Construction Waste Reduction and Recycling
Waukesha County Retzer Nature Center Expansion 2004

June 2004 – May 2005

Final Report

Prepared by

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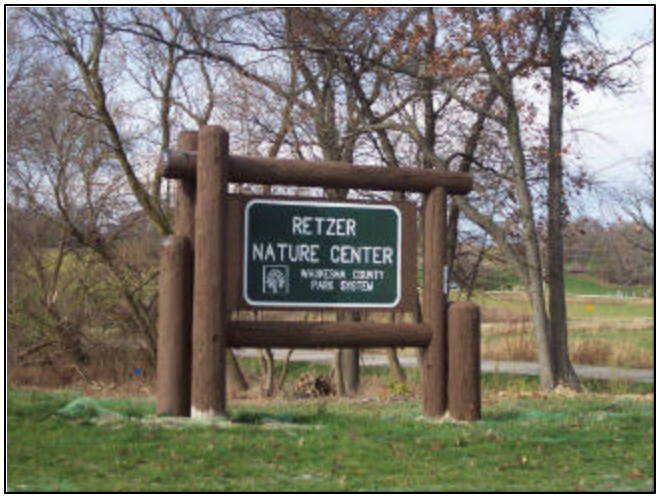
Introduction

In February of 2004, WasteCap Wisconsin conducted a site visit for the Waukesha County Retzer Nature Center expansion. The site visit revealed many opportunities for waste reduction and recycling during construction.



Waukesha County Department of Parks and Land Use hired WasteCap Wisconsin to plan, implement and document construction waste management efforts at the site. WasteCap's scope of services included: develop a construction waste management plan; provide technical assistance, market information and research support; instruct and educate subcontractors about their role in the program; review status of construction waste management plan at meetings; conduct waste audits and monitor program; document construction waste management results; create summaries of waste; create a final construction waste management evaluation; report and share findings.

The new Nature Center's aim at the beginning of the project was to divert at least 50% of the construction materials used from the landfill, while striving to achieve an ultimate goal of 75% diversion rate. To reach this goal, the following materials were recycled or reused; concrete from walkways and columns, window and door glass, cedar roofing shingles, corrugated cardboard, drywall, scrap metal, wood, and cans and bottles.

Creative Constructors was the general contractor, and Fisher-Fisher-Theis, Inc. provided the planning and design for this project. The Retzer Nature Center expansion included the addition of a basement, a new one-story building (Learning Center), and a Planetarium. The original nature center was retained except several walls, which were removed to join the existing center with the expansion. The new building is constructed with cedar siding and asphalt shingle roofing. The floors are made of concrete, and drywall was used to separate rooms.

The project also included the demolition of two walls from the original building, as well as the replacement of shingles on the roof. The walls are made of fieldstone and concrete, with some portions covered by cedar siding.

The new expansion added 8242 ft^2 to the existing 5,876 ft^2 building for a total of 14,118 ft^2. Construction began in early June of 2004 and was recently completed at the beginning of May, 2005.

1.) Summary of Results

Crews from all trades were extremely cooperative with the reuse and recycling program on the site.

Crews diverted over 140 tons of recyclables from being dumped in landfills and ended up with an astounding recycling rate by weight of 82.17% - exceeding the original goals by over 7%!

This project …

- Had the cooperation of numerous individuals on the project all working to separate their wastes and recover resources that became new products instead of ending up in landfills.
- Found an artist willing to take the glass from windows and doors to use in her art projects.
- Recycled over 175 cubic yards of construction waste materials
- Kept over 120 tons of concrete and 10 tons of wood out of landfills.
- Exceeded its 75% recycling goal reused many of the materials that would have normally gone to waste.

2.) Provide construction waste reuse and recycling specifications.

Construction waste reuse and recycling specifications were provided to the General Contractor in July and incorporated into contracts---requiring all contractors to recycle. **See attached specifications under section 1.**

3.) Develop a construction waste management plan.

The plan was completed in June and revised in July and included:

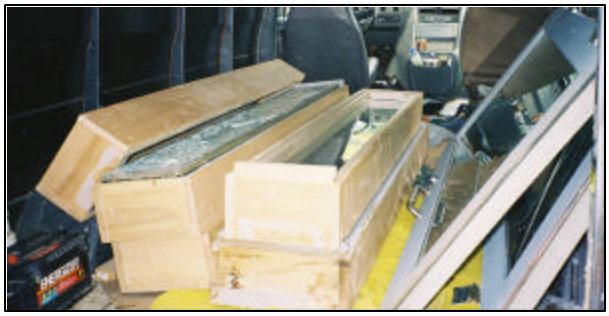
A. Description of the project and identification of a construction waste management plan manager.
B. Reduce, reuse and buy recycled action items.
C. Recycling goal of 75% diversion with a minimum 50% diversion goal.

D. The name of the landfill where trash was disposed, the landfill tipping fee and the projected cost of disposing all Project waste in the landfill.
E. Recycling service provider and targeted materials for recycling.
F. Responsible parties for various recycling operations.
G. Communication plan.
H. Motivation plan.
I. Evaluation plan.
J. Analysis of the proposed jobsite waste to be generated, including types and quantities.
K. Materials-handling procedures for all targeted materials for recycling.
L. Description of meetings held to address waste management.
M. Description of waste auditing procedures.

The revised report is attached to this report under section 2.

4.) Provide technical assistance and market information to facilitate increased waste reduction, reuse and recycling of construction materials.

WasteCap helped identify markets for glass which is not a normally recycled material. Excess glass was taken by local artist Catherine Lottes (pictured right) and used for countertops.



Excess glass doors and panels went to Lisbon, Storm, Screen and Door for resale.

WasteCap also researched whether the cedar shingles used in construction could be recycled and determined that they could be recycled. Waste Management took the shingles and incorporated them into their regular wood recycling program.

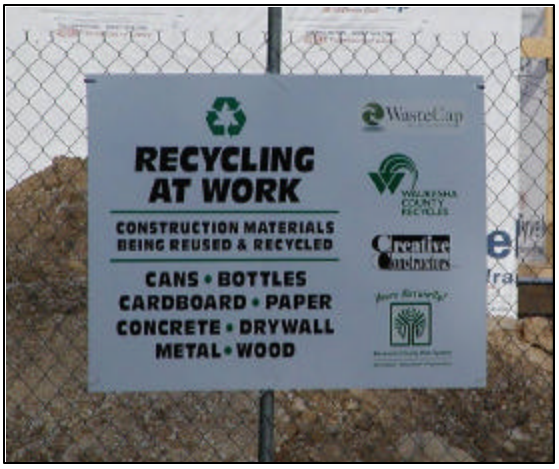
The project also showed leadership in reusing the fieldstone from the columns – the site superintendent in particular spearheaded this effort and ensured its success.

Concrete from walkways (pictured left) was taken to a local quarry.

5.) Instruct and educate contractor employees and subcontractors about their role in the program.

WasteCap attended pre-bid meetings, regular job site meetings approximately once a month and other meetings as needed. WasteCap also created educational materials for all crews, including:

- A handout/sign posted in the job trailer that was distributed to crews as they came onto the job site. **A copy of this handout can be found in Section 3.**
- Two signs posted in clear view on the site which detailed materials being recycled (pictured right) and results to date.
- Material signs for the dumpsters explaining which materials were to be put in which dumpster for recycling.



6.) Conduct waste audits and monitor program.

A WasteCap Wisconsin representative conducted approximately one site visit/waste audit per month from July 2004 through February 2005 to assess if improvements needed to be made to the recycling program.

7.) Ensure proper placement and labeling of containers.

WasteCap worked with the construction project manager and hauler to ensure clear signs on all recycling and trash containers. WasteCap also encouraged that the signs on the recycling containers were different from those on the trash containers. WasteCap designed and provided signs for recycling and trash containers. Containers were located in positions to best facilitate recycling compliance and efficiency for the subcontractors.

8.) Document Construction Waste Management Results.

WasteCap obtained and documented weight and volume information from the hauler, contractor, and subcontractors who hauled their material back (as applicable), and tracked progress. WasteCap documented the project through photographs, interviews with the site superintendent, owner, project manager, and subcontractors and written documentation.

For example, Linda Wainstock, Waukesha County Recycling Specialist stated "We have had excellent cooperation from the general contractor, Creative Constructors, who had done some recycling on other construction sites."

WasteCap provided a monthly summary report to the construction materials management team. **See monthly reports attached in Section 4.**

9.) Final Construction Waste Management Evaluation.

We are pleased with the methods we have developed to transfer, collect and haul materials from the site.

Table 1 (below) shows a summary of waste and recycling records from June 2004 through May 2005.

Material	Volume (yd^3)	% of Total Volume	Weight (tons)	% of Total Weight
Cardboard	2	1.12%	2.24	1.59%
Scrap Metal	24	13.45%	4.03	2.86%
Wood	79.05	44.3%	10.03	7.12%
Concrete	60	33.63%	120	85.17%
Reuse	13.38	7.5%	4.6	3.26%
Total Recyclables	178.43	48.13%	140.9	82.17%
Total Trash	192.33	51.87%	30.58	17.83%
Total	370.76	100%	171.48	100%

Table 2 (below) describes what happened to the materials after they were hauled from the site. Trash was taken to the landfill and buried while the rest of the materials were recycled into new materials, reused as soil stabilizers, etc.

Material	Destination after leaving the site
Cardboard	Waste Management Recycle Center
Scrap Metal	Mill Valley Recycle
Wood	Waste Management Wood Recycling Program
Concrete	Waste Management Recycle pile to be recycled at a later date
Glass	Catherine Lottes, artist, and Lisbon, Storm, Screen and Door
Fieldstone	Reused on site
Trash	Metro Landfill

ATTACHMENTS
Section 1

The following is draft language for Project Specifications / Contracts for Retzer Nature Center, Section 1.1 General Conditions, and covers the clean up and recycling responsibilities of Subcontractors.

4.15. *CLEANING UP*

4.15.1. *Subcontractor at all times shall keep the site free from accumulation of waste materials or rubbish caused by his operation in accordance with the construction site waste recycling plan. At the completion of the Work, he shall remove all his waste materials and rubbish from and about the project, as well as all his tools, construction equipment, machinery and surplus materials and shall clean all glass surfaces installed by him and leave the Work "broom clean" or its equivalent, except as otherwise specified. Subcontractor shall clean, repair, and restore materials, equipment and surfaces damaged by Subcontractor to the original specified conditions.*

4.15.2. *If Subcontractor fails to clean up, Contractor may do so and Contractor's costs thereof shall be charged to Subcontractor.*

4.15.3. *Construction Site Waste and Recycling Plan*
All Contractors will abide by the Recycling Guidelines stated below. Our goal is to minimize the environmental impact of the construction project and reduce our waste by 50%. To reach this goal the following items will be diverted from the landfill waste stream and recycled or reused. In doing this we will be able to keep track of all the material land filled or recycled by the subcontractor, if they decide not to use our receptacles. This will be a joint effort by Creative Constructors, Retzer Nature Center, Waukesha County, WasteCap Wisconsin, and Subcontractors.

A. *Cardboard and Office Paper*
Place in designated containers located on the job site. Cardboard that is over 50% covered with paint, mud or other contaminants should be disposed of as trash. A detailed list of acceptable items will be posted in the trailers. The cardboard and office paper will be sorted, bundled, and sold in bulk to be made into new paper products.

B. *Concrete and Clean Fill*
The clean fill includes cinderblocks, cement, concrete (with minimal rebar) and any combination of clay or soil. The clean fill will be hauled to a local mining pit or used on site as fill. Trees, branches and other organic matter cannot be placed in this container or the trash container.

C. *Drywall/Gypsum from construction*
Drywall from construction in good condition will be stockpiled in a separate location for reuse. Scrap drywall from construction must be kept completely free of contaminants and placed in a separate dumpster for recycling. Scrap drywall will be used locally as a soil amendment. All nails and screws must be removed before placing in the recyclable container. Painted drywall must be disposed of as trash.

D. *Metal*

Separate metal from both the demolition and construction and place in a stockpile on site. The location for this stockpile will be designated by the site superintendent. Metal will be collected and hauled to a local metal recycler for processing.

E. *Mixed plastic, glass, aluminum and steel containers, bottles, jars and cans*

Separate at lunch areas, in trailer, etc into small recycling bins. Place separated recyclables into the 95 gallon cart by the job site trailer. Recyclable containers need to at least be empty. Bottles and cans will be sorted off site and recycled. A detailed list of acceptable items will be posted in the trailers and on each container.

F. *Reusable Items from Demolition*

Demolition contractors are asked to utilize their own reuse contacts and work closely with WasteCap Wisconsin and Waukesha County Department of Parks and Land Use to seek uses for as many materials from the deconstruction as possible, including glass from windows and the greenhouse, cedar roof shingles, sinks and other fixtures, the large counter in the main area, wood rafters and wood paneling from the ceiling.

G. *Unpainted, Untreated Wood*

Unpainted, untreated scrap wood will be separated both for reuse and recycling. Any dimensional lumber in good condition will be stockpiled in a separate location for reuse when short-length pieces are needed. Scrap wood not reused will be placed in a separate dumpster for recycling. The small scrap wood not reused will be chipped, dyed and used as landscaping mulch.

H. *Other Onsite Uses of Reusable/Recyclable Materials*

- *Use scrap wood for blocking, bracing and back framing or as spacers in header construction.*
- *Use small pieces of plywood for drywall hanging and carpet tack strips.*
- *Save sizable pieces of drywall for use around doors, windows, built-ins or on another job.*

I. *Packaging*

- *Confirm that the correct amount of material is delivered to the site to help reduce waste.*
- *Specify minimal and recyclable packaging when ordering materials.*
- *Return reusable or recyclable packing materials to the supplier (e.g. wood pallets, frames, etc.)*

J. *Other:*

- *Containers will be serviced when the on site supervisor calls in. Clear access must be made to the containers and any locked containers must be unlocked.*
- *If a container that is designated for a specific recyclable item is contaminated, the entire load will be dumped as trash. Contractors responsible will be charged. Please help us avoid this.*
- *We want to know of other ways to reduce waste. Notify the site superintendent with suggestions.*

- *Creative Constructors, Retzer Nature Center, Waukesha County, and WasteCap Wisconsin ask you to follow these guidelines and help others to follow them. Together we can create a better work environment and help preserve our environment for a better tomorrow.*

Section 2

Retzer Nature Center Expansion
Construction Waste Management Plan

I. Facility / Scope of Project:

The Retzer Nature Center expansion will include the addition of a basement, a new one-story building (Learning Center), and a Planetarium. The existing nature center will be retained and walls will be removed to join the existing center with the expansion. The new buildings will be constructed with cedar siding and asphalt shingle roofing. Floors will be concrete and drywall will be used to separate rooms.

The project will include demolition of two walls of the existing building, as well as replacing the shingles on the existing roof. The walls are fieldstone and concrete, with some portions covered by cedar siding.

The project will add 16,000 ft^2 to the existing 5,876 ft^2 building. Construction is expected to begin in late May or early June, 2004 and be completed by early 2005.

II. Analysis of Proposed Job Site Waste to Be Generated:

A. Projected construction waste materials:

- Land-clearing debris
- Clean, dimensional wood
- Pallets
- Plywood, OSB, and Particleboard
- Asphalt Shingles
- Concrete
- Fieldstone
- Cedar Shingles, Cedar Siding
- Cardboard, paper, packaging
- Metals
- Gypsum drywall
- 5-gallon paint buckets
- Plastics including stretch-wrap / shrink-wrap and plastic bags
- Beverage containers
- Insulation scrap
- Miscellaneous - lunch wastes, floor sweepings

B. Based on the waste generation rates from projects of 50,000 ft^2 and 327,000 ft^2, this project is expected to generate 33 tons or 302 cubic yards of construction debris. With 50% diversion, Retzer Nature Center should recycle or reuse an estimated 16 tons of material. With 75% diversion, Retzer Nature Center should recycle or reuse an estimated 25 tons of material.

C. Projected quantities of construction waste materials generated on site. All materials are considered recyclables with the exception of trash.

	Estimated %	Est. Tonnage	Yd^3 Per Ton	Est. Yd^3
Trash	25.00%	8.4	6	50.4
Cardboard	10.00%	3.3	40	132
Drywall	14.00%	4.7	5	23.5
Metal	8.00%	2.7	8	21.6
Wood	36.00%	12.0	5	60
Concrete/Bricks	4.00%	1.3	2	2.6
Roofing Shingles*	2.00%	0.7	1	0.7
Commingled	1.00%	0.3	35	11
Total Recyclables	**75.00%**	**25.07**		**251.8**
Total	**100.00%**	**33.25**		**301.8**

III. Project Goals and Intent

Reduction, reuse and recycling of construction waste on the construction site of the Retzer Nature Center expansion is a joint effort of Waukesha County Department of Parks and Land Use; the contractor; Fischer, Fischer, Theis; all subcontractors; and WasteCap Wisconsin, Inc.

It is intended that the project shall minimize the environmental impact of construction and reduce waste. Methods shall be used that minimize waste due to error, poor planning, breakage, mishandling, contamination, or similar factors. As many of the waste materials as economically feasible shall be reused, salvaged, or recycled. Waste disposal in landfills shall be minimized.

The Contractor and subcontractors shall reuse materials to the greatest extent practicable to eliminate or minimize the amount of reprocessing and pollution involved in recycling. Reuse includes the following:

1. Salvaging reusable materials for resale, for reuse on this Project, or for storage for use on future projects.
2. Returning reusable items (e.g., pallets or unused products) to the material suppliers.

All contractors and subcontractors will abide by the guidelines stated below. Our goal is to reduce or recycle at least 50% by weight of the construction materials generated from this site with an aim for a 75% recycling rate by weight. To reach this goal, the following items will be diverted from the landfill and recycled or reused.

IV. Materials - Handling Procedures

A. Reuse

Reuse is encouraged and if materials are going to be thrown away and a contractor or subcontractor can instead use the material, this is allowed and congratulated. There will be a Tracking Form for Materials Taken Off Site available to contractors and subcontractors to help account for any material removed from the site. In doing this, we are able to keep track of all the materials from this site. Subcontractors shall turn in this form on a monthly basis with the request for payment.

B. Cardboard and Office Paper

Cardboard and office paper includes clean cardboard, boxboard, office paper, colored office paper, magazines, and newspapers. It does not include tissue, paper plates or towels, or any item that is not paper. Cardboard that is over 50% covered with paint, mud or other contaminants should be disposed of as trash. Place in designated containers located on the job site. To keep the containers free of contamination and water, they will be covered. A detailed list of acceptable items will be posted in the trailers and on / near each container. The cardboard and office paper will be sorted, bundled and sold to be made into new paper products.

C. Gypsum Drywall

Scrap drywall will be collected for use onsite. Keep absolutely free of contamination. Contamination includes screws, wood, and any other material that is not drywall. Place in area or dumpster designated by contractor.

D. Scrap metal

Place in designated container located on the job site. Metal will be hauled to a local metal recycler for processing. Place aluminum cans in the bin for cans & bottles, not the scrap metal container.

E. Wood

Wood includes packaging wood (e.g. from windows), pallets, clean dimensional wood, heavy wood beams (likely glue laminate), plywood, OSB and particleboard. Treated wood, cedar shingles and cedar shingle siding are not recyclable. Nails that are in the scrap wood may be included, but all other materials such as pieces of metal, cardboard or other materials are prohibited. The scrap wood will be chipped, dyed and used as landscaping mulch.

Subcontractors are strongly encouraged to reuse as much wood as possible. Dimensional lumber in good condition will be stockpiled for reuse when short-length pieces are needed. Scrap wood that is not reusable will be placed in a designated container located on the job site. Pallets that can be reused should be returned to contractors or suppliers for reuse.

F. Concrete and Fieldstone

Concrete and fieldstone will be collected and hauled to concrete or asphalt manufacturers for crushing as aggregate. Keep all dirt and organic materials out of the dumpster. If possible, some concrete and fieldstone will be incorporated into the retaining wall. Place in area or dumpster designated by contractor.

G. Asphalt Roofing Shingles

Asphalt shingles will be collected onsite in an area designated by contractor. The shingles will be incorporated into new asphalt paving by asphalt pavers.

H. Plastic, glass, aluminum and steel bottles, jars and cans (commingled recyclables)
Place in labeled recycling bins located on job site near eating areas. When recycling bin is full, take to larger recycling container outside by other containers. Bottles, jars and cans need to be empty. Bottles and cans will be sorted offsite and recycled. A detailed list of acceptable items will be posted in the trailers.

I. Packaging
Specify minimal packaging when ordering materials. Find out if returnable packaging is available. Return packaging if possible (pallets, spools for electrical wire, etc.). If returnable packaging is not available, request recyclable packaging.

J. Other
All subcontractors are required to take note of what they are throwing away and come up with ways to minimize or eliminate the waste. Minimizing waste is our first priority –for example, returning reusable items (e.g. pallets or unused products) to the material supplier. Our second priority is to reuse – for example, storing reusable products to reuse on future projects. Our third priority is to recycle. If you are generating an item that is not being reused or recycled, please inform Waukesha County Department of Parks and Land Use staff. Your ideas are needed and appreciated to come up with markets for these materials.

V. Meetings to be held to address waste management

Waste management plans and implementation shall be discussed at the following meetings

A. Pre-construction meeting
B. Regular job-site meetings

A WasteCap Wisconsin representative shall document the project through photographs; interviews with the site superintendent, owner, project manager, and subcontractors; written documentation, etc. and provide these results on a monthly basis at these meetings. The site superintendent shall address waste management on a weekly basis at regular job site meetings, review rules and address any contamination issues.

VI. Waste Auditing Procedures

All subcontractors are responsible for daily site cleanup and ensuring that all recycling containers are kept free of contamination. The site superintendent shall be responsible for daily checks of trash and recycling containers to check for and ensure the removal of contamination. Violators will be required to re-sort any misplaced waste and, if the problem continues, pay the cost of the container being disposed as trash rather than recycling. The site superintendent shall be responsible for contacting haulers for collection service.

Feedback from all workers is encouraged and should be given to the site superintendent, Waukesha County Parks and Land Use staff or WasteCap Wisconsin staff. In addition, feedback may be given at any of the meetings held to address waste management to determine if improvements need to be made to the reuse and recycling program.

A WasteCap Wisconsin representative shall conduct approximately one waste audit per month to assess if improvements need to be made to the recycling program. This assessment will include:

- interviews of job site crews to identify specific items that may be hindering the recycling program and to obtain input on ways to reduce, reuse and recycle materials from the site
- checks for mis-sorted materials in containers
- assessment of placement and labeling of containers and signs
- on-site instruction of appropriate separation, handling, and recycling, salvage, reuse and return methods to be used by all parties at the appropriate stages of the project.
- documentation of the process

Section 3

RECYCLING INSTRUCTIONS

Material	What To Include	Do Not Put in Container
Commingled Recyclables	#1 and #2 plastic bottles Aluminum and Steel Cans Glass Jars & Bottles	No #3-7 Plastics No Plastic Spools, Plastic Bags, Caulk Tubes (even if #1 or #2)
Cardboard and Paper	Flattened Cardboard Office Paper Colored Paper	No Waxed Paper No Food Contaminated Paper (Coated with Paint, Mud, etc.) No Plastic or other Packaging
Scrap Metal	Scrap Metal (all types) Wire Painted Metal is OK	No Other Materials Attached to Metal (e.g. Wood, Plastic) No Aluminum or Steel Cans (put in commingled recycling container)
Concrete & Fieldstone	Concrete, Rebar, & Fieldstone of any size	No Dirt, Organic Materials
Wood	Pallets, Cutoffs, Wood scraps, Plywood, OSB, Wheat Board, Particle Board, Wood Packaging Other Untreated Lumber Nails OK	No Treated Wood No Wood used for Concrete Forms No Contaminated Wood (Painted, Oily, etc.)
Drywall	Clean, Unpainted Drywall	No Greenboard or Densglass NOTHING Other Than Drywall (No Screws, Trash, etc.)
Trash	Treated Wood Insulation Other Trash*	No recyclables No hazardous materials including car batteries, oil, etc. No yard waste No tires

PLEASE REDUCE FIRST, THEN REUSE, THEN RECYCLE –

ORDER MATERIALS IN REDUCED PACKAGING. REUSE CUTOFFS. RETURN PACKAGING TO SUPPLIER WHEN POSSIBLE. ORDER RECYCLABLE PACKAGING.

* If you are generating a substantial quantity of any one material as trash, or if you have any questions about whether or not a material is recyclable, talk to Scott. **THANK YOU!!**

Section 4
Monthly Reports

Retzer Nature Center Construction Waste Management Report
July – August 15, 2004

WasteCap Wisconsin is providing technical assistance, educational assistance, monitoring, measuring, and documenting results of construction waste management efforts at the Retzer Nature Center.

1. **Provide construction waste reuse and recycling specifications**. These were provided in July and incorporated into contracts, requiring all contractors to recycle.

2. **Develop a construction waste management plan.** The plan was drafted in 2003 and revised in July. WasteCap developed this plan with the help of Waukesha Co, Creative Constructors and Waste Management.

3. **Provide technical assistance and market information** to facilitate increased waste reduction, reuse and recycling of construction materials.
   - WasteCap helped identify markets for glass which was taken by Catherine Lottes and by Lisbon, Storm, Screen and Door. We also researched whether the cedar shingles could be recycled. We found that they could and current plans are that Waste Management will take them and incorporate them into their regular wood recycling program. The project also showed leadership in reusing the fieldstone from the columns – the site superintendent in particular spearheaded this effort and ensured its success.

- To date, no trash dumpsters have been removed from the site.

4. **Instruct and educate contractor employees and subcontractors** about their role in the program. Attend pre-bid meetings, regular job site meetings approximately once a month, and other meetings.
   - WasteCap attended two job site meetings during this reporting period.
   - WasteCap created educational materials for all crews, including:
     - A handout/sign to be posted in the job trailer – Scott will make copies and hand this detailed sheet out to crews as they come onto the job site
     - Two signs for the fence about the recycling program (one which details materials being recycled and one which details results to date)
     - Signs for the dumpsters

5. **Conduct waste audits and monitor program.** A WasteCap Wisconsin representative shall conduct approximately one site visit/waste audit per month to assess if improvements need to be made to the recycling program.
   - WasteCap conducted two waste audits during this reporting period. The recycling program is so far going quite smoothly. The contractor is very cooperative with recycling and reuse and the site has enough room for recycling as well as trash dumpsters.

6. **Document Construction Waste Management Results**. As of July, 2004

Material	# of loads	Cubic Yards to Date (7/04)	Tons to Date (7/04)
Concrete	5 – pickup truck loads	60	120
Wood	2 – 20 yd dumpsters	40	4.53
Reuse (glass & stone)	Windows, doors, stone	13.38	4.6
Total Recyclables		**113.38**	**129.13**
Total Trash		**0**	**0**
% Recycled		**100%**	**100%**

Retzer Nature Center Construction Waste Management Report

September – October 15, 2004

WasteCap Wisconsin is providing technical assistance, educational assistance, monitoring, measuring, and documenting results of construction waste management efforts at the Retzer Nature Center.

3. **Provide construction waste reuse and recycling specifications**. These were provided in July and incorporated into contracts, requiring all contractors to recycle.

4. **Develop a construction waste management plan.** The plan was drafted in 2003 and revised in July. WasteCap developed this plan with the help of Waukesha Co, Creative Constructors and Waste Management.

7. **Provide technical assistance and market information** to facilitate increased waste reduction, reuse and recycling of construction materials.

- WasteCap helped identify markets for **glass** which was taken by Catherine Lottes and by Lisbon, Storm, Screen and Door. We also researched whether the **cedar shingles** could be recycled. We found that they could and Waste Management took them and incorporated them into their wood recycling program. The project also showed leadership in reusing the **fieldstone** from the columns – the site superintendent in particular spearheaded this effort and ensured its success.
- We are working with the site superintendent and owner on markets for the **drywall** which we anticipate will be able to be used on site. Additional collection of metal and cans and bottles were added in September.
- To date, no trash dumpsters have been removed from the site.

8. **Instruct and educate contractor employees and subcontractors** about their role in the program. Attend pre-bid meetings, regular job site meetings approximately once a month, and other meetings.
   - WasteCap attended one job site meetings during this reporting period.
   - WasteCap created educational materials for all crews, including:
     - A handout/sign to be posted in the job trailer – Scott is making copies and handing this detailed sheet out to crews as they come onto the job site
     - Two signs for the fence about the recycling program (one which details materials being recycled and one which details results to date)
     - Signs for the dumpsters (magnetic)

9. **Conduct waste audits and monitor program.** A WasteCap Wisconsin representative shall conduct approximately one site visit/waste audit per month to assess if improvements need to be made to the recycling program.
   - WasteCap conducted one waste audit during this reporting period. The recycling program is going quite smoothly. The contractor is very cooperative with recycling and reuse and the site has enough room for recycling as well as trash dumpsters.

10. **Document Construction Waste Management Results**. As of October, 2004

Material	# of loads	Cubic Yards to Date (10/04)	Tons to Date (10/04)
Concrete	5 – pickup truck loads	60	120
Wood	4 – 20 yd dumpsters	80	10.72
Reuse (glass & stone)	Windows, doors, stone	13.38	4.6
Total Recyclables		**153.38**	**135.32**
Total Trash		**0**	**0**
% Recycled		**100%**	**100%**

Retzer Nature Center Construction Waste Management Report

October 15 to November 15, 2004

WasteCap Wisconsin is providing technical assistance, educational assistance, monitoring, measuring, and documenting results of construction waste management efforts at the Retzer Nature Center.

5. **Provide construction waste reuse and recycling specifications**. These were provided in July and incorporated into contracts, requiring all contractors to recycle.

6. **Develop a construction waste management plan.** WasteCap developed this plan with the help of Waukesha Co, Creative Constructors and Waste Management.

11. **Provide technical assistance and market information** to facilitate increased waste reduction, reuse and recycling of construction materials.
    - We have been working with the project manager and owner on markets for the **drywall** which we are still hoping will be able to be used on site. The landscaping, where the drywall was to b included, has been finished. There still is an opportunity to use it under the parking lot.
    - WasteCap helped identify markets for **glass** which was taken by Catherine Lottes and by Lisbon, Storm, Screen and Door. We also researched whether the **cedar shingles** could be recycled. We found that they could and Waste Management took them and incorporated them into their wood recycling program. The project also showed leadership in reusing the **fieldstone** from the columns – the site superintendent in particular spearheaded this effort and ensured its success.
    - Additional collection of metal and cans and bottles were added in September.
    - To date, no trash dumpsters have been removed from the site.

12. **Instruct and educate contractor employees and subcontractors** about their role in the program. Attend pre-bid meetings, regular job site meetings approximately once a month, and other meetings.
    - WasteCap attended one job site meetings during this reporting period.
    - WasteCap created educational materials for all crews, including:
        - A handout/sign to be posted in the job trailer – Scott is making copies and handing this detailed sheet out to crews as they come onto the job site
        - Two signs for the fence about the recycling program (one which details materials being recycled and one which details results to date)
        - Signs for the dumpsters (magnetic)

13. **Conduct waste audits and monitor program.** A WasteCap Wisconsin representative shall conduct approximately one site visit/waste audit per month to assess if improvements need to be made to the recycling program.
    - WasteCap conducted one waste audit during this reporting period. We are very disappointed that so far the drywall is scheduled for landfill instead of recycling. We hope this can be rectified.

14. **Document Construction Waste Management Results**. As of October, 2004

Material	# of loads	Cubic Yards to Date (10/04)	Tons to Date (10/04)
Concrete	5 – pickup truck loads	60	120
Wood	4 – 20 yd dumpsters	80	10.72
Reuse (glass & stone)	Windows, doors, stone	13.38	4.6
Total Recyclables		**153.38**	**135.32**
Total Trash	1-20 yd dumpster	20	2.28
% Recycled		**88%**	**98%**

Retzer Nature Center Construction Waste Management Report

December, 2004

WasteCap Wisconsin is providing technical assistance, educational assistance, monitoring, measuring, and documenting results of construction waste management efforts at the Retzer Nature Center.

15. **Provide technical assistance and market information** to facilitate increased waste reduction, reuse and recycling of construction materials.
    - **Drywall** has been a big issue this month. The first twelve yard of drywall was, unfortunately, landfilled. We thought we could use it on site, but the landscaping work on site that could have incorporated the drywall was completed before the drywall scrap was generated, leaving no on site market. However, there is still drywall being generated – we anticipate about another 12 yards. A new, off site market, about four miles away, has been found. We are working out all the logistics of storage, transportation, grinding and spreading. Linda Wainstock is taking the lead on writing up this procedure, and WasteCap will follow up with all partners to ensure smooth operation.
    - WasteCap helped identify markets for **glass** which was taken by Catherine Lottes and by Lisbon, Storm, Screen and Door. We also researched whether the **cedar shingles** could be recycled. We found that they could and Waste Management took them and incorporated them into their wood recycling program. The project also showed leadership in reusing the **fieldstone** from the columns – the site superintendent in particular spearheaded this effort and ensured its success.
    - Additional collection of metal and cans and bottles were added in September.
    - To date, two trash dumpsters have been removed from the site.

16. **Instruct and educate contractor employees and subcontractors** about their role in the program. Attend pre-bid meetings, regular job site meetings approximately once a month, and other meetings.
    - WasteCap attended one job site meetings during this reporting period.
        - WasteCap created educational materials for all crews, including signs for the dumpsters (magnetic) – we dropped these off and stuck two magnetic signs to each dumpster.

17. **Conduct waste audits and monitor program.** A WasteCap Wisconsin representative shall conduct approximately one site visit/waste audit per month to assess if improvements need to be made to the recycling program. WasteCap conducted one waste audit during this reporting period and was disappointed about the decision to landfill the first drywall dumpster and pleased to see the potential for the next one.

18. **Document Construction Waste Management Results**. As of November, 2004

Material	# of loads	Cubic Yards to Date (11/04)	Tons to Date (11/04)
Cardboard	1 – 2 yd dumpster	2	.07
Concrete	5 – pickup truck loads	60	120
Scrap Metal	1 – 12 yd dumpster	12	3.09

Reuse (glass & stone)	Windows, doors, stone	13.38	4.6
Wood	3 – 20 yd dumpsters	60	7.86
Total Recyclables		**147.38**	**135.62**
Total Trash	2-20 yd dumpsters, 1-12 yd dumpster (drywall)	52	9.34
% Recycled		**74%**	**94%**

Retzer Nature Center Construction Waste Management Report

January, 2005

WasteCap Wisconsin is providing technical assistance, educational assistance, monitoring, measuring, and documenting results of construction waste management efforts at the Retzer Nature Center.

19. **Provide technical assistance and market information** to facilitate increased waste reduction, reuse and recycling of construction materials.
    - **Drywall** has been a big issue this month. The first twelve yard of drywall was, unfortunately, landfilled. We thought we could use it on site, but the landscaping work on site that could have incorporated the drywall was completed before the drywall scrap was generated, leaving no on site market. However, there is still drywall being generated – we anticipate about another 10 yards. A new, off site market, about four miles away, has been found. We are working out all the logistics of storage, transportation, grinding and spreading. Linda Wainstock is taking the lead on writing up this procedure, and WasteCap will follow up with all partners to ensure smooth operation. WasteCap is working with Prairie Tree Landscape to see if they will grind the drywall once it is taken to Northview.
    - WasteCap helped identify markets for **glass** which was taken by Catherine Lottes and by Lisbon, Storm, Screen and Door. We also researched whether the **cedar shingles** could be recycled. We found that they could and Waste Management took them and incorporated them into their wood recycling program. The project also showed leadership in reusing the **fieldstone** from the columns – the site superintendent in particular spearheaded this effort and ensured its success.
    - Additional collection of metal and cans and bottles were added in September.

20. **Instruct and educate contractor employees and subcontractors** about their role in the program. Attend pre-bid meetings, regular job site meetings approximately once a month, and other meetings.
    - WasteCap attended one job site meetings during this reporting period.
        - WasteCap created educational materials for all crews, including signs for the dumpsters (magnetic) – we dropped these off and stuck two magnetic signs to each dumpster.

21. **Conduct waste audits and monitor program.** A WasteCap Wisconsin representative shall conduct approximately one site visit/waste audit per month to assess if improvements need to be made to the recycling program. WasteCap conducted one waste audit during

this reporting period and was disappointed about the decision to landfill the first drywall dumpster and pleased to see the potential for the next one.

22. **Document Construction Waste Management Results**. As of December, 2004

Material	# of loads	Cubic Yards to Date (12/04)	Tons to Date (12/04)
Cardboard	1 – 2 yd dumpster	2	.07
Concrete	5 – pickup truck loads	60	120
Scrap Metal	1 – 12 yd dumpster	12	3.09
Reuse (glass & stone)	Windows, doors, stone	13.38	4.6
Wood	3 – 20 yd dumpsters	60	7.86
Total Recyclables		**147.38**	**135.62**
Total Trash	3-20 yd dumpsters, 2-12 yd dumpsters (drywall)	103.1	15.16
% Recycled		**59%**	**90%**

Retzer Nature Center Construction Waste Management Report

February, 2005

WasteCap Wisconsin is providing technical assistance, educational assistance, monitoring, measuring, and documenting results of construction waste management efforts at the Retzer Nature Center.

Provide technical assistance and market information to facilitate increased waste reduction, reuse and recycling of construction materials.

Instruct and educate contractor employees and subcontractors about their role in the program. Attend pre-bid meetings, regular job site meetings approximately once a month, and other meetings. WasteCap has not attended any job meetings in February as the project is wrapping up.

Conduct waste audits and monitor program. A WasteCap Wisconsin representative shall conduct approximately one site visit/waste audit per month to assess if improvements need to be made to the recycling program. WasteCap conducted one waste audit during this reporting period .

Document Construction Waste Management Results. As of January, 2005

Material	# of loads	Cubic Yards to Date (01/05)	Tons to Date (01/05)
Cardboard	1 – 2 yd dumpster	2	.07
Concrete	5 – pickup truck loads	60	120
Scrap Metal	1 – 12 yd dumpster	12	3.09
Reuse (glass & stone)	Windows, doors, stone	13.38	4.6
Wood	3 – 20 yd dumpsters	60	7.86
Total Recyclables		**147.38**	**135.62**
Total Trash	3-20 yd dumpsters, 2-12 yd dumpsters (drywall)	123..55	17.49

% Recycled		**54.40%**	**89.95%**

Retzer Nature Center Construction Waste Management Report

March, 2005

WasteCap Wisconsin is providing technical assistance, educational assistance, monitoring, measuring, and documenting results of construction waste management efforts at the Retzer Nature Center.

Provide technical assistance and market information to facilitate increased waste reduction, reuse and recycling of construction materials.

Instruct and educate contractor employees and subcontractors about their role in the program. Attend pre-bid meetings, regular job site meetings approximately once a month, and other meetings. WasteCap has not attended any job meetings in March as the project is wrapping up.

Conduct waste audits and monitor program. A WasteCap Wisconsin representative shall conduct approximately one site visit/waste audit per month to assess if improvements need to be made to the recycling program.

The planetarium is nearing the end of construction and will be generating a small amount of material until the end of March. It is anticipated that the drywall that has been stockpiled will be transported to the county facility, Northview in April and ground by Prairie Tree Landscapers to be incorporated into the landscaping for that facility. WasteCap will complete the final report for the project by the end of April.

Document Construction Waste Management Results. As of February, 2005

Material	# of loads	Cubic Yards to Date (02/05)	Tons to Date (02/05)
Cardboard	1 – 2 yd dumpster	2	.07
Concrete	5 – pickup truck loads	60	120
Scrap Metal	1 – 12 yd dumpster	12	3.09
Reuse (glass & stone)	Windows, doors, stone	13.38	4.6
Wood	4 – 20 yd dumpsters	79.05	10.03
Total Recyclables		**166.43**	**137.79**
Total Trash	4-20 yd dumpsters, 2-12 yd dumpsters (drywall)	132.33	18.49
% Recycled		**55.71%**	**88.33%**