Town Administrator Report
March 25, 2014

The following is a summary of the major activities of the Office of the Town Administrator for the previous week.

1. **Finance Committee and Town Meeting Issues** – On Thursday, March 20 I met with the Finance Committee to review the latest changes to the Town Meeting Warrant, including the funding Article for ACE-MV, which they have voted to recommend with a transfer of funds from Free Cash. They also reviewed the attached breakdown of the Police contract settlement line item impact, and have voted to recommend at Town Meeting that the sum of $15,767.84 be moved from the Selectmen's Unclassified Account to the Police Salary Account to fund the settlement. At the meeting we also discussed ideas for recommendations to improve the regional school financing formula, and approved correspondence to recommend using a three-year average of enrollment to help avoid the major fluctuation we witnessed this year.
   The Town Meeting warrant has been fully posted and we are readying for Town Meeting on April 8.

2. **North Bluff Update** – The design firm, CLE Engineering, has partnered with Contemporary Landscapes, a landscape design firm, to work out the landscaping features associated with the Boardwalk Project for North Bluff. This will include lighting, planting fencing, signage and other aesthetic features of the project. This will represent the details of the project with which we will interact as users of the boardwalk, so it's a very important part of the overall project. We are working with the Conservation Commission to schedule a review session of their proposed design for Tuesday, April 1in Town Hall in the early afternoon. I would like to invite the participation of the Board of Selectmen in reviewing and providing input for the proposed design to ensure the best project possible. In addition to the general landscaping around the project, it is exciting to note that the design of the seawall will enable the Town to substantially expand the park area surrounding the Brick and Clay Bathroom by approximately 20' by 40' over the water to serve as more substantial gathering space. The design of this new park area will be a critical part of the project.

3. **Solid Waste Transportation Feasibility Study**-As a follow up to our recent meeting with Ralph Packer regarding solid waste transportation issues, I have received the attached Feasibility Report for the establishment of containerized transportation of solid waste between New Bedford and Martha's Vineyard. This study provides an excellent summary of some of the major logistical and equipment requirements for the establishment of barge transport between the Island and New Bedford. Unfortunately it does appear that the high cost of the equipment required makes it currently uneconomic on a cost per ton basis to barge the solid waste from Oak Bluffs and Tisbury. However the study points to the possibility of processing solid waste on-Island by compaction and bailing to create a product which could more efficiently be stored and transported in a

way that would be more economical. An additional feasibility study will be required to cost out and plan for the transport of baled solid waste, which could work in conjunction with other efforts such as source-separation recycling and/or solid waste composting to reduce the overall tonnage to be transported because the compacted and baled solid waste could be stored longer before being transported.

4. **Streetscape Design Project** – Proposals are in for the Streetscape design project, and we have three qualified firms submitting proposals. Our next major steps are to interview and select a planning and design firm and to put into place a steering committee to guide the study and design. This is a very important project for the Town for two major reasons. The first is that the study will develop the basis of a grant application to the State to fund an update of the public infrastructure on Circuit Ave as well as potential funds for façade improvements. The second is that we hope to use the study to jump start the master planning effort by developing goals and recommendations for the downtown that may be folded into the broader plan. For this reason, I have discussed the study with members of the Planning Board and I would recommend that the Town use the Planning Board to help facilitate and manage the study, as well as evaluate its products. Planning Board members will not be able to attend the Selectmen's meeting of March 25 due to an Island-wide planning meeting, but our planning Board is willing and able to help manage the study for ways that it can assist in their planning efforts. Two of their members are willing to serve on the screening and steering teams to help bring back information to the full Planning Board. As we have discussed, I also recommend including other stakeholders such as the Selectmen, OBA and property owners to help steer the study. In this way we can get the most value out of our efforts.

5. **Transfer Station Update** –Since the fire occurred at the transfer station, our chief responsibility was to get operations back up and running, which has been accomplished. The Fire Department has completed their investigation of the fire which started in a load of demolition debris. We have been working closely with our insurance company in filing the appropriate claims, and we have met with the insurance adjuster to tour the facility. The Highway Department has received a written estimate for the repair of the building, which has been forwarded to the insurance company for their review. We hope to have a decision on the insurance claim shortly.

6. **Annual Independent Audit** – The Town's independent audit for the period ending June 30, 2013 has been completed and Accountant is in receipt of the draft copy of the financial statements and the management letter which he is currently reviewing for accuracy. We hope to have reports within the month for distribution to the Board.

OAK BLUFFS
FINANCE & ADVISORY COMMITTEE

3/18/14

There will be a Finance and Advisory Committee meeting on Thursday, 3/20/14, in the upstairs meeting room of the Library, at **4:30 pm.**

Agenda (Adjust as needed)

4:30- Discussion and approval of 2/6, 2/13, 2/20, 2/27 and 3/6 minutes and 2/20 public hearing.
5:00- What do we do next with our school funding idea?
5:15- Approval of transfer of a portion of budget line item 1199/5700 to Police budget.
5:30- Discussion and vote on Selectmen-submitted article on ACE-MV.
6:00- Town Administrator's report.
6:15- Members voices heard.
6:45- Adjournment.

Steve Auerbach

1210	Police Department	FY15 Recommended	FY15 Actual	Difference	Comments
51101	Administrative Salaries	46,353.60	46,353.60	0.00	Level Funded Under Negotiations
51140	Longevity Pay	5,500.00	5,500.00	0.00	Per Contracts/Personnel Bi-Laws
51210	Police Chief's Salary	115,922.07	115,922.07	0.00	Level Funded Under Negotiations
51211	Lieutenant Salary	98,678.88	100,182.24	1503.36	21% above top patrol base pay
51212	Patrolman's Salaries	796,675.00	794,223.00	2452.00	Per Contract in effective 07/01/2014
51213	Summer	125,000.00	125,000.00	0.00	
51214	Patrol Sergeant	187,544.16	190,425.60	2881.44	15% above top patrol base pay
51215	Executive Assistant	53,097.84	53,097.84	0.00	Level Funded Under Negotiations
51217	Quinn Bill Encumberance	179,978.00	191,313.29	11335.29	Includes New Educational Incentive
51292	Animal Ctrl Officer Salary	42,261.12	43,528.95	1267.83	Includes monies for call outs after hours
51293	Asst Animal Ctrl Officer	0.00	0.00	0.00	
51294	Animal Ctrl Other Charges	0.00	0.00	0.00	
5186	Detective Salary	81,557.28	82,789.20	1231.92	Per Contract in effective 07/01/2014
5189	Additional Salary Expense	0.00		0.00	
5190	Additional Salary Expense	181,903.00	181,903.00	0.00	
	Total Salary	1,914,470.95	1,930,238.79	15767.84	

OB Letterhead

DRAFT – 3/24/14 3rd revision

March 25, 2014

James H. Weiss, Ed.D.
Martha's Vineyard
Superintendent of Schools
4 Pine Street
Vineyard Haven, MA 02568

Re: Proposal for Amendment of the MVRHS Regional Town Agreement by Calculating Student Population using the Average of the Preceding 3 Years of Enrollment Census

Dear Dr. Weiss,

This letter serves as a formal proposal passed by the Oak Bluffs Finance and Advisory Committee at their February 13, 2014 meeting. The proposal subsequently received approval from the Oak Bluffs Board of Selectmen at their meeting on March 25, 2014.

The proposal is to amend the High School Regional District Agreement to provide a smoother transition in town assessments by using an average of the student population during the preceding 3 years. Currently, the assessments are based on a one year snapshot as of October 1 of the preceding year. The enrollment census, however, can fluctuate widely from year to year as illustrated on the attached spreadsheet.

It had a major impact on the Oak Bluffs FY15 budget. There was a net increase of 22 students in the high school enrollment census for FY15. This was combined with a net decrease of 17 students for Edgartown and 17 students for West Tisbury, increasing the Oak Bluffs assessment to almost 30% of the high school FY15 budget. Oak Bluffs is the loser this year, but any of the other Island towns could similarly wind up paying much more from one year to the next if the change in student population continues to be based on a single year's projection.

The proposal is to smooth out the assessment by taking an average of the student population over the previous 3 years. This would help reduce both the up and down fluctuations in Town assessments and provide a less severe transition from one budget year to the next. It turns out that this idea is not original and other Regional School Districts in Massachusetts do use a 3 year look back average.

We thank you for your consideration.

Respectfully,

Walter Vail
Chairman, Oak Bluffs
Board of Selectman

Steve Auerbach
Chairman, Oak Bluffs
Finance and Advisory Committee

Feasibility of Establishing a Port-to-Port Containerized Transportation Service between New Bedford and Martha's Vineyard

Prepared by: HDR Engineering, Inc.

1.0 Introduction

HDR Engineering, Inc. (HDR), under contract to the Town of Tisbury and Oak Bluffs, was asked to evaluate the feasibility of establishing Port-to-Port Containerized Freight Services between Martha's Vineyard, Massachusetts and New Bedford, Massachusetts. The scope of the evaluation was to focus specifically on the potential for establishing this port-to-port freight transportation system as it relates to transporting municipal solid waste (MSW) and construction & demolition debris (C&D) generated by the towns of Tisbury and Oak Bluffs. The study scope included an assessment of the feasibility of both rail and truck service from New Bedford to disposal facilities.

2.0 Methodology

In order to evaluate the feasibility of this system, HDR conducted numerous site visits and interviews as well as conducted research of various elements. Below is a summary of HDR's activities:

Site Visits

HDR conducted site visits of the following facilities/locations:

- Tisbury Transfer Station
- Steamship Authority's (SSA) Vineyard Haven Pier
- SSA's Oak Bluffs Pier
- Packer Terminal (Vineyard Haven, MA)
- Packer Terminal (New Bedford, MA)
- New Bedford Harbor Development Commission's State Pier (inclusive of rail infrastructure in the surrounding area)
- Covanta's SEMASS Energy-from-Waste Facility
- ABC Waste Disposal Facility in New Bedford
- Bourne Landfill
- Yarmouth Transfer Station
- Roadway between Tisbury Transfer Station and SSA Pier at Vineyard Haven as well as the roadway between Tisbury Transfer Station and SSA Pier at Oak Bluffs

Interviews

HDR conducted interviews with the following people:

- Greg Carroll, CEO of Bruno's Inc.
- Ralph Packer, Owner of RM Packer Co.
- Mike Camara, President of ABC Waste Disposal (New Bedford)

- Tom Cipolla and Richard O'Connor of Covanta
- Robert Angell, Superintendent for the Town of Yarmouth
- Raymond Jack, Public Works Director for the Town of Falmouth
- Dan Wahle of Mass Coastal Railroad
- Dan Barrett, Bourne ISWM Dept.
- Kristen Decas and Ed Anthes-Washburn of New Bedford Harbor Development Commission
- Joe Dugary, Northeast Representative for MSW & C&D, CSX
- Representatives from the following barge towing companies
    - Island Barge, Inc
    - Mitchell Towing & Salvage
    - Tucker-Roy Marine Towing
- Richard Harris, Sales Representative for Sierra International (Baling Company)Representatives from the following landfills / transfer stations:
    - Crapo Hill Landfill (New Bedford, MA)
    - Johnston Landfill
    - Transload America Pond View (Rhode Island)
    - EnviroSolutions (Kentucky)
    - Apex Landfill (Ohio)
    - Champion City Recovery Transfer Station (Brockton, MA)
    - Trojan Demo Transfer Station (Brockton, MA)
    - Town of Wellesley Recycling Facility (MA)

Data

HDR purchased the following database:

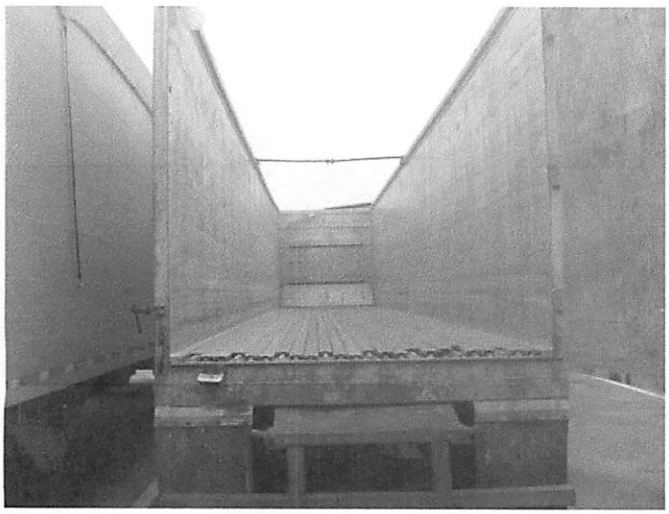
- Waste Business Journal Inc's Database of Disposal Facilities (inclusive of available capacity, type of waste received, transportation access, average tip fees, and average amount of waste received in 2010)

3.0 Background

Current System for Handling MSW and C&D

Currently, the towns of Tisbury and Oak Bluffs have a contract with Bruno's Inc. to operate the Tisbury Transfer Station as well as transport and dispose of all the MSW, C&D and recyclables received at the Transfer Station. The Tisbury Transfer Station has three doors, consisting of one door for MSW and "clean" C&D, one door for "contaminated" C&D and one door for recyclables. The "clean" C&D includes some C&D items, such as sheetrock that can be mixed with the MSW after being compaction via a front-end loader. The MSW and C&D are then transferred to open-top "walking floor" trailers such as the one shown in figure 1 below.

Figure 1: Bruno's Open-top Trailer Truck



Bruno's uses seven (7) of these trailers, which are dedicated to transporting waste received at the Tisbury Transfer Station. These trailers cost approximately $60,000 each and transport approximately 28 tons of either MSW or C&D per load. From the Tisbury Transfer Station, Bruno's transports the trailers onto the SSA freight boat on a daily basis. Typically, the trucks are scheduled to depart out of SSA's Vineyard Haven Pier on the first freight ferry in the morning. Each truck is accompanied by one driver, who then delivers the waste to:

- If MSW, the truck travels to Covanta's SEMASS facility in Rochester, MA
- If C&D, the truck travels to Transload America's Pond View facility in East Providence, RI

After disposing of the MSW or C&D, the driver then travels back to Woods Hole to get transported back to Vineyard Haven on either a late morning or early afternoon freight ferry. According to Greg Carroll, approximately 60% of these empty trailers pick up a commodity to be back-hauled to Martha's Vineyard. Typical back-haul commodities include sand, gravel or landscape materials such as mulch. As far as HDR was able to determine, the Town of Tisbury does not currently receive any benefit from this back-haul.

Based on our interviews as well as the assumptions described below, HDR has calculated the costs for transporting these trailers on the SSA freight ferry as follows:

- The SSA tariff for trucks transporting MSW and C&D one-way is $246.50 for trucks with a length between 60' and 65'
- The SSA charge for each driver (one-way) is $15.00

- Each truck trip requires one day's labor for the driver. Per the Massachusetts 2011 prevailing wage for a truck driver, we have assumed a minimum wage of $39.71 per hour. At 8 hours per day, this equates to $317.68 per trip
- According to Greg Carroll, the capital cost of the walking floor trailer is approximately $60,000. Assuming a 7% interest rate and 10 year useful life, the amortized cost per trip is estimated to be $23.22.
- The capital cost for the tractors required to transport the trailers is estimated to be approximately $150,000. Assuming a 7% interest rate and 10 year useful life, the amortized cost per trip is estimated to be $58.05.
- The one-way distance from the SSA Terminal at 1 Cowdry Road, Woods Hole, MA to the SEMASS facility at 141 Cranberry Highway, West Wareham, MA is approximately 31 miles. The one-way distance from the SSA Terminal at 1 Cowdry Road, Woods Hole, MA to the Transload America Disposal Facility located at 1 Dexter Road in East Providence, RI is approximately 70 miles. The average one-way transit distance is therefore approximately 50.5 miles, with the average round-trip distance being approximately 101 miles. Assuming that each truck travels approximately 7 miles per gallon of fuel, and an estimated fuel price of $4.20 per gallon, the fuel cost per trip would be $60.60
- The annual insurance, licensing and taxes per truck are estimated to be approximately $5,000, which equates to $13.69 per day or per trip
- The annual maintenance is assumed to be approximately 25 cents per mile. At an average of 101 miles per trip, this is estimated to be $25.25

Table 1: Estimated Costs per Trip for Current Transport of Waste

Component	Estimated Cost per Trip
SSA Tariff	$493.00
SSA Charge (Driver)	$15.00
Labor	$317.68
Trailer (Amortized)	$23.22
Tractor (Amortized)	$58.05
Fuel	$60.60
Insurance, licensing, taxes	$13.69
Truck maintenance	$25.25
Total Estimated Cost per Trip	$1,006.49
Estimated Cost per Ton (Assuming 28 tons per truck)	$35.95

Annual Waste Data

As part of the evaluation for the feasibility of developing a containerized freight service for MSW and C&D from Martha's Vineyard, it is important to analyze the volume of waste that is generated. The following table provides a summary of the amount of waste that was received by the Tisbury Transfer Station in 2010.

Table 2: Monthly Waste Quantities at Tisbury Transfer Station, 2010 (Tons)

Month	MSW	C&D	Recycle	Cardboard	Metal	Newspaper	Sheetrock
January	381	341	43	5	9	9	0
February	362	319	31	4	6	0	3
March	478	474	49	6	12	8	
April	495	634	45	10	21	17	
May	681	576	54	11	11	8	
June	941	555	87	13	14	10	
July	1,216	441	107	28	10	1	
Aug	1,344	366	140	26	26	9	
Sept	855	538	97	10	9	9	
Oct	681	507	55	6	12	12	
Nov	543	416	50	5	6	18	
Dec	457	457	31	15	9	0	
Annual	**8,434**	**5,624**	**788**	**140**	**143**	**101**	**4**

Total MSW and C&D: 14,058 tons

The table below summarizes the daily tonnage for each month in 2010 for both MSW and C&D (recyclables was not part of the scope of this study). As expected, there is significant seasonal variability in the waste volumes, particularly with the MSW portion of the waste stream. In August, for example, the Tisbury Transfer Station generates approximately 2.4 containers of MSW and 1.7 containers of C&D per day, for a total of over 4 containers per day. As noted in the table below, we have assumed 18 tons per container, which is an average (non-compacted) payload for typical containers used in rail transport, with dimensions of 20' long, 12' high and 8.5' wide.

Table 3: Tons and Containers Per Day, Tisbury Transfer Station - 2010

	Tons per Day		Containers per day [1]	
Month	**MSW**	**C&D**	**MSW**	**C&D**
January	12	11	0.7	0.6
February	13	11	0.7	0.6
March	15	15	0.9	0.8
April	17	21	0.9	1.2
May	22	19	1.2	1.0
June	31	19	1.7	1.0
July	39	14	2.2	0.8
Aug	43	12	2.4	0.7
Sept	29	18	1.6	1.0
Oct	22	16	1.2	0.9
Nov	18	14	1.0	0.8
Dec	15	15	0.8	0.8
Average	**23**	**15**	**1.3**	**0.9**
Maximum	**43**	**21**	**2.4**	**1.2**
Minimum	**12**	**11**	**0.7**	**0.6**

Table Notes:

1. Assumes 18 tons per container

4.0 Findings

4.1 Waste Transport/Storage Background

A key element to this assessment is the type of container that the waste is transported in. Below are the primary options considered in this Study:

- Top-loaded sealed containers (required lidding / de-lidding capabilities). Containers can be either an integrated wheeled container or a container on a chassis
- Open-top trailers with walking floors
- Open-top trailers with tip chassis
- Plastic-wrapped bales (typically transported on flatbed trailers or in gondolas with lids)
- Open-top gondola railcars (at a transfer station)

Because of the potential need to store waste over several days in order to make barge transport economically feasible, it will be important to understand the requirements or potential limitations on the number of days that MSW can be stored at the Transfer Station. The Tisbury Transfer Station is regulated by the local Board of Health, due to the fact that the average throughput is less than 50 tons per day annually. Therefore, it will be important to coordinate with the Board of Health to determine the requirements for storing MSW at the Transfer Station. We assume, however, that in order for MSW to be stored at the Transfer Station for more than 1-2 days, it will need to be stored in sealed containers or plastic-wrapped bales, in order to reduce potential odor issues.

4.2 Evaluation of Port Facilities

In order to evaluate the port facilities, it is important that one first considers the types of containers that the waste would be transported in. There are several types of container systems utilized for the handling of waste, as described above. These include closed and sealed containers or open top containers. Sealed containers can be handled either on a wheeled bases or a lift basis. For wheeled operations, the container has either an integrated wheel system or removable chassis. This system allows it to be wheeled onto a vessel and is called "RO-RO", or roll on-roll off, and generally assumes that the wheeled container is disconnected from the motive power (truck or tractor) once loaded and then unloaded by motive power at the destination point. The second type of wheeled system involves an integrated chassis where the container and wheel mechanism cannot be disconnected from each other. For the other type of handling, known as "LO-LO" or lift on-lift off, the container is separate from the chassis and is loaded and discharged from a vessel with a crane system. It should be noted however that the container is generally delivered to or taken from the crane by mounting it on a chassis so a portion of the operation is wheeled.

Figure2: One Example of Waste Containers

Packer's Terminal in Vineyard Haven, MA and New Bedford, MA

At the Packer Terminal in Vineyard Haven, there are connecting ramps that provide adequate range of motion to accommodate container loading and unloading within the 18" to 2 foot tide range in Vineyard Haven and 4 foot tidal range in New Bedford. The Packer Terminals in Vineyard Haven and New Bedford both have RO-RO capabilities and are in-use currently for RO-RO service. There is sufficient room at the approximately 2 acre parcel in New Bedford to store containers on chassis or on integrated trailers

awaiting transport. At Packer's Terminal in Vineyard Haven, there is limited space for storage of containers/trailers, so these units would need to be stored at the Tisbury Transfer Station and moved when ready for loading.

For this report, we have assumed that if Packer's Terminal was to be used to transport MSW or C&D, Tisbury Towing & Transport would prefer that their tugs be used to transport/handle the barges and their personnel to conduct the loading and unloading operations, rather than leasing the terminal(s) and allowing other entities to provide the transportation and loading/unloading services.

Standard truck-transported waste containers can be loaded and unloaded from barges over RO-RO ramps by using standard trucks with pick up and drop off trailer mechanisms. The trailers are equipped with slides and lifts where the waste container is loaded onto the slide with a drag wire. The trailer is lifted to receive the container and the container is winched aboard the trailer. To unload the trailer, it is lifted and the container is slid off the trailer. The container is equipped with rollers which allow the container to slide and be positioned where loaded or unloaded. To handle these units on the barge, the truck with the container is backed onto the barge and the trailer lifted allowing the container to slide onto the deck of the barge. Once disconnected, the truck drives off the barge and a fork lift can be used on the barge to position the container. Containers can be equipped with rollers on the bottom, and the container can be positioned easily on the steel deck of the barge. Containers not equipped with rollers can also be handled easily because the truck positions the container when it is unloaded. The reverse process is followed when unloading the barge. No special equipment besides the specially equipped truck is required. These trucks and trailers are used widely in waste transportation. No modifications are required to most RO-RO ramps (including the ones assessed in this report).

Figure3: Standard RO-RO Truck

Figure 4: Packer Terminal's (Vineyard Haven) RO-RO Ramp

New Bedford State Pier

The State Pier Terminal at New Bedford has three berths measuring 450 feet, 600 feet and 775 feet with 30 foot depth alongside. There is 125,000 square feet of covered storage for general cargo. Cargo service out of state pier includes the movement of break-bulk cargo to Cape Verde and Angola. The facility can support freighter service and store over 135 containers. American Cruise Lines operates out of the facility bringing in a minimum of 20 ports of call on an annual basis and up to 89 passengers per trip. Ferry services also operate out of State Pier, including passenger and cargo service to Cuttyhunk Island and passenger service to Martha's Vineyard. Ferry service brings over 115,000 passengers through the Port annually. The Quick Start Ferry facility on New Bedford State Pier allows intermodal transfers of waterborne freight and freight carried by truck and rail. The terminal features a 27-foot pier depth, roll on-roll off capability, offsite cold storage, and easy access to the interstate highway system. The ramp is 100 feet long and 18 feet wide and will hold up to 200 tons. The pier could be used for both RO-RO or LO-LO operations.

The New Bedford State Pier is an adequate facility for handling of containerized waste from Vineyard Haven but would require additional cargo handling equipment. The containers would need to be handled by equipment such as a forklift, RO-RO trucks or trailer chassis for moving and cranes for loading and unloading on barges. Since this equipment could be utilized for other operations at the port, the City of New Bedford may be willing to participate with cost-sharing for this equipment purchasing/leasing. We have determined that only RO-RO operations, not LO-LO operations, are

economically feasible at New Bedford State Pier at this time. This is due to the fact that the port of New Bedford does not currently have a crane capable of handling containers. In order to lift containers on and off the barge, a mobile harbor gantry crane or a construction crane would need to be added to the facility; the picture below shows a mobile harbor crane.

Figure 5: Mobile Harbor Crane

The capital costs for purchasing a mobile harbor crane is estimated to be approximately $3 million. Another option for LO-LO operations would be the use of a construction crane. In order to handle the containers, a 30-ton capacity construction crane would be required. The estimated capital cost of such a crane is estimated to be approximately $2 million. This is exclusive of pier modifications; in order to assess any pier modifications that would be required to handle a crane, a structural engineering assessment would have to be conducted. The primary issue with the New Bedford State Pier is the condition of the pier and the level of congestion at the berths. In regard to marine operations alone, requirements would include a designated berth at the pier. In addition to either the construction crane or mobile harbor crane, the system would also require a spreader (pictured below), which costs approximately $500,000. Due the relatively low quantity of containers that would be generated from Martha's Vineyard waste stream, the use of a mobile harbor crane to handle only waste containers would not be financially feasible without other types of cargo activities in place to offset the capital investment costs.

Figure 6: Spreader

Estimated Operations Cost at New Bedford

In addition to the capital costs estimated above, the following required personnel and estimated hurly rates would be necessary for LO-LO operations at New Bedford State Pier:

1.	Supervisor	$ 65 p/h
2.	Crane Operator	$ 60 p/h
3.	Truck Operator	$ 45 p/h
4.	Lashers/Spotters (2)	$ 45/p/h

Rates are based on two hour minimums by labor contracts which would be adequate for loading and unloading barges. There would also be a per container fee assessed for each unit moved across the dock called wharfage and a berthing fee for the barge called dockage. These assessments would need to be negotiated with the New Bedford Harbor Development Commission.

Given that the capital costs of the LO-LO operations have been determined to be too high to be purchased to service only the waste containers from Martha's Vineyard, we have assumed that RO-RO operations is the only economically feasible option for handling containers in this report. Given this, HDR evaluated the estimated costs at New Bedford State Pier for receiving a barge at its RO-RO ramp. The table below provides an overview of the cost elements.

Table 4: Estimated Port Costs at New Bedford for RO-RO Barge Handling

Category	Estimated Amount	Period	Remarks	Note
Dockage	$100	Per day	Barge rate based on size	2
Wharfage	$1.00	Per ton	Unit rate negotiable	3
Labor	$1,500	Per hour	Negotiable to staff level	4
Labor Differential	$600	Per hour	Overtime-staff level	5
Security Charge	$1,220	Per day	Contract security	6

Table 4 Notes:

1. Barge unloading and loading is anticipated to take between two and four hours depending on the volume aboard the barge to be discharged and return empty units.
2. Dockage is a flat fee based on the length of the barge. A minimal flat rate would apply to a barge based upon a short stay at the berth.
3. Whafage is currently based on a per ton charge. Unit rates can be negotiated as an alternative to a per ton rate for each container handled. Whafage applies to the material loaded and discharged over the ramp.
4. Labor rate is the rate for the entire vessel cargo handling personnel cost. This includes linehandlers, truck drivers, ramp handler, clerks or other personnel utilized to load and discharge the vessel. The rate is based on a minimal union contract ship's longshoring gang. In most cases this level can be reduced depending on the staffing levels contracted. Barge staffing for longshore gangs is generally less than ship gangs. We have assumed that, for scenarios that include rail transport from New Bedford, the longshore gang would load/unload the containers from the railcars at that this operation would occur during the same shift as the barge loading/unloading.
5. Overtime differential applies to those periods before 0800 and after 1600 daily. The OT differential applies to the entire gang cost and can be reduced by smaller staffing levels.
6. Security charge is based upon a 24 hour federal requirement. In most cases, the rate can be reduced to a period prior to start up, during operations and after operations based on a minimal period including call out and on site activities.
7. All rates are negotiable based on frequency of activities, type of activities and personnel and equipment required.

Based on the above cost estimates, and considering potential negotiation items, HDR estimates the New Bedford Harbor Development costs to be approximately as follows:

Table 5: Estimated Barge Handling Costs

Category	Estimated Cost
Dockage	$100
Wharfage	$360
Labor	$4000
Labor Differential	N/A
Security Charge	$610
Total Estimated Cost per Barge Trip	**$5,070**
Estimated cost per ton (assuming 360 tons per barge)	**$14.08**

Table Notes / Assumptions

1. Assumes each barge handles 20 containers, each transporting approximately 18 tons per container
2. Barge handling/loading/unloading takes 4 hours at New Bedford
3. Assumes 4 labor hours at a negotiated $1,000 per hour rate
4. Assumes this operation would only pay 50% of the security charge (assumes this charge would be shared with other port users)
5. Assumes no overtime labor; as barges will arrive during normal working hours

In addition to the port costs described above, if Tisbury was to use a dedicated barge for this operation, there would be a cost for docking/berthing the barge while it was not in service. We have assumed that this cost would be approximately $2,400 per month at a berthing location in New Bedford (the location and terms would need to be negotiated with the New Bedford Harbor Development Commission).

SSA Terminals in Vineyard Haven, MA and Oak Bluffs, MA

The SSA Terminal in Vineyard Haven is capable of RO-RO service and is currently receiving barges in this manner. There is limited available space for storage of containers or trailers, as this area is primarily utilized for the transport of passengers. Similarly, the SSA's Oak Bluffs terminal facility is primarily utilized for passenger ferries. The SSA stated that they utilize the Oak Bluffs terminal occasionally for freight service, however there are two elements that make this facility a challenge for consistent use as a freight RO-RO facility

- The pier faces open water (not a protected harbor), and is therefore susceptible to inclement winds/weather (as shown in the picture below)
- The dock connects to the roadway via a wooden pier, which is not conducive to consistent use via heavy freight trucking activity (the wooden pier is shown in the picture below).
- While it would not be infeasible to utilize the Vineyard Haven pier for RO-RO operations, the fact that the pier faces open water and consists of a wooden pier make this a less than desirable option. RO-RO operations are feasible on wooden piers, but one would expect some wear-and-tear from the heavy freight trucks handling the waste.

Figure 7: SSA Oak Bluffs Dock

Figure 8: SSA Oak Bluffs Pier

4.3 Evaluation of Barge Transportation

To evaluate the estimated capital and operating costs for barge transportation services between Martha's Vineyard and New Bedford, we obtained information from Tisbury Transportation & Towing Services, Inc. The following is a summary of the equipment owned by Tisbury Towing:

- One 160' x 40' deck barge with inside cargo space dimensions of 140' x 32' rated at 1,200 tons and capable of handling 12 trailers
- One 130' x 35' deck barge with inside cargo space dimensions of 125' x 32' rated at 800 tons and capable of handling 6 trailers. This barge is configured for modular units.
- One 130' x 35' deck barge with inside cargo space dimensions of 100' x 29' rated at 800 tons and capable of handling 6 trailers. This barge is configured for gravel.
- Tisbury Towing & Transportation would require the purchase/lease of an additional barge in order to transport waste on a consistent basis
- Used deck barges similar to the sizes owned by Tisbury Towing can be purchased for approximately $150,000 to $300,000. Note that the barges that have been specified to be built and utilized in the containerized waste transport system being developed by New York City Department of Sanitation are 150' x 46' and can transport 48 containers (stacked two-high).

Tisbury Transportation and Towing owns two 800 horsepower (SHP) harbor tugsBelow is a summary of the potential operating parameters and operating costs:

- Barge transit time between Vineyard Haven and New Bedford is approximately 4 hours
- For existing equipment, Tisbury Towing & Transportation's costing is as follows:
  - Daily barge rate: $750
  - Hourly tug rate: $350 (minimum of 4 hours)

In addition to Tisbury Towing & Transport, there are several other companies that could provide barge towing services. We contacted several barge towing companies that service the port of New Bedford or other ports in the area and requested approximate pricing for providing barge towing services. Several of these companies have barges that could be utilized for this service (the price for using the barge is shown in the table as well).

Table 6: Estimated Barge Towing Rates

Company	Tug Rate (per hour)	Barge Rate (per day)	Barge Size (Length x Width)
Island Barge	$300	Included	130 x 32
Mitchell Towing	$350	None	None
Tucker-Roy	$375	To be negotiated	226 x 45

Operational Considerations

Below are additional operational considerations for a potential barge towing service between Martha's Vineyard and New Bedford:

- Given the cost of barge and tug operations, it is desirable to transport has as many tons of waste as possible (to keep the per-ton or per-unit costs as low as possible). Given the relatively low quantities of waste generated by Tisbury and Oak Bluffs, it will therefore be necessary to store waste for several days, so as to only transport full barges (i.e., the barge would depart on an approximately once-per-week basis).
- The travel distance between the facilities is approximately 25 nautical miles through Woods Hole and transit time averages 4 hours in each direction. Assuming a 4 hour turnaround at each end, a round trip averages approximately 16 hours.

Given the above pricing and operational considerations, and given the items discussed above regarding RO-RO operations, HDR has concluded that an efficient mode of barge transport would be RO-RO operations, and each barge would handle approximately 20 containers. While the deck barges would be potentially capable of holding 24 containers (4 across and 6 deep), we have assumed that the first row of containers would need to be left empty to allow the RO-RO trucks to access the containers for loading and unloading. Additionally, it is important to note that double-stacking the containers on the barges would not be feasible, given the fact that this would require a crane. Reach stackers are also capable of stacking containers on top of each other, but reach stackers would not be able to access the barge through standard RO-RO ramps, and would be limited by the amount of space available to operate on a barge. Finally, HDR has determined that the most efficient barge transportation system would involve the transport of both MSW and C&D containers on the barge together. While C&D could be handled in open-top containers and MSW would be handled in sealed containers, both types of containers could be loaded/unloaded using RO-RO trucks, and since the origin/destination ports will be the same, there does not appear to be any significant advantages to dedicating barge voyages for MSW and C&D separately.

4.4 Transfer Station & Roadway Access

The roadways between the Oak Bluffs/Tisbury Transfer Station and the port terminal facilities in Vineyard Haven (both SSA and RM Packer) are sufficient to handle any of the truck configurations that are assessed in this Study.

4.5 Potential for Rail Service

Some municipalities and private haulers have opted to utilize rail service to transport both MSW and C&D to disposal facilities. In general, the advantage of this is to reduce the cost and congestion of truck traffic as well as the potential to access less expensive disposal facilities. New York City, for instance, uses rail to transports the MSW that is managed by the Department of Sanitation (DSNY) in the boroughs of Staten Island, Bronx and Brooklyn. This rail service was implemented as part of DSNY's Solid Waste Management Plan, which recognized the potential economic and environmental advantaged of transporting waste by rail rather than continuing to transport waste by truck, primarily to disposal facilities in Pennsylvania. Other examples include waste transferred at Kearney Point Intermodal Yard in Kearney, New Jersey. This facility receives containerized waste by truck and transfers the containers onto railcars. These railcars are transported to the Apex Landfill in Amsterdam, Ohio. Cities on the West Coast, such as San Francisco and Seattle also transport MSW by rail. Up until recently, much of Boston's waste was transported by rail from the CSX intermodal yard in Brighton (Beacon Park Yard). Allied Waste, under contract to the City of Boston, delivered waste to a disposal facility in South Carolina. However, when this contract came up for renewal, the City of Boston selected Waste Management, who now transports Boston's waste via truck to its landfill in Rochester, New Hampshire.

There are several common drivers that a municipality would consider in evaluating whether to transporting waste via rail, as summarized below:

- ***Large volume of waste***: If a municipality handles a large volume of waste, there are significant efficiencies that can be obtained. The primary efficiency is the potential to transport waste via unit, or block train service, which allows for a shorter cycle time, and therefore reduced equipment requirements. The minimal number of cars that would constitute a block of cars that the railroads would provide preferential service is approximately 30 railcars. Each railcar can transport approximately 72 tons (4 containers, each containing 18 tons). Thirty (30) railcars therefore transport approximately 2,160 tons of waste.
- ***Limited or high-priced nearby disposal options***: If a municipality has limited or only relatively high-priced options for disposal, rail transport can be an attractive option to access more competitive or lower priced disposal options.
- ***Congested or Complex Trucking Logistics:*** Municipalities in highly-populated areas with congestion on the roadways often consider utilizing rail service to transport waste in order to reduce the amount of trucks on the roadways. Removing trucks for the road reduces congestion as well as potentially reduces cost to the municipality, since congested roadways or complex logistics results in increased fuel, equipment and labor costs

- ***Environmental Concerns:*** Another consideration when evaluating rail versus truck transport of waste is the potential environmental benefit of rail. Transporting waste via rail can be significantly more fuel efficient, as it takes only one or two locomotives to transport dozens, if not hundreds of containers, versus one truck moving one container.
- ***Infrastructure and Equipment Requirements:*** Transporting waste via rail requires the leasing or purchase of infrastructure and equipment. In addition to leasing/purchasing railcars, the following need to be considered:
    - Transporting MSW requires the use of sealed containers. These containers are either top-loaded or side-loaded. If side-loaded, a compactor is often utilized, and if top-loaded, the system requires lidding and de-lidding capabilities (typically a gantry crane)
    - Transporting C&D does not require the use of sealed containers, since there are limited odor issues associated with C&D debris. C&D is typically transported in gondola railcars.

For estimating rail transportation costs, we have used the USRail.desktop model, which uses rail cost date provided by the railroads to the Surface Transportation Board. Many rail shippers use this model, or a similar model, to estimate potential rail transportation rates. For the two rail moves that were contemplated in this report, HDR assumed the following rates, based on date from USRail.desktop:

- Estimated rail transportation cost for transport from New Bedford to Seneca Meadows Landfill (NY): $1,812 per rail car
- Estimated rail transportation cost for transport from New Bedford to Apex Landfill (Ohio): $2,838 per rail car

Transport of C&D via Rail

When being transported by rail, C&D is typically transported in large cube gondola railcars. The gondolas are typically 60' to 65' in length. These gondolas are usually tarped or netted to minimize loss of waste while in transport. There are several disposal facilities that are currently receiving C&D by rail, including the following facilities that are located on CSX:

- BFI; Niagara Falls, N.Y
- C&D Technologies, Fernwood, Ohio; Landfill Environmental Logistics Services; North Apex, Ohio
- EnviroSolutions Inc.; Coalton, Ky
- Lafarge; Lordstown, Ohio
- Penn-Ohio; Negley, Ohio
- Preferred Management; East Newark, Ohio
- Sunny Farms; Fostoria, Ohio

These landfills use either a rotary dumper or an overhead clam shell to unload the C&D from the gondolas. Some C&D is transported in sealed containers as well, however, due to the lower density of C&D, this is often less efficient/economical than transporting C&D in gondola railcars.

HDR considered the potential for Tisbury to transport C&D in open-top containers (tarped or netted) on a barge and then loaded onto railcars for transport to a landfill. However, to our knowledge, there are no landfills in the Northeast currently receiving C&D in open-top containers by rail. As mentioned above, the landfills in the Northeast that receive C&D by rail are set up to either rotary-dump gondola cars or to unload the C&D with an overhead clam shell from a gondola. HDR spoke to several representatives from the C&D landfills in the region, and while it would be possible to unload the containers with the overhead clam shell, there are some concerns with the structural ability of the containers to handle this operation.

Given that C&D is typically transported via gondolas and the landfills in the region are set up to receive C&D via gondolas, we have made the assumption that transport of C&D in open-top containers via rail would not be feasible. C&D could be transported in sealed containers, similar to the way that MSW is transported, however due to the lower density of C&D, transporting C&D in containers is not as economical as transport in gondola cars. Therefore for this report, we have evaluated the following two scenarios whereby C&D would be transported by rail:

- In sealed containers transported on a barge and transloaded onto railcars at the port of New Bedford
- In open-top containers (with tarps / netting) on the barge and transloaded to flatbed trailers at the port of New Bedford and transported to a transfer station in MA. The C&D would then be loaded into gondola railcars and transported to landfills.

Figure 9: Gondola Rail Car

4.6 Transport of Waste Via Truck

Transport of waste via truck from a dedicated barge is potentially feasible. There are several options for transporting waste via truck, each with pros and cons, as described briefly below

- Transport via open top trailer would be efficient, given that the nearby disposal facilities have the capability to handle waste in this manner (i.e., Crapo Hill Landfill, ABC Waste Disposal, Bourne Landfill, Covanta SEMASS, Rhode Island Central Landfill, etc). However, given the need to hold waste for several days in order to keep the per-ton barge costs feasible, open top trailers will be problematic, given the potential for odors if stored for any extended period of time. Important to note that C&D could be transported via open top trailers, as odor issues are not as prevalent with C&D as they are with MSW
- Transport of MSW via sealed containers via RO-RO trucks. This scenario is potentially feasible, given that the trailers could utilize the existing RO-RO facilities. Note that the Tisbury/Oak Bluffs Transfer Station and the disposal facility (ies) would have to add lidding/de-lidding capabilities. One drawback to this scenario is that the number of nearby disposal facilities capable of receiving containers is limited.

Similar to the assumptions used in evaluating the current transportation system for moving the waste from the SSA terminal in Woods Hole by truck, below is an overview of the assumptions used in our estimates for the costs of waste transport via truck in this report:

- For labor estimates, we have used the Massachusetts 2011 prevailing wage for a truck driver, which is a minimum wage of $39.71 per hour. At 8 hours per day, this equates to $317.68 per day. Depending on the scenario, we have assumed that drivers can make multiple trips from New Bedford to the disposal facility in one day. For transport from New Bedford (located at 52 Fisherman's Wharf) to Crapo Hill Landfill (located at 300 Samuel Barnet Boulevard in North Dartmouth, MA), we have assumed that one truck can make six trips in one day. For transport from New Bedford to Transload America in East Providence, we have assumed that one truck can make approximately four trips per day
- The one-way distance from the port of New Bedford at 52 Fisherman's Wharf to the Crapo Hill Landfill at 300 Samuel Barnet Boulevard in North Dartmouth, MA is approximately 11 miles. The one-way distance from the port of New Bedford at 52 Fisherman's Wharf to the Transload America Disposal Facility located at 1 Dexter Road in East Providence, RI is approximately 30 miles. We have assumed that each truck travels approximately 7 miles per gallon of fuel, and an estimated fuel price of $4.20 per gallon.
- The annual insurance, licensing and taxes per truck are estimated to be approximately $5,000.
- The annual maintenance is assumed to be approximately 25 cents per mile.

4.7 Summary of Disposal Facilities and Pricing

The following tables provide an overview of the disposal facilities that could be considered for disposal of the MSW and C&D received at the Tisbury Transfer Station. Table 3 below shows a summary of disposal facilities that received at least 100 tons per day in 2010 and are located within an approximate one-day truck haul from New Bedford (includes the states of Massachusetts, Rhode Island, New Hampshire and Connecticut). Only landfills and Energy-from-Waste facilities are included in Table 3, Transfer Stations are not included. The tipping fee charged is the average spot rate that was charged during 2010. Note that tipping fees can be negotiated, and long-term contracts are often signed at tipping fees that are lower than the spot rate. It is important to note that landfills have finite capacity. According to Mass DEP, existing landfill capacity in Massachusetts is expected to decline significantly over the next decade. Massachusetts landfill capacity is expected to decline from just under two million tons in 2009 to about 600,000 tons in 2020 as current landfills close and are not replaced.

Table 7: Disposal Facilities located within New England States

Name	Location	Volume of Primary Waste Accepted (TPD)	Tipping Fee Charged
Covanta Bristol Resource Recovery Facility	Bristol, CT	658	$65.50
Manchester Landfill	Manchester, CT	165	$73.00
Covanta Mid-Connecticut Resource Recovery Facility	Hartford, CT	2,739	$69.00
Covanta Southeastern Connecticut Resource Recovery (SECONN)	Preston, CT	848	$60.00
Wheelabrator Bridgeport RESCO W-T-E	Bridgeport, CT	2,210	$63.00
Covanta Wallingford Resource Recovery Facility	Wallingford, CT	460	$60.00
Wheelabrator Lisbon Inc. W-T-E	Lisbon. CT	544	$70.00
Exeter Energy Limited Partnership	Sterling, CT	339	$26.00
Town of Bourne Landfill	Buzzards Bay, MA	382	$86.00

Name	Location	Volume of Primary Waste Accepted (TPD)	Tipping Fee Charged
Chicopee Landfill (CT Valley)	Chicopee, MA	948	$120.00
Fall River Landfill	Fall River, MA	521	$105.00
Holyoke-Granby Landfill	Granby, MA	325	$130.00
Middleboro Landfill	Middleboro, MA	142 (C&D)	$60.00
Northampton Regional Landfill	Northampton, MA	150	$70.00
Southbridge Landfill	Southbridge, MA	569 (C&D)	$71.00
Taunton Landfill	Taunton, MA	287	$90.00
Fitchburg – Westminster Landfill	Westminster, MA	847	$120.00
Springfield Resource Recovery Facility	Agawam, MA	420	$90.00
Pittsfield Resource & Recovery Facility	Pittsfield, MA	270	$83.00
Covanta SEMASS Resource Recovery Facility	West Wareham, MA	3,229	$86.57
Covanta Haverhill Resource Recovery Facility	Haverhill, MA	1,932	$55.00
Wheelabrator Millbury Central Mass. W-T-E	Millbury, MA	1,572	$91.00
Wheelabrator North Andover RESCO	North Andover, MA	1,451	$75.00
Wheelabrator Saugus RESCO	Saugus, MA	1,404	$86.70
Crapo Hill Landfill	North Dartmouth, MA	302	$90.00[1]
Lewiston Landfill	Lewiston, ME	349 (C&D)	$95.00
Norridgewock Landfill	Norridgewock, ME	1,110	$82.00
Mid-Maine Waste Action Corp Incinerator	Auburn, ME	220	$90.74
Maine Energy Recovery Co. (MERC)	Biddeford, ME	872	$80.00

[1] HDR contacted management representatives from Crapo Hill Landfill and these representatives stated that they are interested in providing landfill capacity to the Town of Tisbury on a long-term basis and that disposal rates would be approximately $70 per ton

Name	Location	Volume of Primary Waste Accepted (TPD)	Tipping Fee Charged
Penobscot Energy Recovery Co. (PERC)	Orrington, ME	1,203	$65.00
Regional Waste Systems Waste-to-Energy	Portland, ME	507	$88.00
NCES Landfill	Bethlehem, NH	336	$87.00
City of Lebanon Solid Waste Landfill	West Lebanon, NH	154	$68.68
Four Hills Landfill	Nashua, NH	202	$80.00
Turnkey Recycling & Environmental Enterprises (TREE)	Rochester, NH	1,277	$87.00
Mount Carberry Landfill	Berlin, NH	443 (C&D)	$70.00
Franklin Landfill	Franklin, NH	195	$44.00
Wheelabrator Concord Facility	Concord, NH	587	$80.00
Wheelabrator Claremont Co., L.P.	Claremont, NH	231	$89.50
Rhode Island Central Landfill (Johnston Landfill)	Johnston, RI	3,528	$75.00
Central Vermont Landfill Transfer Station	Montpelier, VT	101	$119.00
Moretown Landfill	Moretown, VT	480	$77.50
South Hadley Landfill	South Hadley, MA	429	$100.00
Juniper Ridge Landfill	Old Town, ME	865 (C&D)	$67.45
Epping Resource Recycling Facility	Epping, NH	510 (C&D)	$90.00

The table below provides a summary of the rail-served disposal facilities in the region.

Table 8: Rail-served Disposal Facilities in the Region

Name	Location	Volume of Primary Waste Accepted (TPD)	Tipping Fee Charged
Twin Bridges Recycling & Disposal Facility	Danville, IN	3,224	$38.00

Name	Location	Volume of Primary Waste Accepted (TPD)	Tipping Fee Charged
Earthmovers Landfill	Elkhart, IN	999	$36.60
West Kentucky Landfill	Mayfield, KY	227	$30.00
Outer Loop Landfill	Louisville, KY	2,087	$56.43
Laurel Ridge Landfill	Lily, KY	1,112	$34.60
Southern Sanitation Landfill	Russellville, KY	738	$24.75
Chicopee Landfill (CT Valley)	Chicopee, MA	948	$120.00
Fitchburg – Westminster Landfill	Westminster, MA	847	$120.00
Covanta SEMASS Resource Recovery Facility	West Wareham, MA	3,229	$86.57
Wheelabrator North Andover RESCO	North Andover, MA	1,451	$75.00
Turnkey Recycling & Environmental Enterprises TREE	Rochester, NH	1,277	$87.00
Seneca Meadows Landfill	Waterloo, NY	6,151	$50.00
Niagara Recycling Inc Landfill	Niagara Falls, NY	1,454 (C&D)	$100.00
Geneva Landfill	Geneva, OH	388	$63.00
SWACO Franklin County Sanitary Landfill	Grove City, OH	2,574	$36.75
Gallia County Sanitary Landfill	Bidwell, OH	136	$45.00
Lake County Solid Waste Landfill	Painesville, OH	562	$30.00
South Suburban Recycling & Disposal Facility	Glenford, OH	1,178	$50.00
Mahoning Landfill Inc	New Springfield, OH	660	$36.00

Name	Location	Volume of Primary Waste Accepted (TPD)	Tipping Fee Charged
Ottawa County Landfill	Port Clinton, OH	220	$34.50
Pike Sanitation Landfill	Waverly, OH	229	$31.00
Sunny Farms Landfill	Fostoria, OH	994	$25.50
American Landfill	Waynesburg, OH	2,133	$46.00
Evergreen Recycling & Disposal LF	Northwood, OH	495	$55.00
Wyandot Sanitary Landfill/County Environmental	Carey, OH	338	$29.00
Transload America – Alliance LLC Landfill	Alliance, OH	1,035	$35.00
Oakland Marsh Landfill	Shiloh, OH	1,345	$65.00
Tunnel Hill Reclamation Landfill	New Lexington, OH	239	$30.00
McKean County Landfill	Mount Jewett, PA	395	$48.50
Tullytown Landfill	Tullytown, PA	1,969	$83.00
Valley Landfill	Irwin, PA	544	$64.90
Pine Grove Landfill	Pine Grove, PA	835	$52.50
Arden Landfill	Washington, PA	847	$67.00
GROWS Landfill	Morrisville, PA	1,820	$83.00
Grand Central Sanitary Landfill	Pen Argyl, PA	509	$82.16
Kelly Run Sanitary Landfill	Elizabeth, PA	265	$51.50
South Hills Landfill	Library, PA	191	$75.00
Monroeville Landfill	Monroeville, PA	853	$75.00
Pellegreene Landfill	Homer City, PA	316	$60.00
Northwest Sanitary Landfill	West Sunbury, PA	270	$66.20
Conestoga / New Morgan Landfill	Morgantown, PA	1,666	$100.00
Southern Alleghenies Landfill	Davidsville, PA	245	$62.05

Name	Location	Volume of Primary Waste Accepted (TPD)	Tipping Fee Charged
GROWS North Landfill	Morrisville, PA	4,193	$83.00
Charles City County Landfill	Charles City, VA	1,468	$38.00
Middle Peninsula Landfill & Recycling Facility	Glenns, VA	1,365	$45.00
King George County Landfill & Recycling Facility	King George,VA	2,423	$39.00
Roanoke Valley Regional Landfill	Roanoke, VA	700	$55.00
Amelia Landfill	Jetersville, VA	702	$45.00
Atlantic Waste Disposal Inc Landfill	Waverly, VA	5,020	$47.00
Apex Sanitary Landfill	Amsterdam, OH	3,670	$30.00
Holyoke-Granby Landfill	Granby, MA	325	$130.00
Fitchburg – Westminster Landfill	Westminster, MA	847	$120.00

The table below provides information regarding nearby C&D transfer stations that are rail-served. This is shown since Tisbury might consider trucking C&D to a transfer station for transfer to rail in order to access rail-served C&D disposal facilities without the cost of owning/leasing its own rail equipment.

Table 9: C&D Transfer Stations in New England (that are served by rail)

Name	Location	Volume of Primary Waste Accepted (TPD)	Tipping Fee Charged
Transload America - Pond View	East Providence, RI	83	$75.00
ABC & D Recycling, Inc.	Ware, MA	45	$95.00

5.0 Estimated Capital, Equipment and Operational Costs

Below is an overview of the estimated capital and operational costs for the various scenarios that were considered. In order to estimate the number of containers needed for each scenario, HDR developed a model that simulated the transport of the barge, railcars and trucks throughout the system. HDR modeled the peak period of May through August, since the system will need to have sufficient equipment to handle the peak periods. The following assumptions were used for the various scenarios:

- Round-trip barge transport from Martha's Vineyard to New Bedford is approximately 12 hours
- Each barge transports 20 containers
- The barge is loaded within a 4 hour period at Vineyard Haven and unloaded within a 4 hour period at New Bedford
- The barge is loaded and unloaded via RO-RO trucks dedicated to this transportation system. Two RO-RO trucks would be dedicated at each port for this operation.
- MSW would be transported in sealed 20' containers
- C&D would be transported in open-topped 20' containers with tarping/netting

While there are numerous scenarios that could be evaluated, HDR utilized the assumptions above as a starting point for the base assumptions of an efficient system for containerized waste transport via barge, given the operating parameters described throughout this report. In order to assess potential variations of the system, HDR has developed cost estimates for the following scenarios:

Table 10: Overview of Scenarios Evaluated

Scenario	MSW Disposal		C&D Disposal	
	Location	Mode	Location	Mode
Scenario 1	Seneca Meadows Landfill (NY)	Rail	Transload America (East Providence, RI)	Truck
Scenario 2	Apex Sanitary Landfill (OH)	Rail	Transload America (East Providence, RI)	Truck
Scenario 3	Crapo Hill Landfill (New Bedford, MA)	Truck	Transload America (East Providence, RI)	Truck

Estimated Equipment Requirements

Railcars

For the scenarios that include rail, we have assumed that a set of railcars would be dedicated to the transportation system and would be transported as a block on the railroad. We assumed round-trip cycle times of 12 days for transport from New Bedford to Seneca Meadows, New York and a round-trip cycle time of 18 days for transport from New Bedford to Amsterdam, Ohio (Apex Landfill). The cycle time estimate includes rail transport as well as loading/unloading the containers at the disposal facilities.

A key factor for estimating the number of railcars required is to determine whether the number of days to generate the waste required to fill a barge and to transport that barge would be more or less than the round trip cycle time for the rail transportation. In the peak period (August) of 2010, there were 3.1 container equivalents generated per day, between MSW and C&D. At this rate, a barge of 20 containers would need to be transported approximately every 7 days. During the peak season of August, MSW is generated at a rate of approximately 3:1 compared to C&D. Therefore, we would expect that a barge transported in August would contain approximately 15 containers of MSW and 5 containers of C&D. These 15 containers would require 4 railcars. Given that these 15 containers would be generated every 7 days or so, and the cycle time to Seneca Meadows is estimated to be 12 days, HDR estimates that this system would require two sets of 4 railcars, or 8 railcars. Using similar logic, assuming an 18 day cycle time to Apex Landfill in Ohio, the system would require three sets of 4 railcars, or 12 railcars. The estimated cost per railcar is assumed to be approximately $83,000.

Containers

To estimate the number of containers required, HDR used the following methodology:

- **MSW:** As stated above, during the peak month of August, we would expect that a barge transported during this month would consist of 15 containers of MSW and 5 containers of C&D. To estimate the number of containers required, we would use the following calculation:
    - Number of containers on barge: 15
    - Number of containers on railcars (in transit): 32 for transit to Seneca Meadows, 48, for transit to Apex
    - Number of containers required at Transfer Station and port(s) while containers are in transit: 5
    - Total Estimated number of Containers Required for Transit to Seneca Meadows: 52
    - Total Estimated number of Containers Required for Transit to Apex: 68

For truck transport of MSW in containers (assuming that the destination is Crapo Hill Landfill in North Dartmouth, MA), we would use the following calculations to estimate the number of containers required:

- Number of containers on barge: 15 (using similar logic as above)
- Number of containers required at Transfer Station and port(s) while containers are in transit: 20

- **C&D:** In the month of April, C&D is generated at a rate of 1.2 to 1.0 compared to MSW. Given this, we would expect that a barge transported in April would consist of 11 containers of C&D and 9 containers of MSW. A conservative estimate would be to have approximately 20 containers to handle C&D. This would allow for a sufficient number of containers to be at the transfer station while containers are on the barge and in transport to the C&D disposal facility.

The capital cost for each MSW container is estimated to be approximately $13,000. The capital cost for each MSW container is estimated to be approximately $8,000.

RO-RO Trucks

For all three scenarios, we assumed that the system would require two RO-RO trucks dedicated at each port in order to load and unload containers onto/off the barges as well as one RO-RO truck dedicated to the Transfer Station to move containers between the loading area and the lidding area. The purpose of having two trucks at each port is due to the desire to load or unload the barge as quickly as possible to minimize barge handling and transport costs. Two of these trucks would be utilized to bring containers back and forth between the Transfer Station and Vineyard Haven and two of these trucks would be utilized to bring containers back and forth between the port of New Bedford and Crapo Hill Landfill (under Scenario 3). The capital cost for each RO-RO truck is estimated to be approximately $125,000.

Reach Stacker

For the rail options (Scenario 1 and 2), the system would require a reach stacker, or similar container handling unit, at the port of New Bedford in order to load containers onto and off the railcars. The capital cost for a reach stacker is estimated to be approximately $500,000.

Figure 10: Reach Stacker

Below are the equipment estimates for each scenario

Table 11: Equipment Estimates for Each Scenario

Scenario	Containers (MSW)	Containers (C&D)	Railcars	RO-RO Trucks	Barge	Reach Stacker
Scenario 1	52	11	8	5	1	1
Scenario 2	68	11	12	5	1	1
Scenario 3	35	11	N/A	5	1	0

Capital Cost Assumptions

For all capital costs, we have assumed a private sector financing with mortgage-style amortization and an interest rate of 7.0%. We have made the following assumptions for the useful life of the equipment:

Table 12: Equipment Useful Life Assumptions

Equipment	Assumed Useful Life (Years)
Railcars	30
Containers (both C&D and MSW)	8
Reach Stacker	15
RO-RO Trucks	10
Barge	30

Capital Costs

Our analyses also include the following assumed capital costs:

1. Rail Rehabilitation at New Bedford State Pier: To handle containers by rail at the port of New Bedford, the New Bedford State Pier will require a rehabilitation and extension of the existing rail. The estimated cost of this rail rehab is approximately $500,000. This rehabilitation may be implemented regardless of whether Tisbury's waste is delivered to New Bedford, however we have conservatively included this cost in our estimate for rail until it is confirmed by Mass Coastal Railroad and/or New Bedford Harbor Development Commission.
2. Lidding/De-lidding Station: In order to handle sealed containers of MSW, the Tisbury Transfer Station will need to be upgraded to include a lidding/de-lidding station. These containers are loaded from either the top or the side. In the case of the Tisbury Transfer Station, the containers would be loaded from the top. We have assumed that the Transfer Station would have a RO-RO truck dedicated to the facility that would move the containers between the loading area and the lidding/de-lidding area. The disposal facility that these containers would be going to would also require a lidding/de-lidding station. Disposal facilities that currently receive waste by rail are assumed to have existing lidding/de-lidding capabilities. Scenario 3, which includes truck transport of MSW to Crapo Hill Landfill in New Bedford, will require the installation of lidding/delidding capabilities at Crapo Hill Landfill. The estimated cost of the lidding/de-lidding station is $500,000.

All capital cost estimates assume an interest rate of 7.0% and assumed a mortgage-style amortization, based on the useful life of the equipment being purchased.

Operational Costs

Our analyses include the following operational costs:

1. *Barge Handling Costs:* HDR assumed that the Barge Loading and Unloading Costs were identical between New Bedford and Martha's Vineyard.
2. *Barge transport costs:* HDR used an hourly rate of $300 for barge towing costs.
3. *Rail Loading / Unloading Costs (at port of New Bedford)*: HDR assumed that rail loading/unloading at New Bedford would be conducted by the same gang that would handle the barge.
4. *Rail Transport Costs:* HDR utilized USRail.desktop for estimating the costs of rail transport.
5. *Trucking Costs:* For transport from port of New Bedford to Crapo Hill Landfill or Transload America, HDR used the same assumptions as were used to calculate the trucking costs for the current transport of waste from Woods Hole, MA.
6. *Disposal Costs:* HDR used the tip fees that were reported by the Waste Business Journal Inc's Database of Disposal Facilities.

Table 13: Estimated Capital and Operating Costs for Each Scenario

	Scenario 1: MSW by Rail to Seneca; C&D by Truck to Transload America		Scenario 2: MSW by Rail to Apex; C&D by Truck to Transload America		Scenario 3: MSW by Truck to Crapo Hill; C&D by Truck to Transload America	
Component	Estimated Annual Costs	Per Ton Estimated Cost	Estimated Annual Costs	Per Ton Estimated Cost	Estimated Annual Costs	Per Ton Estimated Cost
Capital Costs						
Barge	$23,951	$1.70	$23,951	$1.70	$23,951	$1.70
Containers	$124,994	$8.89	$159,024	$11.31	$88,837	$6.32
Railcars	$53,011	$3.77	$79,517	$5.66	$0	$0.00
RO-RO Trucks	$87,081	$6.19	$87,081	$6.19	$87,081	$6.19
Reach stackers	$53,930	$3.84	$53,930	$3.84	$0	$0.00
Rail rehab	$39,918	$2.84	$39,918	$2.84	$0	$0.00
Lidding / De-lidding	$39,918	$2.84	$39,918	$2.84	$79,836	$5.68
Operating Costs						
Barge Handling Costs (MV)	$197,984	$14.08	$197,984	$14.08	$197,984	$14.08
Barge Transport Costs	$140,580	$10.00	$140,580	$10.00	$140,580	$10.00
Barge Handling Costs (NB)	$197,984	$14.08	$197,984	$14.08	$197,984	$14.08
Barge Berthing Costs	$30,000	$2.13	$30,000	$2.13	$30,000	$2.13
Rail Transportation Costs	$212,256	$25.17	$332,440	$39.42	$0	$0.00
Truck Transportation Costs	$65,749	$4.68	$65,749	$4.68	$124,319	$8.84
Tip fee (MSW and C&D)	$674,820	$48.00	$843,500	$60.00	$1,012,180	$72.00
Total Estimated Cost	**$1,942,175**	**$148.22**	**$2,291,575**	**$178.78**	**$1,982,752**	**$141.04**

Conclusions

As shown in the table above, the transport and disposal costs for the three scenarios that were evaluated range between $141.04 per ton to $178.78 per ton. In addition to the pricing considerations, one should consider market forces as well when determining whether to implement a containerized port-to-port system for transporting MSW and C&D. The primary market forces to consider would be the potential flexibility and market reach that a dedicated freight system would allow Tisbury to realize. An example of flexibility/market reach is with implementing rail service; once the railcars and containers are purchased, Tisbury would be able to access numerous disposal facilities that are served by rail, rather than only having options that are within a one-day truck haul. Another important consideration

to determine the feasibility or attractiveness of this system is to consider the potential for backhaul or additional use of the barge from New Bedford to Martha's Vineyard. As outlined in this report, the barge would only be used approximately one day per week, so the barge would be available for use at these other times. Also, the barge would be traveling between New Bedford and Martha's Vineyard with 20 empty containers, some sealed and some open-topped. This would present potential back-haul opportunities as well.

It is important to note that the three scenarios that HDR chose were based on a thorough assessment of numerous potential transportation scenarios, however, there are many variations that could be evaluated. HDR chose these three scenarios as they represent potentially efficient transportation systems and also compare rail and truck transport scenarios. It is also important to note that the cost estimates included in this report are HDR's estimates based on our industry experience as well as quotes from vendors and transportation providers. These costs are subject to change based on normal economic conditions (escalation/de-escalation) as well as market conditions. These market conditions would include the fact that companies involved in this supply chain (equipment providers, transportation service providers) may price their equipment or services differently through negotiations. As with most market dynamics, the presence of competition often leads companies to price their equipment or services more aggressively. A lack of competition can have the opposite effect on pricing behavior. Another factor to consider is that there is often a benefit to negotiating a long-term deal with service providers. Given the capital expenses required to provide the service described in this report, it would most likely be advantageous to enter into a long-term service contract (in excess of 8 years or so). Such a long-term deal could provide some negotiation leverage with transportation providers. A long-term deal such as this would also allow Tisbury to have certainty regarding costs of disposal, rather than having to negotiate short-term deals subject to spot-market pricing.

Proposed Next Steps

If the cost estimates as outlined above are determined by the Town of Tisbury to be within reasonable limits as compared to the anticipated costs of continuing the current transport and disposal system, then HDR would suggest the following next steps:

- Consider evaluating the potential for RO-RO services at the port of East Providence. There is an existing port in East Providence, and there is the potential to construct RO-RO facilities. It may be advantageous to have a competitive port option to New Bedford, as well as having a port option that would be out-of-state and therefore not subject to the SSA Enabling Act
- Consider evaluating the potential for transport of MSW via plastic-wrapped bales. Baling of MSW would require the installation of a baling system at the Tisbury Transfer Station (estimated cost of $600,000). Once baled, MSW can be stored for many days, given the fact that there are minimal odor or pest issues. Typical bales are 16 square feet (4x4), weigh approximately 1.9 tons and can be stacked three high. Approximately thirteen bales can fit on one standard flatbed trailer. Bales also have an advantage of significantly compacting waste through the baling process. Given the relatively high cost of containers and lidding/de-lidding stations, the

baling system could be an attractive option worth further exploration to determine the feasibility and cost. The figure below shows an example of a baling system.

Figure 11: Plastic-wrapped Baling System

Finally, through HDR's interviews and research, it became evident that there are several companies that are interested in proposing a solution to transporting and disposing of Tisbury's waste. These include Crapo Hill Landfill, ABC Waste Disposal, EnviroSolutions, Bourne Landfill, Covanta at SEMASS, Bruno's, Tisbury Towing & Transportation and others. HDR would suggest that the Town of Tisbury consider issuing a Request for Expression of Interest (RFEI) or similar solicitation that would request that companies provide an overview of their proposed system. HDR would expect that teaming arrangements between transportation providers and disposal companies would potentially be forged through this process, and would provide the Town with potential "all-in" transport and disposal options that would enter into a competition for a contract to provide long-term service for the transport and disposal of the Town's waste.

In conclusion, HDR has determined that establishing a port-to-port containerized freight system between Martha's Vineyard and New Bedford is technically feasible. We have also provided our estimates for the cost of this service, so that the Town can determine whether this service is also economically feasible compared to continuing the current transport and disposal system. We believe that the proposed next steps that we have outlined above will result in providing the Town with a potential competitive set of options for transporting and disposing of Tisbury's waste.