

*Commonwealth Of Massachusetts  
All Hazards Disaster Debris Management Plan*

*REVISION #3*

**Annex to the State Comprehensive Emergency Management Plan**

**APPENDICES**

Massachusetts Emergency Management Agency

## **8.0 APPENDICES**

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## **Appendix A: Disaster Debris Management Resources: Web Links**

### **Massachusetts Disaster Debris Management Resources**

MassDEP's *Disaster Debris Management Planning: An Introduction for Local Government Officials*: <http://www.mass.gov/dep/recycle/laws/policies.htm#sw>

Massachusetts Compost Sites List:  
<http://www.mass.gov/dep/recycle/actcomp.pdf>

Massachusetts Handling Facility, Transfer Stations, and Construction and Demolition Processors List:  
<http://www.mass.gov/dep/recycle/acthf.pdf>

Massachusetts Landfills List:  
<http://www.mass.gov/dep/recycle/actlf.pdf>

Massachusetts Combustion Facilities List:  
<http://www.mass.gov/dep/recycle/actcf.pdf>

Massachusetts Inactive or Closed Landfills List:  
<http://www.mass.gov/dep/recycle/inactlf.pdf>

Finding Recycling Facilities and Resources in Massachusetts  
<http://www.mass.gov/dep/recycle/reduce/assistan.htm#services>

### **Federal Emergency Management Agency (FEMA)**

FEMA Debris Management Main Site: Includes in-depth guidance on developing a debris management plan, FEMA policies and factsheets, and other guidance on conducting debris operations according to FEMA reimbursement requirements:  
[http://www.fema.gov/government/grant/pa/debris\\_main.shtm](http://www.fema.gov/government/grant/pa/debris_main.shtm)

FEMA's updated Public Assistance: Debris Management Guide 325 (DMG325):  
<http://www.fema.gov/pdf/government/grant/pa/demagde.pdf>  
*(Note: Appendices to the DMG (pp 153-260) include FEMA forms for tracking labor and equipment, monitoring forms, Debris Collection and Management Site Hazard Analysis, Demolition Checklist, and Policies and Fact-sheets on various aspects of debris management.)*

FEMA Public Assistance Pilot Website – provides guidance on the FEMA Public Assistance Pilot Program:  
<http://www.fema.gov/government/policy/papilot.shtm>

FEMA Regional contacts

<http://www.fema.gov/about/contact/regions.shtm>

### **US Army Corps of Engineers**

Corps of Engineers Emergency Response Portal

<http://www.englishlink.usace.army.mil>

- Click on: Debris Management, then:
  - Technical Assistance Planning Guide for Local Governments, or
  - Technical and Other Information

Examples of documents available at these links include:

US Army Corps of Engineers Hurricane Debris Estimating Model

Sample State Debris Plan

Sample Pre-Event Contract for Disaster Debris Removal, Reduction, Disposal

Post Strike Estimating Tools – brief guidance for surveying and estimating damage immediately following a disaster

Debris Modeling Reduction Site Requirements

Sample Scope of Work for Monitoring

Typical HHW Storage Area Plan

Temporary Debris Storage and Reduction Site Development Plan Guide (includes incineration)

Sample Unit Price Contract - Hurricane

Sample Contract - Tornadoes, Storms, Floods

Sample Wet Debris Scope of Work

Debris Reduction Site Sample Contract

Sample City (Virginia Beach) Debris Management Plan Strategy

Debris Load Ticket Example

## **US Environmental Protection Agency (US EPA)**

EPA's *Planning for Disaster Debris* manual highlights planning for debris cleanup, including lessons learned from communities experienced in disaster recovery:

<http://www.epa.gov/garbage/disaster/dstr-pdf.pdf>

EPA's website provides specific advice and assistance about planning for disaster debris cleanup:

<http://www.epa.gov/epaoswer/non-hw/muncpl/disaster/disaster.htm>

EPA special guidance on managing Asbestos Containing Materials in the course of building demolition following a large-scale disaster:

<http://www.epa.gov/katrina/debris.html>

EPA information on construction and demolition (C&D) debris recycling:

<http://www.epa.gov/epaoswer/non-hw/debris-new/disaster.htm>

EPA national listing of approved refrigerant (freon) recyclers:

<http://www.epa.gov/ozone/title6/608/reclamation/reclist.html>

## **Other Federal Agencies**

Occupational Safety and Health Administration (OSHA) eMatrix provides guidance on how to keep workers safe during disaster debris cleanup/management (Note: more people are typically injured during cleanup than during disasters):

<http://www.osha.gov/SLTC/etools/hurricane/index.html>

Federal Highway Administration Emergency Relief Program - information on federal reimbursement for repair of disaster-damaged federally funded highways:

<http://www.fhwa.dot.gov/programadmin/erelief.cfm>

## **Other State/Local Plans**

City of Chesapeake, VA Debris Management Plan – one of the first approved by FEMA for the Public Assistance Pilot

[http://cityofchesapeake.net/services/depart/pub-wrks/debris\\_plan/index.shtml](http://cityofchesapeake.net/services/depart/pub-wrks/debris_plan/index.shtml)

Franklin County Massachusetts Disaster Debris Management Planning Document 2006:

[http://frcog.org/pubs/emergency/Franklin\\_County\\_Debris\\_Document\\_Jan07.pdf](http://frcog.org/pubs/emergency/Franklin_County_Debris_Document_Jan07.pdf)

Connecticut Department of Environmental Protection Local Government Debris Management Memo:

[http://www.ct.gov/dep/lib/dep/waste\\_management\\_and\\_disposal/solid\\_waste/DisasterDebrisManagementPlanning.pdf](http://www.ct.gov/dep/lib/dep/waste_management_and_disposal/solid_waste/DisasterDebrisManagementPlanning.pdf)

Alameda County Disaster Debris Management Plan – an excellent regional plan for the county and its 17 cities with a strong emphasis on policies and methodologies for recycling, reusing, and otherwise diverting disaster debris from disposal

<http://www.stopwaste.org/docs/d-plan.pdf>

Appendices to this plan include useful forms and tools for debris management; electronic copies may be requested by calling (510) 891-6500

Disaster Debris Management – Planning Tools, report to EPA Region IV, 1999 – contains disaster debris management case studies with details on debris quantities, management logistics, and lessons learned in efforts to optimize recycling

<http://people.cecs.ucf.edu/reinhart/research/DDfinalreport.pdf>

### **Public Outreach Materials**

Brief print and recorded public service announcements produced by US EPA as guidance for Katrina victims on health hazards/precautions for hurricane and flood damage:

<http://www.epa.gov/katrina/outreach/psa.html>

Includes generic PSAs on the following topics:

- [asbestos and lead](#)
- [carbon monoxide](#)
- [children and flood water](#)
- [cleaning up sediment](#)
- [flood water](#)
- [flooding and lead-based paint](#)
- [gas leaks](#)
- [hazardous materials](#)
- [household cleaners](#)
- [mold](#)
- [protective gear](#)
- [private wells and flood water](#)
- [septic systems](#)

These same PSAs are provided in Spanish at:

[http://www.epa.gov/katrina/outreach/psa\\_espanol.html](http://www.epa.gov/katrina/outreach/psa_espanol.html)

Pierce County, OR Debris Recycling Issues to Consider – helpful tips on disaster debris recycling options and effective ways to engage the public in diversion

<http://www.co.pierce.wa.us/pc/Abtus/ourorg/dem/EMDiv/CEMP/esf21Tab1.htm>

### **Other Resources**

National Demolition Association listing of demolition contractors in New England:

<http://www.demolitionassociation.com/contractors.php?region=1>

Electronics Industry Alliance listing of electronics recyclers in MA:

<http://www.eiae.org/index.php?state=MA>

The Construction Materials Recycling Association lists 7 MA recyclers for Construction/Demolition wastes at <http://www.cdrecycling.org/find.html#ma>  
Select other New England state C&D recyclers at: <http://www.cdrecycling.org/find.html>

Institutional Recycling Network C&D Recycling webpage with numerous resources:  
<http://www.wastemiser.com/resources.html>

Whole Building Design Guide website lists 6 MA companies that accept C&D material, land-clearing debris, soils, and other materials in their Construction Waste Management Database at <http://www.wbdg.org/tools/cwm.php>

General recycling information for other demolition materials is available for:

Concrete at <http://www.concreterecycling.org> (but has no company info listed)

Asphalt shingles at <http://www.shinglerecycling.org>

Drywall at <http://www.drywallrecycling.org>

Mixed metals at:

- Institute of Scrap Recycling Industries <http://www.isri.org>
- Steel Recycling Institute <http://www.recycle-steel.org>
- Automotive Recyclers Association <http://www.a-r-a.org>

## **Resources for Residents**

State of Florida's "*Hurricane Retrofit Guide*" helps the public prepare their homes for hurricane winds and is available at <http://www.floridadisaster.org/brm/rcmp/hrg/index.asp>

FEMA's Homeowner checklist for avoiding hurricane damage is available at <http://www.fema.gov/pdf/plan/prevent/nhp/hurdam.pdf>

State of California's "*Homeowner Guide to Earthquake Safety*" is available at <http://www.seismic.ca.gov/hog.htm>

American Red Cross flyers for a wide variety of disaster hazards/precautions are available at <http://www.redcross.org/disaster/disasterguide/standardmsg.html>

American Red Cross flyer for avoiding flood damage is at <http://redcross.tallytown.com/library/AvoidingFloodDamage.pdf>

FEMA homeowner's checklist to prepare for wildfires is available at <http://www.fema.gov/news/newsrelease.fema?id=7533>

Red Cross guidance for preparing for wildfires is at: [http://www.redcross.org/static/file\\_cont258\\_lang0\\_123.pdf](http://www.redcross.org/static/file_cont258_lang0_123.pdf)

## **Appendix B: Corps of Engineers Debris Modeling Methodology and Debris Estimates by Municipality**

### **CORPS OF ENGINEERS DEBRIS MODELING METHODOLOGY**

The modeling methodology described below was developed by the Corps of Engineers Emergency Management staff using actual data from Hurricanes Frederick, Hugo, and Andrew. The estimates produced by the model are predicated to have an accuracy of  $\pm 30\%$  (accuracy is limited due to the many variables inherent to the debris removal process). The primary factor the model utilizes to estimate storm generated debris is the total number of households in a developed urban/suburban area. Other factors utilized are cubic yards of debris generated per household per storm category, vegetative cover, commercial density, and precipitation. The household debris includes debris generated from damage to the house including contents and surrounding shrubs/trees. Vegetative cover includes all trees /shrubby and other debris located on public rights of way. Commercial density includes debris generated by damage to businesses and industrial facilities. The majority of commercial related debris will be removed by private contractors; however disposal/reduction space is still required. The amount of precipitation generated by a storm has a direct relationship on debris quantities. Very wet storms will cause ground saturation increasing tree fall.

For planning purposes, the worse case scenario should be used, with one storm category for the subject area. For actual events the wind speeds will vary and more accurate debris estimates can be determined by detailed analysis. The most accurate process to determine the defined areas is by using Doppler Radar (National Weather Service Broadcasts) and GIS (Geographical Information Systems). The Doppler radar will define the storm's intensity and the exact track of the "EYE" of the storm in relation to the affected area. By tracking the storm and plotting the eye path and 5 mile wide bands out from the eye, defined areas and estimated wind speeds can be determined. The wind speed of the eye wall normally determines the reported storm category with the outward or five mile bands being a lesser category. The storm then can be tracked inland until the winds speeds dissipate below hurricane strength. The areas now outlined can be divided by storm category. Once divided, coordinates can be entered into GIS to determine areas and demographic information such as population, schools, businesses required by the model to calculate debris quantities.

### **ESTIMATING DEBRIS QUANTITIES**

Determine population (**P**) in the affected area (for example, 1990 census data for Harrison County, MS is 165,500). Therefore, for Harrison Co, **P** = 165,500. Population density per square mile can also be used to determine debris estimates per square mile.

The assumption of three persons per household (**H**) is used for this model. Known/estimated population (**P**) for a jurisdiction may be used to determine a value for **H**.

$$\mathbf{H} = \mathbf{P} / 3$$



The formula used in this model will generate debris quantity as an absolute value based on a known/estimated population or as a debris quantity per square mile based upon population density per square mile.

The model formula is:  $Q = H (C) (V) (B) (S)$

where

- Q** is quantity of debris in cubic yards
- H** is the number of households
- C** is the storm category factor in cubic yards
- V** is the vegetation characteristic multiplier
- B** is the commercial/business/industrial use multiplier
- S** is the storm precipitation characteristic multiplier

**C** is the storm category factor. It expresses debris quantity in cubic yards (cy) per household by hurricane category and includes the house and its contents, and land foliage.

<u>Hurricane Category</u>	<u>Value of C Factor</u>
1	2 cy
2	8 cy
3	26 cy
4	50 cy
5	80 cy

**V** is the vegetation multiplier. It acts to increase the quantity of debris by adding vegetation including shrubbery and trees on public rights of way.

<u>Vegetative Cover</u>	<u>Value of V Multiplier</u>
Light	1.1
Medium	1.3
Heavy	1.5

**B** is the multiplier which takes into account areas which are not solely single-family residential, but includes small retail stores, schools, apartments, shopping centers and light industrial/manufacturing facilities. Built into this multiplier is the offsetting commercial insurance requirement for owner/operator salvage operations.

<u>Commercial Density</u>	<u>Value of Multiplier</u>
Light	1.0
Medium	1.2
Heavy	1.3

**S** is a precipitation multiplier that takes into account either a "wet" or "dry" storm event; in a "wet" storm trees will up-root generating a larger volume of storm generated debris (for category III or greater storms only).

<u>Precipitation Characteristic</u>	<u>Value of Multiplier</u>
None to Light	1.0
Medium to heavy	1.3

**Example:** A category 4 storm passes through Harrison County, Mississippi. The area is primarily single family dwellings with some apartment complexes, schools and shopping centers. Vegetation characteristic is heavy due to the presence of residential landscape shrubbery and trees throughout the area. The storm is a very wet storm with rain before and continuing for a few days after the wind pass.

$$Q = H (C) (V) (B) (S)$$

$$H = P/3 = 165,500 / 3 = 55,167 \quad (3 \text{ persons/household})$$

$$C = 50 \quad (\text{factor for a Category 4 storm})$$

$$V = 1.5 \quad (\text{multiplier for heavy vegetation})$$

$$B = 1.3 \quad (\text{multiplier for heavy commercial due to schools/stores/apartments})$$

$$S = 1.3 \quad (\text{multiplier for wet storm event})$$

$$\text{then } Q = 55,167 (50) (1.5) (1.3) (1.3) = 6,992,374 \text{ cy debris or } \underline{\underline{7 \text{ Million CY}}}$$

### DEBRIS MANAGEMENT SITE REQUIREMENTS

Current Corps guidance for debris management (storage/handling) sites is to estimate stack heights of 10 feet with 60% usage of land area to provide for roads, safety buffers, burn pits, HTW areas etc.

$$1 \text{ acre (ac)} = 4,840 \text{ sq yd (sy)}$$

$$10 \text{ feet stack height} = 3.33 \text{ yards}$$

$$\text{total volume per ac} = 4,849 \text{ sy/ac } (3.33 \text{ y}) = 16,133 \text{ cy/ac}$$

From the example above, the acreage required for debris reduction sites is:

$$7,000,000 \text{ cy} / 16,133 \text{ cy/ac} = 434 \text{ acres required for debris storage only, no buffers, etc.}$$

To provide for roads, buffers, etc., the acreage must be increased by a factor of 1.66 or divided by 60%:

$$434 \times 1.66 = \mathbf{720 \text{ acres}}$$

or, since one square mile (sm) = 640 acres

720 acres / 640 ac/sm = 1.12 square miles

If you assume a 100 acre reduction site can be cycled every 45 to 60 days, or one time during the recovery period, then,  $720 / 2 = 360$  acres or **four 100 acre sites would be required**. The number of sites varies with size, distance from source, speed of reduction (mixed debris is slower than clean woody debris) and removal urgency. If existing landfill space is not readily available to start reducing site volumes immediately, additional sites will be required. Publicly owned property should be considered first, then predesignated leases with land owners as an alternative. Predesignation of sites is critical for expediting initial debris removal operations.

The Corps commonly removes approximately 70% of the total volume generated with local governments, volunteer groups, and private individuals removing the remainder. If 7 million cy is estimated, the Corps would estimate removing approximately 70% or 4.9 million cy.

The debris removed will consist of two broad categories: clean woody, and construction and demolition (C&D) debris. The clean debris will come early in the removal process as residents and local governments clear yards and rights of ways. The debris removal mission can be facilitated if debris is segregated as much as possible at the origin, i.e, along the Right of Way, according to type. The public should be informed regarding debris segregation as soon as possible after the storm. The most effective process is to set time periods for removal, i.e, the first 7-10 days clean woody debris only, and then followed by all other debris, segregating the metals from the non-metals.

Most common hurricane generated debris will consist of the following:

30% Clean woody debris

70% Mixed C&D

of the 70% mixed C&D,

- 42% Burnable but requires sorting (and advance approval from MassDEP Regions)
- 5% Soil
- 15% Metals
- 38% Landfilled

Based on the example above, 7,000,000 cy would break down as follows:

2,100,000 cy Clean woody debris

4,900,000 cy Mixed C&D

of the 4,900,000 cy of mixed C&D,

- 2,058,000 cy is Burnable but requires sorting or landfilling
- 245,000 cy of Soil
- 735,000 cy of Metals
- 1,862,000 cy Landfilled

Burning will produce about 95% reduction. Of less environmental concern than burning is the use of chippers and/or tub grinders. The chips/mulch produced have agricultural value as well as being easily converted to pelletized fuel. Chipping and grinding reduces the debris volume on a 1 to 4 ratio (4 cy is reduced to 1cy) or by 75%. The rate of burning versus chipping/grinding is basically equal, about 200 cy/hr. However chipping requires on-site storage and disposal of the chips/mulch.

The US Army Corps of Engineers Debris Modeling Methodology was used to estimate the quantity of debris that can be expected from a worst-case scenario (category 3 hurricane) for each town in Massachusetts.

### DEBRIS ESTIMATES BY MUNICIPALITY

City/Town	Population	Housing units	Corps of Engineers Debris Model	
			Debris Estimate (CY)	DMS Required (Acers)
Abington, Plymouth County	14,605	5,348	281,989	29
Acton, Middlesex County	20,331	7,680	404,951	42
Acushnet, Bristol County	10,161	3,889	205,059	21
Adams, Berkshire County	8,809	4,362	229,999	24
Agawam, Hampden County	28,144	11,659	614,755	63
Alford, Berkshire County	399	279	14,711	2
Amesbury, Essex County	16,450	6,623	349,217	36
Amherst, Hampshire County	34,874	9,427	497,066	51
Andover, Essex County	31,247	11,590	611,117	63
Aquinnah, Dukes County	344	463	24,413	3
Arlington, Middlesex County	42,389	19,411	1,023,503	105
Ashburnham, Worcester County	5,546	2,204	116,212	12
Ashby, Middlesex County	2,845	1,011	53,308	5
Ashfield, Franklin County	1,800	821	43,289	4
Ashland, Middlesex County	14,674	5,794	305,506	31
Athol, Worcester County	11,299	4,824	254,359	26
Attleboro, Bristol County	42,068	16,554	872,859	90
Auburn, Worcester County	15,901	6,579	346,897	36
Avon, Norfolk County	4,443	1,740	91,746	9
Ayer, Middlesex County	7,287	3,154	166,304	17
Barnstable, Barnstable County	47,821	25,018	1,319,149	136
Barre, Worcester County	5,113	1,988	104,823	11
Becket, Berkshire County	1,755	1,451	76,508	8
Bedford, Middlesex County	12,595	4,708	248,243	26
Belchertown, Hampshire County	12,968	5,050	266,276	27
Bellingham, Norfolk County	15,314	5,642	297,491	31
Belmont, Middlesex County	24,194	9,980	526,225	54
Berkley, Bristol County	5,749	1,885	99,392	10
Berlin, Worcester County	2,380	893	47,086	5
Bernardston, Franklin County	2,155	879	46,347	5
Beverly, Essex County	39,862	16,275	858,148	88
Billerica, Middlesex County	38,981	13,071	689,207	71
Blackstone, Worcester County	8,804	3,331	175,636	18
Blandford, Hampden County	1,214	526	27,734	3
Bolton, Worcester County	4,148	1,476	77,826	8

City/Town	Population	Housing units	Corps of Engineers Debris Model	
			Debris Estimate (CY)	Debris Required (Acers)
Boston, Suffolk County	589,141	251,935	13,284,028	1367
Bourne, Barnstable County	18,721	9,648	508,719	52
Boxborough, Middlesex County	4,868	1,906	100,499	10
Boxford, Essex County	7,921	2,610	137,620	14
Boylston, Worcester County	4,008	1,606	84,681	9
Braintree, Norfolk County	33,828	12,973	684,040	70
Brewster, Barnstable County	10,094	7,339	386,970	40
Bridgewater, Plymouth County	25,185	7,652	403,474	42
Brimfield, Hampden County	3,339	1,396	73,608	8
Brockton, Plymouth County	94,304	34,837	1,836,885	189
Brookfield, Worcester County	3,051	1,302	68,651	7
Brookline, Norfolk County	57,107	26,413	1,392,704	143
Buckland, Franklin County	1,991	839	44,238	5
Burlington, Middlesex County	22,876	8,445	445,287	46
Cambridge, Middlesex County	101,355	44,725	2,358,259	243
Canton, Norfolk County	20,775	8,163	430,418	44
Carlisle, Middlesex County	4,717	1,655	87,264	9
Carver, Plymouth County	11,163	4,127	217,608	22
Charlemont, Franklin County	1,358	628	33,113	3
Charlton, Worcester County	11,263	4,008	211,333	22
Chatham, Barnstable County	6,625	6,743	355,544	37
Chelmsford, Middlesex County	33,858	13,025	686,782	71
Chelsea, Suffolk County	35,080	12,337	650,505	67
Cheshire, Berkshire County	3,401	1,470	77,510	8
Chester, Hampden County	1,308	580	30,582	3
Chesterfield, Hampshire County	1,201	524	27,629	3
Chicopee, Hampden County	54,653	24,424	1,287,828	133
Chilmark, Dukes County	843	1,409	74,293	8
Clarksburg, Berkshire County	1,686	688	36,276	4
Clinton, Worcester County	13,435	5,844	308,142	32
Cohasset, Norfolk County	7,261	2,805	147,902	15
Colrain, Franklin County	1,813	776	40,916	4
Concord, Middlesex County	16,993	6,153	324,435	33
Conway, Franklin County	1,809	749	39,493	4
Cummington, Hampshire County	978	452	23,833	2
Dalton, Berkshire County	6,892	2,832	149,325	15
Danvers, Essex County	25,212	9,762	514,730	53
Dartmouth, Bristol County	30,666	11,283	594,930	61
Dedham, Norfolk County	23,464	8,908	469,701	48
Deerfield, Franklin County	4,750	2,060	108,619	11
Dennis, Barnstable County	15,973	14,105	743,728	77
Dighton, Bristol County	6,175	2,280	120,219	12
Douglas, Worcester County	7,045	2,588	136,460	14
Dover, Norfolk County	5,558	1,884	99,339	10
Dracut, Middlesex County	28,562	10,643	561,184	58
Dudley, Worcester County	10,036	3,910	206,166	21
Dunstable, Middlesex County	2,829	944	49,775	5
Duxbury, Plymouth County	14,248	5,345	281,831	29
East Bridgewater, Plymouth County	12,974	4,427	233,426	24
East Brookfield, Worcester County	2,097	849	44,766	5

City/Town	Population	Housing units	Corps of Engineers Debris Model	
			Debris Estimate (CY)	DMS Required (Acers)
East Longmeadow, Hampden County	14,100	5,363	282,780	29
Eastham, Barnstable County	5,453	5,535	291,849	30
Easthampton, Hampshire County	15,994	7,083	373,472	38
Easton, Bristol County	22,299	7,631	402,367	41
Edgartown, Dukes County	3,779	4,360	229,894	24
Egremont, Berkshire County	1,345	866	45,662	5
Erving, Franklin County	1,467	630	33,218	3
Essex, Essex County	3,267	1,446	76,244	8
Everett, Middlesex County	38,037	15,908	838,797	86
Fairhaven, Bristol County	16,159	7,266	383,121	39
Fall River, Bristol County	91,938	41,857	2,207,035	227
Falmouth, Barnstable County	32,660	20,055	1,057,460	109
Fitchburg, Worcester County	39,102	16,002	843,753	87
Florida, Berkshire County	676	294	15,502	2
Foxborough, Norfolk County	16,246	6,299	332,133	34
Framingham, Middlesex County	66,910	26,734	1,409,630	145
Franklin, Norfolk County	29,560	10,327	544,522	56
Freetown, Bristol County	8,472	3,029	159,713	16
Gardner, Worcester County	20,770	8,838	466,010	48
Georgetown, Essex County	7,377	2,616	137,936	14
Gill, Franklin County	1,363	560	29,527	3
Gloucester, Essex County	30,273	13,958	735,977	76
Goshen, Hampshire County	921	536	28,262	3
Gosnold, Dukes County	86	215	11,336	1
Grafton, Worcester County	14,894	5,828	307,298	32
Granby, Hampshire County	6,132	2,295	121,010	12
Granville, Hampden County	1,521	595	31,373	3
Great Barrington, Berkshire County	7,527	3,352	176,744	18
Greenfield, Franklin County	18,168	8,301	437,695	45
Groton, Middlesex County	9,547	3,393	178,906	18
Groveland, Essex County	6,038	2,096	110,517	11
Hadley, Hampshire County	4,793	1,953	102,977	11
Halifax, Plymouth County	7,500	2,841	149,800	15
Hamilton, Essex County	8,315	2,825	148,956	15
Hampden, Hampden County	5,171	1,846	97,335	10
Hancock, Berkshire County	721	472	24,887	3
Hanover, Plymouth County	13,164	4,445	234,375	24
Hanson, Plymouth County	9,495	3,178	167,569	17
Hardwick, Worcester County	2,622	1,086	57,262	6
Harvard, Worcester County	5,981	2,225	117,319	12
Harwich, Barnstable County	12,386	9,450	498,279	51
Hatfield, Hampshire County	3,249	1,431	75,453	8
Haverhill, Essex County	58,969	23,737	1,251,604	129
Hawley, Franklin County	336	192	10,123	1
Heath, Franklin County	805	648	34,167	4
Hingham, Plymouth County	19,882	7,368	388,499	40
Hinsdale, Berkshire County	1,872	970	51,146	5
Holbrook, Norfolk County	10,785	4,153	218,979	23
Holden, Worcester County	15,621	5,827	307,246	32
Holland, Hampden County	2,407	1,317	69,442	7

City/Town	Population	Housing units	Corps of Engineers Debris Model	
			Debris Estimate (CY)	DMS Required (Acers)
Holliston, Middlesex County	13,801	4,868	256,679	26
Holyoke, Hampden County	39,838	16,210	854,720	88
Hopedale, Worcester County	5,907	2,289	120,694	12
Hopkinton, Middlesex County	13,346	4,548	239,806	25
Hubbardston, Worcester County	3,909	1,360	71,710	7
Hudson, Middlesex County	18,113	7,168	377,954	39
Hull, Plymouth County	11,050	5,366	282,938	29
Huntington, Hampshire County	2,174	935	49,300	5
Ipswich, Essex County	12,987	5,601	295,329	30
Kingston, Plymouth County	11,780	4,525	238,594	25
Lakeville, Plymouth County	9,821	3,662	193,089	20
Lancaster, Worcester County	7,380	2,141	112,890	12
Lanesborough, Berkshire County	2,990	1,382	72,870	7
Lawrence, Essex County	72,043	25,601	1,349,889	139
Lee, Berkshire County	5,985	2,927	154,334	16
Leicester, Worcester County	10,471	3,826	201,737	21
Lenox, Berkshire County	5,077	2,713	143,051	15
Leominster, Worcester County	41,303	16,976	895,110	92
Leverett, Franklin County	1,663	648	34,167	4
Lexington, Middlesex County	30,355	11,333	597,566	61
Leyden, Franklin County	772	306	16,134	2
Lincoln, Middlesex County	8,056	2,911	153,491	16
Littleton, Middlesex County	8,184	3,055	161,084	17
Longmeadow, Hampden County	15,633	5,879	309,987	32
Lowell, Middlesex County	105,167	39,468	2,081,068	214
Ludlow, Hampden County	21,209	7,841	413,440	43
Lunenburg, Worcester County	9,401	3,668	193,406	20
Lynn, Essex County	89,050	34,637	1,826,339	188
Lynnfield, Essex County	11,542	4,273	225,306	23
Malden, Middlesex County	56,340	23,634	1,246,173	128
Manchester-by-the-Sea, Essex County	5,228	2,327	122,698	13
Mansfield, Bristol County	22,414	8,120	428,151	44
Marblehead, Essex County	20,377	8,906	469,595	48
Marion, Plymouth County	5,123	2,439	128,603	13
Marlborough, Middlesex County	36,255	14,903	785,805	81
Marshfield, Plymouth County	24,324	9,954	524,854	54
Mashpee, Barnstable County	12,946	8,325	438,960	45
Mattapoisett, Plymouth County	6,268	3,172	167,253	17
Maynard, Middlesex County	10,433	4,406	232,319	24
Medfield, Norfolk County	12,273	4,048	213,442	22
Medford, Middlesex County	55,765	22,687	1,196,240	123
Medway, Norfolk County	12,448	4,248	223,988	23
Melrose, Middlesex County	27,134	11,248	593,084	61
Mendon, Worcester County	5,286	1,886	99,445	10
Merrimac, Essex County	6,138	2,295	121,010	12
Methuen, Essex County	43,789	16,885	890,312	92
Middleborough, Plymouth County	19,941	7,249	382,225	39
Middlefield, Hampshire County	542	263	13,867	1
Middleton, Essex County	7,744	2,347	123,752	13
Milford, Worcester County	26,799	10,713	564,875	58

City/Town	Population	Housing units	Corps of Engineers Debris Model	
			Debris Estimate (CY)	DMS Required (Acers)
Millbury, Worcester County	12,784	5,109	269,387	28
Millis, Norfolk County	7,902	3,066	161,664	17
Millville, Worcester County	2,724	958	50,513	5
Milton, Norfolk County	26,062	9,161	483,041	50
Monroe, Franklin County	93	67	3,532	0
Monson, Hampden County	8,359	3,213	169,415	17
Montague, Franklin County	8,489	3,844	202,686	21
Monterey, Berkshire County	934	830	43,764	5
Montgomery, Hampden County	654	257	13,551	1
Mount Washington, Berkshire County	130	128	6,749	1
Nahant, Essex County	3,632	1,704	89,848	9
Nantucket, Nantucket County	9,520	9,210	485,624	50
Natick, Middlesex County	32,170	13,368	704,867	73
Needham, Norfolk County	28,911	10,846	571,887	59
New Ashford, Berkshire County	247	110	5,800	1
New Bedford, Bristol County	93,768	41,511	2,188,792	225
New Braintree, Worcester County	927	328	17,294	2
New Marlborough, Berkshire County	1,494	963	50,777	5
New Salem, Franklin County	929	422	22,251	2
Newbury, Essex County	6,717	2,816	148,482	15
Newburyport, Essex County	17,189	7,897	416,393	43
Newton, Middlesex County	83,829	32,112	1,693,201	174
Norfolk, Norfolk County	10,460	2,861	150,854	16
North Adams, Berkshire County	14,681	7,088	373,736	38
North Andover, Essex County	27,202	9,943	524,274	54
North Attleborough, Bristol County	27,143	10,635	560,762	58
North Brookfield, Worcester County	4,683	1,902	100,288	10
North Reading, Middlesex County	13,837	4,870	256,785	26
Northampton, Hampshire County	28,978	12,405	654,090	67
Northborough, Worcester County	14,013	5,002	263,745	27
Northbridge, Worcester County	13,182	4,941	260,529	27
Northfield, Franklin County	2,951	1,262	66,542	7
Norton, Bristol County	18,036	5,961	314,311	32
Norwell, Plymouth County	9,765	3,318	174,951	18
Norwood, Norfolk County	28,587	11,945	629,835	65
Oak Bluffs, Dukes County	3,713	3,820	201,420	21
Oakham, Worcester County	1,673	591	31,162	3
Orange, Franklin County	7,518	3,303	174,160	18
Orleans, Barnstable County	6,341	5,073	267,489	28
Otis, Berkshire County	1,365	1,572	82,888	9
Oxford, Worcester County	13,352	5,228	275,661	28
Palmer, Hampden County	12,497	5,402	284,836	29
Paxton, Worcester County	4,386	1,461	77,035	8
Peabody, Essex County	48,129	18,898	996,453	103
Pelham, Hampshire County	1,403	556	29,316	3
Pembroke, Plymouth County	16,927	5,897	310,937	32
Pepperell, Middlesex County	11,142	3,917	206,535	21
Peru, Berkshire County	821	378	19,931	2
Petersham, Worcester County	1,180	474	24,993	3
Phillipston, Worcester County	1,621	739	38,965	4



City/Town	Population	Housing units	Corps of Engineers Debris Model	
			Debris Estimate (CY)	DMS Required (Acers)
Pittsfield, Berkshire County	45,793	21,366	1,126,586	116
Plainfield, Hampshire County	589	311	16,398	2
Plainville, Norfolk County	7,683	3,111	164,036	17
Plymouth, Plymouth County	51,701	21,250	1,120,470	115
Plympton, Plymouth County	2,637	872	45,978	5
Princeton, Worcester County	3,353	1,196	63,062	6
Provincetown, Barnstable County	3,431	3,890	205,111	21
Quincy, Norfolk County	88,025	40,093	2,114,023	218
Randolph, Norfolk County	30,963	11,533	608,112	63
Raynham, Bristol County	11,739	4,209	221,932	23
Reading, Middlesex County	23,708	8,823	465,219	48
Rehoboth, Bristol County	10,172	3,597	189,662	20
Revere, Suffolk County	47,283	20,181	1,064,103	109
Richmond, Berkshire County	1,604	833	43,922	5
Rochester, Plymouth County	4,581	1,634	86,157	9
Rockland, Plymouth County	17,670	6,649	350,588	36
Rockport, Essex County	7,767	4,202	221,563	23
Rowe, Franklin County	351	209	11,020	1
Rowley, Essex County	5,500	2,004	105,666	11
Royalston, Worcester County	1,254	526	27,734	3
Russell, Hampden County	1,657	641	33,798	3
Rutland, Worcester County	6,353	2,392	126,125	13
Salem, Essex County	40,407	18,175	958,331	99
Salisbury, Essex County	7,827	4,156	219,137	23
Sandisfield, Berkshire County	824	647	34,115	4
Sandwich, Barnstable County	20,136	8,748	461,264	47
Saugus, Essex County	26,078	10,122	533,712	55
Savoy, Berkshire County	705	326	17,189	2
Scituate, Plymouth County	17,863	7,685	405,214	42
Seekonk, Bristol County	13,425	4,947	260,845	27
Sharon, Norfolk County	17,408	6,026	317,738	33
Sheffield, Berkshire County	3,335	1,634	86,157	9
Shelburne, Franklin County	2,058	886	46,717	5
Sherborn, Middlesex County	4,200	1,451	76,508	8
Shirley, Middlesex County	6,373	2,156	113,681	12
Shrewsbury, Worcester County	31,640	12,696	669,434	69
Shutesbury, Franklin County	1,810	807	42,551	4
Somerset, Bristol County	18,234	7,143	376,636	39
Somerville, Middlesex County	77,478	32,477	1,712,447	176
South Hadley, Hampshire County	17,196	6,784	357,706	37
Southampton, Hampshire County	5,387	2,025	106,774	11
Southborough, Worcester County	8,781	2,997	158,025	16
Southbridge, Worcester County	17,214	7,511	396,040	41
Southwick, Hampden County	8,835	3,533	186,288	19
Spencer, Worcester County	11,691	4,938	260,370	27
Springfield, Hampden County	152,082	61,172	3,225,477	332
Sterling, Worcester County	7,257	2,637	139,043	14
Stockbridge, Berkshire County	2,276	1,571	82,835	9
Stoneham, Middlesex County	22,219	9,289	489,790	50
Stoughton, Norfolk County	27,149	10,488	553,011	57

City/Town	Population	Housing units	Corps of Engineers Debris Model	
			Debris Estimate (CY)	DMS Required (Acers)
Stow, Middlesex County	5,902	2,128	112,205	12
Sturbridge, Worcester County	7,837	3,335	175,847	18
Sudbury, Middlesex County	16,841	5,590	294,749	30
Sunderland, Franklin County	3,777	1,668	87,950	9
Sutton, Worcester County	8,250	2,950	155,547	16
Swampscott, Essex County	14,412	5,930	312,677	32
Swansea, Bristol County	15,901	6,070	320,058	33
Taunton, Bristol County	55,976	22,908	1,207,893	124
Templeton, Worcester County	6,799	2,597	136,934	14
Tewksbury, Middlesex County	28,851	10,158	535,611	55
Tisbury, Dukes County	3,755	2,720	143,420	15
Tolland, Hampden County	426	478	25,203	3
Topsfield, Essex County	6,141	2,144	113,048	12
Townsend, Middlesex County	9,198	3,184	167,885	17
Truro, Barnstable County	2,087	2,551	134,509	14
Tyngsborough, Middlesex County	11,081	3,806	200,682	21
Tyringham, Berkshire County	350	265	13,972	1
Upton, Worcester County	5,642	2,084	109,885	11
Uxbridge, Worcester County	11,156	4,090	215,657	22
Wakefield, Middlesex County	24,804	9,937	523,958	54
Wales, Hampden County	1,737	796	41,971	4
Walpole, Norfolk County	22,824	8,229	433,898	45
Waltham, Middlesex County	59,226	23,880	1,259,144	130
Ware, Hampshire County	9,707	4,336	228,628	24
Wareham, Plymouth County	20,335	10,670	562,607	58
Warren, Worcester County	4,776	2,014	106,194	11
Warwick, Franklin County	750	343	18,085	2
Washington, Berkshire County	544	236	12,443	1
Watertown, Middlesex County	32,986	15,008	791,341	81
Wayland, Middlesex County	13,100	4,735	249,667	26
Webster, Worcester County	16,415	7,554	398,307	4841
Wellesley, Norfolk County	26,613	8,861	467,222	48
Wellfleet, Barnstable County	2,749	3,998	210,806	22
Wendell, Franklin County	986	439	23,147	2
Wenham, Essex County	4,440	1,320	69,600	7
West Boylston, Worcester County	7,481	2,458	129,605	13
West Bridgewater, Plymouth County	6,634	2,510	132,347	14
West Brookfield, Worcester County	3,804	1,534	80,884	8
West Newbury, Essex County	4,149	1,423	75,031	8
West Springfield, Hampden County	27,899	12,259	646,392	67
West Stockbridge, Berkshire County	1,416	769	40,547	4
West Tisbury, Dukes County	2,467	1,849	97,494	10
Westborough, Worcester County	17,997	6,773	357,126	37
Westfield, Hampden County	40,072	15,441	814,173	84
Westford, Middlesex County	20,754	6,941	365,985	38
Westhampton, Hampshire County	1,468	623	32,849	3
Westminster, Worcester County	6,907	2,694	142,049	15
Weston, Middlesex County	11,469	3,825	201,684	21
Westport, Bristol County	14,183	6,143	323,908	33
Westwood, Norfolk County	14,117	5,251	276,874	28

City/Town	Population	Housing units	Corps of Engineers Debris Model	
			DMS Required (Acers)	DMS Required (Acers)
Weymouth, Norfolk County	53,988	22,573	1,190,229	122
Whately, Franklin County	1,573	652	34,378	4
Whitman, Plymouth County	13,882	5,104	269,123	28
Wilbraham, Hampden County	13,473	5,048	266,170	27
Williamsburg, Hampshire County	2,427	1,073	56,577	6
Williamstown, Berkshire County	8,424	3,053	160,978	17
Wilmington, Middlesex County	21,363	7,158	377,427	39
Winchendon, Worcester County	9,611	3,660	192,984	20
Winchester, Middlesex County	20,810	7,908	416,973	43
Windsor, Berkshire County	875	474	24,993	3
Winthrop, Suffolk County	18,303	8,067	425,356	44
Woburn, Middlesex County	37,258	15,391	811,536	84
Worcester, Worcester County	172,648	70,723	3,729,082	384
Worthington, Hampshire County	1,270	582	30,687	3
Wrentham, Norfolk County	10,554	3,507	184,917	19
Yarmouth, Barnstable County	24,807	16,605	875,548	90
Massachusetts (total)	6,349,097	2,621,989	138,252,235	14,225

Population and housing unit data Source: U.S. Census Bureau, Census 2000 Summary File 1

Debris calculations based on Corps of Engineers Debris Model

## **Appendix C: Western Massachusetts Intergovernmental Emergency Mutual Aid Agreement**

**This Mutual Aid Agreement (“Agreement”) is entered into by and between the following  
cities and towns: (list all cities and towns that have signed the agreement)**

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### Section 1: Purpose

The purpose of this Agreement is to provide for mutual aid and assistance between the municipalities entering into the Agreement to provide services to prevent and combat the effects of a mass casualty incident or emergency and disasters as defined in Chapter 639 of the Acts of 1950 when a local emergency has been declared and local resources are insufficient to meet this unusual need.

The safety and well being of a community will best be protected through the concerted efforts of multiple governments providing assistance to one another. The promotion and coordination of this assistance through this Agreement is desirable for the effective and efficient provision of mutual aid and assistance.

### **Section 2: Authority**

The Agreement is intended for use in an emergency situation, “in the light of exigencies of an extreme emergency situation” as excerpted from Chapter 639 of the Acts of 1950, as codified under Mass Gen. Laws. C. 33, appendix and other relevant State and local laws and policies. In addition, pursuant to M.G.L. Chapter 40, Section 4A, mutual aid agreements may be made among municipalities or municipal agencies, with the authorization of the City Council and Mayor in a city, and of Town Meeting in a town.

### Section 3: Definitions

**Mutual Aid** means aid to another local government in the form of personnel, equipment, facilities, services, supplies, or other resources appropriate to public safety and welfare.

**Inter-municipal** refers to the surrounding local governments participating in this mutual aid agreement.

**Receiving Government** means the local government requesting mutual aid from another local government.

**Sending Government** means the local government sending mutual aid to another local government.

### Section 4: Other Agreements

This Agreement supersedes prior past mutual aid agreements or inter-municipal agreements

among the signatories of this Agreement, except for the Berkshire, Franklin, Hamden and Hampshire Counties Fire and Police Mutual Aid Agreements and the State Fire Mobilization Agreements which are not superseded by this agreement.

This Agreement does not limit any municipalities' ability to enter into mutual aid agreements in the future.

#### Section 5: Requests for Assistance

In order to request mutual aid pursuant to this Agreement, the receiving Government must declare a local emergency as defined in Chapter 639 of the Acts of 1950 and then request mutual aid from the Sending Government.

#### **Section 6: Limitations**

The provision of mutual aid is voluntary. Neither the Sending nor Receiving Government shall be required to deplete its own resources.

#### **Section 7: Supervision and Control**

Personnel and equipment dispatched to a Receiving Government shall remain employees of their respective Sending Government, but shall work under the overall discretion of the Receiving Government.

The Receiving Government will utilize the incident command system and responding resources from Sending Government(s) will be incorporated as appropriate into that system.

#### **Section 8: Powers and Rights**

Employees of the Sending Government agencies that are parties to this Intergovernmental Mutual Aid Agreement shall be granted recognition of their respective jurisdiction, authority, licenses or permits outside their original jurisdiction under this Intergovernmental Mutual Aid Agreement.

#### **Section 9: Liability**

The Sending Government will maintain workers compensation coverage for its employees and liability coverage for its vehicles and equipment. Any uninsured or extraordinary expenses may be part of a claim for reimbursement. The Receiving Government agrees to maintain adequate liability insurance or be self-insured and to hold harmless and indemnify the Sending Government for any and all claims occurring while its personnel and equipment are working under the direction of the Receiving Government. These indemnities shall include legal fees and costs that may arise from providing emergency aid pursuant to this Agreement, to the extent permissible under Massachusetts General Laws.

#### **Section 10: Workers Compensation**

The Sending Government will maintain workers compensation coverage for its employees and liability coverage for its vehicles and equipment. Any uninsured or extraordinary expenses may be part of a claim for reimbursement. The Receiving Government agrees to maintain adequate liability insurance or be self-insured and to hold harmless and indemnify the Sending Government for any and all claims occurring while its personnel and equipment are working under the direction of the Receiving Government. These indemnities shall include legal fees and costs that may arise from providing emergency aid pursuant to this Agreement, to the extent permissible under Massachusetts General Laws.

### **Section 11: Reimbursement**

Hourly rates, equipment costs, and hours worked by those providing Emergency mutual aid will be provided to the Receiving Government for all actual costs. The Sending Government providing emergency mutual aid may request reimbursement for all actual costs. The Receiving Government agrees to promptly process and pay actual costs to the Sending Government providing emergency mutual aid based on customary and good practices not withstanding potential reimbursements from State or Federal emergency relief programs.

### **Section 12: Implementation**

The purpose of these recitals is to insure that the Sending Government is reimbursed all specified and reasonable costs and assumes no additional liabilities as a result of the Agreement. The Sending Government and its designee shall determine the manner and degree in which such emergency mutual aid is utilized.

During the performance of this Agreement, the Receiving Government agrees as follows:

The Receiving Government will not discriminate against any client or applicant for services because of race, color, religion, sex, age, sexual orientation, disability, family status or national origin. The Receiving Government will take affirmative action to ensure that clients, applicants and employees are treated without regard to their race, color, religion, sex, age, sexual orientation, disability, family status or national origin.

In the event of the Receiving Government's noncompliance with the nondiscrimination clauses of this Agreement or with any of such rules, regulations, or orders, this Agreement may be canceled, terminated, or suspended in whole or in part and the Receiving Government may be declared ineligible to participate in any further emergency mutual aid Agreements.

The Receiving Government further covenants that in the performance of this Agreement, they do not have any interest, direct or indirect, which will conflict in any manner or degree with the performance of the emergency mutual aid hereunder.

This Agreement shall be governed by the law of the Commonwealth of Massachusetts unless otherwise specified. Any action, whether at law or equity, shall be brought only in the Superior

Court of the county in which the complaining municipality resides, or the Federal District Court sitting in Springfield, Massachusetts.

Both the Sending Government and the Receiving Government shall comply with all applicable rules and regulations promulgated by all local, state, federal and national boards, bureaus and agencies.

### **Section 13: Term of Agreement**

This Agreement represents the entire and integrated Agreement between the LOCAL GOVERNMENTS THAT HAVE SIGNED THIS AGREEMENT (list on pages attached) and supersedes all prior negotiations, representations or agreements, either written or oral. This Agreement may be amended only by written instrument signed by all the LOCAL GOVERNMENTS THAT HAVE SIGNED THIS AGREEMENT (list on pages attached).

This Agreement is to remain in effect for twenty-five years from the date of execution, at which time it may be extended in accordance with Massachusetts law. Any party may withdraw from this Agreement at any time by sending fourteen (14) days' prior written notice to all other parties. This Agreement shall continue to be in effect among the remaining parties.

### **Section 14: Severability**

This Agreement may be amended only by written instrument signed by all the LOCAL GOVERNMENTS THAT HAVE SIGNED THIS AGREEMENT (list on pages attached).

Should any portion of this Agreement be judged to be invalid by any court of competent jurisdiction, such judgment shall not impair or invalidate the remainder of this Agreement, and for this purpose the provisions of this Agreement are declared severable.

Signature page(s) for **Western Massachusetts Intergovernmental  
Emergency Mutual Aid Agreement**

List all 101 communities in western Massachusetts

[City/Town] of \_\_\_\_\_

By: \_\_\_\_\_ Date: \_\_\_\_\_  
[Title and Agency--print]

By: \_\_\_\_\_ Date: \_\_\_\_\_  
[signature]

Signatures  
**Continued...**



**[Recommend to add as exhibits, documents reflecting the votes or authorizations for each municipality to join the agreement]**

**Check your local charter, ordinances, or bylaws for signature requirements. Local laws may require a different form of approval than what is given here, so you may need to make appropriate changes. We strongly advise that your city or town attorney review the Agreement.**

**Appendix D**  
**FEMA Mutual Aid Agreement Example**

INTERGOVERNMENTAL EMERGENCY MUTUAL AID AGREEMENT

STATE OF \_\_\_\_\_

CITY / COUNTY \_\_\_\_\_ and CITY / COUNTY \_\_\_\_\_

WHEREAS, Massachusetts General Law c40, s. 4a, authorizes local governments to contract with each other to provide services, and

WHEREAS, Massachusetts General Law c40, s. 4a, and state policy also provide for certain reimbursements or financial aid to local government for certain natural disasters or emergency conditions declared by the Governor, and

WHEREAS, the \_\_\_\_\_ finds it to be in its best interest to have such mutual aid agreements  
(City or County Name)  
with other local governmental bodies in the state and region,

NOW, THEREFORE, in consideration of the above recitals and the covenants contained herein, the parties hereto agree as follows:

1. The \_\_\_\_\_ hereby agrees to provide through its Director of Public Works such mutual  
(City or County Name)  
aid as may be requested by a governmental unit, which has emergency conditions of a natural disaster as defined by Massachusetts law. The aid rendered shall be to the extent of available personnel and equipment not required for minimum needs of the \_\_\_\_\_. The judgment of the Director of Public Works or his designee  
(City or County Name)  
shall be final as to the personnel and equipment so available.

2. Personnel dispatched to aid another jurisdiction shall remain employees of the \_\_\_\_\_ but  
(City or County Name)  
shall work under the supervision of the Director of Public Works of the requesting jurisdiction. The \_\_\_\_\_ retains the right to withdraw any and all aid rendered upon direction of the  
(City or County Name)  
Director of Public Works.

3. The Director of Public Works will provide a list of hourly rates and equipment costs, and hours worked for all such aid rendered to the requesting jurisdiction for all actual costs, and the requesting jurisdiction agrees to compensate such claim for costs incurred as expeditiously as possible.

4. The \_\_\_\_\_ will maintain workers compensation coverage for its employees and  
(City or County Name)

liability coverage for its vehicles and equipment. Any uninsured or extraordinary expenses may be a part of claimed costs for reimbursement. The requesting jurisdiction agrees to maintain adequate liability insurance under state law and to hold harmless and indemnify the \_\_\_\_\_ for any and all

(City or County Name)

claims occurring while its personnel and equipment are working under the direction of the Director of Public Works of the requesting jurisdiction. These indemnities shall include attorney's fees and costs that may arise from providing aid pursuant to this agreement.

5. The purpose of these recitals is to insure that the \_\_\_\_\_ is reimbursed all costs

(City or County Name)

and assumes no additional liabilities as a result of this agreement. Neither party to this agreement shall be liable for its failure or refusal to render aid pursuant to this agreement. The Director of Public Works (or his/her designee in charge of operations) of the requesting jurisdiction shall in his sole discretion determine the manner in which such emergency aid may be used.

IN WITNESS WHEREOF, this Agreement has been duly executed by the parties subscribed below and is binding upon the \_\_\_\_\_ and the requesting jurisdiction.

(City/County)

Date signed \_\_\_\_\_

CITY / COUNTY OF \_\_\_\_\_ by: \_\_\_\_\_

Date signed \_\_\_\_\_

REQUESTING JURISDICTION \_\_\_\_\_ by: \_\_\_\_\_

**Appendix E**  
**FEMA Right of Entry Agreement Example**

I/We \_\_\_\_\_, the owner(s) of the property  
commonly identified as \_\_\_\_\_,  
(street)  
\_\_\_\_\_, State of \_\_\_\_\_  
(city/town) (county)

do hereby grant and give freely and without coercion, the right of access and entry to said property in the  
County/City of \_\_\_\_\_, its agencies, contractors, and  
subcontractors thereof, for the purpose of removing and clearing any or all storm-generated debris of  
whatever nature from the above described property.

It is fully understood that this permit is not an obligation to perform debris clearance. The undersigned  
agrees and warrants to hold harmless the City/County of \_\_\_\_\_, State of \_\_\_\_\_,  
its agencies, contractors, and subcontractors, for damage of any type, whatsoever, either to the above described  
property or persons situated thereon and hereby release, discharge, and waive any action, either legal or  
equitable that might arise out of any activities on the above described property. The property owner(s) will mark  
any storm damaged sewer lines, water lines, and other utility lines located on the described property.

I/We (have\_\_\_\_\_, have not\_\_\_\_\_) (will\_\_\_\_\_, will not\_\_\_\_\_) received any compensation for debris removal  
from any other source including Small Business Administration (SBA), National Resource Conservation  
Service (NRCS), private insurance, individual and family grant program or any other public assistance program.  
I will report for this property any insurance settlements to me or my family for debris removal that has been  
performed at government expense.

For the considerations and purposes set forth herein, I set my hand this \_\_\_\_\_ day of \_\_\_\_\_, 20\_\_\_\_\_.

_____ Witness	_____ Owner
	_____ Owner
	_____ Street Address
	_____ City State Zip
	_____ Telephone No.

# Appendix F: USACE Sample Scope of Work for Equipment Leasing for Clearing of Debris

**SCOPE OF WORK  
FOR  
EQUIPMENT LEASING FOR CLEARING OF DEBRIS  
RELATED TO  
[NAME/NATURE OF DISASTER]  
AT, IN, OR NEAR  
[LOCATION OF RECOVERY EFFORTS]**

**1. GENERAL.**

1.1 The purpose of this contract is to provide debris clearing and removal response assistance to [LOCATION; I.E. “North Carolina counties” or “Mobile and Baldwin Counties in Alabama”] which have been declared disaster areas by the President because of the effects of [NAME OF DISASTER].

**2. SERVICES.**

2.1. The Contractor shall provide specified equipment, with operators and laborers, for debris removal. The contractor shall provide all labor and materials necessary to fully operate and maintain (including fuel, oil, grease and repairs) the following:

**[INSERT QUANTITY AND DESCRIPTION FROM EQUIPMENT PICK LIST]**

2.2. The Contractor shall provide the crews for [INITIAL TIME; I.E. “two weeks” or “not to exceed either time or dollar amount”] with a Government option to extend for up to an additional [EXTENSION TIME; I.E. “one week”].

2.3. All hourly equipment rates include the cost of the operator, supervision, maintenance, fuel, repairs, overhead, profit, insurance, and any other costs associated with the equipment and personnel.

2.4. All hourly manpower rates include the cost of protective clothing (to include hard-hats and steel-toed boots), fringe benefits, hand tools, supervision, transportation and any other costs.

2.5. The work shall consist of clearing and removing any and all “eligible” debris (see section 3.0 for a definition of eligible debris) as directed by the Contracting Officer’s Representative (COR). Work will include: 1) loading the debris, 2) hauling the debris to an approved dumpsite, and 3) dumping the debris at the dumpsite. Ineligible debris will not be loaded, hauled, or dumped under this contract. This work will involve primarily clearing the right-ofway (ROW) of streets and roads.

2.6. The Contractor shall not move from one designated work area to another designated work area without prior approval from the COR.

2.7. The Contractor shall conduct the work so as not to interfere with the disaster response and recovery activities of Federal, State, tribal and local governments or agencies, or of any public utilities.

2.8. The Contractor shall comply with local, tribal, State and Federal Safety and Health

Requirements.

### 3. **DEBRIS CLASSIFICATION**

- 3.1. **Eligible Debris.** Debris that is within the scope of this contract falls under three possible classifications: Burnable, Non-Burnable, and Recyclable. Debris that is classified as Household Hazardous Waste (HHW) is not to be transported by this contract.
- 3.2. **Burnable Debris.** Burnable debris includes all biodegradable matter except that included in the following definitions of other categories of debris. It includes, but is not limited to, damaged and disturbed trees; bushes and shrubs; broken, partially broken and severed tree limbs; tree stumps with base cut measurements less than 2 feet; untreated structural timber; untreated wood products; and brush.
- 3.3. **Non-Burnable Debris.** Non-burnable debris includes, but is not limited to, treated timber; plastic; glass; rubber products; metal products; dry wall cloth items; non-wood building materials; carpeting; recyclable debris including metal products (i.e. mobile trailer parts, household appliances (white metal), and similar items), or uncontaminated soil.
- 3.4. **Household Hazardous Waste (HHW).** Household hazardous wastes, such as petroleum products, paint products, etc., and known or suspected hazardous materials, such as asbestos, lead-based paint, or electrical transformers shall be removed by others. Coordination for hazardous debris removal is the responsibility of the Government.

### 4. **DUMPSITES**

- 4.1. The Contractor shall use only debris dumpsites designated and approved by the COR.
- 4.2. The dumpsite operator shall direct all dumping operations. The Contractor shall cooperate with the dumpsite operator to facilitate effective dumping operations.

### 5. **PERFORMANCE SCHEDULE**

- 5.1. The Contractor shall commence mobilization immediately upon award of the contract and designation of work areas by the COR and will commence debris removal operations within 24 hours of Notice to Proceed.
- 5.2. The Contractor shall work during daylight hours for [INSERT] hours per day, [INSERT] days per week.

### 6. **EQUIPMENT**

- 6.1. All trucks and other equipment must be in compliance with all applicable Federal, State, tribal and local rules and regulations. Any truck used to haul debris must be capable of rapidly dumping its load without the assistance of other equipment; be equipped with a tailgate that will effectively contain the debris during transport and permit the truck to be filled to capacity; and measured and marked for its load capacity. Sideboards or other extensions to the bed are allowable, provided they meet all applicable rules and regulations, cover the front and both sides, and are constructed in a manner to withstand severe operating conditions. The sideboards are to be constructed of 2" by 6" boards or greater and not to extend more than 2 feet above the metal bedsides. The Contracting Officer's representative must approve all requests for extensions. Equipment will be inspected prior to its use by the Contractor using applicable U.S. Army Corps of Engineers forms. The forms will be provided to the Government after completion.
- 6.2. Trucks and other heavy equipment designated for use under this contract shall be equipped with two signs, one attached to each side. A total of [QUANTITY] signs will be provided by the Government and are to be returned to the Government prior to issuance of final payment. A fee of \$[AMOUNT] will be assessed against the final payment for each lost sign.
- 6.3. Prior to commencing debris removal operations, the Contractor shall present to the Government's representative all trucks or trailers that will be used for hauling debris for the purpose of determining hauling capacity. Hauling capacity, in cubic yards, will be recorded and marked on each truck or trailer. Each truck or trailer will also be numbered for identification. The government reserves the right to re-measure trucks and trailers at any time during the contract and to use re-measurements as the basis for calculating loads for payment purposes.
- 6.4. Trucks or equipment that are designated for use under this contract shall not be used for any

other work during the working hours of this contract. The Contractor shall not solicit work from private citizens or others to be performed in the designated work area during the period of this contract. Under no circumstances will the Contractor mix debris hauled for others with debris hauled under this contract.

## **7. REPORTING**

7.1. The Contractor shall submit a report to the COR by close of business each day of the term of the contract. Each report shall contain, at a minimum, the following information:

Contractor's Name.

Contract Number.

Daily and cumulative hours for each piece of equipment.

Daily and cumulative hours for personnel, by position.

## **8. OTHER CONSIDERATIONS**

- 8.1. The Contractor shall supervise and direct the work, using qualified labor and proper equipment for all tasks. Safety of the Contractor's personnel and equipment is the responsibility of the Contractor. Additionally, the Contractor shall pay for all materials, personnel, taxes and fees necessary to perform under the terms of this contract.
- 8.2. The Contractor must be duly licensed in accordance with the state's statutory requirements to perform the work. The Contractor shall obtain all permits necessary to complete the work. The Contractor shall be responsible for determining what permits are necessary to perform under the contract. Copies of all permits shall be submitted to the COR prior to issuance of a notice to proceed.
- 8.3. The Contractor shall be responsible for taking corrective action for any notices of violations issued as a result of the Contractors or any subcontractors actions or operations during the performance of this contract. Corrections for any such violations shall be at no additional cost to the Government.
- 8.4. The Contractor shall be responsible for control of pedestrian and vehicular traffic in the work area. The Contractor shall provide all flag persons, signs, equipment and other devices necessary to meet Federal, State, tribal and local requirements. The traffic control personnel and equipment shall be in addition to the personnel and equipment required in other parts of this contract. At a minimum, one flag person should be posted at each approach to the work area.

## **9. PAYMENT.**

- 9.1. The Contractor will be entitled to invoice for 60% of the mobilization and demobilization line item after all equipment is delivered to the designated work site. The remaining 40% will be due after all equipment is removed from the work site, all vehicle signs have been returned to the government, and the contractor has submitted a proper invoice.
- 9.2. Payment for work completed will be based on verified hours worked from the daily operational report. Equipment down time resulting from equipment failure, routine maintenance and fueling that exceeds fifteen (15) minutes of a work hour will be considered unacceptable work and non-payment for one half of that hour and the number of work hours will be reduced to exclude the down time (the minimum reduction shall be one-half hour).
- 9.3. All payments made under this contract will be in accordance with PAYMENTS clauses located in other sections of this contract.

## **10. OPTIONS**

10.1 The option items listed in Schedule B (the bid Schedule) are for the purpose of extending this contract for 7 days at a time. These options will be exercised at the discretion of the Government in accordance with the OPTION TO EXTEND SERVICES clause located elsewhere in this contract.

## **11. ATTACHMENTS.**

- 11.1 Daily Report Format
- 11.2 Sample Bidding Schedule
- 11.3 Operations Report
- 11.4 Equipment Pick List



<b>DAILY REPORT</b>						
CONTRACTOR: CONTRACT NO. :					DATE OF REPORT:	
Truck No.	Capacity	Burn site trips	C.Y. Totals	Landfill trips	C.Y. Totals	
1						
2						
3						
4						
5						
6						
7						
8						
9						
10						
11						
12						
13						
14						
15						
16						
DAILY GRAND TOTALS			C.Y.		C.Y.	

<b>BIDDING SCHEDULE</b>					
ITEM	DESCRIPTION	HOURS	U/I	U/P	AMOUNT
001	Mobilize Equipment/Demobilize Equipment	JOB			
002	One (1) Truck, Dump, 16-20 cy capacity, with Operator	140.00			
003	One (1) Truck, Dump, 16-20 cy capacity, with Operator	140.00			
004	One (1) Truck, Dump, 16-20 cy capacity, with Operator	140.00			

005	One (1) Truck, Dump, 16-20 cy capacity, with Operator	140.00			
006	One (1) Truck, Dump, 16-20 cy capacity, with Operator	140.00			
007	One (1) Truck, Dump, 16-20 cy capacity, with Operator	140.00			
008	One (1) Truck, Dump, 16-20 cy capacity, with Operator	140.00			
009	One (1) Truck, Dump, 16-20 cy capacity, with Operator	140.00			
010	One (1) Truck, Dump, 16-20 cy capacity, with Operator	140.00			
011	One (1) Truck, Dump, 16-20 cy capacity, with Operator	140.00			
012	One (1) Truck, Dump, 16-20 cy capacity, with Operator	140.00			
013	One (1) Truck, Dump, 16-20 cy capacity, with Operator	140.00			
014	One (1) Loader, Front-end, 3-5 cy capacity, with Operator	140.00			
015	One (1) Loader, Front-end, 3-5 cy capacity, with Operator	140.00			
016	One (1) Knuckleboom, 10 ton lifting capacity, with Operator	140.00			
017	Four (4) Laborers with Chainsaws, 16" min bar, traffic flags, and misc. small tools (axes, shovels, safety equip.)	140.00			
018	One (1) Truck, Pickup, ½-1 Ton, with crew foreman, and cellular phone.	140.00			
019	One (1) Track Hoe, 2-3 yd 3 bucket with operator	100.00			
020	One (1) Low Bed Equipment Trailer , 20 Ton capacity, and Tractor Truck with operator	70.00			
		<b>TOTAL</b>			

<b>BIDDING SCHEDULE</b>					
<b>ITEM</b>	<b>DESCRIPTION</b>	<b>HOURS</b>	<b>U/I</b>	<b>U/P</b>	<b>AMOUNT</b>
	<b>FIRST OPTION PERIOD</b>				
021	One (1) Truck, Dump, 16-20 cy capacity, with Operator	70.00			
022	One (1) Truck, Dump, 16-20 cy capacity, with Operator	70.00			
023	One (1) Truck, Dump, 16-20 cy capacity, with Operator	70.00			
024	One (1) Truck, Dump, 16-20 cy capacity, with Operator	70.00			
025	One (1) Truck, Dump, 16-20 cy capacity, with Operator	70.00			

026	One (1) Truck, Dump, 16-20 cy capacity, with Operator	70.00			
027	One (1) Truck, Dump, 16-20 cy capacity, with Operator	70.00			
028	One (1) Truck, Dump, 16-20 cy capacity, with Operator	70.00			
029	One (1) Truck, Dump, 16-20 cy capacity, with Operator	70.00			
030	One (1) Truck, Dump, 16-20 cy capacity, with Operator	70.00			
031	One (1) Truck, Dump, 16-20 cy capacity, with Operator	70.00			
032	One (1) Truck, Dump, 16-20 cy capacity, with Operator	70.00			
033	One (1) Loader, Front-end, 3-5 cy capacity, with Operator	70.00			
034	One (1) Loader, Front-end, 3-5 cy capacity, with Operator	70.00			
035	One (1) Knuckleboom, 10 ton lifting capacity, with Operator	70.00			
036	Four (4) Laborers with Chainsaws, 16" min bar, traffic flags, and misc. small tools (axes, shovels, safety equip.)	70.00			
037	One (1) Truck, Pickup, 1/2 -1 Ton, with crew foreman, and cellular phone.	70.00			
038	One (1) Track Hoe, 2-3 yd 3 bucket, with operator	50.00			
039	One (1) Low Bed Equipment Trailer, 20 Ton capacity, and Tractor Truck, with operator	35.00			
		<b>TOTAL</b>			

**OPERATIONAL REPORT CONTRACT**

NO. \_\_\_\_\_

<b>EQUIPMENT</b>	<b>TOTAL HOURS WORKED THIS DAY</b>	<b>TOTAL HOURS IDLE THIS DAY</b>
<b>DUMP TRUCK #</b>		
<b>DUMP TRUCK #</b>		
<b>DUMP TRUCK #</b>		
<b>DUMP TRUCK #</b>		
<b>DUMP TRUCK #</b>		
<b>DUMP TRUCK #</b>		
<b>DUMP TRUCK #</b>		
<b>DUMP TRUCK #</b>		
<b>DUMP TRUCK #</b>		
<b>DUMP TRUCK #</b>		
<b>DUMP TRUCK #</b>		
<b>F.E. LOADER#</b>		
<b>F.E. LOADER#</b>		
<b>DOZER #</b>		
<b>TRACK HOE #</b>		
<b>KNUCKLEBOOM #</b>		
<b>KNUCKLEBOOM #</b>		
<b>KNUCKLEBOOM #</b>		
<b>PICKUP TRUCK #</b>		
<b>LABOR CREW #</b>		

# EQUIPMENT PICK LIST

ITEM	PICTURE	DESCRIPTION	LIKE
1.		Truck, Pickup, .5/.75 Ton, with Operator	Ford F-150
2.		Truck, Dump, 6-8 cy capacity, with Operator	
3.		Truck, Dump, 16-20 cy capacity, with Operator	GMC C-Series Trucks
4.		Truck, Dump, 25-30 cy capacity, with Operator	
5.		Excavator, Hydraulic, 1-2 cy bucket, 128 Net Hp, with Operator	CAT 320 CASE 9030B
6.		Excavator, Hydraulic, 2-3 cy bucket, 168 Net Hp, with Operator	CAT 325
7.		Excavator, Hydraulic, 3-5 cy bucket , 286 Net Hp, with Operator	CAT 350
8.		Knuckleboom, 10 ton lifting capacity, with Operator	Barko 160A
9.		Attachment, Grapple, hydraulically operated clam-type bucket with 360-degree rotation, for use in demolition, and clearing	

10.		Attachment, Grapple, thumb, a demolition or trash grapple. Can be used with the standard excavator bucket. Thumb section can be stiff arm mounted or controlled with a hydraulic cylinder.	
11.		Attachment, Clamp, Bucket	
12.		Loader, tracked, 1-2 cy blade capacity, with Operator	CAT 933
13.		Loader, tracked, 2-3 cy blade capacity, with Operator	CAT 953
14.		Loader, tracked, 3-5 cy blade capacity, with Operator	CAT 973
15.		Loader, Front-end, wheeled, 3-5 cy capacity, with Operator	CASE 821B CAT 938F
16.		Loader, Front-end, 3-5 cy capacity, with Operator	CAT 960F
17.		Loader, Front-end, 3-5 cy capacity, with Operator	CAT 970F CASE 921B
18.		Rake, Loader with top clamp	
19.		Attachment, Loader Rake, mounts in place of the bucket on 4-wheel drive or crawler loaders. Loads debris at truck height. Long curved teeth for maximum load capacity. Bucket cylinder controls positions for digging depth or transporting.	
20.		Grader, Motor, 12-foot blade, 130-140 net Hp	CAT 12H Champion 710 Series IV
21.		Dozer, tracked, 1-2 cy Blade Capacity, with Operator	CAT D5
22.		Dozer, tracked, 2-3 cy Blade Capacity, with Operator	CAT D7G

23.		Dozer, tracked, 22'6" Blade length, 405 Net Hp, with Operator	Caterpillar D9R
24.		Rake, Clearing and Stacking, Dozer mounted; lighter-weight construction. Curved teeth lift and stack trees and debris while sifting out dirt.	
25.		Chainsaw, not less than 20" bar, with Operator	
26.		Chainsaw, Gas engine, not less than 14" bar, with Operator	
27.		Backhoe, with loader, 1 cy bucket, with Operator	CASE 4-390
28.		Backhoe, with loader, 1.5 cy bucket, with Operator.	JCB 217 4WD
29.		Attachment, Thumb	
30.		Attachment, Clamshell bucket	
31.		Skidder,	
32.		Loader, Mini, Width of vehicle not to exceed 6 feet, for use in restricted maneuver area.	Bobcat 553 JCB 165
33.		Burner, Air Curtain, fully self-contained system that includes a power plant, hydraulic drive system blower fan and fuel tank. A diesel injection system and/or a propane ignition system are offered as light-up options.	Air Burners, Inc. Model "S"

34.		<p>Burner, Air Curtain, mobile unit, 6 cylinder diesel engine, minimum 89 HP (66 kW), full enclosure; burn container 4" (102 mm) thick walls; refractory panels filled with thermal ceramic material.</p> <p>Instrument panel, tachometer, hour meter, ampere meter, key switch, oil pressure and water temperature gauges, with safety shutdown feature and adjustable locking throttle, minimum 15,500 cfm (439 m3/min). Centrifugal fan, air output approx. 165 MPH (266 km/h) at fan, 110 MPH (177 km/h) at air spouts.</p> <p>Manifold minimum 1/8" (3.2 mm) steel, solid-weld assembly; air vents inject air at 20-degree angle to maintain proper air curtain. Length: 35' (10.70 m); 2 sections: 15' (4.60 m) each; T-section at 5' (1.50 m). Weight approx. 7,200 lbs. (3,266 kg). 50 gallons (189 liter) minimum fuel tank capacity. Air quality meets or exceeds applicable US-EPA regulations.</p>	Air Burners, Inc. Mobile System Model "T- 359"
35.		Grinder, Tub, with 300-400 Hp engine, 8 ft diameter tub	Portec Model 20900
36.		Laborer, with hand tools (i.e. shovels, axes, rakes, traffic-control flags, etc)	



# Appendix G: USACE Sample Scope of Work for Debris Reduction Site Management

## SCOPE OF WORK FOR SITE MANAGEMENT FOR DEBRIS REDUCTION RELATED TO [NAME/NATURE OF DISASTER] AT, IN, OR NEAR [LOCATION OF RECOVERY EFFORTS]

### 1.0 GENERAL

- 1.1 The purpose of this contract is to provide site management and reduction of debris generated as a result of [NAME OF DISASTER] in [DISASTER LOCATION; I.E. “North Carolina counties” or “Mobile and Baldwin Counties in Alabama”] which have been declared disaster areas by the President because of the effects of [NAME OF DISASTER].
- 1.2 The Contractor shall manage and operate the debris reduction site located at [SITE LOCATION]. The site is approximately [SIZE] acres in total area. An outline of the site location is shown in the attached map.
- 1.3 Contractor shall provide all management, supervision, labor, machines, tools and equipment necessary to accept, process, reduce, incinerate and dispose of disaster related debris. The debris to be processed consists primarily of burnable debris, with variable amounts of non-burnable included. Segregation of debris into various categories will be required.
- 1.4 Reduction of burnable debris shall be through air curtain incineration. [INCLUDE OR DELETE NEXT TWO SENTENCES] Reduction of burnable debris may also be accomplished through chipping/grinding. Reduction by this means, however, 1) must be at the same rate as indicated for incineration, and 2) disposal of the chips/mulch would be the responsibility of the Contractor, and 3) shall be done at no increased cost to the Government.

### 2.0 SERVICES

- 2.1 Contractor will establish lined temporary storage areas for ash, household hazardous waste, fuels and other materials that can contaminate soils, runoff or groundwater. Contractor shall set up plastic liners under stationary equipment such as generators and mobile lighting plants unless otherwise directed by the Contracting Officer’s Representative (COR).
- 2.2 Contractor shall be responsible for establishing site layout.
- 2.3 Contractor will be responsible for traffic control, dust control, erosion control, fire protection, on-site roadway maintenance, and safety measures. The Contractor shall comply with local, tribal, State and Federal safety and health requirements.
- 2.4 Contractor shall manage the site to accept debris collected under other contracts. Contractor shall direct traffic entering and leaving the site, and shall direct dumping operations at the site.
- 2.5 Contractor shall be responsible for sorting and stockpiling of debris at the site. Debris shall be segregated into 1) burnable debris, 2) non-burnable debris, 3) household hazardous waste, and 4) ash residue. Further segregation of non-burnable debris, such as recyclable material or durable goods may be necessary. Debris classifications are defined in Section 3.0.
- 2.6 Contractor shall be responsible for disposal of non-burnable debris and ash residue. Non burnable debris and ash shall be hauled to [NAME OF SITE OR LANDFILL, *NOTE: SITE MUST HAVE SCALES.*] for disposal. [SELECT ONE OF THE FOLLOWING SENTENCES] Tipping fees will be [PRICE PER TON] and will be the responsibility of the contractor for payment. [OR] Tipping fees will be the responsibility of the government. Removal of household hazardous waste from the reduction site, including loading of household hazardous waste at the site, will be performed under a

separate contract.

- 2.7 Upon completion of the debris reduction process, the Contractor will clear the site of all debris (excluding household hazardous waste) and restore the site to the satisfaction of the COR. The Contractor shall conduct the work so as not to interfere with the disaster response and recovery activities of Federal, State, tribal and local governments or agencies, or of any public utilities.

### 3.0 DEBRIS CLASSIFICATION

- 3.1 **Eligible Debris.** Debris that is within the scope of this contract falls under three possible classifications Burnable, Non-Burnable and Household Hazardous Waste.
- 3.2 **Burnable Debris.** Burnable debris includes all biodegradable matter except that included in the following definitions of other categories of debris. It includes, but is not limited to, damaged and disturbed trees; bushes and shrubs; broken, partially broken and severed tree limbs; untreated structural timber; untreated wood products and brush.
- 3.3 **Non-Burnable Debris.** Non-burnable debris includes, but is not limited to, treated timber; plastic; glass; rubber products; metal products; sheet rock; cloth items; non-wood building materials and carpeting. Some non-burnable debris is recyclable. Recyclable debris includes metal products (i.e. Mobile Trailer parts, Household appliances (White Metal), and similar items), or uncontaminated soil.
- 3.4 **Household Hazardous Waste (HHW).** Household hazardous wastes, such as petroleum products, paint products, etc., and known or suspected hazardous materials, such as asbestos, lead-based paint, or electrical transformers shall be removed by others. Coordination for hazardous debris removal is the responsibility of the Government. Known or suspected HHW that mistakenly enter the waste stream shall be placed in an appropriate storage area for removal by others.
- 3.5 **Stumps.** Tree stumps with base cut measurements less than 2 feet in diameter will be disposed of with the same methods used for other burnable debris. Tree stumps larger than 2 feet in diameter will be disposed of by either splitting and burning, or chipping/grinding. The method will be at the discretion of the Contractor.
- 3.6 **Ash.** Ash is the residue produced by incineration of the burnable debris. When handling ash, it will be required to “wet down” the ash to prevent dust problems.
- 3.7 **Chips/Mulch.** Chips and mulch are the end product of chipping or grinding wood products. Proper disposal of chips and mulch is to find environmentally friendly (non-landfill disposal) use for the material.

### 4.0 PERFORMANCE SCHEDULE

- 4.1 Immediately following Bid Opening, the apparent low bidder will meet with the COR to discuss matters of judgment, safety, quality control, coordination, payment, record keeping, and reporting.
- 4.2 **Schedule.** The Contractor shall begin preparation for mobilization immediately after Notice to Proceed and be fully operational within [HOURS] hours after Notice to Proceed.
- 4.3 **Production.** The Contractor is required to process a minimum of [RATE] ,[ *NOTE: MOST INCENERATORS BURN 150 TO 180 CY PER HOUR, ALLOW 4 HOURS DOWN TIME FOR SERVICE/ASH REMOVAL PER 24 HOURS*] cubic yards of debris per calendar day. The minimum required reduction/disposal rate shall be achieved no later than the second calendar day after receipt of Notice to Proceed. This minimum production rate is increased to [INCREASED RATE] in the event that the Government exercises the option for additional reduction capacity. Liquidated damages shall be assessed at \$[AMOUNT] per calendar day for any day in which the minimum processing rate is not met, unless non-compliance is due to insufficient debris amounts being delivered to the site.
- 4.4 **Completion.** All work, including site restoration prior to close-out, shall be completed within [DAYS] calendar days after receiving notice from the COR that the last load of debris has been delivered, unless the Government initiates additions or deletions to the contract by written change orders. Subsequent changes in completion time will be equitably negotiated by both parties pursuant to applicable State and Federal law. Liquidated damages shall be assessed at \$[AMOUNT] per calendar day for any time over the maximum allowable time established above.

## 5. EQUIPMENT

5.1 The Contractor shall provide all equipment necessary to prepare the site, stockpile the debris, feed the air curtain incinerator(s), remove ash from the incinerator(s), load and haul for disposal all non-burnable debris and ash residue, and any other equipment which may be necessary for the performance of this contract. The Contractor shall comply with local, tribal, State and Federal safety and health requirements.

5.2 All equipment must be in compliance with all applicable Federal, State, tribal and local rules and regulations. All equipment and operator qualifications will meet the requirements of local, tribal, State and Federal safety and health requirements. The Contractor using the applicable inspection forms will inspect equipment prior to its use. The completed forms will be provided to the Government.

Prior to commencing debris reduction and disposal operations, the Contractor shall present to the Contracting Officer or his representative, the COR, for approval, a detailed description of all equipment to be used for debris handling, sorting, processing, incinerating, loading and hauling, stating brand name, model and horsepower,(including all air curtain incinerators).

5.4 Equipment which is designated for use under this contract shall not be used for any other work during the working hours of this contract. The Contractor shall not solicit work from private citizens or others to be performed in the designated work area during the period of this contract. Under no circumstances will the Contractor mix debris hauled or processed for others with debris hauled or processed under this contract.

5.5 Reduction of burnable debris may be by either air curtain pit burning or portable air curtain incinerators. Section 6.0 specifies requirements for air curtain pit burning. Section 7.0 specifies requirements for portable air curtain incinerators.

[DELETE NEXT SECTION IF CHIPPING/GRINDING/MULCHING NOT ALLOWED IN CONTRACT]

5.6 Reduction of burnable wood debris may also be accomplished by chipping and grinding, provided the processing rate given in Section 4.3 can be maintained. Section 8.0 specifies requirements for chipping and grinding procedures.

## **6.0 AIR-CURTAIN PIT BURNING**

[SELECT ONE OF THE NEXT TWO PARAGRAPHS AND DELETE THE OTHER, DEPENDENT UPON WHETHER THE PIT IS TO BE CONSTRUCTED ABOVE GROUND OR DUG DOWN, BASED ON WATER TABLE]

[BELOW-GRADE PIT; LOW WATER TABLE]

6.1 The air curtain pit burning method incorporates an earthen pit, constructed by digging below grade, and a blower. The blower and pit make up an engineered system that must be precisely configured to properly function. The blower must have adequate air velocity to provide a "curtain effect" to hold smoke in and to feed air to the fire below. The pit configuration must have a precise width, depth and length to compliment the blower. The composition and operation of the air curtain pit incinerator(s) shall conform generally to the drawings in Figures 1, 2, and 3 of this scope of work.

[ABOVE-GRADE PIT; HIGH WATER TABLE]

6.1 The air-curtain pit burning method incorporates an earthen pit, constructed by building above grade, and a blower. The blower and pit make up an engineered system that must be precisely

configured to properly function. The blower must have adequate air velocity to provide a "curtain effect" to hold smoke in and to feed air to the fire below. The pit configuration must have a precise width, depth and length to compliment the blower. The composition and operation of the air-curtain pit incinerator(s) shall conform generally to the drawings in Figures 1, 2, and 3 of this scope of work.

6.2 Minimum required air velocity measured at the nozzle is 8,800 ft/min (100 mph). Minimum airflow rate measured at the nozzle is 900 cubic feet per min per linear foot of pit length. (As an example, a 20-ft long pit would require a blower with a nozzle velocity of 8,800 ft/min and nozzle output rate of 18,000 cfm. This example is intended for explanation purposes only, and does not imply a recommended pit length for actual operations.)

6.3 The pit should be a maximum of 8 feet wide, and should be from 12 to 20 feet deep. The actual pit dimensions should be such that the system functions properly.

6.4 Pits must be constructed out of a highly compactible material that will hold its shape and support the weight of the loading equipment. There shall be an impervious layer of clay or limestone on the bottom of the pit to provide a barrier for ground water protection. This layer shall be a minimum of 1 foot thick and be repaired as necessary after each ash removal operation.

6.5 There is to be a minimum distance of 100 feet between the burn area and the nearest debris piles. There is to be a minimum distance of 1,000 feet between the burn area and the nearest building. Contractors are responsible for assuring that the public and workers are kept a safe distance from the burn site.

6.6 The burn will be extinguished at least 2 hours before removal of the ash mound. Wetting of the ash will be necessary to reduce dust while removing ash.

6.7 The burn pits must be made of limestone or other highly compactible material and be capable of supporting the wheel weight of the loading equipment. There should be an impervious layer of clay or limestone on the bottom of the pit to attempt to seal the ash from the aquifer. This impervious layer should be at least 1 foot thick, and should be repaired or replaced if scraped by bulldozers, excavators, or other equipment.

6.8 The ends of the pits must be sealed with dirt ash or other material to a height of 4 feet.

6.9 A 12 inch dirt seal must be placed on the lip of the burn pit area to seal the blower nozzle. The nozzle should be 3 to 6 inches from the edge of the pit.

6.10 There should be 1 foot high warning stops running the length of the pits to alert equipment operators when they are close to the pit. The warning stops should be constructed of fireproof material.

6.11 No hazardous or contained-ignitable material is to be dumped into the pit.

6.12 The air flow should hit the wall of the pit at about 2 feet below the edge of the pit and the debris should not break the path of the air flow, except during dumping.

6.13 The length of the pit should be no longer than the length of the blower system, and the pit should be loaded uniformly along the length.

6.14 The contractor is responsible for ensuring that the public is protected from the burn operation. Signs, fences, and other measures can be used depending on site conditions.

6.15 Emissions must meet State and Federal standards for burning operations.

6.16 The Contractor shall be responsible for dust control while handling ash materials.

## **7.0 PORTABLE AIR CURTAIN INCINERATORS**

7.1 Portable incinerators use the same principles as air curtain pit systems. The primary difference being portable incinerators utilize a pre-manufactured pit in lieu of an on-site constructed earth or limestone pit. The pits are engineered to precise dimensions to compliment the blower systems. The composition and operation of the air curtain pit incinerator(s) shall conform generally to the drawings in Figures 1 and 2 of this scope of work.

7.2 Minimum required air velocity measured at the nozzle is 8,800 ft/min (100 mph). Minimum airflow rate measured at the nozzle is 900 cubic feet per min (cfm) per linear foot of pit length. (As an example, a 20-ft long pit would require a blower with a nozzle velocity of 8,800 ft/min and nozzle output rate of 18,000 cfm. This example is intended for explanation purposes only, and does not imply a recommended pit length for actual operations.)

7.3 There is to be a minimum distance of 100 feet between the portable incinerator and the nearest debris piles. There is to be a minimum distance of 1,000 feet between the portable incinerator and the nearest building. Contractors must assure that the public and workers are kept a safe distance from the incinerator.

7.4 The burn will be extinguished at least 2 hours before removal of the ash.

7.5 There should be 1 foot high warning stops running the length of the pits to alert equipment operators when they are close to the pit. The warning stops should be constructed of fireproof material.

7.6 No hazardous or contained-ignitable material is to be dumped into the pit.

7.7 The contractor is responsible for ensuring that the public is protected from the burn operation. Signs, fences, and other measures can be used depending on site conditions.

7.8 Emissions must meet State and Federal standards for burning operations.

7.9 The Contractor shall be responsible for dust control while handling ash materials.

[DELETE ENTIRE NEXT SECTION IF CHIPPING/GRINDING NOT ALLOWED; IF THIS SECTION IS DELETED, REMAINING SECTION NEED TO BE RE-NUMBERED]]

## **8.0 CHIPPING AND GRINDING**

8.1 If the Contractor chooses to use chipping/grinding as a method of debris reduction, it is the Contractor's responsibility to acceptably dispose of the chips or mulch, at no additional cost to the Government. Because the volume reduction achieved by chipping/grinding is not as great as the volume reduction achieved by incineration, disposal of the chips or mulch in a landfill is not an acceptable means of disposal. For disposal, the chips or mulch must be put to some benefit or use. The Contractor may provide or sell the chips or mulch to be recycled for use in agricultural mulch, fuel or wood products.

8.2 The average chip size produced will be dependent on the needs of the end user, but typically should not exceed 4 inches in length and ½ inch in diameter.

8.3 Contamination: Contaminates are all materials other than wood products. Contaminates must be held to 10% or less for the chips or mulch to be acceptable. Plastics should be eliminated completely. To help eliminate contaminants, root rake loaders should be used to feed or crowd material to the chipper/grinder. Bucket loaders tend to scoop up earth, which is a contaminate. The use of hand

laborers must be utilized to pull out contaminants prior to feeding the chipper/grinders. The more contaminants, the more numerous the laborers. Shaker screens are required when processing stumps with root balls or when large amounts of soil are present in the vegetative debris.

8.4 Storage: Chips/mulch should be stored in piles no higher than 15 feet, and meet all State and local laws.

## **9. REPORTING**

9.1 The Contractor shall submit a report to the COR no later than [TIME] each day. Each report shall contain, at a minimum, the following information:

- a) Contractor's Name.
- b) Contract Number.
- c) Daily and cumulative totals of debris processed, to include method(s) of processing and disposal location(s).
- d) Daily estimate of Household Hazardous Waste (HHW) debris segregated, and cumulative amount of HHW placed in the designated holding area.
- e) Any problems encountered or anticipated.

## **10.0 SITE CONSIDERATIONS**

10.1 Site Plan. The Contractor will provide a site operations plan for review and approval by the COR prior to beginning work. At a minimum, the plan will address the following:

- a) Access to site
- b) Site management, to include point-of-contact, organizational chart, etc.
- c) Traffic control procedures
- d) Site security
- e) Site safety
- f) Site layout/segregation plan
- g) Hazardous waste materials plan
- h) Environmental mitigation plan, including considerations for smoke, dust, noise, traffic, buffer zones, storm water runoff archeology, historic preservation, wetlands, endangered species as appropriate.

10.2 Site Preparation. The Contractor shall be responsible for preparing the site(s) to accept the debris. This preparation shall include clearing, erosion control, grading, construction and maintenance of haul roads and entrances. The Contractor shall provide utility clearances and sanitation facilities, if needed. The Contractor shall protect existing structures at the sites and repair any damage caused by his operations at no additional cost to the Government.

10.3 Site Security. The Contractor shall be responsible for installing site security measures and maintaining security for his operations at the site.

10.4 Fire Protection. The Contractor shall manage the site to minimize the risk of fire.

10.5 Ash Containment Area. The Contractor shall be responsible for the storage, removal and containment of ash from all burning operations. The containment area will be "wetted down" periodically under this contract to prevent particles from becoming airborne.

10.6 Inspection Tower. The contractor shall construct an inspection tower. The tower shall be constructed using pressure treated wood. The floor elevation of the tower shall be 10 foot above the existing ground elevation. The floor area shall be 8' by 8', constructed of 2"x 8" joists, 16" O.C. with ¾" plywood supported by four 6" x 6" posts. The perimeter of the floor area shall be protected by a 4 foot high wall constructed of 2" x 4" studs and ½" inch plywood. The floor area shall be covered with a corrugated tin roof. The roof shall provide a minimum of 6'-6" of headroom below the support beams. Wooden steps shall provide access with a handrail.

10.7 Traffic Control. The Contractor shall be responsible for control of pedestrian and vehicular traffic in the work area. Contractor shall provide all flag persons, signs, equipment and other devices necessary to meet Federal, State, tribal and local requirements. The traffic control personnel and equipment shall be in addition to the personnel and equipment required in other parts of this contract. As a minimum, one flag person shall be posted at each entrance to direct traffic to the site.

10.8 Site Closure. The Contractor shall be responsible for the closure of the debris site within [INSERT] calendar days of receiving the last load of disaster-related debris. This closure shall include removal of site equipment, debris, and all remnants from the processing operation (such as temporary toilets, observation towers, security fence, etc.), and grading the site, and restoring the site to pre-work conditions. The site will be restored in accordance with all State, tribal and local requirements. The Contractor is responsible for the proper disposal of non-burnable debris, ash, and wood chips. Disposal of the HTW debris is not the responsibility of the Contractor under this contract. The Contractor shall receive approval from the COR as to the final acceptance of a site closure. Final payment shall be released to the Contractor upon acceptance by the Contracting Officer.

## **11.0 HOUSEHOLD HAZARDOUS WASTE (HHW) ISSUES**

11.1 The Contractor will be required to construct a containment area at the reduction site. This containment area will consist of a earthen berm with a non-permeable soil liner. The HHW containment area must be covered at all times with a non-permeable cover.

11.2 Any material found that is classified as HHW shall be reported immediately to the designated COR. This material shall be segregated from the remaining debris using a method that will allow the remaining non-HHW debris to be processed. All HHW debris will be moved and placed in the designated HHW containment area.

11.3 Disposal of the HHW debris will be by separate contract.

## **12.0 CONTRACTOR HHW SPILLS**

12.1 The Contractor shall be responsible for reporting to the COR and cleaning up all HHW spills caused by the Contractor's operations at no additional cost to the Government.

12.2 Immediate containment actions shall be taken as necessary to minimize effect of any spill or leak. Cleanup shall be in accordance with applicable Federal, State, tribal and local laws and regulations.

12.3 Spills other than on the site shall be reported to the National Response Center, and the Contracting Officer immediately following discovery. A written follow-up shall be submitted to the COR not later than 7 days after the initial report. The written report shall be in narrative form, and as a minimum shall include the following:

- a. Description of the material spilled ( including identity, quantity, manifest number, etc.).
- b. Determination as to whether or not the amount spilled is EPA/State reportable, and when and to

- whom it was reported.
- c. Exact time and location of spill, including description of the area involved.
  - d. Receiving stream or waters.
  - e. Cause of incident and equipment and personnel involved.
  - f. Injuries or property damage.
  - g. Duration of discharge.
  - h. Containment procedures initiated.
  - i. Summary of all communications the Contractor has had with press, agencies, or Government officials other than COR.
  - j. Description of cleanup procedures employed or to be employed at the site, including disposal location of spill residue.

### **13.0 OTHER CONSIDERATIONS**

- 13.1 The Contractor shall supervise and direct the work, using qualified labor and proper equipment for all tasks. Safety of the Contractor's personnel and equipment is the responsibility of the contractor. Additionally, the Contractor shall pay for all materials, personnel, taxes, and fees necessary to perform under the terms of this contract.
- 13.2 The Contractor must be duly licensed in accordance with the State's statutory and regulatory requirements to perform the work. The Contractor shall obtain all permits necessary to complete the work. The Contractor shall be responsible for determining what permits are necessary to perform under the contract. Copies of all permits shall be submitted to the COR.
- 13.3 The Contractor shall be responsible for correcting any notices of violations issued as a result of the Contractor's or any subcontractors actions or operations during the performance of this contract. Corrections for any such violations shall be at no additional cost to the Government.

### **14.0 MEASUREMENTS**

- 14.1 Measurements of debris processed are based upon **Cubic Yard** measurements of debris delivered to the site.
- 14.2 Measurement of non-burnable debris and ash is based upon **Ton** measurements measured at the landfill or final disposal site.
- 14.3 All efforts required in mobilization, site set-up, site closeout and demobilization shall be considered as a total **Job**.

### **15. PAYMENT**

15.1 Payment for all debris sorted, segregated, processed, reduced and disposed by burning will be made at the unit price per cubic yard.

15.2 Payment for managing and operating the debris sites; furnishing plant, material, labor, tools and equipment necessary to process/reduce/dispose of debris; and providing for traffic control, dust control, erosion control, inspection tower, lighting, ash containment, fire protection, permits, environmental monitoring, and safety measures; are all incorporated in the bidder's unit price for burning.

15.3 Payment for loading and hauling non-burnable debris to the final disposal site will be by the ton.

15.4 The Contractor will be entitled to invoice for mobilization after all equipment is delivered to and operational at the work site. Demobilization cost will be due after all equipment is removed from the work site. Payment for mobilization and demobilization will be per job.

Payment for site preparation and site closure will be per job.



# SITE MANAGEMENT FOR DEBRIS REDUCTION

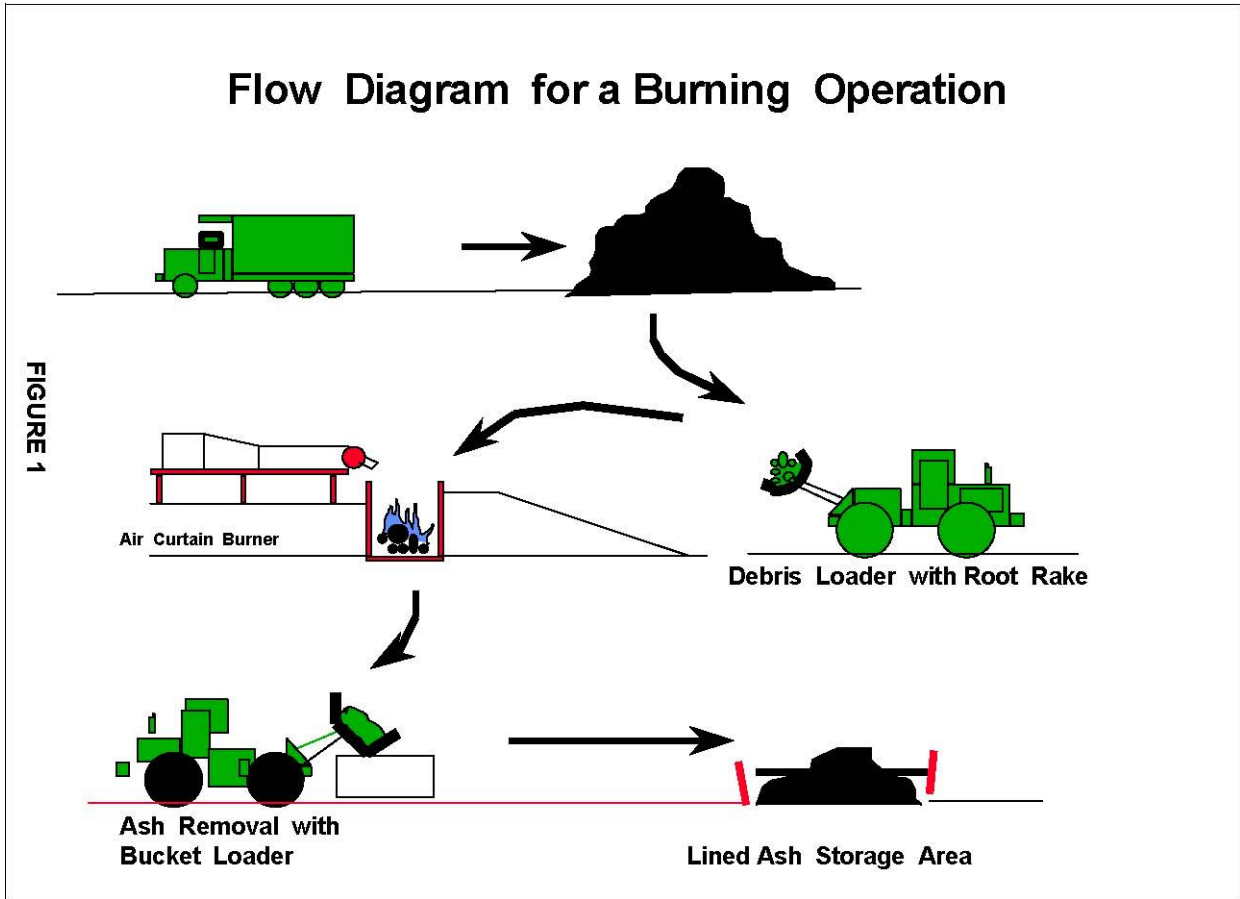


Figure 1

# Overview of an Air Curtain Operation

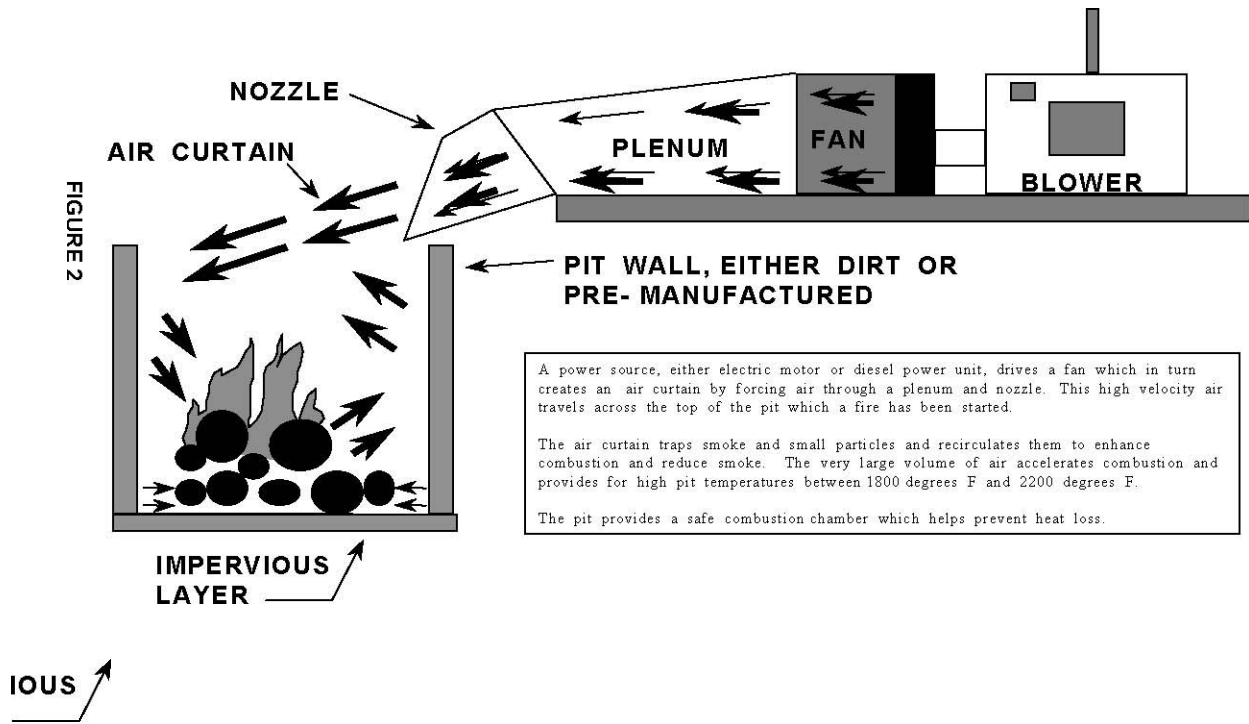


Figure 2 Air Curtain Pit Burner

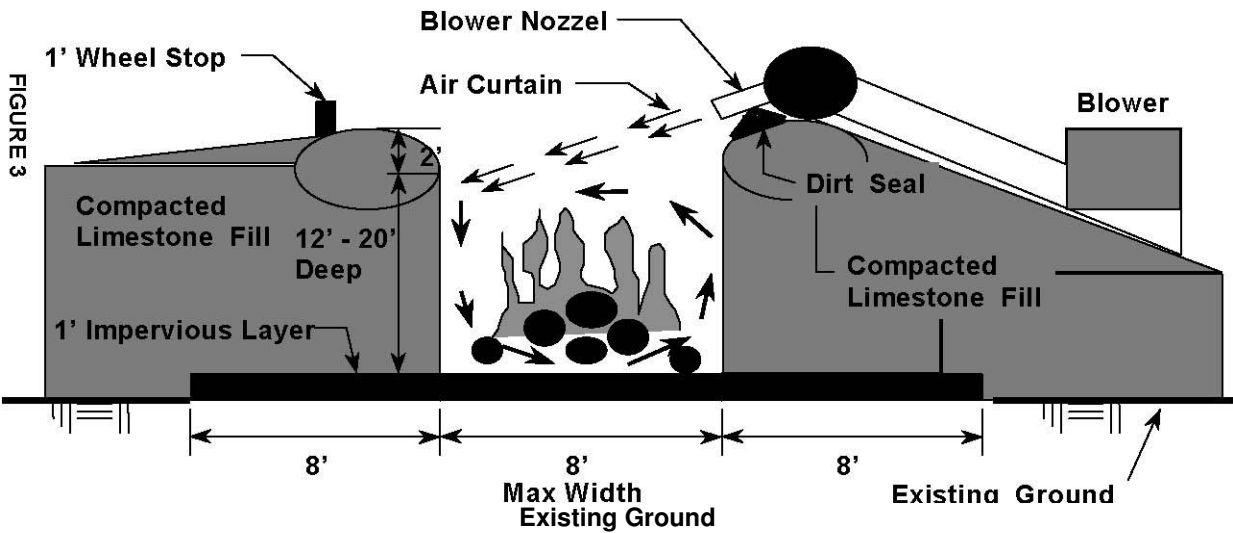


Figure 3

**BIDDING SCHEDULE**

CONTRACT NO. \_\_\_\_\_

ITEM	DESCRIPTION	QUANTITY	UNIT OF ISSUE	UNIT PRICE	AMOUNT
1.	Mobilization.	1	Job	XXX	\$
2.	Reduction of Burnable Debris through the Air Curtain Incineration.		CY	\$	\$
3.	Disposal of Non- Burnable Debris and Ash.		Ton	\$	\$
4.	Site Preparation and Site Closure.	1	Job	XXX	\$

**[DELETE THE NEXT BID ITEM IF CHIPPING & GRINDING IS NOT ALLOWED IN THE CONTRACT.]**

5.	Reduction of Burnable Debris by Chipping and Grinding.		CY	\$	\$
6.	Reduction of Stumps greater than 24" in diameter, but less than 36" in diameter.		Stump	\$	\$
7.	Reduction of Stumps 36" in diameter, but less than 48" in diameter.		Stump	\$	\$
8.	Reduction of Stumps 48" in diameter or greater.		Stump	\$	\$
9.	Demobilization.	1	Job	XXX	\$

# Appendix H: USACE Sample Unit Price Debris Removal Scope of Work

**SCOPE OF WORK  
FOR  
UNIT PRICE CONTRACT FOR DEBRIS REMOVAL  
RELATED TO  
[NAME/NATURE OF DISASTER]  
AT, IN, OR NEAR  
[LOCATION OF RECOVERY EFFORTS]**

## 1.0 GENERAL

1.1 The purpose of this contract is to provide debris clearing and removal response assistance to [LOCATION; i.e. “North Carolina counties” or “Mobile and Baldwin Counties in Alabama”] which have been declared disaster areas by the President because of the effects of [NAME OF DISASTER].

## 2.0 SERVICES

- 2.1 The Contractor shall provide for debris removal from the area(s) outlined on the attached maps, and described as: [DESCRIPTION OF WORK AREA].
- 2.2 The debris shall be taken to the dumpsite(s) indicated on the attached maps, located at [LOCATION (S) OF DUMPSITE(S)].
- 2.3 The total amount of debris to be removed under this contract is estimated to be [QUANTITY].
- 2.4 The work shall consist of clearing and removing any and all “eligible” debris (see section 4.0 for a definition of eligible debris) primarily from the public right-of-way (ROW) of streets and roads, as directed by the Contracting Officer’s Representative (COR). Work will include 1) examining debris to determine whether or not debris is eligible, burnable or non burnable, 2) loading the debris, 3) hauling the debris to an approved dumpsite or landfill, and 4) dumping the debris at the dumpsite or landfill. Ineligible debris will not be loaded, hauled, or dumped under this contract. Burnable debris will be loaded separately from non-burnable debris. Mixed loading of burnable and non-burnable will be kept to a minimum. The COR will determine the appropriate dumpsite for mixed loads.
- 2.5 Debris removal shall include all eligible debris found on the ROW within the area designated by the COR. The COR may specify any eligible debris within the ROW which should not be removed, or which should be removed at a later time. The Contractor shall make as many passes through the designated area as required by the COR. The Contractor shall not move from one designated work area to another designated work area without prior approval from the COR. Any eligible debris, such as fallen trees, which extends onto the ROW from private property shall be cut at the point where it enters the ROW, and that part of the debris which lies within the ROW shall be removed. The Contractor shall not enter onto private property during the performance of this contract.
- 2.6 The Contractor shall conduct the work so as not to interfere with the disaster response and recovery activities of Federal, State, tribal and local governments or agencies, or of any public utilities.
- 2.7 The government reserves the right to inspect the site, verify quantities, and review operations at any time.
- 2.8 All work shall be accomplished in a safe manner in accordance with EM 385-1-1.

## 3. LOAD TICKETS

3.1 “Load tickets” will be used for recording volumes of debris removal. (See Enclosure)

3.2 Each ticket will contain the following information:

Ticket Number  
Contract Number

Date  
Contractor Name  
Site Departure Time  
Dump Arrival Time  
Debris Classification  
Debris Quantity

3.3 [SELECT ONLY ONE OF THE FOLLOWING PARAGRAPHS, AND DELETE THE OTHERS]

Load tickets will be issued by a COR prior to departure from the loading site. The COR will keep one copy of the ticket, and give three copies to the vehicle operator. Upon arrival at the dumpsite, the vehicle operator will give the three copies to the COR at the dumpsite, the COR will validate, retain one copy and give two copies to driver for the Contractor's records, (one copy for the sub-contractor and one copy for the prime contractor).

Load tickets will be issued by a COR prior to departure from the loading site. The COR will keep one copy of the ticket, and give two copies to the vehicle operator for the Contractor's records.

Load tickets will be issued by a COR to a vehicle operator upon arrival at the dumpsite. The COR will keep one copy of the ticket, and give two copies to the vehicle operator for the Contractor's records.

4.0 **DEBRIS CLASSIFICATION**

- 4.1 **Eligible Debris.** Debris that is within the scope of this contract falls under three possible classifications: Burnable, Non-Burnable, and Recyclable. Debris that is classified as Household Hazardous Waste (HHW) is not to be transported by this contract.
- 4.2 **Burnable Debris.** Burnable debris includes all biodegradable matter except that included in the following definitions of other categories of debris. It includes, but is not limited to, damaged and disturbed trees; bushes and shrubs; broken, partially broken and severed tree limbs; untreated structural timber; untreated wood products; and brush.
- 4.3 **Non-Burnable Debris.** Non-burnable debris includes, but is not limited to, treated timber; plastic; glass; rubber products; metal products; sheet rock; cloth items; non-wood building materials; metal products (i.e. Mobile Trailer parts, Household appliances (White Metal), and similar items), or uncontaminated soil; roofing materials; and carpeting.
- 4.4 **Household Hazardous Waste (HHW).** Household hazardous wastes, such as petroleum products, paint products, etc., and known or suspected hazardous materials, such as asbestos, lead-based paint, or electrical transformers shall be removed by others. Coordination for hazardous debris removal is the responsibility of the Government.
- 4.5 **Stumps.** Tree stumps located within the ROW with are one-half or more of the root ball exposed will be removed. Tree stumps with base cut diameter measurements less than or equal to 24 inches (measured 24 inches up from where the tree originally exited the ground) will be considered to be burnable debris and removed of with the same methods used for other burnable debris. Tree stumps larger than 24 inches in diameter will be removed of as burnable and paid for in accordance to the MEASURMENT and PAYMENT paragraphs in this contract.

5.0 **DUMPSITES**

- 5.1 The Contractor shall use only debris dumpsites designated in Section 2.2, unless otherwise approved by the COR. The Contractor shall haul non-burnable debris to the site designated for non-burnable debris and burnable debris to the burn sire designated.
- 5.2 The dumpsite operator shall direct all dumping operations. The Contractor shall cooperate with the dumpsite operator to facilitate effective dumping operations.
- 5.3 The Government makes no representations regarding the turn-around time at the dumpsites.

## 6.0 PERFORMANCE SCHEDULE

6.1 The Contractor shall commence performance on [DATE].

6.2 The Contractor shall, with the CORs direction, provide a work with plan showing where operations will begin and which streets/roads will be cleared on a 2, 7, 14 day projection. The plan will be updated every 2 days.

6.3 Maximum allowable time for completion will be [ENTER] calendar days, unless the Government initiates additions or deletions to the contract by written change orders. Subsequent changes in completion time will be equitably negotiated by both parties pursuant to applicable State and Federal law. Liquidated damages shall be assessed at \$[AMOUNT] per calendar day for any time over the maximum allowable time established by the contract.

## 7. EQUIPMENT

7.1 All trucks and other equipment must be in compliance with all applicable Federal, State, tribal and local rules and regulations. Any truck used to haul debris must be capable of rapidly dumping its load without the assistance of other equipment; be equipped with a tailgate that will effectively contain the debris during transport and permit the truck to be filled to capacity; and measured and marked for its load capacity.

Sideboards or other extensions to the bed are allowable provided they meet all applicable rules and regulations, cover the front and both sides, and are constructed in a manner to withstand severe operating conditions. The sideboards are to be constructed of 2" by 6" boards or greater and not to extend more than two feet above the metal bedsides. The Contracting Officer's representative must approve all requests for extensions. Equipment will be inspected prior to its use by the Contractor using applicable U.S. Army Corps of Engineers forms. The forms will be provided to the Government after completion.

7.2 Trucks and other heavy equipment designated for use under this contract shall be equipped with two signs; one attached to each side. The U.S. Army Corps of Engineers will furnish these signs to the Contractor. The signs remain the property of the United States Government, and will be returned to the U.S. Corps of Engineers at the conclusion of the contract.

7.3 Prior to commencing debris removal operations, the Contractor shall present to the Government's representative all trucks or trailers that will be used for hauling debris, for the purpose of determining hauling capacity. The hauling capacity will be based on the interior dimensions of the truck's metal dump bed. Hauling capacity, in cubic yards, will be recorded and marked on each truck or trailer with permanent markings. Each truck or trailer will also be numbered for identification with a permanent marking.

7.4 Trucks or equipment which are designated for use under this contract shall not be used for any other work during the working hours of this contract. The Contractor shall not solicit work from private citizens or others to be performed in the designated work area during the period of this contract. Under no circumstances will the Contractor mix debris hauled for others with debris hauled under this contract.

7.5 Equipment used under this contract shall be rubber tired and sized properly to fit loading conditions. Excessive size equipment (6 CY and up) and non-rubber tired equipment must be approved by the COR.

## 8.0 REPORTING

8.1 The Contractor shall submit a report to the COR during each day of the term of the contract. Each report shall contain, at a minimum, the following information:

Contractor's Name Contract Number Crew Location of work Day of Report Daily and cumulative totals of debris removed, by category

8.2 Discrepancies between the daily report and the corresponding load tickets will be reconciled no later than the following day.

## 9.0 OTHER CONSIDERATIONS

- 9.1 The Contractor shall supervise and direct the work, using skillful labor and proper equipment for all tasks. Safety of the Contractor's personnel and equipment is the responsibility of the Contractor. Additionally, the Contractor shall pay for all materials, personnel, taxes, and fees necessary to perform under the terms of this contract.
- 9.2 The Contractor must be duly licensed in accordance with the state's statutory requirements to perform the work. The Contractor shall obtain all permits necessary to complete the work. The Contractor shall be responsible for determining what permits are necessary to perform under the contract. Copies of all permits shall be submitted to the COR.
- 9.3 The Contractor shall be responsible for taking corrective action in response to any notices of violations issued as a result of the Contractors or any subcontractors actions or operations during the performance of this contract. Corrections for any such violations shall be at no additional cost to the Government.
- 9.4 The Contractor shall be responsible for control of pedestrian and vehicular traffic in the work area. The Contractor shall provide all flag persons, signs, equipment, and other devices necessary to meet Federal, State, tribal and local requirements. The traffic control personnel and equipment shall be in addition to the personnel and equipment required in other parts of this contract. At a minimum, one flag person should be posted at each approach to the work area. Work shall be accomplished in a safe manner in accordance with EM 385-1-1.

## 10.0 MEASUREMENT

- 10.1 Measurement for burnable debris removed will be by the cubic yard as predetermined through truck bed measurement. Trucks with less than full capacities will be adjusted down by visual inspection by the COR. Measurement will be documented by load tickets.
- 10.2 Measurement for non-burnable debris removed will be by the cubic yard as predetermined through truck bed measurement. Trucks with less than full capacities will be adjusted down by visual inspection by the COR. Load tickets will document measurement
- 10.3 Measurement for payment of stumps removed with 25 to 36 inch diameters base cuts (measured 24 inches up from where the tree originally exited the ground) shall be per stump.
- 10.4 Measurement for payment of stumps removed with 37 to 48 inch diameter basecuts (measured 24 inches up from where the tree originally exited the ground) shall be per stump.
- 10.5 Measurement for payment of stumps removed with 49 inch and larger diameter basecuts (measured 24 inches up from where the tree originally exited the ground) shall be per stump.
- 10.6 Measurement for mobilization and demobilization will be by the job.

## 11.0 PAYMENT

- 11.1 Payment for the removal of burnable debris (including stumps 24 inches and smaller) to include all cost associated with loading, hauling and dumping will be paid for under the contract bid item for **Burnable Debris**.
- 11.2 Payment for the removal of non-burnable debris to include all cost associated with loading, hauling and dumping will be paid for under the contract bid item for **Non-burnable Debris**.
- 11.3 Payment for the removal of stumps, 25 inches and larger, to include all cost associated with loading, hauling and dumping will be paid for under the contract bid item for the appropriate size category for **Stumps**.
- 11.4 Payment for mobilization and demobilization will be paid for under the contract bid item for Mobilization and Demobilization.
- 11.5 Payment for work completed may be invoiced on a bi-weekly basis. Invoices will be based on

verified quantities from the daily operational reports and valid load tickets.

11.6 The Contractor will be entitled to invoice for 60% of the mobilization and demobilization line item after all equipment is delivered to the designated work site. The remaining 40% will be due after all equipment is removed from the work site, all vehicle signs have been returned to the government, and receipt of a proper invoice.

11.7 All payments made under this contract will be in accordance with PAYMENTS clauses located in other sections of this contract

## **12.0 OTHER CONTRACTS**

12.1 Other contracts may have been issued.

12.2 The Government reserves right to issue other contracts or direct other contractors to work within the area included in this contract.

## **13. ENCLOSURES/ATTACHMENTS**

13.1 Bidding Schedule

13.2 Daily Report



**BIDDING SCHEDULE**

<b>ITEM</b>	<b>QTY</b>	<b>DESCRIPTION</b>	<b>UNITS</b>	<b>UNIT PRICE</b>	<b>AMOUNT</b>
<b>001.</b>	1	Mobilization and Demobilization	Lump Sum		
<b>002.</b>	xxx	Removal of Burnable Debris	Cubic Yard		
<b>003.</b>	xxx	Removal of Non-Burnable Debris	Cubic Yard		
<b>004.</b>	xxx	Removal of Stumps - 26 to 36 inch	Each		
<b>005.</b>	xxx	Removal of Stumps - 37 to 48 inch	Each		
<b>006.</b>	xxx	Removal of Stumps - 49 inch and larger	Each		

<b>DAILY REPORT</b>					
<b>CONTRACTOR:</b>				<b>DATE OF REPORT:</b>	
<b>CONTRACT NO. :</b>					
<b>Truck No.</b>	<b>Capacity</b>	<b>Burn site trips</b>	<b>C.Y. Totals</b>	<b>Landfill trips</b>	<b>C.Y. Totals</b>
1					
2					
3					
4					
5					
6					
7					
8					
	Daily Totals				

<b>DAILY REPORT</b>				
<b>CONTRACTOR:</b>			<b>DATE OF REPORT:</b>	
<b>Processing Site</b>	<b>Stumps 26-36 in.</b>	<b>Stumps 36-48 in.</b>	<b>Stumps &gt; 49"</b>	
1				
2				
3				
4				
5				
6				
7				
8				
9				
	<b>DAILY TOTALS</b>			

**Appendix I: New Orleans Sample Diagram of Curbside Collection Separation**

# PICKING UP THE PIECES

Following these specific guidelines when hauling hurricane-related debris and household garbage to the curb will make for a speedier removal process

## CORRECT WAY

Homeowners are being asked to separate debris into the following categories:

### 1 HOUSEHOLD GARBAGE

- Bagged trash
- Discarded food
- Packaging, papers
- All garbage should be placed curbside the night before the scheduled weekly pickup.

### 2 CONSTRUCTION DEBRIS

- Building materials
- Drywall
- Lumber
- Carpet
- Furniture
- Mattresses
- Plumbing

### 3 VEGETATION DEBRIS

- Tree branches
- Leaves
- Logs

### 4 HOUSEHOLD HAZARDOUS WASTE

- Oils
- Batteries
- Pesticides
- Paints
- Cleaning supplies
- Compressed gas

### 5 'WHITE' GOODS

- Refrigerators
- Washers, dryers
- Freezers
- Air conditioners
- Stoves
- Water heaters
- Dishwashers

### 6 ELECTRONICS

- Televisions
- Computers
- Radios
- Stereos
- DVD players
- Telephones

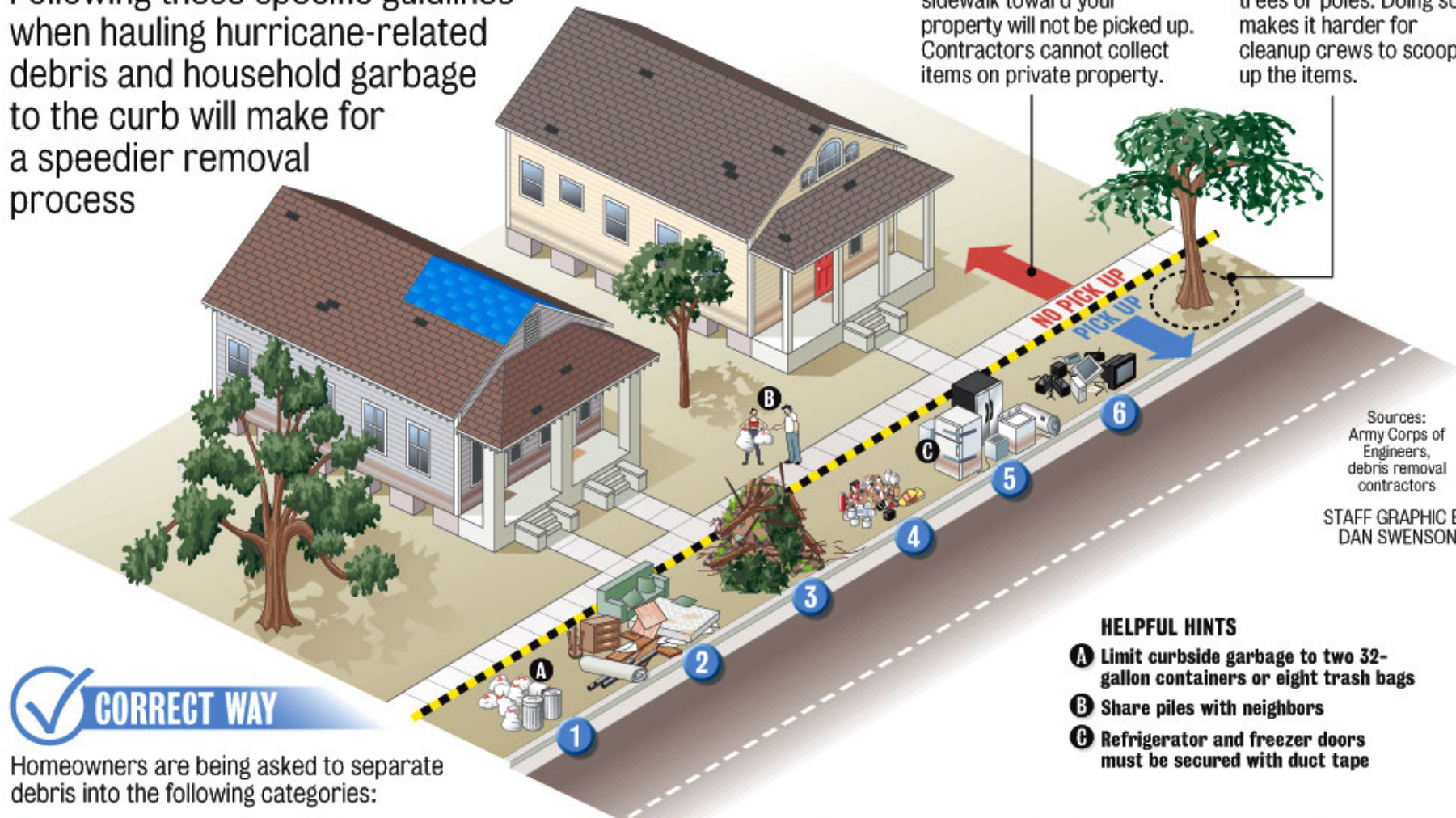
## WRONG WAY

### CROSSING THE LINE

- Any debris placed from the sidewalk toward your property will not be picked up. Contractors cannot collect items on private property.

### PROPPING UP

- Do not set debris against trees or poles. Doing so makes it harder for cleanup crews to scoop up the items.



### HELPFUL HINTS

- A** Limit curbside garbage to two 32-gallon containers or eight trash bags
- B** Share piles with neighbors
- C** Refrigerator and freezer doors must be secured with duct tape

## Appendix J: Animal Carcass Management

The planning framework for managing Animal Carcasses on the following pages applied to managing large numbers of animal carcasses. This framework recognizes that decisions about disposing of large amounts of animal carcasses must be made based on site-specific information, including whether the animals are infectious and, if so, what the disease agent is (if known); the location, number and type of carcasses; and site characteristics that may limit on-site management. In the case of avian flu in particular, Massachusetts has prepared specific draft recommendations for managing avian flu debris. Other animal disease outbreaks may require different management approaches.

However, some pre-planning can be done so that carcass management approaches in certain kinds of situations are generally accepted and agreed upon in advance. Some of the major points of Massachusetts' approach to managing animal carcasses include:

- Whenever possible, carcasses from diseased populations should be managed on site to prevent the potential transmission of disease agents. This may be most easily achieved on farms, which are on a defined property, depending on site-specific conditions. However, this will frequently not be possible for small backyard populations or for diseased wildlife.
- In many cases, carcasses can be effectively composted. Because composting achieves temperatures of 135 – 140 degrees Fahrenheit, composting will kill many viruses, effectively eliminating the risk of the disease spreading. However, in some cases, this temperature may not be sufficient to kill the pathogen and other alternatives must be considered.
- MassDEP generally discourages on-site burial of large numbers of carcasses because of potential for groundwater pollution and because the carcasses may be dug up at a later date. On-site burial also may not be effective in killing disease agents. But, on-site burial may provide a temporary management option if carcasses must be immediately isolated and no other management option has been established.
- MassDEP also generally discourages on-site burning of carcasses, due to air quality concerns, because combustion may not achieve effective pathogen kill in some cases, and because some types of carcasses burn poorly. However, in certain emergency situations when other options are exhausted, MassDEP may approve the use of air curtain burners or other controlled burning options to manage carcasses. The viability of potentially burning carcasses also depends in large part on the type of carcass and how well that animal would burn.
- In some cases, large numbers of healthy animals may die as the result of a major storm and require disposal or other management. It will be important to manage the carcasses as quickly as possible to limit odor and other nuisance concerns, as well as to prevent the development of diseases. In these cases, when concerns about transmitting diseases are minimal, then off-site management of carcasses would be considered more readily than if the animals were considered to be infectious. In cases when on-site management solutions are not viable, carcasses may need to be

sent to an off-site facility for disposal. This also may be necessary for wildlife or small backyard populations for which on-site carcass management is not feasible.

- In such cases, the closest receiving facility that is willing to accept the carcasses should be identified. This may include landfills, municipal waste combustion facilities, or even other alternatives such as a rendering plant, but carcasses should not be sent to a transfer station, where they will be handled twice.
- If carcasses are to be moved off-site, decontamination and disinfection procedures for all staff, equipment, and vehicles should be followed at the site, in transit, and at the receiving facility. Exposure to carcasses should be limited by placing carcasses in sealed containers for transport and disposal.
- Several technologies are available in other parts of the country to process carcasses through mobile microwaving/sterilization or alkaline hydrolysis units. While these are not available in Massachusetts at this time, they are being operated in other states and may present viable carcass management alternatives in the future.

## **Carcass Management Decision Framework**

### Case-Specific Information Needed:

- Carcasses – infectious/non-infectious (if suspect, treat as infectious)
- If infectious – type of disease agent, if known
- Number and size of carcasses
- Location
- Site factors that may limit on-site carcass management
- Key timing points/deadlines
- Financial/cost factors
- Other factors that may affect carcass management decisions

# Carcass Management Decision Framework

