

# On-Site Recycling for Landscape Contractors

*Professional Landscapers*  
*February 22, 2012*



Woody Raine, Austin Resource Recovery





# Austin Resource Recovery

- ARR Climate Protection Plan & Goals
- Zero Waste Goals
- ARR Master Plan - Road to Zero
- Landscape Materials Management
  - General Practices
  - Materials
  - Service Providers
  - Information Sources

# Austin Resource Recovery Climate Protection Plan

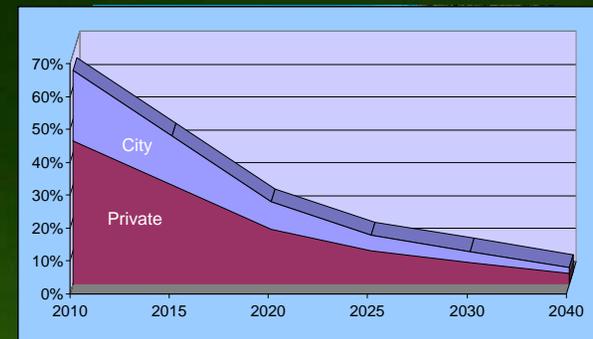
- ARR 2007 emissions
  - 243,597 MTCO<sub>2</sub>E / year (31,630 U.S. homes)
    - FM 812 Landfill = 233,560 MTCO<sub>2</sub>E (96%)
    - SWS General Operations = 10,037 MTCO<sub>2</sub>E / yr
      - COA SWS Vehicles = 3.7% of total
      - Other operations = 0.3% of total

Landfill

v

# Solid Waste Services Climate Protection Goals

- Landfill
  - Methane recovery and carbon credits
  - Solar Farm, Eco-Industrial Park
- Transportation
  - Reduce existing fleet fuel consumption
  - Improve average mpg ratings with new vehicles (including hybrid hydraulic)
- Zero Waste Goal
  - Reduce disposal by 90% by 2040
  - Reduce disposal by 75% by 2020





- Who's heard of Zero Waste?
- Who's watched *Dare to Go Zero*?

## Pop Quiz: What's Zero Waste?

- a. Dry trash (aka Xeriwaste)
- b. Character in movie "Holes"
- c. A journey to the bottom
- d. "We'll stop at nothing."



# What's so special about Zero Waste?

- Extends landfill life
- Conserves
  - Materials
  - Energy
  - Water
- Reduces
  - Pollution
  - Greenhouse gases
- Provides employment
- Boosts the economy
- Improves the bottom line



# Universal Recycling Ordinance Single-Family Residential

- Currently
  - Weekly Landfill Trash – Pay-As-You-Throw
  - Weekly Yard Trimmings – bagged or bundled
  - Bi-weekly Single-Stream Recycling
  - Semi-Annual
    - Loose Brush
    - Bulky Items

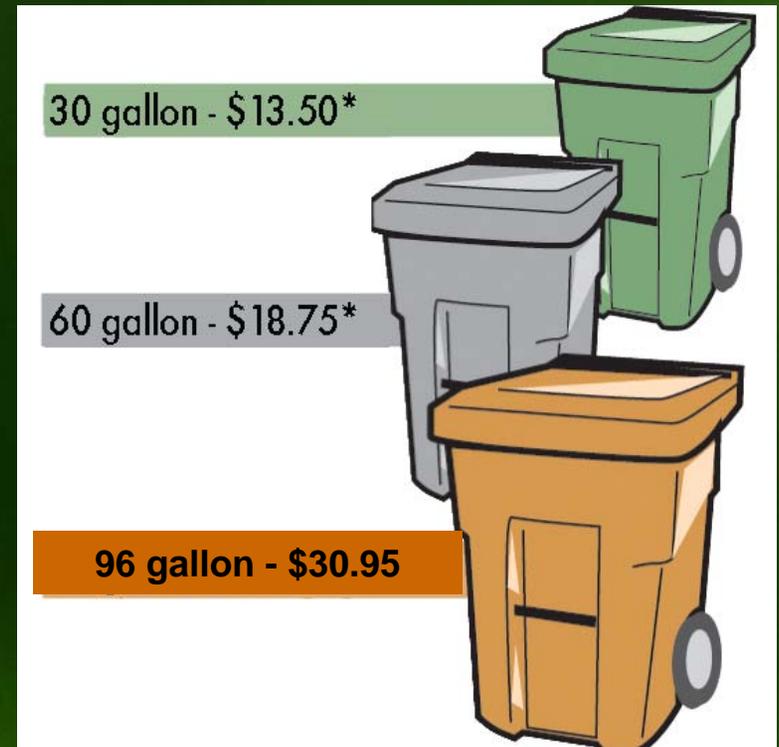


# Universal Recycling Ordinance

## Single-Family Residential - Trash

- Reduce your Cart;  
Reduce your Bill:

**21-gallon cart - \$12.75**



# Universal Recycling Ordinance Single-Family Residential - Recycling



- Coming Soon:
  - More materials
  - More often (weekly)

# Universal Recycling Ordinance Single-Family Residential - Compost



- Composting
  - Attend workshop & get kitchen composter bucket
  - Reduce garbage cart to small size
  - Buy BY compost bin
  - Get 75% rebate from ARR
  - Register @ [AustinRecycles.com](http://AustinRecycles.com)
- Organics cart – 2014-2015
  - yard trimmings
  - brush
  - Kitchen scraps & other compostables



# Universal Recycling Ordinance Single-Family Residential - HHW

- Household Hazardous Waste
  - Expand hours
  - Add materials
  - Add collection sites



# Construction, Demolition, and Deconstruction (C&D) Materials

- 20% of landfill quantities



# C&D Materials Management

## Why?

- Save disposal and material costs
  - Wasted supplies cost twice
    - Purchase
    - Disposal
  - Disposal costs
    - 0.5% of total construction costs
    - Reduce to add 5% to profit



# C&D Materials Management

## Why?

- Save labor costs
  - Reduce handling
    - Excess materials
    - Discards
  - Make workplace safer
    - Proper material management
    - Less exposure to hazardous materials



# C&D Materials Management

## Why?

- Reduce life-cycle environmental impacts
- Gain tax benefits from donating surplus or scrapped materials to a non-profit
- Good deeds yield positive reputation
- Earn AEGB or LEED recognition
- Meet City requirements



# Rethink

- Choose durable products & materials
- Avoid products with a short lifespan
- Generate less scrap; Use:
  - Standard material dimensions
  - Advanced framing methods
  - Pre-fab products
- Consider building materials that
  - Use less material to make
  - Manufactured from scrap materials

# Get Organized

- Designate an on-site materials manager
  - Setup & train crews on reuse and recycling
  - Track & monitor the program
  - Work with haulers
- Adopt incentives for contractors & workers
  - Share savings from reduced supply use
  - Share proceeds

# Get Organized

- Identify & quantify reusables & recyclables
- Estimate quantities to determine container sizes and hauling needs
- Determine what recycler will accept it & how (level of mixing, type of containers, transport)
- Keep reusable or recyclable materials separate from trash on-site to:
  - Increase efficiency
  - Reduce hazards
  - Maintain values

# Get Organized

- To minimize contamination:
  - Clearly label containers & storage areas
  - Train everyone on-site in material handling systems
  - Check bins each morning for overnight contamination
  - Lock up bins, if necessary
- Maintain records
  - Waste haul receipts
  - Recyclers charges or payments
- Track values & costs to re-evaluate options

## Reduce: Keep waste off project site

- Order materials & products cut to size, pre-fabricated, or pre-assembled
- Buy in bulk to minimize packaging
- Have materials delivered:
  - Without packaging  
(already unwrapped or unstrapped)
  - In reusable or recyclable packaging  
(e.g., steel banding, cardboard)

## Reduce: Keep waste off project site

- Have vendors take back packaging (e.g. pallets, wrapping, or banding)
- Have items delivered “just-in-time” to reduce potential for on-site damage
- Require subs to
  - Order & purchase their own materials
  - Pay for or remove their own discards to prevent waste

## Reduce: Prevent waste on project site

- Minimize the number of blueprints
- Organize on-site storage to prevent damage & accidents
- “Measure twice, cut once” to avoid redoing
- Leftover materials
  - Leave with owner for maintenance or repairs
  - Return to supplier for credit or resale
  - Donate

# Reuse

- Reusing is better than recycling
  - Financial
  - Environmentally

# Potential Reusables

- *Appliances\**
- *Bathroom Fixtures\**
- Bedding trays
- Bricks, Masonry
- Cabinets
- Carpeting
- Doors
- Drywall
- Ductwork
- Flooring
- Hardware
- Insulation
- Light Fixtures
- Lumber
- Marble
- Metal Framing
- Nails
- Nursery Pots
- Paint
- Paneling
- Pavers
- Pipes
- Plumbing Supplies
- Plywood
- Screws
- Shelving
- Stairs
- Tile
- Trim
- *Windows\**

*\* Preferably high efficiency*



**Austin**

**Habitat for Humanity®**

**ReStore**

Se vende materiales usados de construcción (512) 478-2165



**La Tienda ReStore Original**



BUSG



SALVAGE & RECLAIMED  
MATERIALS SOLD HERE

LOCALLY  
OWNED!

DOORS WINDOWS FLOORING  
LUMBER BRICK WROUGHT IRON ART  
KITCHEN APPLIANCES BATHROOM  
LIGHT FIXTURES CEILING FANS  
MANTLES FIREPLACE DECOR



# Reuse: Set up for reuse on-site

- On-site use
  - Saves purchasing another material
  - Eliminates transport impacts
- Choose reclaimed materials and products
- Use centralized cutting areas to facilitate use of cutoffs
- Set aside, protect, & secure reusables

## Reuse: Set up for reuse off-site

- Remove, store, & protect reusables
- Hold salvage sale of reusable items during the construction
- Donate clean, reusable building supplies

# Recycle

- Collect, sort, & process discards to make same type or other products
- Whether to recycle usually depends on
  - How much you generate
  - What it's worth
  - Whether a recycling facility is nearby



# Recycle

Typical large-quantity or high-value items:

- Asphalt or Concrete Pavement
- Asphalt Residential Roofing Shingles
- Cardboard & Paper
- Carpet & Padding
- Drywall, Unpainted
- Metal Scrap
- Plastics
- Wood



# Recycle

Options for on-site recovery & off-site processing:

- Commingled Recycling: Haul all materials together
- Source-Separated Recycling: Store some materials separately
  - Maximize their value
  - Reduce recycling costs
- Time-Based Separation
  - Recover primary materials at each stage
  - Example: Lumber from framing
- Self-Haul: Store materials for hauling later



# Recycle

To recover materials

- Efficiently
- Effectively
- & Control contamination:
  - Place well-labeled bins in convenient locations
  - Pair up disposal & recycling bins
  - Train & retrain crews



# Rebuy

Using reclaimed items helps ensure you'll have markets for what you reclaim

Examples:

- Aggregate
- Appliances
- Building Supplies
- Composite Decking
- Fencing
- Glass mulch
- Hardware
- Masonry
- Mulch & compost
- Pavers
- Planters
- Reblended paint

# Austin Area C&D Material Processors

- Asphalt Pavement
- Asphalt Shingles
- Bricks, Masonry
- Carpet & Padding
- Ceiling Tiles
- Concrete
- Drywall
- Metal
- Paint
- Plastics
- Toilets
- Wood, Brush



## Construction & Demolition Materials and Resources: Austin-area Providers\*

\* This listing is being supplied upon request without endorsement and with the understanding that other providers not listed here may offer recycling services as well.

Please refer to the Yellow Pages under Trash Hauling, Land Clearing, or Recycling Centers for other providers.

To be added to this list, contact City of Austin Solid Waste Services, 974-3460.

Company	Address	Phone	Website	Deconstruction	On-Site processing	Mixed C&D processing	Asphalt Pavement	Asphalt Shingles	Bricks, Masonry (rock)	Brush	Corrugated Cartons	Carpet	Carpet Padding	Ceiling, Acoustical Tiles	Concrete	Doors, Windows	Fluorescent Bulbs	Gypsum Wallboard (unpainted)	Metal	Other Architectural Components	Paint	Plastics	Plumbing Fixtures	Toilets	Wood, Lumber
973 Materials (aka 973 Pit or Pit Materials)	6005 FM 973 S Austin TX	512-225-5225				X	X	X	X						X										
A & R Demolition	13201 FM 812 Del Valle TX 78617	512-243-0512 512-243-2913	<a href="http://www.ardemolition.com">www.ardemolition.com</a>		X										X										
Aaron Concrete Contractors	8800 Ramirez Ln Austin TX 78741	512-801-9685	<a href="http://aaronconcrete.com">aaronconcrete.com</a>				X								X										
Alamo Recycles	San Antonio TX	210-661-0888	<a href="http://www.alamorecyclescenters.com">www.alamorecyclescenters.com</a>				X	X		X	X			X				X	X					X	X
American Concrete Washout (Concrete Washout Systems)		866-628-9274 877-292-7468	<a href="http://www.concretewashout.com">www.concretewashout.com</a>												X										
AMP Recycling	1704 W. Howard Ln Austin TX	512-251-3407																	X						
Armstrong Ceiling Tile Recycling Program		877-276-7876 (Option 1, 8)	<a href="http://www.armstrong.com/ceilings/recycling">www.armstrong.com/ceilings/recycling</a>											X											
Austin Acoustical Materials	205 Farley Dr Austin TX 78753	512-339-3006	<a href="http://austinacoustical.com">http://austinacoustical.com</a>											X											
Austin Metal & Iron	1000 E. 4th Street Austin TX	512-477-4640																	X						
Austin Wood Recycling	3875 E Whitestone Blvd Cedar Park, TX 78613	512-259-7430	<a href="http://www.austinwoodrecycling.com">www.austinwoodrecycling.com</a>							X															
City of Austin Household Hazardous Waste Facility	2514 Business Center Drive Austin, TX 78744	512-974-4343	<a href="http://www.ci.austin.tx.us/sws/hhw.htm">www.ci.austin.tx.us/sws/hhw.htm</a>																						
Commercial Metals	710 Industrial Blvd Austin TX	512-442-2384																	X						
Construction Waste Recycler of Texas	924 Cavalry Ride Trail Austin TX 78732	512-284-9440 512-633-4769	<a href="http://www.cwrllexas.com">www.cwrllexas.com</a>		X				X		X							X							
DAR Demolition	PO Box 142028 Austin TX 78714-2028	512-453-4646		X	X	X																			
DNT Recycling	629 W. St. Johns Ave Austin, TX 78752-2315	512-467-0063																	X						
Double D Salvage	14003 Rock Cliff Dr Leander TX	512-259-5683																	X						
Ecology Action	707 E 9th St Austin, TX 78701	512-322-0000	<a href="http://www.ecology-action.org">www.ecology-action.org</a>								X								X						
EPSI (Earth Protection Services, Inc.)	3920 Gatus School Rd Ste 112 Round Rock, TX 78664	512-251-4691	<a href="http://www.earthpro.com">www.earthpro.com</a>														X								
G & R Recycling	4612 Burleson Rd, #M Austin TX 78744	512-634-6684	<a href="http://www.grrecycling.com">www.grrecycling.com</a>									X	X												
Gardner Iron & Metal	1201 E. 4th Street Austin TX	512-477-3900																	X						
Gyp Monster	1781 Rowe Lane Pflugerville TX 78660	512-989-8177	<a href="http://www.gypmonster.com">www.gypmonster.com</a>		X					X	X							X							

# Aggregate, Reclaimed

*Sand, gravel, reclaimed pavement, crushed concrete, pulverized glass*

*Use on-site:*

- In base or surface material
  - Walkways
  - Driveways
  - Parking
  - Embankments
  - Shoulders
  - Roadways
- Fill for utility trenches or erosion control



# Building Supplies

*hardware, doors, windows, cabinets,  
plumbing & electrical supplies, etc.*

- *Rebuy*: Buying salvaged supplies
  - Supports local organizations
  - Helps ensure you have a place for your excess
- *Reduce*: Buy in bulk to minimize packaging
- *Reuse*:
  - Before demo, invite buyers to salvage
  - Sell or donate project leftovers
  - Save for next job



# Cardboard Packing & Packaging



# Cardboard Packing & Packaging

- *Reduce:*
  - Avoid excessively packaging but ensure it's adequate to prevent damage and waste
  - See “Keep waste off project site” to minimize
- *Recycle:*
  - Set up storage area on-site, or
  - Order slotted dumpster for flattened boxes from hauler

# Carpet and Carpet Padding

- *Reuse:*
  - Ask carpet vendors or work crews to take back carpet for reuse or recycling
  - Used carpet as weedblock?
- *Recycle:*
  - Contact local recyclers to determine which types of carpet and padding they can accept

# Commingled C&D Debris Materials

- *Recycle:*
  - Ask processor what materials you can commingle on-site
  - Ensure processor has proper TCEQ authorization
  - Transport to processing recycling facility to be sorted and processed



# Concrete

- *Recycle:*
  - Transport concrete from sidewalks, foundations, pavement, and more to local recyclers that remove steel rebar and crush the concrete into base material and other products



# Drywall, Unpainted



- *Reduce:*
  - Design projects to use standard sizes
  - Order custom-sized sheets for nonstandard walls
  - Place drywall scraps in interior wall cavities
- *Reuse:*
  - Cut in central area to facilitate use of drywall scraps
  - Set aside large drywall scraps for later use as filler pieces in areas such as closets
  - Save half- to full-size sheets for the next job or donate

# Drywall, Unpainted



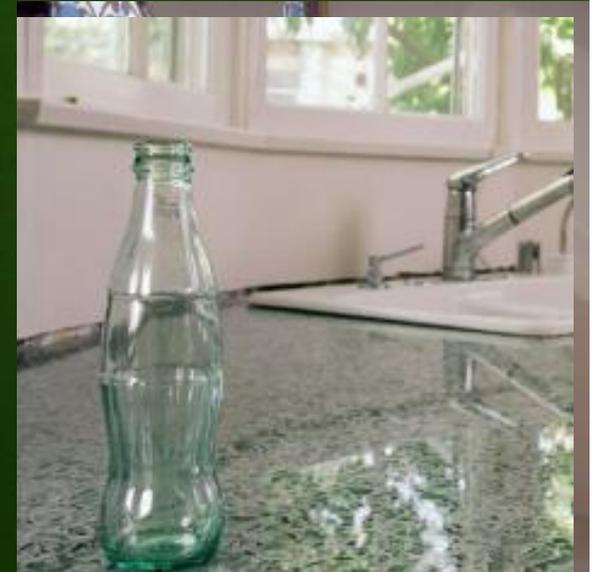
- *Recycle:*
  - If allowed, grind up unusable but clean and unpainted drywall pieces for use on-site or elsewhere. See:
    - Gypsum Association guidelines – [www.gypsumsustainability.org](http://www.gypsumsustainability.org)
    - Construction Materials Recycling Association – [www.drywallrecycling.org](http://www.drywallrecycling.org)
  - Haul unusable, unpainted drywall pieces to local large-scale compost facilities
- *Reuse:* Set aside joint compound buckets for tool or material storage

# Glass – Containers & Plate

- *Rebuy:*
  - *Glass aggregate countertops*
  - *Decorative mulch*



Pulverized Glass



House+Earth



# Glass – Containers & Plate

- *Recycle:*
  - *Ask recyclers about commingling glass bottles and jars with other food & beverage containers, & recyclable paper*
  - *Ask local plate glass vendors about recycling reclaimed plate glass*

# Landscape & Land Clearing Debris

- *Recycle on-site:*
  - Grind branches and trees for use as mulch on-site
- *Recycle:*
  - Haul clean yard trimmings & woody material to large-scale mulching & composting operations

# Lumber & Engineered Woods

- *Reduce* – minimize lumber use & reduce waste:
  - Optimize building dimensions & framing details to match standard lumber dimensions
  - Develop detailed framing layouts when ordering and cutting lumber
  - Store lumber on level blocking under cover to minimize warping, twisting, and waste
  - Minimize leaving sawdust & small wood scraps on the ground to reduce attraction of termites



# Lumber & Engineered Woods

- *Reuse:*
  - Building codes prevent reusing lumber as structural members unless certified
  - Reuse trim, siding, or other non-structural items
  - Cut in central area to facilitate use of cut-off scrap
  - Set aside lumber and sheathing cut-offs for use as blocking, spaces in header construction, etc
  - Donate larger leftover pieces (> 6-feet in length)
  - Save small, untreated wood scraps for kindling

# Lumber & Engineered Woods

- *Recycle:*
  - Use clean sawdust in compost piles or as mulch around gardens
  - Bag sawdust that might contain painted or treated wood separately
  - Donate untreated sawdust to community gardens



973 Materials

# Masonry Scrap & Rubble

bricks, blocks, mortar mix, tile, rock, stone

- *Reduce:*
  - Estimate masonry needs carefully
  - Stack & cover supplies to prevent soiling or loss
  - Avoid compacting the ground in landscaping areas
- *Reuse:*
  - Use clean rubble on-site as foundation backfill
  - Save usable supplies from remodeling & construction for future jobs or divert to salvage
- *Return:* Ask suppliers to accept the returns

# Metal

iron, steel, copper, aluminum, & other nonferrous



# Metal

iron, steel, copper, aluminum, & other nonferrous

- *Reuse:*
  - Set aside old appliances and metal building materials, such as siding and roofing, metal ductwork, and conduit
- *Recycle:*
  - Set aside scrap metal items such as empty paint cans, piping, wire, siding, guttering, banding, nails, fasteners, flashing, rebar, beverage cans, and chimney flashing
  - Keeping lead out of disposal is especially critical

# Paints, Stains, Solvents, & Sealants

- *Rebuy:*
  - Use reconstituted paint
  - Households can pick up Austin ReBlend
- *Reuse:*
  - Donate unused portions
  - Save unused portions for the next job
- *Recycle:*
  - The City of Austin household hazardous waste collection facility accepts these items from Travis County residents



# Pallets

- *Reuse:*
  - Have vendor take back pallets
  - Repurpose pallets and wood shipping boxes
    - *Backyard compost bins*
    - *Landscape edging*
    - *Outdoor furniture*
- *Recycle:*
  - Arrange for grinding into mulch on-site
  - Haul to a wood-scrap processor



# Plastics, Rubber films, containers, packaging, pots

- *Reuse:*
  - Return bedding trays and plant containers to nursery
  - Use pots to grow your own
- *Reduce:*
  - Order only as much as needed
- *Recycle:*
  - HDI handles wide range of plastics
- *Rebuy – recycled-content:*
  - Patio blocks
  - Lawn edging





IESI



**Progressive**  
Waste Solutions

# Wood, Nontreated and Not Painted

dimensional lumber, sheet goods, millwork, scrap, pallets

- *Reuse:*
  - Donate scrap lumber to a high school or community college wood shop
  - Use beautifully weathered wood fencing for landscaping projects

See also, Lumber & Pallets

# Wood, Treated

## landscape timbers, railroad ties, utility poles

- *Reuse:*
  - Fences
  - Bridges
  - Trails
  - Barriers in parking areas
  - Erosion control

# EPA's



# Program



What if you could **spend less** on labor, equipment, and supplies and still have a **great looking and healthy** landscape? You can. GreenScapes activities—**simple, cost-effective, and sustainable** solutions to increase resource **efficiency**—recommend products and practices that meet your needs but have better **environmental** profiles than business-as-usual methods. Take a look at the following list of GreenScapes activities and try to **integrate** some of them into your **site planning and management**.



## Activities List

## MATERIALS AND ENERGY MANAGEMENT

### LESS TO LANDFILL

- 1. Use salvaged items wherever possible; donate usable plants and materials when you are done with them.
- 2. Purchase non-plant landscape materials made from Forest Stewardship Council certified wood or with the following percentages of recycled material content (e.g., plastic or composite lumber):
  - A. Decking – 100% of non-structural materials
  - B. Fencing – 100% of non-structural materials
  - C. Outdoor furniture such as bike racks, benches, tables, and chairs – 50% minimum
  - D. Planters or retaining walls – 100%
  - E. Parking stops or lighting/sign posts – 100%
  - F. Play structures or surfaces – 100%
  - G. Patio blocks, edging or decorative glass mulch – 100%
  - H. Hoses and drip irrigation systems – 100%
- 3. Choose recycled content plastic lumber rather than pressure-treated wood to extend the usable life of decks, benches, and outdoor structures.
- 4. Purchase local compost and mulch recycled from organic materials such as plants or wood waste.
- 5. Restructure waste disposal contracts to incentivize waste reduction, composting, and recycling; pay a weight-based rate or switch to less frequent pickups.
- 6. Compost on site or send organic materials to a facility for composting.
- 7. Provide recycling receptacles next to trash receptacles.
- 8. Return wooden pallets and other shipping materials to the supplier whenever possible; take apart non-returnable wood pallets to reuse the wood as edging around plant beds or as mulch.
- 9. Deconstruct, reuse, and recycle all possible materials, such as metal, wood, shingles, concrete, and pavement, when replacing an existing non-plant structure.
- 10. Recycle used oil and tires from vehicles and equipment.
- 11. Track recycling data and identify ways to improve your waste reduction program; become an EPA WasteWise Partner and receive free technical assistance and resources.

- Site Planning
- Planting
- Materials and Energy Management
- Site Maintenance
- Tools for your GreenScapes Activities



Grow Green Landscape Professionals, 2/22/12

# C&D Material Management Info Sources – Public Agencies

- Austin Energy Green Building
- Construction and Demolition Debris Recycling, CalRecycle  
[www.calrecycle.ca.gov/ConDemo](http://www.calrecycle.ca.gov/ConDemo)
- National Institute of Building Sciences
  - Federal Green Construction Guide for Specifiers  
[www.wbdg.org/ccb/browse\\_doc.php?d=8025](http://www.wbdg.org/ccb/browse_doc.php?d=8025)
  - Construction Waste Management  
[www.wbdg.org/resources/cwmgmt.php](http://www.wbdg.org/resources/cwmgmt.php)
- Northeast Recycling Council  
[www.nerc.org/documents/winning\\_construction\\_bids.pdf](http://www.nerc.org/documents/winning_construction_bids.pdf)
- US EPA GreenScapes  
[www.epa.gov/epawaste/conserva/rrr/greenscapes/pubs/activities.pdf](http://www.epa.gov/epawaste/conserva/rrr/greenscapes/pubs/activities.pdf)
- WasteSpec – Model Specifications for Construction Waste Reduction, Reuse, and Recycling  
[www.tjocg.org/docs/regplan/solidwst/wastspec.pdf](http://www.tjocg.org/docs/regplan/solidwst/wastspec.pdf)



# C&D Material Management Info Sources – Trade Groups & Others

- Building Materials Reuse Association (BMRA)  
[www.bmra.org](http://www.bmra.org)
- Construction Materials Recycling Association
  - [www.cdrecycling.org](http://www.cdrecycling.org)
  - [www.drywallrecycling.org](http://www.drywallrecycling.org)
  - [www.shinglerecycling.org](http://www.shinglerecycling.org)
- Gypsum Association  
[www.gypsumsustainability.org](http://www.gypsumsustainability.org)
- NAHB Research Center: Construction Waste Management  
[www.toolbase.org/Best-Practices/Construction-Waste/construction-waste-management](http://www.toolbase.org/Best-Practices/Construction-Waste/construction-waste-management)  
[www.toolbase.org/PDF/BestPractices/wastemngmnt\\_buildersguide.pdf](http://www.toolbase.org/PDF/BestPractices/wastemngmnt_buildersguide.pdf)
- Sustainable Sources: Construction Waste Recycling  
<http://constructionwaste.sustainablesources.com>



# Austin Resource Recovery Business Outreach Team

**Aiden Cohen, Manager: 974-1929**

Keith Bible: 974-6492

Shirley Gillespie: 974-4306

Annette Moreno: 974-2801

***Woody Raine: 974-3406***

*woody.raine@austintexas.gov*

**AustinRecycles.com**

