WHAT IS A DEBRIS MANAGEMENT PLAN?
WHAT IS A DEBRIS MANAGEMENT PLAN?

• Written Document
• Establishes procedures and guidelines for managing disaster debris
  • Coordinate response
  • Environmentally responsible
IMPORTANCE OF HAVING A PLAN

- Facilitate response and recovery activities
- Return to normalcy
- Reduce impacts to humans and environment
- Ensure effective use of resources
- Minimize costs
It’s not just the plan, it’s the process
Step 1: Form a Collaborative Planning Team

Step 2: Understand the Situation

Step 3: Determine Goals and Objectives

Step 4: Plan Development

Step 5: Plan Preparation, Review and Approval

Step 6: Plan Implementation and Maintenance
Step 1: Planning Team

Identify Planning Team

- Whole Community
  - Task force or committee
  - Planning officials
  - First Responders
  - Key Stakeholders

Step 2: Understand Situation

Step 3: Goals & Objectives

Step 4: Plan Development

Step 5: Prepare, Review, & Approve

Step 6: Implement & Maintain
PLANNING PROCESS

Step 1: Planning Team
Step 2: Understand Situation
Step 3: Goals & Objectives
Step 4: Plan Development
Step 5: Prepare, Review, & Approve
Step 6: Implement & Maintain

- Identify threats and hazards
- Perform threat analysis
- Forecast potential debris impact and quantities
- Review other plans
Determine Goals and Objectives

• Response
  • Initial clearance

• Recovery
  • Removal operations

Xenia tornado of 1974
**Planning Process**

**Step 1:** Planning Team

**Step 2:** Understand Situation

**Step 3:** Goals & Objectives

**Step 4:** Plan Development

**Step 5:** Prepare, Review, & Approve

**Step 6:** Implement & Maintain

**SMARTS**

- **Specific:** What do you want to do?
- **Measurable:** How will you know when you’ve reached it?
- **Achievable:** Is it in your power to accomplish it?
- **Realistic:** Can you realistically achieve it?
- **Timely:** When exactly do you want to accomplish it?
Develop the plan

- Scenario based events
- Plan requirements
- Consider needs and demands
- Determine task assignments/ areas of responsibility
Plan Components

Debris Management Plan

Purpose

Scope

Assumptions

Concept of Operations

- Debris collection & removal
- Debris management of sites & disposal locations

Assignment of Responsibility
Step 1: Planning Team

Step 2: Understand Situation

Step 3: Goals & Objectives

Step 4: Plan Development

Step 5: Prepare, Review, & Approve

Step 6: Implement & Maintain

DEBRIS MANAGEMENT PLAN COMPONENTS

- Debris Plan Overview
- Events and Assumptions
- Debris collection and removal
- Debris management sites and disposal locations
- Debris removal on private property

- Procurement and contractual services
- Use of force account resources
- Monitoring of debris operations

Debris Plan Overview
Events and Assumptions
Debris collection and removal
Debris management sites and disposal locations
Debris removal on private property

Procurement and contractual services
Use of force account resources
Monitoring of debris operations
DEBRIS MANAGEMENT PLAN COMPONENTS

- Health and safety requirements
- Environmental considerations and other regulatory requirements
- Public Information
- Identification of debris removal contractors
- Annexes
  - FEMA Summary Forms
  - List of FEMA information requirements
  - MOUs/MOAs
- Contracts
- Debris Certifications

Step 1: Planning Team
Step 2: Understand Situation
Step 3: Goals & Objectives
Step 4: Plan Development
Step 5: Prepare, Review, & Approve
Step 6: Implement & Maintain
PLANNING PROCESS

Additional Considerations

- Procurement
- Private Property
- Mutual Aid Agreements
- Public information
- Environmental considerations & regulatory requirements
PLANNING PROCESS

Step 1: Planning Team

Step 2: Understand Situation

Step 3: Goals & Objectives

Step 4: Plan Development

Step 5: Prepare, Review, & Approve

Step 6: Implement & Maintain

Debris Management Plan

Debris Management Plan

Standalone

EOP Annex
PLANNING PROCESS

Prepare/Review/Approval

Local Review & Approval

Step 1: Planning Team
Step 2: Understand Situation
Step 3: Goals & Objectives
Step 4: Plan Development
Step 5: Prepare, Review, & Approve
Step 6: Implement & Maintain
Train & Exercise

Step 1: Planning Team
Step 2: Understand Situation
Step 3: Goals & Objectives
Step 4: Plan Development
Step 5: Prepare, Review, & Approve
Step 6: Implement & Maintain
PLANNING PROCESS

- Review
  - Major events
  - Change in resources
  - Change in key stakeholders
  - Change in legislation or ordinance (landfills)
- Revise
- Maintain
PLANNING RESOURCES

- HAZUS data for your jurisdiction
- Current/Prior Disaster EPA Greensheets
- FEMA Debris Management Guide
  (https://www.fema.gov/pdf/government/grant/pa/demagde.pdf)
- FEMA Public Assistance Program and Policy Guide
  (https://www.fema.gov/media-library-data/1525468328389-4a038bbe9081cd7dfe7538e7751aa9c/PAPPG_3.1_508_FINAL_5-4-2018.pdf)
• Ohio EMA Webpage
  (https://ema.ohio.gov/recovery_debrisinfo.aspx)
    • Sample Debris Management Plan Outline
    • Debris Fact Sheet for Local Officials
    • Debris Management Plan Handbook

• Brock Metzger, Ohio Emergency Management Agency, (614)799-3668, brmetzger@dps.ohio.gov
LOCAL PARTNERS ROLE IN A DISASTER
Disaster Life Cycle

PREPAREDNESS
ONGOING
- Pre-disaster recovery planning
- Mitigation planning and implementation
- Community capacity and resilience-building
- Conducting disaster preparedness exercises
- Partnership building
- Articulating protocols in disaster plans for services to meet the emotional and health needs

SHORT-TERM
DAYS
- Mass care/sheltering
- Debris
- Business
- Emotional/psychological
- Public health and health care
- Mitigation activities

INTERMEDIATE
WEEKS-MONTHS
- Housing
- Debris/infrastructure
- Business
- Emotional/psychological
- Public health and health care
- Mitigation activities

LONG-TERM
MONTHS-YEARS
- Housing
- Infrastructure
- Business
- Emotional/psychological
- Public health and health care
- Mitigation activities

National Disaster Recovery Framework (NDRF)
National Response Framework (NRF)
• The EOC helps coordinate and support by:
  • Identify capabilities and shortfalls
  • Identify tasks and activities that they must accomplish to prevent, protect against, prepare for, respond to, and recover from high-threat incidents
  • Work together with local governments and responders to achieve operational priorities
  • Manage resources to support incidents
  • Manage activities necessary to protect the community during major incidents.
Roles and Responsibilities within the EOC

- Coordinating & prioritizing resources
- Developing & maintaining situational awareness
- Managing information
- Coordinating with elected / appointed officials
• At the EOC, partners can act at the Operational Level to translate the “What Needs to be Done” from Strategic Level into “How Can it be Done” for the Field Level

  • Managing Information
  • Managing Resources
  • Managing Consequences
PRIMARY FUNCTIONS OF AN EOC

- Managing Information
  - Information Collection
    - Needs Assessment
    - Damage Assessment
  - Information Display
    - WebEOC/Charts/Maps
  - Information Dissemination
    - Public Information/Alert/Warnings
    - Communication with IC AND local Elected Officials
    - Preparing Situation Reports/Incident Action Plans
**Primary Functions of an EOC**

- Managing Resources
  - Communicating resource information from the field
    - What resources are currently available
    - What resources are currently being used
    - What resources are currently needed
  - Sharing resources across disciplines
  - Activating MOUs/MOAs
  - Coordinating use of limited resources
  - Making resource requests from partners
• What are the benefits of opening an EOC?
  • Face-to-face contact
    • Issues can be discussed between varying disciplines in a common setting
    • Helps to avoid communication issues
    • Problems can be addressed rapidly, quicker decision making
  • Increased situational awareness
    • Information from multiple disciplines, all addressing various parts of an emergency, shared in a common setting
  • Aids in decision making
    • With more information in a single location, enhances the ability to make decisions to address issues
  • Easier public information dissemination
    • Coordinate messages to the public to ensure consistency and accuracy of messaging
• Managing Consequences
  • Establishment of priorities
  • Develop a Common Operating Picture
  • Coordinate across levels of government
  • Facilitate smooth transition between operational periods
  • Address response and recovery needs
CYCLE OF A DISASTER LIFE CYCLE REVISITED

Pre-disaster preparedness and recovery planning:
- Mitigation planning and implementation
- Community capacity and resilience-building
- Conducting disaster preparedness exercises
- Partnership building
- Articulating protocols in disaster plans for services to meet the emotional and health needs

Short-term recovery:
- Mass care/sheltering
- Debris
- Business
- Emotional/psychological
- Public health and health care
- Mitigation activities

Intermediate recovery:
- Housing
- Debris/infrastructure
- Business
- Emotional/psychological
- Public health and health care
- Mitigation activities

Long-term recovery:
- Housing
- Infrastructure
- Business
- Emotional/psychological
- Public health and health care
- Mitigation activities
DEBRIS FORECASTING AND ESTIMATING
Forecasting is a **planning** activity

- Takes place *before* an event
- Provides a general idea of debris generation for particular events
- Essential for proper preparation

Multiple methods to create forecasts

- Historical analysis
- Community-based risk analysis
- Computer modeling
DEBRIS FORECASTING: HISTORICAL ANALYSIS

- Review historical events, newspapers, photos
- Interview staff and citizens
- Review changes over time
  - Land use changes
  - Landfill capacity changes
  - Response capability of community
  - Laws and regulations
• Mobile home
  • Single wide = 290 CY
  • Double wide = 415 CY
• Flooded homes - personal property on right of way
  • Slab on grade home 25-30 CY
  • Home with basement 45-50 CY
Debris Forecasting: Community Risk Analysis

- Determine potential risk for various events
  - Locate flood zones, unusually wind prone areas, etc.
- Review land use & overlay with risk areas
- Predict debris generation
  - Categorize like land uses & risk areas
  - Project for major, moderate, & minor events
- Predict effects on debris response infrastructure
  - Waste handling facilities
  - Waste removal capacity
  - Interruption of services/utilities
DEBRIS FORECASTING: COMMUNITY RISK ANALYSIS

• Community risk analysis tools
  • Aerial photography
    • Auditor/recorder’s office
    • Google Earth or other satellite mapping sites
  • US flood insurance rate maps
  • Weather almanacs
  • GIS maps
  • Ground surveys
DEBRIS FORECASTING: COMMUNITY RISK ANALYSIS

• GIS Map from Butler County, Ohio
DEBRIS FORECASTING: COMMUNITY RISK ANALYSIS

- Satellite image from Bing.com or Google maps
Debris Forecasting: Computer Modeling

- USACE/NOAA Forecasting Tool – Primarily for hurricanes
- FEMA Hazus – Primarily for earthquakes
- Private industry products & consultants
**Debris Forecasting: Computer Modeling - USACE**

Formula: \( Q = C(H)(V)(B)(S) \)

- \( Q \) = Volume of debris in cubic yards
- \( C \) = Storm category factor
- \( H \) = Number of households
- \( V \) = Vegetative characteristic
- \( B \) = Land use multiplier
- \( S \) = Precipitation multiplier

The best forecasts are created using a combination of all available forecasting techniques.
DEBRIS ESTIMATING

- Estimating is a post-event activity
  - Takes place after the damage is done
  - Provides a general idea of debris generated from a specific event
  - Essential for proper plan execution

- Multiple methods to create estimates
  - Ground measurement
  - Aerial photography
    - Before & after comparisons
    - Scaled debris pile measurement
  - GIS mapping
DEBRIS ESTIMATING: IMPORTANT NOTES

• Accuracy is important
  • Establishes scale of recovery effort
  • Aids mobilization of adequate resources
  • Improves cost containment
  • Helps prevent fraud

• Estimate quantity AND types of debris
• Accurate estimates require field work
• Safety is paramount
Debris Volume Calculations

• One story building:

\[
\frac{L \times W \times H \times .33}{27} = \text{CY}
\]

(.33 factor accounts for airspace)

• Mobile Homes & Debris Piles:

\[
\frac{L \times W \times H}{27} = \text{CY}
\]
Debris Pile Volume to Weight Equivalents

• CDD piles: 2 yd$^3 = 1$ ton
• Solid Waste piles: 3 yd$^3 = 1$ ton

• Wood (tree) debris piles:
  Hardwoods: 4 yd$^3 = 1$ ton
  Softwoods: 6 yd$^3 = 1$ ton
DEBRIS QUANTITIES TABLE

- This chart and calculations are inclusive of the structure and contents
- Vegetative Cover Multiplier (Yard Waste)

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<th>Typical House</th>
<th>None</th>
<th>Light (1.1)</th>
<th>Medium (1.3)</th>
<th>Heavy (1.5)</th>
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<tr>
<td>1000 SF.</td>
<td>200 cy</td>
<td>220 cy</td>
<td>260 cy</td>
<td>300 cy</td>
</tr>
<tr>
<td>1200 SF.</td>
<td>240 cy</td>
<td>264 cy</td>
<td>312 cy</td>
<td>360 cy</td>
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<td>280 cy</td>
<td>308 cy</td>
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<td>600 cy</td>
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<td>720 cy</td>
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<tr>
<td>2600 SF.</td>
<td>520 cy</td>
<td>572 cy</td>
<td>676 cy</td>
<td>780 cy</td>
</tr>
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</table>
USACE Flood Debris Model

- Used to calculate debris quantity from a flood event only when the structure is not destroyed
- Formula: Square footage x .02 = cubic yards of debris
- 2400 sq. ft. x .02 = 48 cubic yards
DEBRIS ESTIMATING: EXAMPLES

• Typical single wide = 290 cubic yards

• Typical double wide = 415 cubic yards
FEMA Public Assistance Eligibility Criteria
• Eliminate immediate threat to life, public health and safety
• Eliminate immediate threats of significant damage to improved public or private property
• Ensure economic recovery of the affected community to the benefit of the community-at-large.
ELIGIBILITY BUILDING BLOCKS

- Cost
- Work
- Facility
- Applicant
APPLICANT ELIGIBILITY

- State and local governments/agencies
- Federally recognized Tribal governments
- Certain Private Non-Profit entities
- Certain other entities formed for a public purpose

- Individuals are **NOT** eligible applicants under the Public Assistance Program.
• Legal responsibility of eligible applicant
• In active use at time of disaster

• Examples of eligible facilities:
  • Improved public property (e.g. roads, bridges, parks, etc.)
  • Public right-of-way
  • Certain PNP facilities
Ineligible Facilities

• An applicant’s unimproved property or undeveloped land
• Facilities outside of the designated disaster area
• Agricultural land
• Federal property or facilities that fall under the authority of another Federal agency
  • Exception: Debris management activities performed along Federal-Aid Highways are eligible for reimbursement under FEMA’s Public Assistance Program.
• Eligibility criteria:
  • Must in the public interest
  • Pre-approval process
    • Public interest determination
    • Documentation of legal responsibility
    • Authorization by a legally authorized official
    • Indemnification
  • Duplication of benefits (e.g. insurance)
• Documentation Requirements:
  • Right-of-entry
  • Site location, description and photos
  • Site assessment establishing eligible scope of work
  • Applicable insurance policy
  • Environmental and Historical review
  • Debris removal work completed
• Eligible Work:
  • Large debris piles in living, recreational and/or working areas
  • Debris obstructing primary ingress and egress routes
  • Hazardous trees and limbs
  • Disaster-damaged interior and exterior materials
• Ineligible Work:
  • Debris from vacant lots, unimproved property, etc.
  • Debris on agricultural land
  • Concrete slabs or foundations on-grade
  • Reconstruction debris
  • Debris and materials unrelated to the disaster
  • Damaged swimming pools and basements
  • Debris removal from commercial property
Work Eligibility Criteria

• Be required as a result of the declared incident
• Located within the designated disaster area
• Legal responsibility of an eligible applicant

Special Considerations:
• Public interest requirement
• Damage due to negligence is ineligible
• Normal maintenance items that existed prior to the disaster are ineligible
ELIGIBLE DEBRIS-RELATED ACTIVITIES

- Clearance
- Collection
- Reduction and recycling
- Disposal
- Environmental Monitoring
- Debris Monitoring
- Other debris-related activities
• Disaster-related debris is generally eligible
• Must be closely managed by applicant and have established limits
• Must be separated from normal garbage pickup and other ineligible debris removal
Vegetative Debris

- Vegetative debris on public property and rights-of-way
- Hazardous trees
- Hazardous limbs
- Hazardous Stumps
HAZARDOUS TREES

• Must meet the following criteria:
  • Condition was caused by the disaster
  • Present an immediate threat
  • Measures 6 inches or greater in diameter at 4.5 feet above ground level

• Additionally must meet one or more of the following criteria:
  • More than 50% or more of crown is damaged or destroyed
  • Has split trunk or broken branches exposing the heartwood
  • Has fallen or uprooted in a public-use area
  • Leaning at an angle of greater than 30 degrees and shows evidence of ground disturbance
HAZARDOUS LIMBS

• Must be located on improved public property
• Limb must be greater than 2 inches in diameter at the point of break
• Limb must still be hanging in tree and threatening a public-use area
HAZARDOUS STUMPS

• Must have 50% or more of the root ball exposed
• Must be greater than 24 inches in diameter, measured 24 inches above the ground
• Must be on improved public property or a public right-of-way
• Must pose an immediate threat
**Cost Eligibility**

- Cost must be reasonable and necessary to accomplish the work
- Applicants must comply with all applicable local, State and Federal procurement requirements
- Reduced by all applicable credits (e.g. insurance, recycling revenue, etc.)

Potential Sources of Costs
- Force account resources
- Mutual Aid
- Contracts
FOUR FORCE ACCOUNT RESOURCES

- Labor (Limited to overtime labor hours only)
- Equipment
- Materials
- Leased/purchased equipment and supplies
ALTERNATIVE PROCEDURE FOR DEBRIS REMOVAL

• Retention of recycling revenues
• Reimbursement of straight time labor
• Increased cost share for FEMA “accepted” Debris Management Plan
• The cost of debris-related work performed through mutual aid agreements or contracts between jurisdictions may be eligible.
• Receiving entity still responsible for non-federal cost share
• Regular and overtime labor is eligible
• You must follow local, state and federal procurement requirements
  • A list of some of the state/local requirements is included in the Public Assistance Handbook, pages 3-4. The list is not intended to be all inclusive
  • Federal procurement rules can be found at 2 CFR 200.317-326
  • Types of allowable contracts: Lump sum, unit price, cost-plus-fixed fee and time and material
Time and material contracts should be used only if no other type of contract is suitable and must include a do-not-exceed clause. There is a heavy administrative burden with these contracts.

Types of unallowable contracts: Cost-plus-percentage-of-cost and percentage of construction cost (including markups).

Do not use debarred contractors. Check the following websites and be sure to document:

- Federal site: [www.sam.gov](http://www.sam.gov)
- State site: [https://www.sos.state.oh.us/records/debarred-contractors/](https://www.sos.state.oh.us/records/debarred-contractors/)
• Ensure that all contracts and supporting documentation include:
  • A cost or price analysis
  • A history of procurement
  • Full and open competition
  • Source documentation, particularly with time and material type contracts

• Davis Bacon is NOT required
• Allowable procurement methods per 2 CFR 200.317-326 and Appendix II:
  • Micro Purchase (up to $10,000)
  • Small purchase (under $250,000)
  • Sealed bids
  • Competitive proposals
  • Noncompetitive proposals (limited)
PROCUREMENT RESOURCES

- FEMA’s Public Assistance Program and Policy Guide
- 2 CFR 200:317
- Small Business Administration
  - https://www.sba.gov/
- FEMA’s Procurement Disaster Assistance Team
  - https://www.fema.gov/procurement-disaster-assistance-team
VARIABLES AFFECTING COST

• Quantity, type and location of debris
• Hauling distances and conditions
• Use of debris management sites
• Volume reduction and recycling
• Disposal fees
• Environmental monitoring
• Monitoring and project management
DOCUMENTATION ON ELIGIBILITY

- Debris quantities, types and exact locations (e.g. GPS coordinates)
- Immediate threat and legal responsibility
- Procurement process and procedures
- Contracts
- Force account resources (e.g. labor sheet, equipment logs, material invoices)
- Applicant monitoring information
- Mutual Aid Agreements
DOCUMENTATION ON ELIGIBILITY

- Donated resources
- Historic or local cost information
- Maintenance records
- Federal-aid roads
- Flood control works
- Public right-of-way
- Hazardous trees, limbs and stumps
TECHNOLOGY DURING A DISASTER DEBRIS MANAGEMENT EVENT