



Mr. Jim Minor
Beaufort County
Department of Public Works
120 Shanklin Road
Beaufort, SC 29906

Sent by e-mail

Dear Mr. Minor:

Attached is the final report for Task Authorization #2, dated August 5, 2014, to the agreement between Beaufort County Council and A. Goldsmith Resources, LLC. This report describes the research, findings, and options associated with solid waste management generated on Daufuskie Island with comments from staff incorporated.

Please let me know if you need any additional information or would like to discuss further.

Sincerely,

Abby Goldsmith

Principal

A Goldsmith Resources LLC

1. Introduction

In August 2014, Beaufort County, South Carolina retained A Goldsmith Resources, LLC to conduct a high level evaluation of potential options for managing solid waste generated on Daufuskie Island. The island, with an estimated population of 400 permanent and 600 part-time residents (less than one percent of the County's population), plus many day and overnight visitors at certain times of the year, is only accessible by boat. Thus, all materials have to be brought onto the island by barge and all solid waste must leave the island the same way.

This evaluation was performed by reviewing data and information regarding current and proposed solid waste management services on the island including, but not limited to, historic tonnage and cost data, the 2011 *Solid Waste Integrated Services Study* prepared for the Daufuskie Island Conservancy by Joyce Engineering, and Beaufort County documents regarding plans for upgrading solid waste services on the island. In addition, County staff and island stakeholders listed in Table 1 were interviewed to gather their input on current and future solid waste management on Daufuskie Island on August 20 and 21, 2014. Site visits to existing island facilities and related sites were conducted on these days as well.

Table 1 **Participants in Interviews, August 20-21, 2014**

Name	Representing
Laura Winholdt	Daufuskie Island Conservancy
Karen Opderbeck	Daufuskie Island Conservancy
Paul Vogel	Daufuskie Island Conservancy
Mike Loftus	Bloody Point (homeowners association)
Patrick	Bloody Point (club/restaurant manager)
Jim Moreland	Haig Point (President and General Manager)
Bill Scott	Melrose Transfer Station (owner)
Laura Dugan	Melrose Resort (Manager)
Chris Hutton	Construction company (owner)
Lin Pagesnic	Melrose Homeowners Association
Jim Pelletino	Freeport restaurant/general store manager
Chuck Hunter	Daufuskie Island Council (co-chair)
Eddie Bellamy	Beaufort County (Public Works Director)
Jim Minor	Beaufort County (Solid Waste Manager)
Gregory Hutton	Beaufort County (Equipment Operator)

2. Overview of Current Solid Waste Management System

Currently, multiple providers, including the County, the governing bodies of the three Planned Unit Developments (PUDs), private waste management companies, and individual businesses collect and transfer municipal solid waste (MSW) and construction and demolition debris off of the island by barge to a disposal facility on the mainland. Residents of the PUDs either have their MSW collected at the curb and taken to a central location within the PUD or transport it to these central locations in the PUDs themselves. The commercial generators operating within the PUDs (i.e., restaurants, golf clubs, etc.) often use the same containers as the residents (typically dumpsters, sometimes compactors) at these centralized locations.

Residents in the historic district transport their MSW to the County drop-off site (Francis Jones) where several open top dumpsters are provided. The County pays a contractor approximately \$1,300 per pull (ten times more than from the County's other convenience centers) to transfer and barge these containers to the Hickory Hill landfill. This site, along with all convenience centers provided in the County, is open to all residents self-hauling their MSW. However, since the Francis Jones site is not staffed or fenced, some non-residential users are placing material in these containers as well. Businesses and contractors throughout the County, including on Daufuskie Island, are responsible for arranging for collection, barging, and disposal themselves.

In 2009, the County Council approved a contract to upgrade this drop-off site. However, due to legal wrangling over the Francis Jones site, the site upgrades were never completed.



Haig Point Collection Point



Melrose Transfer Station



County Drop-Off Containers at Francis Jones



Recycling at Haig Point

Currently, a minimal amount of recycling occurs on the island. There is a drop-off recycling center at Haig Point. A curbside recycling program also operates in Haig Point and recyclables are collected and delivered to the drop-off center where they are sorted by volunteers. Other materials, such as household hazardous waste, electronics and materials for reuse are also accepted at the drop-off center where they are sorted and placed into bins. The bins are transported by the Haig Point Ferry to Hilton Head where the town’s recycling trucks combine it with the materials they collect in their program.

3. Findings

The following key findings emerged from the research, site visits, and interviews.

3.1 MSW Management

- It is inefficient to have multiple collection locations and transfer/barge/disposal arrangements for managing the relatively small amount of MSW (estimated to be between 500 and 1,000 tons per year) generated on the island.
- In concept, most of the stakeholders interviewed supported the idea of consolidating MSW at one location and having a single contract to transfer/barge MSW to the mainland for disposal.
- Illegal dumping on the island typically takes one of two forms: 1) disposing of material on vacant land and 2) the use of dumpsters or compactors by unauthorized users. Some interviewees opined that if a convenient location for delivery of MSW or construction and demolition debris was more accessible on the island, even if it was provided for a fee, then illegal dumping would be significantly reduced.



Construction Debris and Commercial MSW in Residential MSW Containers at Haig Point and Francis Jones

3.2 Waste Reduction and Recycling

- Nearly all stakeholders interviewed expressed an interest in more recycling on the island. As with MSW, costs are likely to be lower if recovered materials from multiple sources are aggregated, barged, and delivered to market together.
- Given the costs associated with barging off the island, it may be cost-effective to invest in equipment that allows the processing and end use of certain materials, such as organics and untreated wood from construction sites, on the island.

3.3 Costs

- The County currently spends nearly five times per resident than the County average on solid waste management (an estimated \$142.67 per resident on Daufuskie compared to \$29.02 county-wide).
- The costs of a consolidated system must be fairly allocated among users. This will require that a mechanism in place to determine, or at least estimate, the amount of MSW from each source that is managed at a central location to be able to allocate costs equitably.
- Several stakeholders interviewed said that they would be willing to pay a higher rate for a consolidated solid waste management system that incorporates increased opportunities for recycling. Others, especially representatives of businesses operating on the island, stated that they would only be inclined to participate in a consolidated system if it cost the same or less than the current system.

4. Goals for Solid Waste Management System on Daufuskie Island

Future solid waste management on Daufuskie Island should focus on five goals.

1. Reduce the number of locations on the island where MSW is collected and stored to reduce net costs of solid waste management and minimize environmental impact of multiple collection sites.
2. Consolidate arrangements for transferring MSW from centralized locations off the island to disposal to reduce net costs.
3. Divert MSW requiring disposal through source reduction, reuse, and recycling. For the most benefit, where feasible, maximize the reuse and recycling of recovered materials on the island.
4. Reduce illegal dumping, including unauthorized use of dumpsters and compactors by those that do not pay for them.

5. Reduce the cost to all entities of managing MSW generated on the island. Reduce the County's average cost expended per island resident to be closer to the average amount expended per resident throughout the county.

It may be difficult to achieve all of these goals for several reasons. First of all, it will require collaboration among many different parties that now manage solid waste independently to consolidate collection locations and contracts for transfer, barge, and disposal of MSW. Secondly, it is not clear who will manage consolidated sites and contracts on the island. A new or existing entity may need to be charged with this authority. Lastly, some of the five goals listed above may conflict with one another. For example, in some cases, a consolidated system may cost some users more than their current solid waste management arrangements. In spite of these challenges, options for a future solid waste management system for Daufuskie Island should be measured against their potential to achieve each of these goals.

5. Approach to a Consolidated System

A consolidated option would entail a central location where participating generators would bring their MSW. This site could offer all generators, including those generating residential and commercial MSW and those generating construction and demolition debris a convenient location to bring the waste they generate. Once this location is established, illegal dumping ordinances should be strictly enforced and violators should be identified and fined.

A central location where MSW could be delivered should be fenced and staffed and only accessible to participating (and paying) generators. All MSW would be placed in compactors and the entity overseeing the consolidated site would contract for the transfer, barging and disposal of compacted MSW (or do so through its own forces). Generators that choose not to bring their MSW to the central location (for example, businesses that choose to have their own compactor or roll-off container on site) could be offered the option to participate in an island-wide contract for transferring, barging, and disposing of MSW hauled from their location. If they chose not to participate in an island-wide system, the generator would have to demonstrate they have an alternative option to legally dispose of MSW. Details regarding elements of the how such a consolidated system may work are described below.

5.1 Participants

Ideally all MSW generated on the island would be barged off the island and transferred to disposal under a single contract. One consolidated contract should cost less overall than the current system of each generator making their own arrangements. However, some businesses or PUDs may only want to participate in a consolidated system if the cost to do so is less than their current arrangements. Absent an island-wide requirement for participation in a single system, for which support does not currently appear to exist, the entity leading this effort will need to garner commitments from generators regarding participation in a consolidated system and then solicit bids or proposals for the service level (number of containers, number of pulls per site, tons, etc.).

5.2 Location

The three possible options proposed for a centralized location to consolidate MSW are Francis Jones (the current County drop-off site), the site of the current Melrose transfer station, and the current Haig Point transfer station. Although no detailed analysis has been done to determine if these sites are feasible from

an engineering or legal perspective, Table 2 lists the advantages and disadvantages of each of these sites as identified in stakeholder interviews and site visits.

Table 2 Pros and Cons of Potential Sites for Centralized Collection

Site	Pros	Cons	Other
Francis Jones	Already owned by County Already used as a convenience center site for residents	Requires fencing and other upgrades to discourage unauthorized use	County would want to retain ownership but could lease to public or private operator
Haig Point		Space limited and expansion potential unknown Would need new access that does not pass through residential area Homeowners would have to approve use of site for non-residents Anticipated costs unknown	
Melrose	Viewed as central location to many stakeholders Some transfer equipment already operating on site	Cost to purchase or lease site unknown Access road reportedly owned by Melrose homeowners so would need approval to use Only 2.4 acres likely to be available which may limit functions on site	According to stakeholders from Melrose interviewed, the site is likely to be acceptable to residents if trucks do not pass through residential area, the facility is staffed, fenced and well-maintained

5.3 Oversight

The most important question to address in implementing a consolidated solid waste management system for MSW generated on the island is who will oversee it. Who will own and operate a consolidated site and procure and manage contracts with service providers?

Typically, the role of the County in solid waste management has been to operate convenience centers for residential MSW and recyclables and to contract for disposal of residential MSW and processing of residential recyclables. The County currently plays no role for managing commercially generated MSW or construction and demolition debris for the rest of the County. Thus, it may necessary for an island organization, either existing or created for this purpose, to oversee a consolidated solid waste management system, including operating a centralized site and offering, through its own forces or those of a contractor, transfer, barge, and haul services.

5.4 Allocation of Costs

The entity overseeing the consolidated solid waste management system would need to collect fees from each generator based on the proportion of MSW they deliver (or have collected at their site). If the County owned and operated the site and contracted for services, it would charge each non-residential customer

delivering MSW their share of the cost. If operated by another entity, the County could pay its share based on the weight of MSW delivered by residents (some transfer stations have small, relatively inexpensive scales to weigh bags of MSW self-hauled by residents) or the County could pay based on the average cost per resident of solid waste management in the County (\$29.02 per resident in FY2013) or based on the historic cost of managing residential MSW delivered to the Francis Jones site.

5.5 Waste Reduction and Recycling

Given the limited availability of end users for most recyclable materials on the island, most recovered materials will need to be delivered to markets off the island for processing and end use. The entity overseeing an island-wide recycling program could work through the County’s contract for processing recyclables, investigate the possibility of marketing materials through the avenues currently used by the Haig Point recycling program, or could solicit bids or proposals for source separated or single stream materials. As with contracts to transfer and barge MSW, generators of recyclables would need to indicate whether they wanted their material included in the consolidated recycling contract since the amount of material is likely to influence the bids and proposals received.

Since the costs to barge recyclables off of the island will likely cost the same as barging MSW off the island, processing and using some materials on the island may be more feasible than in most places. Some potential materials, processing needs, and end uses for on-island “closed loop” recycling are listed in Table 3.

Table 3 Potential Use for Recovered Materials on Daufuskie Island

	Processing Equipment	Potential On-Island End Use
Wood (land clearing, construction, etc.) ¹	Tub or horizontal grinder (stationary or mobile)	Mulch
Other C&D (aggregate, shingles)	Grinder (shingles) Crusher (aggregate)	Road beds, fill, and other construction applications
Yard trimmings and food scraps – open windrows	Turning equipment (open piles/windrows cost less than in-vessel but requires more property; odor and vectors need to be actively managed, especially if food scraps are included)	Compost Soil amendment
Yard trimmings and food scraps – in-vessel	Grinder, in-vessel composter (requires less space and site development than open windrows; minimizes odor and other environmental impacts, more expensive)	Compost Soil amendment
Glass	Glass crusher	Solid Waste Integrated Services Study (December 2011) lists multiple construction and other uses for processed glass on the island

1. Several stakeholders interviewed indicated their intention to purchase a wood grinder to process land clearing debris and untreated construction and demolition wood and to use wood chips and mulch on site. Perhaps it would be possible to invest in a single, larger grinder for processing all diverted, untreated wood on the island which could then be used on site or given away or sold as mulch.

Once markets are secured, recyclables could be collected at a central location, ideally, the same place where generators deliver MSW. The generators would each need to pay their share of the cost to transfer, barge, and market the materials. Once the collection locations are available, an island-wide education program can encourage residents, businesses, and contractors to participate in source reduction, reuse, and recycling programs available with an emphasis on why, what, where, and how to recycle. The State of South Carolina has extensive resources for this purpose that can be tailored to the specific details of Daufuskie Island.

6. Role of the County

The County could participate in a consolidated solid waste management system for Daufuskie Island in several ways. The County will need to evaluate the legality, cost, and consistency with its role in other areas of the County before pursuing one of more of these options.

- Upgrade Francis Jones to continue to accept residential MSW and recyclables only (fence, limit hours, provide staff, compactors, cameras, and recycling containers). This facility would continue to be available to all residents on the island and the County would continue to arrange for transfer, haul, and disposal of the MSW and recyclables delivered here.
- Upgrade Francis Jones or develop another site (i.e., the Melrose property if the cost to purchase or lease is competitive) to accept MSW from all generators on the island, charging non-residential customers accordingly based on the amount they deliver (installation of truck scales is likely to be cost prohibitive and so allocation of costs will have to be done on a per volume basis). This would be a unique role for the County that does not currently provide collection services for non-residential MSW anywhere else in the County.
- Contract with a private (or non-profit) operator of a consolidated site that handles all MSW on the island to accept the self-hauled residential MSW delivered. Require operator to document the amount delivered (small scales that weigh individual bags brought by individual residents may be feasible) and charge the County accordingly or agree on a flat rate based on average pounds generated per household.
- Provide assistance to establish waste reduction and recycling capabilities at all sites where MSW is collected, either county-operated (if the County continues to operate the drop-off center) or through contracted operator. These sites should aggregate materials that need to be transported off the island to the County's processor or individual markets and those materials that require processing for use on-island.
- Regardless of who owns and operates a consolidated site for MSW and recyclables, the County should retain a site on the island that can be used in case a private operator defaults or for storage and processing of debris in case of a storm or other disaster.

Table 4 summarizes the pros, cons, and relative costs of the potential roles the County could play in managing MSW on Daufuskie Island.

Table 4 Pros, Cons, and Relative Costs of Potential County Roles

Potential Role of County	Pros	Cons	Relative Cost to County
Upgrade Francis Jones to accept residential MSW and recyclables only and enforce penalties for unauthorized use	Comparable to level of service provided elsewhere in County If properly upgraded and alternatives offered and enforced, could reduce unauthorized use and cost to barge and dispose of MSW collected at County site	Does not provide a consolidated solution Previous opposition to use of Francis Jones site by some island residents	Medium
Upgrade Francis Jones or purchase/lease another site to accept all MSW and recyclables (allow other generators with dumpsters/compactors to access County transfer/barge/haul contract and pay associated cost)	Offers consolidated solution May lower net costs of management MSW on island May reduce illegal disposal	Not a role County typically plays in solid waste management County would need fair method to allocate costs and collect fees Previous opposition to use of Francis Jones site by some residents and anticipated cost to purchase/lease other site high	High
Contract with private site operator on island to accept residential MSW	Can provide level of service provided throughout County to island residents that use convenience center Has the potential to provided consolidated solution	Less control over costs and how self-hauled residential MSW is Does not necessarily provide consolidated solution	Medium
Provide waste reduction and recycling assistance	Offers consistency in waste reduction and recycling Potential opportunity to access better markets Potential access to grants for collection/processing equipment	If non-residential users access County processor, could increase costs (or require allocation of costs)	Low
Maintain site for emergency use	Provides collection location in case of default by private contractors Offers locations for collection and processing of unanticipated material	Some cost/responsibility to maintain site	Low

7. Conclusions

Given the geographic size and population on Daufuskie Island and the amount of solid waste generated, it would be most efficient to consolidate all solid waste at a single location on the island, compact it, and barge it to the mainland for disposal under a single arrangement. Each generator (e.g., individual residents, PUDs, businesses) would deliver solid waste to this location under the arrangement of their choice (i.e., residential self-haul, compactor, roll-off container, front-end loading containers) and pay for the consolidated services (e.g., site management, container rental, compacting, barging, disposal, etc.) accordingly.

The amount of solid waste disposed could be significantly reduced through source reduction, reuse, and recycling. As many recyclable materials as possible should be processed and reused on the island (even if this requires some investment in processing equipment) and the remainder could also be consolidated and barged off the island to a processor or end market under a joint agreement.

Although consolidating solid waste and recyclables from across the island is likely to make the most sense from a practical standpoint, it requires consensus of stakeholders on some challenging questions. These include:

- Who would manage a consolidated system? Who would own and manage the site? Who would enter into the necessary agreements for container rental, barging solid waste and recyclables, disposal of solid waste, and processing and end use of recyclables?
- Where would the consolidated site be located?
- How would the costs of a consolidated operation be equitably allocated?

Key stakeholders, including the County, Daufuskie Island Council, the PUDs, and island businesses, would need to resolve these questions before implementing a consolidated solution that would potentially reduce net costs, reduce the environmental impact of collecting solid waste at multiple locations on the island, and minimize illegal disposal.