











## Overview of C&D Waste Facility Policies and New/Pending Regulations

FORUM	All States' Summary	
	Concrete/Asphalt/Brick/Block	479
	Wood	360
	Mixed C&D	224
	Asphalt Roofing Shingles	5
	Gypsum Drywall	12
	Salvage Store	2
	Other	3
	Unknown	89
GBB	TOTAL	1,174
SOLID WASTE MANAGEMENT		
CONSULTANTS		

	Number of Co Regior	&D Recycling and Type (/	g Facilit As of Se	ies Ider eptemb	ntified by C er 19,1996	GBB, by i)
	Region	Concrete/ Asphalt/ Brick/Block	Wood	Mixed C&D	Other/ Unknown*	Total
	New England States	58	31	55	24	168
	Mid-Atlantic States	121	95	66	32	314
	Upper Midwestern States	76	41	29	9	155
	Southeastern States	28	70	26	22	146
	Southwestern States	15	13	2	2	32
	Rocky Mountain States	15	8	6	5	34
	Western States	<u>166</u>	<u>102</u>	<u>40</u>	<u>17</u>	<u>325</u>
GRR	Total	479	360	224	111	1,174
SOLID WASTE MANAGEMENT	*Precludes stores, and collection pe	plants only handling asph miscellaneous C&D proc eriod.	alt roofing mat essors that cou	erials, gypsum Ild not be cont	drywall, reuse/salva acted during the data	ge
CONSULTANTS						8

R	egional Pop	ulation a	nd N	/ISW Generat	ion
	Region	Est. 1994 Population	% of pop.	% of C&D Recycling Facilities Identified by GBB	
	New England States	13,270,000	5	14	
	Mid-Atlantic States	52,781,000	20	27	
	Upper Midwestern States	59,685,000	23	13	
	Southeastern States	50,573,000	19	12	
	Southwestern States	27,365,000	10	3	
	Rocky Mountain States	13,565,000	5	3	
	Western States	43,102,000	17	28	
	TOTAL	260,341,00		100	
SOLID WASTE MANAGEMENT CONSULTANTS					9

	C&D Processing/Recov The Big Picture 1	very Plans: 996	
	<ul> <li>Concrete/Asphalt Crushing/Recycling (Including Mobile Plants)</li> <li>Wood Waste Processing</li> <li>Mixed C&amp;D Waste Processing TOTAL</li> </ul>	1,000 500 <u>300</u> 1,800	
SOLID WASTE MANAGEMENT CONSULTANTS			10



	Retype	the t	COC LARY OF E I way, Bridg	Tab STIMATH DEBRIS G e, and Lan (Thous	ek ES-1 ED BUILDI ENERATIO d Clearing and Tons)	Y NG-RELA DN* Debris not	.S( TED C&D included)	SU	rce	e is	EF	PA	
		Source	Resid	lential	Nonres	idential	To	tals					
			1996	2003	1996	2003	1996	2003					
			tons	tons	tons	tons	tons	tons					
		Construction	6,560	10,400	4,270	4,950	10,830	15,350					
		Renovation	31,900	32,900	28,000	28,900	59,900	61,800					
		Demolition	19,700	21,800	45,100	64,600	64,800	86,400					
		Totals	58,160	65,100	77,370	98,450	135,530	163,550					
		Percent	43%	40%	57%	60%	100%	100%					
		SUMN (Road	IARY OF E I way, Bridg	Tak STIMATH DEBRIS G c, and Lan (Po	ele ES-2 ED BUILDI ENERATIO d Clearing ercent)	NG-RELA DN* Debris not	TED C&D included)	,					
N N		Source	Resid	lential	Nonres	idential	To	tals					
N N			1996	2003	1996	2003	1996	2003					
		Construction	11%	16%	6%	5%	8%	9%					
		Renovation	55%	51%	36%	29%	44%	38%					
		Demolition	34%	33%	58%	66%	48%	53%					
		Totals	100%	100%	100%	100%	100%	100%					
		Percent	43%	40%	57%	60%	100%	100%					
		*C&D debris ma Quantities manag Source: Franklin	naged on-site ed on-site ar Associates, J	e should, in e unknown A Division	theory, be o of ERG	leducted fro	om generatio	on.					
CONSULTANTS												12	:



















ecycling Orum	State	Contacted	Responded to GBB email yes=1 No=0	Response Date	Facilities info available yes 0=no	Number of facilities on GBB 2010 list	Number of facilities on 1994 EPA list
	Alabama: Al	Y	1	10/13/2010	1	81	32
	Alaska: AK	Ŷ	0	10/15/2010	1	46	21
	Arizona: AZ	Ý	1	10/8/2010	1	11	6
	Arkansas: AR	Y	1	10/11/2010	1	36	22
	California: CA	Y	0	-	0	0	16
	Colorado: CO	Y	1	10/8/2010	1	2	5
	Connecticut: CT	Y	1	10/14/2010	1	1	21
	Delaware: DE	Y	0	10/15/2010	1	3	1
	Washington: DC	N	0	-	1	0	0
	Florida: FL	Y	1	10/8/2010	1	78	277
	Georgia: GA	Y	1	10/8/2010	1	59	44
	Hawaii: HI	N	0	10/14/2010	1	5	1
	Idaho: ID	Y	1	10/18/2010	1	21	7
	Illinois: IL	Y	0	-	0	0	3
	Indiana: IN	Y	1	10/15/2010	1	7	11
	Iowa: IA	Y	0	10/15/2010	1	4	1
	Kansas: KS	Y	0	10/15/2010	1	98	78
	Kentucky: KY	Y	1	10/11/2010	1	104	143
	Louisiana: LA	Y	0	10/14/2010	1	39	167
	Maine: ME	Y	0	10/18/2010	1	19	57
N N	Maryland: MD	Y	1	10/12/2010	1	6	14
	Massachusetts: MA	Y	1	10/12/2010	1	0	18
	Michigan: MI	Y	0	10/14/2010	1	3	5
N N	Minnesota: MN	Y		10/18/2010	1	113	79
	Mississippi: MS	Y	0	10/18/2010	1	78	111
	Missouri: MO	Y	1	10/11/2010	1	2	9
	Montana: MT	Y	1	10/13/2010	1	4	27
	Nebraska: NE	Y	0	10/14/2010	1	27	6
	Nevada: NV	Y	0	10/14/2010	0	0	6
<u> </u>	New Hampshire: NH	Y	1	10/11/2010	1	0	0
D WASTE	New Jersey: NJ	Y	1	10/8/2010	1	0	3
	New Mexico: NM	Y	1	10/8/2010	1	2	4
NAGEMENT	New York: NY	Y		10/15/2010	1	18	19
	North Carolina: NC	Y	1	10/8/2010	1	64	153
NOULIAINIS	North Dakota: ND	v	1	10/12/2010	1	59	20

	Status of Perm	hitted Constru	uction & Dem		Landfills
	State	Number on GBB 2010 list	Number on 1994 EPA list	15 Year Increase	15 Year Reduction
	South Dakota: SD	181	103	78	
	Minnesota: MN	113	79	34	
	Kentucky: KY	104	143		-39
	Kansas: KS	98	78	20	
	Alabama: AL	81	32	49	
	Florida: FL	78	277		-199
	Mississippi: MS	78	111		-33
	South Carolina: SC	72	53	19	
	Tennessee: TN	67	32	35	
N N	North Carolina: NC	64	153		-89
	Georgia: GA	59	44	15	
	North Dakota: ND	59	39	20	
	Ohio: OH	55	148		-93
	Other 37 States	417	597		
	TOTAL	1526	1889		-363
MANAGEMENT CONSULTANTS		Source: GBB data of	collected for the NDA		23



















































































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		10 <b>"</b> D'ana f'a				U.S. D	OE Fur	nds			
forum	1	19 "Bioretinery" Projects for \$564 million, December 2009									
		Company	$\vdash$	Fur DOE Grant	ndin; N	g Non-fed/Other	Location	Description			
	1	Bluefire Ethanol	\$	81,134,686	\$	223,227,314	Fulton, MS	Facility will be constructed to produce ethanol from woody waste, mill residue, and sorted municipal solid waste			
	Ī	BioEnergy International	\$	50,000,000	\$	89,589,188	Lake Providence, LA	Process biologically produces succinic acid from sorghum, the process displaces petroleum			
	2	Enerkem	\$	50,000,000	\$	90,470,217	Pontotoc, MS	the project will be sited on an existing landfill and use feedstock's such as woody biomass in a gasification and catalytic process			
	3	INEOS New Planet BioEnergy	\$	50,000,000	\$	50,000,000	Vero Beach, FL	The facility will combine biomass gasification and fermentation to process wood, vegetative residues and construction and demolition material			
		Sapphire Energy	\$	50,000,000	\$	85,064,206	Columbus, NM	The project will cultivate algae in ponds the will be converted into green fuels using the Dynamic Fuels refining process			
		Algenol Biofuels	\$	25,000,000	\$	33,915,478	Freeport, TX	The project will make ethanol directly from carbon dioxide and seawater using algae			
	ĺ.	American Process	\$	17,944,902	\$	10,148,508	Alpena, MI	The project will produce fuel and potassium acetate and the plant will have the capacity to produce up to 890,000 gallons of ethanol per year			
		Amyris Biotechnologies	\$	25,000,000	\$	10,489,763	Emeryville, CA	The project will produce a diesel substitute through the fermentation of sweet sorghum and will have the capacity to co-produce lubricants, polymersand other petro-chemicals substitutes			
	4	Archer Daniels Midland	\$	24,834,592	\$	10,946,609	Decatur, IL	the project will use acid to break down biomass which can be converted to liquid fuels or energy. The facility will produce ethanol and ethyl acrylate			
	5	Clearfuels Technology	\$	23,000,000	\$	13,433,926	Comerce City, CO	The project will produce renewable diesel and jet fuel from woody biomass by integrating ClearFuel's and Rentech's conversion technologies			
		Elevance Renewable Sciences	\$	2,500,000	\$	625,000	Newton, IA	The project was selected to complete preliminary engineering design for a future facility producing jet fuel, renewable diesel substitutes, and high-value chemical from plant oils and poultry fat			
	6	Gas Technology Institute	\$	2,500,000	\$	625,000	Des Plaines, IL	The project was selected to complete preliminary engineering design for a novel process to produce green gasoline and diesel from woody piomass, agricultural residues, and algae			
	7	Haldor Topsoe	\$	25,000,000	\$	9,701,468	Des Plaines, IL	The project will convert wood to green gasoline by fully integrating and optimizing a multi-step gasification process			
	ĺ	ICM	\$	25,000,000	\$	6,268,136	St. Joseph, MO	The project will modify an existing corn-ethanol facility to produce cellulosic ethanol from switchgrass and energy sorgghum using biochemical processes			
	8	Logos Technologies	\$	20,445,849	\$	5,113,962	Visalia, CA	The project will convert switchgrass and woody biomass into ethanol using a biochemical conversion process			
GDD	9	Renewable Energy Institute International	\$	19,980,930	\$	5,116,072	Toledo, OH	The project will produce high quality green diesel from agriculture and forest residue using advanced pyrolysis and steam reforming			
SOUD WASTE		Solazyme	\$	21,765,738	\$	3,857,111	Riverside, CA	The project will produce algae oil that can be converted to oil-based fuels			
MANAGEMENT	10	Honeywell's UOP	\$	25,000,000	\$	6,685,340	Kapolei, HI	The project will integrate existing technology from Ensyn and UOP to produce green gasoline, diesel, and jet fuel from agricultural residue, woody biomass, dedicated energy crops, and algae			
CONSULTANTS		ZeaChem	\$	25,000,000	\$	625,000	Boardman, OR	The project will use purpose grown hybrid poplar trees to produce fuel- grade ethanol using hybrid technology 65			







	C&D Recycling Plants Mechanical Systems									
	Region	Mixed C&D (1996)	Mixed C&D (2010)							
	New England	55	29							
	Mid-Atlantic	66	34							
	Upper Midwestern	29	28							
	Southeastern	26	28							
	Southwestern	2	5							
	Rocky Mountain	6	2							
	Western	40	38							
	TOTAL	224	164							
SOLID WASTE										
CONSULTANTS				69						

	C&D Recycling Plants (12 States with >3 Facilities)								
	Major States with Mechanical C&D Recycling Systems								
	State	No. of Plants							
	California: CA	25							
	Florida: FL	18							
	Massachusetts: MA	17							
	New York: NY	11							
	Illinois: IL	9							
	Virginia: VA	9							
	Washington: WA	8							
	New Jersey: NJ	7							
	Minnesota: MN	5							
	Connecticut: CT	4							
	Ohio: OH	4							
	Texas: TX	4							
SOLID WASTE	Other 38 States	44							
MANAGEMENT	TOTAL	165							
CONSULIAINIS		70							

	C&D Recyc Mechanica	C&D Recycling Plants Mechanical Systems								
	Region Mixed C&D (2010)									
	New England	29								
	Mid-Atlantic	34								
	Upper Midwestern	28								
	Southeastern	28								
	Southwestern	5								
	Rocky Mountain	2								
	Western	38								
	TOTAL	164								
SOLID WASTE MANAGEMENT										
CONSULTANTS										

Ca D recycuing forum		GBB C&D Waste Data (Rule-of-Thumb)									
		Total Invested         C&D Generated         C&D Disposed         C&D Rec           Construction         Pounds/ \$1,000         Pounds/\$1,000         Pounds/\$1,000         Pounds/\$1,000           Capital         Construction         Construction         Construction         Construction           (Billions \$)         Construction         Construction         Construction         Construction									
Y	/ear	Average	Average	Average	Average						
2	2002	501	617	261	352						
2	2003	530	561	291	368						
2	2004	590	633	263	312						
2	2005	666	523	273	203						
2	2006	675	553	261	418						
CEBB SOLID WASTE MANAGEMENT					70						