

SAMPLE DEBRIS MANAGEMENT PLAN – 04

Subgrantee

Current Date

MISSION

To facilitate and coordinate the removal, collection, and disposal of debris following a disaster, to mitigate against any potential threat to the health, safety, and welfare of the impacted citizens, and expedite recovery efforts in the impacted area, and address any threat of significant damage to improved public or private property.

SITUATION

Natural and man-made disasters precipitate a variety of debris that includes, but is not limited to, such things as trees, sand, gravel, building/construction materials, vehicles, personal property, etc.

The quantity and type of debris generated from any particular disaster is a function of the location and kind of event experienced, as well as its magnitude, duration, and intensity.

The quantity and type of debris generated, its location, and the size of the area over which it is dispersed directly impacts the type of collection and disposal methods used to address the debris problem, associated costs incurred, and the speed with which the problem can be addressed.

In a major or catastrophic disaster, _____ may have difficulty in locating staff, equipment, and funds to devote to debris removal, in the short as well as long term.

Private contractors play a significant role in the debris removal, collection, reduction, and disposal process.

The debris management program implemented by _____ will be based on the waste management approach of reduction, reuse, reclamation. Resources recovery, incineration, and landfilling, respectively.

ORGANIZATION AND CONCEPT OF OPERATIONS

The _____ Department of Public Works is responsible for the debris removal function. The Department of Public Works (DPW) will work in conjunction with designated support agencies utility companies, waste management firms, and trucking companies, to facilitate the debris clearance, collection, reduction, and disposal needs ___ following a disaster. DPW will be responsible for removing debris from the public right-of-way. Only when pre approved and it is deemed in the public interest will DPW remove debris from private property. DPW will further stage equipment in strategic locations locally as well as regionally, if necessary, to protect the equipment from damage, preserve the decision maker's flexibility for employment of the equipment, and allow for the clearing crews to begin work immediately after the disaster.

Because of the limited quantity of resources and service commitments following the disaster, will be relying heavily on private contractors to remove, collect, and manage

debris for reuse, resource recovery, reduction, and disposal. Using private contractors instead of government workers in debris removal activities has a number of benefits. It shifts the burden of conducting the work from _____ to the private sector, freeing up government personnel to devote more time to their regularly assigned duties. Private contracting also stimulates local, regional, and State economies impacted by the storm, as well as maximizes State and local governments' level of financial assistance from the Federal government. Private contracting allows the State and its political subdivisions to more closely tailor their contract services to their specific needs. The entire process (i.e., clearance, collection, transporting, reduction, and disposal, etc.) or segments of the process can be contracted out.

The _____ Public Works Department will also develop and maintain a list of approved contractors who have the capability to provide debris removal, collection, and disposal in a cost effective, expeditious, and environmentally sound manner following a disaster.

STAFF DEVELOPMENT & RESPONSIBILITIES

The _____ (Applicant) is responsible for the developing a debris management plan and shall select a "Debris Manager" to supervise a "Debris Management Staff". The staff shall be comprised of personnel to perform:

1. Administration
Function: Housekeeping, supplies, equipment, funding, accounting.
2. Contracting and Procurement
Function; Bidding requirements, forms, advertisements for bids, instructions to bidders, contract development.
3. Legal
Function: Contract review, right of entry permits, community liability condemnation of buildings, land acquisition for temporary staging and reduction sites, land acquisition for disposal sites, insurance.
4. Operations
Function: Supervision of government and contract resources and overall project management.
5. Engineering
Function: Detailed damage assessment, identification of project tasks, assignments of tasks, preparation of estimates, plans, specifications, and recommendation of contract award.
6. Public Information Specialist
Function: Coordinate press releases, contacts with local organizations, individuals, and media; and public notices for debris removal and disposal contracts.

The staff shall coordinate with all State and Federal agencies responsible for disaster response and recovery operations. The staff will be assigned the task of:

1. Assembling to develop a Debris Management Plan.
2. Developing an analysis and debris management capability
3. Discourage development in hazardous zones.
4. Develop public information and education programs.
5. Train personnel in debris management techniques.
6. Maintain pre-disaster maps, blueprints, photos and other documents.
7. Make a list of critical facilities (streets, roads, and bridges).
8. Identify non-government groups that could assist.

CONTRACT AND COOPERATIVE AGREEMENTS

Sample contracts with a menu of services and generic scopes of work will be developed by the _____ Attorney's Office prior to the disaster to allow the _____ to more closely tailor its contracts to its needs, as well as expedite their implementation in a prompt and effective manner.

The _____ will be responsible for managing the debris contract from project inception to completion. Managing the debris contract includes such things as monitoring of performance, contract modifications, inspections, acceptance, payment, and closing out of activities. _____ is encouraged to enter into cooperative agreements with other State agencies and local governments to maximize public assets. The development of such agreements must comply with the guidelines established in their agency procurement manual. All State agencies and local governments that wish to participate in such agreements should be identified prior to the development and implementation of the agreement.

The three types of contracts required are the:

1. Time and Materials Contract. Will be limited to the first 70 hours of operation and only after all State and local equipment has been committed. The price for equipment applies only when the equipment is operating, the _____ can terminate the contract at its convenience, and the _____ does not guarantee a minimum number of hours.
2. Lump Sum Contract. The price of the work is fixed unless there is a change in the scope of work to be performed. Lump sum contracts will be calculated on either the "area" method or the "pass" method. The lump sum contract shall only be used when the scope of work is clearly defined and the areas of work can be specifically quantified.
3. The Unit Price Contract. Is the most accurate account of actual quantities removed. Requires field inspectors to eliminate contractor fraud. All contractor trucks must be measured. Requires load tickets identifying truck number, contract number, contractor's name, date, time departed site, and estimated volume.

The _____ Attorney's Office has drawn-up sample contracts and these contracts are attached to this plan as an annex.

_____ has established Mutual Aid Agreements with the following entities to provide assistance with debris removal in the event of a disaster resulting in copious amounts of debris:

- (1)
- (2)
- (3)
- (4)
- (5)

These agreements include utilization of personnel, equipment, temporary landfill sites, emergency services, and law enforcement.

_____ has further identified certain volunteer (VOAD), State and Federal agencies ready to assist. These agencies include Civic Clubs, Church organizations, Salvation Army, State Department of Transportation, National Guard, scrap dealers, and U.S. Department of Labor. These VOAD organizations will be coordinated by the State.

SITE SELECTION

Debris storage and reduction sites will be identified and evaluated by interagency site selection teams comprised of a multi-disciplinary staff who are familiar with the area. A listing of appropriate local, State, and Federal contacts will be developed by the appropriate agencies to expedite the formation of the interagency, multi-disciplinary site selection teams.

Initially, debris will be placed in temporary holding areas, determined before the onset of the disaster, until such time as a detailed plan of debris collection and disposal is prepared. This is not anticipated until after the local traffic has been restored. Temporary debris collection sites should be readily accessible by recovery equipment and should not require extensive preparation or coordination for use. Collection sites will be on public property when feasible to facilitate the implementation of the mission and mitigate against any potential liability requirements. Activation of sites will be under the control of the Director of Public Works, and will be coordinated with other recovery efforts through the emergency operations center.

Site selection criteria will be developed into a checklist format for use by these teams to facilitate identification and assessment of potential sites. Criteria will include such factors of ownership of property, size of parcel, surrounding land uses and environmental conditions, and transportation facilities that serve the site. A site selection priority list is attached as an annex to this plan.

The following is a list of temporary holding sites:

- 1.
- 2.
- 3.
- 4.
- 5.

DEBRIS REMOVAL PRIORITIES

The debris removal process must be initiated promptly and conducted in an orderly, effective manner in order to protect public health and safety following a major or catastrophic event. To achieve this objective, the first priority will be to clear debris from key roads in order to provide access for emergency vehicles and resources into the impacted area. Key roads in _____ are identified as follows:

- 1.
- 2.
- 3.
- 4.
- 5.

The need and demand for critical services will be increased significantly following a disaster. Therefore, the second priority that debris removal resources will be assigned is providing access to critical facilities pre-identified by State and local governments. Critical facilities in _____ have been identified as:

- 1.
- 2.
- 3.
- 4.
- 5.

The third priority for the debris removal teams to address will be the elimination of debris related threats to public health and safety. This will include such things as the repair, demolition, or barricading of heavily damaged and structurally unstable buildings, systems, or facilities that pose a danger to the public. Any actions taken to mitigate or eliminate the threat to the public health and safety must be closely coordinated with the owner or responsible party. If access to the area can be controlled, the necessary actions can be deferred.

DEBRIS CLASSIFICATION

To facilitate the debris management process, debris will be segregated by type. It is recommended that the categories of debris established for recovery operations will be standardized. The **Parish** will adopt the categories established for recovery operations by the U.S. Army Corps of Engineers following Hurricane Andrew. Debris removed will consist of two broad categories (clean wood debris and construction and demolition debris. Most common hurricane-generated debris will consist of 30% clean woody material and 70% C&D. Of the 70% mixed C&D it is estimated 42% will be burnable but require sorting, 5% will be soil, 15% will be metals, and 38% landfill.

Definition of classifications of debris are as follows:

Burnable Materials: Burnable materials will be of two types with separate burn locations:

Burnable Debris: Burnable debris includes, but is not limited to, damaged and disturbed trees; bushes and shrubs; broken, partially broken and severed tree limbs; and bushes. Burnable debris consists predominately of trees and vegetation. Burnable debris does not include garbage or construction and demolition material debris.

Burnable Construction Debris: Burnable construction and demolition debris consists of non-creosote structural timber, wood products, and other materials designated by the coordinating agency representative.

Non-burnable Debris: Non-burnable construction and demolition debris includes, but is not limited to, creosote timber, plastic, glass, rubber and metal products, sheet rock, roofing shingles, carpet, tires, and other materials as may be designated by the coordinating agency. Garbage will be considered non-burnable debris.

Stumps: Stumps will be considered tree remnants exceeding 24 inches in diameter; but no taller than 18 inches above grade, to include the stump ball. Any questionable stumps shall be referred to the designated coordinating agency representative for determination of its disposition.

Ineligible Debris: Ineligible debris to remain in place includes, but is not limited to, chemicals, petroleum products, paint products, asbestos, and power transformers.

Any material that is found to be classified as hazardous or toxic waste (HTW) shall be reported immediately to the designated coordinating agency representative. At the coordinating agency representative's direction, this material shall be segregated from the remaining debris in such a way as to allow the remaining debris to be loaded and transported. Standing broken utility poles, damaged and downed utility poles and appurtenances, transformers and other electrical material will be reported to the coordinating agency representative. Emergency workers shall exercise due caution with existing overhead and underground utilities and above ground appurtenances, and advise the appropriate authorities of any situation that poses a health or safety risk to workers on site or to the general population.

- X Debris classifications developed and used by the Corps of Engineers in Hurricane Andrew recovery.

ESTIMATING DEBRIS QUANTITIES

The formula for estimating debris quantity is: **Q=H(C)(V)(B)(S)**

- H (Households)=Population/3 (3 persons per household)
- C (Category of Storm)=Factor (See table below)
- V (Vegetation Multiplier)= Factor (See table below)
- B (Commercial Density Multiplier)= Factor (See table below)
- S (Precipitation Multiplier)= Factor (See table below)

Hurricane Category	Value of "C" Factor
1	2 CY
2	8 CY
3	26 CY
4	50 CY
5	80 CY
Vegetative Cover	Value of "V" Multiplier
Light	1.1
Medium	1.3
Heavy	1.5
Commercial Density	Value of "B" Multiplier
Light	1.0
Medium	1.2
Heavy	1.3
Precipitation	Value of "S" Multiplier
None to Light	1.0
Medium to Heavy	1.3

Once the amount of debris has been estimated, the **Parish** will require temporary storage sites the size of which can be determined by taking the following factors into consideration:

1. The debris pile shall be stacked to a height of no more than 10 feet.
2. 60% usage of the land area will be devoted to roads, safety buffers, burn pits, household hazardous waste, etc.,.
3. 10 foot stack height = 3.33 yards
4. 1 acre = 4,840 square yards (sy)
5. Total volume per acre = 4,840 sy/ac x 3.33y = 16,133 cy/ac.

Using the above assumptions, the estimate of total debris from any hurricane will be within 30% plus or minus of the actual amount of debris accumulated.

_____ Has estimated the that under the worst scenario, e. g., is a Category 5 hurricane, heavy vegetation cover, heavy commercial density, and heavy precipitation, the amount of acres needed for a temporary landfill is 3,352 acres. The calculation (assuming a population of 500,000) is as follows:

$$Q = H(C)(V)(B)(S)$$
$$Q = 166,667 \times 80 \times 1.5 \times 1.3 \times 1.3$$
$$Q = 33,800,068 \text{ cy of debris.}$$

$$33,800,068 \text{ (cy of debris / 16,133 (cy/ac) = 2,095 acres of debris.}$$
$$2,095 \text{ acres} \times 1.66 \text{ (60\% more area needed for roads, ,etc.,.)} = 3,352 \text{ acres.}$$

Note: To help visualize what 33,800,068 cy of debris looks like, picture a building occupying 1 acre. 1,000,000 cy of debris would create a stack 62' high on one acre. That building would be 2,046 feet high or approximately 200 stories high.

DEBRIS DISPOSAL AND REDUCTION

Once the debris is removed from the damage sites, it will be taken to the temporary land fills. The three methods of disposal are burning, recycling, and grinding/chipping.

Grinding and chipping will be utilized as a viable reduction method. Grinding and chipping reduces the volume on a 4 to 1 ratio. For grinding and chipping to be feasible, 25% of volume remaining must have some benefit or use.

The three primary burning methods are open burning, air curtain pit burning, and incineration. Controlled open burning is a cost-effective method for reducing clean woody debris in rural areas. Burning reduces the volume by 95%, leaving only ash residue to be disposed of. Air curtain pit burning substantially reduces environmental concerns. The blower unit must have adequate air velocity to provide a "curtain effect" to hold smoke in and to feed air to the fire below. Portable incinerators use the same methods as air curtain pit systems. The only difference is that portable incinerators utilize a pre-manufactured pit in lieu of an onsite constructed earth/limestone pit.

Metals, wood, and soils are prime candidates for recycling. Most of the non-ferrous metals are suitable for recycling. Specialized contractors are available to bid on disposal of debris by recycling if it is well sorted.

SITE CLOSE-OUT PROCEDURES

Each temporary debris staging and reduction site will eventually be emptied of all material and be restored to its previous condition and use.

Before activities begin ground and aerial photos will be taken, important features such as structures, fences, culverts, and landscaping will be noted. Random soil samples will be taken as well as water samples from existing wells. The site will be checked for volatile organic compounds.

After activities begin, constant monitoring of air quality and soil and water samples will take place. Photo, maps, and sketches of the site will be updated and fuel spills will be noted.

At close-out final testing of soil, water, and air quality and compared to original conditions. All ash will be removed and any remediation actions will be taken.

DEBRIS MANAGEMENT ACTIONS

The Debris Management Plan is separated into four stages:

1. Normal Operations

Develop local and regional resource list of contractors who can assist local governments in all phases of debris management.

Develop sample contracts with generic scopes of work to expedite the implementation of their debris management strategies.

Develop mutual aid agreements with other State agencies and local governments, as appropriate, following guidelines established in agency procurement manual.

Identify and pre-designate potential debris storage sites for the type and quantity of debris anticipated following a catastrophic event.

Pre identify local and regional critical routes in cooperation with contiguous and regional jurisdictions.

Develop site selection criteria checklists to assist in identifying potential debris storage sites.

Identify and coordinate with appropriate regulatory agencies regarding potential regulatory issues and emergency response needs.

Develop the necessary right of entry and hold harmless agreements indemnifying all levels of government against any potential claims.

Establish debris assessment process to define scope of problem.

Develop and coordinate pre-scripted announcements with the Public Information Office (PIO) regarding debris removal process, collection times, temporary storage sites use of private contractors, environmental and health issues, etc.

2. Increased Readiness

(A natural or man-made disaster is threatening the local area)

Review and update plans, standard operating procedures, generic contracts, and checklists relating to debris removal, storage, reduction, and disposal process.

Alert local departments that have debris removal responsibilities ensuring that personnel, facilities, and equipment are ready and available for emergency use.

Relocate personnel and resources out of harm's way and stage in areas where they can be effectively mobilized.

Review potential local, regional, and debris staging and reduction sites that may be used in the response and recovery phases in the context of the impending threat.

Review resource listing of private contractors who may assist in debris removal process. Make necessary arrangements to ensure their availability in the event of the disaster.

3. Response

Activate debris management plan, coordinate with needs assessment team.

Begin documenting costs.

Coordinate and track resources (public and private).

Establish priorities regarding allocation and use of available resources.

Identify and establish debris temporary storage and disposal sites (local, regional).

Address any legal, environmental, and health issues relating to the debris removal process.

Continue to keep public informed through the PIO.

4. Recovery

Continue to collect, store, reduce, and dispose of debris generated from the event in a Cost-effective and environmentally responsible manner.

Continue to document costs.

Upon completion of debris removal mission, close out debris storage and reduction sites by developing and implementing the necessary site restoration actions.

Perform necessary audits of operation and submit claim for Federal assistance.

SAMPLE DEBRIS PLAN ANNEX

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Sample:	Intergovernmental Emergency Mutual Aid Agreement
Sample:	Time and Material Contract
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Sample:	Right of Entry Agreement
Sample:	Site Selection Priority List

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