

# Monitoring Debris Removal Operations

*FEMA 327 Public Assistance Debris Monitoring Guide*  
*FEMA 325 Debris Management Guide*

**Bob Swan Consulting**  
**Disaster Debris Management Planning and Training Services**  
**704-960-0235**  
**swanconsulting9@aol.com**

# Why Monitor?

- To Maximize Reimbursement of Eligible Costs from the Federal Emergency Management Agency (FEMA).
- Accurate documentation of debris removal and disposal operations and eligible associated costs is the outcome of a good debris monitoring program.

# Debris Monitoring

- Webster's New Collegiate Dictionary defines monitoring as:
  - To Watch
  - To Observe
  - To Check
  - To Keep Track Of
- All of these terms apply when monitoring debris contractor cleanup operations following a major debris-generating event.

# Monitoring Considerations

- What are your responsibilities?
- Do you have trained staff?
- What are your reporting and accounting requirements?
- How are you going to use force account or third-party monitors?

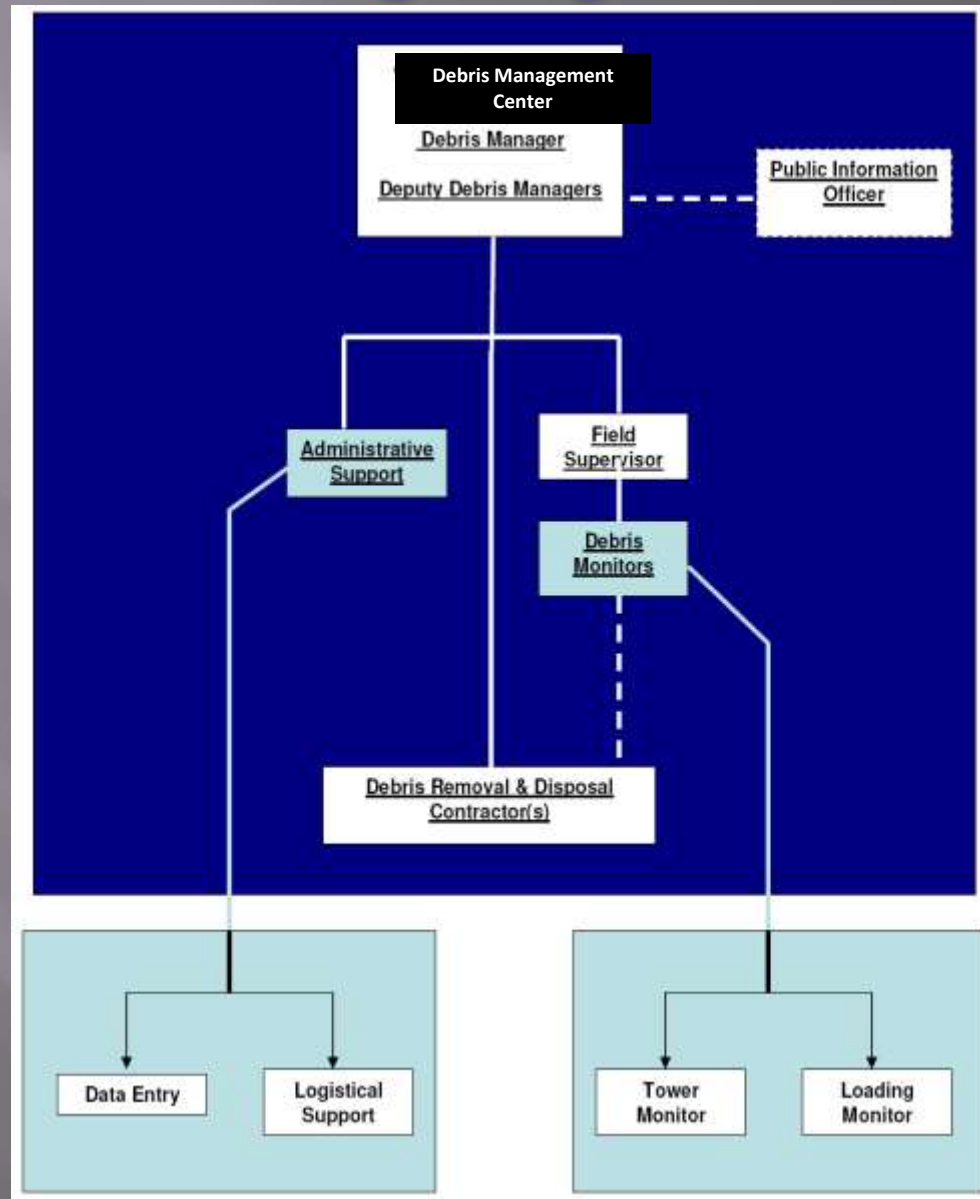
# Applicant Debris Monitor Qualifications

- Force Account Permanent Staff
- Temporary Hires
- Third-Party Contractors
- Must:
  - Be able to differentiate between debris types
  - Be able to fill out load tickets properly
  - Understand site safety procedures
  - Communicate effectively and efficiently
  - Possess construction site experience

# Monitoring Staff

- ▣ Should employ full-time, trained tower monitors, loading monitors and field supervisors.
- ▣ A field supervisor is typically assigned to every ten loading sites.

# Debris Monitoring Organization Chart



# Why Do You Need a Debris Monitoring Plan?

- ▣ Multiple Debris Hauling Contractors
- ▣ Multiple Debris Loading Sites
- ▣ Multiple Debris Management Sites
- ▣ Multiple Landfill Sites
- ▣ Multiple Local, State and Federal Agency Participation
- ▣ Lots of Monitors
  - Over 90 in Palm Beach County working at 62 loading sites and 28 debris management sites.

# Debris Monitoring Plan Outline

- ▣ General
- ▣ Purpose
- ▣ Monitoring Operations
- ▣ Debris Loading Site Monitor's Responsibilities
- ▣ Debris Management Site Monitor's Responsibilities
- ▣ Instruction for Completing the Load Ticket
- ▣ Sample of the Load Ticket
- ▣ Truck Measurement Instructions
- ▣ Load Estimating Methods
- ▣ Staff Assignments
- ▣ Training
- ▣ FEMA Monitoring Responsibilities

# Monitor Requirements

- ▣ Monitors must be capable of spending shifts (12-14 hrs/day) in an outside environment and be able to climb a staircase ladder at least 10 feet high.
- ▣ Monitors must be a minimum of 18 years of age and a valid drivers license.
- ▣ Monitors must have experience in at least one of the following:
  - Construction inspector
  - Entry level surveyor
  - Entry level engineer
  - Solid waste site operations
  - Land clearing operations
  - Previous Monitoring Experience
- ▣ Each monitor must attend a 1/2 day training class before being assigned to monitor contractor debris operations.
- ▣ Contractor supervisors are encouraged to also attend the training.

# Why Do You Need To Monitoring Private Debris Removal Contractors?

- ▣ **Verify Unit Price and Time and Material Contracts.**
- ▣ **Necessary for ensuring proper use of local funds**
- ▣ **Necessary to receive reimbursement from FEMA.**
- ▣ **Reduce the possibility of fraud.**

# Unit Price Contract Verification

## Requirements:

- ❑ Must verify eligibility at the loading site.
- ❑ Must estimate the quantity of debris by cubic yards at the disposal site.
- ❑ Document using load tickets.
- ❑ Provide an audit trail.
- ❑ No audit trail – NO MONEY FROM FEMA!

# Loading Site Monitors

- ▣ The Loading Monitors will perform on-site, street-level debris monitoring at all loading sites to verify debris eligibility based on FEMA requirements, and initiate debris removal documentation using load tickets.
- ▣ Monitoring at load sites will require a minimum of 2 persons that have transport and communications.
- ▣ A recommended alternative is to establish “Choke Point” inspection sites where all trucks must pass. This will reduce the overall number of monitors.

# *Typical Curbside Loading Site*



# *Typical Curbside Loading Site*



# *Typical Curbside Loading Site*



# *Truck on Scale*



# Load Tickets

- ▣ Verify unit cost contracts by use of load tickets
- ▣ Load tickets:
  - Must be pre-numbered
  - Should be a 5 part pre-printed form
  - Should be printed and maintained by the municipality and not the contractor.

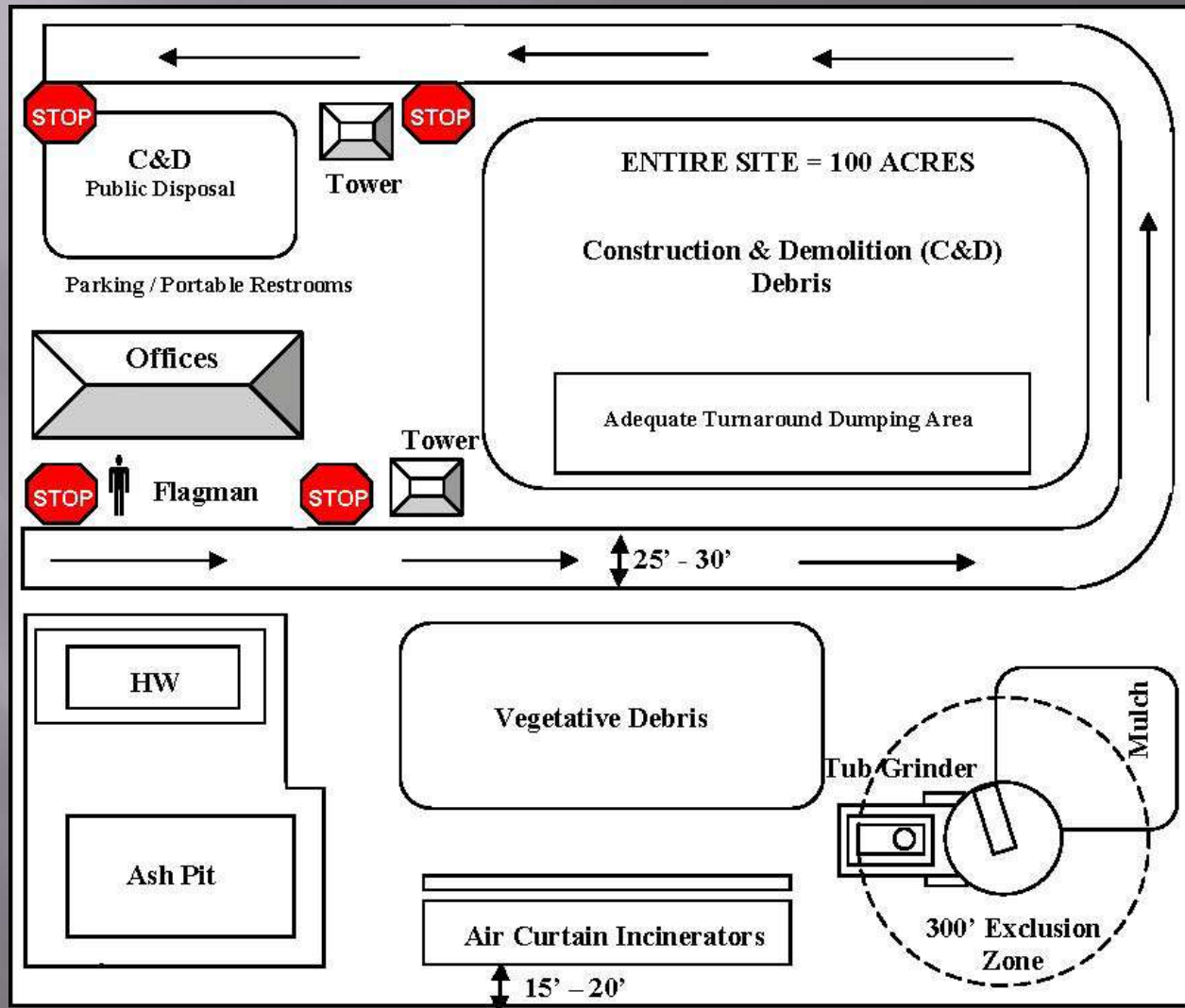
# Load Ticket

<b>Load Ticket</b>		Ticket No. 0012345	
Municipality (Applicant)		Prime Contractor	
		Sub-Contractor	
<b>Truck Information</b>			
Truck No		Capacity	
Truck Driver (print legibly)			
<b>Loading Information</b>			
<b>Loading</b>	Time	Date	Inspector/Monitor
Location (Address or Cross Streets)			
<b>When Using GPS Coordinates use Decimal Degrees (N xx.xxxxx)</b>			
<b>N</b>		<b>W</b>	
<b>Unloading Information</b>			
Debris Classification		Estimated %, CYs, or Actual Weight	
<input type="checkbox"/> Vegetation <input type="checkbox"/> C&D <input type="checkbox"/> White Goods <input type="checkbox"/> HHW <input type="checkbox"/> Other* See Below			
<b>Unloading</b>	Time	Date	Inspector/Monitor
DMS Name and Location			
*Other Debris Explanation		Original:     Applicant Copy 1:       _____ Copy 2:       _____ Copy 3:       _____	

# Tower Site Monitors

- ▣ The Tower Monitors should verify estimated quantities of eligible debris hauled by the removal trucks and document information on tower logs and/or load tickets.
- ▣ Monitoring at debris management and final disposal sites will require a minimum of 2 persons that have transport and communications.

# Typical Debris Management Site Layout



## *Loaded Truck Traveling to a Debris Management Site*



# *Unsafe Scissor Lift Inspection Tower*



# *Inspection Tower*



# Tower Monitoring Procedures

- Document Time of Arrival
- Estimate Quantity of Debris
- Record Information on the Load Ticket
- Sign the Load Ticket
- Retain one copy and give the remaining copies to the truck driver.
- The disposal site monitor's copy will be turned into the Supervisor at the end of each day.
- These are controlled forms and cannot be lost since they will be used to verify the amount of money paid to the debris reduction site Contractor and to the debris hauling Contractor.

# Tower Monitors

## Watch for:

- Inaccurate truck capacities
- Trucks not fully loaded
- Lightly loaded trucks
- Load “exceeding capacities”
- Changing truck numbers
- Reduced truck capacity
- Picking up ineligible debris
- Multiple counting of the same load

# *Debris Management Site Inspection Station*



# *Examples of Household Hazardous Waste*



## *Temporary Household Hazardous Waste Storage Area*



# *Less Than 100% Loaded*



# *Less Than 100% Loaded*



# Cubic Yards vs. Compaction



- FEMA will not allow a compaction factor for this type of vehicle
- They will only reimburse the applicant for the measured inside cubic yards of the container.
- This type of vehicle is hand loaded and only carries what is easily picked up by the crew. (leaves, small branches, yard trash)

# Tree Trunks & Branches



# *No Tailgate*



# *Classic Hand-Loaded Trailers*



# Classic Debris Haulers



**NOTE: FEMA Policy – RP9523.12**

**“THE MAXIMUM AMOUNT RECORDED FOR A HAND-LOADED VEHICLE WILL BE 50% OF ITS MEASURED CAPACITY.”**

# Reporting

- ▣ The Tower Monitor shall submit a summary report and copies of each load ticket to the Supervisor at the end of each shift.
  
- ▣ The report will contain the following information
  - a) Debris reduction site name
  - b) Site monitors names
  - c) Supervisors name
  - d) Number of trucks entering the site
  - e) Number of trucks turned away that did not have official load tickets
  - f) Any problems encountered or anticipated



# Truck Certification List

- ▣ The standard list of requirements includes:
  - Size of hauling bed in cubic yards
  - License plate number
  - Truck identification number assigned by the owner
  - Short physical description of the truck
  
- ▣ See Appendix D, FEMA 325, *Sample Monitoring Forms*, for an example truck certification worksheet.

# Truck Certification Form

TRUCK CERTIFICATION FORM			
<b>General Information</b>			
Applicant: _____		Monitor: _____	
Contractor: _____		Date: _____	
Measurement Location: _____		County: _____	
Declaration Number: _____			
<b>Truck Information</b>			
Make	Year	Color	License
<b>Truck Measurements</b>			
Performed By: _____		Date: _____	
Volume Calculated By: _____		Date: _____	
Both Checked by: _____		Date: _____	
<b>Driver Information</b>			
Name: _____			
Address: _____			
Phone Number: _____			
<b>Owner Information</b>			
Name: _____			
Address: _____			
Phone Number: _____			
Truck Identification			Truck Capacity
<div style="border: 1px solid black; width: 300px; height: 150px; margin: 0 auto;"></div>			
Photo			
<small>(See reverse for calculation worksheet)</small>			

# Dump Truck

## DUMP TRUCK

### Measurements

Truck Measurements

Length (L) =  Width (W) ft =  Height (H) ft =

Hoist Measurement

Length<sub>1</sub> (L<sub>1</sub>) ft =  Width<sub>H</sub> (W<sub>H</sub>) ft =  Height<sub>H</sub> (H<sub>H</sub>) ft =   
 Length<sub>2</sub> (L<sub>2</sub>) ft =

Radius

Radius ft =  Height (H) =

### Calculations

Bed Volume (Basic)

$(L \times W \times H) / 27 =$   cyd

Hoist Volume

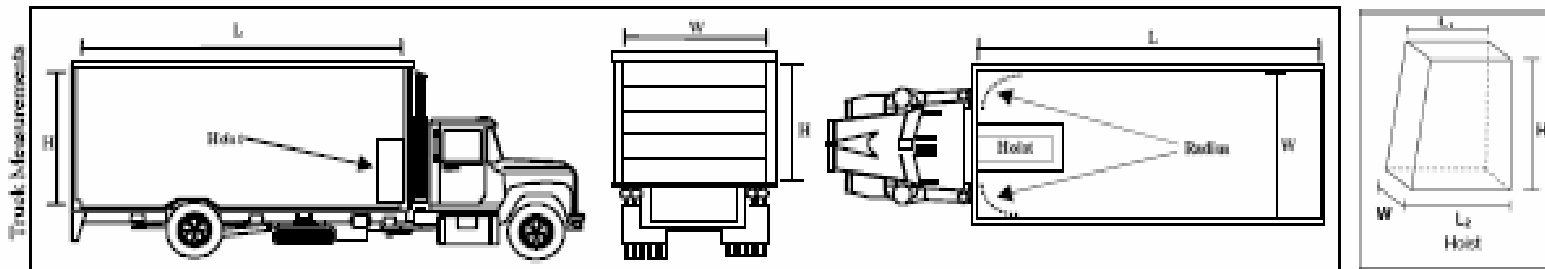
$((L_1 + L_2) / 2) \times W_H \times H_H / 27 =$   cyd

Radius Volume

$(3.14 \times R^2 \times H) / 27 =$   cyd

Total =  cyd

Cubic Yards



EXTRA TRAILER

## Internal Measurements

# Communications

- ▣ Monitors must have a cell phone or radio communications.
- ▣ Monitors should not argue with truck drivers or with FEMA monitors.
- ▣ Monitors must have a phone listing of:
  - Site Supervisor
  - Project Officer
  - Nearest Fire, Police, and Emergency Medical Facilities.

# Safety

- ▣ Monitors must adhere to site Contractor's safety requirement.
- ▣ Monitors must wear their required safety equipment whenever on the site.
- ▣ The following items are mandatory:
  - Hard Hat
  - Reflective Vest
  - Hard Toe Shoes
  - Long Pants
  - Eye and Hearing Protection
  - Appropriate Cold and Rainy Weather Clothing

# Questions to Consider

- ▣ Do you have a process or a strategy for hiring and training debris monitors?
- ▣ Do you have access to a local labor force qualified to perform these functions?
- ▣ What jurisdictional department will coordinate these efforts?
- ▣ Do you have monitoring report procedures and forms established?

# Questions?

**See me at the break for additional information on my 2 day Debris Management Workshop.**