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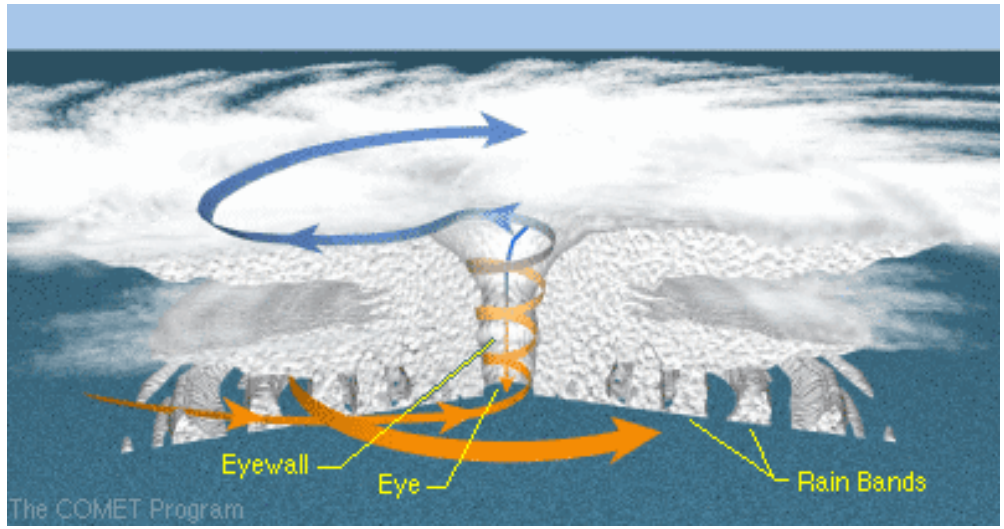
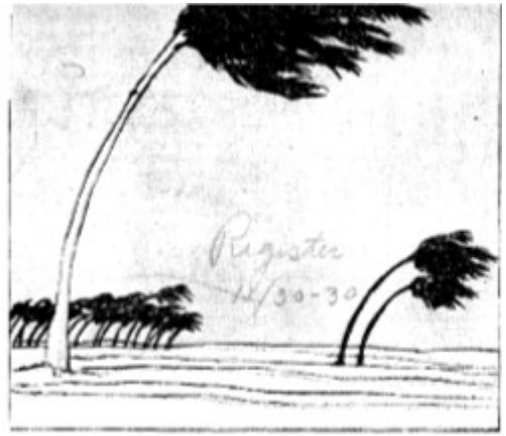
What is a hurricane?



A hurricane is a large powerful storm with very high winds.

Hurricanes originate over the tropical and subtropical North Atlantic and North Pacific oceans, where there is high humidity and light wind. These conditions prevail mostly in the summer and early fall.

The Saffir-Simpson Scale



Category	Wind Speed	Barometric Pressure	Storm Surge	Damage Potential
1 (weak)	75 - 95 mph 65 - 82 kts 33 - 42 m/s	> 28.94 in. Hg > 980.0 mb > 97.7 kPa	4.0 - 5.0 ft. 1.2 - 1.5 m	minimal damage to vegetation
2 (moderate)	96 - 110 mph 83 - 95 kts 43 - 49 m/s	28.50 - 28.93 in. Hg 965.1 - 979.7 mb 96.2 - 97.7 kPa	6.0 - 8.0 ft. 1.8 - 2.4 m	moderate damage to houses
3 (strong)	111 - 130 mph 96 - 113 kts 50 - 58 m/s	27.91 - 28.49 in. Hg 945.1 - 964.8 mb 96.2 - 97.7 kPa	9.0 - 12.0 ft. 2.7 - 3.7 m	extensive damage to small buildings
4 (very strong)	131 - 155 mph 114 - 135 kts 59 - 69 m/s	27.17 - 27.90 in. Hg 920.1 - 944.8 mb 91.7 - 94.2 kPa	13.0 - 18.0 ft. 3.9 - 5.5 m	extreme structural damage
5 (devastating)	> 155 mph > 135 kts > 70 m/s	< 27.17 in Hg < 920.1 mb < 91.7 kPa	> 18.0 ft > 5.5 m	catastrophic building failures possible

typical hurricane damage

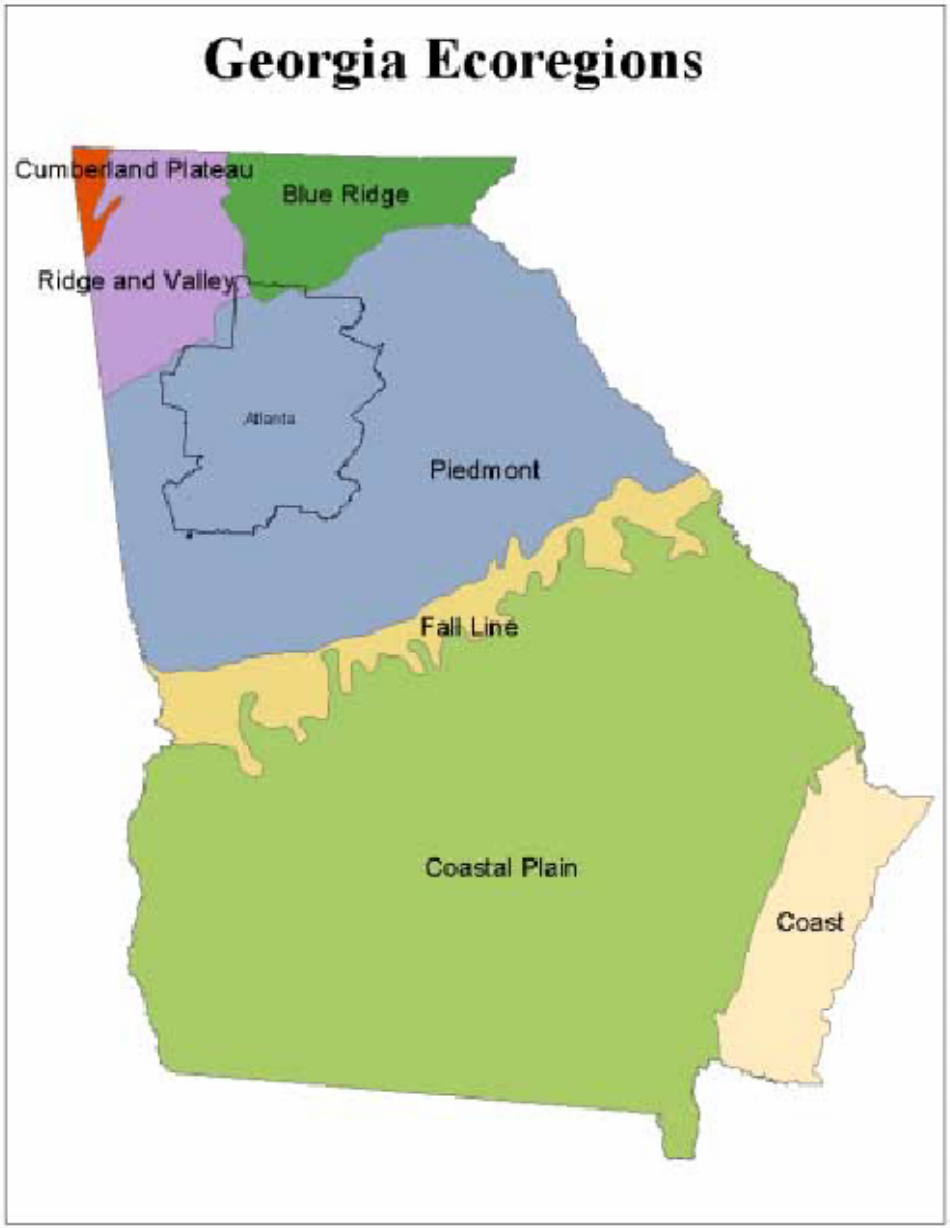
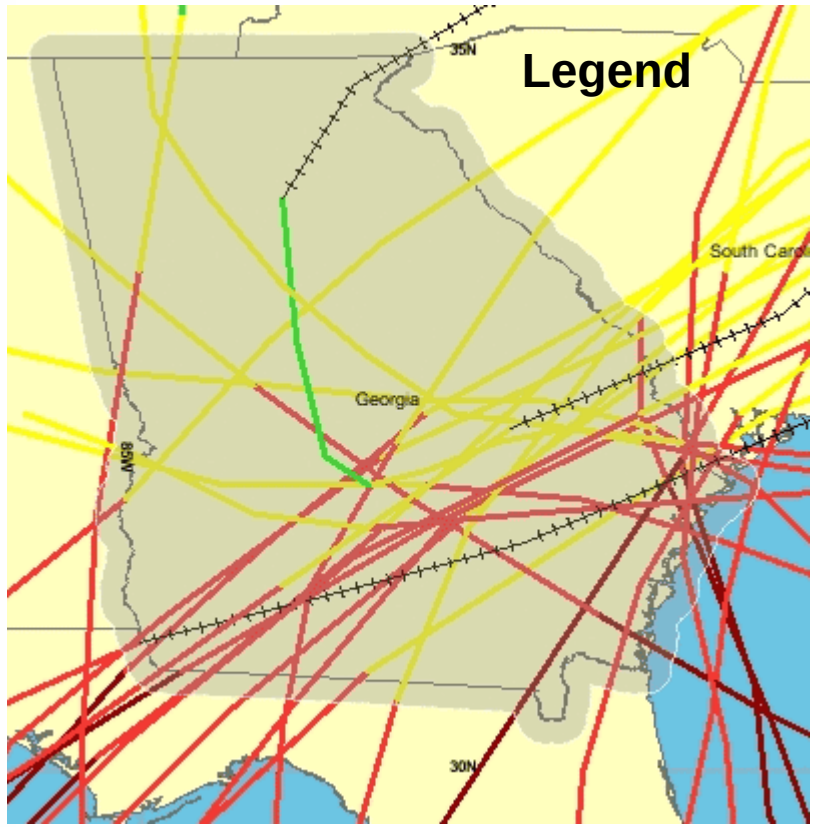


Figure 1. Ecoregion map of Georgia used for classification and accuracy assessment work. Based upon Keyes et al.

Areas of Georgia most likely to be directly impacted by hurricanes are the coast and coastal plain regions.



category 1 to 5 hurricanes
1851 - 2005

After the storm…

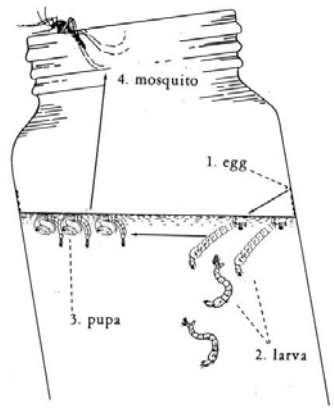






'Mosquitoes are killing us'

With so much stagnant water and the hot weather, mosquitoes are thriving in flooded areas.



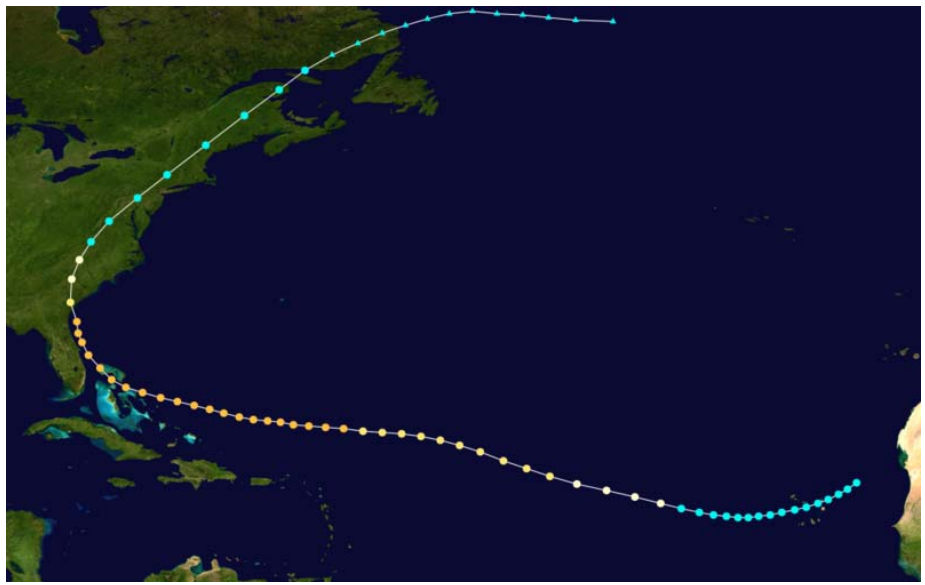
Even without disease, mosquito control is still an important aspect of recovery. While the risk for WNV appears to be low in this case, massive numbers of biting insects can impede rebuilding efforts.

Researchers recorded landing rates from 50 to 200 mosquitoes per minute landing on people and trying to bite.

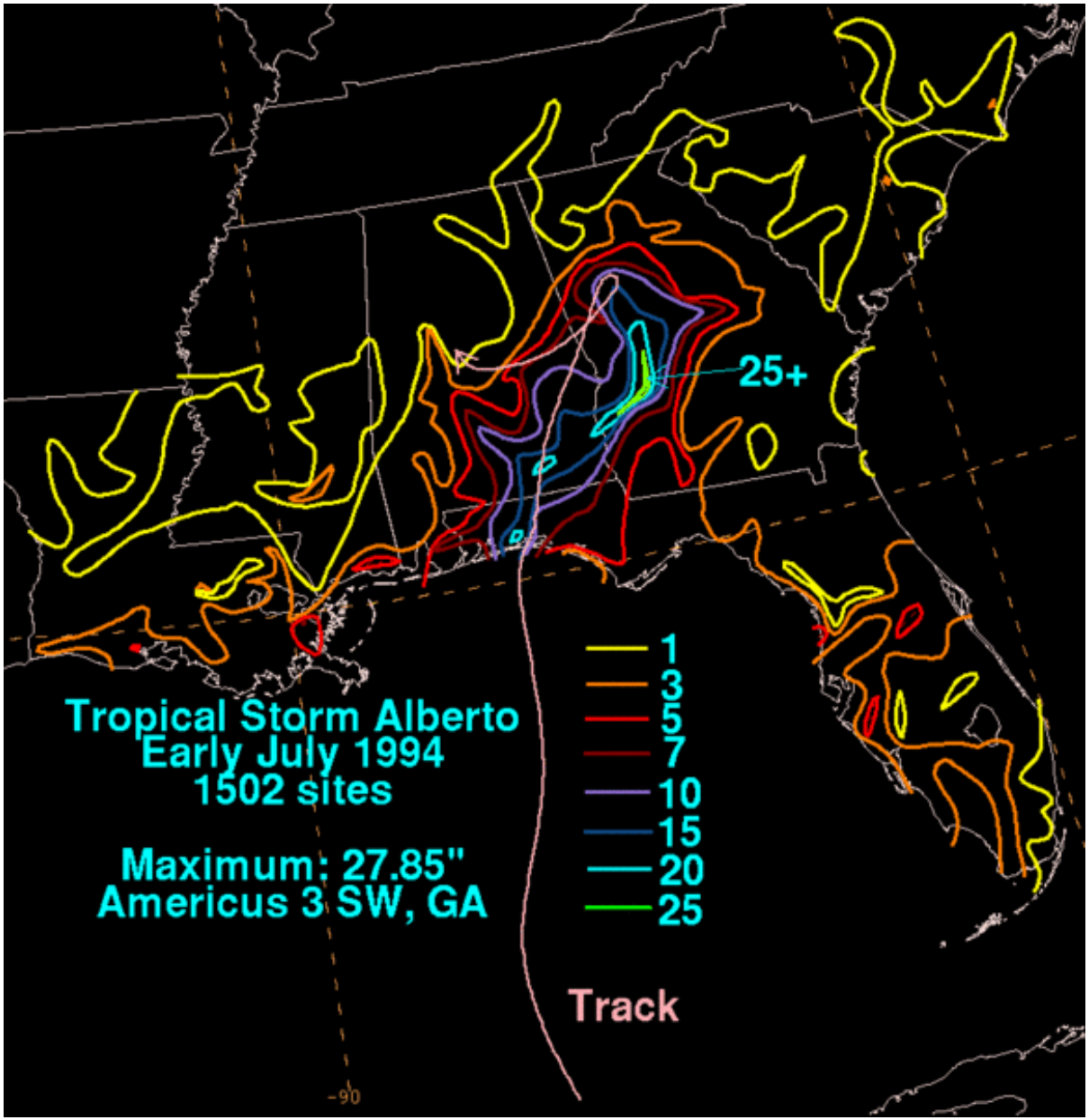
"Mosquitoes of that density can have a profound impact on your ability to perform recovery operations or just be there... people restringing electrical lines, or clearing roads, or a home owner trying to carve up a tree that's fallen on the house can't readily avoid the mosquitoes. The normal levels of mosquito control that one would expect as a service that would make your life more tolerable, suddenly becomes essential," Dr. Nasci said.

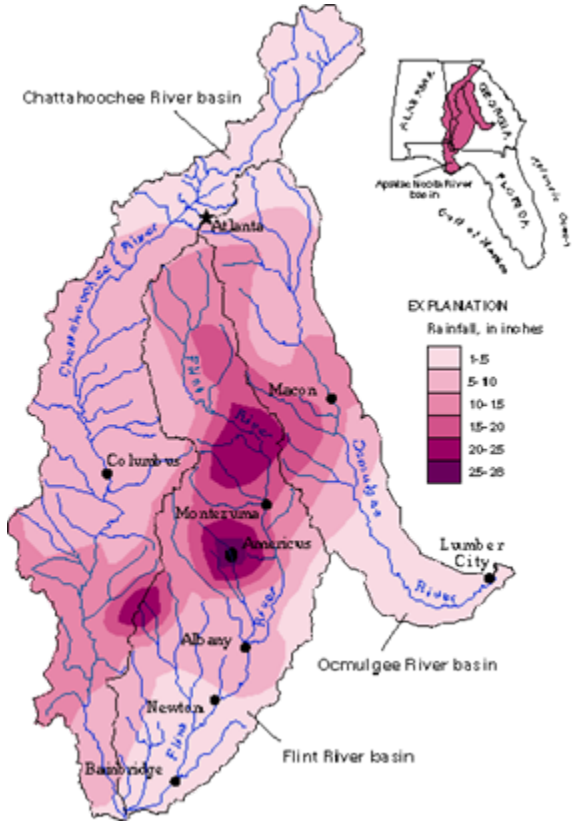
Some Georgia Hurricanes

1893 Sea Islands Hurricane
Georgia-South Carolina Hurricane (1940)
Hurricane Donna (1960)
Hurricane Hilda (1964)
Hurricane Agnes (1972)
Tropical Storm Isabel (1985)
Hurricane Hugo (1989)
Hurricane Klaus (1990)
Tropical Storm Alberto (1994)
Tropical Storm Jerry (1995)
Hurricane Opal (1995)



"Near misses" may also cause heavy rains, flooding, and increases in mosquito numbers.





Tropical Storm Alberto - 1994

Lessons from the Georgia Floods

Journal article by Joseph A. Brennan, J. Jarrett Clinton, Beaumont R. Hagebak, J. Gary Sirmons; Public Health Reports, Vol. 110, 1995

Responses to requests for Federal support should be consistent with approved public health practices.

In the wake of the July flooding, affected communities urgently sought Federal support for mosquito control activities. **At the request of the State of Georgia, PHS provided vector control experts to evaluate the mosquito population.**

A decision was made to resist widespread spraying, a decision increasingly difficult to enforce as nuisance mosquito problems increased.

This experience demonstrates the need for careful evaluation of the effect of specific disaster response activities on the community as a whole.

Early planning is required.

The surveillance for and control of mosquito disease vectors and nuisance pests is considered an essential part of disaster recovery efforts and can be eligible for **Federal Emergency Management Assistance (FEMA).**

Getting CDC assistance is essential in order to receive FEMA funds for vector control.

Once CDC personnel arrive, they must assess the situation to determine if a request for FEMA funds is justified. To qualify for Federal (FEMA) assistance for emergency vector surveillance and control, **at least one** of the following conditions must be certified by the CDC as having been met (CDC 1993).

- Vector transmission of human or animal disease is considered imminent or in progress.
- Large populations of nuisance mosquitoes substantially hamper reconstruction efforts.
- Normal functioning of communities in the disaster area is substantially disrupted by mosquitoes.
- Large populations of nuisance mosquitoes place additional stress on the human population.

Collections help assess the nuisance level of the mosquito population.

Normally, a **3-5 mosquito per minute landing rate** is considered a problem, and rates **in excess of 20 per minute** are considered above the normal tolerance level for humans, pets and livestock.

After wet hurricanes, landing rates of **100 to 200 per minute** are not uncommon.

GEORGIA EMERGENCY MOSQUITO CONTROL RESPONSE PLAN

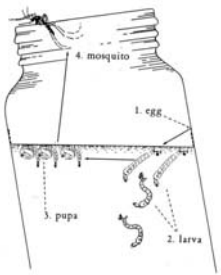
Objective: To determine the scope of the public health-related mosquito problem:

- vector species
- nuisance problem

Need to collect mosquito population data to send to GEMA, FEMA, CDC, budget office, GDPH, etc…

Priorities:

1. get to site
2. contact locals
3. contact control agencies
4. collect data
5. pool mosquitoes / send for testing
6. provide data to CDC
7. control

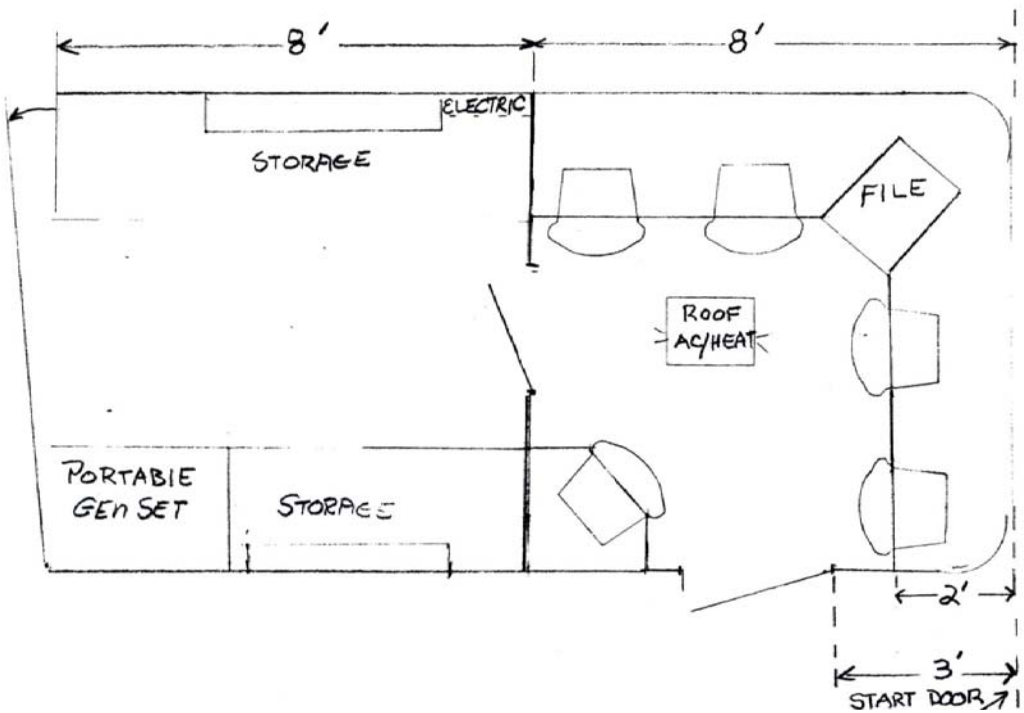


From Idea to Reality - A (Mostly) Ongoing Process

STEP 1: A Place for Surveillance Equipment - or 'We need a trailer!'

and a way to get it to the site

Ask, and (amazingly enough), you receive.



STEP 2: Filling the Void - Equipment Needs During an Emergency

(Did we get it all?)

item	# available	description
Meiji microscope	3	microscope with both 10x and 15x oculars for identifying mosquitoes
fiber optic lights	3	
CDC light traps	24	traps for capturing host-seeking mosquitoes
CDC gravid traps	12	traps for capturing gravid mosquitoes
fine tip forceps	12	
petri dishes	5	bags of 20
cryolizers	2	used to keep maintain cold chain for virus isolation
larvae collection kits	2	used for larval surveillance
backpack aspirator	1	used to collect adult mosquitoes resting on surfaces
thermosafe containers	2	used to hold dry ice for the light traps
backpack sprayer	2	used to apply larvicide or adulticide to small areas
6-volt batteries	72	
battery charger	6	
mosquito keys	2	used to ID mosquitoes

Step 3: Getting From Point A to Point B - What Would We Do Without Protocols

EMERGENCY MOSQUITO SURVEILLANCE TRAILER USE PROTOCOLS

(and who should write them)

better question - Who should approve them?

New word for the day - **Prime Mover**

Step 4: (If we ever get past step 3) Mosquito Control - Sort Of The Whole Point

WHO

WHAT

WHEN

WHERE

HOW

MONEY

contingency contract????

permissions

exceptions

local control agency???

flight plans

chemicals

vendors, vendors everywhere

spray block maps

Who needs to be involved in these sort of decisions?
Who are the stakeholders?
WHO MAKES THE ACTUAL DECISIONS? GEMA, GDPH, ????

Does this plan have a future? Will the trailer ever roll?