Pinellas County Tornado
and
Downburst Wind Event

March 31, 2011

STORM DAMAGE ASSESSMENT

A study of the installation of manufactured/mobile homes

and the effects of storm damage.

prepared by the

Manufactured Home Section

Division of Motorist Services

Department of Highway Safety and Motor Vehicles

MOBILE\MANUFACTURED HOME DAMAGE ASSESSMENTS FROM

The Pinellas County Tornado and Downburst Wind Event

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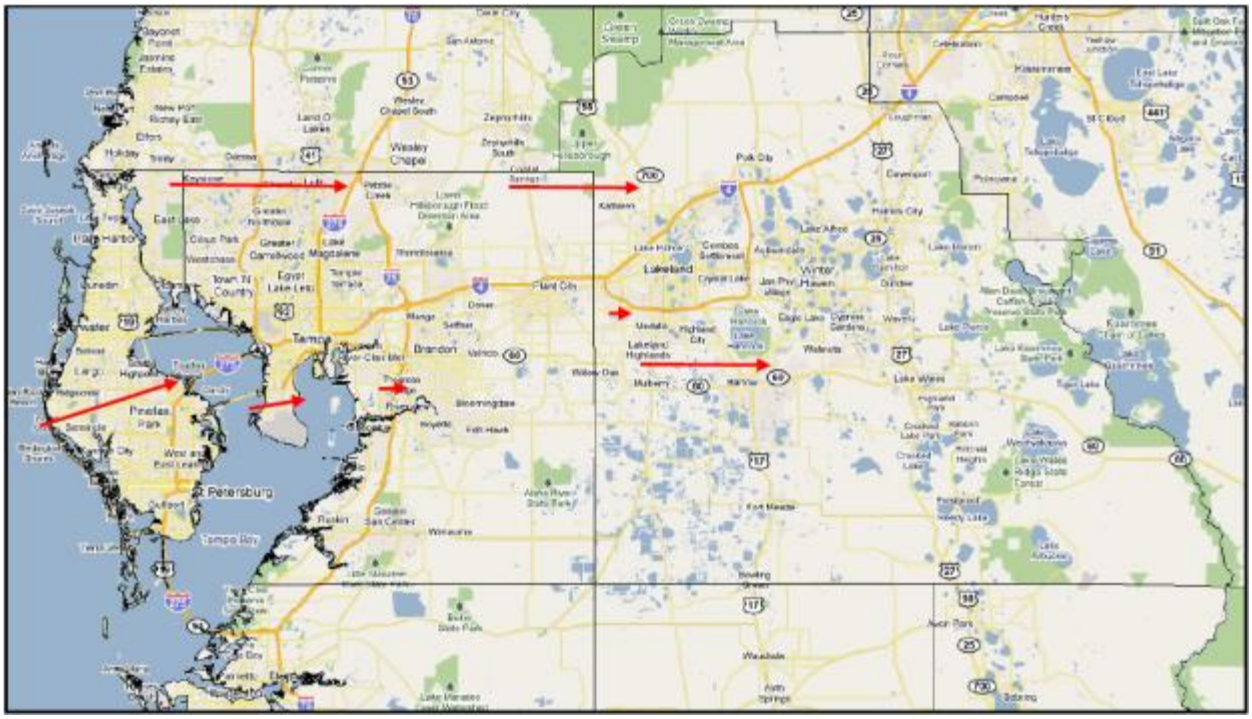
NOTE

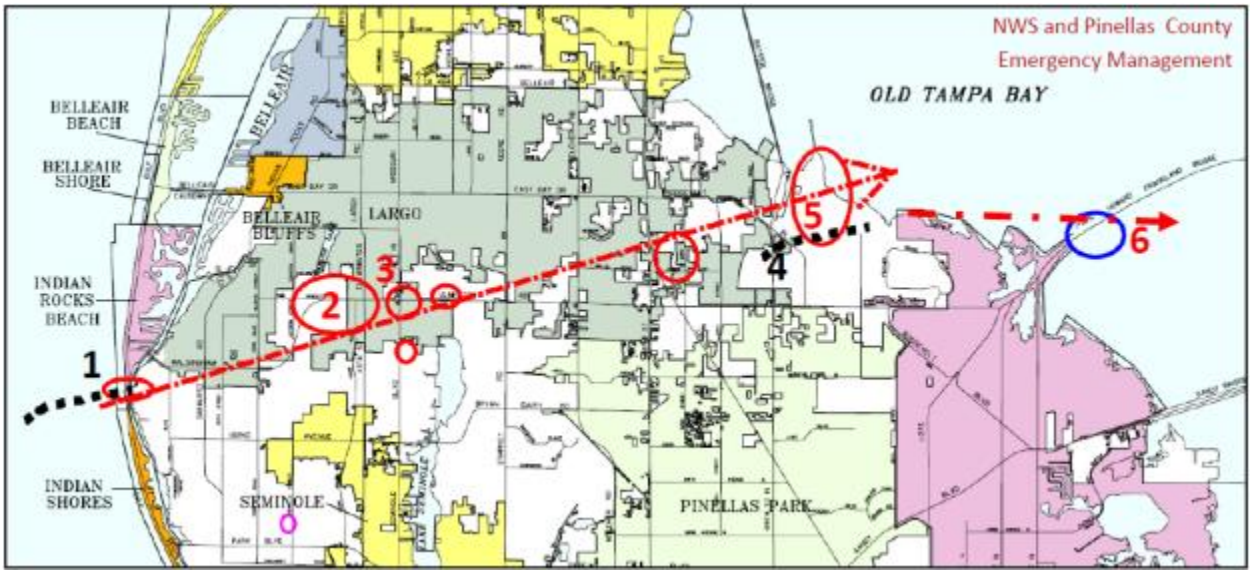
The purpose of this report is strictly for the use of the Florida Department of Highway Safety and Motor Vehicles to determine the effectiveness of current department administrative rules governing the installation of mobile/manufactured homes.

All statistics reported here are from a sample of mobile home inspected. In addition, due to debris, entry into some of the mobile homes observed was not possible to make more specific determinations. Consequently, the statistics reported here are estimates. There may be differences between what is reported here and determinations by local building departments, insurance companies or other government agencies.

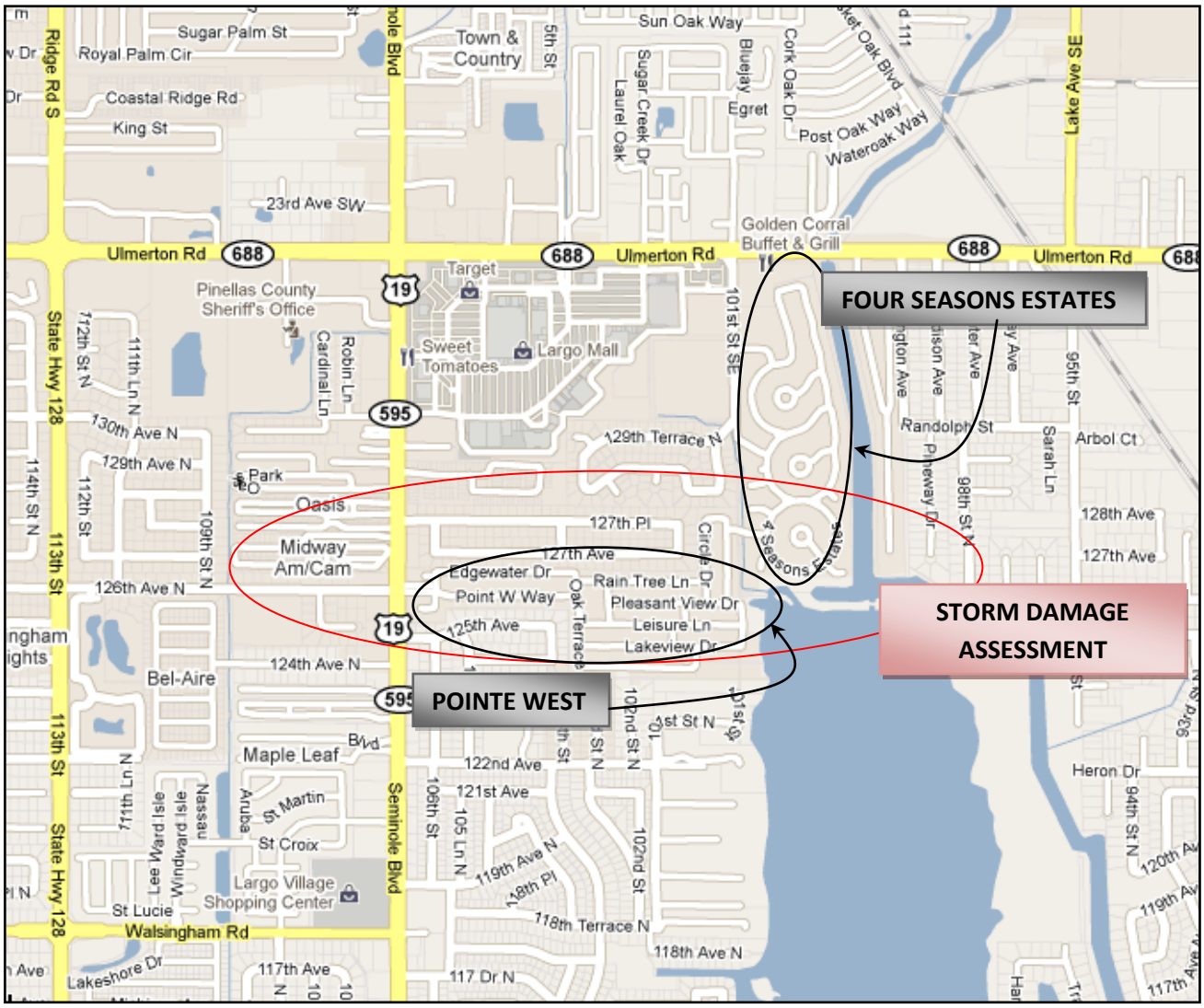
When reporting the number of homes "destroyed or non-repairable" the totals represent homes with severe roof damage to the point of the roof being blown from the home, one or more exterior walls being separated from the home or water completely penetrating the unit.



A map from the National Weather Service website showing areas where significant wind damage occurred.



A map from the National Weather Service website showing damaged areas in Pinellas County. Area two is where seven mobile home parks were hit with two parks, Four Season Estates and Pointe West, sustained the majority of damage.



This is the area of study for this report which encompasses the Pointe West MHP and the south portion of the Four Seasons Estates MHP.

DEPARTMENT OF HIGHWAY SAFETY AND MOTOR VEHICLES

DIVISION OF MOTORIST SERVICES

MOBILE HOME SECTION

ASSESSMENT

On March 31, 2011 a strong storm system moved through central Florida. In the Tampa Bay area, nine tornados were reported to the National Weather Service (NWS) and four were confirmed as having touched down. The NWS also classified strong in line winds and called them downburst wind events with the wind speeds reaching as much as ninety miles per hour. Bureau personnel investigated mobile/manufactured homes in the Largo area of Pinellas County where the vast majority of mobile/manufactured homes were damaged. According to the NWS the mobile home damage was a result of wind gusts and not tornados.

The Largo Building Department reported 142 mobile homes were damaged; 28 being uninhabitable with 12 of those being destroyed. Only three homes moved on their foundations. No injuries or deaths occurred as a result of the storm. Homes with siding damage, broken windows, missing awnings, and collapsed carports are considered damaged by the building department. The uninhabitable homes had the actual envelope of the home compromised coupled with some rain water intrusion. The destroyed homes had the carports blown away which are attached to the home's metal roofs. Consequently, those roofs were peeled off the home leaving severe damage to the rest of the home from rain and wind.

The majority of damage occurred in two mobile home communities; Four Seasons Estates and Pointe West (see map). More than 90 percent of homes in these parks are pre-HUD and all damaged homes investigated by the Bureau were pre-HUD homes. Four Seasons Estates sustained the greatest damage and this community received benefit of the retrofitting program. All residents who signed up for this benefit received anchors, stabilizer plates and longitudinal stabilizing devices in January of 2003. The only cost to the residents was the removal of their brick skirting. Only three homes moved on their foundations and these were located in Four Seasons; two were retrofitted and one was not because the homeowner said she could not afford the fifty dollar cost of brick skirting removal.

The damage from these winds serves as a reiteration of previous reports. Anytime a carport or an addition is attached to the roof line of a mobile/manufactured home (usually older homes with metal roofs), it will more than likely sustain more severe damage during storms. Carports and attachments are usually the first structures to be blown from the homes. Since they are attached to the home's roof line, the metal roof is then peeled away from the home exposing the insides of the home. Our findings seem to indicate a brief touchdown of a low level tornado, possibly an EF-0 or EF-1.

Carport blown away, taking the metal roof off also. The home did not move on its foundation.

Same home, also missing the front addition which was added after the home was installed.

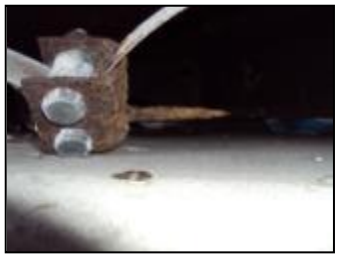
The home next door shows another example of a carport pulling the metal roof off the home.

Once the metal roof of the home has pulled away, rain and wind usually make the home non-repairable even though the home stayed on its foundation.

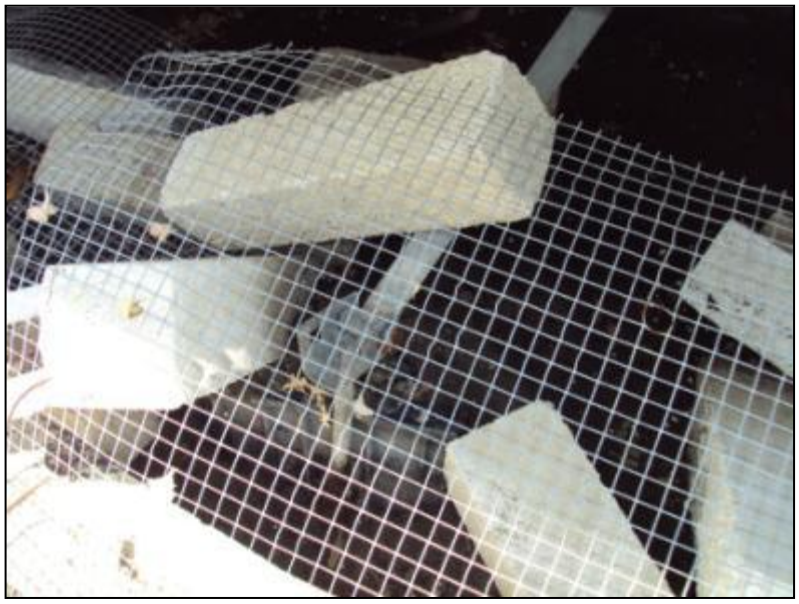
The Four Seasons Estates Community was retrofitted in January 2007. These three homes were the only three homes that moved on their foundations giving the appearance of a brief tornado touchdown. Home number one was retrofitted and moved 12 inches on its foundation. Home number three was retrofitted and moved 16 inches on its foundation. Home number two was not retrofitted and moved 25 feet on its foundation.

This is home number 2 and was not retrofitted. The white rectangle shows where the front of the home was before th

Rusted anchors.



Home number one moved 12 inches on its foundation. Home number three moved 16 inches on its foundation.



Extra components installed during the retrofitting process. Galvanized anchors, stabilizer plates, strapping and frame clamps aided in keeping the home from moving more on its foundation.

Longitudinal stabilizing devices added during the retrofitting process.

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Old style carports will continue to be a problem during storms. The 1 ½ inch aluminum columns will not keep the carport in place during high winds.

Some homeowners are modifying their column supports on their driveways. This technique gives them extra room for the car, but does nothing for the structural integrity of the carport. Both uplift wind forces and downburst from storms will collapse these types of carport.