TAB D
DEBRIS DISPOSAL LOCATIONS AND DEBRIS MANAGEMENT SITES

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TAB D: DEBRIS DISPOSAL LOCATIONS

I. GENERAL.

A. Initially, following a debris generating event, County jurisdictions may remove debris directly to established EPD approved landfills, or to an established Collection Center (then transferred to the EPD approved landfill location).

B. However should the volume of debris be to the extent it overwhelms established debris management process, jurisdictions may opt to establish a Debris Management Site (DMS).

II. DMS LOCATION RECOMMENDATIONS.

A. In order to expedite the debris removal and subsequent disposal operations, jurisdictions need to identify potential DMS locations before a major natural disaster occurs.

B. Designated jurisdictional debris coordinators and additional staff as needed must work closely with other local, County, and State debris coordinators to develop and maintain current listings of potential DMS locations. Site selection should be based on the following criteria:

1. Ownership.

a. For small scale events, existing public and private disposal or recycling facilities in close proximity to the disaster area are ideal locations for DMS operations. Nearby landfill and recycling center capacities need to be evaluated on a regular basis for site feasibility.

b. In order to avoid costly land leases, public lands should be first in the order to be considered for additional DMS locations. Also, public facilities that will not require extensive repair costs, such as parks, vacant lots, or sports fields, should be considered. State-to-state or County-to-county agreements may present possible solutions for public land use. These agreements must be coordinated through GEMA.

c. When existing facilities and/or public lands are not viable options, private property may be considered for DMS operations. Jurisdictions should develop criteria for identifying potential private property locations for the DMS,

including executing private land leases as needed in order to avoid extensive damage claims upon site closeout. All agreements and leases need to be reviewed by appropriate jurisdictional legal departments.

C. Land Lease Agreements

1. Any land lease agreement should require the jurisdiction to conduct a baseline environmental evaluation of the site before the site is occupied and an environmental evaluation before returning the property back to the owner. Both documents become additions to the agreement.

2. The duration of a land lease agreement should be for a specific time frame with the ability to extend the lease if debris removal and processing activities are not completed. This specific time frame should include the time the jurisdiction will be present at the site, beginning with the baseline environmental study and ending once the property owner takes back legal ownership.

D. Size. The size of the site is dependent on the quantity of debris that is processed. The site should be large enough to safely accommodate processing of various debris materials, storing heavy equipment, and maneuvering trucks and large processing equipment. Historic disasters have shown that it takes 100 acres of land to process one million cubic yards of debris. USACE has found that approximately 60 percent of the area will be used for roads, buffers, burn pits, HHW disposal areas, etc.

E. Location.

1. Selecting the location for a DMS is largely dependent upon the activities planned for the site. Smoke from burning, around-the clock light and noise from equipment operation, dust, and traffic are generally tolerated early in a disaster recovery operation, but may have to be curtailed later. In order to avoid potential public relations issues, DMS operations should not be located near residential areas, schools, churches, hospitals, and/or other sensitive areas.

2. A DMS requires good ingress/egress to accommodate heavy truck traffic. Local law enforcement and GDOT should be consulted regarding potential traffic issues in the immediate area of a designated DMS location. Traffic issues may include but are not limited to:

a. DMS operations should not impede the flow of traffic along major transportation corridors or disrupt local business operations.

b. Considerations should be given to adjusting existing (operational) traffic signals and/or providing additional traffic control signage to accommodate projected truck traffic on critical haul routes.

c. The DMS selection criteria should consider access to major routes to allow for trucks to transport reduced/processed material to final disposition locations.

F. Environmental and Historic Preservation Concerns

1. When selecting public or private sites, pre-existing conditions should be considered because the sites will have to be restored upon site closeout. Proper management of the site allows the site to be closed with manageable efforts. For site closure reasons, jurisdictions should refrain from aggravating any existing environmental issues during debris management operations.

2. Therefore, a DMS should not be established in an environmentally or historically sensitive area such as wetlands, critical animal and plant habitats, sole source aquifers, freshwater well fields, historic districts, or archeological sites. This applies specifically to Superfund sites and/or areas within a 100-year floodplain. DMS selection criteria should also take into consideration any disproportionately high or adverse impacts on minority or low-income populations, in accordance with EO 12898. Adverse impacts should be avoided or minimized where possible.

3. If an environmental or historic preservation concern is found during the baseline data collection process (described below), the potential site should be ranked lower than others. However, if use of such areas is unavoidable, State and local environmental and historic preservation requirements must be followed. Compliance with environmental and historic preservation requirements is still required.

4. By conducting a baseline data collection study, jurisdictions are able to further establish the feasibility of potential sites, document the existing site, and vet potential environmental issues. Data collection needs to be completed prior to establishing the site and continued throughout the operations. The final evaluation should include the same documentation in order to avoid disagreements

on the condition of the site prior to the operations and the condition to which it was returned.

III. DMS BASELINE DATA COLLECTION

A. DMS baseline data collection is essential to documenting the condition of the land before it is used as a DMS. Private and public land used as a DMS needs to be returned to its original condition following the end of all debris operations. As soon as a potential site is selected, jurisdictions should work closely with local, County, and State officials to develop baseline data criteria.

B. The following actions are suggested to document the baseline data on all sites:

1. Videotape and/or Photograph the Site. Thoroughly videotape and/or photograph (ground or aerial) each site before beginning any activities. Periodically update video and photographic documentation to track site evolution.

2. Document Physical Features. Note existing structures, fences, culverts, irrigation systems, and landscaping that can help evaluate possible damage claims made later.

3. Investigation of Historic Significance. Research the past use and ownership of the property to document any issues regarding the existence of historic structures or archeological sites.

4. Sample Soil and Water. Soil and groundwater samples should be collected prior to use of the site. Areas planned for HHW, ash, and fuel processing should routinely be sampled prior to site setup.

IV. ENVIRONMENTAL MONITORING.

A. During the recovery process, as well as after the material has been removed from each of the debris sites, environmental monitoring of all DMS locations will be needed. This is to ensure that no long-term environmental contamination occurs or is left on the site.

B. Monitoring will be done on three different media:

1. Ash. The monitoring of the ash will consist of chemical testing to determine the suitability of the material for land filing;

2. Soils. Monitoring of the soils will be by portable methods to determine if any of the soils are contaminated by volatile hydrocarbons; and

3. Groundwater. The monitoring of the groundwater will be done to determine the probable effects of rainfall leaching through either the ash areas or the stockpile areas. Periodic water samples from any existing wells on the site or adjacent to the area will be done.

   NOTE: Air quality will also be monitored for those sites where burning occurs.

V. PERMITTING.

A. County jurisdictions are responsible for obtaining all permits and/or waivers required by their respective debris management plans. In the event of a major disaster such as a hurricane or tornado(s), some jurisdictional permit requirements may be suspended, temporarily. Should this not be the case, permits for Collection Centers and/or DMS, (including land disturbance permitting for site prep), highway entrance and other permits may be needed.

B. The Georgia Environmental Protection Division, Georgia Department of Natural Resources (GDNR) Environmental Protection Division (EPD), Georgia Department of Transportation (GDOT), Georgia Forestry Commission, as well as other State and federal agencies as required, should be consulted to determine permits that may be required, processes for obtaining permits, and inspections timetables. See Tab C, EPD Guidance on Handling Storm-Generated Debris and Questions and Answers from the FEMA-325 Debris Management Guide.

   Note: Regardless whether permits themselves are required, jurisdictions will comply with all State and local regulations for both Collection Center and DMS preparations and operation; including debris incineration requirements (burning). Best management practices will be put in place at upon activation of any Collection Center and/or DMS and maintained throughout the use of each site. See Exhibit 1, Chatham Zoning Regulation References and Potential Permit Requirements.

VI. ESTABLISHMENT AND OPERATIONS

A. Site Design. The information gathered during the baseline data collection becomes important to the design of the site. Additional concerns, such as site operations and closure criteria, need to be taken into consideration when the site is designed. Many of these issues will be addressed by the appropriate jurisdiction during pre-event planning, but will be implemented after the debris-generating event occurs.

B. Site Preparation. The topography and soil/substrate conditions should be evaluated to determine the best site layout. When planning site preparation, closure and restoration requirements should always be

considered. For example, if the local soils are very thin, the topsoil can be scraped to bedrock and stockpiled in perimeter berms. Upon site closeout, the uncontaminated soil can be re-spread to preserve the integrity of the tillable soils. Operations that modify the landscape, such as substrate compaction and over-excavation of soils when loading debris for final disposal, adversely affect landscape restoration.

C. Site Layout. The efficiency and overall success of the DMS operations is determined by how the site is designed. Debris should be constantly flowing to incinerators and grinders, or recycled with the residue and mixed construction and demolition materials going to a landfill. Significant accumulation of debris should not be allowed to occur at temporary storage sites, due to environmental and safety concerns, such as the risk of fire. Moreover, permits for such sites usually impose maximum capacity restrictions. Additional debris management sites may be required if the actual debris quantities flowing into the site are greater than the site storage and processing capacity. See Tab E, Example DMS Layout.

D. Operational Boundaries. Operational boundaries are established within the DMS to clearly define different use areas. Techniques used to establish these operational boundaries may include using earthen berms, temporary barriers, or any other physical restriction. Subdividing the DMS into functional areas aids traffic circulation and helps keep debris amassing at a minimum. As operations proceed, operational boundaries may be moved to accommodate either growing demand for space or a reduction in preparation for closure. Common Operational Boundaries established at DMS locations include but are not limited to:

1. Reduction, Recycling, Tipping, and Loading. These areas need ample room for large equipment operations. The design should take into consideration the possibility of multiple pieces of equipment being in the same activity area at one time. Depending on the scale of operations, each debris stream may have its own tipping area and should be designed accordingly.

2. General Public Drop-off. General public drop-off areas for recycling, reduction, and construction and demolition debris may be included within a DMS. These public use areas should be carefully designed for passenger vehicle traffic and public safety.

3. Household Hazardous Waste (HHW). HHW storage should be close to the public drop-off center yet restricted so that qualified personnel may process the waste appropriately. Jurisdictions may consider constructing an impermeable lining and earthen berms in order to contain spills and prevent surface water runoff from leaving the area.

4. Monitoring Towers. Monitoring towers should be located at ingress and egress points. Monitoring towers should be constructed of durable structural materials. The structures should be designed to withstand active and static loads. A stepladder is not an acceptable monitoring tower.

5. Equipment and Fuel. Equipment and fuel should have a designated storage area and signs posted appropriately. The fuel storage areas need to be designed to contain spills. Water should be readily available at all times. Water storage areas should be strategically positioned throughout the site and identified appropriately.

    a. Traffic Patterns. The traffic circulation needs to be well defined throughout the entire site. Although traffic signs and barricades aid in directing traffic, site management may consider flag personnel to help direct traffic. Drivers unfamiliar with the new environments, routes, and rules will need assistance in order to safely navigate through the DMS. See Tab E, Example DMS Layout.

    NOTE: Entry and Exit Points. Optimally, the DMS traffic pattern should allow trucks to enter and exit through different access points, as long as each is monitored. Haulers are typically paid by the volume of a load. The load is evaluated when entering the site as a percentage of the full capacity of the truck. Stationing monitors at ingress and egress points ensures every truck releases the entire load prior to leaving the site. This avoids debris left in a truck from a previous load from being counted again in a subsequent load. Empty trucks that enter the site to remove the processed (reduced) debris should enter and exit only through a designated access point, if practical, other than that of all other traffic. This reduces the site management and debris monitor confusion regarding debris being deposited or leaving the site.

b. Site Management. To meet overall debris management strategy goals and to ensure that the site operates efficiently, each jurisdiction will determine the level of management and staffing required at their designated DMS location(s). Jurisdictions may use in-house personnel or contracted services to manage the site. In either situation, a site manager, debris monitors, and safety personnel are needed to ensure safe and efficient operations. Dependent on site size, additional personnel may be added.

c. DMS Closeout. Jurisdictions are responsible for ensuring appropriate site closure procedures are establishment and implemented to include necessary planning, permitting and associated requirements in coordination with appropriate local, State, and Federal agencies. Basic DMS close-out procedures will include:

1) Remediation and Restoration. All debris, processing equipment, storage tanks, if any, and structures should be removed. Top soil, if removed and stockpiled, should be reapplied. Quality assurance inspectors should monitor all closeout and disposal activities to ensure that contractors, if used, complied with contract specifications. Additional measures may be necessary to meet local, State and Federal environmental requirements because of the nature of the staging and reduction operation.

2) Audit and Assessment. At close out final testing of soil, water, and air quality should be taken and compared to original conditions. All ash should be removed and remediation actions taken as needed. If warranted, additional testing may be done at other locations adjacent to the site. Final site evaluation is an extension of the environmental monitoring program.

3) Termination of Leases. If sites are leased, a final release from future damages should be obtained when the site is returned to the owner.

EXHIBIT 1
CHATHAM COUNTY ZONING REGULATIONS AND POTENTIAL PERMIT REQUIREMENTS

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EXHIBIT 1: CHATHAM COUNTY ZONING REGULATIONS AND POTENTIAL PERMIT REQUIREMENTS

I. Chatham County Zoning Regulation.

A. **Section 4-5.1** Zoning Districts, Provisions Regarding Use in C-Districts and R-Districts **Use 14.** Public Uses.

Buildings, structures, and uses of land by a government agency or government unit including public schools, provided that ***application for a public use shall be referred to and approved by the Commissioners of Chatham County.***

B. **Section 4-5.2** Provisions Regarding Use in Districts A-T, B,, B-1, B-2, B-C, B-N, B-N-1, I-H, I-L, PILT, I-P, M, P-S-C, RB-1, T-B, W-I, PD-M, P-N-T, and PUD-C **Use 14.** Public Uses

a. *Buildings, structures, and uses of land by a Government agency or Government unit including public schools, provided that* ***application for such uses shall be referred to and approved by the Commissioners of Chatham County***

b. *Including, but not limited to, schools, fire and police stations, parks and recreation facilities.*

II. Potential Permit Requirements.

A. Land Use
B. Open Burning
C. Solid Waste
D. Recycling
E. Groundwater Recharge Area Assessment
F. Wetlands Assessment
G. HAZMAT

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EXHIBIT 2
EXAMPLE DEBRIS MANAGEMENT SITE LAYOUT

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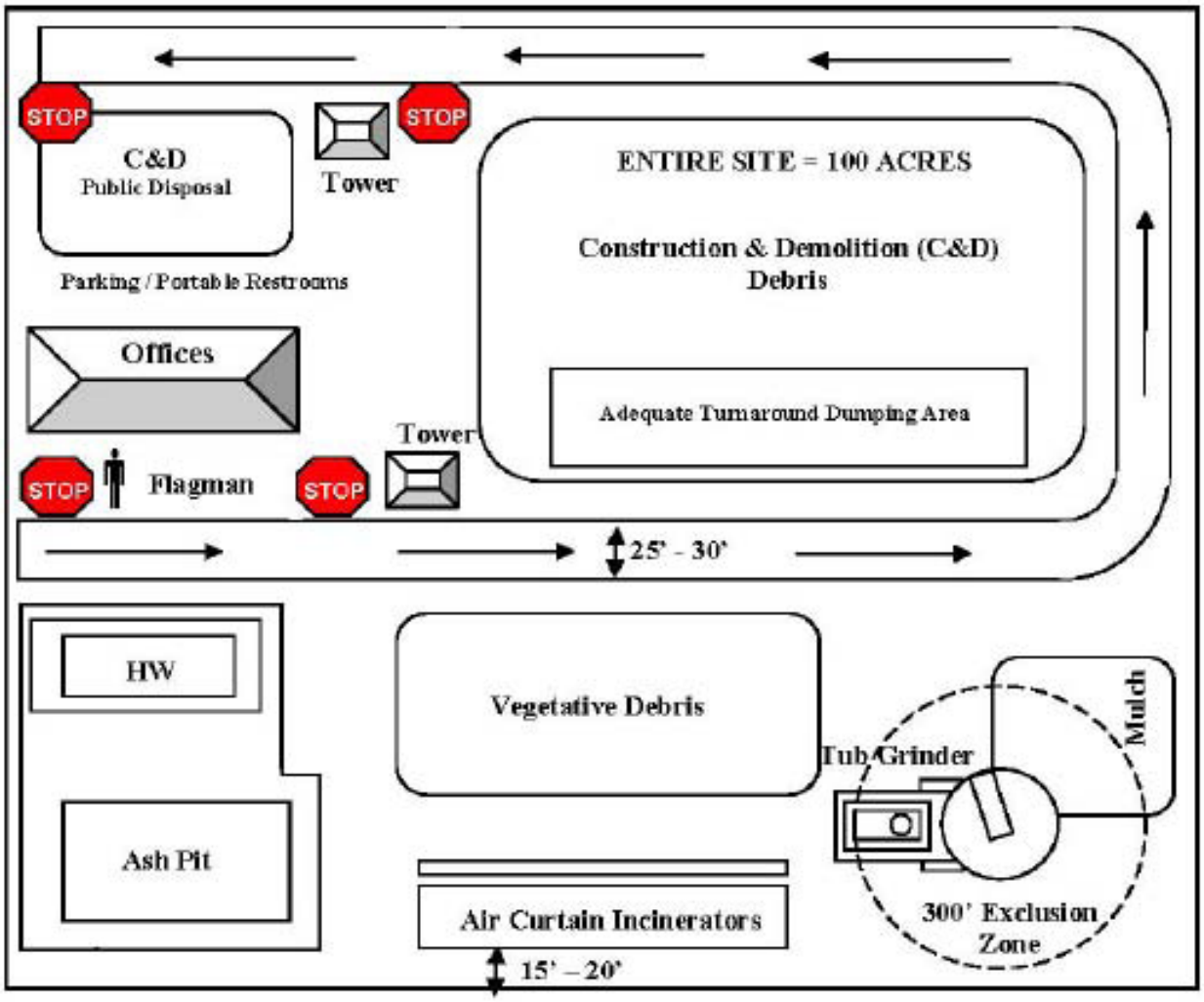
EXHIBIT 2: EXAMPLE DEBRIS MANAGEMENT SITE LAYOUT



Source: FEMA, 2007

Example DMS Layout

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EXHIBIT 3
DEBRIS MANAGEMENT SITES

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EXHIBIT 3: DEBRIS MANAGEMENT SITES

DEBRIS STORAGE LOCATION	X COORDINATE	Y COORDINATE	ACRES	VOLUME (cubic yards)
Chatham County				
Chevis Rd Site	-81.25048521000	31.97597733000	19.985	322,418.0
Thomas Ave Site	-81.09157543000	31.98485714000	25.369	409,278.1
Wilmington Island Landfill	-80.97055619000	32.01953619000	32.721	527,887.9
L. Scott Stell Park	-81.28431561000	32.04204154000	8.986	144,971.1
Island Expy Boat Ramp	-81.02310979	32.05950414	1.04	16778.32
Chatham County Recreation	-81.04357035000	32.06376094000	13.300	214,568.9
5103 Ogeechee Rd	-81.19062024000	32.04017056000	17.452	281,553.1
City of Savannah				
Crusader Neighborhood Center	-81.14928594000	31.94584936000	4.014	64,757.9
Bacon Park ball field	-81.07976797000	32.00959685000	37.304	601,825.4
Bacon Park golf course	-81.08210282000	32.00695160000	80.584	1,300,061.7
Army National Guard	-81.09656442000	32.00823977000	27.296	440,366.4
Daffin Park	-81.08156119000	32.04535309000	74.806	1,206,845.2
Sallie Mood Dr Health Center	-81.09279989000	32.00050435000	127.479	2,056,618.7
Louisiana Ave	-81.05131170000	32.05083054000	11.193	180,576.7
Old City Landfill	-81.16927098000	32.05887667000	10.985	177,221.0
Bloomingdale				
Bloomingdale Recreation Fields	-81.30891621000	32.11049253000	16.326	263,387.4
Wildcat Dam Rd, Bloomingdale	-81.27564938000	32.12309270000	11.385	183,674.2
Dillon Landfill	-81.31631775000	32.09143094000	9.245	149,149.6
Pooler				
Isaac G Laroche Dr	-81.26432869000	32.13344467000	43.729	705,480.0
I 16 GA Ports property	-81.22059551000	32.07870732000	387.094	6,244,987.5
Garden City				
Garden City Parks & Recreation	-81.16016370000	32.10550879000	8.685	140,115.1
Bazemore Park	-81.16902880000	32.11703635000	49.405	797,050.9
1522 Old Dean Forest Rd	-81.19340866000	32.07401543000	10.940	176,495.0
Telfair Pl	-81.16341669000	32.08159484000	13.909	224,393.9
307 Chatham Pkwy	-81.15401700000	32.08270579000	61.977	999,874.9

DEBRIS STORAGE LOCATION	X COORDINATE	Y COORDINATE	ACRES	VOLUME (cubic yards)
Port Wentworth				
Port Wentworth Police & Fire	-81.16428436000	32.14610522000	9.910	159,878.0
Thunderbolt				
3rd St, Thunderbolt	-81.05258078000	32.03292398000	1.010	16,294.3
Tybee Island				
Tybee Parking Lot	-80.85136527000	31.98779551000	0.154	2,484.5
Tybee Parking Lot	-80.85136527000	31.98779551000	0.114	1,839.2
Tybee Parking Lot	-80.85136527000	31.98779551000	0.280	4,517.2
Tybee Parking Lot	-80.85136527000	31.98779551000	0.988	15,939.4
Jaycee Park	-80.84514421000	32.01785162000	8.168	131,774.3
Jones St at Park St	-80.84448524000	32.00843802000	1.773	28,603.8
Tybee Light House	-80.84608347000	32.02229278000	1.540	24,844.8

Site Capacity Assumptions - Per USACE Guidance: 16,133 cubic yards per acre, stacked 10 feet high, 0.86 additional acres needed for roadways, buffers and offsets for each actual stockpile acre.