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Grant Request Amount: **\$200,000**  
Project Timeframe: **24 months**

**Project Abstract:** Construction and Demolition Debris (C&D) management has been an area of growing concern, nationally, and within the state of Florida. In the state of Florida, C&D debris makes up approximately 33% or 9.4 million tons of the waste stream and currently only 3.3 million tons, or 36% of the C&D debris is diverted to recycling or reuse. In Palm Beach County, C&D makes up 21% of the waste stream or nearly 250,000 tons of materials. Currently about 20% of the C&D or 46,295 tons of material, is being recycled. Building materials are bulky, difficult to manage, typically not recyclable as they contain a mix of materials types. Building materials can only be effectively diverted through an infrastructure to manage the materials. Currently, 169,353 tons of C&D debris was disposed of in 2001.

The Solid Waste Authority of Palm Beach County (SWA) proposes to develop and operate a Building Materials Reuse Center (BERC II). The BERC II will facilitate the donation of building materials no longer needed by local builders, developers, renovators, building materials manufacturers, distributors and retailers, and homeowners. The materials would be collected, screened and then warehoused, and made available to local non-profits, affordable housing organizations, community development organizations, and low-to-moderate income homeowners meeting certain established criteria. It is the intent of the SWA that the BERC II become the model for other Florida centers and serve as the template for a statewide building materials solid waste diversion program.

The Building Materials Reuse Center (BERC II) is intended to be an expansion of the Business Equipment Reuse Center (BERC 1), a project funded by Florida DEP in 2000 to divert quantities of bulky business equipment from businesses to local non-profits. BERC 1 has proved its viability and success and today, only one year into the project, SWA can tout an impressive 249,364 pounds or 125 tons of material diverted from landfilling to reuse. BERC II will utilize the same successful model for promotion, collection, processing and distribution, proven during the initial phases of BERC 1. BERC II will be a complimentary program of an existing program supported by the state, as the two operations can share personnel, facilities, and material handling equipment. In addition, there will some overlap of target audience, however, BERC II provides an opportunity to reach a new potential market for waste diversion, the building community, and to reach a new source of materials currently being landfilled. While operating the BERC 1, SWA staff was offered a variety of building materials as a result of local construction projects. While SWA did not have the resources for handling all the offerings, they did accept one donation of new building materials that were destined for the landfill in order to keep the material from disposal and to distribute the material to existing non-profits who could use the material.

The BERC II seeks to match the materials available with the materials needed to meet several community objectives: *To preserve the environment by keeping excess building materials and supplies out of the waste stream (lumber, brick, concrete, doors, windows, toilets, sinks, hardware, wallpaper, carpet and more); To benefit the affordable housing community and nonprofit organizations by providing useful building materials and supplies; To help rebuild deteriorating areas of Palm Beach County and to help instill home ownership pride, especially among low-income groups; To help manufacturers, distributors and retailers find an outlet for their outdated, obsolete, mis-tinted or otherwise unsellable stock of building supplies that would get thrown away; To utilize certain hazardous materials which still have useful life, instead of disposing of them as a hazardous waste, such as paints, stains, thinners, cleaners, and more; To expand the program over time to utilize the resources and expertise from the center to provide educational and occupational programs to the community, such as the partnership with the Sheriff's Department Drug Farm.*

**Project Description:** The amount of C&D in the waste stream is expected to increase as a result of increased development and construction occurring throughout the country. There is on-going construction of residential (new home construction and remodels), service (hotel and restaurant), office and banking, and other commercial structures. According to Metro Study, residential housing starts for the county from (mid-2001 to mid-2002) were 8,324. There is an average of 12,945 new building permits issued each year in Palm Beach County. In other words, Palm Beach County is growing and there is significant construction continuing to happen even with the slowing economy. Currently, Palm Beach County's population increases an average of 20,000 people each year, with the majority of the influx in West Palm Beach, but significant growth in Palm Beach Gardens (more than 30 percent increase since 1990), Riviera Beach, Jupiter, and Lake Worth too. This trend means increased waste generation, especially in the C&D area, as the county accommodates this influx.

There is also an increase in the poverty level in Palm Beach County. Over a ten year period, the poverty rate increased 37%, 9.9% of the population, or 110,430 individuals living at or below the poverty level. The county unemployment rate is 6% or 25,286 individuals. Low-income families are in need of materials to fix up their homes in order to stay in a neighborhood, maintain a house, and gain pride in home ownership.

While individual waste haulers may divert some of their wood waste to composting and/or mulching facilities, this only represents a small fraction of the overall material generated, and the majority of the C&D materials in the country are being disposed of. Local builders, such as Ocean Royale, generate excess building materials from their job sights everyday. In Palm Beach County, there is a common, daily problem – the need for a link between excess building materials and those organizations and individuals who seek materials to rebuild their communities, their churches, and their non-profit organizations.

The Solid Waste Authority (SWA) has proactively sought innovative ideas for managing waste by operating a state-of-the art landfill, composting facility, material recovery facility, waste-to-energy facility; and the newest addition, a very successful Business Equipment Reuse Center (BERC 1), whereby SWA, for the first time, delved into the very important waste management option of REUSE. Reuse is second only to waste prevention on the waste management hierarchy.

Building materials reuse centers are a growing trend across the county as a means of diverting still usable waste from the construction, remodeling, deconstruction and demolition industries. There is also waste generated from the manufacturers, distributors and retailers of building materials when there is obsolete inventory or over-runs. It is safe to say that it is substantial, when you look at local, state and national figures. There are currently more than 200 building materials reuse centers across the country. Each center is mission-focused to serve their local communities, focusing on diverting waste, historic preservation, or affordable housing rehabilitation. Some simply take in materials from local contractors, while others actually deconstruct structures. There are numerous business models that can be evaluated for their appropriateness and possible effectiveness in Palm Beach. The SWA will work with the local building and development community to seek out materials generated and typically disposed. Key stakeholders in this effort will include: Gold Coast Builders Association (250 residential builders), Association of General Contractors (West Palm representing commercial builders), and the Association of Builders and Contractors (Delray Beach). The proposed project would serve as a pilot to find the most cost-effective means of spotting collection containers on construction and demolition jobsites or working with local haulers to do so, transporting materials, processing materials, and making them available at a warehouse for reuse in the community. Located in a centrally-located, convenient facility, the BERC II will occupy between 15,000 and 25,000 square feet of warehouse and office space. The facility will be co-located with the BERC 1 and share staff and equipment, and to operate as efficiently and cost-effectively as possible. Donations will be picked up by center staff or volunteers, or brought to the facility by the donor. Once the materials are evaluated and sorted, they may be cleaned up or reconditioned by the Drug Farm residents, then displayed in the warehouse, and made available to nonprofit organizations, religious organizations and the affordable housing community. The BERC II will address the current and anticipated flow of reusable building materials. Based on county's demographics, and compared to reuse initiatives in metropolitan areas of similar size, it is estimated that the BERC II will divert 12,000 -15,000 tons of materials in the first three years of operation.

**(a) Technologies or Processes:**

***Not in Common Use in Florida:*** There are currently about 200 building materials reuse programs across the country. Currently there are only six (6) Florida communities that have even implemented C&D reuse programs. Several are affiliated with local Habitat for Humanity organizations (Alachua, Charlotte and Pinellas Counties) , take in donations and sell the materials in a building materials thrift-store fashion, and use the revenues to support new home building for low-income people. University of Florida and Hillsborough County are both engaged in deconstruction activities, along with building materials reuse. Orange County operates a program in partnership with the county correctional office.

Though building materials reuse has been implemented in the state, there has not been a government- operated facility that will have the mutual mission of waste diversion, affordable housing and provide the opportunity for SWA to create a new model in building materials reuse as a part of a county comprehensive solid waste management program. Using other models across the country, there are opportunities for collection of materials at construction and demolition job sites, at transfer stations and landfills. There is also tremendous opportunities to partner with the local building industry, demolition contractors, and waste haulers to capture material currently being landfilled. The Building Materials Reuse Center is exemplary of waste reduction, business development, and community development, to provide mutually beneficial benefits to a variety of organizations and populations.

***Novel Application of an Existing Technology or Process:*** The unique attributes of this program are demonstrated most in the ways that the SWA will go after construction and demolition debris generators and divert materials to reuse, a higher form of waste management than recycling. In addition, the project will utilize strategic partners in the building & development, waste management, non-profit, and other government agencies, such as the Sheriff's Department Drug Farm residents. The project will find convenient, innovative, and cost-effective methods of collecting materials from jobsites. The project would include training programs that could help the building trades participate in a reuse program by assisting in segregating reusable materials at the source. The project will explore ways to work with existing haulers to pull dumpsters and drop materials at the Building Materials Reuse Center, or to contact haulers or SWA when reusable material containers need to be.

Building materials generated at a construction site are bulky, contain mixed materials, don't have a ready market in the same way recyclables do, and require specialized training, equipment, and vehicles for handling. And, in the instance of paints, stains, cleaners, and some other materials, they pose a particular challenge because they cannot be disposed of in a municipal waste stream, but must go to a hazardous waste facility. The goal, then, would to use these material in the manner in which they were intended instead of throwing it away.

The Palm Beach County Sheriff's Office will provide assistance in picking up materials, sorting, and possibly even providing some value-added services, such as repair and fabrication. For instance, the Drug Farm residents could rewire light fixtures, polish hardware, repair a lock set, or other minor repairs that would help an item that would be unusable become reusable. The Drug Farm residents can also provide labor for inventory stocking throughout the warehouse.

The Building Materials Reuse Center will also be implemented as a partnership with local business, especially local builders and developers, and waste haulers. SWA will work through their membership in the Gold Coast Builders Association and the waste haulers to create programs that can solve problems to local C&D waste challenges. In addition, manufacturers, such as Cyclo Industries, Devcon Consumer Products, and Plastec Industries, can utilize BEREC II to get rid of obsolete stock without throwing it away.

The Ocean Royale new construction project resulted in 6,346 pounds (3.173 tons) of material diverted from disposal. This represents only a sampling of material that could be available should there be an infrastructure to manage building materials in Palm Beach County. Today, there is no such comprehensive infrastructure in the county, and with this rare exception, perfectly good, reusable materials are being thrown away instead of used.

## Ocean Royale Material Donations

Item	#	Est. Weight
Medicine cabinets	38	266
Toilet paper holders	7	21
Towel bar sets	72	288
Soap Dishes	90	270
Bathroom windows	2	40
Schlage passage door handles	28	56
Thresholds 36"	150	450
Ent door w/jamb 5/8 x 7/0	1	100
Mirror bypass door set 6/0	3	45
Mirror bypass door set 4/0	13	130
Metal door 3/0 x 6/0	3	105
Doors (solid) varied sizes	32	1120
Aluminum vent (commercial) 5' x 5'	1	50
Door closers	2	5
Threaded rods 3/8" x 5' (for the Drug Farm)	60	120
Plywood 4' x 8' (for the Drug Farm)	14	280
Ceramic tile (misc sizes & style)	500	3000
<b>Total Weight</b>		<b>6346</b>

Finally, the program will be set up to meet the needs of the affordable housing community. Materials that would have been destined for the landfill, will instead be diverted for use by the local affordable housing organizations, low-to-moderate income people, local non-profits, churches and others looking to build new or rehab deteriorating facilities or housing. A preliminary survey of Palm Beach County organizations was conducted, and it was found that Palm Beach Housing Partnership and Habitat for Humanity of Palm Beach County were both very supportive of the concept and verified the need for such a program.

***Overcoming Obstacles in waste reduction in new or innovative ways:*** No two reuse centers are exactly alike since each are started by a local champion, may have a different spin on their mission to meet specific local needs, and may have access to different resources. But, others in the state interested in starting up a business equipment reuse center can greatly benefit from the process, programs, and partners set forth in the SWA business plan. In addition, it is not uncommon for reuse center located within a region to work cooperatively on large donations, redistribution systems, marketing, and sharing of ideas.

In planning for the BEREC II, SWA will again draw upon the expertise of other national reuse centers through the Reuse Development Organization, Inc., (ReDO) a national 501(c)(3) organization promoting reuse for its environmental, social, and economical benefits. ReDO is the only organization dedicated solely to the issue of reuse, and brings the collective expertise of those who operate successful reuse programs, such as The Loading Dock in Baltimore, The Storehouse in Chicago, Rehab Resource, Inc. in Indianapolis, and many others. ReDO provided expertise and planning for the BEREC I, and will provide technical assistance to the SWA in developing a business plan and successfully implementing BEREC II. The business planning phase will involve a thorough analysis of supply and demand, facility, equipment and personnel needs, opportunity for community partnerships, and analysis of cost and materials diversion.

Many communities struggle to move beyond recycling programs to incorporate reuse into their solid waste programming. The solid waste authority has proven an ability to establish strong and diverse waste management programs.

**(b) Targets:**

The Center will target and divert from the waste stream a variety of building materials and supplies, including doors, windows, roofing material, lumber, bathroom and kitchen fixtures, lighting, electrical and plumbing materials, wallpaper, carpet, cabinets, hardware and much, much more. There is not currently a market for this material by any for-profit organization, and therefore, there is significant potential to work with builders, renovators, developers and even homeowners, to capture materials from disposal and divert them to reuse.

Builders looking to save money on disposal, and haulers looking for ways to service their building industry clients, can both benefit from the Building Materials Reuse Center. A preliminary survey of haulers in Palm Beach County indicates an overwhelming willingness to support this program.

Local builders, such as Centex & Rooney indicate that they would be interested in a service that would help them divert materials and save money, especially if provided as a service through their hauler. A challenge was noted that not every jobsite would be suitable because of small lot sizes or other factors, but that many of their projects would be good candidates for construction waste diversion.

According to South Florida's Waste Management Recycle America representative, Victor Storelli, haulers charge both for the dumpster pull and for the disposal. Storelli suggests that clients would be interested in a program that could save them money on their disposal, and that his haulers would be interested in working with builders to pull still-usable materials. He indicated that common waste might include brick, lumber, and roofing material, to name a few.

Barkley Henderson, President & CEO of the Association of Builders and Contractors, has indicated a willingness to participate in discussion of such a program on behalf of his membership. The association be a direct link to many of the building community in Palm Beach County in developing a workable program and in sharing information and education among the industry on the importance of reusing materials as an alternative method of management to disposal.

The Building Materials Reuse Center will fill an existing gap in waste management options, and offer a convenient, cost-effective alternative to landfilling. Reuse is the most efficient, if not the only, means to divert a vast portion of the targeted materials. For example, while wood and glass are theoretically recyclable, once they are in the form of a window, it is not feasible or cost-effective to recycle the material; or a door made of up wood and hardware might also contain recyclable components, but painted wood cannot go into composted operations and the metal hardware would be labor intensive and therefore not cost-effective to remove and recycle. This holds true in the case of many building materials. Therefore, these items today are destined for the dumpster.

During the business planning process, a variety of techniques and strategies for collection of C&D will be tested. From dropping collection bins at jobsite for segregation, to working with haulers to pull materials to the BERC II, to providing drop off opportunities to builders, there will be many potential ways the program could develop for maximum efficiency, cost-effectiveness and participation. The goal will be to find a program that builders will support and utilize to increase the county's diversion of C&D related materials.

### **(c) Environmental and Economic Benefits/Cost Effectiveness:**

The Solid Waste Authority of Palm Beach County is strongly in support of reuse program to compliment existing recycling programs. Reuse offers the same waste diversion benefits of recycling, but offers much, much more in terms of environmental, social and economic benefits to the residents of the country.

*Methodology:* Though higher on the waste management hierarchy, few communities have tackled reuse as a method of waste diversion. However, reuse is higher on the waste management hierarchy than recycling since it eliminates the environmental impacts of manufacturing a new products, e.g., raw material extraction and consumption, air and water pollutants of the manufacturing process, and transportation emissions.

*Toxicity:* The Building Materials Reuse Center will also provide an outlet for many toxic materials, such as paints, stains, cleaners and more. The center will provide an outlet for the collection and redistribution of these materials in the manner in which they were intended ..to be used, not disposed. Reuse of toxic materials reduces the potential for the development of toxic leachate.

#### **Environmental Benefits:**

- (1) It is estimated that the Center will result in the following diversion rates over the next three years: Year One - 2,000 (planning will take up six to nine months, so it is estimated that the center will only be operating 6 months); Year Two - 3,000 tons; Year Three and each year thereafter - 4,000 - 5,000 tons.
- (2) Reuse has been identified as an effective means of reducing greenhouse gases linked to global warming, especially those items targeted by this building materials reuse center. Wood extraction and manufacture of wood products, as well as the disposal of wood products has been identified by US EPA as a major contributor to CO<sub>2</sub>, a greenhouse gas. In addition, forest sequestration avoided by reusing items, such as window frames, doors, lumber, and more, can has a positive net effect on the depletion of the ozone layer by taking in the CO<sub>2</sub> in the atmosphere before it gets to the upper atmosphere.
- (3) This project will provide an outlet and reuse opportunity for one of the most difficult materials in the waste stream -- building materials from construction and demolition. These bulky, heavy-weight, oversized, mixed materials represent one of the most difficult to manage because of the need for specialized equipment, human and other resources, space, etc.

#### **Economical Benefits:**

- (1) Often materials that are reusable are not cost effectively recycled because of mixed materials or the value of the material in the marketplace. To deconstruct and segregate an item, such as a door, and process the material for recycling, takes significant collection and processing equipment, infrastructure and labor; whereby reuse simply redistributes the item from one to another, requiring fewer resources. In addition, painted wood surfaces are not accepted in compost program. Some items, such as wood flooring, has little inherent value once ground because it is an abundant commodity and there is far more material available than the markets can absorb. However, wood flooring being reused as wood flooring has been determined to provide a scarce resource and a quality product at a low price (compared to purchasing new wood flooring). Therefore, reuse becomes the most cost-effective means for managing many of the items commonly found in building construction and deconstruction.
- (2) Reuse provides an economically beneficial alternative to nonprofits, individuals, and others in need of building materials. A fire damaged home in Indianapolis was completely renovated using \$5,000 of used materials and donated labor, saving the homeowners tens of thousands of dollars during their time of need. Reuse provides a means for acquiring the needed items.
- (3) Donating businesses save significant money by being able divert materials to reuse versus disposal and receive the economic benefit of reduced disposal costs. Currently, the landfill tipping fee for Palm Beach County (a landfill owned by the SWA, is \$26/ton). The reuse center will be offering pick-up of items at no charge to their business clients utilizing the assistance of the Drug Farm residents. Businesses can also take

advantage of tax benefits when donating inventory or items that have not been fully depreciated to non-profit 501(c)(3) organization.

- (4) The economic feasibility and sustainability of building materials reuse through deconstruction has been demonstrated in a study by the University of Florida, Center for Construction and the Environment. The study, conducted in 2001, found that deconstructing and reusing materials, especially materials of value such as tongue-in-groove flooring, could be more cost effective than disposal. While SWA won't be directly involved in deconstruction, they can offer an infrastructure to local deconstruction/demolition contractors to move materials to reuse.
- (5) Adding the Building Materials Reuse Center as an add-on to the business equipment program will make both programs more cost-effective and sustainable. They will share space, personnel and equipment, therefore lowering the cost of operation for both programs than if operating two independent programs.

**Social Benefits:** In addition to environmental and social benefits, in many communities, reuse becomes the mechanism for social rehabilitation, job training, youth development, and other successful community development efforts.

There are 8,686 substandard housing units located in the county which are in major disrepair. Of those units, 46% are owner-occupied, while 54% are renter occupied. According to the Palm Beach County 5-Year Plan (October 2000 - September 2005), 93% of those units deemed substandard are suitable for rehabilitation. Partnerships with Housing Partnership, Habitat for Humanity and other local non-profits can benefit their affordable housing missions.

The drug farm rehabilitation program becomes the first of many possible social programs that could be implemented in conjunction with the reuse center. As the BERC 1 has utilized the Sheriff's Department Drug Farm, the BERC II will also utilize the drug farm residents to help collect, process, stock the warehouse, and repair materials. This provides a means for residents to learn skills and responsibility.

These added social benefits can help a community gain political support for continuing a program beyond a grant period. They can also add quality-of-life benefits which are less tangible, but no less important.

**(d) Transferability:**

***Transferability:*** Once the Center is up and running, it will serve as a model to the rest of the state as a cost-effective means of removing bulky building materials from the waste stream while also meeting a material need in the community. As stated earlier in this proposal, no two centers are exactly alike. However, other communities can utilize the experiences and plans of the Palm Beach County center to lay the groundwork for their own activities.

Information on how the SWA set up the infrastructure and built the relationships will be some of the most valuable information to share. In addition, sharing the experience of the day-to-day operations of a center operated by a waste authority, unique from non-profit operated programs, will also provide valuable insight to those interested in starting up a center. The concept of a reuse program can appeal to a wide variety of constituents across the state, from solid waste managers, community development organizations, non-profit groups, builders, developers, renovators, affordable housing organizations and government agencies can all benefit from the completed plan. The Center's business plan, then, provides the "roadmap" for other communities in Florida to create similar programs, addressing their specific demographics, resources and needs.

***How The Program Will Promote That Transferability:*** Just as information about the planning, start-up and lessons learned about the Business Equipment Reuse Center, SWA will seek every opportunity to share similar information about the Building Materials Reuse Center. SWA will initiate opportunities for tours and on-site visits from those interested in starting up building materials reuse programs. In addition, SWA will look to local partners throughout the state, such as Florida Department of Environmental Protection, Southern Information Waste Exchange, and Recycle Florida Today. In addition to working with those actively involved in the waste management field, there would also be a strong push to share information with the builder community. By working through the local builders associations, such as Gold Coast, Association of General Contractors, and the Association of Builders and Contractors, SWA can help transfer technology of this concept and success by doing education and outreach during their meetings and events, writing letters in their association newsletters, and so on. Finally, SWA will also work with the Florida Green Building Coalition to help share successes and lessons learned throughout the state.

The Center will provide an excellent example of how to move up the solid waste hierarchy. Furthermore, there are numerous examples of how reuse programs have been replicated in other areas of the country. This is exactly what the project strives to accomplish - to bring the best practices, the experiences and expertise, the pitfalls and challenges, and the successes of all the other reuse organizations to Palm Beach County to create a successful BERC II.

**(e) Local Support:**

The success of the Palm Beach County SWA project hinges on the number and diversity of partners, from the builders to the solid waste haulers to the affordable housing community to the local correctional facility. Representation from each group has already express genuine interest in being involved with such a program. As with the BERC 1, the SWA anticipates that through a strategic process, more and more important community partners, especially in the builder/developer field, will have interest and get involved in the development, implementation, and long-term support and participation in the BERC II.

In addition to all the time, energy, and commitment in the form of in-kind contributions to this project, there will also be significant cash contribution from the SWA.

The SWA will contribute substantial financial contribution to make certain that the BERC II has all the resources necessary for success. Personnel, building, vehicle, equipment and other resources will be cost-effectively shared between the BERC 1 and the BERC II. SWA will have dedicated resources and staff for the BERC II, but can also draw on other staff and resources when necessary. For instance, when the BERC II has several locations of materials that need to be picked up at the same time, SWA can call in reinforcements and shift recycling collection staff to assist with the BERC II. Similarly, the BERC II has access to the Drug Farm residents and personnel when extra human resources are needed for loading/unloading materials, processing materials, or other labor.

The total project cost for the BERC II planning and implementation is **\$602,158**. The request for funding from the Florida Department of Environmental Protection is **\$200,000**. The SWA will contribute the following in-kind personnel contribution: 50% of the BERC I manager's time; 50% of the BERC I driver's time; 50% of the BERC I warehouse/inventory staff's time; 33% of 5 recycling collector's/driver's time; 10 drug farm laborer's time for 4 hours every other week plus one supervisor; a roll-off truck, a BERC II box truck, a pick-up truck; a forklift; and media/graphic design for outreach and education. This cash/in-kind contribution represents **\$402,158**. SWA is requesting less than 1/3 of the total project costs and contributing more than 2/3 the total project costs in cash and in-kind contributions.

Business planning, coupled with Solid Waste Authority's proven record of innovation, ensures a successful program. Further evidence of success can be found in the quality and quantity of the program partners, and the level of commitment to in-kind and cash contribution to this project.