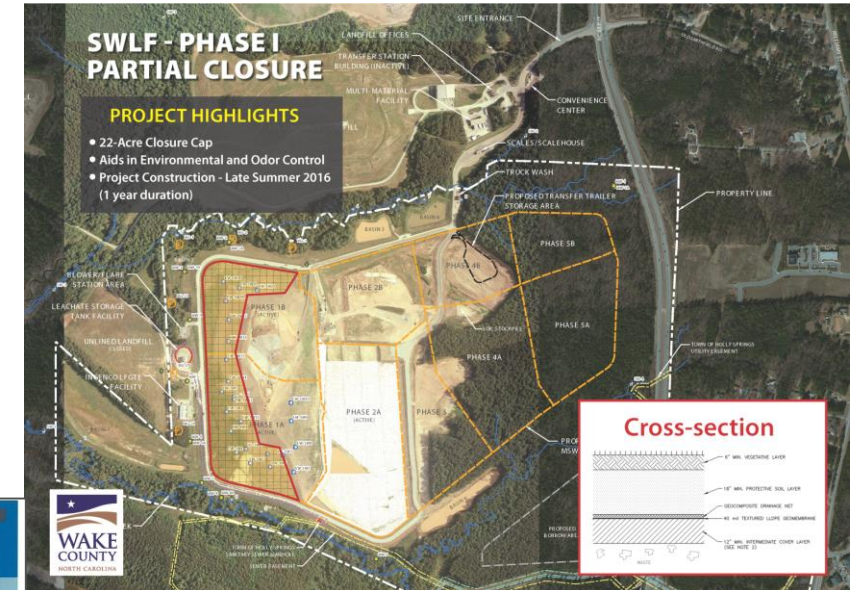
Events Impacting SWLF Life

- **Ongoing efforts:**
 - Convenience Center Improvements - goal of improving recycling and other programs that minimize waste to landfill
 - Site 2 (South Wake)
 - Site 11 (Wendell/Zebulon)
 - Site 3 (Morrisville – future)



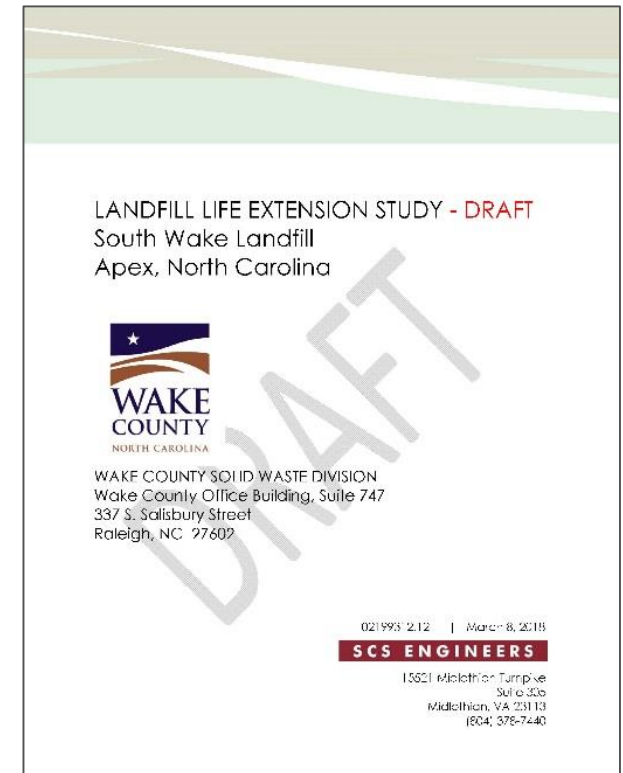
Events Impacting SWLF Life

- **Ongoing (continued)**
 - Partial Closure of SWLF
 - Helps with LFG collection and odors
 - Potentially compromises future waste disposal volume...
 - Improved WCPSS school recycling
 - Paper-only to commingled
 - Less waste from schools



Life of Landfill (LOL) Study

- **Decision to conduct a study titled “Landfill Life Extension Study” for South Wake Landfill**
 - SCS Engineers assisting with development of study
 - Study being looked at as “menu” list of topics and ideas, both on and off the landfill, that can increase the life of the SWLF

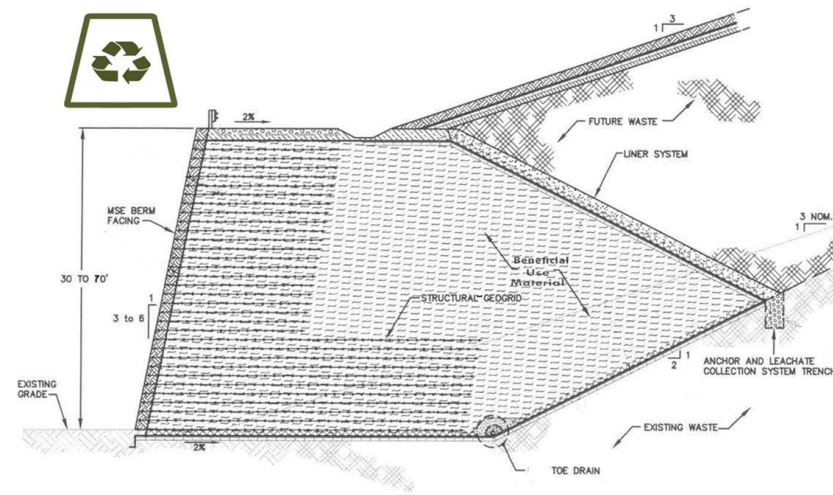


Potential Landfill (on-site) Initiatives

- **Density, Density, Density...**
 - 25% increase in density adds 10 years (1100 vs. 1375 lbs/CY)
 - Not without a cost, but airspace value is significant
- **Side slopes - 4:1 versus 3:1 (Risk versus Reward?)**
 - 4:1 much safer in long term
 - 3:1 yields more volume but difficult to maintain
 - Where is the “sweet” spot for the landfill – 3.5:1?

Potential Landfill (on-site) Initiatives

- **MSE Berm**
 - Costs versus airspace
 - Potential use of waste material (coal ash) to build wall
- **Lateral Landfill Expansion**
 - Availability of land adjacent to existing facility
 - Easier than a new LF?
 - Potential Environmental impacts



Potential Landfill (on-site) Initiatives

- **Vertical Landfill Expansion**
 - Final grade elevation increase
 - Base grade elevation decrease
- **Temporary Overfilling Analysis**
 - Waste compacts over time due to gravity
 - Anticipate compaction to minimize future waste placement in areas that will be remote...
 - Allows earlier partial closure due to meeting final permitted grades

Potential WD&R (off-site) Initiatives

- **Curbside Recycling**

- Municipal partners doing all they can?
- Franchising for non-municipal areas
 - To impact recycling rates, needs to be mandatory
 - Competition concerns and developed convenience center program impact potential effectiveness
- Providing incentives to haulers/recyclers



- **Mattress Recycling**

- SWLF single biggest headache of typical items brought to landfill
- Availability of vendors and/or volume to process

Potential WD&R (off-site) Initiatives

- **Encourage Commercial Recycling**
 - Data, Data, Data – waste audits, landfill data
 - Stick vs. carrot approach (require vs. encourage)
 - Small vs. Large (businesses)
- **Multi-family Recycling**
 - Container placement/space
 - Private vs. Public



Potential WD&R (off-site) Initiatives

- **Organics**

- Education, Post Consumer Use, Composting and Anaerobic Digestion
- Reasons other that landfill life to do organics as impact is not significant (compared to other materials)

- **Reuse**

- Private groups (Habitat, etc.)
- Swap shops (not sweat shops, but they may make us sweat if we open one up...)



- **Landfill &/or Development Policies**

- **C&D Recycling**










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- The map displays the following waste management facilities in North Carolina:
- Durant Road C&D Transfer Station** (near Durham)
 - Republic Services Transfer Station** (near Rolesville)
 - Capital Waste C&D Transfer Station** (near Raleigh)
 - Shotwell Landfill** (near Zebulon)
 - Greenway Waste Solutions** (near Holly Springs)
 - Red Rock C&D Landfill** (near Fuquay Varina)





Study Summary

Measure	Section of Report	First/Next Step(s)	Potential Landfill Life Impact	Difficulty	Eval ²
Waste Diversion & Reduction					
Increase Residential Recyclable Materials Diversion					
Assist Select Munis w/Residential Recycling	2.1.2	Develop consistent performance measures; Identify underperforming munis	High	Med	●
Establish/Formalize Interlocal Collaboration	2.1.3	Form communication mechanism for County, city/towns, & other stakeholders	High	Med	●
Establish Rural Curbside Collection Service	2.1.4	Feasibility Study; Exploratory RFQ/RFP for service	Med	High	●
Offer Hauler Awards for Material Diversion	2.1.5	Develop program outline & facilitate hauler feedback to assess amenability	Low	Low	●
Establish Mattress Diversion Program	2.1.6	Assess County facility/operational assets to gauge feasibility; Estimate costs	High	Med	●
Create Economies of Scale	2.1.7	Examine space available at CCs & available recycling markets	Med	High	●
Construction & Demotion (C&D) Debris Diversion					
Explore MRF Possibilities for CC C&D Debris	2.2.1	Tighten enforcement of contractor/commercial C&D abuse at CCs	Med	Med	●
Source Separate Add'l C&D Material at CCs	2.2.2	Examine space available at CCs & available recycling markets	Low	Med	●
Increase/Promote Multi-Family Complex (MFC) Recycling					
Start Serving Complexes in City/Towns	2.3.1	Identify candidate underserved MFCs; Conduct feasibility study	High	High	●
Incentivize Private Haulers Serving MFCs	2.3.2	Assess hauler recognition program; Assess MFC containers per 2.3.4	Low	Low	●
Target Student MFCs/University Collaboration	2.3.3	Initiate/enhance mechanism for dialogue with Universities	Low	Low	●

Key		
Symbol	Color	Description
●	Green	Recommended & Endorsed – Proceed with Implementation
●	Yellow	Recommended – Proceed with Further Evaluation & Analysis to Facilitate Future Implementation
●	Orange	Recommended but w/Reservations – Significant Additional Evaluation & Analysis Necessary before Proceeding w/Detailed Planning Efforts
●	Black	Identified as Neutral Action - Low Priority for Further Consideration

Study Summary

Measure	Section of Report	First/Next Step(s)	Potential Landfill Life Impact	Difficulty	Eval ²
Waste Diversion & Reduction					
Promote Commercial Recycling					
Audit/Perform Data Analysis of SWLF Loads	2.4.1	Interview LF scalehouse/operator staff to identify select commercial disposers	Med	Low	
Target Small Businesses	2.4.2	Perform assessment & study	Med	Med	
Collaborate with Stakeholders	2.4.3	Identify major generators & form inter-sector communication mechanism	Med	Low	
Business Waste Audits	2.4.4	Perform assessment & study; Walkthrough	Med	Med	
Pay-As-You-Throw (PAYT)					
Implement Pay-As-You-Throw	2.5.0	Identify method of accepting fee payment at collection centers	High	High	
Expand Organics Management					
Expand Food Waste Education	2.6.1	Increase E&O, marketing; Examine County govt/schools policy	Med	Med	
Find Post-Consumer Food Waste Partners	2.6.2	Partner w/food rescue agencies; Maintain list of major generators	Low	Low	
Expand Composting	2.6.3	Expand food scrap collection & backyard program; Maintain generator list	Med	Med	
Implement Anaerobic Digestion	2.6.4	Conduct study/needs assessment for siting facility on County property	High	High	

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Study Summary

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Waste Diversion & Reduction					
Additional Waste Reduction/Diversion Programs					
Lead by Example	2.7.1	Examine County govt & public school policy; Identify/form gurus/committees	Low	Low	●
Stimulate Reuse	2.7.2	Post providers on County website; Identify deconstruction/C&D reuse markets	Low	Low	●
Implement New Policy	2.7.3	Explore political will/legal ramifications	High ¹	Varies	●
Sponsor Additional Special Events	2.7.4	Sponsor/provide repair workshop venue; Continue to attend special events	Low	Med	●
Landfill Capacity Increase Measures					
Side Slope Angle Increase	3.1.0	Increase the final grade slopes from 4:1 to 3.5:1	Med	Low	●
MSE Berm	3.2.0	Build a mechanically stabilized earth berm	Med	Med	●
Temporary Overfilling	3.3.0	Fill above permitted intermediate grades	Low	Low	●
Lateral Expansion	3.4.0	Expand the footprint of the Landfill	High	High	●
Vertical Expansion	3.5.0	Lower the Landfill base grades	Med	Med	●
Increase Density	3.6.0	Work with contract operator to increase waste density	Med	High	●

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Next Steps

- **Never to early to start studying future waste disposal options**
 - Another landfill – unlikely in Wake County
 - Out of County transfer...
 - Waste to Energy
 - 10-15 years for planning, environmental review, design & construction
 - Want to have landfill space left for the ash!
 - Very expensive, especially with lower energy pricing!
 - Regional... work with Orange, Durham, Johnston, etc.?



Next Steps

- **Mattress recycling and waste composition study are at the top of the list for now**
- **Easy steps taken, harder choices exist...**
- **Input from GLUE Committee members regarding the study**
 - Move forward with green items?
 - More work on yellow?
 - Other ideas?



A faint, light blue map of Wake County, North Carolina, is centered in the upper half of the slide. The word "Questions" is written in white, bold, sans-serif font over the map.

Questions