MARTHA’S VINEYARD DECONSTRUCTION PILOT FINAL REPORT

MARCH 15, 2023

Center for EcoTechnology
EXECUTIVE SUMMARY

CET, Vineyard Vision Fellowship, South Mountain Company, WasteNot, The Green Mission, RecyclingWorks in MA and Carroll’s Trucking collaborated to deliver a deconstruction project that diverts the maximum amount of building materials through the disassembly of one home on Martha’s Vineyard. This pilot establishes a model for streamlining the recovery of residential building materials through reuse, resale, and recycling. Various organizations supplied their expertise and came together to educate stakeholders about the benefits of deconstruction, coordinate the collection of materials from the job site, provide documentation for leveraging tax incentives, and aggregate the recovered materials for reuse locally and for sale through CET’s reclaimed building materials store EcoBuilding Bargains.

Over a three (3) month period September 2022 – November 2022, the deconstruction pilot at 6 Nora’s Lane (Figure 1) diverted approximately 10 tons of materials from landfills. This represents nearly 23.5t CO₂-eq or 4.6 homes’ electricity usage for a year or 1,100+ household trash bags.¹

GOALS

- Divert the maximum amount of construction and demolition (C&D) materials from landfills
- Develop and document a deconstruction model that can be replicated
- Quantify the materials diverted and donated

Figure 1. Exterior of home at deconstruction site

¹ EPA Greenhouse Gas Equivalencies Calculator
PARTNERS

Martha’s Vineyard Vision Fellowship (MVVF) is a non-profit organization empowering Islanders who are committed to the environmental and social sustainability of Martha’s Vineyard. MVVF provided funding for the pilot through the Pilot Committee.

South Mountain Company (SMCo) is a fully integrated architecture & engineering, building, interiors, and renewable energy firm operating on Martha’s Vineyard. South Mountain Company is committed to a Triple Bottom Line, which means that people, planet, and profit are all equally important – balancing profits with environmental restoration, social justice, and community engagement. SMCo is a certified B Corp and worker-owned cooperative.

Center for EcoTechnology (CET) helps people and businesses save energy and reduce waste. For more than 45 years our innovative non-profit organization has offered practical solutions to save money, increase the health and comfort of our homes, and help businesses perform better. CET championed the pilot initiative and provided project management services including coordinating among the various stakeholders.

EcoBuilding Bargains, CET’s reuse store, is the largest reclaimed and surplus building materials store in New England. EcoBuilding Bargains accepts donations of quality home improvement materials and sells them to the public at discounted prices. They work to help homeowners and contractors prevent perfectly good building materials from going to landfills and make home improvement more affordable for more people.

RecyclingWorks in Massachusetts is a recycling assistance program funded by the Massachusetts Department of Environmental Protection and delivered under contract by CET that helps businesses and institutions reduce waste and maximize recycling, reuse, and food recovery opportunities. Waste reduction activities like recycling and composting can help decrease environmental impact, save money, improve employee morale, and respond to customer demands for sustainable practices.

Waste Not, Inc. is a leading deconstruction firm providing high-quality deconstruction services on Cape Cod and Martha’s Vineyard in addition to supporting their mission of creating employment opportunities for underserved individuals and building up the local community. Waste Not provided deconstruction services to the pilot during the dismantling of the residence.

The Green Mission Inc. specializes in waste diversion strategies and the interrelated fields of: Deconstruction management, IRS-qualified and USPAP-compliant personal property donation appraisals, and charitable contribution tax expertise. The organization also works with green industry leaders and appraisal standard boards to raise the bar across the appraisal industry. The Green Mission provided appraisal services for all items identified for donation.

Carroll’s Martha’s Vineyard is a family owned, full-service moving and storage company. Carroll’s assisted the pilot in transportation and storage of deconstruction and donation materials. Carroll’s staff are experts in navigating the unique transportation logistics of island life and provided consultation for the pilot team on local waste and transport issues. For the pilot, Carroll’s agreed to pack and protect donations for transport with reusable blankets or recyclable materials, minimizing waste generation.

Bruno’s provides customers with year-round and seasonal trash and single-stream recycling services. Bruno’s offers construction dumpsters and roll offs as well as storage containers.

Martha’s Vineyard Film Festival is produced by the Circuit Arts organization and committed to making arts and culture accessible on Martha’s Vineyard. The deconstruction pilot was filmed by their filmmaking division Circuit Films and will be featured in an upcoming documentary.
Identify Partners – in June 2022 individuals from CET, SMCo, and MVVF identified the opportunity for this pilot, desired outcomes, contract arrangements, and began conversations with potential collaborating organizations.

Preliminary Site Visit – in June 2022 stakeholders converged at the 6 Nora’s Lane property to evaluate opportunities for donation and recycling, and to outline the pilot scope. Materials were identified that could be removed without damage and retail pre-pricing and appraisal activities began.

Stakeholder Kick Off – in July 2022 a formal Kick Off meeting marked the pilot start. At this time the pilot objectives and project plan, including critical milestones, key resources, and timeline, were reviewed by all parties.

Waste Management Plan – in August 2022 RecyclingWorks finalized and presented the Waste Management Plan Recommendations (Appendix A) to the pilot team for review and comment. The pilot team selected diversion opportunities to pursue (Table 1).

Donations Plan – in August 2022 EcoBuilding Bargains, Waste Not, Carroll’s, and SMCo finalized plans for staging, storing, and transporting all materials identified for donation. The Green Mission provided appraisal value of all items. Items were offered for pre-sale to SMCo employees.

Site Visit – in August 2022 available parties met on site for final walkthrough in advance of deconstruction start.

Figure 2. Interior of home during deconstruction
Deconstruction – in September 2022, deconstruction began with removal of the homeowners’ belongings, removal and staging of donation items (Figure 2, 3). Source separation areas for waste streams were identified with signage provided by RecyclingWorks. Signage was provided in English and Portuguese. SMCo coordinated all collection activities and provided training to work crews (Figure 4, 5). A methodical approach to collection, staging, and signage ensured source separation was efficiently accomplished and easily logged in the Daily Waste Log (Appendix B).

Demolition – in October 2022 rough demo commenced. Collection and staging of recyclables and reusables continued in designated areas.

Collect Data – from September through November 2022 SMCo recorded diverted materials and waste leaving the site in the Daily Waste Log (Appendix B). The Daily Waste Log was created in Google Forms to ensure ease of on-site data entry. Data entered populated a spreadsheet with team member shared access.

WASTE STREAMS

RecyclingWorks developed waste diversion recommendations based on site visits and input from SMCo and MVVF. The plan describes what material types can be targeted and available options for reuse or recycling. Refer to Appendix A for a full copy of recommendations.

The MassDEP bans the disposal of certain recyclable, compostable, or hazardous materials such as clean gypsum wallboard, wood, metal, asphalt, brick, concrete, and cardboard. Waste Ban Materials are prohibited from being placed in trash containers and/or transferred for disposal. Waste ban materials from on-island construction projects are typically collected in mixed construction and demolition (C&D) dumpsters and brought to the transfer station where they are shipped to the mainland. The pilot team met with Carroll’s, the main waste management service provider for Martha’s Vineyard, to understand opportunities for increasing recycling rates and offered to provide information about C&D processing (recycling) facilities that could accept un-crushed materials. Ultimately, mixed C&D materials from this project were not recycled.

RecyclingWorks worked closely with MVVF to evaluate opportunities to establish reuse programs on the island by notifying community groups of available materials. This model serves the community need for materials and reduces the carbon footprint associated with transporting items off the island for recycling or disposal. Reusable building materials that were not reused on-island were identified for donation to EcoBuilding Bargains.

The following items were targeted by this pilot effort: Film Plastics, Food Scraps, Gypsum Wall Board, Metal, Mixed Recycling, Stone, Wood and Building Materials (Table 1).
RESULTS

WASTE DIVERSION

Over a 3-month period September 2022 – November 2022, the deconstruction pilot at 6 Nora’s Lane diverted 1.355 tons of materials for recycling. Another 8.800 tons of building materials were recovered for reuse or resale. The deconstruction has generated approximately 7.000 tons of mixed C&D waste that was unable to be recycled (Table 1). Recycling of mixed C&D material on the Vineyard remains an opportunity for future projects.

*Table 1. Tons diverted by material type. Items noted with * will be collected during the construction phase as new materials arrive.*

<table>
<thead>
<tr>
<th>Material Type</th>
<th>Diversion Type</th>
<th>Staging Area</th>
<th>Transport</th>
<th>Measure</th>
</tr>
</thead>
<tbody>
<tr>
<td>Film Plastics</td>
<td>Recycle</td>
<td>On-site</td>
<td>Local Pickup</td>
<td>TBD* Tons Diverted</td>
</tr>
<tr>
<td>Food Scraps</td>
<td>Recycle</td>
<td>On-site</td>
<td>Local Pickup</td>
<td>0.050 Tons Diverted</td>
</tr>
<tr>
<td>Gypsum Wall Board</td>
<td>Recycle</td>
<td>On-site</td>
<td>Local Pickup</td>
<td>TBD* Tons Diverted</td>
</tr>
<tr>
<td>Metal</td>
<td>Recycle</td>
<td>On-site</td>
<td>SMCo</td>
<td>1.000 Tons Diverted</td>
</tr>
<tr>
<td>Mixed Recycling</td>
<td>Recycle</td>
<td>On-site</td>
<td>Bruno’s</td>
<td>0.105 Tons Diverted</td>
</tr>
<tr>
<td>Wood</td>
<td>Recycle</td>
<td>On-site</td>
<td>Local Pickup</td>
<td>0.200 Tons Diverted</td>
</tr>
<tr>
<td><strong>TOTAL Recycled</strong></td>
<td></td>
<td></td>
<td></td>
<td><strong>1.355 Tons Diverted</strong></td>
</tr>
<tr>
<td>Wood</td>
<td>Reuse</td>
<td>On-site</td>
<td>Local Pickup</td>
<td>0.900 Tons Diverted</td>
</tr>
<tr>
<td>Building Materials</td>
<td>Reuse</td>
<td>On-site</td>
<td>Carroll's</td>
<td>7.000 Tons Diverted</td>
</tr>
<tr>
<td>Stone</td>
<td>Reuse</td>
<td>On-site</td>
<td>Local Pickup</td>
<td>0.900 Tons Diverted</td>
</tr>
<tr>
<td><strong>TOTAL Reused</strong></td>
<td></td>
<td></td>
<td></td>
<td><strong>8.800 Tons Diverted</strong></td>
</tr>
<tr>
<td>Mixed C&amp;D Materials</td>
<td>Disposal</td>
<td>On-site</td>
<td>Bruno's</td>
<td>7.000 Tons Disposed</td>
</tr>
<tr>
<td><strong>TOTAL Disposed</strong></td>
<td></td>
<td></td>
<td></td>
<td><strong>7.000 Tons Disposed</strong></td>
</tr>
</tbody>
</table>
Mixed C&D Materials generated were unable to be recycled. Over the course of the 3-month deconstruction period, 7 tons of C&D materials were generated and shipped off island for disposal. Changes in practices of handling and shipping that would enable recycling of C&D materials from future deconstruction projects represents the greatest opportunity for diversion from the waste stream. Stakeholders on the island should also be aware that these changes could be important from a waste ban compliance perspective.

Film Plastics will be collected during the construction effort as new materials arrive in protective film packaging. Local partner, grocer, Stop & Shop, has agreed to accept these materials through their store collection program.

Food Scraps were collected from work crews during deconstruction and accepted by local non-profit organization Island Grown Initiative.

Gypsum Wallboard will be collected during the construction effort as off-cuts are generated. Island Grown Initiative accepts clean gypsum wallboard as a soil amendment.

Metal was source separated on-site and collected for recycling at the transfer station. Carroll’s accepts metal for recycling.

Mixed Recycling was source separated on-site and collected for recycling at the transfer station. Mixed recycling includes items such as paper, cardboard, glass, aluminum cans, and plastic bottles.

Stone building materials, such as cobblestones, were identified for reuse on-island by local residents or groups. One hundred fifty (150) decorative cobblestones used as driveway edging were diverted to a local landscape company.

Wood materials were able to be reused by local residents (re-bundled sidewall shingles) or recycled (Figure 6). Approximately 200 8x2x4 pieces of lumber from the deconstruction will be re-used for the construction effort, representing 0.500 tons in avoided disposal.

DONATION

Over the course of the deconstruction 415 individual items were recovered for resale spanning 15 categories. The materials represent approximately 7 tons of recovered materials, a resale value of $47,745, and will save 15.3 CO₂-eq. associated with avoided manufacturing (Figure 7-9; Appendix C). The appraised value of donated items is $116,145. The homeowner can deduct the Fair Market Value of deconstructed and donated items to a 501c3 non-profit organization, such as EcoBuilding Bargains. This creates a tax deduction and a decrease in tax.
liability for the homeowner that would otherwise have been inaccessible had the owner demolished and disposed of the materials.

- 415 individual items donated
- 7 Tons of materials recovered for donation and resale
- 15.3 tons CO₂-eq in avoided manufacturing
- Resale value of $47,745
- Appraised Value of $116,145
- Tax advantages

Recovery of building materials also prevents these valuable materials from going to landfills and makes building materials affordable to people of all income levels. EcoBuilding Bargains provides important employment and affordable building supplies to the Springfield, MA community, which the state has categorized as an environmental justice area.

**FINANCIAL**

The total demolition and deconstruction expenses, including Waste Not’s services and other pilot expenses cost approximately $230,500. Table 2 outlines the costs and tax benefits of three project types: no reclamation, soft strip, and full reclamation. In projects without reclamation, all interior materials are demolished and disposed over an approximately 2-week period. In soft strip projects, finishes and products are salvaged for reuse while building materials are disposed, over an approximately 2-month period. In a full reclamation project, such as the pilot, reclamation and diversion of all feasible finishes, products, and materials were sought over an approximately 3-month period. Pilot-specific expenses are also noted.
Table 2. Financial comparison of no reclamation, soft strip only, and pilot costs.

<table>
<thead>
<tr>
<th>Cost Type</th>
<th>No Reclamation (2 weeks)</th>
<th>Soft Strip (2 months)</th>
<th>Full Reclamation (3 months)</th>
<th>Pilot Expense</th>
</tr>
</thead>
<tbody>
<tr>
<td>Management</td>
<td>$1,000</td>
<td>$10,000</td>
<td>$15,000</td>
<td>$10,000</td>
</tr>
<tr>
<td>Rough Demo Labor</td>
<td>$50,000</td>
<td>$6,000</td>
<td>$25,000</td>
<td>-</td>
</tr>
<tr>
<td>Skilled Demo Labor</td>
<td>-</td>
<td>$90,000</td>
<td>$123,000</td>
<td>$50,000</td>
</tr>
<tr>
<td>Waste Disposal Fee</td>
<td>$25,000</td>
<td>$9,500</td>
<td>$7,500</td>
<td></td>
</tr>
<tr>
<td>TOTAL COSTS</td>
<td>$76,000</td>
<td>$115,500</td>
<td>$170,500</td>
<td>$60,000</td>
</tr>
<tr>
<td>Appraisal Value of Donations</td>
<td>-</td>
<td>$46,212*</td>
<td>$116,000</td>
<td></td>
</tr>
<tr>
<td>*Value at 35% tax bracket</td>
<td>-</td>
<td>$16,000</td>
<td>$40,000</td>
<td></td>
</tr>
<tr>
<td>NET COST AFTER TAX DEDUCTION</td>
<td>$76,000</td>
<td>$99,500</td>
<td>$130,500</td>
<td></td>
</tr>
</tbody>
</table>

*Estimated

Center for EcoTechnology received a $15,000 grant from the pilot committee to provide services to the project. The project also received RecyclingWorks technical assistance services, valued at approximately $3,300 (funded by MassDEP), as well as $2,640 in recovery and donations services, in-kind, from EcoBuilding Bargains. SMCo project management, The Green Mission appraisal, Waste Not deconstruction services, and tipping fees were a homeowner expense. Filming costs were considered a pilot expense for MVVF.

**KEY TAKEAWAYS**

- 10.155 tons of materials were diverted from the waste stream as a result of the pilot.
- Approximately 7,000 tons of mixed C&D materials were sent for disposal rather than recycling. Recycling of mixed C&D from deconstruction projects would improve recycling rates for these types of projects.
- The Recycling Rate for the pilot is 59% which is above the national target of 50%\(^2\). Recycling rates from future projects can be increased by sending mixed C&D materials for recycling on the mainland.
- This model can be replicated on Martha’s Vineyard and other areas of the Northeast.
- The keystone to ensuring success of on-site source separation in deconstruction projects is a dedicated on-site project manager, such as SMCo.

\(^2\) EPA U.S. National Recycling Goal [https://www.epa.gov/recyclingstrategy/us-national-recycling-goal](https://www.epa.gov/recyclingstrategy/us-national-recycling-goal)
• Support and engagement from a community nonprofit, such as MVVF, enables connection of available materials with local outlets – and keeps as many items as possible on-island.

• Hiring a dedicated deconstruction contractor, such as WasteNot, to ensure items are recovered for donation with little to no damage ensures maximum materials recovery and tax advantage for the homeowner.

• The deconstruction process and removing items for resale is the greatest source of waste diversion and ultimately, carbon savings from this project.

• While the full reclamation remains more costly than the soft-strip approach, as demonstrated in Table 2, future projects could employ a targeted strategy that bypasses some of the most labor-intensive reclamation efforts such as removing shingles.

RECOMMENDATIONS

Results of this pilot will inform stakeholders as they evaluate opportunities for furthering building materials reclamation efforts across Martha’s Vineyard. Future projects would benefit from the ability to recycle mixed C&D material. The pilot also demonstrated that an on-island materials reuse programs may be a scalable opportunity for recovered building materials.
OVERVIEW

RecyclingWorks Massachusetts (RecyclingWorks) will provide technical assistance to South Mountain Company for the deconstruction and recycling of materials removed from 6 Noras Lane, Edgartown, MA. RecyclingWorks is funded by the Massachusetts Department of Environmental Protections (MassDEP).

It is understood that materials from on island construction projects are collected in mixed construction and demolition (C&D) dumpsters and transported to the transfer station. From there, C&D debris are crushed and shipped to the mainland for disposal. RecyclingWorks staff are hoping to meet with Carroll’s, the main waste management service provider for Martha’s Vineyard, to understand how and where materials are brought to the mainland from the island and how we can increase the recycling rates of C&D materials.

In this report and the supplemental Construction Materials Management Plan, RecyclingWorks has evaluated opportunities to establish reuse programs on the island for specific materials generated during the project’s construction phase. These reuse initiatives may be scalable, and this project presents an opportunity to start small pilot programs.

In order to get a better sense of the materials that come out of renovation projects like 6 Noras Lane, RecyclingWorks staff suggest South Mountain Company maintain a record of the contents of the materials being removed. This could help better inform recommendations on future projects.

ASSESSMENT

1. RecyclingWorks conducted a site assessment with project team members in June 2022. Materials have been identified and outlined in the Construction Materials Management Plan for suggested recycling and reuse.

2. Some C&D materials can be deconstructed and re-used on the island through creative programs. For example, lumber and other pieces of wood can be used for a number of projects including furniture making and reclaimed decorative wood walls. Other C&D materials may be shipped off island and recycled at C&D processing sites. RecyclingWorks will offer consultation throughout the course of the project to support recycling and reuse initiatives.

3. The project is slated to start after Labor Day 2022.
CONSTRUCTION MATERIALS MANAGEMENT PLAN

4. The Construction Materials Management Plan takes the vision from the project specifications and translates it into an action plan of where waste materials will be staged onsite. Additionally, it outlines each material being targeted, where it will go, who will haul it, and its projected quantities.

5. Assess deconstruction material flow via waste project timeline
   a. Pre-construction clean-out schedule
      i. Consider how materials are made available to reuse outlets on site
         1. Live-loaded
         2. On-site staging area
         3. Storage-onsite or elsewhere (such as the transfer station)
   b. South Mountain Company (with RecyclingWorks support) coordinates the pickup or transfer of materials
   c. Consider waste reduction strategies
      i. Work with suppliers/subcontractors to take back packaging or supply reusable/recyclable packaging
      ii. Other take-back programs with manufacturers of other materials
      iii. On island reuse – there is significant opportunity to deconstruct materials from this project and store them at the transfer station. Other businesses, contractors, and/or artists and makers can use the materials in future projects!

TRAINING and EQUIPMENT

6. See the STAFF TRAINING AND SIGNAGE section at the end of this document.
7. Meet with Carroll, the waste hauler
   a. Discuss available equipment for storing source separated materials for recycling
   b. Discuss how materials will be picked up from the project site
   c. Discuss the ultimate destination for recyclable materials
      i. Ask: “How can the project collect materials to increase their recyclability?” For example, keeping streams such as metal, clean gypsum wallboard, wood, and cardboard separate
   d. Determine when and how diversion reports will be created. Review pre-construction cleanout and deconstruction plan
8. RecyclingWorks can provide customizable signage for crew trainings and labeling containers
9. Conduct crew training prior and during deconstruction
   a. If contamination is observed, ensure staff are being re-trained as needed

PROJECT TARGET DATES
Below is a proposed project timeline.
<table>
<thead>
<tr>
<th>ITEM</th>
<th>IMPLEMENTATION STEPS</th>
<th>TARGET DATE COMPLETION</th>
</tr>
</thead>
<tbody>
<tr>
<td>Deconstruction Project Kickoff</td>
<td>1. Initial meeting held all project partners.</td>
<td>June 2022</td>
</tr>
<tr>
<td>Set Deconstruction Plan</td>
<td>1. Coordinate South Mountain Company staff pickup</td>
<td>August 2022</td>
</tr>
<tr>
<td></td>
<td>2. Schedule EcoBuilding Bargains pickup</td>
<td></td>
</tr>
<tr>
<td></td>
<td>3. For leftover materials, RecyclingWorks can research other outlets</td>
<td>August 2022</td>
</tr>
<tr>
<td>Materials Management Plan</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Meeting with Waste Hauler</td>
<td>1. Meet with Carroll’s to discuss end site for materials, how to increase recycling, and equipment that will be used</td>
<td>August 2022</td>
</tr>
<tr>
<td>Revise and Finalize Plan</td>
<td>1. Team meeting to finalize plan of removal of items prior to construction</td>
<td>August 2022</td>
</tr>
<tr>
<td></td>
<td>2. Decide what materials will be commingled and/or source separated materials</td>
<td></td>
</tr>
<tr>
<td>Waste Bin Signage &amp; Employee</td>
<td>1. Provide all onsite staff with waste management training in advance of project start date</td>
<td>August/September 2022</td>
</tr>
<tr>
<td>Training</td>
<td>2. Label/color code all material containers</td>
<td></td>
</tr>
</tbody>
</table>

**MATERIAL MANAGEMENT RECOMMENDATIONS**

The MassDEP bans the disposal of certain recyclable, compostable, or hazardous materials. Visit this [website](#) to see MassDEP’s full list of banned materials, such as clean gypsum wallboard, wood, metal, ABC, and cardboard. Materials on the MassDEP’s list of bans cannot be placed in trash containers and/or transferred for disposal.

The following materials may be generated by the project. Other materials discovered during the project can be added.
REUSABLE MATERIALS
Local markets for reusable items include:

- Clay bricks, large stones, pieces of wood, lumber/molding, hardwood flooring,
- Kitchen cabinets and sinks, bathroom sinks, vanities, tubs, toilets,
- Stone or solid surface countertops, residential doors, windows,
- Appliances, lighting fixtures, landscape materials, insulation

Tax Deductions

Often a tax deduction can be taken when usable materials are donated to a nonprofit. To determine what materials are deductible, and how to determine their value, see IRS Publication 523 – Charitable Contributions and IRS Publication 561 – Determining the Value of Donated Property.

The project team is working together to get materials donated. Other materials that will be generated during the construction phase may be able to be reused on Martha's Vineyard. See below for these materials and their potential uses.

BRICK AND STONE

Bricks, most commonly non-extruded, clay bricks and stones from foundations, fireplaces, and windows settings are valuable to masons, landscapers and contractors. Additionally, some contractors and masons will rebate projects for carefully removing these materials for them. RecyclingWorks gathered inspiration from this project at Saint Michael’s in Vermont on the potential positive return for salvaging bricks.

For bricks, stones and other landscaping materials that are not donated to EcoBuilding bargains, consider staging them at the transfer station. Sell them to residents or masons/contractors to reuse on future projects.

METALS

Metals are a common material generated at construction sites, most of which can be source separated and recycled with a local metal recycler.

Source separating scrap metal can potentially yield a higher rebate than mixing with other construction debris. Metals such as rebar could also be stored at the transfer station for reuse. Metal scraps can be used in the construction of trendy furniture and industrial style racking.

CLEAN GYPSUM WALLBOARD

Clean gypsum wallboard is banned from disposal in Massachusetts. C&D processors throughout Massachusetts receive source separated loads of gypsum and send it to a recycler in Pennsylvania. Alternatively, the island could consider setting up a recycling program at the transfer station. For example, wallboard can be de-papered and pulverized and added to soil to boost calcium content.
Consider separating clean gypsum scrap from mixed loads by using designated wheeled barrels. Wheeled barrels can be brought outside with ease and emptied into a larger dumpster or other storage container. Depending on where the gypsum goes (recycling or reuse) consult Carroll’s on what dumpsters they have available to collect this material.

**PACKAGING MATERIALS**

Materials such as wood pallets, plastic film and Styrofoam are commonly generated by a project when finished materials are delivered and unboxed. South Mountain Company may consider asking suppliers to take-back pallets or other hard to recycle materials for reuse. Additionally, the team may want to ask vendors to use less packaging, where possible. RecyclingWorks can help draft communications to vendors that ask them to evaluate their packaging type and volume to decrease waste generation where feasible.

**BOTTLES AND CANS**

Plastic/metal/glass bottles and cans are likely to be generated by onsite staff during lunch and breaks. The project team can consider instituting a separate recycling program for these items. Recycling these materials separately will likely lead to a higher recycling rate. Consider working with your hauler of choice to deliver 64-gallon carts to the site. Label the carts with recycling signage (see below) and teach subcontractors and onsite staff about the program and what to/and what not to collect in this stream.

Use [Recycle Smart’s Recyclopedia](https://www.recycle-smart.com) if a staff member has a question about what should and should not be placed into recycling bins for bottles, cans, paper and cardboard onsite.

South Mountain Company can also consider working with a local boy/girl scout or social organization who may be interested in collecting the redeemable cans from the project.

**CARDBOARD**

Cardboard can be recycled with mixed construction and demolition debris; however, it can get contaminated. Consider scheduling a frontload container at the end of the project to keep cardboard segregated. Front load containers are taller, so they don’t take up as much space and have side doors for ease of loading. Cardboard can also be reused with local businesses that ship things or the transfer station can store flattened boxes for residents that need moving boxes.

**STAFF TRAINING AND SIGNAGE:**

**TRAINING**

The onsite team should be trained on the material management procedures in advance of the project start date or as soon as they arrive onsite.

- Utilize portions of daily/weekly/monthly safety training to reinforce handling/sorting procedures or to answer any questions from staff about waste.
• Sub-contractors, laborers shall be given access to waste management plans, signage and progress reports. Celebrate successes and post/share diversion rates with crews to incentivize them to participate in recycling right!

SIGNAGE
Clear signage should be provided for all materials on each dumpster/container. Signage should be weatherproof and visible on all sides of the container. Signage can show a representative picture of the materials to be collected for recycling. One of the Cranshaw team members should be put in charge of removing signage just prior to container pick up and ensuring signage is placed back on the new containers.

- Contact RecyclingWorks for free PDF signage for waste bins. We have translated versions available and can have new signs created as requested. See the signage templates below.

Alternatively, some projects have found using color coded flags placed inside of hampers to designate material streams is easier to manage than waste bin signage. Although waste bin signage can still be handed out to describe/teach staff about the different streams.

Signage Templates

Bottles & Cans

EMPTY BEVERAGE CONTAINERS
Aluminum & steel cans, glass jars & bottles, plastic bottles & containers

NO
Liquids
Plastic Bags
Tissues/Paper Towels
Styrofoam
Food/Soiled Materials

Cardboard

CARDBOARD
Flattened cardboard

NO
Soiled cardboard
Waxed cardboard
Plastic bags
Green strapping and other tanglers
UPDATE: August 2022

C&D Materials Recycling & Reuse Technical Assistance Outline
FOR 6 Noras Lane, Edgartown, MA

Jae, John, Woody and Abbey attended a meeting with Carroll’s staff on Tuesday, August 8 and discussed how C&D materials are consolidated at the transfer station and moved off island. The majority of C&D debris are transported to a landfill in New York. In Massachusetts, there are many materials generated on a construction site that cannot be disposed of in the trash (landfill, waste to energy site). As mentioned earlier, the MassDEP bans the disposal of asphalt pavement, brick, concrete, wood, clean gypsum wallboard, white goods, paper and cardboard, bottles and cans, and more. Both organizations that generate waste (South Mountain) and those that transport it to disposal facilities (Carroll’s) are responsible for complying with the MassDEP waste bans.
UPDATED RECOMMENDATIONS:

ONSITE COLLECTION/SEPARATION FOR RECYCLING (LARGE CONTAINERS)

At this time, Carroll’s confirmed that metal and cardboard are able to be recycled. It is not currently feasible to source separate any other materials for recycling, as the bulk of mixed C&D is disposed of in the trash. The recommendation for these materials is below:

- Source separate cardboard from the trash into a separate dumpster such as a frontload dumpster. These dumpsters have lids to keep the material clean and dry from the elements and sliding side doors for ease of loading (see green container to the right). Contact Bruno’s to schedule the delivery of a cardboard dumpster when deliveries will start arriving onsite.
- Carts or “Toters” can be used to collect plastic/metal/glass bottles, cans, and containers generated from the crew.
  - Carts can also be used to collect crew trash
  - Carts can also be used to collect food scraps from crew meals and snacks.

Contact Island Grown Initiative (Woody) to start a food waste collection program. Contact Bruno’s to schedule a separate trash collection for crew waste.

Carroll’s confirmed metal will be collected and recycled. It can be collected in a separate dumpster (depending on volume) or staged and placed in a roll off near the door. Typical roll off sizes include: 15, 20, 30, or 40 yards (see blue container to the right).

Make sure to clearly label each stream of material at the project site.

ONSITE COLLECTION/SEPARATION FOR RECYCLING (DIRECT HAUL IN SMALL CONTAINERS)

- Another opportunity to ensure materials generated from the site are recycled at a C&D handling facility is to collect materials in dedicated receptacles/bins and deliver them directly to a permitted facility.
  - Below are examples of reusable shipping containers. They are the size of gaylords (pallet boxes/watermelon boxes)
  - South Mountain can also continue using makeshift boxes by utilizing pallets from deliveries to store materials onsite and to transport them.
  - Roll off containers can be used to collect material then haul it directly to a C&D recycler.
ON-ISLAND REUSE OPPORTUNITIES

RecyclingWorks developed a construction materials management plan that details materials that could be generated from 6 Noras Lane and used for on-island uses or recycling. As a result of the meeting with Carroll’s and presentation review with the team, the following materials may be able to be recycled/reused from this project:

- Plastic film (case wrap, plastic bags, shrink wrap) can be collected separately in cardboard boxes, plastic totes, or a big plastic bag and consolidated with a retailer’s plastic film (such as a grocery store or other retailer). RecyclingWorks is happy to help locate a recycler if the project decides to implement this recycling program.
- Pallets, wood scraps, metal rebar and scraps, can be staged onsite until they are picked up by a local artist or makers.
- Dimensional lumber and other structural materials could be staged somewhere on-island for future use by contractors and other builders.
- Surplus insulation, new cutoffs of gypsum wallboard and other over orders can be redistributed to EcoBuilding Bargains, Habitat for Humanity or other projects.
- Any brick and landscape stones can be saved for future South Mountain projects, offered up to local homeowners, and/or masons.
  - CONFIRMED there will be Cobblestones to donate
  - CONFIRMED there will be some bricks to donate.
- Clean gypsum wallboard can be de-papered and pulverized and used as a soil amendment with IGI.
- CONFIRMED there will be wood shakes (wood siding) to donate.
- CONFIRMED there will be chimney blocks to donate.
- CONFIRMED there will be wooden pallets to donate.

Some of the materials disposed of from this project and other construction project on island could be stored in an area such as a vacant building or other covered area until a contractor or other business/person has a use for them. South Mountain can also consider using Facebook marketplace, the Buy Nothing Project Martha’s Vineyard group, or Freecycle to post the items to be picked up from the site directly.

Woody and Abbey will locate outlets for reusable materials via a Google Survey.
WASTE PREVENTION

There is likely coordination for materials, appliances and other products being transported to the island for this project. South Mountain can consider using the talking points in the letter below to ask suppliers to reduce difficult to recycle packaging.

Dear [insert vendor name here],

Thank you for working with us!
The [PROJECT NAME] is a project focused on environmental consciousness with the intention of using sustainable practices in material choice, construction methods, and waste management. One of our main goals is to divert 80% of our construction waste from landfills. We ask that you help us with this goal by reducing the packaging of your product, if possible, for our project.

Activities that may be taken to achieve this include, but are not limited to:

- Reduce use of pallets
- Use of bag packaging over box packaging where applicable;
- Reduce additional layers of packaging through product labeling;
- Reduce the use of additional boxes by attaching containers together;
- Use of air pillows (box sized); and
- Reduce or eliminate key unsustainable materials such as polystyrene foam (commonly known as Styrofoam) packaging (e.g. packing peanuts) and polyvinyl chloride (PVC)

We understand that there are procedures already set in place for packing your product. Whatever measures you can take to reduce this packaging while also ensuring the safe transportation would be greatly appreciated!

Additionally, we encourage all companies to assess their packaging systems and identify any areas where they can reduce material or redesign to greater efficiency. This not only helps with environmental impact but can also present economic benefit for your company. For any questions or further consultation please contact [NAME & PHONE].

Thank you!

[PROJECT NAME]
## APPENDIX B

Sample Daily Waste Log

<table>
<thead>
<tr>
<th>Timestamp</th>
<th>Waste Category</th>
<th>Description</th>
<th>Hauler</th>
<th>Containers (s) Used</th>
<th>Estimated Volume/Weight or Count</th>
<th>Comments</th>
<th>Picture</th>
<th>Disposal method</th>
</tr>
</thead>
<tbody>
<tr>
<td>9/28/2022 13:20:20</td>
<td>Wood</td>
<td>Re-bundled shingles</td>
<td>Local person</td>
<td>27 bundles</td>
<td>8 square</td>
<td>TVfXySr3s</td>
<td></td>
<td>Donated</td>
</tr>
<tr>
<td>10/2/2022 22:06:30</td>
<td>C&amp;D Materials</td>
<td></td>
<td>Bruno's Shop</td>
<td>20 yard</td>
<td></td>
<td>Toler</td>
<td></td>
<td>Disposal</td>
</tr>
<tr>
<td>10/4/2022 14:34:40</td>
<td>Metal</td>
<td></td>
<td>SMC shop</td>
<td>20 yard</td>
<td></td>
<td>Toler</td>
<td></td>
<td>Recycled</td>
</tr>
<tr>
<td>10/10/2022 15:44:10</td>
<td>C&amp;D Materials</td>
<td></td>
<td>Bruno's Shop</td>
<td>20 yard</td>
<td></td>
<td>Toler</td>
<td></td>
<td>Recycled</td>
</tr>
<tr>
<td>10/24/2022 9:13</td>
<td>C&amp;D Materials</td>
<td></td>
<td>SMC</td>
<td>20 yard</td>
<td></td>
<td>Toler</td>
<td></td>
<td>Recycled</td>
</tr>
<tr>
<td>10/24/2022 9:13</td>
<td>Metal</td>
<td></td>
<td>SMC</td>
<td>100 cubic ft</td>
<td></td>
<td><a href="https://drive.google.com">https://drive.google.com</a></td>
<td>Recycled</td>
<td></td>
</tr>
<tr>
<td>11/21/2022 17:35</td>
<td>C&amp;D Materials</td>
<td></td>
<td>Bruno's Shop</td>
<td>20 yard</td>
<td></td>
<td>Toler</td>
<td></td>
<td>Disposal</td>
</tr>
<tr>
<td>11/21/2022 17:37</td>
<td>Metal</td>
<td></td>
<td>SMC</td>
<td>Trash Barrel</td>
<td></td>
<td>Toler</td>
<td></td>
<td>Recycled</td>
</tr>
<tr>
<td>11/21/2022 17:37</td>
<td>Wood</td>
<td></td>
<td>SMC</td>
<td>Trash Barrel</td>
<td></td>
<td>Toler</td>
<td></td>
<td>Recycled</td>
</tr>
<tr>
<td>11/21/2022 17:37</td>
<td>Mixed Recycling</td>
<td></td>
<td>SMC</td>
<td>56 gallon Toter</td>
<td></td>
<td>Toler</td>
<td></td>
<td>Recycled</td>
</tr>
</tbody>
</table>
## APPENDIX C

Environmental Impact of Recovered Materials

<table>
<thead>
<tr>
<th>Metric</th>
<th>Value</th>
<th>Unit of analysis</th>
<th>Method</th>
<th>References</th>
</tr>
</thead>
<tbody>
<tr>
<td>Avoided carbon dioxide equivalents (i.e., embodied carbon in recovered materials offsetting the need for new materials)</td>
<td>15.3t CO$_2$-eq</td>
<td>Per truckload delivered to EBB and sold to new users</td>
<td>Based on survey, estimate weight contribution of each recovered material type (i.e., appliances, lumber, plumbing materials) Use CET’s model of embodied carbon per building material type to quantify total embodied carbon in truckload Assume 75% of collected materials are re-sold</td>
<td>EPA WARM tool, Inventory of Carbon and Energy (ICE) database</td>
</tr>
</tbody>
</table>

### Descriptive Metrics

<table>
<thead>
<tr>
<th>Metric</th>
<th>FY23 Value*</th>
<th>Unit of analysis</th>
<th>Method</th>
</tr>
</thead>
<tbody>
<tr>
<td>Inventory of recovered material</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Cabinet Sets</td>
<td>1</td>
<td></td>
<td>Survey/checklist provided to driver to complete upon collection</td>
</tr>
<tr>
<td>Doors</td>
<td>40</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Windows</td>
<td>9</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Building Materials</td>
<td>45</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Furniture/Décor</td>
<td>164</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Appliances</td>
<td>12</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Plumbing</td>
<td>14</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Chandeliers</td>
<td>3</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Lighting</td>
<td>34</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Bathroom Sinks</td>
<td>1</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Hardware</td>
<td>71</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Kitchen Sinks</td>
<td>1</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Flooring</td>
<td>1</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Moulding</td>
<td>1</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Electrical</td>
<td>7</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Siding/Decking/Roofing</td>
<td>1</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>