

PRELIMINARY HURRICANE IKE DAMAGE ASSESSMENT VICINITY MILE MARKER 74 (MM – 74)

Matt Parke, OPL
National Weather Service Forecast Office, Key West



On the morning of 10 September, 2008, a tornado crossed the Upper Keys in the vicinity of Mile Marker 74 on Lower Matecumbe Key. The tornado moved in a general direction from southeast to northwest cutting across the width of the island chain and affecting the community known as Safety Harbor. The office received a preliminary call from local authorities to the event and dispatched a Weather Service employee, the author of this report, up to the area to take damage pictures for further assessment and categorization by the Warning Coordination Meteorologist, Jon Rizzo and the Science and Operations Officer, Andy Devanas. This condensed report is the outcome of those discussions. Due to size constrictions, I was limited to the number of photographs that could be included. I attempted to pick photos that highlighted the amount of damage incurred along the path of the tornado.

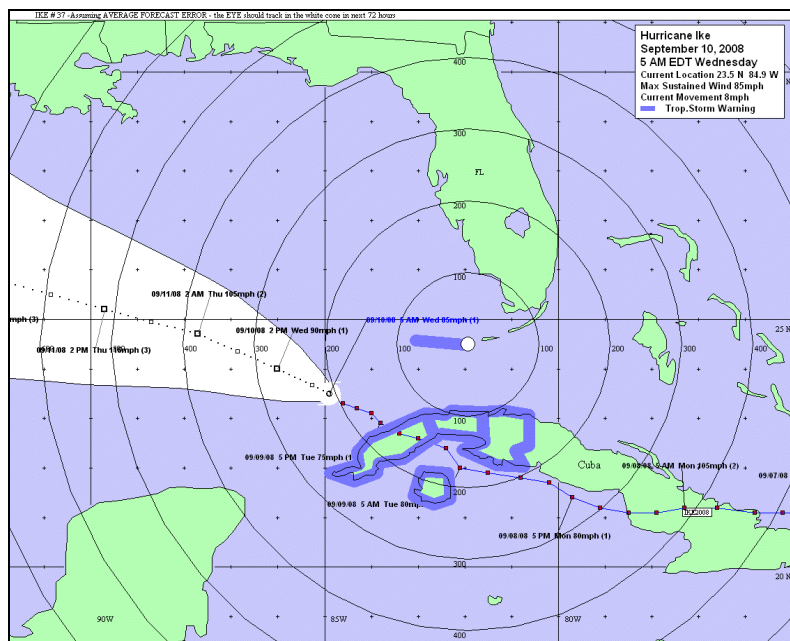


Figure 1. Hurricane Ike track 1 hour after reported event.

On the early morning of 10 September, Hurricane Ike had moved into the southwest Gulf of Mexico and had begun to re-intensify upon exiting the landmass of Cuba. As can be seen in Figure 1, Ike was located approximately 200 miles southwest of Key West as a Category 1 tropical cyclone. Ike's location is about 1 hour after the reported tornadic event across Lower Matecumbe Key which was reported by witnesses to the event as occurring sometime between 345 am and 400 am. While the center of Ike was a good distance away from the Florida Keys, the area continued to be affected by the outer convective bands associated with Ike.

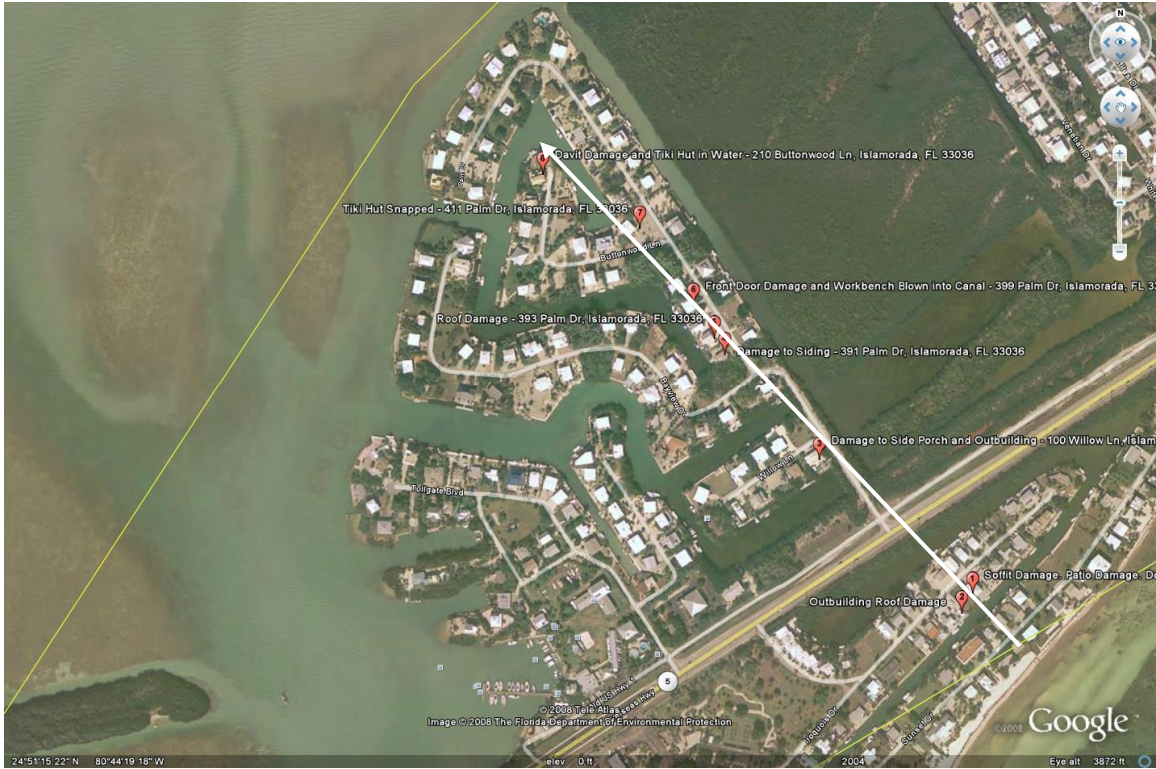


Figure 2. Damage track from lower right to upper center. Arrow indicates direction of motion. Balloons indicate areas of damage discussed in this assessment.

The damage path of Ike was on a track that trended from the southeast to the northwest. This would be indicated in Figure 2 from the lower right portion to the upper center portion of the image. The track of the tornadic event came across from the Atlantic side in the vicinity of Iroquois Drive and moved northwest towards Buttonwood Lane causing damage about 100 yards wide. The red pushpins in Figure 2 indicate damaged homes along the path. Photographs included in the remainder of this report correspond to damage at individual homes.



Figure 3. 153 Iroquois Dr.

The tornadic event came ashore around 4:00 am along the southern coast of Lower Matecumbe Key. The view in Figure 3 is looking approximately east. On the other side of the distant trees are the nearshore Atlantic waters. Note in the above figure that there is damage to the soffit of the house. However, the metal roof is undamaged. Note also that several palm trees have been blown over, the fence is blown down, and the considerable amount of debris strewn into the sideyard. Some of the debris was rather heavy (a weight bench with weights, and a propane grill) was moved well out into the sideyard from the back porch (See Figures 3 and 4). The owner of the house at 153 Iroquois Drive stated that the event occurred near 4:00 am. The owner stated that they were asleep in the Master Bedroom at the time and that it sounded as if a “bomb” had gone off. Not shown are the pictures which show one of the upstairs patio doors had exploded as the storm shutter was ripped off, presumably by the propane grill which was out on the upstairs back porch. Also not shown is the bowed out and fractured back bedroom closet mirror doors.

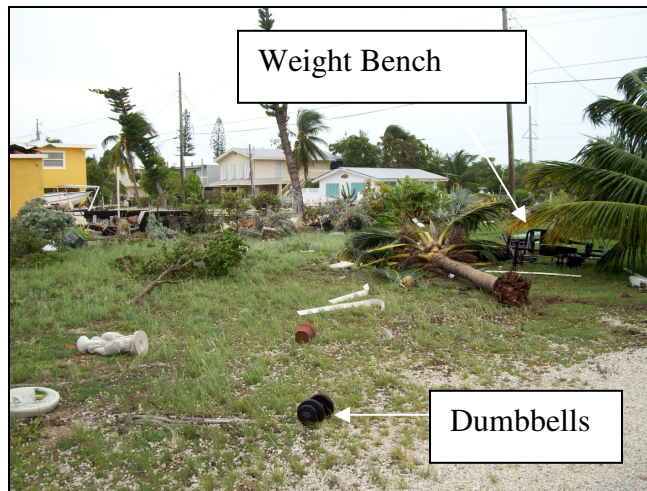


Figure 4. View looking approximately northwest from 153 Iroquois Dr



Figure 5. Damage to back porch of 153 Iroquois Dr.

This view is looking approximately south from the back porch of 153 Iroquois Dr. Note the damage to the storage door and the metal storm shutter. According to the homeowner, the weight bench which was flung into the sideyard was located on the back porch. It is hypothesized that the bench was lifted and flung up towards the door and storm shutter causing the breaking of the door frame and denting the storm shutter. There is a piece of the door frame embedded between the storm shutter and the exterior window it is protecting. When looking approximately southwest from the upstairs screened-in porch at 153 Iroquois Dr (Figure 5), moderate roof damage is apparent in the neighbor's house adjacent to the sideyard with the roof peeling back from approximately a west to east fashion. Further note that the main house (yellow) appears to be unaffected by the event. The house is about 100 yards away.



Figure 6. House to southwest of 153 Iroquois Dr.



Figure 7. Snapped palm tree across road to northwest of 153 Iroquois Dr.

Across Iroquois Dr. and to the northwest of 153 Iroquois, a palm tree was snapped about 1/3 of the way up from the surface. The stump can be seen in the upper left of the photo. The trunk and palm fronds are oriented in approximately a north south direction.

After crossing US-1 at MM-74, the tornadic wind event proceeded northwest down Palm Drive coming into contact with a house at 100 Willow Lane. Note that as the event drove across US-1, it snapped the power lines which run parallel to the highway, causing a loss of electrical power to the homes in the area.



Figure 8. Backyard view of house at 100 Willow Lane.

The event came across the back and sideyards of the 100 Willow Lane house. Note the damage to the gutter system, the outbuilding which has been transported from its original location to the left in the picture (See also Figure 11) and the popped out upper bedroom window. The owner was not at home during the event, but stated that the window's storm shutter was not closed at the time. This house suffered damage to the back and side screened-in porch. Figure 9 shows this with the view looking from the southeast to the northwest. The front of the house (on Willow Lane) is in the background and Palm Drive is to the right of the photo. The front of the house (Figure 10) shows damage to the gutter system.



Figure 9. Porch Damage at house at 100 Willow Lane.



Figure 10. Front view of house at 100 Willow Lane.



Figure 11. Backyard of house at 100 Willow Lane.

Note also in Figure 11 the snapped trees in the background when looking approximately south. Photos not included in this report are of a few trees in the front yard bent to the northwest, as well as a photo indicating the apparent continuation of the track across Willow Lane to the northwest. Witnesses at 100 Willow Lane told me that there was further damage down Palm Drive to the northwest, so I proceeded along Palm Drive to investigate.



Figure 12. House on Palm Dr with siding damage.

This house (Figure 12) is the first in a linear series of 4 houses on the right side of Palm Drive about midway into the development known as Safety Harbor (see Figure 2). This view would be looking approximately south from Palm Drive. Note in the photo several penetrations of the siding by some type of wind-borne projectiles.

The next house in the series, 393 Palm Drive, had extensive roof damage (Figures 14 through 16). This house had a metal roof whose eastern side was torn away in the event. Note that large chunks of the metal roof were removed and that no apparent damage was done to the part of the roof to the west of the roofline (Figure 15). Note also the lack of damage to the air conditioning ducting and rafter structure. The roof's rafters were well tied together with storm strapping. It is also interesting to note that numerous roofing nails were left in the rafters, their nailheads extending above the bare rafters. The damage to the roof also included damage to the dining room ceiling. Figure 16 shows an inward bowed and cracked ceiling. It is unknown how this occurred unless part of the roof above came down and impacted the ceiling briefly before being carried away.



Figure 13. Roof damage at house at 393 Palm Dr. View is looking east southeast.



Figure 14. Roof damage at house on Palm Dr.



Figure 15. Roof damage to house on Palm Dr. View is looking approximately south.



Figure 16. Dining room ceiling of house at 393 Palm Drive whose roof was damaged. Note the window in the background through which a tree limb came through. This view is looking approximately southeast.

Underneath the house at 393 Palm Drive, the wind swept through the downstairs patio and moved the hot tub from underneath the structure out to the backyard, a distance of approximately 15 feet. Witnesses at the scene said the occurrence of the event was around 4:00 am. It is interesting to note that one of the occupants of the house was in the front room with the family dog, attempting to calm the animal down when the event happened. A tree limb came through the 2nd story window, transited across the dining room into the living room, and hit the adjacent couch, narrowly missing the individual trying to comfort the dog. It is also interesting to note that just before the limb came through the window, the dog broke free of its master, and quickly scampered to the back bedroom and under the bed. The window through which the limb came through was not shuttered at the time.



Figure 17. Hot tub blown out from underneath house at 393 Palm Drive.

A witness at 393 Palm Drive told me to check out damage 2 doors down. The witness said that apparently some of the roof from 393 Palm had hit the front door of the house at 399 Palm Drive. Upon driving down to that address, I noted damage to the front door which was on the east side of the house (Figure 18). The homeowner stated that a piece of roofing was blown into his front door shattering the top portion of the door which was made of wood. A closer photo of the door (Figure 19) indicated damage to the wooden door frame as well as damage to the concrete wall above the door. The owner stated that the event occurred between 3:45 am and 4:00 am. When looking back toward the east southeast, it was noted that a house stood between the residence which had lost its roof (393 Palm Drive) and the residence at 399 Palm Drive. The house in between apparently had not been damaged (Figure 20). The distance traveled by the roof debris was approximately 175 feet.



Figure 18. Home at 399 Palm Drive with front door damage. Door faces east.



Figure 19. Close up view of damage above door in Fig. 18.



Figure 20. Looking back to east southeast from home at 399 Palm Drive with door damage.

Other apparent damage noted at 399 Palm Drive was the removal of a workbench from underneath the eastern side of the house. The workbench, according to the homeowner, was 6 feet by 8 feet and had been built around a Sears brand table saw. The bench was blown out into the adjacent canal mangroves northwest of the home (Figure 21). This distance was estimated to be about 100 feet. The homeowner stated that the table saw was retrieved out of the backyard canal using a grappling hook – minus the electric motor, which was not recovered (Figure 22).



Figure 21. Workbench in the mangroves.



Figure 22. Recently retrieved table saw from canal.

Continuing down Palm Drive to Buttonwood Lane (Figure 2) and looking back to east it was relatively easy to see the path of the event as it bisected Buttonwood Lane at its beginning (photo not included). At the 411 Palm Drive residence which was at the corner of Palm and Buttonwood, I noticed the damage path had gone across the property at 411 Palm Drive. The force of the wind had snapped a Tiki hut at its base and tossed it into the adjacent boat ramp a distance of about 15 feet (Figure 23). The residents were not at this home during the event. However, they did tell me that to the northwest from

their backyard more damage had occurred, which led me to 210 Buttonwood Lane. In Figure 24 one can see 210 Buttonwood Lane in the background of the picture.



Figure 23. Tiki hut snapped and blown into adjacent boat ramp.



Figure 24. View looking northwest from house at 411 Palm Drive.

At 210 Buttonwood Lane, severe davit damage had occurred along the seawall which faces northwest. The homeowner speculated that a Tiki hut in the backyard had been ripped up from its location and was flung in a generally south to north direction across a fence, into the rightmost davit (when facing northwest) and then into the canal adjacent to their property (Figures 25 and 26).



Figure 25. View looking north northeast from backyard of 210 Buttonwood Lane. Note apparent travel of tiki hut would have been from right to left and just beyond electric pole in center of photo. Rightmost davit in background.



Figure 26. Close up view of rightmost davit at home at 210 Buttonwood Lane. Note top rail of fence on seawall as well as cinder blocks blown from right side of picture. Also note broken seawall bumper in canal.

As previously mentioned, the Tiki hut was located in the backyard approximately south of the seawall (Figure 27). According to the homeowner, the hut had electrical power run out to it in electrical conduit. The hut was apparently lifted whole severing the electrical power and tossed a distance of approximately 75 feet to the north damaging shrubbery, the fence bordering the seawall, and the rightmost davit before ending up in the canal (Figures 28 and 29). It is speculated that once the Tiki hut impacted and severely damaged the rightmost davit the weight of the attached motorboat in conjunction with the wind served to pull up the leftmost davit (Figure 26). The owners were not at this home during the event. However, a witness from the other side of the canal said that the event happened around 4:00 am and that power was lost near that time and then a huge rush of wind (he specifically said it did not sound like a freight train) which lasted for about 10 seconds.



Figure 27. Original location of Tiki Hut at 210 Buttonwood Lane backyard. View from boarded walkway just off of seawall. Rightmost davit would be over left shoulder.



Figure 28. Remains of Tiki hut in canal at 210 Buttonwood Lane.



Figure 29. Apparent track path of Tiki hut across backyard of 210 Buttonwood Lane. View looking north-northeast.



Figure 30. View looking east southeast from 210 Buttonwood Drive backyard.

In looking from the backyard back towards the southeast, a damage path could be discerned with snapped tree limbs and debris in the yard. It is interesting to note the piece of metal abutting the small tree in the foreground and wonder where it was blown from.

In summary, after perusing the photos, and in conjunction with the meteorological assessment of the event, the WCM and SOO came to the conclusion that an tornado rated as an EF1 on the Enhanced Fujita Scale had been generated in an outer convective band associated with Category 1 strength Hurricane Ike as it moved northwest and began to intensify in the southeast Gulf of Mexico. Based on photographic evidence, it is estimated that the winds associated with this event were in the range of 90 – 100 miles per hour. Although this is an unofficial assessment of the event, the official classification of EF1 will appear within 60 days after the close of the month that the event occurred. The classification of this event will be published in the Storm Data publication available

from the National Climatic Data Center (NCDC). This publication can be obtained from NCDC for a nominal fee by requesting the data at <http://www.ncdc.noaa.gov>.