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December 15, 2017

VIA ELECTRONIC FILING

Ms. Carlotta Stauffer, Commission Clerk
Florida Public Service Commission
2540 Shumard Oak Boulevard
Tallahassee, Florida 32399-0850

RE: Docket No. 20170215-EU
Review of electric utility hurricane preparedness and restoration activities

Dear Ms. Stauffer:

On behalf of Duke Energy Florida ("DEF"), please find attached for electronic filing in the above referenced docket:

- DEF's Redacted response to Staff's First Data Request (Nos. 1-37)

Thank you for your assistance in this matter. Please feel free to call me at (850) 521-1428 should you have any questions concerning this filing.

Sincerely,

/s/ Matthew R. Bernier

Matthew R. Bernier

MRB/at
Enclosures
cc: parties of record

CERTIFICATE OF SERVICE

I HEREBY CERTIFY that a true and correct copy of the foregoing has been furnished to the following by electronic mail this 15th day of December, 2017, to all parties of record as indicated below.

/s/ Matthew R. Bernier
Attorney

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Docket 20170215-EU
Review of electric utility hurricane preparedness and restoration actions

DEF's Response to Staff's 1st Data Request

Staging for Utility Personnel and Mutual Aid

1. Please describe the pre-storm coordination process for Hurricanes Hermine, Matthew, Irma, Maria, and Nate. The description should include:
   a. Dates and topics of internal meetings held after each storm was named.
   b. Dates and topics of external communication pertaining to mutual aid held after each storm was named.
   c. Date mutual aid was requested and nature of request.

RESPONSE TO QUESTION 1a:

Duke Energy ERO (Event Response Organization) utilizes pre-storm checklist (120hr, 96hr, 72hr, 48hr, 24hr) in advance of the projected impact, along with pre-storm coordination calls/meetings. Once the storm passes and response activities begin, the ERO briefing cadence schedule is followed.

Hermine- 9/1/16 - 9/5/16
Matthew- 10/6/16 – 10/10/16
Irma - 9/11/17 – 9/19/17
Maria- N/A
Nate-10/7/17 – 10/8/17

Pre-storm system coordination calls

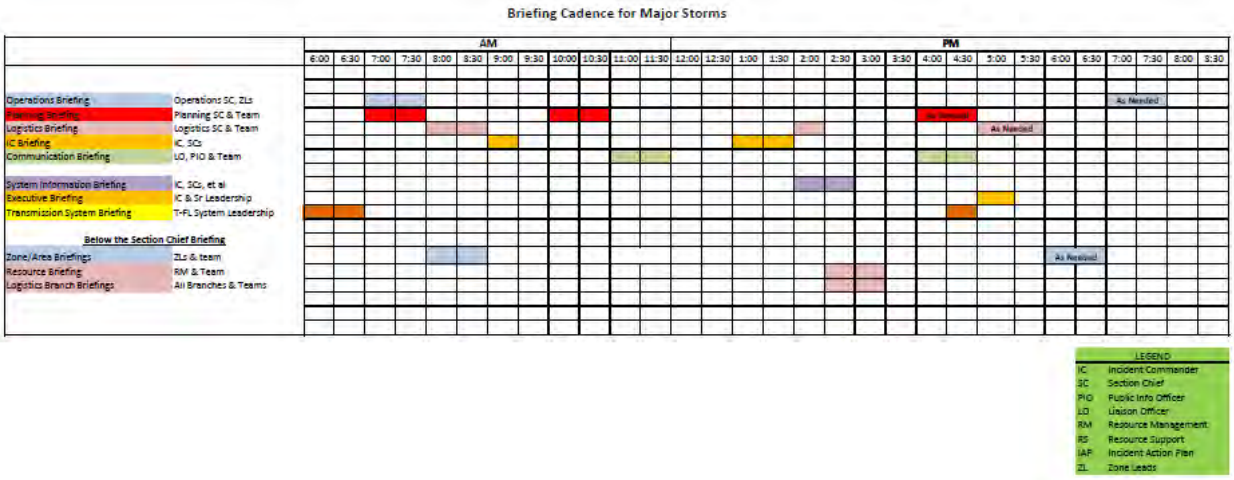
Hermine	
8/24/16	1 call- incident briefing (track & intensity and potential impact)
8/25/16	2 calls- incident briefing (track & intensity, potential impact and mutual aid)
8/26/16	1 call- incident briefing (track & intensity and potential impact, mutual aid)
8/27/16	1 call- incident briefing (track & intensity and potential impact, mutual aid)
8/28/16	1 call-incident briefing (track & intensity and potential impact, mutual aid)
8/29/16	6 calls- Incident briefing (predictive models, resources needs, mutual aid, planning and logistics)
8/30/16	8 calls-incident briefing, communications, mutual aid, planning, system briefing, impact, resource needs and logistics
8/31/16	13 calls-incident briefing, communications, mutual aid, planning, system briefing, impact, resource needs and logistics
9/1/16	ERO briefing cadence schedule followed

Matthew	
9/30/16	1 call-incident briefing (track, intensity and potential impact)
10/2/16	2 calls-incident briefing (track, intensity and potential impact) and predictive models
10/3/16	1 call-incident briefing (track, intensity and potential impact)
10/4/16	6 calls-incident briefing (track, intensity, potential impact), resource needs, mutual aid, logistics and communications
10/5/16	ERO briefing cadence schedule followed

Irma	
9/5/17	5 calls- Incident briefing (track, intensity and potential impact) communications, planning (resources, mutual aid and logistics)
9/6/17	8 calls- Incident briefing (track, intensity and potential impact) communications, planning (resources, mutual aid and logistics) Operations, system and data management
9/7/17	7 calls- Incident briefing (track, intensity and potential impact) communications, planning (resources, mutual aid and logistics)
9/8/17	8 calls- Incident briefing (track, intensity and potential impact) communications, planning (resources, mutual aid and logistics)system briefing
9/9/17	7 calls- Incident briefing (track, intensity and potential impact) communications, planning (resources, mutual aid and logistics), system briefing, Mutual aid oversight and contingency plans
9/10/17	9 calls- Incident briefing (track, intensity and potential impact) communications, planning (resources, mutual aid and logistics)

Nate	
10/4/17	1 call- Incident briefing (track, intensity, impact, resource needs, mutual aid, logistics and communications)
10/5/17	3 call- Incident briefing (track, intensity, impact, resource needs, mutual aid logistics and communications), system call, planning
10/6/17	1 call-incident briefing (track, intensity, impact, resource needs, mutual aid logistics and communications)
10/7/17	1 call- incident briefing (track, intensity, impact, resource needs, mutual aid logistics and communications)

Briefing cadence once ERO (Event Response Organization) is fully activated



In regards to generation preparation, once a storm is predicted to affect the DEF service territory, Generation begins a series of recurring meetings to review preparations. The meetings begin as once per day and go to twice per day as landfall approaches. Participants include all stations, support services and other internal stakeholders such as the Energy Control Center and the Fuels Department. One recurring agenda item is to have Duke Energy Meteorology report site-specific wind speed and storm surge projections. The data is used to determine if any proactive equipment shut downs are needed to allow time for cooling to prevent possible equipment damage from weather-forced shut downs which would prolong startups to provide system load following the storm. The meeting cadence continues throughout storm impact and restoration activities.

1b. Dates and topics of external communication pertaining to mutual aid held after each storm was named.

RESPONSE TO QUESTION 1b:

Pre-storm Coordination Process & External Communication Topics: Once a storm is named and, based on the forecasted track and intensity, is anticipated to impact DEF's service territory, mutual aid calls are initiated for additional resources including non-native Duke Energy resources, native and non-native contractors and mutual assistance organizations to discuss the availability of resources outside the projected impacted area that may be able to provide assistance to our service territory should it be necessary. Resources typically include: Line, vegetation, damage assessment, support and logistics to support both Distribution and Transmission restoration efforts. Depending on the projected event impact, the objective is to have resources mobilized ahead of the impact.

External Communication Dates:

Hermine
8/25/16
8/26/16
8/29/16
8/30/16
8/31/16
9/1/16
9/2/16
9/3/16

Matthew
10/4/16
10/5/16
10/6/16
10/7/16
10/8/16
10/9/16
10/10/16

Irma
9/5/17
9/6/17
9/7/17
9/8/17
9/9/17
9/10/17
9/11/17
9/12/17
9/13/17
9/14/17

Maria
No mutual assistance calls conducted

Nate
10/5/17
10/6/17

1c. Date mutual aid was requested and nature of request.

RESPONSE TO QUESTION 1C:

Hermine	**Nature of Request**
8/25/16	Distribution Line & Veg- Non-native Contractors
8/30/16	Distribution Line & Veg- Mutual Assistance Organization
9/1/16	Distribution Line & Veg- Mutual Assistance Organization
9/2/16	Distribution Line & Veg- Mutual Assistance Organization
9/3/16	Distribution Line - Mutual Assistance Organization

Matthew	**Nature of Request**
10/4/16	Distribution Line & Veg- Non-native Contractors
10/4/16	Distribution Line & Veg- Mutual Assistance Organization
10/5/16	Distribution Line & Veg- Mutual Assistance Organization
10/6/16	Distribution Line & Veg- Mutual Assistance Organization

Irma	**Nature of Request**
9/5/17	Distribution Line & Veg- Non-native Contractors
9/5/17	Distribution Line & Veg- Mutual Assistance Organization
9/6/17	Distribution & Trans Line & Veg- Mutual Assistance Organization
9/7/17	Distribution & Trans Line & Veg- Mutual Assistance Organization
9/8/17	Distribution & Trans Line & Veg- Mutual Assistance Organization
9/9/17	Distribution & Trans Line & Veg- Mutual Assistance Organization
9/11/17	Distribution Line & Veg- Mutual Assistance Organization
9/12/17	Distribution Line & Veg- Mutual Assistance Organization
9/13/17	Distribution Line - Mutual Assistance Organization

2. Please provide a detailed description of the utility's allocation of storm duties for all personnel. This should include a description of each function and the number of utility personnel assigned.

RESPONSE:

Storm Duty (Roles)	**Description of Role**	**Number of Assigned Role**
Incident Commander	The individual responsible for all incident activities, including the development of strategies and tactics and the ordering and the release of resources. The IC has overall authority and responsibility for conducting incident operations and is responsible for the management of all incident operations at the incident site.	1

Deputy Incident Commander	Serves as the alternate Incident Commander and provided field intel during the event.	1
Operations Section Chief (DCC)	Responsible for outage dispatch, switching & tagging activities, setting of ITR/ETR's globally, decision owner for the suspension of scheduled customer work, ensure that outages that are unable to complete such as flooded areas are assigned to the correct unit so they are visible to other organizations such as Call Center and Corp. Comm. Ensure the distribution system is in normal configuration when applicable prior to landfall of the event, ensure the backup control room is functional in case we have to relocate.	1- Director 6- Supervisors 36- Dispatchers 5- Data Center support staff 2- Admins
Planning Section Chief	Responsible for the collection, evaluation, and dissemination of information related to the incident, and for the preparation and documentation of Incident Action Plans. Includes the Situation, Resources, Documentation, and Demobilization Units, as well as Technical Specialists.	1
Logistics Section Chief	The Section responsible for providing facilities, services, and materials for the incident. Includes resource acquisition, lodging, meals, resource support, support services, etc.	1
Finance Section Chief	The Section responsible for all incident costs and financial considerations.	1
Liaison Officer	A member of the Command Staff responsible for coordinating with representatives from cooperating and assisting agencies.	1
Public Information Officer	A member of the Command Staff responsible for interfacing with the public and media or with other agencies with incident-related information requirements.	1
Safety Officer	A member of the Command Staff responsible for monitoring and assessing safety hazards or unsafe situations, and for developing measures for ensuring personnel safety.	1
Lead Dispatch Supervisor	This position will conduct and lead the Distribution Control Center major event coordination meetings. In addition, this position will coordinate with the other Shift Supervisors to ensure effective, consistent communication to internal customers, employees and other process owners.	1
Dispatch Shift Supervisor	Manage the Dispatcher group to ensure OMS modeling and switching and tagging procedures are fully supported. Fill shifts as necessary for storm support.	5
Distribution Dispatcher	Initiate all switching and tagging Operations necessary to restore and maintain the distribution system in	36

	accordance with the Duke Switching and Tagging manual.	
Grid Management Lead	Review the distribution system for any current or upcoming switching orders and any abnormal configurations. Determine best configuration of the distribution system based on transmission constraints and distribution work.	1
Grid Management Engineer	Provide relevant system performance metric's such as condition of critical feeders, system load, abnormal configuration and critical switching orders to Grid Management Lead.	3
Grid Management Support Specialist	Assist Grid Management Engineer in monitoring the system performance matrix such as condition of critical feeders, system load, abnormal configuration and critical switching orders to Grid Management Lead.	4
Data Management Manager	Review and approve all outage and restoration data prior to publication. Provide relevant performance metric information via the system storm calls to other process owners.	1
Zone Management Coordinator	Assist the Data Management Manager by review existing storm electronic reporting compared to visual indicators at the Zone level to ensure alignment.	4
Op Center Coordinator	This individual is responsible for updating outage data within the MOMS application as necessary during the restoration process	15
Desktop MOMS Operator	This individual is responsible for updating outage data within the MOMS application as necessary in support of damage assessment and Outage Update and Close sections of the FDO Major Storm Workflow Process.	70
Data Coordinator	Compile, Analysis and report accurate outage and restoration information during a major event/hurricane to the Data Management Manager. Collaborate with Process Owners to ensure accurate modeling of the system.	4
Data Input Specialists	Follow the FDO Major Storm Workflow Process by modeling OMS to reflect the current condition of the distribution system. Process the outage log's received in the Distribution Data Center by creating confirmed outages in OMS by utilizing the "forced outage creation "process.	8
GIS Support Specialists	Maintain and update the distribution system mapping before during and after a major event/hurricane.	3
Liaison Officer	A member of the Command Staff responsible for coordinating with state and county governments, including EOCs, with the support needed to facilitate outage restoration in impacted sections of the Duke Energy Florida service territory and to provide accurate	1

	and timely information to key leaders and local communities before during and after storms.	
Account Management	Serves as the primary contact for the Liaison Officer for storm preparation activities including, assignment of representatives to County EOCs and maintenance of the County priority lists. Maintains relationships with large account identified customers (industrial, commercial, municipal) during storm restoration activities and manages the dedicated support line established for these customers.	7
Regulatory Affairs Lead	Interacts primarily with the State EOC, the Florida Public Service Commission (FPSC), Department of Environmental Protection (DEP), Department of Transportation (DOT), Law Enforcement, Military Support and the Governor's Office.	1
Government & Community Relations Manager	Has overall responsibility for Duke Energy's governmental coordination program in their assigned service territory working with public officials and other identified key leaders before, during and after hurricane restoration efforts.	6
State EOC Representative	Located at the State Emergency Operations Center, works with the State EOC personnel to establish current priorities for restoration, communicate this information to appropriate operating center personnel, and ensure State EOC priorities are worked successfully.	5
County EOC Representative	Located at the county EOCs in Duke Energy's service territory, the County EOC representatives work with the County EOCs establish current priorities for restoration, communicate this information to appropriate operating center personnel, and ensure the County EOC priorities are worked successfully. The County EOC Representatives works annually with the County EOCs to update specific city/county and EOC priorities and develops a prioritized list for each county based on input from the County.	30
Operations Liaisons	Located at the Duke Energy operations centers, the Operations Liaisons receives and dispatches the priorities from the County and State EOC reps and ensure the priorities are worked successfully.	18
Community Relations Office Management	Provides support for communication with public officials, emergency management personnel and other identified key leaders in the area assigned.	5
Central Support	Provides support to the Liaison Officer in regards to implementation of storm preparation planning activities and managing issues such as ensuring a full storm staffing compliment, team coordination, and mission	3

	and emergent issues support during an event.	
State External Affairs Lead	Provides timely communications and assists in the resolution of issues for state-wide organizations.	1
Florida Storm Accounting Team	Responsible for issuing charging guidance, capturing costs and preparing estimates for accruals for their business unit. Provide accurate storm estimates which are updated monthly and verify costs are in accordance with Storm Rule.	8
Lead PIO	Activates Joint Information Center (JIC) and works with emergency communications planner and/or administrative support to initiate appropriate emergency response organization (ERO) staffing. Reports to the JIC and implements/aligns corporate communications activities with the event strategy. Manages JIC staff to ensure dissemination of timely, accurate information to internal and external audiences. Provides for overall JIC management and direction. Develops and directs the work to achieve the emergency/storm communications strategy.	1
Joint Information Center (JIC) Manager	Command and control of Near-site JIC and ensures proper operations of facility and equipment	1
Emergency Planner	Provides process guidance for all aspects of JIC operation. Maintains JIC in a state of readiness. Assists the Lead PIO to optimize the effectiveness of the corporate communications emergency response and to integrate all communications activities. Assists in coordination of JIC activation and deactivation. Critiques event communications response and coordinates corrective actions to enhance corporate communications' emergency response processes	1
Assistant PIO	Assists the public spokesperson with preparations for media interviews/news conferences. Assists with message development and coordinates with the lead PIO to address business unit specifics related to the event. Moderates news conferences and manages media interviews with the public spokesperson.	1
Media Liaisons	Media-trained personnel assigned to the storm center or a field location to handle media questions, interviews, news conferences/briefing, tours, etc.	2
Operational Internal Communications	Develops and distributes pre-storm and post-storm communications for the Customer Services and Distribution organizations. During a storm event, also develops and distributes a daily operational update from the storm director to the distribution organization, key company leaders and support organization that includes updates on safety, human performance, resources, restoration progress and customer care.	2

Duke Energy Customer Care Operations Specialists	Responsibility of providing customer service including handling outage calls.	1,323
Vendor Call Specialists	Vendor call centers with employees who provide customer service and handling outage calls.	500
Second Responders Customer Service Resource	Employees within the Customer Service, Revenue Service organization who normally handle billing, accounts receivable, payment posting, etc. that have a major storm role of answering customer outage calls.	248
Corporate Responders (CR1) and Corp Volunteers resources	Employees within many organizations throughout the enterprise responding to the request to assist in answering customer outage calls (CR1). This will be different per storm event. Our CR1 program consists of dedicated corporate resources with volunteers responding only if needed based upon the size of the event.	514 during Hurricane Irma
Customer Care Operations Storm Director	Leads the successful execution of the teams and processes in response to the storm event. Serves as the liaison to other storm organizations to ensure integration (e.g. Distribution Operations, Corporate Communications). These resources are comprised of leaders who are on an on-call rotation throughout the year.	5
Customer Care Operations Storm Director Assistant	Joins the Customer Care Operations Storm Director to assist with storm calls, meeting notices, action items and tracking of resolutions.	9
Customer Care Operations Logistics	Coordinates meals, hotels, transportation, security, supplies, and equipment for the call-answering resources throughout the event at each site.	3
Customer Care Operations Communications	Centralizes all information needed by call-answering resources which includes customer talking points of storm restoration, meals, schedules and other key information needed during the event.	9
Customer Care Operations Workforce Management	Develops and manages all storm schedules of all call-answering resources during the event. Manages the timekeeping process for all resources.	5
Customer Care Operations Technology	Representatives from IT and system support serve on this team. Monitors all systems to ensure system health and operational, responding to issues that occur for remedy. Executes IVR messages as well as the outbound call campaigns to customers regarding restoration in particular to our medical alert/life support customers.	12

Customer Care Operations Reporting	Serves to provide statistical tracking of data throughout the event (e.g. calls handled by live voice and systems, service level, average handle time).	4
Customer Care Operations PSC Commission Complaints/Social Media	Responsible for responding to commission complaints and other situations needing research. Resources from this department as well as other organizations serve on social media teams to respond to customer needs via this channel and also proactively communicate with customers regarding storm restoration information.	11
Customer Care Operations Training	Comprised of CCO Training Staff to train resources to answer and report customer outages in the outage management systems. Those receiving the training are internal specialists as needed and also our additional call answering resources that assist (e.g. Corporate Responders).	4
Customer Care Operations - Escalation	Mobilizes to receive the routed customer escalated calls that the call-answering resources were unable to handle for the customer. There are teams in each jurisdiction that are activated as needed during the event. Comprised of coordinators, call-answering resources and 2nd Level Field Liaisons which serve as liaison to Delivery Operations for complex customer restoration issues.	7
Customer Care Operations - Corporate Responders/ Volunteers Support Team	Comprised of many different roles to fully coordinate and support these enterprise resources as they report to various sites across the jurisdictions to assist in answering customer outage calls. These roles include leaders, coordinators, floor support, trainers and our HR Crisis department.	24
Customer Care Operations -Human Resources	Work with CCO to ensure employee needs and issues are addressed appropriately according to company policy.	6

Incident Commander- Coastal	This position will typically be filled by the Zone Point of Contact (POC), typically the Zone GM. This position is the lead for the zone storm organization.	1 NCE 1 SCE 1 NCO 1 SCO
Deputy Incident Commander	This position may be filled by the Zone Point of Contact (POC) or assigned to a qualified designee by the Zone GM. This position is responsible for the management of all of the zone resources during a major storm.	1 NCE 1 SCE 1NCO 1 SCO
Zone Tactical Management	It is the responsibility of this position to support an	1 NCE

Coordinator	efficient storm restoration effort through planning and communication. The Tactical Management Coordinator will remain fully engaged with the Zone Resource Coordinator, Zone DA Coordinator, Community Relations Manager and Zone Data Management Coordinator to ensure the timely execution of the zones restoration plan. This position will engage with the Operations Center storm planning team with critical links to the Operation Center Tactical Management Coordinators.	1 SCE 1 NCO 1 SCO
Operations Center Coordinator	This position will typically be the Operations Point of Contact (supervisor) assigned to the center. This position provides the managerial oversight for the entire operation centers restoration effort. The OPS1 reports directly to the REG1 for the assigned region. This position should maintain a storm organizational and planning focus throughout the restoration effort.	4 NCE 5 SCE 6 NCO 4 SCO
Tactical Management Coordinator	The Tactical Management Coordinator is responsible for prioritizing the outage restoration and the flow of high-priority outages. The Tactical Management Coordinator is responsible for ensuring that the Operations Center's restoration strategy is followed. This position supports the Operations Center restoration efforts by maintaining an organized "tactical" approach to battling a storm. In addition, this position helps to drive the data management modeling and reporting based on established timelines. This position is responsible for ensuring timely updates on ETR's and meeting the Operations Center commitment to the customers.	4 NCE 5 SCE 6 NCO 4 SCO
Strategic Support Staff Supervisor	This team replaces the daytime Operation Centers Storm Management Team and is an extremely critical function. This group will typically be led by one C&M operations Supervisor or other qualified management personnel with strong leadership.	4 NCE 5 SCE 6 NCO 11 SCO
Emergency Crew Coordinator	This position is responsible for coordinating and assigning EOC and other emergency work to restoration personnel assigned to this role. These responsibilities may be fulfilled by the Tactical Management Coordinator or assigned to a designee. The dedicated EOC restoration personnel may be located at the EOC, if requested.	4 NCE 5 SCE 6 NCO 4 SCO
Substation/Zone Coordinators	The Substation/Zone Coordinator will normally be a supervisor with line and service experience. The	16 NCE 20 SCE

	position can be an experienced line and service person or other qualified employee. This individual must have strong field experience in distribution operations and should be very familiar with their assigned zone.	90 NCO 17 SCO
Feeder Coordinators	The Feeder/Field Coordinator will typically be a line or service person or other qualified employee who is familiar with the territory. This individual reports to the Substation/Zone Coordinator and the coordination of restoration crews and support needs with staging teams and logistics personnel. This position will receive daily prioritized work packages from the Substation/Zone Coordinator and will be responsible for issuing and coordinating these with the assigned resources/crews. Guides/Scouts may be assigned to the Feeder/Field Coordinator, if needed.	84 NCE 71 SCE 179 NCO 96 SCO

Incident Commander (Transmission Restoration Coord/T-FL Storm Director)	The storm organizations directing leader for annual readiness, season and event preparedness, and storm plan/event implementation. T-FL Storm Director is the Restoration Coordinator and Incident Commander for Transmission's event within Florida. This position provides managerial oversight and leadership direction over the entire organization and specific event (planning, operational implementation, logistical support, communications, financial, and post-event close-out). T-FL Storm Director is responsible for assuring smooth, safe activation of storm centers, storm resources, and restoration activities.	2
Transmission System Storm Liaison	The Transmission -Florida storm organizations' liaison to 1DF-DEF Storm Center and Incident Commander. The Liaison is to assure communication, decision making, actions that Distribution Storm Organization makes are validated with Transmission and vice versus.	2
Operations Section Chief (Area Storm Ctrs. IC)-Trans	T-FL C&M Area Coordinator/Area Storm Center Chief is responsible for assuring smooth, safe activation of the local storm center, that center's storm resources, and all restoration and mobilization activities. The Transmission C&M Area Coordinator will activate, coordinate and mobilize all the construction and maintenance transmission resources in the respective Area in a severe storm or other disaster in an effort to maintain or restore service. Under the authority of the Transmission System Coordinator/TSSC Director, T-IC for the event, the Area Coordinator has similar authority on the Local Transmission Area level	6
Crew Management & Restoration/DA Mobilization Director-Trans	The Crew Mgmt. & Restoration/DA Mobilization Director is the lead over mobilization of all crews; it is	4

	the Operations organization's directing leader for internal and contract crew.	
Crew Mgmt./Supervisor – Line, Sub/Relay, Veg. Mgmt., Inspector/SSOL, DA -Trans	The Supervisor is to deploy and assign work according to Damage Assessment and Incident Action Plan Goals and Objectives. The assignment of work and oversight of the crews, reporting of work complete and ETRs back to Storm Center are to be assured complete by the Supervisor daily. The Supervisor of each discipline (line crews, substation crews, relay crews) is to follow all DE and utility safety, resource management, human resource, craft personnel guidelines as per 'blue sky' moving to 'storm/emergency' response.	23
Storm Site Operational Lead (SSOL)-Trans	SSOL drives the crew work assignments AND schedule adherence to the work plan as directed by System Storm Center / T-FL Storm Directors. The SSOL operates in a role of oversight of all crews deployed from a particular work site/Storm Site/Base Camp. The SSOL conducts / assures that on-boarding / safety briefings AND pre-job/post-job briefings occur for all deployed crews.	8
Area System Assessment / Engineering & Work Assignment Lead-Trans	Responsible for the Regional Engineers, Work Planners, and Regional Data Mgmt. Techs. The Area System Assessment Lead is to work directly with System Storm Center, Planning Section, and Area Storm Center Directors to assist in establishing appropriate prioritization of bringing each Area System back on-line so as to support total System Grid integrity and stability. The primary responsibility of this role is to assure that the Area/Regional Engineers have information, resource support, training, and means to provide each impacted T-FL Area/Region with work plans to effectively restore.	3
Asset Mgmt. / Regional Engineering Support-Trans	Area System Assessment –Regional Engineer support the Area Storm Center assessing and then designing / providing the instructions / work plan for the Restoration Crews. Also known as, the asset management engineer, this role will normally work with the Area Storm Center Director and Crew Management , to provide assessment and prioritization for restoration.	18
TOA & Work Planning (Outage Management)-Trans	Area System Assessment –Regional Work Planners support the Area Storm Center providing the work assignment and instructions / work plan for the Restoration Crews. This role will normally work in the Area Storm Center and provides data updates within the outage management system. (TOMS). This role supports tagging and switching orders / work planning.	18
Regional Outage Mgmt. (TOMs Data Mgmt.)-Trans	This role is included in the Regional Work Management and Outage Management role above. These positions must work very closely together in order for the work assignments and ETRS to gain updating and Outages restored updated in TOMS.	12
Area Logistics Coordinator-Trans	Responsible for The Logistics Area Coord. Teams and	3

	coordination of the communication to Logistics System Center providing logistics needs for specific area and updating Initial crew needs, lodging needs. Crew movement notifications to reallocate or demobilize. Validate all logistics req. through Resource Mgmt. and Site Mgmt.	
Area Logistics Support – Log. Req., RoD, Lodging-Trans	Support to Area Logistics Coord. in submitting requests, providing data of resource needs, and lodging and meal needs for each area storm center, base camp and/or work site.	28
Safety Officer/Liaison for Ops-Trans	A member of the Command Staff responsible for monitoring and assessing safety hazards or unsafe situations, and for developing measures for ensuring personnel safety.	1
Planning Section Chief-Trans	The Planning Section Chief is responsible for developing, maintaining and issuing the Incident Action Plan (IAP). It is expected that The Planning Section Chief will gather Planning Section Branch Leads to develop and strategize the best approach to respond to the event. This includes but is not limited to Wholesale Customer Emergency Center, Resource Assessment & Planning, Damage Assessment Planning (including Data Management and Documentation.	2
ECC/Grid Restoration-System Operations Director-ECC	The ECC-System Operations Director is responsible for leading and coordinating all ECC organization activities during a major storm event, including ultimate decision making authority for actions taken, ECC staffing and resource deployment, and activation of the Backup Control Center Responsible for outage dispatch, switching & tagging activities; coordinating with Area Storm Centers/work mgmt.	3
T-FL System Storm Center – Point of Contact (POC)-Trans	Responsible for modeling potential storm /event impacts, for assessing and confirming with ECC/Planning initial priorities for restoration of system and maintaining grid stability	3
System Planners & Evaluation / TOA & TOMS-Trans	Engineering support staff in Operations Engineering and Transmission Planning will support the ECC control room in identifying storm related outages, assessing system conditions and entering outage data into the Transmission Outage Management System (TOMS). This information is crucial to developing the ECC restoration priorities and input into work planning, switching and tagging.	8
Wholesale Customer Emergency Center-Trans	The Wholesale Customer Emergency Center (WCEC) is a liaison between Duke Energy and Florida's Wholesale Customers during a storm/emergency event. It is responsible for maintaining clear and direct communication to and from DEF's Wholesale customers regarding DEF's strategy and approach to restoration, as it impacts wholesale/transmission interconnections. Additionally, discusses and maintains awareness of the wholesale customer's restoration efforts and provided support as necessary.	3
Resource Assessment & Planning - Trans	RM ensures that all line and tree resources are acquired, mobilized, tracked, assigned, and demobilized before and during major storm events. This position will ensures that available resource plan is incorporated into the daily work plan.	2

Damage Assessment Planning -Trans	Responsible for providing overall assessment of *volume of crew resources anticipated* based on modeling and projections from Planning Section. This role also identifies perceived gaps in resource availability / mobilization so that the Planning Section can project length of restoration.	2
Logistics Section Chief-Trans	The Section responsible for providing facilities, services, and materials for the incident. Includes resource acquisition& mobilization, lodging, meals, resource support/site mgmt., support services, etc.	2
Site Management Leads-Trans	Manages all transmission storm site related storm roles in support of crews logistical needs through storm site management, ensuring all site logistical needs are met during major storm restoration events. (Specifically, SSM role as liaison to Distribution, Site Acquisition and Maintenance roles, Storm Site Admin/RM support roles, Storm site Lodging/Crew support and Crew tracker roles. Storm Site Mgmt. Lead manages all Storm site operations, ensuring all Site needs are met while implementing best practices at sites throughout the system during event restoration activities.	2
Storm Site Logistics Leads (SSLL)-Trans	SSLL is the logistical lead at any assign base camp / site. The role assures staff and crew assigned to Storm Sites for logistical support (lodging, meals, fueling, etc.) get the support requested.	9
Site Crew Trackers-Trans	This position ensures that all on-system contractors, internal crew resources AND off system resources receive their operational schedules, understand expectations and participate in the designated safety orientation.	19
Site Crew Lodging Support-Trans	Responsible for verifying arrival date and times for off system storm resources. This position ensures that all on-system contractors, internal crew resources AND off system resources receive assignment and delivery to lodging / housing for crews. This position will also verify and update the lodging tracking spreadsheet and verify with Crew Tracker all on-boarded crew.	19
Site Acquisition & Maintenance Lead-Trans	At the beginning of a Major Storm Event, this role is to participate in the initial activation of the Storm Sites selected and to assure acquisition / activation of additional sites as needed.	2
Lodging Mgmt. Leads-Trans	Primary responsibility of the Lodging Lead is to meet bed needs and inform the T-FL Logistics Chief, Resource Mgmt. Lead, Area Logistics Lodging Support, SSM-Crew-Lodging Support and 1DF-DEF Logistics –Lodging Lead of capacity, availability, and bedding issues during an event.	2
Lodging Team (System)-Trans	The Lodging Team member will work with Lodging Lead and field personnel to accurately acquire and assign lodging / hotel / alternative housing needs for restoration personnel.	6
Logistics Requests & Eng. Support Leads-Trans	Logistics Coordinator directs the activation of the Logistics Request section of Logistics.	2
Log. Request Takers/Support-Trans	The Logistics Request & Engineering Support Team are to	14

	receive, triage, assign, and assure complete processing of all logistical requests from the Area Storm Centers and System Storm Center.	
System Eng. Support-Trans	Engineering support role provides delivery of requests, physical hand off of drawings and materials orders.	24
Resource Mgmt. Leads-Trans	Responsible for ensuring that identified resource needs for support of the restoration effort are met.	2
RSVP-Internal Resource Activation-Trans	Manage the process of receiving requests, and staffing, non-craft and technical storm resources requests on behalf of Florida Transmission System	2
RSVP Coordinators-Trans	Manage Resources (activate/release) within the RSVP Tool	7
Resource Acquisition Team-Trans	The Resource Acquisition Lead is responsible for assuring internal & contract crew resources are identified, acquired and brought on-to the Transmission system as storm restoration resources.	6
Resource Mobilization Team-Trans	Responsible for mobilizing all required / acquired resources; which mean assigning crews to Areas and then Storm Sites. For collaborating with the Area Restoration Coordinators and Logistics to assure crews have information necessary to report to work.	6
Materials Mgmt. Liaison-Trans	RM-Liaison to Materials Support function is to manage the processes and communications requirement for acquiring and managing the logistics of the particular resource to the requestor (work site, storm site, storm center, etc.).	2
Materials Planners-Trans	Materials Planners fulfill materials requests from engineering, area logistics, work planning.	3
Heavy Hauling/Equipment Mgmt. Liaison-Trans	The RM-Liaison to Heavy Hauling / Equipment Mgmt. Support role will coordinate/respond to all requests from Transmission -FL Area Logistics/System Storm Center through System Logistics Center to Heavy Hauling / Equipment Management.	2
Heavy Hauling/Equip Rental & Support-Trans	Heavy hauling Equip Rental and support fulfill requests for rental equipment and provide hauling services to all efforts/organizations of restoration.	10
Fleet Mgmt. Liaison-Trans	RM-Liaison to Transportation (Fleet/Fuel/Rentals) Mgmt. role will coordinate/respond to all requests from Transmission -FL Area Logistics/System Storm Center through System Logistics Center to Transportation Mgmt.	2
Sourcing / Vendor Mgmt. Liaison-Trans	RM-Liaison to Sourcing/Vendor Relations Support role will coordinate/respond to all requests from Transmission - FL Area Logistics/System Storm Center through System Logistics Center to Sourcing/Vendor Relations Management.	2
Admin/Corp Services Leads-Trans	Responsible for administrative functioning of the event; set up of storm centers, assure communications, notifications, storm calls /briefings are scheduled, documented, communicated; assure meals for administration/storm center workers.	2
Admin Support-Trans	Responsible for drafting and sending all communications / notifications during an event as directed by the IC/Storm Director and/or Section Chiefs for Logistics, Planning, and	12

	Operations, the internal communications of the event, and serves as a liaison to the Communications Section Chief (Public Information Officer), providing necessary support. Provides meal plan for storm centers staff.	
Finance Support-Trans	Assures all storm roles are notified and provided accurate charging instructions, timing, & coding. Upon Declaration of an Event, creates, gains approval, communicates, and distributes charging instructions and charge-to codes to the entire T-FL System Storm organization. Manages and reports to IC/Finance Chief	4
Storm Center Set Up Team-Trans	Assures all storm centers are set up, connected (internet, telecom, Wi-Fi, electricity, generator, printer system, etc.), stocked (office supplies, printing supplies, pens, paper, markers, etc.), supplied (maps, charts, projectors, laptops/hardware, software, telephones, etc.) for communication, notifications, decisions, data gathering, sharing within the storm organization to occur systematically and smoothly.	5
Public Information Officer / Communications -Trans	A member of the System Storm Center responsible for interfacing with the public and media or with other agencies with incident-related information requirements.	2
Safety Officer	A member of the System Storm Center responsible for monitoring and assessing safety hazards or unsafe situations, and for developing measures for ensuring personnel safety.	2

System Safety Officer & Backup	Coordinate and Manage all H&S storm response with the Florida system storm team. Track all safety related events and provide consistent safety messages daily.	2
H&S Zone Storm Coordinator	Coordinate H&S response, orientations and coverage for their assigned zone. Provide and coordinate field response and perform field observations in support of the Zone Storm Team. Provide leadership and direction to any field support assigned to support them.	5
H&S Zone Field support	Provide in field H&S response to the area they are assigned. Provides safety messages, field response, observations, event reporting and tracking support.	10
Nursing Support	Nursing support was strategically spread throughout the restoration area to support first aid care for employees and contractors as needed.	7

Logistics Chief-Dist.	The Logistics Chief oversees the Logistics Organization which is comprised of the following sections: Resource Management, Resource Support (Site Mgmt., Lodging, Vendor Mgmt.), Fleet, Materials, and Support Services (IT, HR, Security, Facilities)	1
Resource Management Director-Dist.	The Resource Manager manages the RM storm organization and functions during major restoration	2

	efforts. This position is responsible for ensuring that identified resource needs for support of the restoration effort are met. This position will ensure that off-system line and tree resources are acquired, mobilized, tracked, assigned, and demobilized before and during major storm events.	
Resource Management PM Lead-Dist.	Provides guidance and direction for the night staff and ensures that all Resource Management questions and issues are resolved before next day.	1
Resource Management Support-Dist.	Provides support to the Resource Manager, PM Resource Manager and the RM storm organization and functions during major restoration efforts.	2
Resources On Demand SME-Dist.	Provides RoD Tool support and guidance to the Resource Mobilization Teams	1
RSVP Leads-Dist.	This position manages the process of receiving requests, and staffing of non-craft, technical support internally during major events	2
Mutual Assistance Lead	SEE and EEI company representative: Team lead, or designee, participates and collaborates with national and Zone mutual assistance associations	1
Resource Acquisition Lead	Collaborate with Resource Management Director, or designee, and the Planning Section to determine resource requirements. Ensure resources are acquired and appropriate terms and conditions are negotiated.	2
Resource Mobilization Lead-Dist.	This position oversees the mobilization of acquired resources and equipment at the System level to the Operation Section Zones.	2
Zone Resource Coordinators-Dist.	The Zone Resource Coordinator is responsible for accepting, tracking, and assigning all internal and external contractor line and tree resources to the appropriate Operations Centers.	4
RSVP Support-Dist.	This position is responsible for keeping their assigned area portion of the RSVP tool current. In addition, this position will support the storm response by updating the RSVP tool to accurately reflect the resource mobilization plan.	3
Resource Acquisition Line – Dist. Account Mgrs. & Resource Acquisition Vegetation Account Mgrs.	At the direction of the Resource Acquisition Lead, this position acquires and secures resources from utilities, private companies, muni's and coops that meets the criteria established by the Acquisition team lead. Negotiate terms and conditions as prescribed by team lead.	5
Resource Acquisition Support-Dist.	This position supports the Resource Acquisition Line and Vegetation Account Managers in the acquisition of line and vegetation crews.	5
Line Mobilization Support and Vegetation Mobilization	This position will input acquired crews in the resource tracking tool, split and assign crews based on direction	13

Support-Dist.	from their lead. This role is also responsible for communicating with the crews as they are in route to Florida to ensure location and time of arrival.	
Crew Tracking Team Lead-Dist.	Responsible for the coordination and scheduling of the Crew Trackers and ensures that all based camps are resourced to accept and verify arriving crews.	1
Crew Tracking Team-Dist.	This position is responsible for verifying arrival date and times for off system storm resources. This position will also verify and update the Resource on Demand tool with actual resource counts, roster names and type of equipment.	15
Resource Support Director-Dist.	The Resource Support Director manages all Crew Support storm roles, ensuring all base camp logistical needs are met during major storm restoration events. In addition, the Resource Support Director is responsible for ensuring lodging and meal needs for all resources supporting storm efforts are secured.	1
Site Management Lead-Dist.	This position manages all Logistics Base Camp and Site operations, ensuring all Logistics needs are met while implementing best practices at sites throughout the system during storm restoration activities.	1
System Site Lead and Coordinators-Dist.	These positions are the primary contact for the Site Logistics Leads and Transmission Logistics to address Base Camp/Site concerns while implementing best practices at sites throughout the system during storm restoration activities.	3
Staffing Lead-Dist.	The Staffing Lead acts as the single point of contact to assign personnel to the Resource Support storm roles that best utilize their skill sets during storm restoration activities.	2
Site Logistics Lead-Dist.	This position is accountable for reporting and/or resolving base camp related logistical issues	20
Site Lodging Lead-Dist.	This position is responsible for assigning base camp resources to acquired hotels, rooms, and beds, distribute hotel keys, and track room assignments.	20
Site & Lodging Support-Dist.	These roles support the operations of the base camp through administrative support, safety oversight, daily maintenance, on-site traffic flow, and hotel support.	100
Vendor Mgmt. Lead & Coordinators-Dist.	These positions are responsible for managing the assigned logistics vendors supporting Base Camp and Site operations.	3
Meals Lead & Coordinators-Dist.	These positions are responsible for managing the storm center meals. In addition, these positions act as a liaison between Vendor Mgmt. and the Operations Section should company facilities need system level meal support.	3
Lodging Lead-Dist.	The Lodging Lead directs all activity for the System	2

	Lodging Team and 3rd Party Acquisition vendor. The primary responsibility of the Lodging Lead is to meet bed needs and inform the Logistics – Resource Support Director when beds are not available and the need for alternative housing exists.	
System Lodging Team-Dist.	These positions receive direction from the Lodging Lead on bed and location needs and works with the 3rd party vendor to acquire the necessary lodging accommodations.	4
System Lodging Support-Dist.	This team fields incoming calls from crews and resources requiring bed arrangements or changes in accommodations and responds to their request for forwards it to the appropriate System Lodging Team member.	6
Site Operational Lead Coordinator-Dist.	This position is responsible for assigning and overseeing the activated Site Operation Lead's during major restoration events.	1
Site Operational Leads-Dist.	This position is accountable for all operations at Base Camps	23
Support Services Director-Dist.	The Support Services Director/Coordinator is the liaison between for IT, HR, Facilities, and Corporate Security to facilitate event support report outs and issue resolution.	1
Support Services Coordinator-Dist.	The Support Services Coordinator is responsible for providing 24 hour IT support and phone coverage in the System Logistics Storm Room.	2
IT&T Liaison-Dist.	The IT&T Liaisons act as a single point of contact for IT and Telecom needs. The Support Services Director notifies the IT&T Liaisons of any potential issues and they relay the need to the appropriate area of the IT&T department.	3
HR Liaison	The HR Liaisons act as the single point of contact to the HR department for employee needs during emergency events. These positions provide frequently asked questions and policy guidance for managers and employees.	2
Facilities Liaison	This position coordinates all facility needs for DE properties.	2
Corporate Security Liaison	The System Security Liaison (normally a supervisor) acts as a single point of contact for identifying and leveraging security resources in support of storm restoration activities. The Distribution System Storm Center is the central hub for all security-related communication where the System Security Liaison will be primarily located during a storm event.	1
Zone Security Liaison	The Zone Security Specialist acts as a single point of contact to Duke Energy field personnel, primarily	4

	addressing security-related concerns on a Zone basis during storm restoration activities.	
Logistics Zone Liaisons-Dist.	The Logistics Zone Liaison is the single point of contact to Zone Storm Managers with the primary function of addressing logistical concerns during restoration activities.	4
Materials Director	This position manages the Materials Storm Organization to ensure major storm restoration work groups are fully supported.	1
Materials Warehouse Coordinator	This position coordinates the receipt, issue and delivery of all T&D materials needed to support storm restoration efforts.	1
Materials Warehouse Storekeepers-Dist.	This position serves as the materials expert and point of contact for obtaining materials and supplies as needed or requested from the Wildwood Central Warehouse.	4
Materials Truck/Tractor Operators	This position loads and delivers materials from the Wildwood Central Warehouse to staging sites and Zone Storerooms, and transports materials back to the Central Warehouse from outlying locations.	7
Materials Runners-Dist.	This position delivers small quantities of critical materials to staging sites and operations centers on an as needed basis.	6
Materials Stock-out Coordinator	This position ensures that material stock-outs are followed up on.	1
Materials Warehouse Assistant Storekeepers-Dist.	This position supports the Warehouse Storekeeper (SC-2A) at the Wildwood Central Warehouse with materials handling and readiness.	14
Materials Field Coordinator	This position is responsible for the staffing and operations of T&D Storerooms and materials support at Staging Areas in support of storm restoration efforts.	2
Materials Storm Room Storekeepers	This position serves as the materials expert and point of contact for obtaining materials and supplies as needed or requested for the Zone Storeroom.	1
Materials Logistics Coordinator-Dist.	This position is responsible for ensuring that food, lodging, and equipment rental requirements are handled for personnel reporting to the Central Warehouse and Transformer Shop.	1
Materials Site Storekeepers-Dist.	This position serves as the materials expert and single point of contact for obtaining materials and supplies as needed or requested by the Staging Site Operation Lead (SSOL-2) or Staging Site Logistics Lead (SL-7).	10
Materials Site Handlers-Dist.	This position supports the Staging Site Storekeeper (SC-3B) with materials handling and readiness at the Staging Site.	40
Materials Admin Support-Dist.	This position provides administrative support to the Supply Chain Storm Manager (SC-1) and the Materials Storm Center as directed by the Logistics Coordinator	1

	(SC-4).	
Materials RSVP Coordinator-Dist.	This position is responsible for keeping the Supply Chain portion of the RSVP tool current. In addition, this position will support storm response by updating the RSVP tool to accurately reflect the Supply Chain resource mobilization plan.	1
Fleet Director	This position manages the Fleet Services organization to ensure major storm restoration work groups are fully supported.	1
Fleet Storm Coordinator	This position manages the fleet storm organization to ensure vehicle and equipment needs are met throughout the storm restoration process.	2
Fuel Storm Coordinator	This position manages the fuel storm organization to ensure vehicle and equipment fuel needs are met throughout the storm restoration process.	2
Fleet RSVP Coordinator	This position is responsible for keeping the Fleet portion of the RSVP tool current. In addition, this position will support the C&MS storm response by updating the RSVP tool to accurately reflect the Fleet resource mobilization plan.	2
Rental Vehicle Coordinator	This position manages the procurement of light duty rental vehicles to ensure light duty transportation needs are met throughout the storm restoration process.	2
Zone Technical Support	This position is responsible for maintenance support at Ops Centers and light duty staging site repairs. In addition, they will provide support at zone level to coordinate all fleet issues if normal organizational structure is not possible.	5
Fleet Technicians	Responsible for minor repairs. May utilize vendor support.	47
Fuelers	Provide overnight fueling of all vehicles on staging site.	8 per 250 assets
Fleet Parts Support	Supports parts for Fleet	3
DA System Coordinator-Dist.	Leads DA efforts related to Statistical, Targeted, and Forensic assessment	1
Statistical DA Coordinator-Dist.	Leads Statistical DA operations statewide	1
Targeted DA Coordinator-Dist.	Leads Targeted DA operations statewide	1
Forensic DA Coordinator-Dist.	Leads Forensic DA operations statewide	1
Zone DA Coordinator-Dist.	Leads Statistical & Targeted DA operations within the local Zone, providing oversight to native and contracted DA resources	4
Op Center DA Coordinator-Dist.	Leads Statistical & Targeted DA operations within a specific Op Center	21
DA Assessor (Duke Energy Employee)-Dist.	Performs assessment of damage for Statistical, Targeted, and Forensic efforts; potential to lead DA	160

	contract resources	
DA Assessor (Contract Resource)-Dist.	Performs assessment of damage of Statistical, Targeted, and Forensic efforts	~450
Planning Section: Collection, evaluation, and dissemination of information related to the incident and preparation and documentation of Incident Action Plans. • Resource Allocation • Situation Awareness • Environmental	 • Incident Action Plan (IAP) Development and Production, Daily goal setting, ETR • Restoration status reports, State EOC reporting • Liaison to field, oil spill response and reporting	 3 4 6

3. When did the costs for Hurricanes Hermine, Matthew, Irma, Maria, and Nate begin to accrue for receiving mutual aid?

RESPONSE:

Pursuant to DEF's Mutual Assistance Guidelines, mutual aid costs begin to accrue when the responding entity begins taking actions towards providing mutual aid in response to a request (including, e.g., preparing employees and equipment for travel). Costs began to accrue on the following dates:

HERMINE: August 29, 2016
MATTHEW: October 4, 2016
IRMA: September 5, 2017
MARIA: *N/A*
NATE: October 6, 2017

Damage Assessment Process

4. Please provide a detailed overview of the initial damage assessment process for Hurricanes Hermine, Matthew, Irma, Maria, and Nate, including the number of utility employees or contractors involved, their duties, and how initial damage assessment is disseminated within the utility to assist in restoration activities. Additionally, please provide photographs or other visual media that memorializes storm damage, which was documented during the initial damage assessment process.

RESPONSE:

Duke Energy Florida's Damage Assessment process , while primarily focused on the physical assessment of damage to electrical facilities, has evolved over the years into three (3) discrete focus areas: Statistical Assessment, Targeted Assessment and Forensic Assessment. Immediately after the storm has cleared, Damage Assessment teams are deployed when it is safe to be mobilized. Duke Energy Florida typically staffs approximately one hundred sixty personnel that are focused primarily on oversight of contract and non-native damage assessment resources and processing of data provided by the same. Contract and non-Native Damage Assessment resources provide the field assessment data that is utilized to project resource needs, material needs, hazard conditions, automated equipment verification and data collection. Over two hundred fifty contractor and non-native resources were utilized each in Hurricanes Matthew and Irma. A description of the three functional areas of Damage Assessment is as follows:

- **Statistical** - to obtain estimated damage to the Distribution system in an abbreviated timeframe. The estimated damage is then extrapolated across the entire area (Ops Center, Zone, and DEF) and combined with Resource information to obtain an initial Estimated Time to Restore(ETR). The areas that have been designated for Statistical Assessment amount to approximately ten percent (10%) of the facilities in any given area. This statistically valid sample can be extrapolated over the entire area with a high degree of confidence.
- **Targeted** – to provide a pole to pole patrol of specific targets identified after the initial patrol of the feeder by the Construction & Maintenance (C&M) organization, i.e., Assess, Isolate, Restore (AIR) process. In other instances, pole to pole patrols of the feeder are performed of all facilities associated with an event (downstream of an identified device, i.e., recloser, transformer, regulator, fuse, etc.) Further into the restoration process, some Damage Assessment resources may be re-deployed to patrol distribution facilities immediately ahead of the C&M resources, reporting on upcoming field conditions and damage to facilities. Collected data and intelligence is utilized to develop specific restoration plans and to update the local ETR.
- **Forensic** – to collect forensic data on broken poles and the performance of Storm Hardened circuits. This data is utilized to validate designs, system performance during adverse weather events and to provide intelligence back to the Florida Public Service Commission. Additionally, Forensic Assessment makes field observations of automated equipment facilities that are not visible to the Distribution Control Center (DCC) after restoration.

Transmission Damage Assessment Process

Damage Assessment Crew Management – Roles & Responsibilities

After the storm event has passed, and ECC has begun assessment and prioritization of system impact/damage, T-FL Crew Management Restoration/DA Mobilization Director

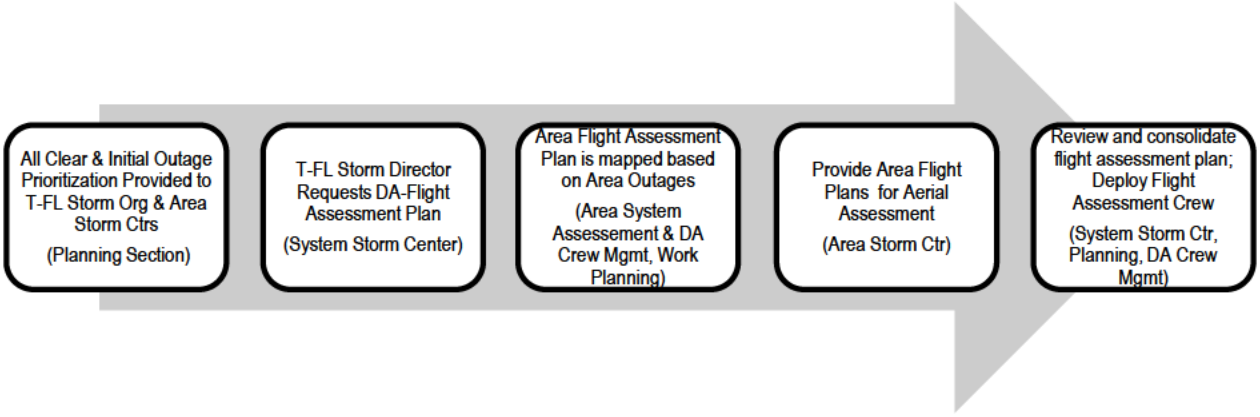
and Area Storm Center provides a Damage Assessment plan / recommendation to System Storm Center. Typically, Damage Assessment includes:

- Flight Assessment of lines impacted, hard to access areas designated from the outage reports, and vegetation / debris that may be in those impacted areas
- Ground Assessment of the impacted and more accessible lines, substations, switches that have road, clear access
- Ground Assessment of accessibility to lines, sub-sites, and switches, determining immediate tree clearing needs
- Ground Assessment and repair of hard to reach lines and switches using specialty / marsh-master crew and equipment

Flight Assessment Work Plan

DEF / Transmission-FL has a helicopter / hangar in Florida for aerial patrols and emergency event/ major storm event aerial assessments. DE has two other helicopters on the system and available for use in Flight Assessment after an emergency event/major storm event. T-FL System Storm Center takes the lead in planning flight patrols/damage assessments for One Florida Storm Response.

- Timing of Flight Assessments are highly reliant on 'all clear' and storm conditions; wind, cloud coverage, rain/precipitation will all impact the helicopters ability to begin flight. The Helicopter pilot and assessment team is required to follow all DE Aviation Policy, AFA, Utility, Emergency Management flight rules and guidelines. All restoration activities MUST follow all SAFETY guidelines to assure SAFE working conditions.



Please see photos attached bearing Bates Numbers DEF DR1-4-0001 through DEF DR1-4-0039.

5. Please provide a description of how damage assessment data is updated and communicated internally.

RESPONSE:

Duke Energy Florida's Damage Assessment process allows for real-time data updates throughout the restoration period. As outages are collected within Duke Energy's Outage Management System (OMS), local Op Center leads from C&M and Damage Assessment request and assign outages from the Distribution Data Center (DCC) to Damage Assessment teams by email submittals. These outages are electronically reassigned by DCC out of pending status and into a Damage Assessment Mobile Truck. As data is collected from Damage Assessment teams, this information is entered on the assigned OMS ticket, and stays with the ticket in the comments history. The data collected includes a material summary of all damage found, addresses/intersections of damaged areas, necessary vegetation clearing, and locations of damaged equipment owned by Customers (follow up to note within Duke Energy's Customer Service System on the Customer's account, creating a pending reconnect ticket, allowing the customer to make repairs and request service at a later date). Damage Assessment teams strategically review the compiled data pertaining to the OMS ticket, and submit an email request back to DCC for reassignment out of the Damage Assessment Mobile Truck and into a further work queue. C&M Leadership at the Op Center reviews the OMS further work queues throughout the event and develops strategic restoration plans with Vegetation and C&M resources.

Though most communication is established through mobile connectivity, Damage Assessment teams also return the data collected on paper forms to the local Op Center. These forms are filed with Damage Assessment Leads, and referenced if/when mobile connectivity is unavailable.

Restoration Workload

6. Please provide a detailed description of how the utility determines when and where to start restoration efforts.

RESPONSE:

In an effort to maintain power to customers, Duke Energy remains engaged in restoration efforts as storms approach, during storms and after storms pass as long as the following conditions do not exist:

- Employees are prohibited from operating bucket trucks in the elevated work position when the wind speed (steady or gusts) exceeds 30 MPH.

- Any manufacturer's recommended wind speed guideline for bucket trucks operating in the elevated position, if less than 30 MPH. (Example: Condor (Transmission) recommends a maximum wind speed of 25 MPH.)
- Employees should cease traveling (in all vehicles) or working, including climbing, when winds reach tropical storm velocity of 39 MPH.

After a major storm (hurricane) passes and safe conditions exist, Duke Energy focuses on restoring power safely and efficiently.

A typical sequence of activities, many of which occur simultaneously, is as follows:

- **Restore the circuits/devices serving the largest number of customers:**
    - Transmission - substation equipment – these serve large numbers of customers and large geographic areas, and must be restored first to keep electricity flowing from power plants to neighborhoods.

    - Distribution - facilities/devices with the largest number of customers back on as quickly as possible.
- **Restore the circuits/devices serving facilities supporting public health and welfare:**
    - Essential facilities – emergency service and critical infrastructure such as hospitals, shelters, water and sewer treatment facilities, law enforcement, fire departments, communications and food distribution centers.

- **Respond to emergent issues requested through County and State EOCs:**
    - Missions – Respond to requests associated with missions provided by County and State EOCs such as make it safe (road clearing and wire downs), interstate information signs, traffic signals, 1st responder issues and real-time escalated issues.

7. For Hurricanes Hermine, Matthew, Irma, Maria, and Nate, please complete the following table on workload priority:

Personnel Responsible for Restoration Workload Assignments		
Title	Years of experience	Number of crews managed

RESPONSE:

ZIC-Zone Incident Commander
TIC-Transmission Incident Commander

The responsibilities of the ZICs and TICs are outlines in DEF's response to DR 1.2.

Personnel Responsible for Restoration Workload Assignments at peak -Hermine		
Title	Years of experience	Number of crews managed
ZIC	29 years	589
ZIC	34 years	304
ZIC	35 years	1389
ZIC	25 years	315
TIC	32 years	283

Personnel Responsible for Restoration Workload Assignments-Matthew		
Title	Years of experience	Number of crews managed
ZIC	29 years	380
ZIC	34 years	377
ZIC	35 years	175
ZIC	25 years	2246
TIC	32 years	345

Personnel Responsible for Restoration Workload Assignments at peak -Irma		
Title	Years of experience	Number of crews managed
ZIC	29 years	3796
ZIC	34 years	3233
ZIC	35 years	2461
ZIC	25 years	3453
TIC	32 years	1766

Personnel Responsible for Restoration Workload Assignments-Maria		
Title	Years of experience	Number of crews managed
N/A		

Personnel Responsible for Restoration Workload Assignments-Nate		
Title	Years of experience	Number of crews managed
ZIC	29 years	590
TIC	32 years	81

8. Please provide a description of how restoration workload adjusts based on work completed and updates to damage assessments.

RESPONSE:

Based on weather forecast and predictive models, as a storm approaches resources are allocated to the areas projected to be impacted by the storm. Once the storm passes, damage assessment is performed to assist with determining the level of damage to our system. As restoration is completed in portions of our service territory to customers that can receive power, resources are reallocated to the remaining areas without power. Typically, these are areas with significant damage. Daily planning meetings are conducted to validate restoration progress and develop resource mobilization plans until completion of restoration.

9. If applicable, please describe how mutual aid was determined to be no longer needed following Hurricanes Hermine, Matthew, Irma, Maria, and Nate.

RESPONSE:

Estimated times of restoration were initially determined based on damage forecasts and firm resource commitments. Subsequent offers of mutual assistance resources (primarily lineman and vegetation management personnel) were received throughout these events. Each was assessed individually based on factors that included cost, travel time to Florida, familiarity with DEF's electric system, and expected restoration effectiveness. Mutual Aid resources were accepted throughout the duration of these events, and were deemed to be no longer needed when they could not contribute to achievement or acceleration of ETRs at reasonable cost.

Staffing Considerations

10. Regarding Hurricanes Hermine, Matthew, Irma, Maria, and Nate, please respond to the following, please provide the following:
    a. Days of lodging provided for Utility personnel (Person-Days)
    b. Days of lodging provided for mutual aid partners (Person-Days)
    c. Number of meals provided for Utility personnel
    d. Number of meals provided for mutual aid partners
    e. Number of Utility personnel injuries
    f. Number of mutual aid partner injuries
    g. Number of Utility personnel fatalities
    h. Number of mutual aid partner fatalities

    Please note any delays in restoration associated with items e-h above.

a. Days of lodging provided for Utility personnel (Person-Days)
b. Days of lodging provided for mutual aid partners (Person-Days)

RESPONSE:

Lodging data is not tracked separately between utility personnel and mutual aid partners. The tables by storm reflect the number of beds provided by day for each named event. These bed totals include a combination of hotel rooms and alternative housing arrangements (tents with cots, sleeper trailers, campgrounds, fixed buildings with cots).

- Days of lodging reflect both pre-staging of resources and post restoration lodging arrangements provided for deployed employees and vendors completing post-restoration activities
- Restoration crews are bedded down on the final day of restoration depending on time of completion of restoration activities on the final day (e.g., too late to safely begin return travel)
- Alternative housing options have minimum day requirements on rentals, extending secured beds past restoration date
- Beds secured for resource need projected and committed; however, in certain circumstances (e.g., Hurricane Nate) as understanding of and confidence in track of storm strengthened, resource need was reduced resulting in reduction of beds – dependent on cancellation policy of individual hotels.

Hermine

Date	8/31	9/1	9/2	9/3	9/4	9/5	9/6	9/7	9/8
Bed Total	971	2,314	3,757	3,775	3,283	1,852	328	155	0

Matthew

Date	10/5	10/6	10/7	10/8	10/9	10/10	10/11	10/12	10/13	10/14	10/15	10/16	10/17	10/18	10/19

Bed Total	78	2,506	2,820	4,382	4,735	4,269	2,962	59	119	119	55	55	55	55	0

Irma

Date	9/6	9/7	9/8	9/9	9/10	9/11	9/12	9/13	9/14	9/15	9/16	9/17	9/18	9/19	9/20	9/21	9/22	9/23	9/24	9/25	9/26
Bed Total	20	94 3	2,050	10,777	11,441	13,436	20,624	21,827	23,125	21,536	20,501	20,334	21,589	21,923	13,075	8,272	1,130	1,109	231	79	39

Maria - No Lodging Provided

Nate

Date	10/6	10/7	10/8	10/9	10/10	10/11	10/12	10/13
Bed Total	1	1,419	695	249	249	249	239	-

c. Number of meals provided for Utility personnel

d. Number of meals provided for mutual aid partners

RESPONSE:

Meal data is not tracked separately between utility personnel and mutual aid partners. The table below reflects meals provided to both utility personnel and mutual aid partners (combined response for C&D). These meal counts include all resources supporting restoration efforts; including Storm Center Personnel, Call Center Personnel, Support Personnel, and Craft Personnel (native and non-native employees and contractors).

# of Meals Provided					
Event Name	Hermine	Matthew	Irma	Maria	Nate
Total	57,460	72,113	301,799	-	13,602

e. Number of Duke Line Crew injuries (Employee and Native Contractors)

RESPONSE:

Hermine = 1 Duke Line Employee.
2 Native Contractor line workers

Matthew = 1 Duke Line Employee
0 Native Contractors

Irma = 2 Duke Line Employees & 1 Duke Fleet Employee (Mechanic Support)
7 Native Contractors

Nate = 0

Maria = N/A

f. Number of Utility Mutual aid partner injuries (non-native)

RESPONSE:

Hermine = 0
Matthew = 0
Irma – 7 Non Native mutual aid line crew injuries
Nate = 0
Maria = N/A

g. Number of Utility personnel fatalities

RESPONSE:

Hermine = 0
Matthew = 0
Irma – 0
Nate = 0
Maria = N/A

h. Number of mutual aid partner fatalities

RESPONSE:

Hermine = 0
Matthew = 0
Irma = 0
Nate = 0
Maria = N/A

No delays in restoration resulted from injuries.

11. Please provide a detailed description of when your Utility was considered fully restored from each named storm event.

RESPONSE:

Restoration is considered complete when all customers able to receive power have been restored. Some customers may not be able to receive power as a result of damage to their structure, meter equipment or due to flooding.

The date ranges below represent the first storm related outages and the date of full restoration, as defined above, for each storm.

Hermine: 9/1/16 - 9/5/16
Matthew: 10/6/16 – 10/10/16
Irma: 9/11/17 – 9/19/17
Maria: N/A
Nate: 10/7/17 – 10/8/17

Customer Communication

12. Regarding Hurricanes Hermine, Matthew, Irma, Maria, and Nate, please respond to the following for each county in the Utility's service territory affected by the storms.
    a. Total number of customer accounts
    b. Peak number of outages

RESPONSE:

Please see the attached PDF file: "PSC Data Request Fall 2017 – Q12 Response" bearing Bates number DEF DR1-12-0001.

13. Please provide how call center customer service representatives were utilized before, during and after Hurricanes Hermine, Matthew, Irma, Maria, and Nate.

RESPONSE:

Duke Energy Florida has a robust major storm plan under which all customer services employees serve in assigned storm roles. The great majority of customer service representatives are responsible for fielding outage calls, issuing outage "tickets" and responding to emergency situations during major storms. Customer service representatives are alerted to impending storms, including Hurricanes Hermine, Matthew, Irma, Maria and Nate days in advance to begin their storm preparation activities and to ensure they are able to report to work for their assigned, expanded shifts. Customer service representatives are provided with detailed updates, storm-specific information before, during and after the storms so they can effectively respond to/take action on all

customer contacts. Customer service representatives are all provided with detailed storm training and access to a major storm communication repository which houses pertinent information about outages, restoration times, key emerging issues, local shelter info, evacuation info, agency (FEMA, other) assistance and safety tips to provide to customers based on need. Customer service representatives are also provided with talking points to help deal with difficult situations in an empathetic and customer-focused manner as well as a process for engaging appropriate resources to deal with escalated issues. Post restoration, customer service representatives shift back into their normal work roles, while continuing to focus on responding to and resolving storm related customer inquiries and work requests. As shared with commission staff, customer service representatives focus on working with customers, providing agency assistance information, and providing expanded payment arrangements to help customers recover from personal major storm impact both financial and other. Schedules were expanded during and after the storms to meet the increased volume of calls and post storm work (regular work) that backlogged due to storm restoration focus. For social media storm response, we used a core group of social media employees and recruited additional volunteers to help assist in responding to customer inquiries on Facebook and Twitter before, during and after the storms.

14. Please provide the number of customer service representatives the Utility had during Hurricanes Hermine, Matthew, Irma, Maria, and Nate.
    a. Were there additional personal deployed or 3rd party entities utilized to help address customer contacts during each named storm event? If so, how many?

RESPONSE:

Customer Service Specialists (representatives):

Hermine: 142 (CCO Specialists)

Matthew: 699 (CCO Specialists)

Irma: 850 (CCO Specialists)

Maria: No Impact

Nate: 35 (CCO Specialists)

Social Media Storm Response Staffing:

Hermine: 18

Matthew: 81

Irma: 109

a. Were there additional personal deployed or 3rd party entities utilized to help address customer contacts during each named storm event? If so, how many?

RESPONSE:

Hermine: 51 (Vendors)

Matthew: 275 (Vendors), 343 (Corporate Volunteers), and 167 (Revenue Services)

Irma: 500 (Vendors), 514 (Corporate Volunteers), 123 (Revenue Services), and 75 (Piedmont Natural Gas)

Maria: No Impact

Nate: Not Needed

15. Please provide the number of customer contacts received by the customer call center(s) during Hurricanes Hermine, Matthew, Irma, Maria, and Nate.

RESPONSE:

Customer Contacts (calls into customer call center(s)):

Hermine: (9/1/2016 – 9/5/2016)

- Calls received 236,827

Matthew: (10/6/2016 - 10/10/2016)

- Calls received: 384,747

Irma: (9/10/2017 – 9/20/2017)

- Calls received: 2,169,289

Maria: No Impact

Nate: (10/7/2017 – 10/9/2017)

- Calls received: 19,595

16. Please provide all methods (call centers, email, Utility website, etc.) utilized to submit and collect customer contacts before, during, and after Hurricanes Hermine, Matthew, Irma, Maria, and Nate.

RESPONSE:

- All Call Centers (inbound calls)
- External Website (Environmental Inquiry form, customer service emails)
- Inbound outage texts
- Social Media (Facebook/Twitter)
- Direct emails/Calls/Letters (Executives, CRMs, Consumer Affairs etc.)
- Media Line
- FPSC
- BBB
- Attorney General
- Florida Department of Agriculture and Consumer Services
- Pinellas County Consumer Protection
- Business Consumer Alliance
- Legislative Offices (Senators, Representatives)
- Issues redirected from state and county EOCs
- Surveys (Fastrack, Customer Perception Tracker, On-Line (pre-storm and post restoration)

17. Please describe the step by step process(es) by which customer contacts are addressed before, during, and after a named storm event. If different during each timeframe, please describe the step by step process during each separately.
    a. Did the Utility identify any delays in restoration as a result of addressing customer contacts related to Hurricanes Hermine, Matthew, Irma, Maria, and Nate? If so, please provide detail.

RESPONSE:

EOC-related process by which customer contacts are addressed before, during and after a named storm event:

- Duke Energy Florida's (DEF) external relations team works year-round to develop a staffing model to provide in-person and telephone support for county emergency operations centers (EOC) in DEF's territory. The area of responsibility falls under the Liaison section of the Incident Command Structure (ICS).
- The primary responsibility of the EOC representative is to bring forth, from the county EOC staff/leadership located in the same physical EOC, any critical customer and situational concerns to the attention of DEF operations staff located in various field locations throughout Florida.
- The EOC representative enters all issues into an online tracking system accessible to all DEF EOC representatives. This allows for seamless tracking and transmission of information in the transition of shifts.

- The information entered into the system at the county EOC by the DEF representative is continuously assessed by a DEF Operations Center Liaison (OCL) located in each operations center.
- The OCL coordinates resolution with operational staff and other resources assigned to the respective center.
- The EOC representative and OCL work closely via phone and the online tracking system to ensure resolution of issues and/or to communicate status of resolution or restoration.
- Issues are closed-out upon confirmation from the field

Customer Service (Call Centers and Consumer Affairs)-related process(es) by which customer contacts are addressed before, during and after a named storm event:

- DEF's Customer Services organization (which includes the Call Centers, Consumer Affairs, Revenue Services and other customer facing departments) utilizes a robust Major Storm Response structure and plan. Staff obtain extensive training so they are well prepared to shift into storm mode before the storm strikes, during restoration and post-restoration.
- Customers contact DEF in a number of ways including calls via the IVR, or calls directed to customer service reps, emails, social media inquiries, escalated complaints to Consumer Affairs from the commission as well as other external entities.
- Before, during and after the storm(s), the great majority of customer contacts are via phone. Customer service representatives respond to the calls and attempt to answer customer inquiries for information, take action on work requests, and during the storms, issue outages on specific residences and businesses, provide outage details and estimated restoration times when available. Representatives attempt to resolve all issues within the initial contact, but if unsuccessful, they are positioned to escalate the issue to a team lead, or other escalated team resource.
- In addition, inquiries and complaints are also received by the Consumer Affairs Team. Before, during and after the storm(s), Consumer Affairs fields the specific issue, contacts the customer in a prompt manner to acknowledge receipt of the inquiry or complaint, obtain additional information and resolve the customer issue in a thorough manner as promptly as possible.
- DEF also receives inquiries and complaints via our social media platforms (typically Facebook and Twitter). DEF has an effective process in place to route customer contacts to a Customer Service Social Media team who then reaches out to the customer, obtains additional clarifying information and takes steps to resolve all issues in a prompt and thorough manner while protecting customer confidentiality.
- Also, proactive content is pushed out through email, social, and web with messaging focused on preparedness, safety, mid-storm updates and post-storm restoration

information as well as scam alerts. We also have communication teams embedded in the field providing real time updates with photos of damage and restoration efforts.

- Based on the severity of the storm and number of outages/contact volume, resources are toggled among the teams based on need. For instance, during Irma we experienced record contact volume and additional resources were added to the Social Media team from other departments to keep up with the unprecedented volume.
- Regardless of the source of the contact, inquiry or complaint and the team who is fielding the contact, there is a shared expectation of first contact resolution and positive, customer treatment.
- Outage contacts are entered into the company's Outage Management System which issues individual electronic "tickets" to our field technicians. This action is real time.
- Other inquires and complaints are entered into the team's respective systems for tracking including the company's Customer Service System, Social Media tracking system and Consumer Affairs' complaint tracking system when appropriate. Not all contacts (for instance, requests for information) result in an entry especially during significant high volume (major storm) restoration but all complaints to Consumer Affairs are entered in the complaint tracking system.

Corporate Communications - Joint Information Center

Before a Storm

- Prepares news releases to inform the public that the company is preparing for severe weather and encouraging customers to prepare as well - includes storm and safety tips, how to report and outage and encourages customers to receive outage information via text alerts. Similar information is shared via social media platforms.
- Pro-actively contacts media to ensure news releases are picked up and participates in numerous media interviews.
- Pitches media events at our operations centers to show how the company and our crews are preparing.
- Places banners on company website linking customers to storm and safety information.
- Develop and launch new storm page dedicated to the emergency event as a resource for all storm related information and links.
- Storm director video with "we're prepared" message
- Outbound calls are placed to customers with Medical Alert status on their accounts in the potentially affected areas/counties.
- Develop media messages and talking points for external stakeholders, customer care and internal audiences.
- Customer emails to residential, small business and large business customers.
- Internal communication to employees regarding storm preparation efforts.

- Public service announcements

During the Storm

- Develop daily messages to be used with external stakeholders, media, customers, social customer care and field personnel. Also develop evergreen messages and messages to manage rumors and unique issues as needed.
- Develop at least one news release per day.
- Ongoing updates to social media on various topics: storm damage, estimated times of restoration, crews working, out of town resources, staging areas -- we look for numerous ways to tell the story of restoration through various operational and personal angles.
- Ongoing updates on dedicated storm page with resources, links and daily storm director video updates focused on the assessment and restoration processes.
- Reactive and proactive media -- local, regional and national. Also participate in press conferences and news briefings. Arrange events to host media at staging locations or crew work locations to see damage and restoration efforts. Embed and send media liaisons to field locations to host media, post on social media, capture storm damage and tell stories from the field of our crews working to restore power, call center operations, logistics team at staging locations, etc.
- If information changes - supplement normal customer channel communications (customer care specialists, text alerts, online outage maps) with news releases, emails, outbound calls, updated messages on the storm webpage and social media.
- Paid public/customer service announcements are also an option if deemed necessary to reach customers based on the extent of the storm - to inform the public of estimated times of restoration, etc.
- Social customer care responds to customers via online platforms

After the Storm

- Prepare wrap-up messages to be shared with customers and external stakeholders
- News release to provide final outage-related numbers, thank customers for their patience, local first responders and the companies that provided off-system resources.
- Thank you customer email to residential, small and large account customers
- Social media postings to thank customers, first responders, community agencies and other utilities that provided assistance.

a. Did the Utility identify any delays in restoration as a result of addressing customer contacts related to Hurricanes Hermine, Matthew, Irma, Maria, and Nate? If so, please provide detail.

RESPONSE:

Although DEF does not track whether or not it identified delays in restoration through customer contacts, information gathered from customer contacts is an integral part of the restoration process. During a storm event, DEF has multiple avenues available to gain intelligence regarding storm damage and resulting outages, but information reported by customers can provide additional information that DEF would be otherwise unaware of without manual inspection of the system as a whole.

18. Please provide whether or not customer contacts are categorized (by concern, complaint, information request, etc.) If so, how are they categorized? If not, why not?

RESPONSE:

Inbound calls are categorized by customer call type, dependent on the customer's IVR selection. Complaints and Inquiries that are escalated to Consumer Affairs are categorized by Complaint vs. Inquiry, by source (FPSC, executive letter, Better Business Bureau, etc.) and by complaint type (Outage, Deposit, High Bill, etc.). Consumer Affairs tracks all inquiries and complaints, including resolution details and preventability/contributing factor details (human performance, process, communication gaps) when appropriate as well as any subsequent corrective actions or improvements that have been identified and implemented to mitigate future occurrences.

Also, all inbound and outbound social media posts related to a storm are tagged with the following issues types and locations:

i. Inquiry Type: Outage Inquiry or Appreciation/Positive Restoration
ii. Location/Jurisdiction: Florida, NC-DEC, NC-DEP, SC-DEC, SC-DEP, MW

**DEF's Social Media team monitor for crisis and emerging situations that would require escalation. When not in storm mode, DEF tags all inbound messages with a much more diverse tagging structure.

That said, Customer contacts are not categorized as such in the company's Customer Service System (CSS). When appropriate, "Customer Contacts" (notes on a customer's account) are created in CSS by customer service specialists and other customer facing employees to document the interaction and to provide historical information for future reference/use. These Customer Contacts are categorized by the customer's issue but not categorized by information request vs. concern or complaint. During the major storms/hurricanes, the focus is on ensuring all customer outages are entered into the system, to provide customer with all information that is available to resolve their outage issues and to become available in queue to meet the significant customer demand.

In general, outage restoration requests are issued through CSS and fed to the company's outage management system where work can be dispatched to crews and where outage restoration details are tracked.

19. Please provide a detailed description of how customer service representatives are informed of restoration progress.
    a. Is there a script provided to each customer service representative to relay restoration progress to customers? If so, what is the process by which the script is created?

RESPONSE:

- Outages by County information is provided to the customer service representatives as updated throughout each event – this information is also available to our customers via multiple channels such are our website and social media platforms. Customer service representatives are also educated on the restoration process to allow the representatives to explain the restoration process and how it must follow a step-by-step progression. A visual depiction of that process is provided to DEF's representatives (see attached document bearing Bates Number DEF DR1-19-0001). During a storm event, there are also multiple calls held throughout the day that provide updates on restoration progress, issues that may have arisen, etc. Customer Service is represented on these calls ensuring the most up to date information is passed on to the Department.

- For the Social Media team (customer service responders) at the beginning of each responder shift, responders are updated on current status of restoration. Social media messaging is developed and updated as restoration numbers are released and shared with responders in real time. Duke Energy has an extensive library of responses based on frequently asked questions based on prior storms. All information is validated and approved by appointed Storm Director

a. Is there a script provided to each customer service representative to relay restoration progress to customers? If so, what is the process by which the script is created?

b.

RESPONSE:

- No, DEF does not provide our representatives with scripts as prior feedback from customers has indicated dissatisfaction with that approach. Instead, we provide general information, answers to frequently asked questions, and talking points provided from our Corporate Communications partners. This information is developed jointly with our distribution field partners and revised as information is received/updated. Attached is an example bearing Bates Numbers DEF DR1-0002 through DEF DR1-0007. The goal is to provide customer service representatives

with the information necessary to respond to individual customer's particular concerns, questions, or needs, rather than a "one-size-fits-all" script that may not provide the customer with the information desired.

20. Please describe the process the Utility uses to notify customers of approximate restoration times. The response should include at a minimum:
    a. How restoration time estimates were determined.
    b. How customers are notified.
    c. How restoration time estimates are updated.
    d. How restoration time estimates are disseminated internally, to the county and state Emergency Operations Centers, and to the public.

RESPONSE:

a. How restoration time estimates were determined.

DEF uses a number of factors to establish estimated times to restoration (ETRs). The factors are continuously monitored so that changes to the inputs produce updated ETRs which can then be communicated to customers. In general, the factors listed below are evaluated and DEF's Storm response coordinators determine ETRs based upon professional experience. As such, ETRs are based upon the facts as they are known at a given time and a degree of professional judgment.

- OMS event count by impacted areas
- ETR Tools
- Damage Assessment
- Initial Feedback from Zone and Local Incident Commanders
- Available resources (anticipated arrival time and available to begin restoration).
- Logistical challenges (i.e. travel conditions, flooding, fuel, road closures, etc.)

b. How customers are notified.
- Media releases
- Outbound calls
- Interactive Voice Response (IVR)
- Email

c. How restoration time estimates are updated.
- Updated content related to restoration are posted to on Facebook and Twitter.
- Customers can received an email, text, or voice call updating them on their outage after they have reported their outage OR if they are subscribed to proactive outage notifications.

- Customers can visit www.Duke-Energy.com and view outage maps on mobile, desktops and Facebook page.
- Customers can call to report their outage and receive restoration status updates vial automation through the IVR or speak to a customer service representative.
- We share outage updates with media and local authorities as restoration updates are available and published to our website.
- Media/press releases
- Regular cadence of required updates to state and county officials

d. How restoration time estimates are disseminated internally, to the county and state Emergency Operations Centers, and to the public.

County & State EOC's:

- Periodic outage reports by county are provided to both the County and State EOCs
- County EOC Reps
- County specific maps outage data populated

Public:

- Updated content related to restoration are posted to on Facebook and Twitter.
- Customers can received an email, text, or voice call updating them on their outage after they have reported their outage OR if they are subscribed to proactive outage notifications.
- Customers can visit www.Duke-Energy.com and view outage maps on mobile, desktops and Facebook page.
- Customers can call to report their outage and receive restoration status updates vial automation through the IVR or speak to a customer service representative.
- We share outage updates with media and local authorities as restoration updates are available and published to our website.
- Media/press releases
- Regular cadence of required updates to state and county officials

Material Considerations

21. Regarding Hurricanes Hermine, Matthew, Irma, Maria, and Nate, please provide a description of how vehicle fuel was procured for Utility personnel and mutual aid partners. As part of the response, please answer the following:
    a. Whether or not the Utility has fuel stored for these types of events
    b. Whether or not fuel shortage was an issue during these events
    c. Whether or not there were any delays due to fuel shortage
    d. Whether or not there were enough vehicles available during these events/any issues mobilizing crews

RESPONSE:

500 gallon fuel tanks are staged at most operations yards and filled pre-landfall for the projected path and surrounding areas. These tanks are filled 2-5 days in advance of landfall depending on size and strength of the storm. This process is followed for all the storms mentioned. In addition, the fuel vendor is under contract to fill prior to storm arrival (5) 10,000 gallon tankers with 75% diesel and 25% unleaded to ensure fuel would be immediately available.

In addition to the above, due to the magnitude of hurricane Irma, efforts to assure fuel for restoration efforts were increased and three additional sets of pre-staged fuel teams were located within the state and at a staging area in South Georgia. The fuel is pre-staged so that it will be available and not caught up in the line of traffic for those returning from evacuation.

a. No, fuel is not stored year-round for storm events
b. No, due to DEF's proactive steps to ensure adequate fuel supply, there were no issues related to fuel shortages for any of the named events.
c. No, there were fuel shortages, and therefore, no delays to restoration resulting from fuel shortages.
d. There were enough vehicles during these events, and there were no vehicle related issues associated with the availability or mobilization of resources.

22. Please detail any complications or delays such as shortage or delayed delivery of materials for Hurricanes Hermine, Matthew, Irma, Maria, and Nate.

RESPONSE:

Due to DEF's preplanning and staging, including annual readiness training, there was no shortage of materials or delays in delivery of materials for any of the named events.

Restoration Process

23. Please provide a summary timeline of the utility's restoration process for each hurricane: Hermine, Matthew, Irma, Maria, and Nate. The timeline should include, but not limited to, staging, stand-down, deployment, re-deployment, allocation, mutual aid, release of mutual aid, and date last outage was restored.

RESPONSE:

Hermine- 9/1/16 - 9/5/16
Matthew- 10/6/16 – 10/10/16

Irma – 9/11/17 – 9/19/17
Maria- N/A (no impact)
Nate- 10/7/17 – 10/8/17

	Hermine	Matthew	Irma	Nate
Initial incident briefing	8/24/16	9/30/16	9/5/17	10/4/17
Mutual aid- requested	8/25/16	10/4/16	9/5/17	10/6/17
Staged resources	8/31/16	10/5/16	9/9/17	10/6/17
Deployment	8/25/16	10/6/16	9/11/17	10/7/17
Redeployment	8/26/16	10/7/16	9/12/17	N/A
Allocation	8/24/16	10/5/16	9/10/17	10/6/17
Release of mutual aid	9/6/16	10/12/16	9/25/17	10/8/17
Stand-down	9/6/16	10/12/16	9/19/17	10/8/17
Last outage restored	9/5/16	10/10/16	9/19/17	10/8/17

Maria-No Impact
Time-line represents-Line, VM and DA resource activities

24. Please explain how the Utility validates adherences and departures from its storm preparation plan.
    a. If the Utility does not assess departures from its storm plan, explain why not.
    b. If the Utility does not document or otherwise memorialize departures from its storm plan, explain why not.
    c. Have departures from the Utility's storm preparation plan resulted in modification of the storm preparation plan during 2015 through 2017? If so, please explain how with examples.

RESPONSE:

A few years ago, Duke Energy introduced the ICS response model to our Florida Event Response Organization. We continue to mature with each year and each storm. During preparations and execution, the Incident Commander, in conjunction with the command staff, will develop daily objectives. The Planning section will work with the various sections to develop IAP (Incident Action Plan) to meet the objectives. As part of the daily process, multiple briefings are conducted to validate progress towards completion of task to meet objectives.

During preparations and response efforts, daily goals are established, communicated and validated for completion.

Duke Energy has applied experiences and observations from previous storms and deployments to support other utilities to our plans. Even with applying these experiences and observations, no two storms are alike and each storm brings more challenges and opportunities.

Our engagement with County EOCs has increased to assist with Road Clearing/Make It Safe in response to request during Hermine. As we prepare for an approaching storm, we assign resources to work directly with County teams immediately following the storms. Once road clearing efforts have been completed, these resources become engaged in restoration efforts.

In an effort to better understand between Duke Energy and both State and County operations, we participate in State and County training and drill exercise sessions and they have participated in our sessions.

We continue to expand the use of ICS terms and models across Duke Energy and have adopted common constructions standards. These initiatives allow for more effective response when mutual aid form other Duke Energy regions respond to a storm event in Florida. This includes storm support beyond traditional line, tree and damage assessment roles.

We have modified our preparation plans to increase the use of alternative lodging vs. exclusive use of hotels in the past. The proved to be beneficial during the most recent storm (Irma). Many Florida residents from the south evacuated north to central & north Florida and even into Georgia limiting the number hotels available.

Examples:

- Further maturity of ICS model
- Hired an enterprise Emergency Preparedness Manager
- Developed structured Road Clearing/Make It Safe programs and develop dedicated resource plans to support counties EOCs
- Expansion of alternative lodging plans
- Increased logistic vendors
- Leadership alignment meetings
- Included County and State officials in drills and exercises
- Enhanced our state and county mission tracking process

25. Please explain how the Utility validates adherences and departures from its storm restoration plan.
    a. If the Utility does not assess departures from its storm restoration plan, explain why not.
    b. If the Utility does not document or otherwise memorialize departures from its restoration storm plan, explain why not.
    c. Have departures from the Utility's storm restoration plan resulted in modification of the storm restoration plan during 2015 through 2017? If so, please explain how with examples.

RESPONSE:

Response-During preparations and response efforts, daily goals are established, communicated and validated for completion.

The following are best practices and opportunities for improvement from the period described.

Examples:

- Leverage technology for damage assessment
- Enhanced communication plans
- Developed social media teams
- Expansion of alternative lodging utilization
- Modified Switching & Tagging clearance process
- Streamlined feeder/backbone modeling process
- Incorporated a new Deputy Commander role to assess field operations
- Proliferation of self-healing circuits
- Introduced nurse staffing at staging sites to support native and mutual aid resources
- Modified our forensics damage assessment process
- Moved to common construction standards across Duke Energy to aid in restoration efficiencies

Outages

26. Please identify all counties, including reporting regions/division for each county if applicable, that were impacted (had outages or damage) due to Hurricanes Matthew, Hermine, Irma, Maria, and Nate.

RESPONSE:

Please see the attached PDF document titled: "PSC Data Request Fall 2017 – Q26 Response" bearing Bates Number DEF DR1-26-0001.

27. Please complete the table below summarizing the wind speed and flooding impacts by county in the utility's service area. If the requested information is not available by county, please provide the information on a system basis. Please provide this information for Hurricanes Matthew, Hermine, Irma, Maria, and Nate.

Weather Impact				
County	Maximum Sustained Winds (MPH)	Maximum Gusts (MPH)	Maximum Rainfall (inches)	Maximum Storm Surge (Feet)

RESPONSE:

Hurricane Maria:

There were no impacts to the Florida Service Area as a result of Hurricane Maria, which stayed a few hundred miles offshore the Southeastern US coastline.

Hurricane Nate:

Weather Impact				
County	Maximum Sustained Winds (MPH)	Maximum Gusts (MPH)	Maximum Rainfall (inches)	Maximum Storm Surge (Feet)
Gulf	25	34	0.20	3
Franklin	29	37	0.18	4

Hurricane Nate tracked west of the Florida Service Area, making landfall near the Mississippi/Alabama border. The storm was relatively weak and had a small wind-field, thus there were minimal impacts seen across Florida. Strongest wind gusts ranged 30-40 mph for the farthest west counties in the Panhandle, including Gulf and Franklin, which led to minimal issues.

Hurricanes Hermine and Matthew:

See the attached PDF from the Florida State Climatologists that includes comprehensive, detailed post-storm analyses for both Hurricanes Hermine and Matthew.

http://climatecenter.fsu.edu/images/docs/Hurricane_Hermine_Fla_summary.pdf

http://climatecenter.fsu.edu/images/docs/Hurricane_Matthew_Florida_summary.pdf

Hurricane Irma

See the attached files bearing Bates Numbers DEF DR1-27-0001 through DEF DR1-27-00124 regarding Hurricane Irma from the Tampa Bay/Ruskin, Melbourne and Tallahassee National Weather Service offices, and the Florida State Climatologist for necessary data. Due to the unique storm track and large size, Irma resulted in unprecedented damage across the service territory with broad wind damage coast-to-coast. The Gulf Coast ocean and bay waters receded tens of feet after days of persistent, strong north-northeast winds pushing massive amounts of

water west into the Gulf of Mexico. As Irma passed to the north, and winds became southerly and onshore, waters quickly returned at a steep pace peaking on Monday, September 11th.

Hardened and Non-Hardened Structures

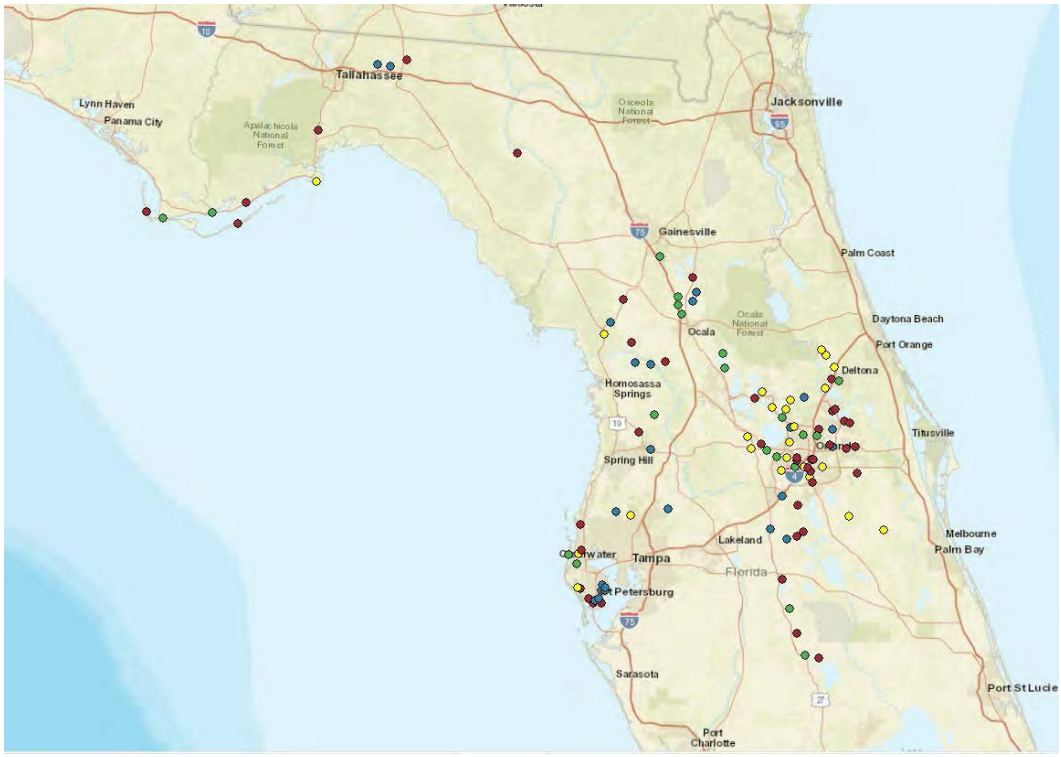
28. Please provide a county map or graphic indicating the geographic locations where the Utility's infrastructure was storm hardened after 2006. For purposes of this question, do not include vegetation management.

RESPONSE:

The confidential graphic indicating hardened transmission structures is below. See the attached document bearing Bates Number DEF DR1-28-0001.

REDACTED

Additionally, the graphic indicating hardened distributions structures from 2007 through 2016 is below.



2007
2010
2013
2016

This map represents the Storm Hardening projects that have been filed with the Florida Public Service Commission from 2007 to 2016. Color coded indicators, that represent the year reported, have been geographically plotted to show where the projects have been constructed throughout the Duke Energy Florida service territory.

29. Please complete the table below summarizing hardened facilities that required repair or replacement as a result of Hurricanes Matthew, Hermine, Irma, Maria, and Nate.

Hardened Facilities		
Hurricane	**Number of Facilities Requiring**	
	Repair	**Replacement**
Transmission		
Structures		
Substations		
Total		
Distribution		
Poles		
Substation		
Feeder OH		
Feeder UG		
Feeder Combined		
Lateral OH		
Lateral UG		
Lateral Combined		
Total		
Service		
Service OH		
Service UG		
Service Combined		
Total		

RESPONSE:

Hardened distribution facilities were forensically assessed after Hurricane Irma[1] in a focused effort that identified nearly thirty targets across four zones within Florida. (During restoration efforts, data is not collected and compiled separate from non-hardened facilities.) The data from field observations was gathered and compiled into a spreadsheet that has been included in this write-up. Small wire targets were selected because these targets had the greatest exposure and were prone to extensive damage resulting from high wind events. (It should be noted that ten (10) of the targets were recently included in the 2013 Storm Hardening Plan that was submitted to the FPSC.) Of all the targets assessed, the predominate cause of damage was either directly or indirectly attributable to trees impacting the facilities, and predominantly these trees impacted DEF's facilities from outside of DEF's easement or right-of-way. In several cases, while trees were on distribution facilities, poles and wires did not break. Several pictures have

[1] After Hurricane Matthew, DEF expanded the scope of its post-storm forensic analysis to specifically include a review of hardened facilities (prior to that, DEF's analysis did not focus on hardened versus non-hardened facilities and therefore there is no data to report for Hurricanes Hermine and Matthew. Moreover, neither Hurricanes Maria or Nate resulted in damage to DEF's facilities).

been included to show the field conditions associated with circuits that were assessed. The pictures bear Bates Numbers DEF DR1-29-0001 through DEF DR1-29-0012.

ZONE	OPC	PROJECT NAME	REPORT	TYPE	conductor	comments
North Central	Apopka	Earwood Av. Reconductor	2013	SW	3 phase 1/0	Additional pictures were submitted. The replaced 3-phase performed well - no damage. Areas that weren't replaced had damage.
		Feeder tie Eustis M501 to M499			3 phase 795	Damage very minimal. No broken poles or conductor.
		Feeder Tie Lockhart M408-M412 to Eatonville M1137			3 phase 795	No damage
		Kelly Park M822 Recon. Ak-Sh-195			336 to 795	No damage
		Plymouth M707 Feeder Exit reconductor	2013	SW	3 phase 795	No dmage
		Woodward Av. Eustis	2013	SW	1,3 phase 1/0	Primary and services down because of trees in few spot of the project. Perform well
	Deland	Durfey Av.			1 phase 1/0	No damage
		Mercedes Fernery Rd.	2013	SW	1 phase 1/0	Project preformed well, with exception of few spots where trees fell in the line.
		Pennsylvania Ave.	2013	SW	1 phase 1/0	Project damage was minimal- no broken poles. Few services down because of trees.
	Jamestown	Cleburne Rd.			2 phase 1/0	No damage
		Old Sandford Dr. Reconductoring			3 phase 1/0	No damage
	Longwood	N. Ranger Blvd. Reconductor.	2013	SW	1 phase 1/0	No broken poles, some primary and services down because trees falling on lines
North Coastal	Inverness	Ranch hand Dr- Along Riverbend			3 phase 1/0	No damage
		Brooksville SR SO E of Cortez			3 phase 1/0	One or two locations the wire broke because of trees.
		Williston Reconductor			3 phase 336	No damage
	Monticello	A192 Luraville				No damage
		Cape San Blas recond. Port St. Windward St.			3 phase 1/0	No damage
		Carrabelle Beach-Eastpoint Small wire				No damage
	Ocala	Us 301 Citra			3 phase 1/0	No damage
South Central	Buena Vista	Cassino Ave. Reconductor			1 phase 1/0	No damage
		Reams Road Feeder tie K110 to K798	2013	FT	3 phase 795	Poles in good shape. Two trees leaning on wire, but wire is ok.
	Clearmond	Reconductor from swicth K5330622 to K227	2013	SW	3 phase 795	No damage (one pole peeling)
	Lake Wales	Hibiscuss			3 phase 336	No damage
		Highland Park			3 phase 1/0	No damage (pictures do not correspond)
		Hunt brothers Rd. reconductor	2013	SW	3 phase 336	No damage
	South East O.	Lake Berger			3 phase 795	No damage
South Coastal	Clearwater	Highlands C2807 SH	2013	SW		Held up well - no damage (no form)
		Indigo (not inspected)				Not inspected
	ST. Petersburg	Coquina Key			1,3 phase 1/0	lot of damage, 19 trees on line, 2 broken poles, several spans down

Below is Transmission-FL submission for all named storms in query.

Hardened Facilities		
Hurricane MATTHEW	**Number of Facilities Requiring**	
	Repair	**Replacement**
Transmission		
Structures	0	0
Substations	N/A	N/A
Total		
Distribution		
Poles		
Substation		
Feeder OH		
Feeder UG		
Feeder Combined		
Lateral OH		
Lateral UG		
Lateral Combined		
Total		
Service		
Service OH		
Service UG		
Service Combined		
Total		

Hardened Facilities		
Hurricane IRMA	**Number of Facilities Requiring**	
	Repair	**Replacement**
Transmission		
Structures	0	0
Substations	N/A	N/A
Total		
Distribution		
Poles		
Substation		
Feeder OH		
Feeder UG		
Feeder Combined		
Lateral OH		
Lateral UG		
Lateral Combined		
Total		
Service		
Service OH		
Service UG		
Service Combined		
Total		

Hardened Facilities		
Hurricane MARIA	**Number of Facilities Requiring**	
	Repair	**Replacement**
Transmission		
Structures	0	0
Substations	N/A	N/A
Total		
Distribution		
Poles		
Substation		
Feeder OH		
Feeder UG		
Feeder Combined		
Lateral OH		
Lateral UG		
Lateral Combined		
Total		
Service		
Service OH		
Service UG		
Service Combined		
Total		

Hardened Facilities		
Hurricane NATE	**Number of Facilities Requiring**	
	Repair	**Replacement**
Transmission		
Structures	0	0
Substations	N/A	N/A
Total		
Distribution		
Poles		
Substation		
Feeder OH		
Feeder UG		
Feeder Combined		
Lateral OH		
Lateral UG		
Lateral Combined		
Total		
Service		
Service OH		
Service UG		
Service Combined		
Total		

30. Please complete the table below summarizing non-hardened facilities that required repair or replacement as a result of Hurricanes Matthew, Hermine, Irma, Maria, and Nate.

Non-Hardened Facilities		
Hurricane	**Number of Facilities Requiring**	
	Repair	**Replacement**
Transmission		
Structures		
Substations		
Total		
Distribution		
Poles		
Substation		
Feeder OH		
Feeder UG		
Feeder Combined		
Lateral OH		
Lateral UG		
Lateral Combined		
Total		
Service		
Service OH		
Service UG		
Service Combined		
Total		

RESPONSE:

Damage to both non-hardened and hardened facilities is captured by our Outage Management System. Specific information regarding whether facilities are repaired or replaced during a major event is not tracked. Below is a listing of the damage reported during Hurricanes Hermine, Matthew and Irma.

Hermine - Date/Times: 9/1/2016 10:00am - 9/6/2016 23:59

Feeder	OH	215
	UG	108
	Total	323
Lateral	OH	2,477
	UG	73
	Total	2,550
Service	OH	2,838
	UG	0
	Total	2,838

Matthew - Date/Times: 10/6/2016 15:00 - 10/10/2016 23:59

Feeder	OH	230
	UG	351
	Total	581
Lateral	OH	4,365
	UG	199
	Total	4,564
Service	OH	3,281
	UG	0
	Total	3,281

Irma - Date/Times: 9/9/2017 04:00 - 9/20/2017 23:59

Feeder	OH	1,070
	UG	1,271
	Total	2,341
Lateral	OH	20,330
	UG	1,462
	Total	21,792
Service	OH	14,638
	UG	0
	Total	14,638

Note for all hurricane events:

We used outages from the entire system for the entire date/time window even though areas were impacted at different times.

Below is Transmission-FL submission for all named storms in query.

Non-Hardened Facilities		
Hurricane MATTHEW	**Number of Facilities Requiring**	
	Repair	**Replacement**
Transmission		
Structures	0	2
Substations	0	N/A
Total		
Distribution		
Poles		
Substation		
Feeder OH		
Feeder UG		
Feeder Combined		
Lateral OH		
Lateral UG		
Lateral Combined		
Total		
Service		
Service OH		
Service UG		
Service Combined		
Total		

Non-Hardened Facilities		
Hurricane IRMA	**Number of Facilities Requiring**	
	Repair	**Replacement**
Transmission		
Structures	0	148
Substations	17	N/A
Total		
Distribution		
Poles		
Substation	13	
Feeder OH		
Feeder UG		
Feeder Combined		
Lateral OH		
Lateral UG		
Lateral Combined		
Total		
Service		
Service OH		
Service UG		
Service Combined		
Total		

Non-Hardened Facilities		
Hurricane MARIA	**Number of Facilities Requiring**	
	Repair	**Replacement**
Transmission		
Structures	0	0
Substations	0	N/A
Total		
Distribution		
Poles		
Substation		
Feeder OH		
Feeder UG		
Feeder Combined		
Lateral OH		
Lateral UG		
Lateral Combined		
Total		
Service		
Service OH		
Service UG		
Service Combined		
Total		

Non-Hardened Facilities		
Hurricane NATE	**Number of Facilities Requiring**	
	Repair	**Replacement**
Transmission		
Structures	0	0
Substations	0	N/A
Total		
Distribution		
Poles		
Substation		
Feeder OH		
Feeder UG		
Feeder Combined		
Lateral OH		
Lateral UG		
Lateral Combined		
Total		
Service		
Service OH		
Service UG		
Service Combined		
Total		

31. For Hurricanes Matthew, Hermine, Irma, Maria, and Nate, please provide a ranking of the five highest volume of outage causation that impacted the Utility's service area.

RESPONSE:

The tables below provide four (4) highest volume of outage causing events for the named storms. DEF's analysis found that the 4 causes identified below resulted in the vast majority of the outages associated with the storms; all remaining causes would be categorized as "other".

Transmission

Outage Cause	Hermine	Matthew	Irma	Nate	Maria
Lightning	0	T2	T2	0	0
Tornado/Microburst	0	0	T3	0	0
Windblown Debris	0	T3	T4	0	0
Fallen Trees	0	T1	T1	0	0

Distribution

Outage Cause	Hermine	Matthew	Irma	Nate	Maria
Lightning	D4	D4	D4	0	0
Tornado/Microburst	D3	D3	D3	0	0
Windblown Debris	D2	D2	D2	0	0
Fallen Trees	D1	D1	D1	D1	0

32. For Hurricanes Matthew, Hermine, Irma, Maria, and Nate, please provide a ranking of the top five drivers that protracted service restoration time.

RESPONSE:

Transmission and Distribution

Protraction of Restoration	Hermine	Matthew	Irma	Nate	Maria
Volume of mutual aid resources-oversight	4	3	2	N/A	N/A
Volume of device repair locations	3	2	3	N/A	N/A
Access to repair locations	1	4	5	N/A	N/A
Complexity of repairs	2	5	4	N/A	N/A
Widespread geographical impact	5	1	1	N/A	N/A

Please note, the drivers identified above led to outage times that were greater than those associated with routine storm (afternoon thunderstorms) operations; hurricanes introduce a number of restoration complexities that result in extended restoration times. These drivers are identified and ranked in the table above; however, DEF does no agree that the restoration time for any individual storm was "protracted" when assessed in the context of the magnitude of damage to the system and work required to fully restore all customers.

33. If applicable, please describe any damage prevented by flood monitors during Hurricanes Matthew, Hermine, Irma, Maria, and Nate.

RESPONSE:

N/A

34. How many outages were avoided by automated feeder switches during Hurricanes Matthew, Hermine, Irma, Maria, and Nate? Please explain how the data for each event was collected.

RESPONSE:

Hurricane	Total Operations	Successful	Failed	Percent Successful	Customer Outages Saved	Customer Minutes Saved
Hermine	19	18	1	95%	25,334	3,076,134
Matthew	2	2	0	100%	1,639	159,467
Irma	23	23	0	100%	12,202	5,120,640

Critical Infrastructure Restoration

35. Please complete the table below for all critical infrastructure facilities (CIFs), by location (city/county) and facility type, which lost power, the restoration time for the CIFs and the cause of the outage (such as wind, storm-surge, flooding, debris, etc.) and facilities structure type that required replacement and/or repair. Please provide this information for Hurricanes Matthew, Hermine, Irma, Maria, and Nate.

Hurricane (Name) – CIF						
CIF Name/Type (i.e. Hospital)	**County/ Location**	**Restoration Time**	**Outage Cause**	**Number of Facilities Requiring**		
					Repair	**Replace**
				Transmission		
				Structures		
				Substations		
				Total		
				Distribution		
				Poles		
				Substation		
				Feeder OH		
				Feeder UG		
				Feeder Combined		
				Lateral OH		
				Lateral UG		
				Lateral Combined		
				Total		
				Service		
				Service OH		
				Service UG		
				Service Combined		
				Total		

RESPONSE:

Our current systems are unable to provide the information in the format requested above.

Our process focuses on identifying CIF's and the source circuits that must be restored first to serve them, not the individual CIF. Following a major storm (hurricane), Duke Energy focuses on restoring power to the facilities/devices with greatest number of customers, county and state EOC missions, as well as restoration to circuits supporting public health and welfare facilities (CIFs) throughout the community, such as:

- Hospitals
- Municipal water & sewer treatment plants
- County emergency shelters (schools, community centers, etc.)
- Industrial plants with public safety concerns (Ammonia Plants)
- EOCs
- Law enforcement
- Fire & rescue stations
- Central communications facilities
- Military and governmental facilities
- Food distribution centers

- Medical assistance facilities *
- Commercial nursing homes *

*Not inclusive of facilities operating in a residence.

This list is reviewed and updated annually. The list is then provided to our operations organization to prioritize the restoration of our electric system.

Underground Facilities

36. Please provide an assessment of the performance of underground facilities during Hurricanes Matthew, Hermine, Irma, Maria, and Nate. As part of this assessment please summarize the number of underground facilities that required repair or replacement for each event.

RESPONSE:

In Hurricanes Hermine, Matthew and Irma, underground facilities generally performed well. The predominate impact to underground facilities was the result of either flooding, erosion or damage to upstream overhead facilities. Specific information regarding the number of facilities that were repaired or replaced is not tracked. Overall, underground device outages did not exceed seven percent (7%) of outages on the entire distribution system as reported by our OMS. The number of outages to underground facilities by event is as follows:

Event	Underground Outages
Hermine	181
Matthew	550
Irma	2700

37. Please provide a discussion what programs/tariffs the utility has in place to promote
    a. Undergrounding of new construction (e.g., subdivisions)
    b. Conversion of overhead to underground

RESPONSE:

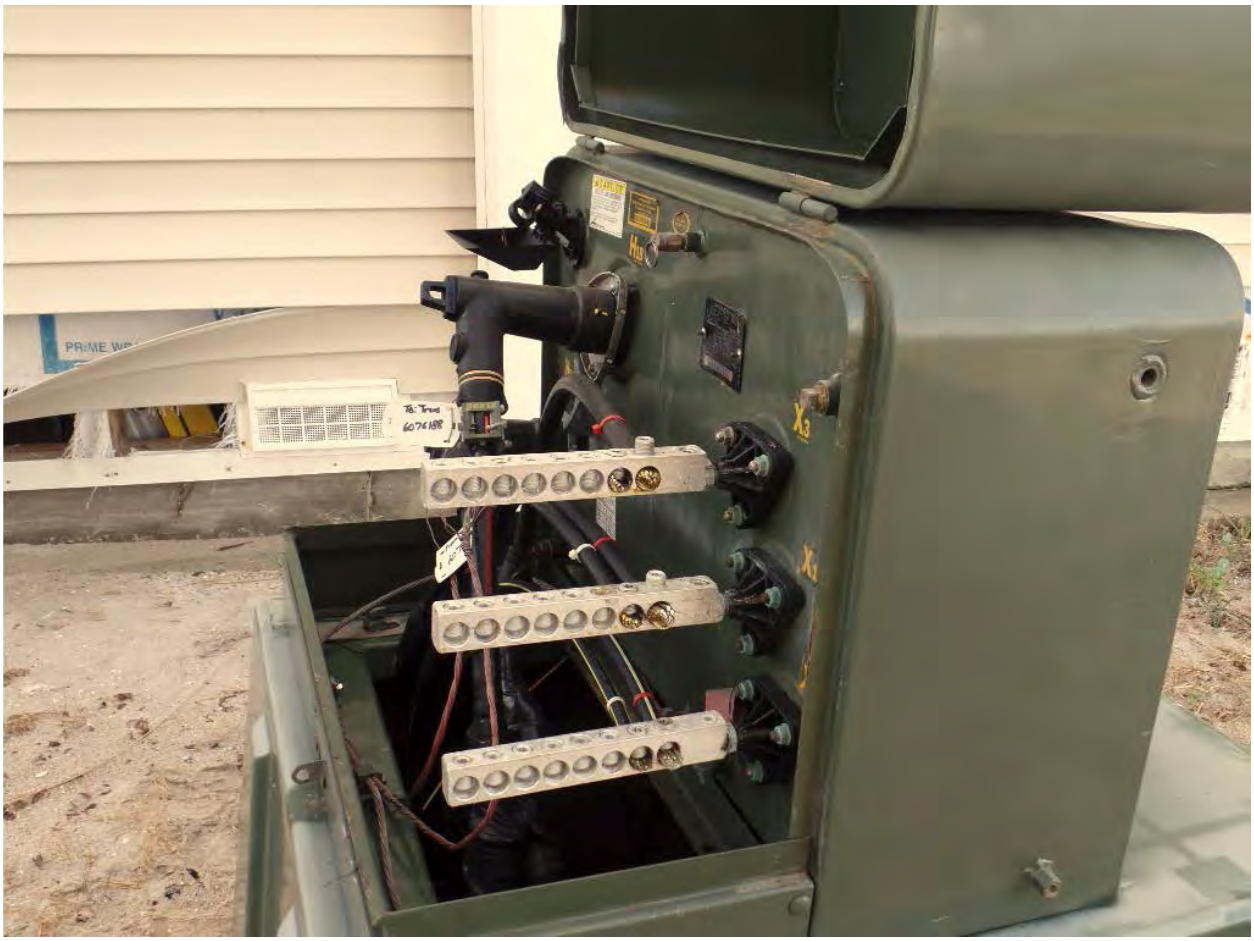
a. Section IV, Part 11XI of the Company's PSC-approved tariff provides the Company's rules and regulations regarding the undergrounding of new residential

construction. This tariff section also governs the computation of the costs the customer(s) requesting the underground construction are required to pay in order to eliminate cross-subsidization of the underground construction by the customers who have not requested undergrounding of facilities and do not receive the benefits thereof.

Undergrounding of non-residential facilities is governed by Section IIIIV, Part 3 of the tariff.
DEF's tariff can be accessed at: https://www.duke-energy.com/home/billing/rates#tab-d589a156-227c-46b6-8a5b-21aa87e19ff0.

b. Conversion of overheard facilities to underground facilities is governed by Section XII IV, Part 12 of the tariff. Certain provisions of this part of the tariff provide customers/applicants with the ability to customize the undergrounding process to manage costs as they may desire. For example, Part Section 12.05(3) allows applicants to construct all or a portion of the underground system if the applicant believes it can do so at a lower cost than offered by DEF (with the caveat that the applicant's construction must meet DEF's construction standards and DEF will ultimately own and operate the facilities) and Section Part 12.06 provides a mechanism by which local governments can obtain cost reimbursement of the undergrounding costs for conversions of distribution facilities within its jurisdiction via a governmental undergrounding fee that is added to certain customer electric service bills in the area of the undergrounding project. Finally, DEF is preparing to launch a Targeted Undergrounding Program, which will move the most outage-prone overhead power lines underground. This reliability focused program will reduce outages and momentary interruptions on these circuits and quicken overall restoration times after major events. Over a 10-year period, approximately 1,250 miles of overhead distribution lines will be placed underground.

Attachments responsive to question #4


X3
X1


WARNING
Keep Out!
Hazardous voltage inside.
Call Before You Dig!
Electrical cable buried below.
Maintain Clearance
Energized electrical equipment.
NORMALLY OPEN POINT
ON UG LOOP

Hurricane Irma Storm Damage Photos

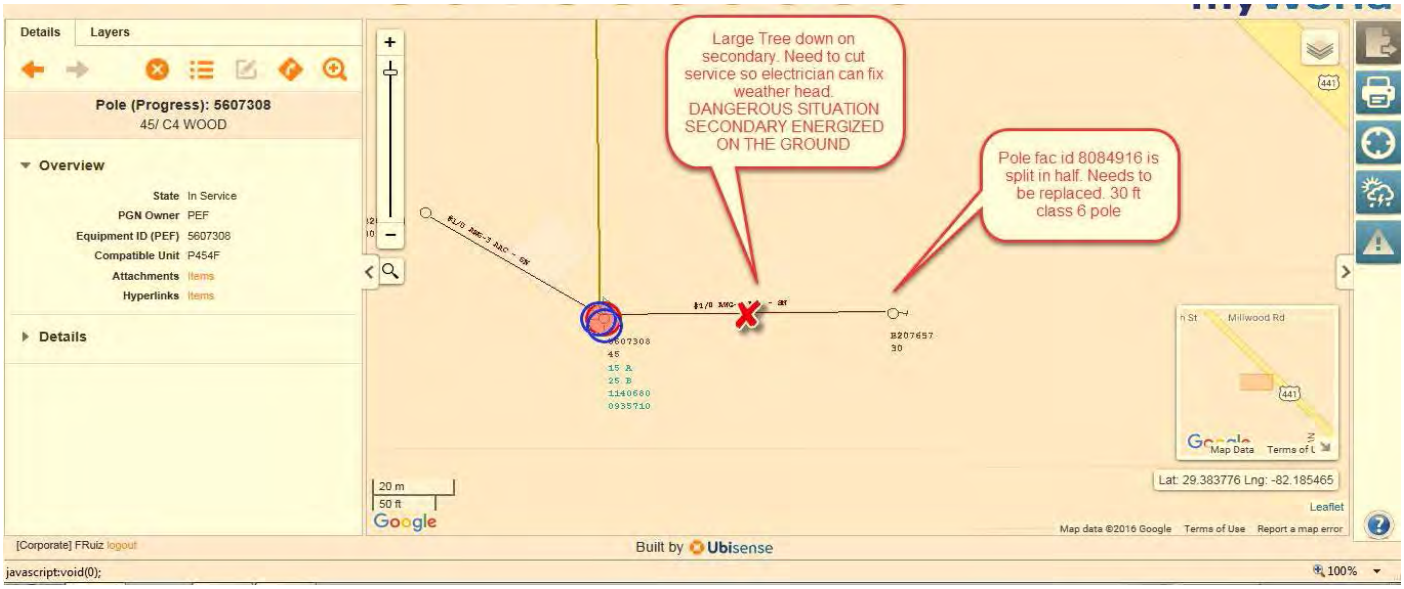

09.17.2017 13:45


2645564


ROAD

Hurricane Matthew Storm Damage Photos


25


Details
Layers
Pole (Progress): 5607308
45/ C4 WOOD
Overview
State In Service
PGN Owner PEF
Equipment ID (PEF) 5607308
Compatible Unit P454F
Attachments Items
Hyperlinks Items
Details
Large Tree down on secondary. Need to cut service so electrician can fix weather head. DANGEROUS SITUATION SECONDARY ENERGIZED ON THE GROUND
Pole fac id 8084916 is split in half. Needs to be replaced. 30 ft class 6 pole
5607308
45
15 A
25 B
1140660
0935710
8207657
30
Millwood Rd
441
Map Data
Terms of U
Lat: 29.383776 Lng: -82.185465
Leaflet
20 m
50 ft
Google
Map data ©2016 Google
Terms of Use
Report a map error
[Corporate] FRuiz logout
Built by Ubisense
javascript:void(0);
100%

Attachment responsive to question #12

Question 12 Response

	HERMINE		MATTHEW		IRMA	
Counties Served	Customers Served	Peak Customers Out	Customers Served	Peak Customers Out	Customers Served	Peak Customers Out
Alachua	4,855	3,733	4,855	310	4,880	3,095
Bay	2,222	479	2,222	NA	2,273	1,261
Brevard	15	NA	15	9	16	9
Citrus	46,076	9,945	46,076	NA	46,697	34,104
Columbia	553	601	553	NA	566	389
Dixie	1,790	792	1,790	53	1,800	1,074
Flagler	16	NA	16	16	16	13
Franklin	10,065	3,263	10,065	244	10,202	5,869
Gilchrist	1,618	850	1,618	48	1,637	951
Gulf	6,242	603	6,242	117	6,470	3,661
Hamilton	2,929	2,815	2,929	67	2,927	1,751
Hardee	2,666	NA	2,666	NA	2,661	2,680
Hernando	10,829	4,738	10,829	NA	11,357	8,400
Highlands	54,078	NA	54,078	NA	54,209	53,952
Hillsborough	25	4	25	NA	25	19
Jefferson	4,581	3,590	4,581	152	4,639	2,703
Lafayette	840	704	840	NA	845	497
Lake	81,427	9,801	81,427	10,752	84,056	57,166
Leon	60	57	60	NA	61	35
Levy	3,649	2,568	3,649	58	3,702	2,491
Madison	3,760	3,451	3,760	98	3,811	2,280
Marion	64,489	16,254	64,489	8,479	65,525	54,822
Orange	357,762	9,737	357,762	NA	369,171	229,865
Osceola	45,515	668	45,515	1,810	48,065	229,865
Pasco	137,369	22,979	137,369	NA	139,992	105,559
Pinellas	536,341	93,170	536,341	854	540,933	59,738
Polk	97,494	NA	97,494	1,208	100,519	66,469
Seminole	153,598	NA	153,598	NA	156,103	116,925
Sumter	9,974	1,854	9,974	1,211	10,171	8,846
Suwannee	790	368	790	NA	797	473
Taylor	5,994	5,148	5,994	171	6,026	3,548
Volusia	79,580	3,395	79,580	61,126	81,055	68,492
Wakulla	6,673	5,991	6,673	217	6,814	3,906

*There were no outages for Maria and Nate

** Counties were considered impacted if final total customers restored was greater than 2% of customers served

Attachments responsive to question #19

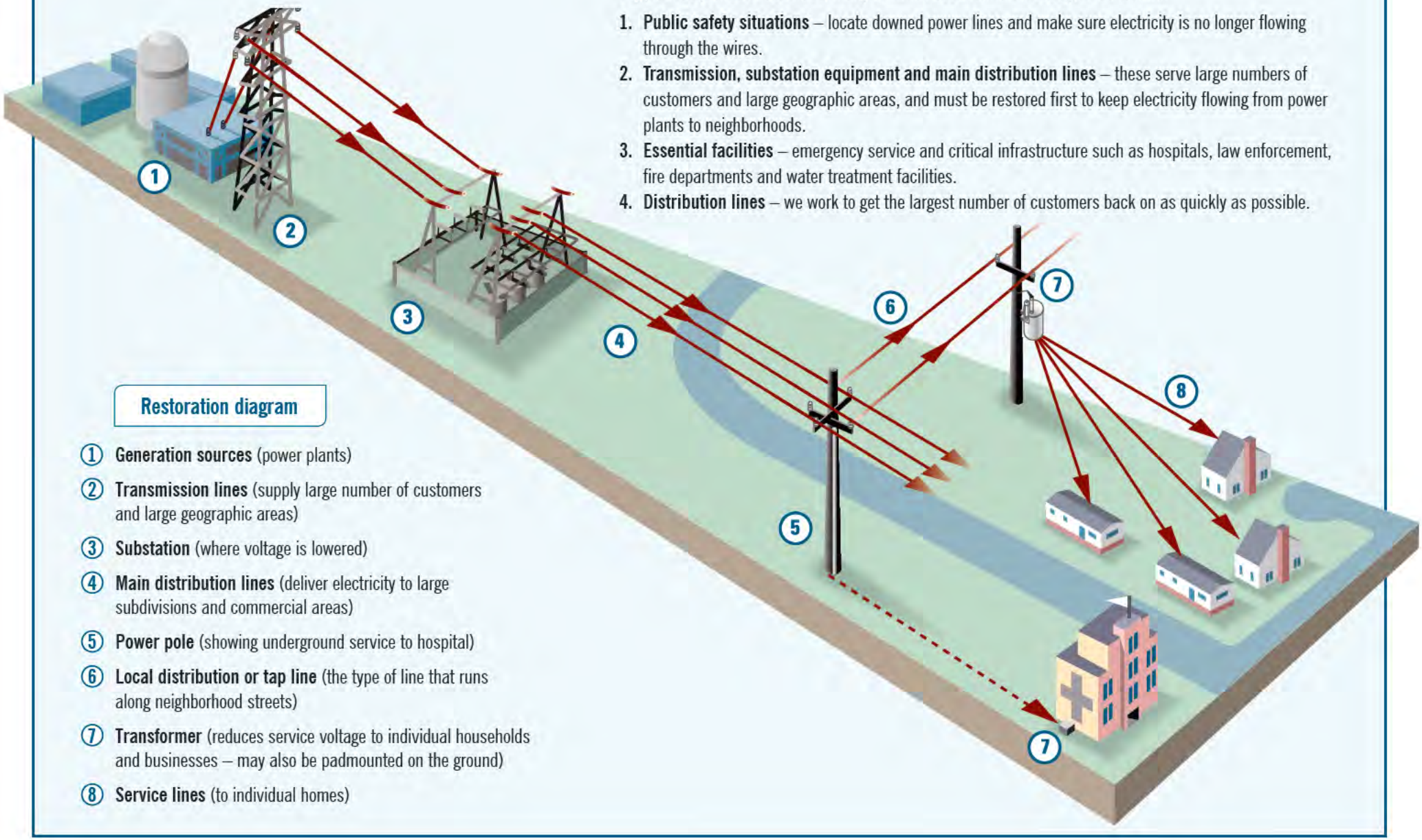
How Duke Energy Restores Power

DUKE ENERGY®

Duke Energy focuses on restoring power in a sequence that enables power restoration to public health and safety facilities and to the greatest number of customers as safely and quickly as possible.

A typical sequence of activities, many of which occur simultaneously, is as follows:

1. **Public safety situations** – locate downed power lines and make sure electricity is no longer flowing through the wires.
2. **Transmission, substation equipment and main distribution lines** – these serve large numbers of customers and large geographic areas, and must be restored first to keep electricity flowing from power plants to neighborhoods.
3. **Essential facilities** – emergency service and critical infrastructure such as hospitals, law enforcement, fire departments and water treatment facilities.
4. **Distribution lines** – we work to get the largest number of customers back on as quickly as possible.



Restoration diagram

① **Generation sources** (power plants)

② **Transmission lines** (supply large number of customers and large geographic areas)

③ **Substation** (where voltage is lowered)

④ **Main distribution lines** (deliver electricity to large subdivisions and commercial areas)

⑤ **Power pole** (showing underground service to hospital)

⑥ **Local distribution or tap line** (the type of line that runs along neighborhood streets)

⑦ **Transformer** (reduces service voltage to individual households and businesses – may also be padmounted on the ground)

⑧ **Service lines** (to individual homes)

DEF Hurricane Irma
External Messages and Talking Points
Sept. 18, 2017

The Hurricane Irma website remains active and includes news releases, videos, tips, links and several resources for our customers and the public. Please ensure key leaders you provide updates for are aware of this website.

KEY MESSAGES – The messages below are for today and tomorrow. Messages for any additional issues that develop will be sent separately.

Restoration Update

- **We have restored power to nearly 1.8 million customers and approximately 115,000 customers remain without power**.
  Note: Outage numbers may fluctuate as restoration efforts continue and new outages are reported not related to Hurricane Irma. In addition, total restorations do not add up to the peak total or to the total number of customers served. This is due to some customers experiencing more than one outage associated with the storm or restoration process. The restoration total includes all restorations, such as multiple outages/restorations experienced at individual locations. Additionally, every customer may not have been impacted.
- **To our customers who remain without power tonight, we apologize. Hurricane Irma was the most significant storm to ever hit Duke Energy's service territory in Florida. The hurricane affected every one of our 35 counties – some more than others.**
- **In some cases, service may be delayed in areas impacted by tornadoes, heavy tree and debris damage, and where a meter or other customer equipment was damaged and requires repair and an inspection.**

- **We have restored 99 percent of our customers in 21 counties and expect to restore essentially all customers as follows:**
  - **By 11 p.m. on Monday, Sept. 18 – Alachua, Citrus, Hernando, Levy, Marion, Seminole and Sumter counties.**
  - **By 11 p.m. on Tuesday, Sept. 19 – The severely impacted areas of Hardee, Highlands, Lake, Polk and Volusia counties. Also, the northern Orange and Lake County border due to rebuilding the electrical system that suffered significant damage in those areas.**
- For the counties where we are 99 percent complete with Irma-related outages, crews will continue to work until all remaining, isolated and scattered outages are restored.
- Following the storm, we've been hampered by IT system issues, forcing us to manually track outage reports and repairs. This has made it more difficult to provide precise outage numbers and restoration times. As we transition back to using our normal IT systems, we will be able to provide customers with more detailed information.

Crews

- We have thousands of workers in the field working to restore power. As crews restore service in one area, they move to other affected areas to support restoration.
- Crews initially focused on restoring the large circuits and are now working to restore the smaller branches off of these circuits, many of which supply small numbers of homes/businesses or individual customers.
- Not every customer impacted by the storm can receive power at their location. In some cases, service may be delayed where a meter or other customer equipment is damaged, requiring repair and inspection (damage to meter boxes).
  - Customers living in mobile homes are responsible for the service pole and service line that leads from the service pole to the meter. Customers are also responsible for their meter box.
  - If the meter box is pulled away from a house and there is no power, the homeowner is responsible for contacting an electrician for a permanent fix. In some instances, an electrical inspection may be required before Duke Energy can reconnect service. The electrician should be aware and advise accordingly.
  - If the meter box is pulled away from the house and there is power, customers should call an electrician to reattach the meter box. Again, an electrical inspection may be required.
- Sometimes houses in a neighborhood may have power and others do not. It could be that the houses are served by different circuits that are not restored at the same time. Or, there may be a problem with individual service lines or meters.
- There are also times when power is restored and it goes off again. This may be because additional damage is discovered that needs repair or more customers are being restored.

Customer Bills

- Customers who are without power are not using energy while they are experiencing a power outage and would not incur energy costs during the duration of the outage.
  - Duke Energy is a regulated utility and, therefore, does not offer discounts for customers who may have experienced a power outage.

- Some customers have received estimated bills, which are higher than normal. To assist customers, we have:
  - Stopped applying late payment charges
  - Extended our pause on non-pay disconnects

  Note: Additional customers will receive estimated bills in the coming days. These are provided to let customers have awareness of their usage. Duke Energy will work with customers regarding their bills.

Claims

- Extreme weather, such as Hurricane Irma, is beyond Duke Energy's control. We will not assume responsibility for spoiled food or other losses caused by the storm and customers do not need to file a claim with our Duke Energy insurer.
- Customers can check with their individual insurers and/or FEMA (disasterassistance.gov) regarding claims.

Preventing Scams

- Utility workers may need to work on personal property, but will never need to enter homes.
  - Ask workers for a photo ID if you have questions regarding work.
- **Duke Energy does not solicit personal information from customers, such as social security numbers or banking information.**
- Duke Energy has an outage alert program where customers can enroll to receive outage alerts. Customers can sign up online for phone or email alerts, or text REG to 57801 to enroll for text alerts.
- Duke Energy will never ask customers to buy a prepaid debit/credit card, and utility employees will never ask customers to pay immediately.

Outage Reporting

- **Customers can view outage information at news.duke-energy.com/irma. We are working to transition to our normal outage reporting system that allows customers to access detailed outage information by clicking Florida Outages to view a map rather than an outage by county table (the table remains available until we transition to the map). Customers can then zoom into their location on the map for specific details. These maps update every 15-30 minutes. We will make notifications once the transition is made.**

  Note: Outage/restoration numbers may fluctuate as we transition back to our normal outage reporting system and as new outages are reported unrelated to Hurricane Irma. Additionally, the outage reported date on the map may not reflect the date the outage was first reported.
- **Customers can continue to call our automated outage reporting system at 800.228.8485 to report new outages or outages not showing in our system (map).**

  Note: Customers have an opportunity to "opt-out" to reach a customer service specialist.
- Customers can text OUT to 57801 to report their outage. The cell number they are texting from must be registered on their account. If not, they will be directed on how to register that number.
- Customers can text STATUS for information. They will be directed to the Irma webpage link for ETRs by county.

- Customers can follow Duke Energy on Twitter (@DukeEnergy) and Facebook (Duke Energy) for updated information.

Worker Safety

- Please do not approach our crews when they are working.
- Working on power lines is hazardous work. These crews work in extreme conditions, and around live power lines and energized electrical equipment.
- Distractions make working safely even more challenging.
- Our workers are trained to be vigilant and constantly aware of their surroundings. If, at any time, our crews believe they are in an unsafe situation, they will postpone the work and leave the area (which slows restoration).
- If needed, local law enforcement may also be contacted.
- We know people are anxious to have their power restored, and we are working diligently. Respect our work zones and all areas where our crews are working –for your safety and the safety of our crews.

Debris Removal

- When an "act of nature" (such as lightning, high winds, hurricanes, tornadoes, ice/snow storms) or other natural events cause trees or other vegetation to fall across power lines and damage facilities, we cut the trees and brush so poles and lines can be replaced and re-energized. Disposal of any wood, limbs or debris resulting from this type of emergency operation is the responsibility of the property owner.

Additional Messages

Restoration Process

- Restoration is a complex process. It begins with a comprehensive damage assessment across the service area. This assessment determines where the company deploys workers, equipment and other resources to begin the complex job of power restoration.
- Duke Energy first restores power to critical infrastructure – such as emergency centers, fire stations, hospitals and other public safety and health facilities.
    - At the same time, we safely repair major power transmission lines, damaged substations and other large-scale electrical equipment to restore power to the largest number of customers, as quickly as possible.
    - Work to restore power to small areas and individual customers follows large-scale repairs.
    - We are using helicopters and drones to assist in Hurricane Irma response efforts. These resources provide an opportunity to further examine the extent of damage.

Storm Costs

- There is no cost estimate for the storm at this time. Our key focus is on safely restoring service to all our customers.
- In the coming weeks, we will gather the costs of this storm and determine appropriate next steps.
    - We budget for storms in our service areas.

- There are state regulatory recovery mechanisms available for recovering storm costs.

Safety Tips

- **Stay away from downed power lines and electrical wires. DO NOT drive over or stand near downed power lines. Consider all lines energized as well as trees, limbs, cars, ladders or anything in contact with these lines. Report all power line hazards to Duke Energy or your local emergency services department or agency.**
  - **Keep children and family pets away from areas where lines may have fallen (backyards, fields, school yards, etc.).**
  - If it is a life-threatening situation involving a downed power line, call 911.
  - If a power line falls across a car that you're in, stay in the car. If you MUST get out of the car due to a fire or other immediate, life-threatening situation, do your best to jump clear of the car and land on both feet. Be sure that no part of your body is touching the car when your feet touch the ground.
  - Be aware that flooding can hide downed power lines and electric current passes easily through water. Fallen trees can also hide downed lines.
- Customers who have special needs, such as electric-powered medical equipment, should make arrangements for a back-up power supply or for relocation during power outages. It is not possible to guarantee first restoration of power to those who have accounts listed as medical alert because of the overall power restoration sequence.
  - Families should continue to closely monitor individual situations (particularly elderly members, neighbors) and make plans for alternate arrangements as needed.
- Never replace a fuse or touch a circuit breaker with wet hands or while standing on a wet or damp surface.
- If your home or business experienced flooding, Duke Energy cannot reconnect power until flood waters recede and the electrical system has been inspected by a licensed electrician. If there is damage, an electrician will need to make necessary repairs and obtain verification from your local building inspection authority before power can be restored.
- “Move Over and Slow Down” Law: The “move over” law requires drivers to move over one lane when two or more lanes are available in each direction to make way for emergency responders, tow trucks, DOT incident management assistance patrols and roadside work crews, such as utility crews. On roads with only one traffic lane in each direction, drivers must slow down and be prepared to stop.

Overhead to Underground Conversion

- We are required to serve customers to ensure reliable electricity at the “least cost.” The cost of converting electric lines from overhead to underground can be significant. Because “undergrounding” existing lines on a large scale is very expensive, the decision to convert must be made collaboratively by all parties involved, along with governmental representatives, communities and customers.
- When possible, we work with builders and other parties to locate electrical lines underground at the beginning of new projects.
- Outages are not eliminated with underground lines. While the total number of outages may be reduced, restoration can often take longer because of the time needed to locate the problem, dig it up and make repairs. And, equipment serving underground electric lines may be located above ground.

Smart Grid – Smarter Energy Future

- We have invested $2.4 billion in hardening our electrical system in Florida since the last group of hurricanes came through in the 2004-05 time frame. This includes:
  - Employing smart technology to “self-heal” or redirect power to restore customer outages – the new equipment can quickly detect and correct trouble on a power line and isolate and reroute electricity.
  - Replacing wooden poles with concrete or steel poles.
  - Implementing grid automation and Smart Grid devices to improve service reliability year-round.
  - For more information on grid modernization, view this fact sheet.

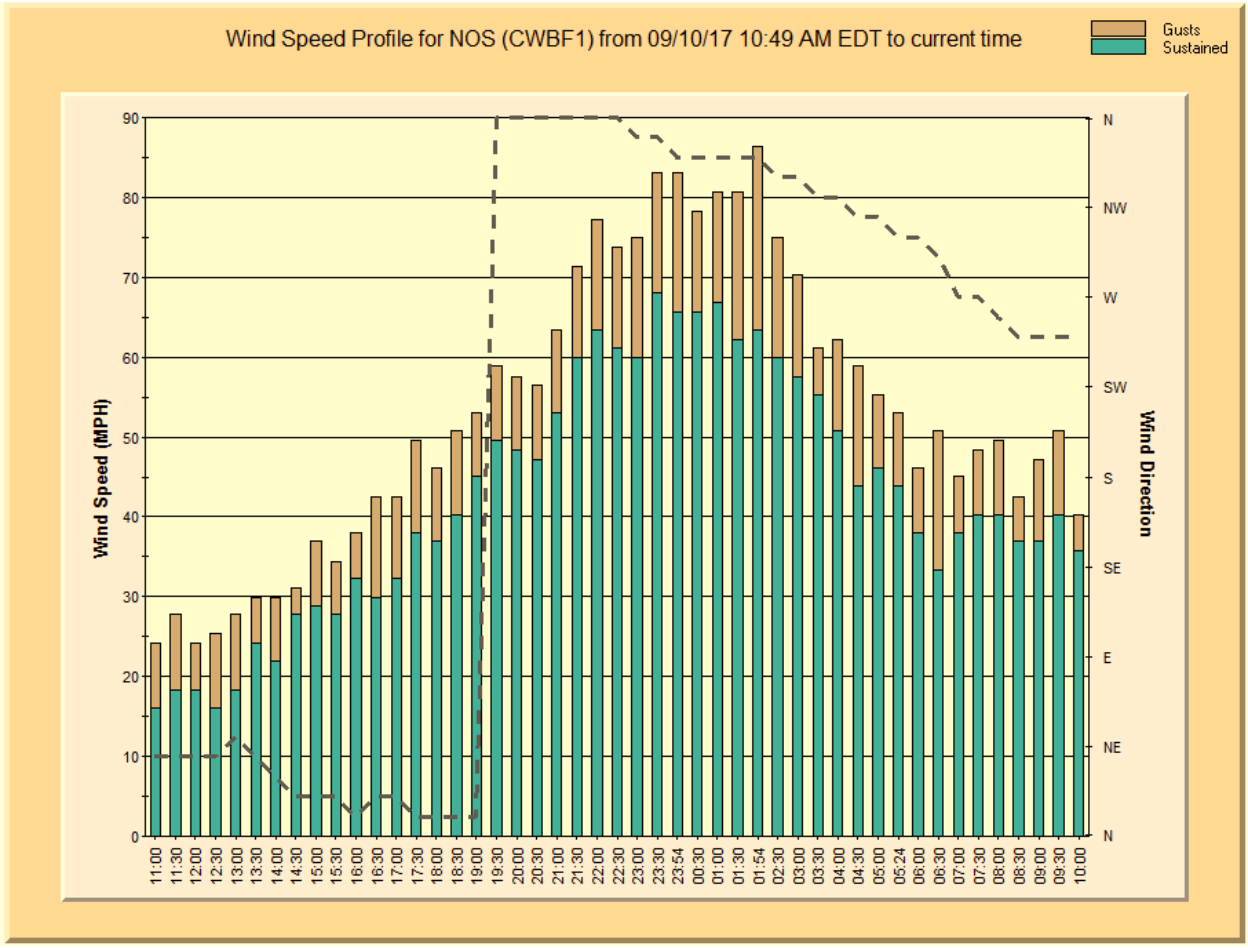
Attachment responsive to question #26

Question 26 Response

Counties Served	Impacted by HERMINE	Impacted by MATTHEW	Impacted by IRMA	Impacted by MARIA	Impacted by NATE
Alachua	Yes	Yes	Yes	No	No
Bay	Yes	No	Yes	No	No
Brevard	No	Yes	Yes	No	No
Citrus	Yes	No	Yes	No	No
Columbia	Yes	No	Yes	No	No
Dixie	Yes	Yes	Yes	No	No
Flagler	No	Yes	Yes	No	No
Franklin	Yes	Yes	Yes	No	No
Gilchrist	Yes	Yes	Yes	No	No
Gulf	Yes	Yes	Yes	No	No
Hamilton	Yes	Yes	Yes	No	No
Hardee	No	No	Yes	No	No
Hernando	Yes	No	Yes	No	No
Highlands	No	No	Yes	No	No
Hillsborough	Yes	No	Yes	No	No
Jefferson	Yes	Yes	Yes	No	No
Lafayette	Yes	No	Yes	No	No
Lake	Yes	Yes	Yes	No	No
Leon	Yes	No	Yes	No	No
Levy	Yes	Yes	Yes	No	No
Madison	Yes	Yes	Yes	No	No
Marion	Yes	Yes	Yes	No	No
Orange	Yes	No	Yes	No	No
Osceola	Yes	Yes	Yes	No	No
Pasco	Yes	No	Yes	No	No
Pinellas	Yes	Yes	Yes	No	No
Polk	No	Yes	Yes	No	No
Seminole	No	No	Yes	No	No
Sumter	Yes	Yes	Yes	No	No
Suwannee	Yes	No	Yes	No	No
Taylor	Yes	Yes	Yes	No	No
Volusia	Yes	Yes	Yes	No	No
Wakulla	Yes	Yes	Yes	No	No

* Counties were considered impacted if final total customers restored was greater than 2% of customers served

Attachments responsive to question #27


Wind Speed Profile for NOS (CWBF1) from 09/10/17 10:49 AM EDT to current time
Gusts
Sustained
Wind Speed (MPH)
Wind Direction
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From: Thompson, Max Grant
To: Guzman Jimmy D; Ordaz Luis; Joyner Jr. Jackie; Fountain Todd; Cutliffe Jason; Sachon Eric G; Seixas Melissa L; Patterson Valerie A; Montgomery Steven R; Roebuck Gary V; Gilliard Tamara A; Goldsmith Henry; Meteorology Team; Matthews R-B; Desouza Ray F; DeZonia Amy R; Dunn Todd; Reed Susan; Sumlin Brandi M; Dooley Glenn S; Lyerly John W; Zeigler Corey L; Oliver Jay W; McCarty Hershell; Guyton Brent C; Pickels Robert; Keener Nick; Leyton Steve; Varga AnnMarie; Sideris Harry K; McGugan Steve; Holbrook Sandra W; Burek Brian A; Boisvert Laura M; Buckley Matthew E.; Holiday Yolanda D; Polo Kelly F; Burleson Jacob J; Ginley James L; Johnson Michael J; Miranda Randall J; O"Quinn Joseph D; Prosser Adam G; Sapp Wayne; White Timothy S; Wicker Richard D; Hanken Donas G; Stagg Nicholas; Talbot Kenneth M; Cornell Carol C; Swango Kelly E; Ghent LaQuitta Y; Roebuck Tess L; Swartz Jeffrey; Grant Eric Stafford; Oliver Mark; Verderame John A; Phipps Brett
Cc: Osborne Ron; Larkin Michael L
Subject: Hurricane Irma Post-Storm Florida - 9/27/2017
Date: Wednesday, September 27, 2017 2:37:41 PM
Attachments: image003.png
image004.jpg
image009.jpg
image011.png
image015.jpg

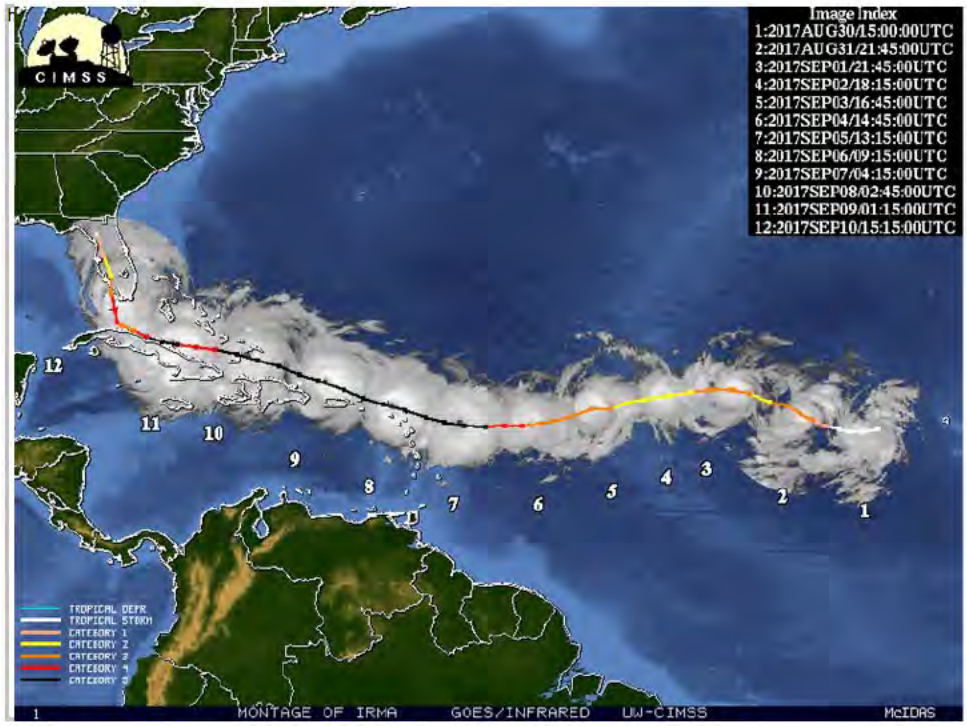
Synopsis

Hurricane Irma is the strongest storm, measured by wind, to exist in the Atlantic Ocean, outside of the Caribbean and Gulf of Mexico on record, with peak sustained winds of 185 mph. This max lifetime wind speed of 185 mph ties 3 other major storms (Florida Keys 1935; Gilbert 1988; Wilma 2005) for second strongest sustained winds of all time in the entire Atlantic Basin. Hurricane Allen is the strongest recorded wind speed of 190 mph in 1980. Irma maintained a peak Category 5 intensity with sustained winds of 185 mph for an unprecedented 37 hours, the longest of any historical cyclone around the globe on record. The peak minimum central pressure of 914 millibars is the lowest in the Atlantic since Dean in 2007 and 10th lowest in satellite era (since 1966). Irma was an unprecedented hurricane, ranking atop historical storm records, and will be retired by the World Meteorological Organization.

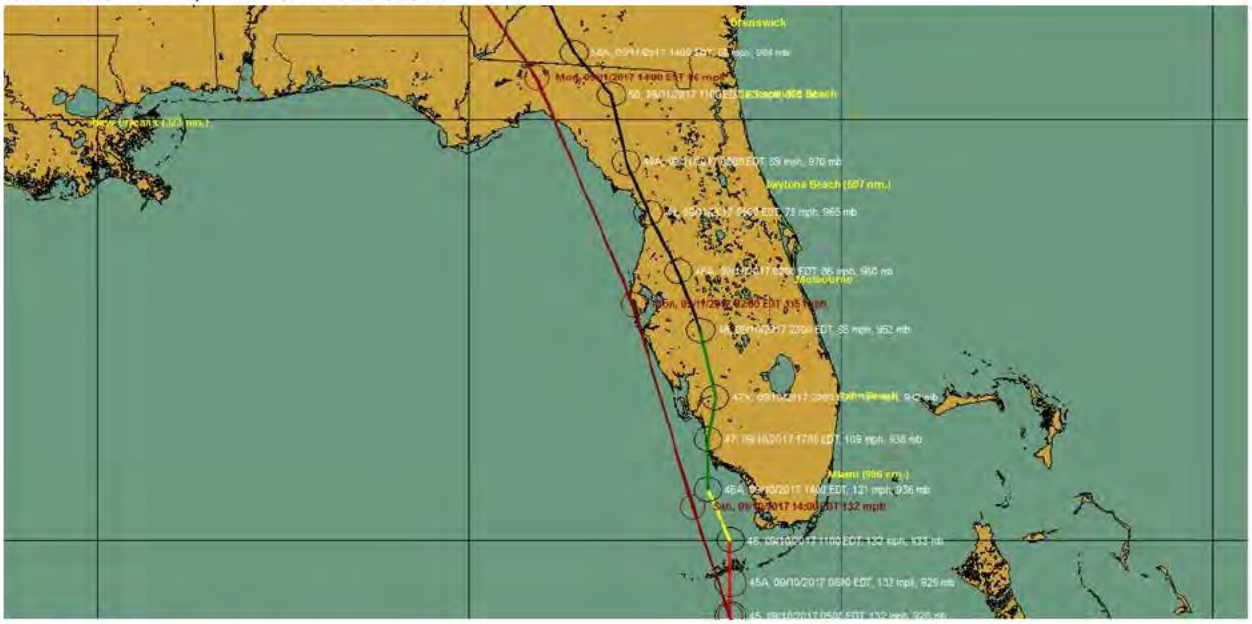
Hurricane Irma was a classic Cape Verde, long-duration hurricane that will long be remembered, not only for its unprecedented peak winds and strength, but for its severity and wide-ranging impacts to the northeastern Leeward Islands, including the Virgin Islands and Barbuda, along the Cuban coast and Florida. Like many historical, infamous Atlantic hurricanes, Irma began as a weak wave of low pressure accompanied by disorganized showers and thunderstorms which emerged off the west coast of Africa on August 27th, near the peak of the Atlantic hurricane season. These types of disturbances are common in August and September and emerge off the west coast of Africa every few days; however, most of them fail to develop into tropical cyclones. In late August and early September, however, the atmospheric and oceanic conditions in the tropical Atlantic were favorable for tropical development. Tropical Storm Irma formed in the far eastern Atlantic, just west of the Verde Islands, on August 30th. Over the proceeding 30 hours Irma strengthened into a major Category 3 hurricane, and the intensity remained steady for the next few days despite moving into a region with drier air aloft.

As Irma approached the northern Leeward Islands on September 4th, the hurricane rapidly strengthened while traveling through an ideal environment. The storm became a rare Category 5 on September 5th, with maximum sustained winds of 185 mph. The storm then passed through the northeast Leeward Islands, Virgin Islands, and just north of Puerto Rico and Hispaniola, while maintaining Category 5 intensity. As Irma continued moving west-northwestward, the storm finally "weakened" to a Category 4 hurricane on September 8th as it passed west of the Turks and Caicos Islands and approached the northern coast of Cuba. The interaction along the northern coast of Cuba on September 9th led to further weakening and Irma briefly dipped to a Category 3 strength. The storm made its pivotal northward turn and re-strengthened in the Florida Straits, and first continental US landfall occurred at Cudjoe Key in the Florida Keys on Sunday morning September 10th as a Category 4 hurricane. Then, at 3:35PM made its second landfall over Marco Island, FL as a Category 2 storm, the first direct landfall on Florida since 2004, with sustained winds of 110 mph. Increasing shear to the north of Irma was the main factor for weakening below major intensity as the storm came ashore. Irma's unique track northward across central Florida resulted in broad tropical to hurricane strength gusts, peaking 80-85 mph in Hardee, Highlands and Polk Counties after 9PM where the eye-wall tracked as a Category 2 storm. Irma weakened to a Category 1 hurricane around 11PM on September 10th near Hardee County and continued northward inland along the I-75 corridor, finally weakening to a tropical storm the morning of September 11th between Dixie and Levy Counties.

Duke Meteorology began a formal dialogue with Florida leadership on Tuesday, September 5th and specified immediately that Florida would see "significant impacts" as a result of Irma's future track. Forecast models depicted an Atlantic coast track initially and gradually trended west over time, which was communicated as a risk. However, because of Irma's size and intensity, either track scenario would cause significant issues for the Florida Service Area. Initial resource planning began that same day and it was decided to use wind speeds from Hurricane Matthew (east coast track) and Hurricane Charley (west coast track) to model best and worst case scenarios, respectively. The forecast track trended farther west over time and by late week, the resource model output became more refined depicting major impacts to the FDO. Irma was always expected to make a pivotal northward turn, but forecast models struggled with consistency where exactly that turn would occur between 80W and 83W longitude and the risk to the track was communicated to be farther west compared to early eastern track forecasts. The National Hurricane Center's official track forecast finally settled with a northward track along the Gulf Coast on Saturday, September 9th, relying heavily on the more reliable European operational model/ensemble; however, ironically, the American Model was steadfast with an earlier northward turn and tracking centrally over Florida, which ultimately verified. Typically there is low confidence with the exact track of a tropical cyclone, but this shift of 25 miles or so resulted in broader impacts over South Central, where Hardee, Highlands, Okeechobee, Orange and Polk Counties overserved the strongest gusts. Please click here (http://www.nhc.noaa.gov/archive/2017/IRMA_graphics.php?product=5day_cone_with_line_and_wind) for the NHC's archived Irma track graphics.



Actual Track and Intensity vs NHC Track Forecast 9/10/2017 5AM



Florida Specific Hazards and Impacts

-

Storm Surge

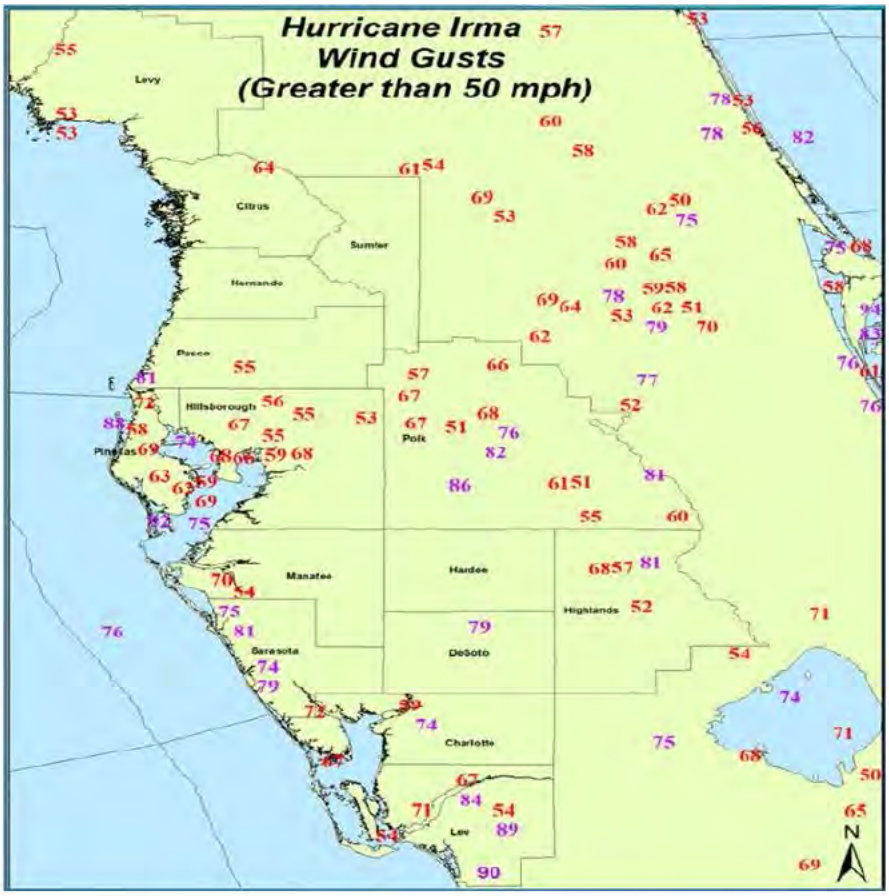
Irma's track over west-central Florida was fortuitous for lesser impacts along the Gulf Coast, which seemed more perilous based on forecast from September 9th – 10th. Locally, the Gulf Coast actually saw ocean and bay waters receded tens of feet after days of persistent north-northeast winds pushing massive amounts of water west into the Gulf of Mexico. As Irma passed to the north and winds became southerly, waters quickly returned at a steep pace and peaked 3-5 feet. Storm surge generally ranged 3-6 feet along the Atlantic coast, including a record-breaking 5 57 feet in downtown Jacksonville and near 8 feet in Port St. Lucie. A tide gauge in Naples peaked near 8 feet as Irma moved inland.

Wind

The strongest, hurricane-strength gusts were observed in Hardee, Highlands and Polk Counties, with a peak gust of 86 mph officially registered at Sebring Regional Airport where the eastern edge of the eye-wall tracked, and 80-85 mph gusts near Eagle Creek and Bartow, FL. Gusts ranging 70-80 mph were also observed in Osceola and Orange Counties. Tropical storm force conditions were observed elsewhere generally along the I-4 corridor and inland locations, with weaker winds northward. Winds generally peaked between 7PM Sunday, September 10th over far southern locales, to the early morning Sunday, September 11th. Irma entered

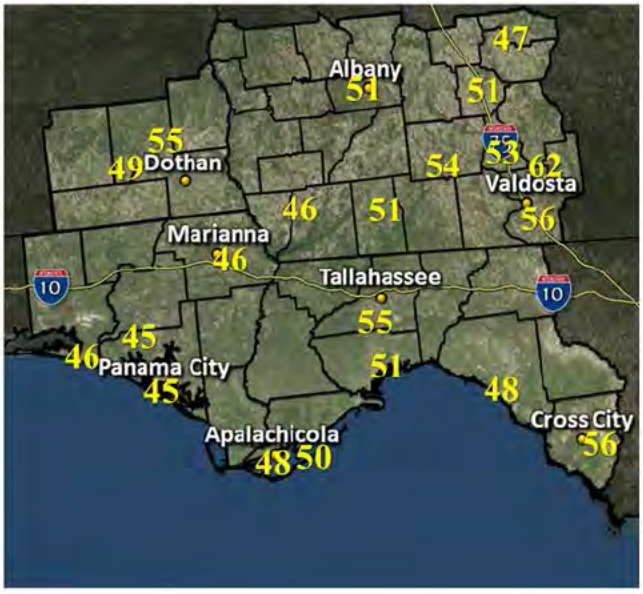
the far South Central Zone as a Category 2 hurricane, weakening with an inland track to a Category 1 storm just east of Sebring around 11PM.

- Sebring – 50-60 mph sustained winds, 86 mph peak gust
- Orlando International – 45-55 mph sustained winds, 79 mph peak gust
- North Central Zones – 35-45 mph sustained winds, 60-75 mph gusts
- St Petersburg/Clearwater International – 35-45 mph sustained winds, 74 mph peak gust
- Panhandle/North Coastal – 25-35 mph sustained winds, 45-55 mph gusts



Peak measured wind gusts on 11 Sep 17 (MPH)

Moody AFB, GA	62
Valdosta Airport, GA	56
Cross City Airport, FL	56
Tallahassee Airport, FL	55
Dothan Airport, AL	55
Moultrie Airport, GA	54
1 S Adel, GA	53
Shell Point, FL	51
Tifton Airport, GA	51
Thomasville, GA	51
Saint George Island, FL	50
Ozark, AL	49
Keaton Beach, FL	48
Apalachicola Airport, FL	48
Fitzgerald, GA	47
Marianna Airport, FL	46
1 WNW Blue Mountain Beach, FL	46
Bainbridge, GA	46
Panama City Airport, FL	45
1 S Panama City, FL	45

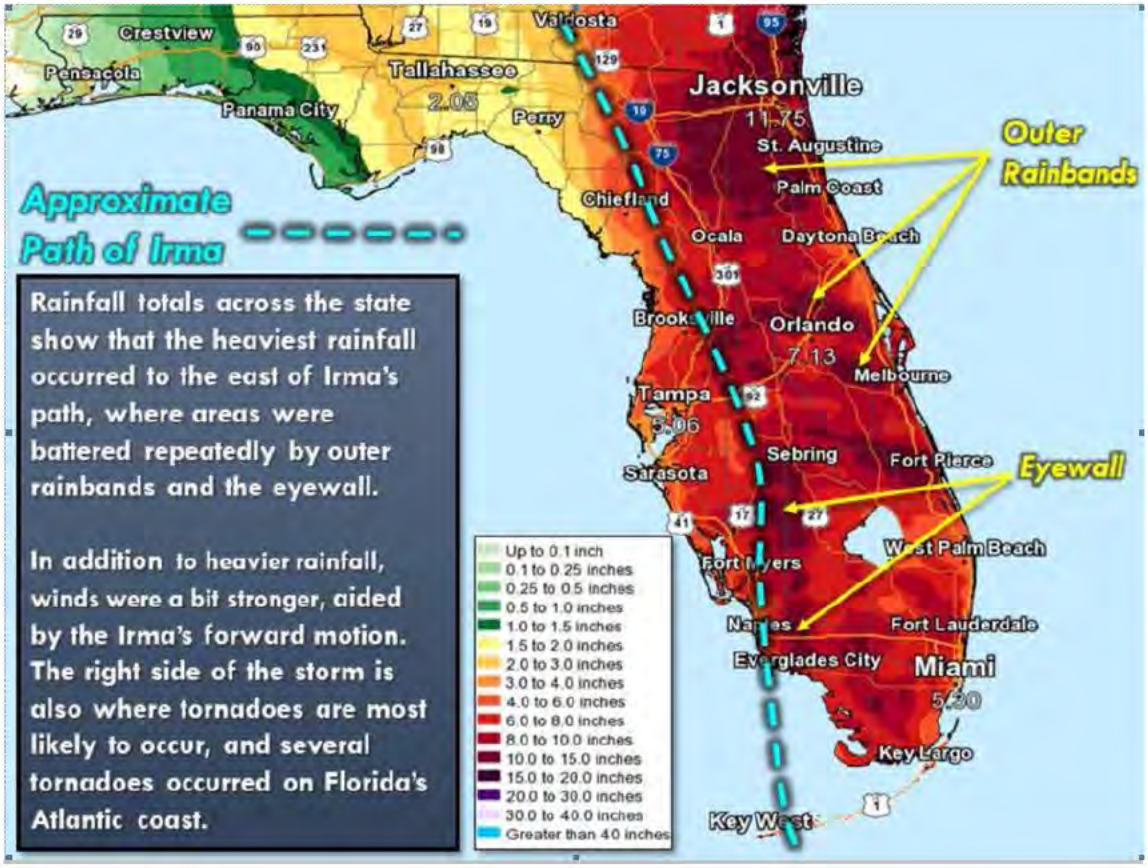


Rainfall

Rainfall totals due to Hurricane Irma were extreme given the track and slow-forward speed, with the highest amounts ranging 10-20" right along the eastern flank of the eye-wall, as well as along the I-95 corridor where outer rain bands were most persistent. Rain totals exhibited a sharp gradient westward across the Peninsula that is typical of the western half of tropical cyclones in the Atlantic Basin. Rainfall totals along and west of the I-75 corridor ranged 3-8". The highest

rainfall totals, in excess of 10", were observed in Brevard, Indian River, Lake, Orange, Osceola, Seminole, St. Lucie and Volusia Counties. The highest reported total, via a spotter, in the Florida Service Area was 17.44" followed by Union Park receiving 13.79". The most extreme rainfall total was observed in Fort Pierce with one gauge measuring 21.66". Extreme rainfall amounts led to major river flooding and record crests for many locales, including the Anclote, Santa Fe and St. John's Rivers.

- Christmas – 17.44"
- Union Park – 13.79"
- Oviedo – 12.14"
- Sanford – 11.95"
- DeLand – 11.82"



Tornadoes

Tornadoes were communicated ahead of Irma's landfall to be a moderate-impact for the Florida Service Area, but are typical during tropical cyclones and are usually short-tracked and weak. There were multiple reports of weak, isolated tornadoes and water spouts at the immediate coast where outer rain bands moved inland, as well as inland where the eye-wall tracked into south-central Florida. The Storm Prediction Center issued multiple Tornado Watches as Irma moved northward over Florida, and in conjunction with local National Weather Service offices, issued numerous tornado warnings. In total, there were 12 official tornado reports across Florida related to Irma, but only 1 was reported over the service area located in Wauchula, FL in Hardee County where roof damage was a result of a passing tornado.

The storm weakened as it moved northward to a tropical storm between Dixie and Levy Counties on Monday morning, but remained a dangerous, large tropical storm. Irma officially exited the Florida Service Area shortly after 12PM Monday afternoon and entered south-central Georgia and brought tropical storm conditions across Georgia, Alabama, and the Carolinas. The all-clear, however, for employees to travel into local operational centers was given Monday morning. Hurricane Irma caused major impacts to the service area's transmission and distribution systems, strained the electrical grid and resulted in nearly 1.3 million customer outages that rivals all-time record outages caused by historical storms Hurricane Frances and Jeanne of 2004. However, the damage as a result of Irma was unparalleled to any prior storm due to the storm's unique track northward over west-central Florida. Irma also caused significant impacts to the Carolinas Service Area with sustained winds 25-45 mph and gusts to 60 mph, particularly for Carolinas West. If there are any questions, please feel free to contact me, and feel free to forward internally. The Meteorology Team, along with Data Analytics, will continue to dissect the resource planning models and verify its accuracy and then introduce data to improve future precision. Be mindful that the Atlantic tropical season lasts until November 30th and a late-season storm is possible, particularly originating from the Gulf of Mexico and/or the Caribbean. The 2017 season has been very active and produced strong tropical systems and is rivaling 2004 in Accumulated Cyclone Energy and storm days.

Sources
National Weather Service/NOAA

- National Hurricane Center
- Storm Prediction Center

Colorado State University Tropical Meteorology

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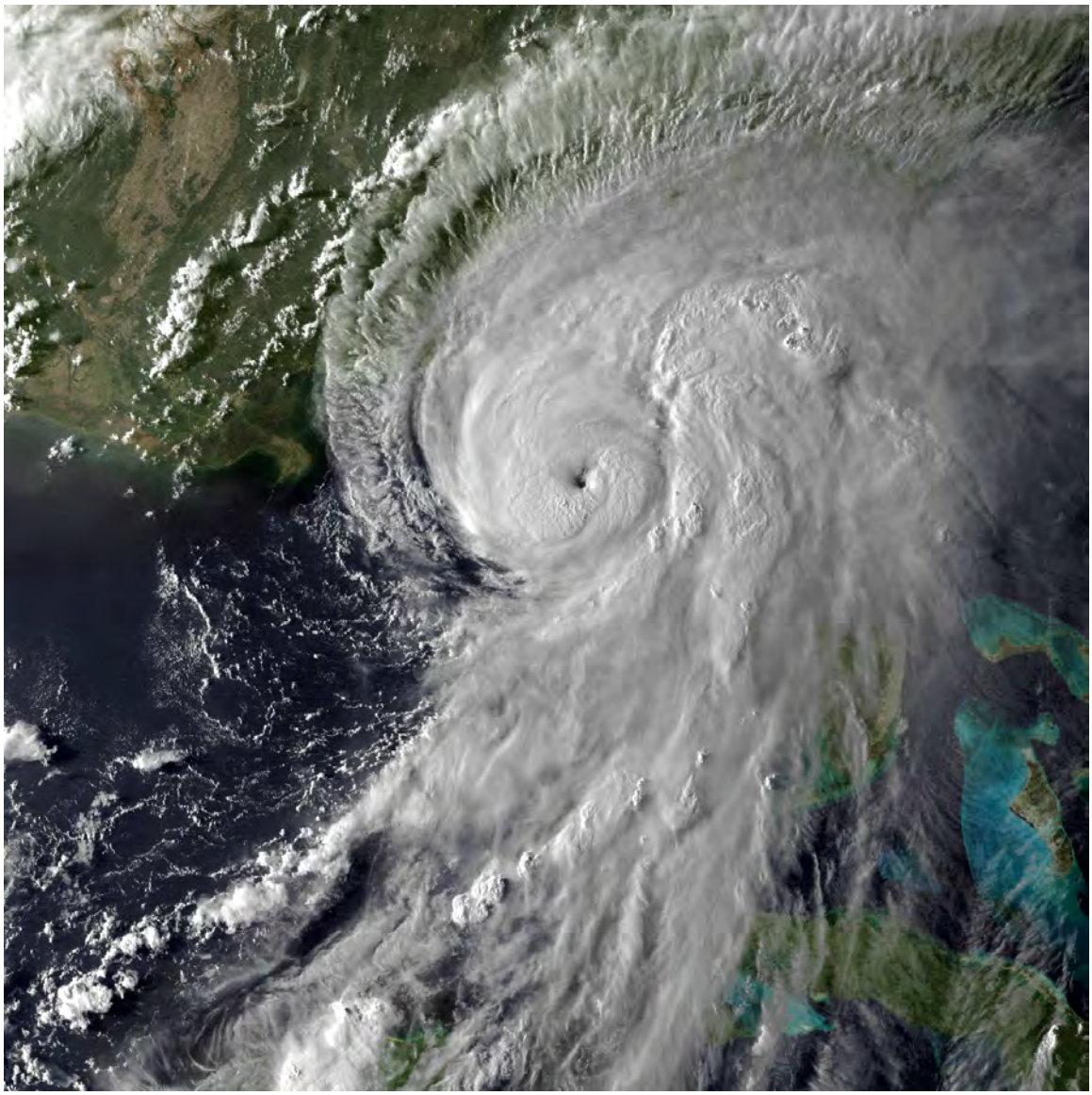
Hurricane Hermine – the First Hurricane to Landfall on Florida since 2005
Prepared by Daniel J. Brouillette, Florida Climate Center



Courtesy: NASA Naval Research Laboratory.

Introduction

At around 1:30 AM EDT on 2 September 2016, Hurricane Hermine made landfall near Saint Marks, Wakulla County, in the Big Bend region. Hermine was the first hurricane to make landfall on Florida since Hurricane Wilma made landfall near Cape Romano, Collier County, on 24 October 2005. The streak of no Florida hurricane landfalls spanned 3966 days and was record long. The previous record-long streak was 2271 days between the time of landfall of Hurricane David near West Palm Beach on 3 September 1979 and the time of landfall of Hurricane Kate near Mexico Beach, Bay County, on 21 November 1985. Hermine was also the first hurricane to make landfall on Apalachee Bay coastline since Hurricane Alma made landfall near Alligator Point, Wakulla County, on 9 June 1966.

Hermine was the second named storm of 2016 to landfall on Florida after Tropical Storm Colin did so on 6 June.

Development and Evolution

Hermine had a protracted history and path before it made landfall. On 18 August, forecasters at the National Hurricane Center called attention to a tropical wave that had developed about 300 miles southwest of the Cape Verde islands. After strong wind shear and dry air hindered its development for a few days, a poorly defined circulation was evident by the 23rd, when the wave was just east of Guadalupe in the Caribbean Sea. The strength and organization of the wave waxed and waned as it then moved across the Caribbean Sea, impacting Puerto Rico and the southern Bahamas, before it gained a well-defined circulation on the 28th. At that time, located in the Florida Straits between the Florida Keys and Cuba (which saw some rains from outer bands), it was christened as Tropical Depression Nine (Figure 1). Suffering from considerable westerly wind shear and dry air to its west, the depression had a ragged presentation on satellite imagery as it moved into the Gulf of Mexico. By the 31st, conditions improved, allowing the storm to strengthen into a tropical storm at a position in the eastern Gulf some 400 miles southwest of Apalachicola, Franklin County. At this time, a mid-level trough was deepening over the southeastern U.S., forcing the acceleration of the storm to the northeast. Moving over Gulf waters with surface temperatures of around 86 degrees Fahrenheit, Hermine continued to gather strength, sending heavy rainfall and tropical-storm winds to its east, as far east as the western half of the Florida peninsula, as the calendar turned to September. Upgraded to Category 1 hurricane strength by early afternoon on the 1st, Hermine continued to strengthen until landfall. At the time of landfall during the middle of the following night, maximum sustained winds were estimated at 80 miles per hour, and the central pressure was 982 millibars.

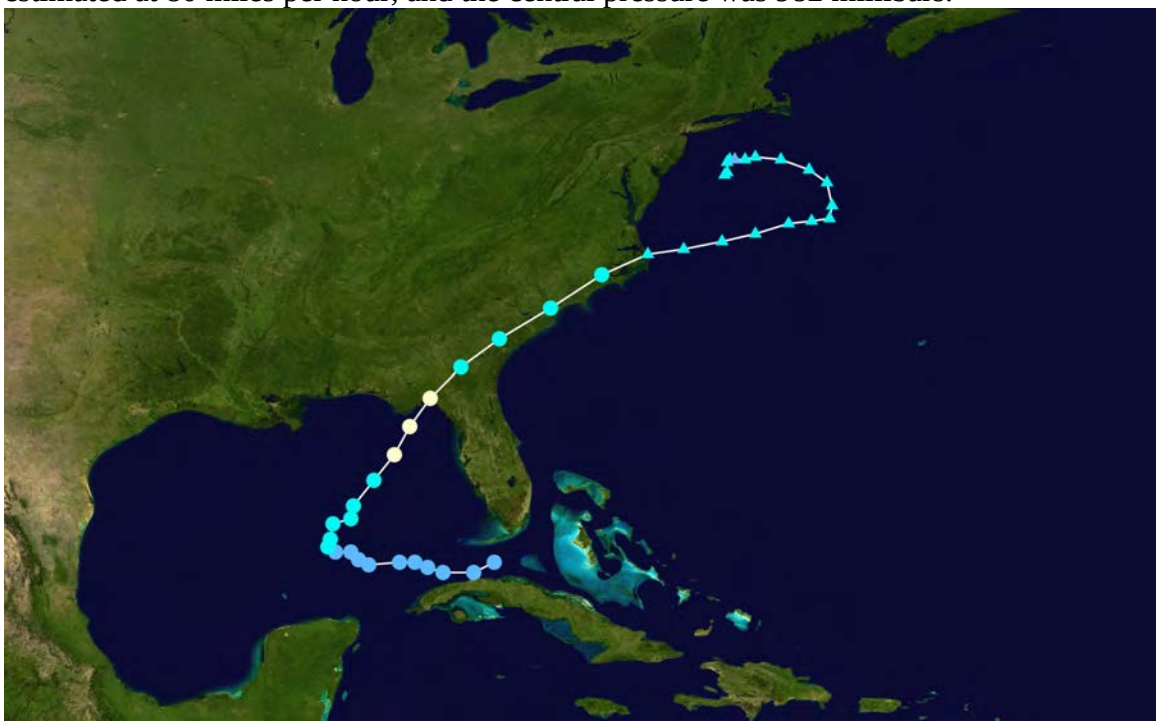


Figure 1: The track of Hurricane Hermine from its christening as a tropical depression in the Florida Straits, south of the Keys, to its landfall on the coast of the Apalachee Bay as a Category 1 hurricane.

Impacts

Although Hermine had numerous impacts, its greatest impact away from the coast was damaging wind gusts. Winds were strong near, and especially off, the western coast from the Tampa Bay region northward through the Nature Coast and the north-central part of the peninsula and into the Big Bend region. Damage from these wind gusts, though seen in much of the Big Bend, was most evident in Tallahassee, the largest population center affected by Hermine at its peak strength. A number of factors came together in Tallahassee to yield widespread damage. First, Tallahassee is well known for its dense, thick tree canopy, which includes many live oaks and yellow pines. Additionally, a storm of the approximate magnitude of Hermine had not occurred since Hurricane Kate in 1985, allowing for the build-up of diseased and vulnerable tree limbs in canopies that had not been pruned regularly. Furthermore, the heavy rains from the storm fell onto the region's characteristically sandy soil, softening it. Lastly, for much of the time in which the storm progressed through the region, Tallahassee resided within the northwestern quadrant of the storm's eye wall, which was strengthening all the way to the time of landfall. Zones of strengthening within a hurricane, especially its eyewall, are associated with zones of evolving momentum, which is mixed to the surface and manifested as zones of particularly strong winds. Although the highest wind gust measured in Tallahassee during the storm was 64 miles per hour from a WeatherSTEM sensor mounted near Doak Campbell Stadium on the campus of the Florida State University, it is plausible that somewhat higher wind gusts, not recorded by sensors, may have occurred in and near Tallahassee (Figure 2).

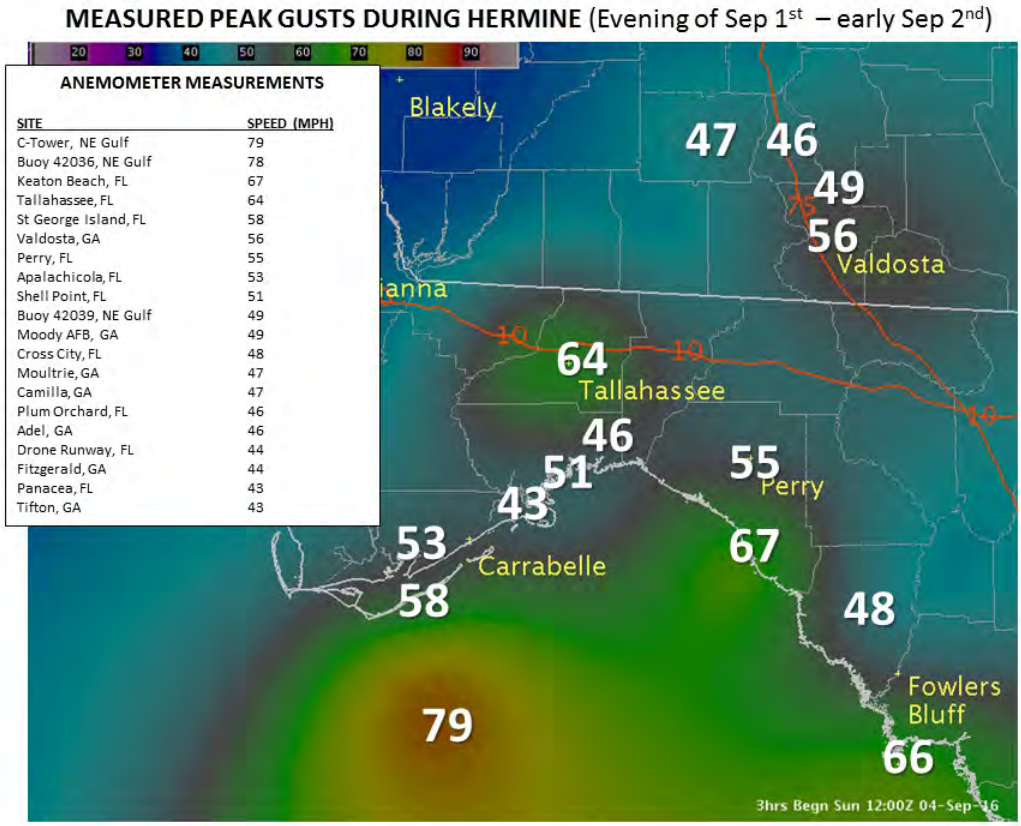


Figure 2: Measured peak wind gusts during Hurricane Hermine in the Big Bend region of Florida and the adjacent part of south Georgia. Courtesy: NWS Tallahassee.

In any event, all these factors came together to topple trees and snap tree branches, which fell onto many power lines and roads and some homes and businesses. Damage and widespread power outages were seen in Gadsden, Wakulla, Franklin, Leon, Jefferson, Taylor, Dixie, Lafayette, and Suwannee counties. Approximately 80 percent of customers of Tallahassee's municipal electric utility were without power on the morning of the 14th, and restoration of some customers' power took up to a week.

Another major impact in the near vicinity of the coast was storm-surge flooding and attendant damage to buildings and roads. The shape of the coastline in the Apalachee Bay contributes to relatively severe storm-surge flooding compared to surrounding coastline on the Gulf of Mexico. Figure 3 shows the storm-surge inundation observed along the Apalachee Bay. Evacuations from near-coastal zones were requested in Franklin and Wakulla Counties, and damage to some coastal structures (homes and roads) because of storm-surge flooding, especially in the vicinity of Alligator Point, was said to be substantial.

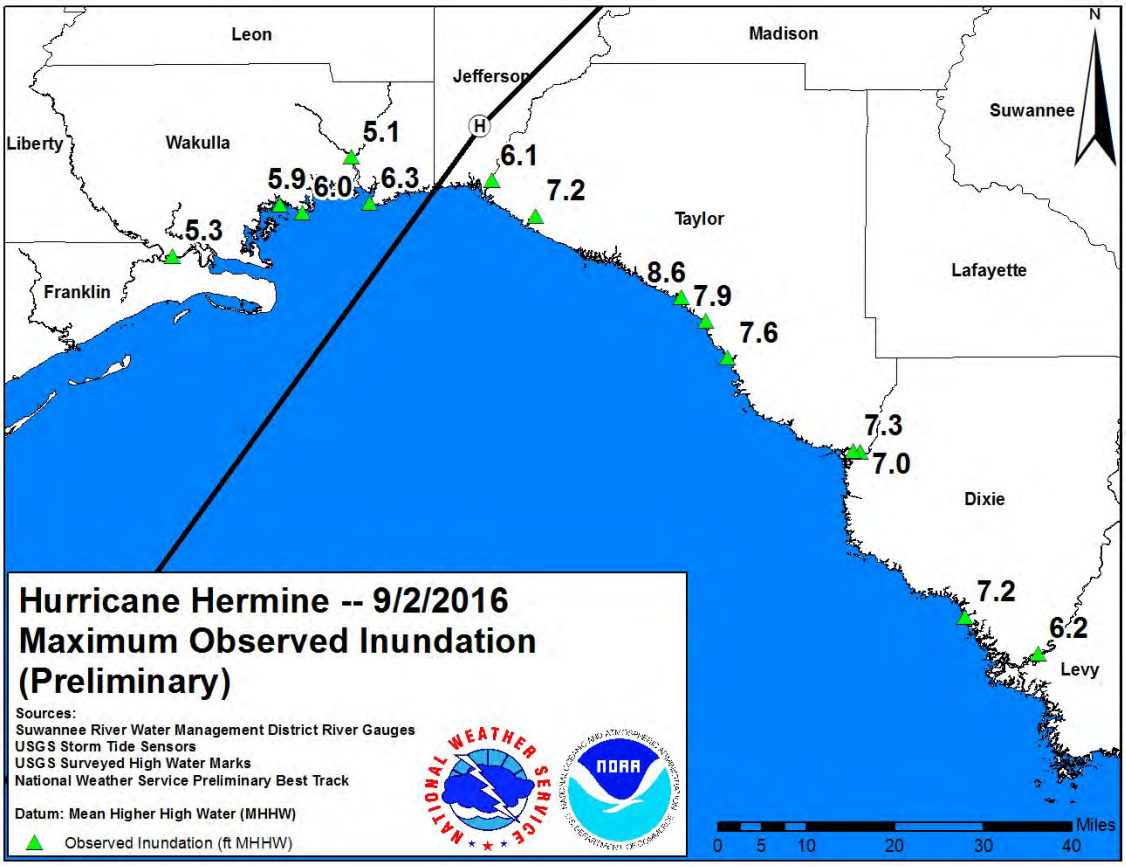


Figure 3: A map of maximum observed inundation from storm surge in Hurricane Hermine in the Apalachee Bay. Courtesy: NWS Tallahassee.

Three brief tornadoes occurred in southern Taylor County. All three were rated weak, or EF-0, on the Enhanced Fujita Scale and passed over rural areas. Figure 4 shows where they occurred.

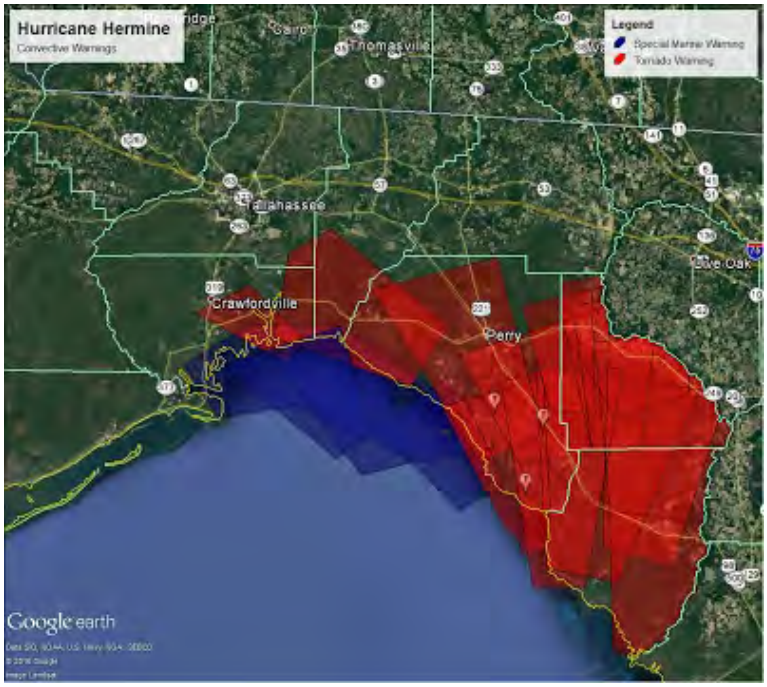


Figure 4: Map showing where the National Weather Service Weather Forecast Office in Tallahassee issued tornado warnings (red polygons) and where the three EF-0 tornadoes in southern Taylor County were confirmed (red pegs). Courtesy: NWS Tallahassee.

Additionally, one tornado touched down in the Hamlin Grove community of Winter Garden, Orange County, at around 8:38 PM EDT on the 1st and remained on the ground for one minute. The tornado was weak, rated EF-0 on the Enhanced Fujita Scale by a storm-survey team headed by the National Weather Service Weather Forecast Office in Melbourne. It had a path length of 1.2 miles, a maximum path width of 150 yards, and maximum winds of 80 to 85 miles per hour. The damage was summarized as follows:
"Toward the north end of the track, the tornado affected a neighborhood of new homes, resulting in minor damage to several of them. A pool screen enclosure and fences were damaged and a few homes experienced soffit, window and air conditioning unit damage due to impact from flying debris. Over 100 trees were damaged along the track, including dozens of pine trees snapped several feet from the ground. The tornado lifted near New Independence Parkway, east of Hamlin Groves Trail".

Rainfall from Hermine was particularly heavy in coastal areas of the Tampa Bay region, where minor to moderate flash flooding was reported. Rainfall occurred there, and elsewhere in the west-central part of the peninsula, as early as the afternoon of the 31st as the outermost bands of Hermine moved over the region. In the Big Bend, where rains were mainly confined to the 1st and 2nd, because Hermine was advancing fairly quickly, rainfall was moderate but not excessive. In particular, the rainfall generally did not result in flash flooding. The heaviest amounts in the Big Bend were observed in Dixie and Lafayette Counties (Figure 5).

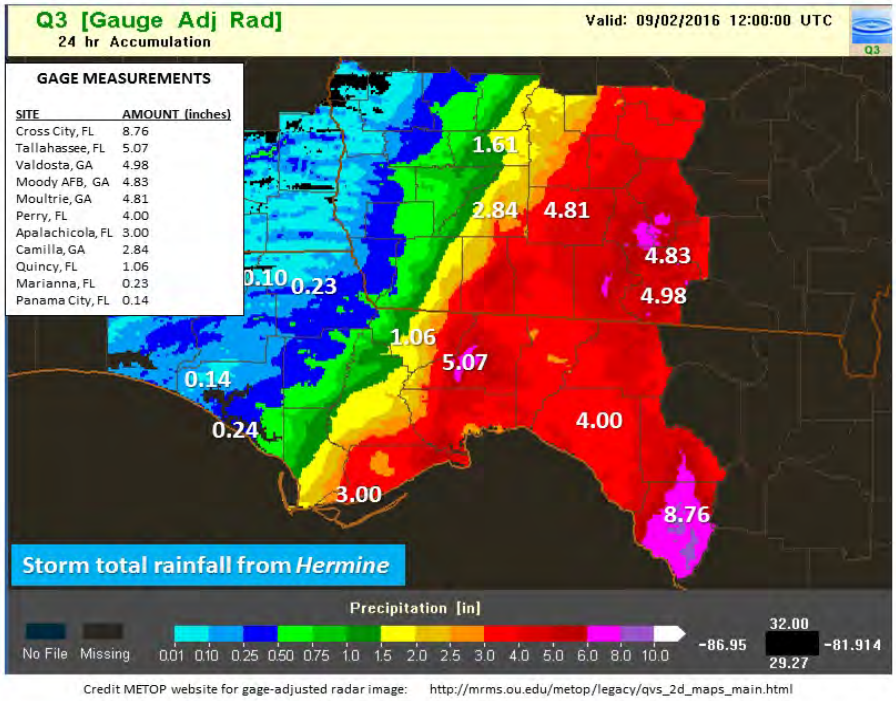


Figure 5: Map showing rainfall totals from Hurricane Hermine in the Big Bend region and south Georgia. Courtesy: NWS Tallahassee.

The following table shows selected 48-hour rainfall totals in excess of 3.00 inches ending the morning the 2nd measured by various gauges in Florida. These totals can be regarded as storm totals.

GAUGE LOCATION	COUNTY	RAINFALL TOTAL (inches)	OBSERVATION NETWORK
Seminole 3.2 WNW	Pinellas	16.64	CoCoRaHS
Largo	Pinellas	11.57	USGS
Seminole 1.2 WSW	Pinellas	11.33	CoCoRaHS
South Pasadena 0.6 E	Pinellas	10.65	CoCoRaHS
Largo 0.7 W	Pinellas	9.98	CoCoRaHS
Largo 2.2 ESE	Pinellas	9.50	CoCoRaHS
South Pasadena 1.0 NE	Pinellas	9.10	CoCoRaHS
Holiday 0.6 E	Pasco	8.74	CoCoRaHS
Hudson 1.1 ESE	Pasco	8.55	CoCoRaHS
Sarasota/Bradenton Airport	Sarasota	8.55	ASOS
Palmetto 1.2 W	Manatee	8.54	CoCoRaHS
Cross City 1 E	Dixie	8.43	NWS COOP
Dunedin 3.0 SE	Pinellas	8.32	CoCoRaHS
Clearwater 2.2 S	Pinellas	8.25	CoCoRaHS
Oldsmar 2 NW	Pinellas	8.02	USGS
Dunedin 2.8 ESE	Pinellas	7.88	CoCoRaHS

Bradenton 3.5 WNW	Manatee	7.80	CoCoRaHS
Tarpon Springs	Pinellas	7.79	USGS
Dunedin	Pinellas	7.75	USGS
Clearwater 3 E	Pinellas	7.68	USGS
Pinellas Park	Pinellas	7.26	USGS
Pinellas Park 2 N	Pinellas	7.19	USGS
Bronson 3.0 SE	Levy	7.16	CoCoRaHS
Suwannee 6 NE	Levy	7.13	USGS
Port Richey 2.0 NNE	Pasco	7.12	CoCoRaHS
Land O' Lakes 1.8 SE	Pasco	6.90	CoCoRaHS
St. Petersburg 2.3 SSW	Pinellas	6.84	CoCoRaHS
Dunedin 1 SE	Pinellas	6.80	USGS
Chiefland 2.4 WSW	Levy	6.71	CoCoRaHS
Tallahassee 5.7 SE	Leon	6.65	CoCoRaHS
Lake Ward/Bradenton 5 SE	Manatee	6.61	USGS
St. Petersburg 4.6 N	Pinellas	6.46	CoCoRaHS
St. Petersburg 2.4 NW	Pinellas	6.38	CoCoRaHS
Land O Lakes 1.5 SSE	Pasco	6.30	CoCoRaHS
St. Petersburg 2.4 N	Pinellas	6.30	CoCoRaHS
Oldsmar 3 NE	Hillsborough	6.25	USGS
Sulphur Springs 3 NW	Hillsborough	6.18	USGS
St. Petersburg 3.2 NNW	Pinellas	6.14	CoCoRaHS
Apollo Beach 3.0 ENE	Hillsborough	6.13	CoCoRaHS
Sarasota 1.4 E	Sarasota	6.13	CoCoRaHS
Mayo	Lafayette	6.10	NWS COOP
Tallahassee 3.3 SSE	Leon	6.00	CoCoRaHS
St. Petersburg 3.9 N	Pinellas	5.98	CoCoRaHS
Citrus Park 1.3 ENE	Hillsborough	5.96	CoCoRaHS
Tampa 6.5 NNE	Hillsborough	5.88	CoCoRaHS
Ruskin 1.8 ESE	Hillsborough	5.88	CoCoRaHS
University West 2.0 WNW	Hillsborough	5.83	CoCoRaHS
Crawfordville 7.3 SSE	Wakulla	5.81	CoCoRaHS
Riverview 4.8 SSW	Hillsborough	5.76	CoCoRaHS
St. Petersburg 4.5 NW	Pinellas	5.75	CoCoRaHS
Dade City 4.3 N	Pasco	5.74	CoCoRaHS
Tampa International Airport	Hillsborough	5.73	ASOS
Riverview 4.4 SSW	Hillsborough	5.72	CoCoRaHS
St. Petersburg 2.3 SSE	Pinellas	5.67	CoCoRaHS
Madison 1.2 ENE	Madison	5.60	CoCoRaHS
Monticello 9.8 SW	Jefferson	5.58	CoCoRaHS
Cross City 4.7 E	Dixie	5.56	CoCoRaHS
Lamont 7.7 SW	Jefferson	5.56	CoCoRaHS

Brooksville Airport	Hernando	5.53	ASOS
Temple Terrace 1.5 SE	Hillsborough	5.52	CoCoRaHS
Tallahassee 10.2 NE	Leon	5.52	CoCoRaHS
Tampa 5.2 SSW	Hillsborough	5.43	CoCoRaHS
Tallahassee 14.2 NE	Leon	5.42	CoCoRaHS
Bloomingdale 7.6 ESE	Hillsborough	5.39	CoCoRaHS
Tampa 10.2 NNW	Hillsborough	5.39	CoCoRaHS
Sun City Center 1.0 NE	Hillsborough	5.35	CoCoRaHS
St. Petersburg/Clearwater Airport	Pinellas	5.33	ASOS
Chiefland 8.5 ENE	Levy	5.32	CoCoRaHS
Spring Hill 3.3 SE	Hernando	5.30	CoCoRaHS
Tallahassee 9.3 ESE	Leon	5.29	CoCoRaHS
Tallahassee 5.1 NE	Leon	5.25	CoCoRaHS
St. Petersburg – Albert Whitted Airport	Pinellas	5.23	ASOS
Lutz 2.0 E	Hillsborough	5.22	CoCoRaHS
Spring Hill 2.4 NW	Hernando	5.21	CoCoRaHS
Wimauma 4 SW	Hillsborough	5.19	USGS
Tampa 5.0 NNE	Hillsborough	5.16	CoCoRaHS
Sarasota 4.0 S	Sarasota	5.12	CoCoRaHS
Valrico 1.1 SE	Hillsborough	5.09	CoCoRaHS
Dade City 1.8 WSW	Pasco	5.08	CoCoRaHS
Tampa – Progress Boulevard	Hillsborough	5.08	USGS
Riverview 0.9 ENE	Hillsborough	5.07	CoCoRaHS
Tallahassee 8.1 NE	Leon	5.05	CoCoRaHS
Lutz 0.6 WSW	Hillsborough	5.02	CoCoRaHS
Tallahassee 1.3 SW	Leon	5.02	CoCoRaHS
Lutz 3.4 NE	Pasco	5.01	CoCoRaHS
Greater Northdale 0.4 ENE	Hillsborough	5.00	CoCoRaHS
Valrico 2.2 SE	Hillsborough	4.99	CoCoRaHS
Tallahassee 5.5 ENE	Leon	4.94	CoCoRaHS
Trenton 4.0 NW	Gilchrist	4.91	CoCoRaHS
Spring Hill 2.4 WSW	Hernando	4.90	CoCoRaHS
Tampa – Delaney Creek	Hillsborough	4.80	USGS
Monticello 2.9 WSW	Jefferson	4.85	CoCoRaHS
Monticello 4.3 ENE	Jefferson	4.72	CoCoRaHS
Tampa – East Lake	Hillsborough	4.70	USGS
Newberry 4.0 WNW	Gilchrist	4.66	CoCoRaHS
Crystal River 4.7 ESE	Citrus	4.65	CoCoRaHS
Lutz 1.3 SSE	Hillsborough	4.64	CoCoRaHS
Tampa 4.8 SW	Hillsborough	4.61	CoCoRaHS
Dade City 4.3 S	Pasco	4.61	CoCoRaHS

Plant City 6.4 NW	Hillsborough	4.57	CoCoRaHS
Live Oak 10.0 W	Suwannee	4.52	CoCoRaHS
Brandon 2.7 N	Hillsborough	4.51	CoCoRaHS
Tallahassee 5.2 E	Leon	4.51	CoCoRaHS
Tampa Dam	Hillsborough	4.50	USGS
Palmetto 6.4 ENE	Manatee	4.49	CoCoRaHS
Madison 8.3 NNE	Madison	4.45	CoCoRaHS
Tallahassee 0.6 SE	Leon	4.44	CoCoRaHS
Apalachicola 0.8 WNW	Franklin	4.41	CoCoRaHS
Auburndale 1.7 NW	Polk	4.41	CoCoRaHS
Tallahassee 10.8 N	Leon	4.40	CoCoRaHS
Thonotosassa 3 N	Hillsborough	4.40	USGS
Glen St. Mary 4.4 SW	Baker	4.39	CoCoRaHS
Ellenton 6.6 E	Manatee	4.39	CoCoRaHS
Dade City 4.6 SSE	Pasco	4.37	CoCoRaHS
High Springs 3.2 SW	Alachua	4.33	CoCoRaHS
Tampa 5.1 S	Hillsborough	4.32	CoCoRaHS
Trenton 8.0 ENE	Gilchrist	4.30	CoCoRaHS
Interlachen 1.3 SW	Putnam	4.30	CoCoRaHS
Lithia	Hillsborough	4.25	USGS
Gainesville Regional Airport	Alachua	4.23	ASOS
Bradenton 10.8 SE	Manatee	4.20	CoCoRaHS
Live Oak 9.1 NW	Suwannee	4.19	CoCoRaHS
Archer 5.5 E	Alachua	4.15	CoCoRaHS
Fort White 3.2 WNW	Columbia	4.11	CoCoRaHS
Gainesville 1.8 SW	Alachua	4.09	CoCoRaHS
Zephyrhills 0.9 ENE	Pasco	4.08	CoCoRaHS
Lorraine 1 SW	Manatee	4.07	USGS
Crystal River 5.3 NNE	Citrus	4.05	CoCoRaHS
Lakeland Highlands 0.3 SE	Polk	4.05	CoCoRaHS
Gainesville 1.7 SE	Alachua	4.00	CoCoRaHS
North Brooksville 6.3 NE	Hernando	4.00	CoCoRaHS
Zephyrhills 2.6 NNW	Pasco	3.99	CoCoRaHS
Lakeland 8.7 SW	Polk	3.98	CoCoRaHS
Auburndale 1.1 W	Polk	3.98	CoCoRaHS
Bradenton 11.0 E	Manatee	3.93	CoCoRaHS
Fort Lonesome	Hillsborough	3.90	USGS
Gainesville 3.8 W	Alachua	3.89	CoCoRaHS
Sarasota 6.4 NNE	Manatee	3.88	CoCoRaHS
Perry 2.0 S	Taylor	3.82	CoCoRaHS
Micanopy 8.5 W	Alachua	3.77	CoCoRaHS
Gainesville 7.7 W	Alachua	3.74	CoCoRaHS
Inverness	Citrus	3.74	NWS COOP

Spring Hill 1.6 NNW	Hernando	3.74	CoCoRaHS
Lakeland 6.9 SW	Polk	3.73	CoCoRaHS
Gainesville 3.4 S	Alachua	3.72	CoCoRaHS
Interlachen 10.4 NNE	Putnam	3.70	CoCoRaHS
Weeki Wachee 7.1 NNE	Hernando	3.69	CoCoRaHS
Live Oak 0.4 NE	Suwannee	3.69	CoCoRaHS
Macclenny 2.5 S	Baker	3.67	CoCoRaHS
Sarasota 5.8 SE	Sarasota	3.65	CoCoRaHS
Knights 4NE	Hillsborough	3.63	USGS
Lakeland 4.0 S	Polk	3.63	CoCoRaHS
Polk City 1.1 S	Polk	3.62	CoCoRaHS
Rockledge 1.1 WSW	Brevard	3.61	CoCoRaHS
Gainesville 6.5 NW	Alachua	3.60	CoCoRaHS
High Point 0.2 E	Hernando	3.59	CoCoRaHS
Myakka State Park	Sarasota	3.58	USGS
Eastpoint 1.4 NW	Franklin	3.57	CoCoRaHS
Gainesville 8.1 SW	Alachua	3.56	CoCoRaHS
Alachua 5.2 NNW	Alachua	3.53	CoCoRaHS
Orlando 2.9 NNE	Orange	3.50	CoCoRaHS
Glen St. Mary 1 W	Baker	3.47	NWS COOP
Havana 4.2 SW	Gadsden	3.45	CoCoRaHS
Gainesville 5.4 W	Alachua	3.38	CoCoRaHS
Gainesville 2.4 SW	Alachua	3.37	CoCoRaHS
Lutz 2.2 SSE	Hillsborough	3.35	CoCoRaHS
Ocala 14.3 S	Marion	3.32	CoCoRaHS
Brighton 7 NW	Highlands	3.28	USGS
Bushnell 1.0 NNW	Sumter	3.27	CoCoRaHS
Brooker 6.6 SSE	Alachua	3.26	CoCoRaHS
Kenansville 2NW	Osceola	3.25	S. Fla. Water Mgmt. Dist.
Inverness 2.6 ENE	Citrus	3.23	CoCoRaHS
Venice 2.4 SSE	Sarasota	3.23	CoCoRaHS
Lakeland 5.3 WNW	Polk	3.20	CoCoRaHS
Lake City 7.9 SSW	Columbia	3.19	CoCoRaHS
Cape Canaveral 0.6 ESE	Brevard	3.18	CoCoRaHS
Madison	Madison	3.17	NWS COOP
Jasper	Hamilton	3.15	NWS COOP
Dunnellon 10.1 NW	Levy	3.12	CoCoRaHS
Macclenny 4.9 SSW	Baker	3.09	CoCoRaHS
Glen St. Mary 1.7 N	Baker	3.07	CoCoRaHS
Jacksonville 6.7 WSW	Duval	3.06	CoCoRaHS
Myakka Head 8 W	Manatee	3.06	USGS
Palm Shores 1.4 W	Brevard	3.05	CoCoRaHS

Supplementary Links (all working as of 28 September 2016)

A summary of Hermine from the Tallahassee National Weather Service Weather Forecast Office: http://www.weather.gov/tae/hurricane_hermine2016

A report about the storm-damage survey for the tornado that touched down in Hamlin Grove, Orange County:
http://www.weather.gov/media/mlb/surveys/HamlinGroveTornado_090116.pdf

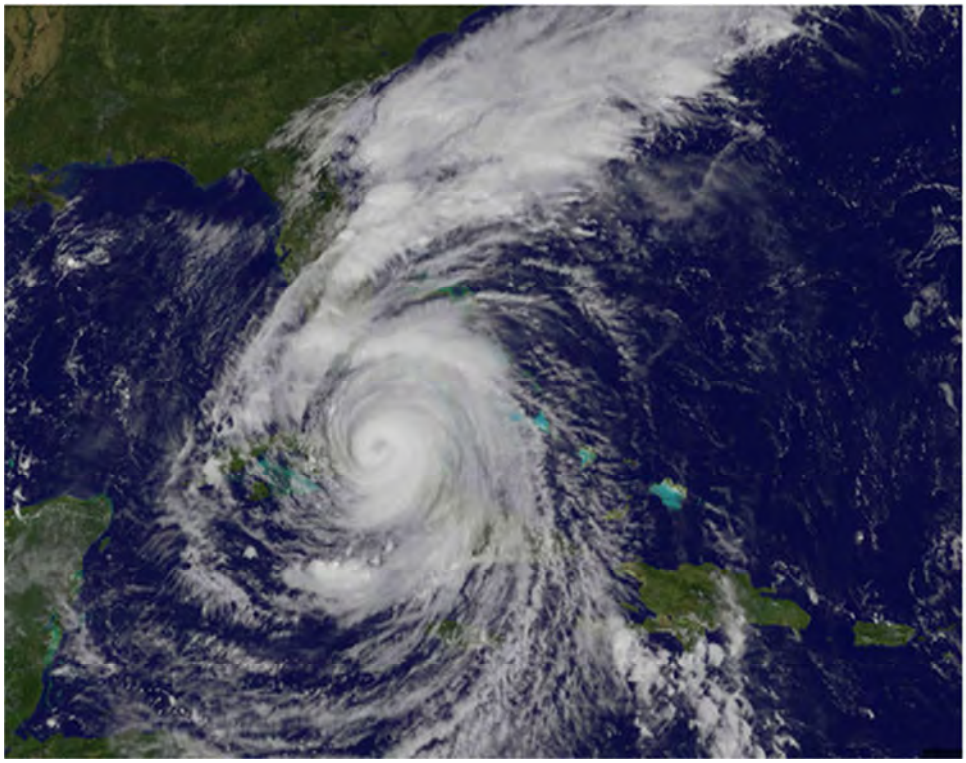
A link to a NWS Tallahassee Twitter post addressing storm surge during Hermine:
https://twitter.com/NWSTallahassee/status/776808700514226176

An archive of products issued by the National Hurricane Center for Hermine:
http://www.nhc.noaa.gov/archive/2016/refresh/HERMINE+shtml/190402.shtml?

Archived Doppler radar imagery of Hermine, courtesy of Brian McNoldy, University of Miami/Rosenstiel School: http://andrew.rsmas.miami.edu/bmcnoldy/tropics/radar/

Hurricane Irma: Florida's First Landfalling Major Hurricane Since 2005

Prepared by Daniel J. Brouillette
Florida Climate Center, Center for Ocean-Atmospheric Prediction Studies
The Florida State University
28 November 2017



Hurricane Irma as it approached Florida. Courtesy: NASA/NOAA GOES Project

General Overview

Hurricane Irma made landfall on and then tracked over a large portion of Florida on 9-11 September 2017. Before its sojourn in the Sunshine State, Irma had a history as one of the most intense tropical cyclones in the observational record of the Atlantic basin. It was the ninth named storm, fourth hurricane, and second major hurricane of the active 2017 season.

The storm's origins were in western Africa, where, on 26 August, an easterly wave developed. That wave moved westward off the African coast and into the Atlantic Ocean on the 27th. On the 30th, at 11:00 AM EDT, a closed circulation was deemed to have developed near Cape Verde, allowing the entity to be christened as a tropical storm. High sea-surface temperatures and low wind shear, along with only dry air as a hindrance, allowed Irma to strengthen rapidly into a Category 2 hurricane by the 31st. This period of rapid strengthening included an increase in maximum sustained wind speeds from 70 to 115 MPH in only 12 hours. Later that day, Irma attained Category 3 strength. Over the following several days, moving generally westward over the open Atlantic Ocean, it fluctuated between Category 2 and 3 strength as eyewall replacement cycles modified its structure. On 4 September, intensification resumed, and Irma reached Category 4 strength that day. At 7:45 AM EDT on the 5th, it reached Category 5 strength. By 8:00 PM EDT that day, it reached peak intensity, which it would maintain for 37 hours, with maximum sustained winds of 185 MPH and a central barometric pressure of 914 hPa. At 2:00 AM on the 6th, Irma made its first landfall on the northern coast of the small Lesser Antilles island of Barbuda, causing near-total destruction. At 8:00 AM EDT, it made landfall on Saint Maarten; at 1:00 PM EDT, it made landfall on Ginger Island and Tortola in the British Virgin Islands cluster. Moving west-northwestward across the Caribbean Sea, on the 8th, it made landfall on the island of Little Inagua in the Bahamas at 2:00 AM EDT before weakening to Category 4 strength because of an eyewall replacement cycle. By 11:00 PM EDT on the 9th, Irma had re-strengthened to Category 5 strength before a landfall on Cuba. Interaction with the Cuban land-mass weakened it to Category 3 strength before it traversed into the Straits of Florida, where it regained Category 4 strength.

On the 10th, Irma made three separate landfalls on Florida. The first occurred at Cudjoe Key (Monroe County; in the lower Keys), at 9:10 AM EDT, with 130-MPH maximum sustained winds (Category 4). This landfall was the first of a major hurricane on Florida since Hurricane Wilma made landfall at Cape Romano (Collier County) on 24 October 2005. The second Irma landfall was at 3:35 PM EDT at Marco Island (Collier County), with 115-MPH maximum sustained winds (Category 3). The third was one-half hour later at Naples, with 115-MPH maximum sustained winds. Irma's center then moved inland about 25 miles, weakening to Category 2 strength, before moving in a generally north-northwest direction. As it passed just east of Tampa on the night of the 10th, the storm maintained Category 1 strength. By the time the center reached the Big Bend region around dawn on the 11th, Irma had weakened to tropical-storm strength. By the afternoon of the 11th, the center had exited the state into Georgia.

Following is a list of outstanding points about Irma's strength and longevity (derived in part from a list compiled by Phil Klotzbach, who is a research scientist at the Colorado State University):

- Its peak maximum sustained wind speed value (185 MPH) was tied with the Florida Keys hurricane (1935), Hurricane Gilbert (1988), and Hurricane Wilma (2005) for second-highest value in the Atlantic basin observational record. Hurricane Allen (1980) had a peak maximum sustained wind speed value of 190 MPH.
- Based on the aforementioned maximum sustained wind speed value, it was the strongest storm to exist outside the Caribbean Sea and Gulf of Mexico in the observational record in the Atlantic basin.
- It maintained 185-MPH winds for 37 hours. No storm in the global observational record has maintained a higher wind speed for a longer period of time. Typhoon Haiyan (2013) in the northwest Pacific Ocean maintained 185-MPH winds for 24 hours.
- Its lifetime minimum barometric pressure was 914 hPa, which is the lowest in the Atlantic basin observational record since Hurricane Dean (2007) and the 10th lowest in the satellite era, which began in 1966.
- That lifetime minimum barometric pressure value was the lowest of any Atlantic basin hurricane outside of the western Caribbean Sea and Gulf of Mexico in the observational record.
- It was the first Category 5 hurricane in the tropical north Atlantic Ocean (7.5-20^{o}N, 60-20^{o}W) since Hurricane Hugo (1989).
- It had a 3.25-day lifetime at Category 5 strength, which is tied with the Cuba hurricane (1932) for longest in the Atlantic basin. It also maintained Category 5 strength for three consecutive days, the longest of any Atlantic basin storm in the satellite era.
- It spent 8.50 days as a major hurricane, which is the second longest in the satellite era in the Atlantic basin after Hurricane Ivan (2004).
- It generated the most Accumulated Cyclone Energy (ACE) (67.5 ACE) of any tropical cyclone in the observational record in the tropical Atlantic Ocean.
- It generated more ACE than the first eight named storms of the 2017 Atlantic hurricane season (Arlene through Harvey) combined.
- It generated the most ACE in a 24-hour period of any tropical cyclone in the Atlantic basin observational record, breaking the record set by Hurricane Allen (1980).
- Its ACE is the second greatest in the satellite era in the Atlantic basin, trailing only Hurricane Ivan (2004), whose ACE was 70.4.

Impacts on Florida

The impacts of Hurricane Irma were widespread, covering the entire Florida peninsula and approximately the eastern two-thirds of the panhandle, and ran the full gamut, including damaging winds, large storm surge, high rainfall totals, and tornadoes (totaling 17).

Damaging winds were observed throughout much of the state, with the strongest winds in the Keys and coastal southwest. It is likely that gusts of higher velocity than those recorded, especially in the southern part of the peninsula and the Keys,

occurred but are not reflected in observations because of electric power being knocked out to anemometers. In the Keys, where Irma made its initial landfall, the highest wind gust recorded was 119 MPH at Big Pine Key. Peak gusts of 75 to 95 MPH were common among the observations available. In the southern part of the peninsula, the highest gust recorded was 142 MPH at the Naples Airport, and peak gusts of 75 to 105 MPH were common among the observations available, with the highest gusts on the western side of the peninsula. In the central part of the peninsula, peak gusts recorded were generally 75 to 90 MPH. Farther north, including the panhandle, gusts generally remained below hurricane force. More specific details on maximum wind speeds and gusts achieved can be found in the appendices of this report in the post-tropical cyclone reports prepared by the local National Weather Service (NWS) offices.

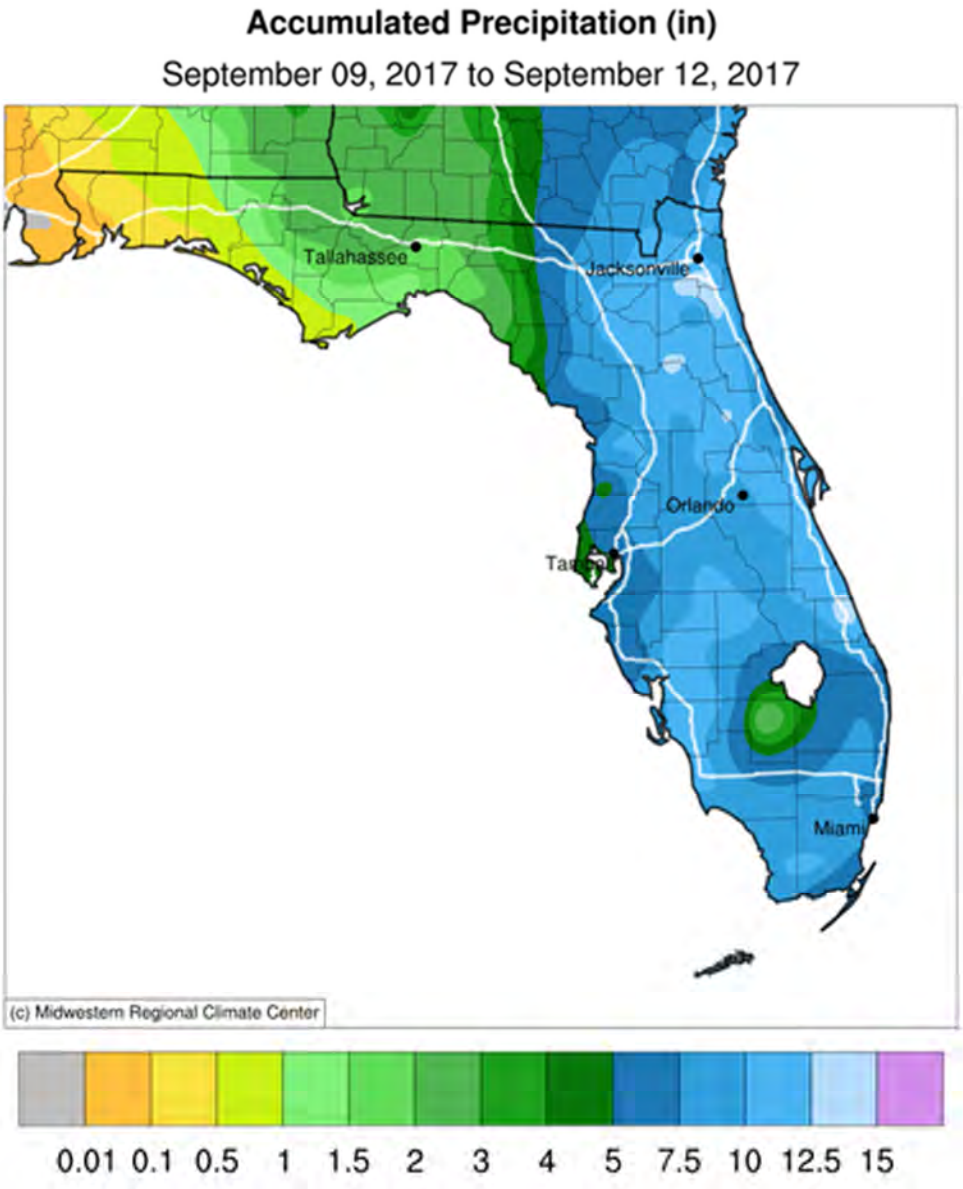
Storm surge reached record levels along portions of the eastern coast, exceeding levels observed during Hurricane Matthew in 2016 at many locations and breaking records set during Hurricane Dora in 1964 along the St. Johns River around Jacksonville. In the below table are selected surge height values.

LOCATION, BODY OF WATER	COUNTY	STORM SURGE HEIGHT (feet)
Fernandina Beach, Atlantic Ocean	Nassau	7.78
Southbank Riverwalk, St. Johns River	Duval	6.61
Mayport, St. Johns River	Duval	6.44
Dames Point Bridge, St. Johns River**	Duval	5.97
Buckman Bridge, St. Johns River**	Duval	5.71
Naples, Gulf of Mexico	Collier	5.14
Naples Bay, Gulf of Mexico**	Collier	5.00
Racy Point, St. Johns River	St. Johns	4.72
Trident Pier, Atlantic Ocean	Brevard	4.20
Virginia Key, Atlantic Ocean	Miami-Dade	3.92
Fort Myers, Gulf of Mexico	Lee	3.88
Bal Harbour, Atlantic Ocean	Miami-Dade	3.80
Key West, Atlantic Ocean	Monroe	3.29
McKay Bay, Gulf of Mexico	Hillsborough	3.07
Vaca Key, Atlantic Ocean	Monroe	2.80

Lake Worth Pier, Atlantic Ocean	Palm Beach	2.23
Port Manatee, Gulf of Mexico	Manatee	2.17
St. Petersburg, Gulf of Mexico	Pinellas	2.17
Clearwater Beach, Gulf of Mexico	Pinellas	1.85

**Incomplete data.

Rainfall was heavy and led to street and river flooding in various parts of the state. Of particular note was the major to record flooding that occurred on streams of all sizes in the northern part of the peninsula. Typical of tropical cyclones, rainfall totals were heaviest to the east of the storm center, which was an area that included most of the peninsula. The figure below shows the spatial distribution of the storm-total rainfall, which ranged as high as 15” in pockets of south Florida.



For this report, it was elected to report only those rainfall totals that were observed at stations part of the Community Collaborative Rain, Hail, and Snow (CoCoRaHS) network. To be included in the table below, a daily rainfall total observation for each of 10, 11, and 12 September needed to be available, and the total of those daily totals, forming a storm total, had to exceed 4.00"; a multi-day total covering those three days was also acceptable. For two stations in Monroe County, where rains from Irma started earlier than in the rest of the state, a total spanning 9-12 September is reported. Totals from stations in the Automated Surface Observing System (ASOS) and the NWS Cooperative Observation Program (NWS COOP) are not included in this table because many values are missing or incomplete. Some of these totals, for varying storm-total periods, are given in the post-tropical cyclone

reports, issued by the various NWS local forecast offices, which can be found in the appendices of this report.

STATION NAME	COUNTY	STORM RAINFALL TOTAL (inches)
Lutz 2.2 SSE	Hillsborough	16.08
St. Augustine 12.2 WNW	St. Johns	15.39
Fort Pierce 3.4 NNE	St. Lucie	15.19
Fleming Island 1.7 SE	Clay	14.96
Orange Park 4.1 WSW	Clay	14.39
Keystone Heights 6.9 ENE	Clay	14.31
Starke 0.9 ESE	Bradford	14.14
Jacksonville 12.0 SSE	Duval	14.03
Jacksonville 12.0 SSE	Duval	13.95
Fleming Island 2.2 S	Clay	13.94
Jacksonville 9.6 SE	Duval	13.81
Palm Shores 4.3 NNW	Brevard	13.74
Buckingham 1.7 SE	Lee	13.55
Interlachen 8.8 S	Marion	13.24
Palm Bay 2.7 SSE	Brevard	13.23
Jacksonville 5.9 SW	Duval	13.21
Gainesville 2.4 NW	Alachua	13.07
East Palatka 3.5 NNW	Putnam	12.90
Mims 8.5 W	Volusia	12.87
Florahome 4.1 NNE	Putnam	12.57
De Land 4.5 NW	Volusia	12.55
Keystone Heights 7.6 ENE	Clay	12.47
Union Park 1.1 E	Orange	12.36
Oviedo 4.0 W	Seminole	12.14
Vero Beach 5.3 W	Indian River	12.10
Gainesville 6.5 NW	Alachua	12.07
Oviedo 1.6 SE	Seminole	12.06
Orange 11.2 NE	Orange	12.05
Lady Lake 4.8 WNW	Marion	11.94
De Land 5.7 NW	Volusia	11.82
Apopka 3.5 ESE	Orange	11.80
Gainesville 1.7 SE	Alachua	11.59
Mount Plymouth 0.2 WSW	Lake	11.59
Gainesville 7.5 WSW	Alachua	11.58
Satsuma 4.0 NE	Putnam	11.55
Port St. Lucie 1.7 NNW	St. Lucie	11.55
DeLand 2.0 W	Volusia	11.53
Gainesville 3.8 W	Alachua	11.41
Arcadia 7.1 WSW	DeSoto	11.39

Titusville 5.9 NNW	Brevard	11.38
Titusville 3.5 NW	Brevard	11.33
Micanopy 2.1 NNE	Alachua	11.30
Alachua 5.2 NNW	Alachua	11.30
Bushnell 1.0 NNW	Sumter	11.30
Jacksonville 10.0 WSW	Duval	11.27
Lady Lake 2.0 NNW	Lake	11.26
Gainesville 2.4 SW	Alachua	11.22
Chuluota 0.9 N	Seminole	11.22
Orange Park 2.5 WSW	Clay	11.13
Palm Bay 2.6 SSE	Brevard	11.10
Lakeland 6.9 SW	Polk	11.10
Fernandina Beach 6.3 SW	Nassau	11.09
Oakland Park 0.3 SE	Broward	11.04
Vero Beach 2.5 S	Indian River	11.04
Miami Lakes 0.3 NNW	Miami-Dade	11.00
Sylvan Shores 8.5 NE	Highlands	10.95
Oxford 1.2 ENE	Sumter	10.88
The Villages 2.6 NW	Marion	10.87
Lady Lake 1.2 ESE	Lake	10.80
Rockledge 1.1 WSW	Brevard	10.79
Kendale Lakes 1.0 S	Miami-Dade	10.78
Crescent City 8.6 WSW	Putnam	10.77
Gainesville 7.7 W	Alachua	10.74
Crystal River 4.7 ESE	Citrus	10.65
The Villages 2.8 ESE	Sumter	10.62
Vero Beach 3.4 W	Indian River	10.61
Okeechobee 27.1 NNW	Okeechobee	10.61
Bay Lake 4.1 WSW	Orange	10.59
Sebring 4.7 WNW	Highlands	10.54
Orlando 4.9 N	Orange	10.51
Glen St. Mary 1.7 N	Baker	10.48
Jacksonville 4.2 NE	Duval	10.46
The Villages 2.7 NNW	Marion	10.44
Lake Placid 1.1 WSW	Highlands	10.42
Hernando 1.6 N	Citrus	10.39
St. Augustine South 2.1 SSW	St. Johns	10.38
Port St. Lucie 4.0 NE	St. Lucie	10.36
La Belle 2.3 WNW	Hendry	10.31
Interlachen 10.4 NNE	Putnam	10.29
Ocala 4.6 N	Marion	10.23
Jacksonville 11.4 ESE	Duval	10.21
Ocala 9.8 SW	Marion	10.21
Poinciana Place 2.5 SSW	Polk	10.20

Merritt Island 3.8 N	Brevard	10.19
De Land 1.4 WSW	Volusia	10.18
Penney Farms 0.1 E	Clay	10.16
Leesburg 2.7 NW	Lake	10.13
Port St. Lucie 2.4 N	St. Lucie	10.13
Lady Lake 4.6 W	Lake	10.12
Ocala 11.2 SW	Marion	10.12
Vero Beach 3.5 SSW	Indian River	10.11
Palm Shores 1.4 W	Brevard	10.10
Keystone Heights 10.0 NE	Clay	10.06
Belleview 4.8 E	Marion	10.06
Sebastian 1.7 SSE	Indian River	10.04
Keystone Heights 3.5 ENE	Clay	10.02
Plantation 3.4 E	Broward	10.01
Naples 9.0 NE	Charlotte	10.01
Miramar 3.0 WNW	Broward	9.94
Ocala 14.3 S	Marion	9.94
La Belle 4.5 NNW	Glades	9.92
Lady Lake 5.0 W	Sumter	9.92
Jacksonville 11.9 N	Duval	9.88
Bartow 7.8 SE	Polk	9.88
Babson Park 0.9 NW	Polk	9.88
Lake Wales 0.7 SE	Polk	9.88
High Springs 3.2 SW	Alachua	9.84
Melbourne 4.6 NNW	Brevard	9.84
Palm Coast 5.9 S	Flagler	9.83
Dade City 1.8 WSW	Pasco	9.83
Ocoee 1.4 N	Orange	9.82
Micco 1.3 NW	Brevard	9.80
Melbourne 1.1 N	Brevard	9.76
Hernando 2.9 W	Citrus	9.68
The Villages 3.7 NNW	Marion	9.68
Sunset 2.4 SW	Miami-Dade	9.66
Lake City 7.9 SSW	Columbia	9.63
Ocala Weather Service	Marion	9.60
Merritt Island 5.6 NNW	Brevard	9.57
Cocoa 5.1 NW	Brevard	9.55
Altoona 5.3 NNE	Lake	9.53
Gainesville 5.0 SSW	Alachua	9.46
Port St. Lucie 4.1 SW	St. Lucie	9.46
Cocoa 4.6 NW	Brevard	9.45
Cocoa 2.6 WNW	Brevard	9.44
Orlando 4.8 NNW	Orange	9.44
Winter Garden 2.3 SSW	Orange	9.44
Zephyrhills 0.9 ENE	Pasco	9.40

Melbourne 4.7 N	Brevard	9.39
Micanopy 3.6 SSW	Marion	9.35
Vero Beach 2.4 W	Indian River	9.34
Union Park 2.9 SSE	Orange	9.29
Union Park 3.8 ESE	Orange	9.28
Dade City 4.1 SSE	Pasco	9.28
Micanopy 8.5 W	Alachua	9.24
The Villages 2.7 NNW	Sumter	9.21
De Land 1.3 WSW	Volusia	9.21
Belleview 6.0 SSE	Marion	9.18
Zephyrhills North 2.3 N	Pasco	9.11
Crescent City 2.0 N	Putnam	9.07
Jacksonville 6.7 WSW	Duval	9.04
Aberdeen 3.7 WNW	Palm Beach	8.99
Sun Valley 0.8 SW	Palm Beach	8.96
Jacksonville 7.8 SW	Duval	8.93
Weston 2.8 SE	Broward	8.89
Plantation 2.3 WNW	Broward	8.89
Okeechobee 18.0 NNW	Okeechobee	8.88
Gainesville 5.4 W	Alachua	8.87
Davie 2.6 WSW	Broward	8.87
Ocala 1.1 SE	Marion	8.83
Lakeland Highlands 0.3 SE	Polk	8.79
Lakeland 5.3 WNW	Polk	8.75
Pierson 1.5 SW	Volusia	8.74
Ocala 7.0 NW	Marion	8.73
Aberdeen 1.4 WNW	Palm Beach	8.70
Haines City 6.0 ESE	Polk	8.67
Lady Lake 4.3 SSW	Sumter	8.65
Lutz 1.3 SSE	Hillsborough	8.62
Orlando 12.0 S	Orange	8.60
Jacksonville 3.8 ESE	Duval	8.57
Palm City 3.1 NW	Martin	8.52
Key West 1.3 ENE	Monroe	9.03**
Fort White 3.2 WNW	Columbia	8.28
Biscayne Park 0.3 E	Miami-Dade	8.19
Port Orange 2.9 WSW	Volusia	8.18
Port Charlotte 6.2 W	Charlotte	8.17
Delray Beach 2.3 WSW	Palm Beach	8.11
Chiefland 8.5 ENE	Levy	8.07
Jensen Beach 2.2 NW	Martin	8.07
Auburndale 1.1 W	Polk	8.03
Palm Coast 1.9 S	Flagler	7.91
Pompano Beach Highlands 0.7 E	Broward	7.78

Palm City 1.4 NW	Martin	7.68
Weeki Wachee 7.1 NNE	Hernando	7.67
Valrico 2.2 SE	Hillsborough	7.63
Palm Bay 3.2 S	Brevard	7.62
Palm City 4.0 SW	Martin	7.56
Boynton Beach 1.3 WNW	Palm Beach	7.56
Tradition 5.6 W	St. Lucie	7.52
Groveland 1.7 E	Lake	7.49
Hollywood 3.9 SW	Broward	7.48
Micanopy 4.6 SSE	Martin	7.43
The Villages 4.8 SSW	Sumter	7.35
Eagle Lake 2.0 WNW	Polk	7.25
Lutz 3.4 NE	Pasco	7.16
Bradenton 10.8 SE	Manatee	7.12
Astatula 1.0 E	Lake	7.08
Hammocks 0.5 SSE	Miami-Dade	7.06
Ruskin 1.8 ESE	Hillsborough	6.89
Riverview 4.8 SSW	Hillsborough	6.87
Aberdeen 4.2 NNW	Palm Beach	6.81
Riverview 4.4 SSW	Hillsborough	6.79
Jupiter 4.0 NNW	Martin	6.79
Brooksville 1.2 E	Hernando	6.73
Delray Beach 1.6 WSW	Palm Beach	6.73
North Port 2.6 E	Sarasota	6.70
Hollywood 1.1 WNW	Broward	6.68
Trenton 4.0 NW	Gilchrist	6.68
Golden Lakes 2.4 SSW	Palm Beach	6.63
Valrico 1.1 SE	Hillsborough	6.61
Ormond Beach 3.5 SE	Volusia	6.61
Englewood 2.0 NNW	Sarasota	6.50
Riverview 4.9 S	Hillsborough	6.46
Englewood 3.7 NNW	Sarasota	6.41
Ellenton 6.6 E	Manatee	6.33
Sanford 1.9 WNW	Seminole	6.26
Boca Raton 2.1 ENE	Palm Beach	6.15
Bloomingdale 7.6 ESE	Hillsborough	6.11
Melbourne Beach 3.9 SSE	Brevard	6.05
Greater Northdale 0.4 ENE	Hillsborough	6.04
Tampa 6.5 NNE	Hillsborough	6.02
Riverview 0.9 ENE	Hillsborough	5.98
Neptune Beach 0.5 NNW	Duval	5.94
Sarasota 6.4 NNE	Manatee	5.86
Key West 1.0 SW	Monroe	5.75**
North Port 1.6 ENE	Sarasota	5.63
Ruskin 1.6 ESE	Hillsborough	5.62

Clearwater 2.2 S	Pinellas	5.62
Boynton Beach 6.2 WNW	Palm Beach	5.60
Oak Hill 2.8 WSW	Volusia	5.59
Apollo Beach 3.0 ENE	Hillsborough	5.52
Citrus Park 1.3 ENE	Hillsborough	5.48
Port Richey 2.0 NNE	Pasco	5.36
Land O Lakes 1.5 SSE	Pasco	5.36
Palm Harbor 1.0 S	Pinellas	5.36
Spring Hill 2.4 WSW	Hernando	5.33
Bradenton 3.5 WNW	Manatee	5.13
Titusville 0.9 SW	Brevard	5.12
Lutz 2.0 E	Hillsborough	5.12
Edgewater 0.1 SW	Volusia	5.09
North Port 4.7 NNE	Sarasota	5.06
Lantana 0.3 E	Palm Beach	5.05
West Palm Beach 6.0 WNW	Palm Beach	4.94
Live Oak 10.0 W	Suwannee	4.83
Riverview 2.1 W	Hillsborough	4.78
Holiday 0.6 E	Pasco	4.76
St. Petersburg 4.5 NW	Pinellas	4.75
Bay Pines 0.5 NW	Pinellas	4.71
Dunedin 2.8 ESE	Pinellas	4.68
Golfview 0.9 SSW	Palm Beach	4.66
Dunedin 3.0 SE	Pinellas	4.62
Crystal River 5.3 NNE	Citrus	4.58
Lutz 0.6 WSW	Hillsborough	4.56
St. Petersburg 3.2 NNW	Pinellas	4.51
Sarasota 5.8 SE	Sarasota	4.43
Daytona Beach Shores 1.8 SSE	Volusia	4.43
Seminole 3.3 WNW	Pinellas	4.40
Largo 2.2 ESE	Pinellas	4.35
Apollo Beach 2.7 ENE	Hillsborough	4.34
Lake Worth 1.2 N	Palm Beach	4.09
Green Cove Springs 6.8 SSE	Clay	4.05
Gulfport 0.9 NNW	Pinellas	4.01

**Because Hurricane Irma's rains reached the Keys before other parts of the state, storm total covers 9-12 September.

Seventeen tornadoes were recorded in Florida due to Hurricane Irma. Forming typically east of the center of the storm, these tornadoes followed that pattern by generally occurring in the eastern half of the peninsula, north of its midpoint. The following table summarizes key facts about the tornadoes, and more details are

given in the appendices in the post-tropical cyclone reports issued by the NWS local offices.

EF RATING	LOCATION	COUNTY	PATH LENGTH (miles)	MAXIMUM WIND SPEED (miles per hour)
2	1 SE Crescent Beach	St. Johns	1.0	110-130
1	Mims, Kilbee Street	Brevard		115-125
1	1 SSE Vilano Beach	St. Johns	4.0	85-100
1	1 N St. Augustine	St. Johns	1.0	85-100
1	Turkey Creek	Brevard	unknown	100-110
1	Indialantic	Brevard	unknown	90-100
1	Mims, Northgate	Brevard	unknown	90-95
1	Umatilla	Lake	unknown	95-100
1	Ormond Beach	Volusia	unknown	100-110
1	Patrick AFB	Brevard	unknown	85-95
1	North Merritt Island	Brevard	unknown	100-110
1	2 W Ochopee	Collier	unknown	unknown
0	2 NNW Fernandina Beach	Nassau	11.0	85-100
0	2 NNW Amelia City	Nassau	11.0	85-100
0	2 S Marineland	Flagler	4.0	85-100
0	Melbourne Beach	Brevard	unknown	70-80
0	1 S Wilton Manors	Broward	unknown	unknown

Conclusion

In Florida, Hurricane Irma will be remembered for being the first major hurricane to make landfall on the state in over a decade and for its widespread impacts throughout the state, including an evacuation and preparation effort that caused severe traffic congestion over much of the Southeast and strained material resources and commodities, such as gasoline and bottled water. In particular, Irma produced heavy rainfall through a large portion of the peninsula, contributing to a historically wet rainy season on the peninsula, and record-high storm surge at some locations along the northern east coast. Wind damage was noted throughout much of the peninsula and at some locations in the Big Bend; this damage proved to be substantial in the southwestern part of the state and in the Keys. A developing legacy of Irma, at the time of publication of this report, is its deleterious impact on the state's agricultural sector, particularly that part concerned with citrus crops. Seventy-two persons perished in Florida as a result of Irma.

Appendices

Appendix A – Links to other sources of information

This article from the Tampa Bay Times describes some of the agricultural impacts that are being realized following the hurricane: http://www.tampabay.com/florida-politics/buzz/2017/11/16/irma-agriculture-losses-continue-to-mount/

Courtesy of Brian McNoldy at the University of Miami's Rosenstiel School of Marine and Atmospheric Science, the following link leads to Doppler radar imagery of Irma as it moved over Florida and the rest of the Southeast: http://andrew.rsmas.miami.edu/bmcnoldy/tropics/irma17/Irma_9-12Sep17_southeast.gif

Appendix B – Post-Cyclone Report from the Tallahassee NWS WFO

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PSHTAE

POST TROPICAL CYCLONE REPORT...HURRICANE IRMA
NATIONAL WEATHER SERVICE - TALLAHASSEE FL
1124 AM EDT THU SEP 28 2017

NOTE: THE DATA SHOWN HERE ARE PRELIMINARY....AND SUBJECT TO UPDATES
AND CORRECTIONS AS APPROPRIATE.

THIS REPORT INCLUDES EVENTS OCCURRING WHEN WATCHES AND/OR WARNINGS
WERE IN EFFECT...OR WHEN SIGNIFICANT FLOODING ASSOCIATED WITH IRMA
OR ITS REMNANTS WAS AFFECTING THE AREA.

COUNTIES INCLUDED...BAKER...BAY...BEN HILL...BERRIEN...BROOKS...
CLAY...COFFEE...COLQUITT...COOK...DALE...DECATUR...DIXIE...
DOUGHERTY...EARLY...FRANKLIN...GADSDEN...GENEVA...GRADY...GULF...
HENRY...HOLMES...HOUSTON...IRWIN...JACKSON...JEFFERSON...
LAFAYETTE...LANIER...LEE...LEON...LIBERTY...LOWNDES...MADISON...
MILLER...MITCHELL...QUITMAN...RANDOLPH...SEMINOLE...TAYLOR...
TERRELL...THOMAS...TIFT...TURNER...WAKULLA...WALTON...WASHINGTON...
WORTH...CALHOUN, FL...CALHOUN, GA

A. LOWEST SEA LEVEL PRESSURE/MAXIMUM SUSTAINED WINDS AND PEAK GUSTS

METAR OBSERVATIONS...
NOTE: ANEMOMETER HEIGHT IS 10 METERS AND WIND AVERAGING IS 2 MINUTES

LOCATION ID LAT LON DEG DECIMAL	MIN PRES (MB)	DATE/ TIME (UTC)	MAX SUST (KT)	DATE/ TIME (UTC)	PEAK GUST (KT)	DATE/ TIME (UTC)
KCTY-CROSS CITY, FL						
29.62 -83.10	9999.0	/	360/036	11/0655 I	010/053	11/0735 I
KAAF-APALACHICOLA MUNI, FL						
29.72 -85.03	996.6	11/1153	320/028	11/1953	360/042	11/0953
K40J-PERRY-FOLEY, FL						
30.07 -83.57	9999.0	/	020/020	11/0235 I	020/032	11/0335 I
KPAM-TYNDALL AFB, FL						
30.07 -85.59	999.3	11/1446	320/029	11/1446	320/038	11/1527
KECP-PANAMA CITY NW, FL						
30.35 -85.80	999.9	11/1953	300/024	11/1653	310/035	11/1706
KTLH-TALLAHASSEE RGNL, FL						
30.40 -84.35	990.8	11/1553	350/030	11/1223	350/048	11/1208
KDTS-DESTIN/FT WALTON BEACH ARPT, FL						
30.40 -86.47	1001.0	11/2053	330/024	11/1853	360/034	11/1125
KVLD-VALDOSTA, GA						
30.79 -83.28	996.5	11/0953 I	020/036	11/1005 I	010/049	11/0939 I
KMAI-MARIANA, FL						
30.80 -85.21	995.1	11/1953	340/027	11/1445	340/040	11/1453
KVAD-VLDOSTA/MODY AFB, GA						
30.97 -83.20	984.8	11/1443	020/038	11/1214	010/054	11/1311

KBGE-BAINBRIDGE, GA
30.97 -84.63 9999.0 / 360/027 11/1255 350/040 11/1335

KMGR-MOULTRIE/THMSVIL, GA
31.08 -83.80 9999.0 / 010/032 11/1235 010/047 11/1235

KOZR-FT RUCKER/CAIRNS, AL
31.29 -85.72 997.4 11/1944 330/025 11/1613 320/042 11/1727

KDHN-DOTHAN, AL
31.32 -85.45 996.1 11/2053 330/030 11/1615 330/048 11/1607

KABY-ALBANY MUNICIPAL, GA
31.54 -84.18 988.9 11/1953 010/025 11/1500 010/043 11/1336

K1JO-HOLMES COUNTY, FL
30.85 -85.60 993.6 11/1958 030/020 11/1911 320/032 11/1641

KTMA-TIFTON, GA
31.43 -83.49 9999.0 / 030/027 11/1455 020/044 11/1315

REMARKS:
CTY STOPPED REPORTING AT 11/0955Z
40J STOPPED REPORTING AT 11/0315Z
VLD STOPPED REPORTING AT 11/1030Z

NON-METAR OBSERVATIONS...
NOTE: ANEMOMETER HEIGHT IN METERS AND WIND AVERAGING PERIOD IN
MINUTES INDICATED UNDER MAXIMUM SUSTAINED WIND IF KNOWN

LOCATION ID LAT LON DEG DECIMAL	MIN PRES (MB)	DATE/ TIME (UTC)	MAX SUST (KT)	DATE/ TIME (UTC)	PEAK GUST (KT)	DATE/ TIME (UTC)
CONE FARM - GREENVILLE, FL 30.40 -83.54	984.1	99/9999	327/022 99/99	11/1030	355/038	11/1035
MADISON HIGH SCHOOL - MADISON, FL 30.48 -83.45	1001.4	999/99	049/030 99/99	11/0306	027/034	11/0505
TERRY FARM - MADISON, FL 30.35 -83.33	9999.9	99/9999	015/032 99/99	11/0120	029/043	11/0744
AUCILLA CHRISTIAN ACADEMY - AUCILLA, GA 30.48 -83.76	990.9	99/9999	071/027 99/99	11/0847	052/034	11/0931
UGA TIFTON - TIFTON, GA 31.47 -83.53	988.1	99/9999	049/023 99/99	11/1637	023/035	11/1318
SUN BELT AG EXPO - MOULTRIE, GA 31.13 -83.71	992.2	99/9999	344/037 9999	11/1214	360/041	11/1216
FSU COASTAL AND MARINE LAB - ST. TERESA, FL 29.91 -84.51	9999.9	99/9999	298/028 9999	11/1158	319/034	11/1024
ST. GEORGE ISLAND BRIDGE - EASTPOINT, FL 29.69 -84.89	9999.9	99/9999	350/047 9999	11/1210	350/047	11/1210
GULF COUNTY EOC - PORT ST. JOE, FL 29.81 -85.29	9999.9	99/9999	050/032 9999	11/0447	014/035	11/1025

FSU PANAMA CITY - PANAMA CITY, FL
30.19 -85.72 9999.9 99/9999 024/037 11/1213 024/041 11/1213
99/99

DOTHAN TECHNOLOGY CENTER - DOTHAN, AL
31.26 -85.38 9999.9 99/9999 335/023 11/1418 360/035 11/1609
9999

CHALLENGER LEARNING CENTER - TALLAHASSEE, FL
30.44 -84.28 9999.9 99/9999 024/035 11/1145 016/035 11/1206
99/99

TLLAS-CHILES HS TALLAHASSEE, FL
30.57 -84.21 9999.9 99/9999 344/027 11/1121 360/037 11/1135
9999

CONLEY ELEMENTARY - TALLAHASSEE, FL
30.41 -84.22 9999.9 99/9999 019/030 11/1127 011/036 11/1148
99/99

FSU SCHOOLS - TALLAHASSEE, FL
30.38 -84.22 9999.9 99/9999 050/030 11/0720 323/037 11/1136
99/99

FSU REC SPORTSPLEX - TALLAHASSEE, FL
30.42 -84.34 9999.9 99/9999 360/034 11/1133 040/036 11/1131
99/99

FSU RESERVATION - TALLAHASSEE, FL
30.40 -84.34 9999.9 99/9999 338/027 11/1219 348/036 11/1121
99/99

FSU WEATHERSTEM - TALLAHASSEE, FL
30.43 -84.30 9999.9 99/9999 014/037 11/0937 043/047 11/1109
9999

HOLY COMFORTER EPISCOPAL SCHOOL - TALLAHASSEE, FL
30.48 -84.22 9999.9 99/9999 355/030 11/1145 030/040 11/1207
99/99

SEALEY ELEMENTARY - TALLAHASSEE, FL
30.48 -84.29 9999.9 99/9999 350/027 11/1135 340/035 11/1012
99/99

TALLAHASSEE COMMUNITY COLLEGE - TALLAHASSEE, FL
30.44 -84.34 9999.9 99/9999 318/025 11/1327 282/035 11/1213
99/99

THE EDISON RESTAURANT - TALLAHASSEE, FL
30.43 -84.28 9999.9 99/9999 016/030 11/1048 044/037 11/1201
99/99

WT MOORE ELEMENTARY - TALLAHASSEE, FL
30.47 -84.21 9999.9 99/9999 266/031 11/1417 273/037 11/1201
99/99

AELG1 - ADEL GA RAWS
31.10 -83.43 9999.9 99/9999 170/027 11/1200 999/046 11/1200
99/99

PRWF1 - ST. MARKS RAWS
30.01 -84.42 9999.9 99/9999 360/011 11/1100 999/038 11/1300
99/99

REMARKS: WEATHERSTEM STATION UNLESS NOTED OTHERWISE.

B. MARINE OBSERVATIONS...
NOTE: ANEMOMETER HEIGHT IN METERS AND WIND AVERAGING PERIOD IN
MINUTES INDICATED UNDER MAXIMUM SUSTAINED WIND IF KNOWN

LOCATION ID LAT LON DEG DECIMAL	MIN PRES (MB)	DATE/ TIME (UTC)	MAX SUST (KT)	DATE/ TIME (UTC)	PEAK GUST (KT)	DATE/ TIME (UTC)
42036-3D32 /D W. TAMPA 28.50 -84.51	990.9	11/0850	020/043	11/0250	999/056	11/0650
42039-3D20 /D PENSACOLA 28.78 -86.04	1000.9	11/1050	350/033	11/1150	999/039	11/0250
SGOF1-TYNDALL AFB TOWER C, FL 29.41 -84.86	992.4	11/1200	999/999	99/9999	999/999	99/9999
APCF1-APALACHICOLA, FL NOS 29.73 -84.98	995.6	11/1206	020/034	11/0918	999/044	11/0942
APXF1-APALACHICOLA NERR, FL 29.79 -84.88	9999.9	99/9999	340/025	11/1115	999/999	99/9999
KTNF1-KEATON BEACH, FL/M 29.82 -83.59	984.7	11/1300	360/026	11/0700	999/042	11/1100
SHPF1-SHELL POINT, FL 30.06 -84.29	990.3	11/1506	340/030	11/1112	999/049	11/1112
PCBF1-PANAMA CITY BEACH, FL NOS 30.21 -85.88	999.4	11/2206	360/026	11/0942	999/038	11/2218

REMARKS:

C. STORM TOTAL RAINFALL FROM 1200 UTC SEP 01 UNTIL 1200 UTC SEP 02

CITY/TOWN LAT LON DEG DECIMAL	COUNTY	ID	RAINFALL (IN)
1 SE MORGAN 31.53 -84.58	CALHOUN	MGNG1	4.91
4 E EDISON 31.55 -84.68	CALHOUN	PCHG1	4.15
WSW SASSER 31.72 -84.35	TERRELL		3.93
5 WNW LEESBURG 31.76 -84.25	LEE	DSNG1	3.88
4 NW VALDOSTA 30.89 -83.32	LOWNDES	VDRG1	3.85
4 E MARIANNA 30.77 -85.17	JACKSON		3.66
1 SW MOODY AFB 30.97 -83.20	LOWNDES		3.53
5 WSW MOODY AFB 30.95 -83.27	LOWNDES	VDSG1	3.53
5 W MYSTIC	IRWIN	IVLG1	3.42

31.63 -83.42

2 S ADEL COOK ADLG1 3.33
31.11 -83.43

2 NW EAST ALBANY DOUGHERTY ABNG1 3.28
31.59 -84.14

1 SE CROSSROADS QUITMAN MRSG1 3.23
31.82 -84.97

WNW MILFORD BAKER MLFG1 3.21
31.38 -84.55

5 S MIDLAND CITY HOUSTON LCHA1 3.16
31.25 -85.48

3 NNE LEESBURG LEE MCKG1 3.13
31.78 -84.14

3 W CAPPS HENRY EFKA1 3.04
31.50 -85.37

4 WNW TIFTON TIFT TWCG1 3.03
31.48 -83.56

REMARKS:

D. INLAND FLOODING...

E. MAXIMUM STORM SURGE AND STORM TIDE...
OFFICIAL TIDE GAUGES NOTED WITH LEADING G

COUNTY	CITY/TOWN OR LOCATION	SURGE (FT)	TIDE (FT)	DATE/ TIME	BEACH EROSION
FRANKLIN	G APALACHICOLA	0.93	1.68	12/1124	NONE
WAKULLA	SHELL POINT	-9999.00	2.34	12/0748	NONE
JEFFERSON	NUTALL RISE	-9999.00	2.28	12/0748	NONE
WAKULLA	CURTIS MILL	-9999.00	2.63	12/1030	NONE
TAYLOR	STEINHATCHEE	-9999.00	2.71	12/0800	NONE

REMARKS: APPROXIMATE INUNDATION (HEIGHT ABOVE MEAN HIGHER HIGH
WATER):
APALACHICOLA......0.82 FT
SHELL POINT.......0.71 FT
NUTALL RISE.......0.39 FT
CURTIS MILL.......1.28 FT
STEINHATCHEE......1.07 FT

F. TORNADOES...

(DIST)CITY/TOWN LAT LON (DEG DECIMAL DESCRIPTION	COUNTY	DATE/ TIME(UTC)	EF SCALE (IF KNOWN)

G. STORM IMPACTS BY COUNTY...

COUNTY	DEATHS	INJURIES	EVACUATIONS	DESCRIPTION
DIXIE	0	0	0	
				TREES AND POWER LINES DOWN ACROSS THE COUNTY. ROUGHLY 40 TO 50 HOMES SUSTAINED MAJOR DAMAGE WITH 55 SUFFERING MINOR DAMAGE.
SEMINOLE	0	0	116	
				150000 DOLLARS IN DAMAGE TO STRUCTURES...TREES AND POWER LINES. EVACUATED 42 LOCALS AND 74 EVACUEES FROM FLORIDA.
LEON	0	0	3000	
				EXPERIENCED TROPICAL STORM FORCE WIND GUSTS FOR APPROXIMATELY 8 HOURS. THE HIGHEST WIND GUST RECORDED WAS 55 MPH AT TALLAHASSEE INTERNATIONAL AIRPORT. THE HIGHEST RECORDED SUSTAINED WIND WAS 43 MPH AT THE FSU WEATHERSTEM SITE. NUMEROUS TREES AND POWER LINES WERE DOWNED ACROSS THE COUNTY. AT THE PEAK...APPROXIMATELY 70000 CUSTOMERS WERE WITHOUT POWER. 200 OBSTRUCTIONS WERE CLEARED FROM ROADWAYS. 88 HOMES SUSTAINED SOME LEVEL OF DAMAGE WITH ONE HOUSE DESTROYED...4 SUSTAINING MAJOR DAMAGE AND 29 OTHERS MINOR DAMAGE. 11 SHELTERS HOSTED 3000 PEOPLE INCLUDING LOCAL RESIDENTS AND EVACUEES FROM OTHER PARTS OF THE STATE. FSU...FAMU AND TCC WERE CLOSED FOR 6 DAYS. COUNTY PUBLIC SCHOOLS WERE CLOSED FOR 4 DAYS.
TAYLOR	0	0	400	
				DAMAGE WAS PRIMARILY TO TREES AND POWER LINES WITH A FEW ON HOUSES CAUSING DAMAGE. THREE HOMES SUSTAINED MAJOR DAMAGE AND TWO MINOR DAMAGE. THERE WERE 10941 POWER OUTAGES...SOME NOT RESTORED FOR 6 DAYS. THERE WERE BLOW OUT TIDES BUT NO SURGE FLOODING. TWO INDIRECT FATAILITIES WERE CAUSED DUE TO CARBON MONOXIDE FROM A GENERATOR.
WASHINGTON	0	0	0	
				A FEW DOWNED TREES AND POWER LINES. ONE TREE BLOCKED TRAFFIC ON I-10 AT MILE MARKER 124.
MITCHELL	0	0	0	
				200 TREES DOWNED ONTO ROADWAYS AND POWER LINES. LITTLE KNOWN PROPERTY DAMAGE. AGRICULTURAL IMPACT MAY BE LARGE TO PECANS AND COTTON...BUT STILL BEING ASSESSED.
LIBERTY	1	0	250	
				DOWNED TREES AND POWER LINES...BUT MINIMAL TO NO DAMAGE TO STRUCTURES. 250 RESIDENTS WERE HOUSED IN SHELTERS. FIVE CAR CRASHES DURING THE EVENT RESULTING IN ONE FATALITY.
COLQUITT	0	0	0	
				ABOUT 200 TREES AND MANY POWER LINES DOWNED RESULTING IN ROAD CLOSURES. SOME TREES FELL ON HOMES AND ONE FELL ON A CAR. HALF THE CITY OF MOULTRIE LOST POWER.
LOWNDES	0	0	1500	
				PEAK GUST OF 50 KNOTS OR 58 MPH AT WUNDERGROUND SITE KGAVALDO8 WITH A 52 MPH GUST AT VLD AIRPORT. OVER 500 TREES WERE DOWNED, 34 HOMES WERE DAMAGED AND 60,000 CUSTOMERS WERE WITHOUT POWER. MORE THAN 5,000 PECAN TREES WERE DESTROYED. THERE WAS APPROXIMATELY 25,000 CY OF VEGETATIVE DEBRIS ON PUBLIC AND PRIVATE PROPERY. TOTAL ESTIMATED LOSSES WERE AROUND $9 MILLION.
TIFT	0	0	0	
				MANY TREES AND POWER LINES DOWNED BLOCKING ROADS INCLUDING U.S. 19.

WAKULLA 0 0 317

US 98 BLOCKED FROM SR 267 TO SR 363 BECAUSE OF TREES DOWN. A TOTAL OF 98 TREES WERE FELLED WITH 50 OF THOSE WITH LINES ENTANGLED. ALL 98 FELLED TREES WERE BLOCKING ROADWAYS OR PRESENTED A DANGER TO TRAFFIC ON ROADWAYS. THREE TREES FELL ON STRUCTURES AND TWO ON VEHICLES. THERE WERE 8700 POWER OUTAGES AND 317 EVACUATED TO SHELTERS. 10 HOMES WERE DAMAGED IN TOTAL, 6 MAJOR DAMAGE AND 1 DESTROYED.

EARLY 0 0 0

WEATHER SENTRY STATION AT EARLY COUNTY EMA REPORTED GUST TO 63 MPH.

DOUGHERTY 0 0 0

WIDESPREAD TREES DOWN AND POWER LINES DOWN REPORTED IN ALBANY AREA WITH MANY POWER OUTAGES AND BLOCKED ROADS. ONE TREE FELL ON A CAR IN THE SHOREHAM APARTMENT COMPLEX.

HOUSTON 0 0 0

A FEW TREES AND POWER LINES DOWN.

WORTH 1 0 0

WIDESPREAD TREES AND POWER LINES DOWN WITH DAMAGE TO ROOFS AND VEHICLES REPORTED. SOME LARGE OAKS WERE AMONG THE TREES TOPPLED BY THE STORM. A MAN DIED OF A HEART ATTACK WHILE SHELTERING IN A HOME MADE SHELTER. SUSTAINED WINDS OF 42 MPH WITH GUSTS TO 70 MPH MEASURED AT EMA OFFICE.

LAFAYETTE 0 0 0

NUMEROUS TREES AND POWER LINES DOWN ACROSS THE COUNTY WITH EXTENSIVE DAMAGE TO TRANSMISSION AND FEEDER LINES RESULTING IN POWER LOSS TO 100 PERCENT OF COUNTY RESIDENTS AND BUSINESSES. TWO RESIDENTIAL STRUCTURES WERE DESTROYED WITH THREE OTHERS SUSTAINING MAJOR DAMAGE AND NINE MINOR DAMAGE.

MADISON 0 0 0

TREES DOWN AND POWER OUTAGES ACROSS MADISON COUNTY...TWO OF WHICH BLOCKED TRAFFIC ON I-10 AT MILE MARKERS 253 AND 246. TWO ROOFS DAMAGED DUE TO TREES. A TOTAL OF 12 HOMES WERE DAMAGED...3 OF WHICH SUSTAINED MAJOR DAMAGE.

LANIER 0 0 97

TREES AND POWER LINES DOWN ACROSS LANIER COUNTY INCLUDING A FEW LARGE OAKS. FIVE TREES DOWN ON HOMES. SHELTERED 97.

BERRIEN 0 0 0

TREES DOWN ACROSS COUNTY. POWER OUTAGES. AT LEAST ONE REPORT OF STRUCTURAL DAMAGE. WITHIN THE CITY OF NASHVILLE, TREES FELL ONTO TWO RESIDENCES CASUING SIGNIFICANT ROOF DAMAGE.

TURNER 0 0 0

TREES AND POWER LINES DOWN ACROSS THE COUNTY. ROOFS BLOWN OFF SEVERAL HOMES. SEVERAL BARNS BLOWN DOWN.

COFFEE 0 0 0

SEVERAL POWER LINES AND LARGE TREES WERE DOWN ACROSS MAJOR HIGHWAYS INCLUDING HWY 135 SOUTH...441 SOUTH AND 151 SOUTH. SOME TREES FELL ON STRUCTURES AND ONE FARM STRUCTURE COLLAPSED.

DECATUR 0 0 UNKNOWN

SOME TREES AND POWER LINES DOWN. FACEVILLE HIGHWAY WAS BLOCKED.

LEE	0	0	UNKNOWN

MANY TREES DOWNED ACROSS THE COUNTY. TREES FELL ONTO OR INTO SEVERAL MOBILE HOMES. DOWNED POWER LINES BLOCKED U.S. 19. CITY OF SMITHVILLE HAD NO POTABLE WATER FOR A PERIOD OF TIME FROM MONDAY INTO TUESDAY.

THOMAS	0	0	UNKNOWN

NUMEROUS TRAFFIC SIGNALS WERE OUT. DOWNED TREES ON POWER LINES LEFT 750 RESIDENTS WITHOUT POWER.

TERRELL	0	0	UNKNOWN

SEVERAL POWER LINES AND LARGE TREES DOWNED...DAMAGING SEVERAL HOMES. AT LEAST ONE HOME IN DAWSON WAS SEVERELY DAMAGED BY A LARGE PECAN TREE.

JACKSON	0	0	UNKNOWN

NUMEROUS TREES AND POWER LINES DOWN BLOCKING ROADS. TWO HOMES SUSTAINED MAJOR DAMAGE FROM FALLING TREES.

BAY	0	0	55

55 PEOPLE WERE SHELTERED IN THE COUNTY. SPORADIC POWER OUTAGES DUE TO DOWNED TREES. MINOR DAMAGE WAS SUSTAINED TO ONE COUNTY FIRE STATION.

CALHOUN, FL	0	0	UNKNOWN

DOWNED TREES AND POWER LINES WITH SPORADIC POWER OUTAGES...BUT NO ROAD CLOSURES. NO MAJOR STRUCTURAL DAMAGE REPORTED.

FRANKLIN	0	0	0

SEVERAL TREES DOWN...SOME DAMAGING HOMES. SEVERAL POWER OUTAGES.

JEFFERSON	0	0	0

SEVERAL TREES DOWN AROUND THE COUNTY...ONE FALLING ON A HOME AND THREE ON CARS. BARNS AND FENCES DAMAGED. FARM DAMAGE. 388 POWER OUTAGES.

WALTON	0	0	110

110 EVACUATED TO SHELTERS.

HOLMES	0	0	35

A FEW TREES AND POWER LINES WERE DOWN THROUGHOUT THE COUNTY. THIRTY-FIVE EVACUEES FROM OUTSIDE THE COUNTY WERE HOUSED IN COUNTY SHELTERS.

QUITMAN	0	0	0

TREES AND POWER LINES WERE DOWNED ACROSS THE COUNTY. ESTIMATED COST OF DAMAGE TO THE COUNTY: $15,000.

RANDOLPH	0	0	0

WIDESPREAD TREES AND POWER LINES WERE DOWN ACROSS THE COUNTY. FORTY PERCENT OF THE COUNTY WAS WITHOUT POWER. A TWO-STORY HOUSE CAUGHT ON FIRE FROM A DOWNED TREE ON A POWER LINE.

HENRY	0	0	0

NUMEROUS TREES AND POWER LINES WERE DOWN ACROSS THE COUNTY. TWO HOMES SUSTAINED STRUCTURAL DAMAGE DUE TO FALLING TREES. MULTIPLE

ROADS WERE BLOCKED BY FALLING TREES. APPROXIMATELY 1200 HOMES WERE WITHOUT POWER.

DALE 0 0 0

SEVERAL TREES AND POWER LINES WERE DOWN IN THE COUNTY. TWO HOMES SUFFERED MINOR DAMAGE DUE TO TREES FALLING ON THE ROOFS. POWER OUTAGES WERE ALSO NOTED IN THE COUNTY.

MILLER 0 0 0

NUMEROUS TREES AND POWER LINES WERE DOWN THROUGHOUT THE COUNTY. ONE HOUSE AND ONE OUTBUILDING FIRE OCCURED DUE TO DOWNED POWER LINES.

BAKER 0 0 0

TREES AND POWER LINES DOWN ACROSS THE COUNTY. APPROXIMATELY 2400 PEOPLE LOST POWER.

GULF 0 0 2000

A FEW TREES AND POWER LINES WERE DOWN ACROSS THE COUNTY. AROUND 2000 PEOPLE WERE WITHOUT POWER.

GRADY 0 0 550

WIDESPREAD TREES AND POWER LINES DOWN ACROSS THE COUNTY (MORE THAN 225). SEVEN TO EIGHT HOMES SUSTAINED MINOR DAMAGE DUE TO FALLING TREES. APPROXIMATELY 11,000 PEOPLE WERE WITHOUT POWER. A VOLUNTARY EVACUATION WAS ORDERED FOR MOBILE HOMES AND APPROXIMATELY 550 PEOPLE IN THE COUNTY EVACUATED.

IRWIN 0 0 70

NUMEROUS TREES AND POWER LINES WERE DOWN ACROSS THE COUNTY. EIGHT HOMES SUSTAINED MINOR STRUCTURAL DAMAGE DUE TO FALLEN TREES. APPROXIMATELY 70 PEOPLE EVACUATED FROM THEIR MOBILE HOMES. THERE WAS ONE INDIRECT INJURY FROM THE STORM AS ONE LINEMAN WAS ELECTROCUTED.

COOK 0 0 0

TREES AND POWER LINES WERE DOWN ACROSS THE COUNTY THAT RESULTED IN 26 ROAD CLOSURES. THESE IMPACTS LASTED 4 TO 5 DAYS. APPROXIMATELY 15 HOMES WERE DAMAGED DUE TO FALLEN TREES. SCHOOL IN THE COUNTY WAS CLOSED FOR THE WHOLE WEEK.

BROOKS 0 0 0

WIDESPREAD TREES DOWN ACROSS THE COUNTY. SEVERAL HOMES WERE DAMAGED, TWO MAJOR. SEVERAL ROADS WASHED OUT. POWER OUTAGES LASTED 4 TO 5 DAYS ACROSS THE COUNTY WITH SEVERAL THOUSAND POWER OUTAGES. 150 PEOPLE WERE SHELTERED IN THE COUNTY.

CALHOUN, GA 0 0 70

NUMEROUS TREES AND POWER LINES WERE DOWN ACROSS THE COUNTY. TWO HUNDRED AND FIFTY PEOPLE WERE WITHOUT POWER FOR A COUPLE OF DAYS. A COMFORT STATION WAS SET UP FOR PEOPLE IN MOBILE HOMES TO STAY AT DURING THE STORM AND 70 PEOPLE STAYED AT THE COMFORT CENTER. TEN HOMES SUSTAINED STRUCTURAL DAMAGE DUE TO WIND OR FALLEN TREES. ONE BUSINESS IN ALRINGTON LOST ITS ROOF DUE TO WIND.

GENEVA 0 0 0

TREES AND POWER LINES WERE DOWN ACROSS THE COUNTY WITH THE COUNTY REMOVING TREES FROM 37 SITES. IN ADDITION, ON COUNTY ROAD 60, THE ROOF WAS LOST OFF A MOBILE HOME. THE CEILING OF THE MOBILE HOME EVENTUALLY COLLAPSED AND WITH RAIN ENTERING THE MOBILE HOME, IT WAS A COMPLETE LOSS.

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LEGEND:
I-INCOMPLETE DATA
E-ESTIMATED

HOLLINGSWORTH/CAMP/WOOL/FIEUX/GODSEY

Appendix C – Post-Cyclone Report from the Jacksonville NWS WFO

384
ACUS72 KJAX 230237
PSHJAX

POST TROPICAL CYCLONE REPORT...HURRICANE IRMA
NATIONAL WEATHER SERVICE JACKSONVILLE FL
1037 PM EDT FRI SEP 22 2017

NOTE: THE DATA SHOWN HERE ARE PRELIMINARY....AND SUBJECT TO UPDATES
AND CORRECTIONS AS APPROPRIATE.

THIS REPORT INCLUDES EVENTS OCCURRING WHEN WATCHES AND/OR WARNINGS
WERE IN EFFECT...OR WHEN SIGNIFICANT FLOODING ASSOCIATED WITH IRMA
OR ITS REMNANTS WAS AFFECTING THE AREA.

COUNTIES INCLUDED...ALACHUA...APPLING...ATKINSON...BACON...BAKER...
BRADFORD...BRANTLEY...CAMDEN...CHARLTON...CLAY...CLINCH...COFFEE...
COLUMBIA...DUVAL...ECHOLS...FLAGLER...GILCHRIST...GLYNN...
HAMILTON...JEFF DAVIS...MARION...NASSAU...PIERCE...PUTNAM...
ST JOHNS...SUWANNEE...UNION...WARE...WAYNE

SEP 19...UPDATED FOR...ADDED NOAA PORTS STATIONS AND AMENDED SOME NE
FLORIDA AWOS STATIONS FOR INCOMPLETE DATA

SEP 22...UPDATED FOR...ADDED LOWEST PRESSURE READINGS FOR SOME
NON-METAR SITES.

SEP 22...UPDATED FOR...INLAND FLOODING INFORMATION.

A. LOWEST SEA LEVEL PRESSURE/MAXIMUM SUSTAINED WINDS AND PEAK GUSTS

METAR OBSERVATIONS...
NOTE: ANEMOMETER HEIGHT IS 10 METERS AND WIND AVERAGING IS 2 MINUTES

LOCATION ID LAT LON DEG DECIMAL	MIN PRES (MB)	DATE/ TIME (UTC)	MAX SUST (KT)	DATE/ TIME (UTC)	PEAK GUST (KT)	DATE/ TIME (UTC)
KJAX-JACKSONVILLE INTERNATIONAL AIRPORT FL 30.49 -81.69	986.6	11/1156	050/051	11/0748	050/075	11/0741
KCRG-CRAIG MUNICIPAL AIRPORT FL 30.33 -81.52	987.0	11/1153	140/040	11/1227	140/061	11/1226
KNRB-MAYPORT NAVAL STATION FL 30.39 -81.42	988.5	11/1152	050/059	11/0738	050/076	11/0738
KNIP-JACKSONVILLE NAVAL AIR STATION FL 30.24 -86.68	984.6	11/1153	120/043	11/1053	050/063	11/0636
KVQQ-CECIL FIELD AIRPORT FL 30.22 -81.88	9999.0	/	040/024	11/0515 I	030/038	11/0435 I
KSGJ-SAINT AUGUSTINE AIRPORT FL 29.97 -81.33	994.3	11/0656 I	060/045	11/0506 I	050/062	11/0446 I
KFIN-BUNNELL FL 29.47 -81.21	9999.0	/	060/035	11/0235	100/053	11/0455
KVVG-THE VILLAGES FL 28.96 -81.97	9999.0	/	050/032	11/0250	070/047	11/1010

KOCF-OCALA INTERNATIONAL AIRPORT FL
29.18 -82.22 995.3 11/0251 I 010/021 10/2221 I 030/034 11/0311 I

K42J-KEYSTONE HEIGHTS FL
29.85 -82.05 9999.0 / 070/031 11/0755 070/049 11/0555

KGNV-GAINESVILLE REGIONAL AIRPORT FL
29.68 -82.27 979.5 11/1053 040/035 11/0527 050/053 11/0517

KLCQ-LAKE CITY FL
30.18 -82.58 9999.0 / 020/031 11/0635 020/047 11/0635

KHOE-HOMERVILLE GA
31.06 -82.77 9999.0 / 030/020 11/0735 030/034 11/0735

KHOE-HOMERVILLE GA
31.06 -82.77 9999.0 / 030/020 11/0735 030/034 11/0735

KDQH-DOUGLAS MUNICIPAL AIRPORT GA
31.48 -82.86 9999.0 / 050/034 11/1355 040/051 11/1255

KAYS-WAYCROSS GA
31.25 -82.40 9999.0 / 040/030 11/0815 040/042 11/0955

KAMG-BACON COUNTY AIRPORT GA
31.54 -82.50 989.8 11/1553 140/021 11/1853 010/038 11/1314

KJES-JESUP GA
31.55 -81.88 9999.0 / 040/021 11/0856 030/033 11/0937

KBQK-BRUNSWICK/GLYNCO AIPORT GA
31.15 -81.47 9999.0 / 060/035 11/0915 060/052 11/0915

KSSI-ST. SIMONS/MALCOLM MCKINNON AIRPORT GA
31.15 -81.38 1006.1 11/0553 I 060/033 11/0610 I 050/049 11/0548 I

REMARKS:

NON-METAR OBSERVATIONS...
NOTE: ANEMOMETER HEIGHT IN METERS AND WIND AVERAGING PERIOD IN
MINUTES INDICATED UNDER MAXIMUM SUSTAINED WIND IF KNOWN

LOCATION ID LAT LON DEG DECIMAL	MIN PRES (MB)	DATE/ TIME (UTC)	MAX SUST (KT)	DATE/ TIME (UTC)	PEAK GUST (KT)	DATE/ TIME (UTC)
BXTG1 - RAWS BAXLEY GA 31.71 -82.39			999/999		070/056	11/1504
XTRM - TERMINAL CHANNEL DOWNTOWN JACKSONVILLE 30.33 -81.62	983.0	11/1158	120/040	11/1143	120/065	11/1158
XJAK - BUCK ISLAND 30.39 -81.48	983.0	11/1235	060/055	11/0735	060/069	11/0735
XHUP - HUGUENOT PARK 30.41 -81.41	985.0	11/1116	065/057	11/0746	060/074	11/0741
XJAX - WEATHERFLOW JACKSONVILLE BEACH PIER 30.29 -81.39	986.0	11/1010	130/049	11/1310	097/065	11/1010
XLWS - WEATHERFLOW LEWIS ST. JOHNS 29.91 -81.33	984.0	11/1044	140/045	11/1149	130/065	11/1054
XHSE - WEATHERFLOW CRESCENT BEACH SUMMERHOUSE 29.71 -81.23	987.0	11/1005	145/047	11/1025	145/060	11/1055
OKEG1 - RAWS WAYCROSS GA 31.24 -82.40			999/999		035/055	11/1004

JONG1 - RAWS JONES ISLAND OKEFENOKEE NWR

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30.82 -82.36                    999/999           082/044 11/1801

TT331 - RAWS OKEFENOKEE NWR WEST
30.97 -82.40                    999/999           032/048 11/0910

EDTF1 - EDDY TOWER BAKER COUNTY
30.54 -82.34                    999/999           114/024 11/1304

LGRF1 - RAWS LAKE GEORGE OCALA NF
29.38 -81.81                    999/999           208/034 11/1704

TS818 - RAWS OKEFENOKEE NWR EAST
30.74 -82.13                    999/999           114/042 11/1256

OLSF1 - RAWS OLUSTEE BAKER
30.25 -82.42                    999/999           173/040 11/1704

STRG1 - RAWS STERLING GLYNN GA
31.25 -81.61                    999/999           073/048 11/1104

FAWN LIVE OAK FL
30.30 -82.90                    999/999           999/042 11/0615

XJEK - JEKYLL ISLAND GA
31.05 -81.41    988.0 11/1322   130/050  1337     080/067 11/0837

1 NNE ST. AUGUSTINE BEACH
29.86 -81.26                    999/999           999/068 11/0700

CRESCENT BEACH
29.72 -81.23                    999/999           999/058 11/0720

PALATKA AIRPORT
29.66 -81.69                    999/999           999/053 11/0055

3 SE WELAKA
29.44 -81.63                    999/999           999/057 11/0421

2 SSE KINGSLAND
30.75 -81.65                    999/999           999/049 11/0511

2 W DEENWOOD
31.25 -82.40                    999/999           999/048 11/0604

3 NE YULEE
30.66 -81.54                    999/999           999/047 10/2259

1 SW ORTEGA
30.26 -81.72                    999/999           999/047 11/0212

PALM COAST
29.57 -81.21                    999/999           999/046 11/0729

4 SW BAXLEY
31.71 -82.39                    999/999           999/045 11/0704

2 NNE BAKERSTOWN
29.39 -81.47                    999/999           999/045 11/0932

SUWANNE COUNTY AIRPORT
30.30 -83.02                    999/999           999/043 11/0315

BAXLEY MUNICIPAL AIRPORT
31.71 -82.39                    999/999           999/042 11/0715

3 N BUNNELL
29.51 -81.25                    999/999           999/042 11/0042

5 ESE THALMANN
31.26 -81.61                    999/999           999/042 11/0704
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11 NNW STEVEN FOSTER ST PK
30.98 -82.40                    999/999            999/042 11/0510

1 SE ORTEGA
30.25 -81.69                    999/999            999/040 11/0203

3 S BOYS ESTATE
31.27 -81.48                    999/999            999/030 11/0437

5WNW NEWBERRY
29.67 -82.70                    999/999            999/039 11/0315

HAZLEHURST
31.88 -82.65                    999/999            999/039 11/0655

5 WNW OCALA AIRPORT
29.20 -82.30                    999/999            999/039 11/0147

3S BELLAIR
30.18 -81.81                    999/999            999/039 11/0739

3 W BELLAIR
30.18 81.91                     999/999            999/039 11/0739

5 SE ALACHUA
29.73 -82.42                    999/999            999/037 11/0229

1 SW SAN PABLO
30.27 -81.46                    999/999            999/037 11/0246

1 WNW STEVEN FOSTER ST PK
30.83 -82.36                    999/999            999/036 11/0801

3 SSE SAN MARCO
30.27 -81.65                    999/999            999/036 11/0243

2 NNW TALLYRAND
30.39 -81.65                    999/999            999/036 11/0400

5 WSW DURBIN
30.05 -81.54                    999/999            999/035 11/0130

1 SE SAN MARCO
30.30 -81.64                    999/999            999/034 11/0115

3 WSW KINGSLAND
30.77 81.73                     999/999            999/034 11/0657

4 NNW VILANO BEACH
30.02 -81.32   1005.0 11/0308 I 050/051  10/2223 I 055/060 11/0308 I

REMARKS:


B. MARINE OBSERVATIONS...
NOTE: ANEMOMETER HEIGHT IN METERS AND WIND AVERAGING PERIOD IN
MINUTES INDICATED UNDER MAXIMUM SUSTAINED WIND IF KNOWN
-------------------------------------------------------------------
LOCATION  ID    MIN    DATE/     MAX      DATE/     PEAK    DATE/
LAT  LON        PRES   TIME      SUST     TIME      GUST    TIME
DEG DECIMAL     (MB)   (UTC)     (KT)     (UTC)     (KT)    (UTC)
-------------------------------------------------------------------
SAUF1-CMAN STATION SAINT AUGUSTINE FL
29.86  -81.26   986.0 11/0700   144/059  11/0720   140/073 11/0716


MYPF1-NOS STATION MAYPORT FL
30.40  -81.43   988.0 11/1218   058/057  11/0736   053/078 11/0742


FRDF1-NOS STATION FERNANDINA BEACH FL
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30.67 -81.47   990.0 11/1312   145/029 11/1548   124/052 11/1236

NFDF1-NOAA PORTS-NAVY DEPOT
30.40 -81.62   988.0 11/1200   9999999 99999   I 051/054 11/0800

BKBF1-NOAA PORTS- I-295 BRIDGE
30.18 -81.68   984.0 11/1142   060/050 11/0648   109/060 11/0936

BLIF1-NOAA PORTS, BLOUNT ISLAND COMMAND
30.39 -81.52   988.0 11/1212   117/041 11/1036   100/058 11/1000

REMARKS:

C. STORM TOTAL RAINFALL FROM 1200 UTC SEP 11 UNTIL 1200 UTC SEP 12

CITY/TOWN LAT LON DEG DECIMAL	COUNTY	ID	RAINFALL (IN)
4 W BELLAIR 29.75 -82.93	GILCHRIST		15.11
FERNANDINA BEACH 30.65 -81.45	NASSAU		12.70
GAINESVILLE REGIONAL APT 29.67 -82.34	ALACHUA	GNV	12.40
2.4 NW GAINESVILLE 29.69 -82.36	ALACHUA	FL-AL-57	12.22
0.9 ESE STARKE 29.94 -82.10	BRADFORD	FL-BF-2	11.74
8.8 S INTERLACHEN 29.48 -81.90	MARION	FL-MR-46	11.51
8.8 E MIDDLEBURG 30.04 -81.75	CLAY		11.32
7.5 WSW GAINESVILLE 29.63 -82.45	ALACHUA	FL-AL-60	11.15
1 WNW ORTEGA 30.27 -81.72	DUVAL		11.11
10 SW JACKSONVILLE 30.24 81.79	DUVAL		11.04
1.8 WSW ORANGE PARK 30.15 -81.73	CLAY	FL-CY-25	11.03
5.2 NNW ALACHUA 29.84 -82.51	ALACHUA	FL-AL-56	11.03
12 SSE JACKSONVILLE 30.18 81.57	DUVAL		11.00
3.5 NNW EAST PALATKA 29.69 -81.62	PUTNAM		10.96
1.7 SE GAINESVILLE 29.65 -82.32	ALACHUA	FL-AL-26	10.94
3.8 W GAINESVILLE	ALACHUA	FL-AL-10	10.89

29.67 -82.40			
2.4 SW GAINESVILLE	ALACHUA	FL-AL-50	10.75
29.64 -82.36			
2.1 NNE MICANOPY	ALACHUA	FL-AL-51	10.70
29.53 -82.26			
2.6 WNW GREEN COVE SPRIN	CLAY	FL-CY-42	10.48
30.00 -81.72			
1.8 ESE KEYSTONE HEIGHTS	CLAY	FL-CY-24	10.36
29.76 -82.01			
6 S NAHUNTA	BRANTLEY		10.34
31.12 -81.98			
7.7 W GAINESVILLE	ALACHUA	FL-AL-55	10.33
29.67 -82.46			
ST. AUGUSTINE SOUTH	ST. JOHNS		10.22
29.84 -81.31			
4.6 N OCALA	MARION	FL-MR-57	10.12
29.25 -82.13			
4 NE SATSUMA	PUTNAM		10.05
29.59 -81.61			
11.2 SW OCALA	MARION	FL-MR-59	9.96
29.07 -82.26			
6.3 S FERNANDINA BEACH	NASSAU		9.92
30.56 -81.45			
9.80 SW OCALA	MARION	FL-MR-43	9.91
29.08 -82.24			
10.7 WSW OCALA	MARION	FL-MR-56	9.90
29.12 -82.29			
0.4 N FERNANDINA BEACH	NASSAU		9.86
30.66 -81.45			
HOMELAND	CHARLTON		9.85
30.85 -82.02			
3 N OLUSTEE	BAKER		9.76
30.24 -82.43			
5 ESE THALMANN	GLYNN		9.65
31.29 -81.69			
14.30 S OCALA	MARION	FL-MR-36	9.65
28.97 -82.13			
3 SSW BELLEVIEW	MARION		9.64
29.01 -82.07			
0.9 NE RAIFORD	UNION		9.62
30.07 -82.23			
4.8 E BELLEVIEW	MARION	FL-MR-18	9.50
29.05 -81.97			
10 SW FOLKSTON	CHARLTON		9.30
30.73 -82.13			
JACKSONVILLE INTL APT	DUVAL	JAX	9.20
30.49 81.69			

5.9 S PALM COAST 29.48 -81.21	FLAGLER	FL-FL-25	9.10
4.9 NE OCKLAWAHA 29.09 -81.87	MARION	FL-MR-22	9.00
5.4 W GAINESVILLE 29.67 -82.43	ALACHUA	FL-AL-48	8.87
1 WSW ATKINSON 31.21 -81.87	BRANTLEY		8.74
2 NE FARGO 30.70 -82.54	CLINCH		8.66
1.1 SE OCALA 29.17 -82.12	MARION	FL-MR-54	8.63
2.3 ENE SCREVEN 31.49 -81.98	WAYNE		8.56
9 N FLORAHOME 29.86 -81.88	CLAY		8.55
10 NE KEYSTONE HEIGHTS 29.88 -81.91	CLAY	FL-CY-38	8.55
1.0 ENE BUNNELL 29.47 -81.24	FLAGLER	FL-FL19	8.48
5 NNW BLACKSHEAR 31.36 -82.28	PIERCE		8.45
SUWANNEE RIVER US HWY 44 30.68 82.56			8.44
7.9 SSW LAKE CITY 30.08 -82.69	COLUMBIA	FL-CB-12	8.44
3.2 SW HIGH SPRINGS 29.78 -82.63	ALACHUA	FL-AL-17	8.23
MAYPORT NAVAL STATION 30.38 -81.41	DUVAL	NRB	7.96
11 NNW STEVEN FOSTER ST. 32.57 -83.19	CHARLTON		7.81
7 NNW TAYLOR 30.53 -82.34	BAKER		7.79
0.6 ESE PALM COAST 29.56 -81.20	FLAGLER	FL-FL-21	7.67
1 WNW STEVEN FOSTER ST. 30.83 82.36			7.66
8.0 ENE TRENTON 29.65 -82.69	GILCHRIST	FL-GC-1	7.60
5 WNW JACKSONVILLE HEIGH 30.27 -81.86	DUVAL		7.54
5 SE ALACHUA 29.72 -82.42	ALACHUA		7.51
PENNEY FARMS 29.98 -81.81	CLAY	FL-CY-41	7.46
6.7 WSW JACKSONVILLE 30.30 -81.76	DUVAL		7.37

4 NNE MANDARIN 30.20 -81.61	DUVAL		7.35
4.2 NNW JESUP 31.65 -81.92	WAYNE		7.22
LITTLE SATILLA RIVER 31.45 82.05			7.14
JACKSONVILLE NAS 30.23 -81.68	DUVAL	NIP	7.08
10 NNW JESUP 31.73 -81.95	WAYNE		6.96
WAYCROSS 31.21 -82.36	WARE		6.86
3 WSW KINGSLAND 30.77 -81.71	INLAND CAMDEN		6.84
4.6 SSE MICANOPY 29.44 -82.25	MARION	FL-MR-42	6.83
3.5 ENE KEYSTONE HEIGHTS 29.79 -81.98	CLAY	FL-CY-7	6.78
1.9 S PALM COAST 29.54 -81.21	FLAGLER	FL-FL-26	6.72
4 NW TRENTON 29.65 -82.86	GILCHRIST	FL-GC-8	6.53
3.5 NE PEARSON 31.33 -82.81	ATKINSON		6.50
SATILLA RIVER HWY 158 31.30 82.56			6.49
BACON COUNTY AIRPORT 31.54 82.51	BACON		6.04
2 W DEENWOOD 31.24 -82.40	WARE		5.98
4 SW BAXLEY 31.72 -82.40	APPLING		5.89
ALAPAHA RIVER HWY 94 30.70 83.03			5.82
1 WNW ALACHUA 29.78 -82.50	ALACHUA		5.70
0.5 NNW NEPTUNE BEACH 30.32 -81.40	DUVAL	FL-DV-13	4.97
DOCTORTOWN 31.65 -81.83	WAYNE		4.92
3 SSW FOLKSTON 30.79 -82.03	CHARLTON		4.66
1 SSE LUMBER CITY 31.92 82.67			4.22

REMARKS:

D. INLAND FLOODING...

BRADFORD...ALLIGATOR CREEK AT STARKE SETS RECORD FLOOD STAGE AT 147.98 FEET ON 09/11 AT 1100 EDT. SANTA FE RIVER NEAR GRAHAM SETS RECORD FLOOD STAGE AT 118.98 FEET ON 09/11 AT 0945 EDT. HAMPTON LAKE NEAR HAMPTON CRESTED AT 131.03 FEET ON SEPT 13TH AT 1200 EDT. MODERATE FLOODING OCCURS AT THIS LEVEL. LAKE SAMPSON NEAR STARKE SETS RECORD FLOOD STAGE AT 135.34 FEET ON SEPT 15TH AT 2000 EDT. MAJOR FLOODING OCCURS AT THIS LEVEL. NEW RIVER NEAR LAKE BUTLER SETS RECORD FLOOD STAGE AT 98.55 FEET ON SEPT 12TH AT 0815 EDT. MAJOR FLOODING OCCURS AT THIS LEVEL. SAMPSON RIVER AT SAMPSON CITY SETS RECORD FLOOD STAGE AT 135.09 FEET ON SEPT 15TH AT 1900 EDT. MAJOR FLOODING OCCURS AT THIS LEVEL.

CLAY...BLACK CREEK AT MIDDLEBURG (BLANDING BLVD/SR 21) SETS RECORD FLOOD STAGE AT 30.52 FEET ON 09/12 AT 0130 EDT. MAJOR FLOODING OCCURS AT THIS LEVEL. NORTH FORK BLACK CREEK NEAR MIDDLEBURG SETS ESTIMATED RECORD FLOOD STAGE BETWEEN 28 AND 29 FEET ON SEPT 12TH. MAJOR FLOODING OCCURS AT THIS LEVEL. SOUTH FORK BLACK CREEK NEAR PENNEY FARMS SETS ESTIMATED RECORD FLOOD STAGE BETWEEN 28 AND 29 FEET ON SEPT 12TH. MAJOR FLOODING OCCURS AT THIS LEVEL.

MARION...OCKLAWAHA RIVER NEAR CONNER SETS RECORD FLOOD STAGE AT 40.07 FEET ON 09/11 AT 1000 EDT. OCKLAWAHA RIVER AT EUREKA SETS RECORD FLOOD STAGE AT 25.49 FEET ON 09/13 AT 0515 EDT. OCKLAWAHA RIVER NEAR OCALA SET RECORD FLOOD STAGE AT 41.31 FEET ON SEPT 11TH AT 0745 EDT.

PIERCE...ALABAHA RIVER AT GEORGIA HIGHWAY 203 NEAR BLACKSHEAR CRESTED AT 11.41 FT ON 09/12 AT 1730 EDT. MINOR FLOODING OCCURS AT THIS LEVEL.

BRANTLEY...SATILLA RIVER AT ATKINSON CRESTED AT 16.07 FEET ON SEPT 17TH AT 0845 EDT. MINOR FLOODING OCCURS AT THIS LEVEL.

FLAGLER...MATANZAS RIVER AT BINGS LANDING CRESTED AT 4.85 FEET ON SEPT 11TH AT 0424 EDT. MAJOR FLOODING OCCURS AT THIS LEVEL. HAW CREEK ABOVE RUSSELL LANDING SETS RECORD FLOOD STAGE AT 7.87 FEET ON SEPT 11TH AT 1430 EDT. MAJOR FLOODING OCCURS AT THIS LEVEL.

DUVAL...ST JOHNS RIVER AT THE BUCKMAN BRIDGE SETS RECORD FLOOD STAGE AT 5.63 FEET ON SEPT 11TH AT 0718 EDT. MAJOR FLOODING OCCURS AT THIS LEVEL. BROWARD RIVER BELOW BISCAYNE BLVD CRESTED AT 4.08 FEET ON SEPT 11TH AT 0045 EDT. MODERATE FLOODING OCCURS AT THIS LEVEL. CLAPBOARD CREEK NEAR SHEFFIELD ROAD SETS RECORD FLOOD STAGE AT 5.31 FEET ON SEPT 11TH AT 0430 EDT. MAJOR FLOODING OCCURS AT THIS LEVEL. DUNN CREEK AT DUNN CREEK ROAD SETS RECORD FLOOD STAGE AT 6.38 FEET ON SEPT 11TH AT 0930 EDT. MAJOR FLOODING OCCURS AT THIS LEVEL. THE ST JOHNS RIVER AT THE DAMES POINT BRIDGE SETS RECORD FLOOD STAGE AT 5.05 FEET ON SEPT 11TH AT 1324 EDT. MAJOR FLOODING OCCURS AT THIS LEVEL. CEDAR RIVER AT SAN JUAN AVENUE SETS RECORD FLOOD STAGE AT 6.35 FEET ON SEPT 11TH AT 1230 EDT. MAJOR FLOODING OCCURS AT THIS LEVEL. JULINGTON CREEK AT OLD ST AUGUSTINE ROAD SETS RECORD FLOOD STAGE AT 6.20 FEET ON SEPT 11TH AT 1030 EDT. MAJOR FLOODING OCCURS AT THIS LEVEL. THE ST JOHNS RIVER AT THE MAIN STREET BRIDGE SETS RECORD FLOOD STAGE AT 5.57 FEET ON SEPT 11TH AT 1224 EDT. MAJOR FLOODING OCCURS AT THIS LEVEL. ST JOHNS RIVER AT MAYPORT CRESTED AT 5.58 FEET ON SEPT 11TH AT 0254 EDT. MAJOR FLOODING OCCURS AT THIS LEVEL. NASSAU RIVER NEAR TISONIA SETS RECORD FLOOD STAGE AT 8.18 FEET ON SEPT 11TH AT 0330 EDT. MAJOR FLOODING OCCURS AT THIS LEVEL. ORTEGA RIVER AT ARGYLE FOREST BLVD SETS RECORD FLOOD STAGE AT 12.99 FEET ON SEPT 11TH AT 1215 EDT. MAJOR FLOODING OCCURS AT THIS LEVEL. ST JOHNS RIVER AT BUFFALO BLUFF CRESTED AT 3.31 FEET ON SEPT 12TH AT 2315 EDT. MODERATE FLOODING OCCURS AT THIS LEVEL. POTTSBURG CREEK AT BEACH BLVD SETS RECORD FLOOD STAGE AT 5.84 FEET ON SEPT 11TH AT 1300 EDT. MAJOR FLOODING OCCURS AT THIS LEVEL. POTTSBURG CREEK AT BOWDEN ROAD SETS RECORD FLOOD STAGE AT 10.04 FEET ON SEPT 11TH AT 0800 EDT. MAJOR FLOODING OCCURS AT THIS LEVEL. TROUT RIVER AT LEM TURNER ROAD CRESTED AT 4.16 FEET ON SEPT 11TH AT 0200 EDT. MODERATE FLOODING OCCURS AT THIS LEVEL.

GLYNN...THE TIDAL GAUGE ON THE ATLANTIC COAST AT ST SIMONS ISLAND

VILLAGE PIER CRESTED AT 6.90 FEET ON SEPT 11TH AT 1145 EDT. MAJOR FLOODING OCCURS AT THIS LEVEL.

CAMDEN...THE TIDAL GAUGE ON THE ATLANTIC COAST AT SEA CAMP DOCK ON CUMBERLAND ISLAND CRESTED AT 6.48 FEET ON SEPT 11TH AT 0200 EDT. MODERATE FLOODING OCCURS AT THIS LEVEL. SATILLA RIVER AT WOODBINE CRESTED AT 6.85 FEET ON SEPT 11TH AT 1445 EDT. MAJOR FLOODING OCCURS AT THIS LEVEL.

PUTNAM...DUNNS CREEK AT SATSUMA CRESTED AT 4.26 FEET ON SEPT 11TH AT 1915 EDT. MAJOR FLOODING OCCURS AT THIS LEVEL. ORANGE CREEK AT ORANGE SPRINGS CRESTED AT 28.96 FEET ON SEPT 11TH AT 1115 EDT. MAJOR FLOODING OCCURS AT THIS LEVEL. OCKLAWAHA RIVER AT RODMAN DAM SETS RECORD FLOOD STAGE AT 9.70 FEET ON SEPT 13TH AT 1900 EDT.

ST JOHNS...DURBIN CREEK AT RACE TRACK ROAD CRESTED AT 6.69 FEET ON SEPT 11TH AT 1600 EDT. MAJOR FLOODING OCCURS AT THIS LEVEL. ST JOHNS RIVER AT RACY POINT CRESTED AT 4.60 FEET ON SEPT 11TH AT 1648 EDT. MAJOR FLOODING OCCURS AT THIS LEVEL. DEEP CREEK AT SPUDS SETS RECORD FLOOD STAGE AT 6.57 FEET ON SEPT 11TH AT 2200 EDT. MAJOR FLOODING OCCURS AT THIS LEVEL. TOLOMATO RIVER ABOVE ST AUGUSTINE AIRPORT SETS RECORD FLOOD STAGE AT 5.58 FEET ON SEPT 11TH AT 0206 EDT. MAJOR FLOODING OCCURS AT THIS LEVEL.

CLINCH...SUWANNEE RIVER AT FARGO CRESTED AT 104.57 FEET ON SEPT 19TH AT 0245 EDT. MINOR FLOODING OCCURS AT THIS LEVEL.

NASSAU...THE TIDAL GAUGE ON THE ATLANTIC COAST AT FERNANDINA BEACH CRESTED AT 6.34 FEET ON SEPT 11TH AT 0148 EDT. MODERATE FLOODING OCCURS AT THIS LEVEL. THE ST MARYS RIVER AT I-95 CRESTED AT 3.57 FEET ON SEPT 11TH AT 1415 EDT. MINOR FLOODING OCCURS AT THIS LEVEL. GILCHRIST...SANTA FE RIVER NEAR HILDRETH CRESTED AT 21.22 FEET ON SEPT 17TH AT 0715 EDT. MINOR FLOODING OCCURS AT THIS LEVEL. SANTA FE RIVER NEAR FORT WHITE CRESTED AT 34.46 FEET ON SEPT 15TH AT 1545 EDT. MAJOR FLOODING OCCURS AT THIS LEVEL

ALACHUA...SANTA FE RIVER NEAR HIGH SPRINGS SETS RECORD FLOOD STAGE AT 48.46 FEET ON SEPT 14TH AT 1800 EDT. MAJOR FLOODING OCCURS AT THIS LEVEL AND US HIGHWAY 441 WAS BRIEFLY SHUT DOWN NEAR THE CREST. SANTA FE RIVER AT POE SPRINGS POOL SETS RECORD FLOOD STAGE AT 40.59 FEET ON SEPT 15TH AT 0400 EDT. MAJOR FLOODING OCCURS AT THIS LEVEL. SANTA FE RIVER AT RIVER RISE NEAR HIGH SPRINGS SETS RECORD FLOOD STAGE AT 50.48 FEET ON SEPT 14TH AT 1315 EDT. MAJOR FLOODING OCCURS AT THIS LEVEL.

COLUMBIA...ICHETUCKNEE RIVER BELOW ICHETUCKNEE SPRINGS STATE PARK CRESTED AT 24.54 FEET ON SEPT 16TH AT 1900 EDT. MAJOR FLOODING OCCURS AT THIS LEVEL. SANTA FE RIVER AT OLENO STATE PARK SETS RECORD FLOOD STAGE AT 57.07 FEET ON SEPT 14TH AT 0715 EDT. MAJOR FLOODING OCCURS AT THIS LEVEL. SUWANNEE RIVER NEAR BENTON CRESTED AT 94.47 FEET ON SEPT 21ST. MINOR FLOODING OCCURS AT THIS LEVEL. SANTA FE RIVER AT THREE RIVERS ESTATES CRESTED AT 24.55 FEET ON SEPT 16TH AT 2000 EDT. MAJOR FLOODING OCCURS AT THIS LEVEL. SUWANNEE RIVER AT WHITE SPRINGS CRESTED AT 76.49 FEET ON SEPT 13TH AT 0045 EDT. MINOR FLOODING OCCURS AT THIS LEVEL.

BAKER...ST MARYS RIVER NEAR MACCLENNY CRESTED AT 22.32 FEET ON SEPT 12TH AT 1845 EDT. MAJOR FLOODING OCCURS AT THIS LEVEL. ST MARYS RIVER AT MONIAC CRESTED AT 17.51 FEET ON SEPT 13TH AT 0415 EDT. MAJOR FLOODING OCCURS AT THIS LEVEL.

WAYNE...LITTLE SATILLA RIVER NEAR OFFERMAN CRESTED AT 12.81 FEET ON SEPT 12TH AT 1745 EDT. MODERATE FLOODING OCCURS AT THIS LEVEL.

CHARLTON...ST MARYS RIVER AT TRADERS HILL SETS RECORD FLOOD STAGE AT 19.30 FEET ON SEPT 15TH AT 1445 EDT. MAJOR FLOODING OCCURS AT THIS LEVEL.

WARE...SATILLA RIVER AT GEORGIA HIGHWAY 158 ABOVE MILLWOOD CRESTED AT 14.91 FEET ON SEPT 14TH AT 2030 EDT. MINOR FLOODING OCCURS AT THIS LEVEL.

UNION...SANTA FE RIVER AT WORTHINGTON SPRINGS SETS RECORD FLOOD STAGE AT 71.17 FEET ON SEPT 12TH AT 2200 EDT. MAJOR FLOODING OCCURS AT THIS LEVEL.

E. MAXIMUM STORM SURGE AND STORM TIDE...
OFFICIAL TIDE GAUGES NOTED WITH LEADING G

COUNTY		CITY/TOWN OR LOCATION	SURGE (FT)	TIDE (FT)	DATE/ TIME	BEACH EROSION	
FLAGLER	G	BINGS LANDING	4.19	4.19	11/0824	UNKNOWN	
DUVAL	G	BUCKMAN BRIDGE	5.71	5.26	11/1118	UNKNOWN	I
GLYNN	G	ST SIMONS ISLAN	3.93	3.93	11/1545	UNKNOWN	I
DUVAL	G	BROWARD RIVER	2.78	2.78	11/0445	UNKNOWN	I
DUVAL	G	CLAPBOARD CREEK	3.47	3.47	11/1715	UNKNOWN	
CAMDEN	G	SEA CAMP DOCK O	3.13	3.13	11/0600	UNKNOWN	
DUVAL	G	DUNN CREEK	4.77	4.77	11/0930	UNKNOWN	
DUVAL	G	DAMES POINT BRI	5.97	3.69	11/1724	UNKNOWN	
PUTNAM	G	DUNNS CREEK NEA	3.60	3.60	11/2315	UNKNOWN	
ST. JOHNS	G	DURBIN CREEK AT	5.61	5.61	11/2000	UNKNOWN	I
NASSAU	G	FERNANDINA BEAC	7.78	3.61	11/0548	UNKNOWN	
DUVAL	G	CEDAR RIVER AT	5.66	5.66	11/1630	UNKNOWN	
DUVAL	G	JULINGTON CREEK	5.35	5.35	11/1430	UNKNOWN	
CAMDEN	G	ST MARYS RIVER	1.10	1.10	11/1815	UNKNOWN	
DUVAL	G	MAYPORT	6.44	3.62	11/0654	UNKNOWN	
DUVAL	G	SOUTHBANK RIVER	6.61	4.94	11/1624	UNKNOWN	
ST JOHNS	G	RACY POINT	4.72	3.96	11/2100	UNKNOWN	
DUVAL	G	NASSAU RIVER NE	6.21	6.21	11/0730	UNKNOWN	I
DUVAL	G	POTTSBURG CREEK	4.76	4.76	11/1700	UNKNOWN	
DUVAL	G	TROUT RIVER AT	2.91	2.91	11/0600	UNKNOWN	I
ST JOHNS	G	TOLOMATO RIVER	3.61	3.61	11/0606	UNKNOWN	
CAMDEN	G	SATILLA RIVER A	3.44	3.44	11/1845	UNKNOWN	
ST JOHNS	G	DEEP CREEK AT S	5.75	5.75	12/0200	UNKNOWN	

REMARKS: OFFICIAL TIDE GAUGE SITES HAVE STORM TIDE WITH RESPECT TO MHHW. TIMES IN UTC. TIDE GAUGE AT BUCKMAN BRIDGE STOPPED REPORTING 9/11 1347UTC AND THEREFORE MAY HAVE EXPERIENCED HIGHER WATER LEVELS. FURTHER DETAILED ANALYSIS IS BEING DONE NEAR DOWNTOWN JAX ON WATER LEVELS AND STORM SURGE.

F. TORNADOES...

(DIST)CITY/TOWN LAT LON (DEG DECIMAL DESCRIPTION	COUNTY	DATE/ TIME(UTC)	EF SCALE (IF KNOWN)
1 SSE VILANO BEACH 29.93 -81.30	St. Johns	10/2350	EF1

THIS TORNADO MAY HAVE INITIATED AS A WATERSPOUT THAT MOVED ONSHORE AT VILANO BEACH. MINIMAL DAMAGE WAS SEEN IN VILANO BEACH, WITH MORE TREE DAMAGE OBSERVED WEST OF VILANO BEACH. A FEW TREES WERE SNAPPED AND UPROOTED. RADAR INDICATED A TORNADO DEBRIS SIGNATURE. ESTIMATED PEAK WINDS WERE 85-100 MPH. THE PATH LENGTH WAS ABOUT 4 MILES AND THE WIDTH OF THE VORTEX WAS ABOUT 200 YARDS. THE TORNADO DAMAGE SURVEY BEGIN IN VILANO BEACH FLORIDA (29.93, -81.30) AROUND 7:50 PM LOCAL TIME ON 9/10. THE DAMAGE ENDED 4 MILES WEST OF VILANO BEACH (29.95, -81.38) AROUND 7:56 PM ON 9/10.

1 N ST. AUGUSTINE 29.90 -81.31	St. Johns	10/1740	EF1

THIS TORNADO LIKELY BEGAN AS A WATERSPOUT THAT MOVED ONSHORE. SIGNIFICANT TREE DAMAGE OCCURRED AT HUGUENOT CEMETERY, WITH MORE TREE DAMAGE WESTWARD TOWARD HIGHWAY 1. THE TIME OF DAMAGE WAS BASED ON RADAR. PEAK WINDS WERE 85-100 MPH WITH TOTAL PATH LENGTH OF 1 MILE AND WIDTH OF 50 YARDS. THE TORNADO STARTED IN ST. AUGUSTINE (29.90, -81.31) AROUND 1:40 PM AND TRACKED TOWARD 1 MILE WEST OF ST. AUGUSTINE (29.90, -81.33) ENDING AROUND 1:45 PM.

1 SE CRESCENT BEACH 29.72 -81.23	ST. JOHNS	11/0415	EF2

SIGNIFICANT STRUCTURAL DAMAGE OCCURRED AT SUMMER HOUSE VACATION RENTALS. THERE WERE CLEAR SIGNS OF A CIRCULATION IN THE DAMAGE PATTERN. TREE DAMAGE OCCURRED TO A1A. THE TORNADO APPEARED TO DISSIPATE OVER THE INTERCOASTAL WATERWAY. PEAK WINDS WERE 110-130 MPH. TOTAL PATH LENGTH WAS ABOUT 1 MILE WITH WIDTH OF 300 YARDS. THE TORNADO BEGAN AROUND 1:15 AM ABOUT 2 MILES SOUTH OF CRESCENT BEACH (29.72, -81.23) AND ENDED AROUND 1:20 AM ABOUT 3 MILES SSW OF CRESCENT BEACH (29.72, -81.25).

2 NNW FERNANDINA BEACH 30.69 -81.46	NASSAU	11/0625	EF0

NO DAMAGE WAS REPORTED AS THE TORNADO TRACKED GENERALLY OVER OPEN MARSH. THERE WAS A CLEAR TORNADO DEBRIS SIGNATURE ON RADAR. THE TIME OF THE TORNADO WAS ESTIMATED BASED ON RADAR. PEAK WINDS REACHED 85-100 MPH. THE TOTAL PATH LENGTH WAS 11 MILES WITH UNKNOWN WIDTH. THE TORNADO STARTED NEAR FORT CLINCH (30.69, -81.46) AROUND 2:25 AM AND ENDED ABOUT 11 MILES WEST OF FORT CLINCH (30.69, -81.64) AROUND 2:35 AM.

2 NNW AMELIA CITY 30.61 -81.47	NASSAU	11/0625	EF0

NO DAMAGE WAS REPORTED AS THE TORNADO TRACKED MOSTLY OVER OPEN TERRITORY. THERE WAS A CLEAR TORNADO DEBRIS SIGNATURE ON RADAR. THE TIME OF THE EVENT WAS BASED ON RADAR. PEAK WINDS REACH 85-100 MPH. PATH LENGTH WAS ABOUT 11 MILES AND THE WIDTH WAS UNKNOWN. THE TORNADO STARTED ABOUT 5 MILES SOUTH OF FORT CLINCH STATE PARK (30.61, -81.47) AROUND 2:25 AM AND ENDED ABOUT 9 MILES SOUTHWEST OF FORT CLINCH STATE PARK (30.61, -81.57) AROUND 2:30 AM.

2 S MARINELAND 29.64 -81.21	Flagler	11/0020	EF0

INITIAL AERIAL SURVEY FOUND A TORNADO PATH OF TREE DAMAGE. THERE WAS NO STRUCTURAL DAMAGE REPORTED. A TORNADO DEBRIS SIGNATURE WAS DETECTED ALONG THE TORNADO PATH. PEAK WINDS WERE 85-100 MPH. THE PATH LENGTH WAS ABOUT 4 MILES AND THE WIDTH WAS UNKNOWN. THE TORNADO STARTED ABOUT 1 MILE SOUTH OF MARINELAND (29.64, -81.21) AROUND 8:20 PM AND TRACKED TO ABOUT 4 MILES WEST OF MARINELAND (29.67, -81.29)

AROUND 8:30 PM.

G. STORM IMPACTS BY COUNTY...

COUNTY	DEATHS	INJURIES	EVACUATIONS	DESCRIPTION

FLAGLER

FLAGLER COUNTY EXPERIENCED SURGE, WIND AND FLOODING RAINFALL DAMAGE FROM IRMA. THERE WAS ALSO ONE CONFIRMED EF0 TORNADO TOUCHDOWN JUST SOUTH OF MARINELAND. TROPICAL STORM FORCE WIND GUSTS BEGAN SUNDAY MORNING AROUND 9:46 AM AT FLAGLER BEACH AS MEASURED BY A VOLUNTEER ARES OBSERVER WITH A WIND GUSTS OF 39 MPH. THROUGH NOON, GUSTS OF 40-45 MPH WERE MEASURED. AT 12:48 PM, SURF OVER-WASH WAS REPORTED AT MALACOMPRA BEACH APPROACH NEAR THE HAMMOCK. AT 1:16 PM, WATER WAS REPORTED AT THE TOP OF THE SEA WALL IN PALM COAST. BY 2:31 PM WATER WAS OVER THE SEA WALL AND ONTO GRASS IN PALM COAST. ALSO AT 2:31 PM, ROOF SHINGLES AND SIDING WAS BLOWN OFF OF HOMES ALONG NORTH 20TH STREET AND A1A. AROUND 3 PM, POWER LINES WERE BLOWN DOWN AT THE BEVERLY BEACH CAMPTOWN RV RESORT. AT 4:31 PM, WATER WAS ABOUT 15 INCHES OVER THE SEA WALL IN PALM COAST. AT 4:40 PM, WATER WAS OVER THE ROAD ALONG WYNFIELD DRIVE IN PALM COAST. AT 5 PM, WATER WAS OVER THE SEA WALL AND THE RAMP AT BINGS LANDING AND HERSHAL KING PARKS ON THE INTERCOASTAL WATERWAY, AND WATER WAS OVER THE BOAT RAMP AT DEAD LAKE FISH CAMP. AT 5:35 PM, POWER OUTAGES WERE REPORTED AT STATION 71. AT 6:30 PM, AT 50 MPH WIND GUST WAS MEASURED NORTH OF FLAGLER BEACH. BY 8:28 PM, SUSTAINED TROPICAL STORM FORCE WINDS OF 40 MPH WERE MEASURED AT NORTH FLAGLER BEACH. AT 8:29 PM, TREES WERE BLOWN DOWN ONTO POWERLINES AT BURGRESS PLACE. AT 8:30 PM, A MEASURED WIND GUST OF 50 MPH WAS RECORDED IN FLAGLER BEACH. AT 8:45 PM, TANGERINE TO LANCEWOOD WATEROAK TO HIBISCUS WAS UNDERWATER AND IMPASSABLE. AT 9:06 PM, A WIND GUST OF 60 MPH WAS MEASURED IN NORTH FLAGLER BEACH, AND BY 9:17 PM, A SUSTAINE WIND OF 45-50 MPH WAS MEASURED IN FLAGLER BEACH. BY 9:32 PM, THERE WERE MULTIPLE REPORTS OF 40-45 MPH WIND GUSTS INLAND AND 45-50 MPH GUSTS AT THE BEACHES. AT 9:40 PM, NUMEROUS SECONDARY ROADS IN DAYTONA NORTH WERE IMPASSABLE DUE TO FLOODING. THE EMERGENCY OPERATIONS CENTER IN BUNNELL MEASURED A WIND GUST OF 59 MPH AT 10:45 PM. AT 10:55 PM, THE ASOS AT THE FLAGLER COUNTY AIRPORT MEASURED A WIND GUST OF 59 MPH, THEN AT 11:58 PM, A SUSTAINED WIND OF 48 MPH WAS MEASURED IN FLAGLER BEACH. SEPTEMBER 11, AT 12:24 AM, A MEASURED WIND GUST OF 75 MPH WAS MEASURED IN FLAGLER BEACH WITH SUSATINED WINDS NEAR 50 MPH THROUGH 12:47 AM. AT 12:26 AM, A MEASURED GUST OF 72 MPH WAS MEASURED AT THE EMERGENCY OPERATIONS CENTER IN BUNNELL. AT 1:01 AM, THE COUNTY AIRPORT MEASURED A WIND GUST OF 63 MPH. AT 2 AM, ABOUT 2 FEET OF WATER WAS OVER THE SEA WALL IN PALM COAST. AT 2:38 AM, A SUSTAINED WIND OF 40 MPH WITH GUSTS TO 54 MPH WAS MEASURED AT FLAGLER BEACH, THEN AT 3 AM A SUSATINED WIND OF 54 MPH WITH A GUST OF 78 MPH WAS MEASURED IN FLAGLER BEACH. AT 3:10 AM, A MEASURED GUST OF 83 MPH WAS RECORDED AT FLAGLER BEACH. AT 3:13 AM, WAIST DEEP WATER WAS REPORTED ON EMERSON DRIVE IN PALM COAST. AT 4 AM, A REPORT OF STORM SURGE IMPACTED MARINELAND ACRES JUST SOUTH OF WASHINGTON OAKS STATE PARK. AT 4:03 AM, A SUSTAINED WIND OF 47 MPH WAS MEASURED WITH A GUST TO 67 MPH IN FLAGLER BEACH. AT 5:30 AM, A PORCH WAS BLOWN OFF ALONG CAROL COURT. AT 5:45 AM, WATER WAS 4 INCHES OVER THE SEA WALL IN PALM COAST. AT 6:49 AM, THERE WERE MULTIPLE REPORTS OF STORM SURGE FLOODING ALONG THE INTERCOASTAL WATERWAY IN FLAGLER BEACH. AT 7:22 AM, A WIND GUST OF 53 MPH WAS MEASURED IN PALM COAST. AT 7:44 AM, ALONG STATE ROAD 100 AND SOUTH CHAPEL, WATER WAS REPORTED OVER THE ROAD AS WELL AS TREES BLOWN DOWN. AT 8 AM, HOMES WERE DAMAGED ALONG WOODLASH LANE. AT 8:22 AM, BARRINGTON BECOME IMPASSABLE. AT 8:27 AM, A POWER LINE WAS REPORTED BLOWN DOWN ON BARKEY IN PALM COAST, THEN AT 8:31 AM TREES AND FENCES WERE BLOWN DOWN ALONG BELLE TERRE AND BALLAIRE BLVD. AT 10:19 AM, MULTIPLE HOMES WERE REPORTED UNDER WATER IN FLAGLER BEACH AND ALONG THE INTERCOASTAL WATERWAY. THE LAST MEASURED WIND OVER 40 MPH WAS MEASURED AT 1:15 PM. RAINFALL TOTALS INCLUDED 12.24 INCHES AT THE BUNNELL EMERGENCY OPERATIONS CENTER, 14.0 INCHES

IN CENTRAL PALM COAST AT THE COPC WATER PLANT 1, 10.03 INCHES IN SOUTHERN PALM COAST AT THE COPC WATER PLANT 2, 10.10 INCHES IN WEST PALM COAST AT THE COPC WATER PLANT 3, 8.82 INCHES IN EAST PALM COAST AND 5.6 INCHES IN WEST PALM COAST.

ALACHUA

COUNTYWIDE WIND DAMAGE INCLUDED TREES DOWN ACROSS ROADS AND ON HOMES. RESIDENTIAL HOMES FLOODED IN SOME AREAS DUE TO POOR DRAINAGE. TREES WERE BLOWN DOWN ACROSS THE UNIVERSITY OF FLORIDA CAMPUS AND WITHIN THE GAINESVILLE CITY LIMITS. AT 1015 PM ON 9/10, A 10 INCH IN DIAMETER SPRUCE TREE WAS BLOWN DOWN ABOUT 5 MILES WEST OF GAINESVILLE . THE U.S. HIGHWAY 441 BRIDGE AND U.S. HIGHWAY 27 BRIDGE OVER THE SANTE FE RIVER WAS CLOSED ON 9/13/2017 DUE TO RISING FLOOD WATER NEAR HIGH SPRINGS.

GLYNN

AT 4:15 AM ON 9/10, A TREE WAS BLOWN DOWN ONTO A CAR ALONG STUART AVENUE. THE TIME WAS BASED ON A PEAK WIND REPORTED AT THE ST. SIMONS ISLAND AIRPORT. AT 12:50 AM ON 9/11, A WATERSPOUT WAS OBSERVED OVER THE MARSH AREAS ALONG HIGHWAY 17, JUST WSW OF JEKYLL ISLAND.

BRADFORD

AT 10:35 AM ON 9/10, ALLIGATOR CREEK IN STARKE STARTED RISING UP TO THE BRIDGE LEVEL AT LAURA STREET. THIS OCCURRED IN CONJUNCTION WITH MAJOR FLOOD STAGE REPORTED AT THE ALLIGATOR CREEK GAUGE LOCATED JUST DOWNSTREAM AT U.S. HIGHWAY 301.

PUTNAM

AT 11:49 PM ON 9/10, A NURSING HOME IN PALATKA WAS FLOODED AND EVACUATIONS WERE ORDERED DUE TO FLASH FLOODING.

UNION

AT 8:15 AM ON 9/11, THE PUBLIC REPORTED POWER LINES WERE BLOWN DOWN ON SW 8TH STREET IN LAKE BUTLER.

DUVAL

TROPICAL STORM FORCE WIND GUSTS STARTED TO IMPACT DUVAL COUNTY DURING THE MORNING 9/10, WITH A GUST OF 50 MPH AROUND 6:21 AM AT HUGUENOT PARK. AT 7 AM, A WEATHERFLOW MESONET STATION AT BUCK ISLAND ON THE ST. JOHNS RIVER MEASURED A SUSTAINED WINDS OF 37 MPH AND A GUST TO 50 MPH. AT 9:20 PM, A MESONET STATION ABOUT 2 MILES WNW OF FORT CAROLINE MEASURED SUSTAINED WINDS OF 35 MPH WITH A GUST TO 50 MPH. AT 10:26 PM, THE ASOS AT THE JACKSONVILLE INTERNATIONAL AIRPORT NEAR THE NWS OFFICE MEASURED A 58 MPH WIND GUST. ON 9/11 AT 1:45 AM, THE NOS TIDE GAUGE AT MAYPORT MEASURED WATER LEVELS OF 2.9 FT TO 3 FT ABOVE MHHW DATUM. AT 3:23 AM, THE MAYPORT ASOS MEASURED A SUSTAINED WIND OF 51 MPH (44 KT) AND A GUST OF 74 MPH (64 KT). AT 3:38 AM, THE MAYPORT ASOS MEASURED A SUSTAINED WIND OF 68 MPH (59 KT) AND A GUST OF 87 MPH (76 KT). THIS WAS THE HIGHEST OFFICIAL RECORDED WIND SPEED OF IRMA ACROSS THE NWS JACKSONVILLE COUNTY WARNING AREA. AT 3:41 AM, THE ASOS AT THE JACKSONVILLE INTERNATIONAL AIRPORT MEASURED SUSTAINED WINDS OF 59 MPH (51 KT) AND A GUST OF 86 MPH (75 KT) WITHIN THE SAME POTENT RAIN-BAND THAT STRETCHED EASTWARD ACROSS MAYPORT. THIS WAS THE MOST INTENSE RAINFALL AND WIND RAIN BAND THAT IMPACT THE AREA WITH IRMA. AT 3:41 AM, THE WEATHERFLOW SENSOR AT HUGUENOT PARK MEASURED SUSTAINED WINDS OF 66 MPH AND GUSTS TO 85 MPH, AGAIN UNDER THE SAME RAIN BAND. AT 3:42 AM, MULTIPLE TREES WERE BLOWN DOWN OUTSIDE OF THE NWS JACKSONVILLE OFFICE AT THE JACKSONVILLE INTERNATIONAL AIRPORT FOLLOWING THE 86 MPH WIND GUST. ONE TREE FELL ON THE NWS OFFICE SIGN AND DAMAGED IT. AT 4:30 AM, THE ROOF WAS BLOWN OFF OF A HOME IN THE SANS SOUCI NEIGHBORHOOD. AT 5:45 AM, THE ST. JOHNS RIVER AT MAIN STREET IN DOWNTOWN JACKSONVILLE REPORTED A WATER LEVEL OF 4.39 FT NAVD88, WHICH BROKE THE RECORD FROM HURRICANE DORA OF 4.12 FT NAVD88 SET IN 1964. AT 8:26 AM, THE ASOS AT CRAIG AIRFIELD MEASURED A WIND GUST OF 70 MPH. AT 10:09 AM,

THE ASOS AT NAVAL AIR STATION (NAS) JACKSONVILLE IN ORANGE PARK MEASURED A WIND GUST OF 67 MPH. AT 10:14 AM, A PEAK WIND GUST OF 69 MPH WAS MEASURED AT NAS JACKSONVILLE. AT 3:59 PM, AN EVACUEE IN SAN MARCO ALONG THE ST. JOHNS RIVER NEAR DOWNTOWN JACKSONVILLE REPORTED WATER ROSE INTO HIS HOME UP TO HIS NECK (ABOUT 5 FT INUNDATION IN HIS HOME). HISTORIC RECORD SETTING FLOODING OF THE ST. JOHNS RIVER AND TRIBUTARIES DUE TO COMBINATION OF ELEVATED WATER LEVELS FROM NOR'EASTER EVENT, HIGH ASTRONOMICAL TIDES, RIVER SURGE AND STORM RAINFALL FROM IRMA. THE RIVER GAUGE AT THE MAIN STREET BRIDGE IN DOWNTOWN JACKSONVILLE SURPASSED HURRICANE DORA 1964 RECORD FLOODING THE MORNING OF 9/11 AT LOW TIDE WITH A VALUE OF OVER 5 FT DATUM NAVD88 (DORA RECORD WAS 4.12 FT NAVD88 DATUM). THE RIVER AT THIS LOCATION CRESTED AROUND 12:30 PM AT 5.57 FT NAVD88, WHICH IS AN ALL TIME RECORD STAGE. MAJOR FLOODING IMPACTED THE ST. JOHNS RIVER BASIN, AND ABOUT 350 WATER RESCUES WERE CONDUCTED IN DUVAL COUNTY, ESPECIALLY IN THE RIVERSIDE, SAN MARCO AND DOWNTOWN JACKSONVILLE AREAS.

ST JOHNS

ST. JOHNS COUNTY WAS IMPACTED BY STRONG TROPICAL STORM WINDS, STORM SURGE AS WELL AS MULTIPLE TORNADOES DUE TO HURRICANE IRMA. ON 9/10, A MESONET STATION IN VILANO BEACH MEASURED A SUSTAINED WIND OF 47 MPH WITH GUSTS UP TO 54 MPH. AT 9:39 AM, THE ST. AUGUSTINE AIRPORT AWOS STATION MEASURED WINDS OF 39 MPH WITH GUSTS UP TO 53 MPH. AT 10:05 AM, THE VILANO BEACH MESONET STATION MEASURED A WINDS OF 56 MPH WITH GUSTS OF 62 MPH. AT 7:40 PM, A MESONET STATION 2 MILES NW OF ST. AUGUSTINE MEASURED A SUSTAINED WIND OF 30 MPH WITH GUSTS TO 50 MPH. AT 8:46 PM, THE ST. AUGUSTINE AIRPORT AWOS MEASURED A WIND GUST OF 58 MPH. ON 9/11 AT 12:46 AM, THE ST. AUGUSTINE AWOS AT THE AIRPORT MEASURED A SUSTAINED WIND OF 48 MPH (42 KT) AND A GUST OF 71 MPH (62 KT). AT 1:30 AM, A ROOF WAS BLOWN OFF OF A BARN AT THE 2500 BLOCK OF DEERWOOD LANE. AT 3:30 AM, MULTIPLE TREES WERE BLOWN DOWN AT THE TRINITY RESCUE MISSION FREEDOM FARM FACILITY. A ROOF WAS BLOWN OFF OF ONE OF THE BUILDINGS AND A FENCE WAS BLOWN DOWN.

BAKER

MULTIPLE TREES WERE BLOWN DOWN ACROSS THE COUNTY. LARGE TREES 18-20 INCHES IN DIAMETER WERE BLOWN DOWN ABOUT 3 MILES WNW OF MACCLENNY.

MARION

MARION COUNTY EXPERIENCED WIDESPREAD TREE AND POWER LINE DAMAGE FROM TROPICAL STORM FORCE WINDS. A LOCATION ABOUT 5 MILES ENE OF OCALA MEASURED A 24-HR RAINFALL TOTAL ON 9/10 OF 7.30 INCHES, WHICH WAS IN ADVANCE OF IRMA'S HEAVY RAINFALL BAND. AT 1 AM ON 9/11, TREES AND POWER LINES WERE BLOWN DOWN ABOUT 10 MILES SW OF SANTOS. AT 1 AM, TREES WERE BLOWN DOWN AND BLOCKED THE ROAD ALONG SE 50TH TERRACE. TREES AND POWER LINES WERE BLOWN DOWN OVER THE ROAD AT THE INTERSECTION OF SE 50TH TERRACE AND SE 21ST STREET IN OCALA. ADDITIONAL REPORTS OF TREES AND POWER LINES BLOWN DOWN CONTINUED THROUGH THE PRE-DAWN HOURS ON 9/11 AROUND OCALA WITH A REPORT OF A TREE BLOWN DOWN ONTO A ROOF ON SW 41ST AVENUE IN OCALA. AT 2:20 AM, POWER LINES WERE BLOWN DOWN INTO A YARD ON 38TH STREET IN OCALA, AND AT 2:40 AM, A 12-INCH IN DIAMETER CRUSHED A VEHICLE AND TORE A HOLE INTO A ROOF ALONG SE 47TH PLACE IN OCALA. AT 8:35 PM ON 9/11, A PUBLIC REPORT OF 5.42 INCHES ABOUT 5 MILES ENE OF OCALA WAS RELAYED AS A STORM TOTAL RAINFALL FROM IRMA.

NASSAU

ON 9/11, A PRIVATE WEATHER STATION ON DUNES ROW AT THE SOUTH END OF AMELIA ISLAND AT 60 FT ELEVATION MEASURED A WIND GUST OF 106 MPH, BETWEEN 1 AM AND 2:30 AM. AT 3 AM, SEVERAL TREES WERE BLOWN DOWN ONTO HOMES NEAR FERNANDINA BEACH. AT 2 AM, THE FERNANDINA BEACH NOS TIDE GAUGE MEASURED WATER LEVEL RISES OF 3.5 TO 4 FT ABOVE MHHW DATUM.

CLAY

CLAY COUNTY EXPERIENCED WIDESPREAD WIND DAMAGE INCLUDING TREES DOWN, POWER LINES DOWN, AND STRUCTURAL DAMAGE DUE TO TROPICAL STORM FORCE WINDS. RAPID RIVER RISES AND EXTREMELY HEAVY RAINFALL CAUSED HISTORIC RIVER FLOODING ALONG THE ST. JOHNS RIVER AND BLACK CREEK, AS WELL AS TRIBUTARIES OF THESE RIVERS. AT 3:04 AM, 3 FT OF STORM SURGE ABOVE MHHW WAS REPORTED AT THE I-295 BRIDGE AND THE ST. JOHNS RIVER. NUMEROUS RIVER FRONT HOMES LOST PROPERTY AND HAD EXTENSIVE DOCK AND PIER DAMAGE, INCLUDING MANY STRUCTURES AND BOATS WASHED AWAY FROM THE SURGE. RIVER WATERS ROSE TO LEVELS EXCEEDING PRIOR MAJOR STAGE RECORDS. SEVERAL HELICOPTER RESCUES OCCURRED ALONG BLACK CREEK.

CAMDEN

TREES AND POWER LINES WERE DAMAGED NEAR SAINT MARYS DUE TO TROPICAL STORM FORCE WINDS. DOZENS OF PEOPLE WERE RESCUED BY BOATS DUE TO STORM SURGE AND RAINFALL FLOODING. LANGS MARINE IN ST. MARYS WAS HEAVILY DAMAGED, WITH DOCKS, PIERS AND BOATS DAMAGED AS WELL ALONG THE ST. MARYS RIVER DUE TO BOTH STORM SURGE AND TROPICAL STORM WINDS.

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Legend:
I-Incomplete Data
E-Estimated

NWS JAX

Appendix D – Post-Tropical Cyclone Report from the Melbourne NWS WFO

044
ACUS72 KMLB 292144 CCA
PSHMLB

POST TROPICAL CYCLONE REPORT...HURRICANE IRMA
NATIONAL WEATHER SERVICE MELBOURNE FL
545 PM EDT FRI SEP 29 2017

NOTE: THE DATA SHOWN HERE ARE PRELIMINARY....AND SUBJECT TO UPDATES
AND CORRECTIONS AS APPROPRIATE.

THIS REPORT INCLUDES EVENTS OCCURRING WHEN WATCHES AND/OR WARNINGS
WERE IN EFFECT...OR WHEN SIGNIFICANT FLOODING ASSOCIATED WITH IRMA
OR ITS REMNANTS WAS AFFECTING THE AREA.

UPDATED (SEPT 29): ADDED PATRICK AFB TORNADO AND UPDATED COUNTY
SPECIFIC DAMAGE AND INDIRECT FATALITY INFORMATION.

UPDATED (SEPT 25): NEW INFORMATION: RAIN TOTALS FROM USGUS AND COOP
WERE ADDED, UPDATED DAMAGE TOTALS FROM BREVARD, LAKE, SEMINOLE, AND
VOLUSIA COUNTIES, AND STORM SURGE AT TRIDENT PIER.

UPDATE (SEPT 23): ADDED INFORMATION REGARDING NORTH MERRITT ISLAND
TORNADO, BREVARD COUNTY DAMAGE ESTIMATES, AND PEAK WIND GUSTS, AND
NEW RAINFALL TOTALS.

MAX WINDS UPDATED (SEPT 20): ADDED ONE ADDITIONAL MAX SUSTAINED AND
PEAK WIND.

MAX WINDS UPDATE (SEPT 19): ADDITIONAL MAX SUSTAINED AND PEAK WIND
GUSTS ADDED.

RAINFALL UPDATE (SEPT 19): ADDITIONAL RAINFALL REPORTS ADDED.

TORNADO UPDATE (SEPT 19): NINE TORNADOES CONFIRMED IN BREVARD,
VOLUSIA, AND LAKE COUNTIES...ROCKLEDGE TORNADO UPDATED TO EF-1.

PRELIMINARY REPORTS OF DAMAGE ESTIMATES FOR SOME COUNTIES HAS BEEN
ADDED.

COUNTIES INCLUDED...VOLUSIA...LAKE...SEMINOLE...ORANGE...BREVARD...
OSCEOLA...INDIAN RIVER...SAINT LUCIE...MARTIN...OKEECHOBEE

A. LOWEST SEA LEVEL PRESSURE/MAXIMUM SUSTAINED WINDS AND PEAK GUSTS

METAR OBSERVATIONS...
NOTE: ANEMOMETER HEIGHT IS 10 METERS AND WIND AVERAGING IS 2 MINUTES

LOCATION ID LAT LON DEG DECIMAL	MIN PRES (MB)	DATE/ TIME (UTC)	MAX SUST (KT)	DATE/ TIME (UTC)	PEAK GUST (KT)	DATE/ TIME (UTC)
KDAB-DAYTONA BEACH INTL, FL 29.18 -81.05	984.8	11/0937	060/047	11/0246	050/068	11/0202
KFPR-FORT PIERCE/ST LUCIE CO INTL, FL 27.49 -80.36	987.8	11/0238	130/062	10/2306	130/077	10/2309
KLEE-LEESBURG INTL, FL 28.82 -81.80	977.0	11/0820	120/042	11/0735	120/060	11/0746
KMLB-MELBOURNE INTL, FL 28.10 -80.64	988.1	11/0532	999/999	99/9999	999/999	99/9999
KMCO-ORLANDO INTERNATIONAL, FL 28.42 -81.31	980.4	11/0720	110/051	11/0519	050/069	10/2244
KORL-ORLANDO EXECUTIVE, FL 28.54 -81.33	981.4	11/0804	110/049	11/0504	120/068	11/0530

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KSFB-ORLANDO/SANFORD, FL
28.77 -81.24   982.1  11/0746   130/048  11/0651   130/065 11/0731

KVRB-VERO BEACH, FL
27.65 -80.41   9999.0 /         999/999  99/9999   999/999 99/9999

KOBE-OKEECHOBEE COUNTY AP, FL
27.26 -80.85   9999.0 /         150/040  11/0315   130/062 11/0135

KCOF-PATRICK AFB/COCOA, FL
28.23 -80.60   9999.0           999/999  99/9999   999/999 99/9999

KSUA-WITHAM FIELD/STUART,FL
27.18 -80.22   9999.0 /         999/999  99/9999   999/999 99/9999

KTIX-SPACE COAST REGIONAL/TITUSVILLE, FL
28.51 -80.79   9999.0 /         999/999  99/9999   999/999 99/9999

KISM-KISSIMMEE GATEWAY AP
28.29 -81.43   990.4  11/0051   060/038  10/2349   080/058 11/0009

KXMR-CAPE CANAVERAL AFS SKID STRIP
28.46 -80.56   990.1  11/0441   110/051  11/0207   100/070 11/0214

KDED-DELAND MUNICIPAL AIRPORT
29.06 -81.28   9999.0 /         070/035  11/0215   070/055 11/0315

KTTS-SHUTTLE LANDING FACILITY
28.61 -80.69   9999.0 /         999/999  99/9999   999/999 99/9999

REMARKS: DATA FROM THE MELBOURNE (KMLB) ASOS, VERO BEACH (KVRB) ASOS,
SPACE COAST REGIONAL AIRPORT (KTIX), PATRICK AIR FORCE BASE (KCOF),
WITHAM FIELD AIRPORT IN STUART (KSUA), AND THE SHUTTLE LANDING
FACILITY (KTTS) WERE UNAVAILABLE.


NON-METAR OBSERVATIONS...US AIR FORCE WIND TOWERS...
-------------------------------------------------------------------------
NOTE: ANEMOMETER HEIGHT IN FEET INDICATED UNDER MAXIMUM SUSTAINED
WIND, IF KNOWN.
-------------------------------------------------------------------------
LOCATION  ID    MIN    DATE/     MAX      DATE/     PEAK    DATE/
LAT  LON        PRES   TIME      SUST     TIME      GUST    TIME
DEG DECIMAL     (MB)   (UTC)     (KT)     (UTC)     (KT)    (UTC)
-------------------------------------------------------------------------
KSC0001 - USAF TOWER 1
28.43 -80.57                    MMM/MMM  MM/MMMM   108/045  11/0220
                                12 FEET
KSC0003 - USAF TOWER 3
28.46 -80.53                    102/049  11/0202   MMM/MMM  MM/MMMM
                                12 FEET
KSC BALLOON LAUNCH FACILITY
28.47 -80.56                    MMM/MMM  MM/MMMM   MMM/102  MM/MMMM
                                30 FEET
KSC0001 - USAF TOWER 1
28.43 -80.57                    090/068  11/0220   100/082  11/0220
                                54 FEET
KSC0003 - USAF TOWER 3
28.46 -80.53                    110/058  11/0205   100/074  11/0205
                                54 FEET
KSC0019 - USAF TOWER 19
28.74 -80.70                    130/054  11/0315   130/070  11/0315
                                54 FEET
KSC0108 - USAF TOWER 108
28.54 -80.57                    090/049  11/0205   110/081  11/0205
                                54 FEET
KSC0211 - USAF TOWER 211
28.61 -80.62                    110/040  11/0220   090/073  11/0235
                                54 FEET
KSC0300 - USAF TOWER 300
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28.40 -80.65                    140/056  11/0230   100/079  11/0135
                                54 FEET
KSC0303 - USAF TOWER 303
28.46 -80.57                    100/039  11/0220   110/071  11/0220
                                54 FEET
KSC0311 - USAF TOWER 311
28.60 -80.57                    100/048  11/0220   080/072  11/0210
                                54 FEET
KSC0403 - USAF TOWER 403
28.46 -80.59                    100/044  11/0220   090/072  11/0150
                                54 FEET
KSC0412 - USAF TOWER 412
28.61 -80.67                    103/039  11/0219   099/065  11/0218
                                12 FEET
KSC0412 - USAF TOWER 412
28.61 -80.67                    092/056  11/0219   092/076  11/0218
                                54 FEET
KSC0415 - USAF TOWER 415
28.66 -80.70                    090/037  11/0220   090/064  11/0215
                                54 FEET
KSC0418 - USAF TOWER 418
28.71 -80.73                    130/042  11/0145   160/069  11/0455
                                54 FEET
KSC0506 - USAF TOWER 506
28.52 -80.64                    080/042  11/0130   100/072  11/0230
                                54 FEET
KSC0509 - USAF TOWER 509
28.57 -80.66                    100/037  11/0220   100/065  11/0230
                                54 FEET
KSC1102 - USAF TOWER 1102
28.57 -80.59                    MMM/MMM  MM/MMMM   103/092  11/0210
                                162 FEET
KSC0021 - USAF TOWER 21
28.44 -80.56                    106/073  11/0218   MMM/MMM  MM/MMMM
                                204 FEET
KSC1102 - USAF TOWER 1102
28.57 -80.59                    MMM/MMM  MM/MMMM   087/092  11/0210
                                204 FEET
KSC0397 - USAF TOWER 397
28.63 -80.62                    076/081  11/0015   077/094  11/0015
                                259 FEET
KSC0397 - USAF TOWER 397
28.63 -80.62                    111/090  11/0239   104/101  11/0239
                                458 FEET

REMARKS: UNITED STATES AIR FORCE (USAF) HAVE A 1-MINUTE AVERAGING
PERIOD FOR SUSTAINED WINDS.

NON-METAR OBSERVATIONS...OTHER STATIONS...
NOTE: ANEMOMETER HEIGHT IN METERS AND WIND AVERAGING PERIOD IN
MINUTES INDICATED UNDER MAXIMUM SUSTAINED WIND IF KNOWN.
-------------------------------------------------------------------
LOCATION  ID    MIN    DATE/     MAX      DATE/     PEAK    DATE/
LAT  LON        PRES   TIME      SUST     TIME      GUST    TIME
DEG DECIMAL     (MB)   (UTC)     (KT)     (UTC)     (KT)    (UTC)
-------------------------------------------------------------------
KFLDAYTO14 - WEATHERSTEM DAYTONA BEACH (EMBRY RIDDLE)
29.19 -81.05                    140/061  11/0324   100/070  11/0205

EW9392 - DAYTONA INTERNATIONAL SPEEDWAY TOWER ROOF (175 FEET)
29.19 -81.07                    045/039  11/0315   030/068  11/0315

EW5900 - DAYTONA INTERNATIONAL SPEEDWAY INFIELD (30 FEET)
29.18 -81.07                    023/036  11/0331   110/068  11/0301

XNSB - WEATHERFLOW NEW SMYRNA BEACH
29.04 -80.90                    090/053  11/0309   090/071  11/0324

XCCB - WEATHERFLOW MERRITT ISLAND (BANANA RIVER AT SR520)
28.36 -80.65                    080/049  11/0107   080/063  11/0037
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XPAR - WEATHERFLOW TITUSVILLE (PARRISH PARK NORTH)
28.63 -80.81 110/049 11/0220 110/065 11/0215

XJEN - WEATHERFLOW JENSEN BEACH
27.22 -80.20 140/048 10/2345 140/061 10/2345

XDAI - WEATHERFLOW MELBOURNE (DAIRY ROAD)
28.04 -80.64 120/037 11/0232 130/066 11/0417

XMER - WEATHERFLOW MERRITT ISLAND (BANANA RIVER AT SR528)
28.40 -80.66 100/051 11/0120 120/082 11/0140

XSTL - WEATHERFLOW ST. LUCIE (ST. LUCIE POWER PLANT)
27.35 -80.24 130/062 10/2304 130/087 11/2304

XCOA - WEATHERFLOW COCOA BEACH CLUB
28.31 -80.63 080/047 11/0022 080/072 11/0102

XVER - WEATHERFLOW VERO BEACH (CITY HALL)
27.63 -80.39 140/032 11/0219 140/054 11/0219

XAQU - WEATHERFLOW MELBOURNE BEACH (AQUARINA R&D LAB)
27.94 -80.49 090/048 10/2302 100/065 10/2327

XHOB - WEATHERFLOW HOBE SOUND
27.05 -80.17 110/040 10/2144 120/062 10/2309

KFLSTUAR26 - WEATHERSTEM STUART (SOUTH FORK HIGH)
27.08 -80.25 MMM/MMM MM/MMMM MMM/065 10/2155

XSPR - WEATHERFLOW ALTAMONTE SPRINGS (SPRING LAKE)
28.66 -81.41 120/029 11/0631 100/050 11/0456

XRDY - WEATHERFLOW HORIZON WEST (REEDY LAKE)
28.44 -81.63 170/039 11/0821 130/060 11/0606

XIND - WEATHERFLOW NEAR GRANT-VALKARIA (INDIAN RIVER)
27.96 -80.53 090/044 10/2306 090/058 10/2306

KFLORLAN212 - WEATHERSTEM ORANGE COUNTY (LAKE NONA MIDDLE SCHOOL)
28.37 -81.25 MMM/MMM MM/MMMM 071/066 11/0011

KFLORLAN179 - WEATHERSTEM ORANGE COUNTY (UNIVERSITY OF CENTRAL
FLORIDA) 28.59 -81.20 MMM/MMM MM/MMMM 170/053
11/0445

KFLKISSI30 - WEATHERSTEM OSCEOLA COUNTY (POINCIANA HIGH SCHOOL)
28.23 -81.49 MMM/MMM MM/MMMM 220/063 11/0113

WDW03 - WALT DISNEY WORLD ANIMAL KINGDOM (102 FEET)
28.42 -81.58 MMM/MMM MM/MMMM MMM/056 11/0700

WDW08 - WALT DISNEY WORLD EPCOT
28.37 -81.55 MMM/MMM MM/MMMM MMM/053 11/0450

WDW09 - WALT DISNEY WORLD MAGIC KINGDOM (98 FEET)
28.42 -81.58 MMM/MMM MM/MMMM MMM/062 11/0605

LKBDC - WALT DISNEY WORLD CONTEMPORARY RESORT (106 FEET)
28.42 -81.57 MMM/MMM MM/MMMM MMM/079 11/0050

LKBNT - WALT DISNEY WORLD TOWER OF TERROR (131 FEET)
28.36 -81.56 MMM/MMM MM/MMMM MMM/063 11/0430

KFLMELBO72 - MELBOURNE SHORES (34 FT)
27.96 -80.51 135/056 11/0325 135/075 11/0350

REMARKS: WEATHERFLOW SITE XIND STOPPED REPORTING AT 10/2316.
WEATHERFLOW SITE XSPR STOPPED REPORTING AT 11/1111.

B. MARINE OBSERVATIONS...
NOTE: ANEMOMETER HEIGHT IN METERS AND WIND AVERAGING PERIOD IN MINUTES INDICATED UNDER MAXIMUM SUSTAINED WIND IF KNOWN

LOCATION ID LAT LON DEG DECIMAL	MIN PRES (MB)	DATE/ TIME (UTC)	MAX SUST (KT)	DATE/ TIME (UTC)	PEAK GUST (KT)	DATE/ TIME (UTC)
BUOY 41009 28.52 -80.19	992.2	11/0830	090/049	11/0250	090/066	11/0250
TRDF1 - PORT CANAVERAL (TRIDENT PIER) 28.42 -80.59	990.2	11/0700	153/046	11/0942	142/059	11/0742

REMARKS: TRIDENT PIER TRDF1 STOPPED REPORTING AT 11/0441Z.

C. STORM TOTAL RAINFALL FROM 1200 UTC SEP 09 UNTIL 1200 UTC SEP 12

CITY/TOWN LAT LON DEG DECIMAL	COUNTY	ID	RAINFALL (IN)	
FT. PIERCE WP (COOP) 27.44 -80.35	ST. LUCIE	FPCF1	21.66	
CHRISTMAS (SPOTTER) 28.57 -81.02	ORANGE	ORA-048	17.44	
FT. PIERCE (COCORAHS) 27.56 -80.40	ST. LUCIE	FL-SL-41	17.25	
FT. PIERCE (AIRPORT ASOS) 27.49 -80.37	ST. LUCIE	KFPR	15.88	
FT. PIERCE (SFWMD) 27.47 -80.47	ST. LUCIE	NCSF1	15.18	
INDIAN RIVER (FAWN) 27.62 -80.57	INDIAN RIVER	IRVF1	14.15	
UNION PARK (COCORAHS) 28.56 -81.17	ORANGE	FL-OR-10	13.79	
PALM SHORES (COCORAHS) 28.24 -80.68	BREVARD	FL-BV-20	13.74	
PALM BAY (COCORAHS) 27.95 -80.64	BREVARD	FL-BV-59	13.23	
MIMS (COCORAHS) 28.69 -80.99	VOLUSIA	FL-VL-49	12.87	
LAKE MARY (USGS) 28.79 -81.41	LAKE	LSPF1	12.46	
UNION PARK (COCORAHS) 28.59 -81.22	ORANGE	FL-OR-19	12.36	
OVIEDO (COCORAHS) 28.66 -81.25	SEMINOLE	FL-SM-12	12.14	
VERO BEACH (COCORAHS) 27.64 -80.48	INDIAN RIVER	FL-IR-36	12.10	
CAPE CANAVERAL* (ASOS) 28.48 -80.57	BREVARD	KXMR	12.08	I
OVIEDO (COCORAHS) 28.64 -81.17	SEMINOLE	FL-SM-20	12.06	

ORANGE (COCORAHS) 28.59 -81.11	ORANGE	FL-OR-23	12.05
YEEHAW JUNCTION (SJRWMD) 27.70 -80.90	OSCEOLA	M	12.00
SANFORD (COOP) 28.81 -81.28	SEMINOLE	SFNF1	11.95
MELBOURNE (ASOS) 28.10 -80.65	BREVARD	KMLB	11.84
DE LAND (COCORAHS) 29.10 -81.36	VOLUSIA	FL-VL-9	11.82
10 MILE CREEK (SFWMD) 27.40 -80.43	ST. LUCIE	TMWF1	11.82
MELBOURNE WFO (COOP) 28.11 -80.65	BREVARD	MLBF1	11.82
APOPKA (COCORAHS) 28.67 -81.46	ORANGE	FL-OR-43	11.80
GENEVA (USGS) 28.71 -81.04	SEMINOLE	GNEF1	11.74
MT. PLYMOUTH (COOP) 28.79 -81.53	LAKE	PLTF1	11.59
APOPKA (COCORAHS) 28.68 -81.47	ORANGE	FL-OR-16	11.58
PORT ST. LUCIE (COCORAHS) 27.30 -80.36	ST. LUCIE	FL-SL-46	11.55
DE LAND (COCORAHS) 29.04 -81.33	VOLUSIA	FL-VL-21	11.53
TITUSVILLE (COCORAHS) 28.63 -80.86	BREVARD	FL-BV-74	11.38
RANSOM RD - NASA (SJRWMD) 28.51 -80.68	BREVARD	M	11.34
TITUSVILLE (COCORAHS) 28.63 -80.86	BREVARD	FL-BV-38	11.33
LADY LAKE (COCORAHS) 28.95 -81.94	LAKE	FL-LK-22	11.26
CHULUOTA (COCORAHS) 28.65 -81.12	SEMINOLE	FL-SM-8	11.22
ROCK SPRINGS WELL (SJRWMD) 28.77 -81.44	ORANGE	M	11.16
PALM BAY (COCORAHS) 27.95 -80.64	BREVARD	FL-BV-1	11.10
VERO BEACH (COCORAHS) 27.61 -80.39	INDIAN RIVER	FL-IR-27	11.04
LADY LAKE (COCORAHS) 28.89 -81.94	LAKE	FL-LK-16	11.03
APOPKA (FAWN) 28.64 -81.55	ORANGE	POPF1	11.01
LADY LAKE (COCORAHS) 28.92 -81.91	LAKE	FL-LK-21	10.80

PALM BAY STP (SJRWMD) 28.02 -80.60	BREVARD	M	10.67
L. BUENA VISTA (REEDY CREEK) 28.39 -81.52	ORANGE	M	10.65
LAKE APOPKA NSRA (SJRWMD) 28.65 -81.57	ORANGE	M	10.65
YEEHAW JUNCTION (SFWMD) 27.68 -81.02	OSCEOLA	YEHF1	10.61
VERO BEACH (COCORAHS) 27.64 -80.45	INDIAN RIVER	FL-VL-24	10.61
BAY LAKE (COCORAHS) 28.36 -81.63	ORANGE	FL-OR-35	10.59
BITHLO (USGS) 28.44 -81.17	ORANGE	WELF1	10.54
STUART (COOP) 27.19 -80.24	MARTIN	STRF1	10.53
PALM BAY PUB WRK (SJRWMD) 27.99 -80.70	BREVARD	M	10.52
ORLANDO (COCORAHS) 28.57 -81.39	ORANGE	FL-OR-27	10.51
UMATILLA (FAWN) 28.93 -81.65	LAKE	UMLF1	10.49
PORT ST. LUCIE (COCORAHS) 27.32 -80.31	ST. LUCIE	FL-SL-19	10.36
MAGIC KINGDOM (REEDY CREEK) 28.43 -81.58	ORANGE	M	10.29
FT. WILDERNESS (REEDY CREEK) 28.41 -81.56	ORANGE	M	10.21
WDW SERVICE AR (REEDY CREEK) 28.38 -81.59	ORANGE	M	10.21
LEESBURG (COCORAHS) 28.84 -81.91	LAKE	FL-LK-30	10.13
VERO BEACH (COCORAHS) 27.60 -80.42	INDIAN RIVER	FL-IR-26	10.11
PARRISH PARK (SJRWMD) 28.76 -80.88	BREVARD	M	10.07
PINE MEADOWS C A (SJRWMD) 28.88 -81.66	LAKE	M	10.05
PIERSON (USGS) 29.23 -81.49	VOLUSIA	LGRF1	10.03
PALM SHORES (COCORAHS) 28.19 -80.68	BREVARD	FL-BV-2	10.01
VERO BEACH (COCORAHS) 27.64 -80.42	INDIAN RIVER	FL-IR-15	10.00

REMARKS:
*THE LAST OBSERVATION FROM THE CAPE CANAVERAL ASOS (KXMR) OCCURRED AT 0441 UTC SEP 11.

THIS REPORT ONLY INCLUDES VALUES OF 10 INCHES OR GREATER. A PUBLIC INFORMATION STATEMENT (PNS) WILL BE ISSUED WITH ALL THE RAINFALL TOTALS GATHERED ACROSS EAST CENTRAL FLORIDA. THIS INFORMATION IS PRELIMINARY AND MAY CHANGE AS MORE INFORMATION IS RECEIVED.

D. INLAND FLOODING...

ST. LUCIE...REPORTS THAT US 1 AT ORANGE AVE IS IMPASSABLE DUE TO FLOODING

ST. LUCIE...REPORTS OF FLOODING IN A HOME ON EL RANCHO DR IN FORT PIERCE

ST. LUCIE.....UPDATED...A 1 MILE STRETCH OF US 1 FROM ORANGE AVE TO VIRGINIA AVE IS IMPASSABLE DUE TO FLOODING

ST. LUCIE...PHOTO AND REPORT RELAYED VIA SOCIAL MEDIA OF WATER INSIDE A HOME NEAR 25TH ST AND VIRGINIA AVE

ST. LUCIE...PHOTO RELAYED VIA SOCIAL MEDIA OF HOME AND PARKED CARS FLOODED

INDIAN RIVER...INDIAN RIVER COUNTY SHERIFF AND FELLSMERE POLICE RESCUED 12 PEOPLE FROM FLOOD WATERS.

BREVARD...REPORTS OF FLOOD WATER UP TO MAILBOXES

BREVARD...PHOTOS RELAYED VIA SOCIAL MEDIA OF SIGNIFICANT FLOODING ON DESOTO PARKWAY IN SATELLITE BEACH

BREVARD...VIDEO RELAYED VIA SOCIAL MEDIA OF ANKLE DEEP FLOODING ALONG EBER BLVD IN WEST MELBOURNE

BREVARD...VIDEO RELAYED VIA SOCIAL MEDIA OF FLOODING AT US 1 AND FAY BLVD

BREVARD...REPORT VIA SOCIAL MEDIA OF WAIST DEEP FLOODING AND DEEP WATER IN HOMES ON 12TH AVE NEAR S RAMONA IN INDIALANTIC.

VOLUSIA...PHOTO RELAYED VIA SOCIAL MEDIA OF SEVERE FLOODING ALONG BEACH STREET IN DAYTONA BEACH

VOLUSIA...DAYTONA BEACH POLICE REPORT SIGNIFICANT FLOODING EAST OF US 1

VOLUSIA...DAYTONA BEACH POLICE REPORT SIGNIFICANT FLOODING EAST OF US 1

ORANGE...FIRE DEPT AND NATIONAL GUARD RESCUING RESIDENTS FROM FLOODED HOMES

E. MAXIMUM STORM SURGE AND STORM TIDE...
OFFICIAL TIDE GAUGES NOTED WITH LEADING G

COUNTY	CITY/TOWN OR LOCATION	SURGE (FT)	TIDE (FT)	DATE/ TIME	BEACH EROSION
BREVARD	G TRIDENT PIER	4.20	4.18	11/0318	MODERATE

REMARKS: STORM TIDE DATUM REFERENCED TO MHHW.

F. TORNADOES...

(DIST)CITY/TOWN LAT LON (DEG DECIMAL DESCRIPTION	COUNTY	DATE/ TIME(UTC)	EF SCALE (IF KNOWN)
MELBOURNE BEACH TORNADO	BREVARD	10/1319	EF-0

28.07 -80.56

BASED ON A NWS STORM SURVEY, A WATERSPOUT MOVED ONSHORE MELBOURNE BEACH NEAR AVENUE B, CAUSING MINOR DAMAGE TO THE SECOND FLOOR OF TWO HOMES. THE BRIEF EF-0 TORNADO WITH WINDS ESTIMATED AT 70 TO 80 MPH CONTINUED INLAND AND DISSIPATED JUST WEST OF HIGHWAY A1A.

TURKEY CREEK TORNADO BREVARD 10/1500 EF-1
28.03 -80.58

BASED ON A NWS STORM SURVEY, A WATERSPOUT THAT DEVELOPED ON THE INDIAN RIVER MOVED ONSHORE AND DAMAGED SEVERAL RESIDENCES ON WORTH COURT, INCLUDING A WATERFRONT HOME WHOSE SECOND FLOOR WAS REMOVED AND CARRIED DOWNWIND. THE EF-1 TORNADO (ESTIMATED 100 TO 110 MPH) CONTINUED ACROSS US-1, CAUSING MINOR ROOF DAMAGE TO A UNIVERSITY BUILDING. THE TORNADO THEN IMPACTED OVER A DOZEN MOBILE HOMES WITHIN PALM BAY ESTATES, SEVERAL OF WHICH WERE HEAVILY DAMAGED OR DESTROYED. THE TORNADO CONTINUED WEST, JUST TO THE NORTH OF TURKEY CREEK, DAMAGING MANY TREES AND SEVERAL ADDITIONAL HOMES BEFORE MOVING THROUGH A SCHOOL CAMPUS BEFORE DISSIPATING NEAR THE HARRIS CORPORATION.

INDIALANTIC TORNADO BREVARD 10/1524 EF-1
28.09 -80.57

A NWS STORM SURVEY REVEALED THAT A WATERSPOUT MOVED ONSHORE THE BARRIER ISLAND IN INDIALANTIC NEAR HIGHWAY A1A AND 1ST AVENUE. THE EF-1 TORNADO (WINDS ESTIMATED 90-100 MPH) REMOVED PART OF THE ROOF OF A BEACHFRONT CONDO AND CARRIED IT ACROSS THE HIGHWAY, WHERE IT LANDED ON A BANK. THE TORNADO THEN WEAKENED AS IT TRAVELED WEST-NORTHWEST, PRODUCING DAMAGE TO TREES AND ROOF SHINGLES AND SOFFITS OF SEVERAL HOMES ALONG A NARROW PATH ACROSS THE BARRIER ISLAND, EXITING TO THE INDIAN RIVER NEAR CEDAR LANE AND WEST RIVERIA BOULEVARD.

MIMS KILBEE STREET TORNADO BREVARD 10/2149 EF-2
28.69 -80.85

BASED ON A NWS STORM SURVEY, A TORNADO DEVELOPED NEAR THE NORTH END OF NAB STREET AND THE EAST END OF BENSON COURT IN MIMS. A PICKUP TRUCK NEAR THE CORNER OF BENSON COURT AND LISA DRIVE ROLLED ABOUT 30 FEET WEST INTO THE FENCE OF AN ADJACENT YARD. THE TORNADO STRENGTHENED TO EF-2 INTENSITY WITH ESTIMATED WIND SPEEDS OF 115 TO 125 MPH AS IT AFFECTED HOMES ON KILBEE STREET, TURNBULL ROAD, AND BREVARD ROAD. NUMEROUS HOMES WERE IMPACTED AND SEVERAL WERE LEFT UNINHABITABLE DUE TO SEVERE ROOF DAMAGE. A NUMBER OF TREES WERE SNAPPED AND UPROOTED AS THE TORNADO CONTINUED WEST NORTHWEST ACROSS OLD DIXIE HIGHWAY. THE TORNADO DISSIPATED SHORTLY AFTER CROSSING US HIGHWAY 1.

MIMS NORTHGATE TORNADO BREVARD 10/2201 EF-1
28.69 -80.86

BASED ON A NWS STORM SURVEY, AN EF-1 TORNADO, WITH ESTIMATED WIND SPEEDS BETWEEN 90 TO 95 MPH, SNAPPED AND UPROOTED SEVERAL TREES AS IT DEVELOPED NEAR OLD DIXIE HIGHWAY. THE TORNADO CONTINUED ACROSS US HIGHWAY 1 AND THE NORTHERN PORTION OF THE NORTHGATE MOBILE HOME AND RV PARK, DAMAGING OVER A DOZEN HOMES, SEVERAL OF WHICH EXPERIENCED PARTIAL ROOF REMOVAL. IN ADDITION, SEVERAL POWER POLES SNAPPED IN THE DEVELOPMENT AND ONE LANDED ON A HOME. THE TORNADO ALSO ROLLED SEVERAL UNOCCUPIED RV'S ONTO TO THEIR SIDES, WHICH WERE BEING STORED IN A PARKING LOT BETWEEN US HIGHWAY 1 AND THE MOBILE HOME PARK.

UMATILLA TORNADO LAKE 10/2226 EF-1
28.94 -81.62

A NWS STORM SURVEY REVEALED AN EF-1 TORNADO WITH ESTIMATED WIND SPEEDS BETWEEN 95 AND 100 MPH DEVELOPED NEAR EAST 8TH AVENUE IN UMATILLA, UPROOTING AND SNAPPING SEVERAL TREES IN AN OPEN FIELD. THE TORNADO MOVED TOWARD A RESIDENTIAL NEIGHBORHOOD BETWEEN EAST 8TH AVENUE AND EAST COLLINS STREET AND PEELED BACK THE ROOFS FROM

SEVERAL HOMES AND UPROOTED NUMEROUS TREES. DAMAGE CONTINUED INTO NORTH LAKE COMMUNITY PARK WHERE A SCOREBOARD WAS TOPPLED AND THREE POWER LINES WERE SNAPPED. THE TORNADO MOVED ACROSS LAKE PEARL AND INTO THE OLDE MILL RV RESORT WHERE IT DESTROYED APPROXIMATELY TEN RECREATIONAL VEHICLES AND DAMAGED AT LEAST 25 OTHERS. THE TORNADO CONTINUED WEST TOWARD DOWNTOWN UMATILLA AND DAMAGED THE ROOFS OF THE UMATILLA INN, AN ELEMENTARY SCHOOL, AND A HOME ON BABB ROAD.

ORMOND BEACH TORNADO VOLUSIA 11/0104 EF-1
29.29 -81.06

BASED ON A NWS STORM SURVEY, A WATERSPOUT MOVED ONSHORE FROM THE HALIFAX RIVER NEAR DIX AVENUE AND NORTH BEACH STREET IN ORMOND BEACH, CAUSING TREE DAMAGE AND MINOR SIDING AND SHINGLE DAMAGE TO A FEW TWO STORY HOMES. THE TORNADO CONTINUED INLAND AND PRODUCED STRONG EF-1 DAMAGE (ESTIMATED 100 TO 110 MPH) TO SEVERAL HOMES AND TREES NEAR THE INTERSECTION OF HERNANDEZ AVENUE, NORTH RIDGEWOOD AVENUE AND ROSEWOOD AVENUE. SEVERAL HOMES SUSTAINED MAJOR ROOF DAMAGE. THE TORNADO THEN DOWNED TREES AND PRODUCED DEBRIS IMPACT AT THE ORMOND BEACH FIRE STATION 93 AND DAMAGING THE ROOFS OF TWO COMMERCIAL BUILDINGS NEAR US HIGHWAY 1 AND WILMETTE AVENUE. THE TORNADO DISSIPATED JUST WEST OF US HIGHWAY 1.

PATRICK AFB TORNADO BREVARD 11/0104 EF-1
28.23 -80.60

BASED ON A NWS STORM SURVEY, A WATERSPOUT MOVED ONSHORE FROM THE ATLANTIC AND CAUSED TORNADO DAMAGE AS IT CONTINUED ACROSS THE BARRIER ISLAND, AFFECTING PATRICK AIR FORCE BASE. THE EF-1 TORNADO (ESTIMATED 85-95 MPH) REMOVED THE ROOF FROM A SMALL BUILDING EAST OF HIGHWAY A1A, THEN PRODUCED MINOR TO MODERATE DAMAGE TO SEVERAL STORAGE BUILDINGS, MAINLY IN THE FORM OF PARTIAL LOSS OF ROOF COVERINGS AND BROKEN GLASS IN SOME EAST AND NORTH FACING WINDOWS. SEVERAL LARGE, STEEL CONEX STORAGE CONTAINERS WITHIN THE TORNADO PATH WERE ROLLED 100+ FEET DOWNWIND (NORTHWEST). DAMAGE ALSO OCCURRED TO ANTENNAS MOUNTED ON FREE STANDING TOWERS AND TO SOME SMALL TREES AND SHRUBS. THE TORNADO THEN WEAKENED AS IT APPROACHED THE BANANA RIVER.

ROCKLEDGE TORNADO BREVARD 11/0114 EF-1
28.28 -80.69

A NWS STORM SURVEY CONFIRMED THAT A WATERSPOUT MOVED ONSHORE ALONG ROCKLEDGE DRIVE NEAR RIVER WOODS DRIVE AND PRODUCED EF-1 TORNADO DAMAGE (WINDS ESTIMATED AT 95-105 MPH) ALONG A SHORT TRACK. APPROXIMATELY SIX HOMES SUSTAINED SIGNIFICANT ROOF DAMAGE AND NUMEROUS TREES WERE SNAPPED OR UPROOTED. A PORTION OF ONE ROOF WAS REMOVED AND AT LEAST ONE OTHER HOME HAD A PORTION OF ITS METAL ROOF PEELED BACK. SEVERAL HOMES ADJACENT TO THE AREA OF MOST SIGNIFICANT DAMAGE ALSO EXPERIENCED A LESSER DEGREE OF SHINGLE DAMAGE. AT LEAST ONE SCREEN PATIO WAS DESTROYED, SEVERAL OTHERS WERE DAMAGED AND SOME FENCES WERE BLOWN OVER AND CARRIED DOWNWIND.

NORTH MERRITT ISLAND TORNADO BREVARD 11/0148 EF-1
28.42 -80.68

A NWS STORM SURVEY CONFIRMED THAT A TORNADO FORMED ON NORTH MERRITT ISLAND WITHIN OR SOUTHEAST OF THE SAVANNAHS SUBDIVISION, PRODUCING STRONG EF-1 DAMAGE (WINDS ESTIMATED 100-110 MPH) TO NUMEROUS HOMES ON SAVANNAHS TRAIL. OVER A DOZEN HOMES SUSTAINED SIGNIFICANT SHINGLE DAMAGE AND APPROXIMATELY SIX POOL SCREEN ENCLOSURES WERE DESTROYED. NUMEROUS TREES WERE SNAPPED. THE TORNADO CONTINUED NORTHWEST AND CROSSED EAST HALL ROAD AND LEILANI LANE, PRODUCING TREE AND MINOR ROOF DAMAGE TO A FEW HOMES. THE TORNADO THEN TRAVELED THROUGH THE SOUTHERN PORTION OF THE ISLAND LAKES MOBILE HOME PARK AT EF-1 STRENGTH (ESTIMATED WINDS OF 95 TO 105 MPH) AND IMPACTED OVER 25 MOBILE HOMES. SEVERAL MOBILE HOMES WERE DESTROYED AND MANY OTHERS SUSTAINED MODERATE TO MAJOR DAMAGE (THE NEIGHBORHOOD WAS NEARLY COMPLETED EVACUATED FOR HURRICANE IRMA). THE TORNADO THEN WEAKENED, BUT TOPPLED THE STEEPLE AT THE ORSINO BAPTIST CHURCH, AFTER CROSSING NORTH COURTNEY BOULEVARD. TREE DAMAGE

AND MINOR ROOF DAMAGE OCCURRED ALONG THE REMAINDER OF THE PATH UNTIL THE INDIAN RIVER WAS REACHED.

G. STORM IMPACTS BY COUNTY...

COUNTY	DEATHS	INJURIES	EVACUATIONS	DESCRIPTION
BREVARD	0	0	3667	PRELIMINARY REPORT: OVER 7,132 HOMES SUSTAINED DAMAGE, INCLUDING 400 WITH MAJOR DAMAGE AND 45 DESTROYED. INITIAL PROPERTY DAMAGE ESTIMATE OF $30.0 MILLION. FLORIDA POWER AND LIGHT REPORTS 100% OF CUSTOMERS IN BREVARD COUNTY LOST POWER DURING THE HURRICANE. MODERATE TO LOCALLY SEVERE BEACH EROSION WAS OBSERVED.
INDIAN RIVER	0	0	MMMM	PRELIMINARY REPORT OF 72 STRUCTURES WITH MINOR DAMAGE, AND 6 WITH MAJOR DAMAGE. TOTAL ESTIMATED DAMAGE COST OF $1.5 MILLION.
LAKE	0	0	4413	PRELIMINARY REPORT OF 110 COMMERCIAL BUILDINGS: 92 WERE AFFECTED, 16 SUSTAINED MINOR DAMAGE, AND 2 SUSTAINED MAJOR DAMAGE. TOTAL DAMAGE TO COMMERCIAL BUILDINGS IS APPROXIMATELY $3.5 MILLION. PRELIMINARY REPORT OF 2,615 RESIDENTIAL BUILDINGS: 1,895 WERE AFFECTED, 632 SUSTAINED MINOR DAMAGE, 80 SUSTAINED MAJOR DAMAGE, 7 WERE DESTROYED. TOTAL DAMAGE TO RESIDENTIAL BUILDINGS IS APPROXIMATELY $33 MILLION. OUT OF 160,707 CUSTOMERS IN MARTIN COUNTY, 123,467 OR 77% LOST POWER DURING THE HURRICANE.
MARTIN	0	0	MMMM	PRELIMINARY REPORT: 180 AFFECTED STRUCTURES, 192 WITH MINOR DAMAGE, 8 WITH MAJOR DAMAGE, 1 DESTROYED. TOTAL ESTIMATED DAMAGE COST OF $4.3 MILLION.
OKEECHOBEE	0	0	MMMM	PRELIMINARY REPORT: 585 AFFECTED RESIDENTIAL STRUCTURES, 239 WITH MINOR DAMAGE, 99 WITH MAJOR DAMAGE, AND 8 DESTROYED. TOTAL ESTIMATED DAMAGE COST OF $157 MILLION.
ORANGE	1	0	MMMM	ONE DIRECT FATALITY; VEHICLE ACCIDENT DURING HURRICANE AND 5 INDIRECT FATALITIES (3 CARBON MONOXIDE AND 2 ELECTROCUTION).
OSCEOLA	0	0	MMMM	PRELIMINARY REPORT OF RESIDENTIAL AND BUSINESS STRUCTURES: 183 WERE AFFECTED, 3,934 WITH MINOR DAMAGE, 95 WITH MAJOR DAMAGE, 23 DESTROYED. TOTAL ESTIMATED DAMAGE COST OF $100 MILLION.
ST. LUCIE	0	0	2365	TOTAL OF 150,000 HOMES/BUSINESSES LOST POWER. TOTAL ESTIMATED DAMAGE TO BUSINESS STRUCTURES IS APPROXIMATELY $25 MILLION.
SEMINOLE	0	0	MMMM	PRELIMINARY REPORT OF 7,125 RESIDENTIAL STRUCTURES: 4,939 WERE AFFECTED, 698 WITH MINOR DAMAGE, 162 WITH MAJOR DAMAGE, 24 WERE DESTROYED, AND 1,302 WERE INACCESSIBLE. TOTAL ESTIMATED DAMAGE TO RESIDENTIAL STRUCTURES IS APPROXIMATELY $393 MILLION. PRELIMINARY REPORT OF 305 BUSINESS STRUCTURES: 191 WERE AFFECTED, 64 WITH MINOR DAMAGE, 18 WITH MAJOR DAMAGE, 1 WAS DESTROYED, AND 31 WERE INACCESSIBLE. TOTAL ESTIMATED DAMAGE TO BUSINESS STRUCTURES IS APPROXIMATELY $150.2 MILLION.
VOLUSIA	0	0	MMMM	PRELIMINARY REPORT OF 4,811 RESIDENTIAL AND BUSINESS STRUCTURES: 3,457 WERE AFFECTED, 1,003 WITH MINOR DAMAGE, 329 WITH MAJOR DAMAGE, 21 DESTROYED. TOTAL ESTIMATED DAMAGE COST OF $332 MILLION. MODERATE TO LOCALLY SEVERE BEACH EROSION WAS OBSERVED. ONE INDIRECT FATALITY (CARBON MONOXIDE).

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LEGEND:
I-INCOMPLETE DATA
E-ESTIMATED
9999 OR MMMM - DENOTES MISSING DATA.

SPRATT/ULRICH/BLOTTMAN/SMITH/COMBS/RODRIGUEZ/

Appendix E – Post-Tropical Cyclone Report from the Tampa Bay NWS WFO

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701
ACUS72 KTBW 141642
PSHTBW

POST TROPICAL CYCLONE REPORT...HURRICANE IRMA
NATIONAL WEATHER SERVICE TAMPA BAY AREA - RUSKIN FL
1241 PM EDT THU SEP 14 2017


NOTE: THE DATA SHOWN HERE ARE PRELIMINARY....AND SUBJECT TO UPDATES
AND CORRECTIONS AS APPROPRIATE.

THIS REPORT INCLUDES EVENTS OCCURRING WHEN WATCHES AND/OR WARNINGS
WERE IN EFFECT...OR WHEN SIGNIFICANT FLOODING ASSOCIATED WITH IRMA
OR ITS REMNANTS WAS AFFECTING THE AREA.

COUNTIES INCLUDED...INLAND LEVY...INLAND CITRUS...SUMTER...
INLAND HERNANDO...INLAND PASCO...INLAND HILLSBOROUGH...PINELLAS...
POLK...INLAND MANATEE...HARDEE...HIGHLANDS...INLAND SARASOTA...
DE SOTO...INLAND CHARLOTTE...INLAND LEE...COASTAL LEVY...
COASTAL HERNANDO...COASTAL PASCO...COASTAL HILLSBOROUGH...
COASTAL MANATEE...COASTAL SARASOTA...COASTAL CHARLOTTE...
COASTAL LEE




A. LOWEST SEA LEVEL PRESSURE/MAXIMUM SUSTAINED WINDS AND PEAK GUSTS
------------------------------------------------------------------------
METAR OBSERVATIONS...
NOTE: ANEMOMETER HEIGHT IS 10 METERS AND WIND AVERAGING IS 2 MINUTES
------------------------------------------------------------------------
LOCATION  ID    MIN    DATE/     MAX      DATE/     PEAK    DATE/
LAT  LON        PRES   TIME      SUST     TIME      GUST    TIME
DEG DECIMAL     (MB)   (UTC)     (KT)     (UTC)     (KT)    (UTC)
------------------------------------------------------------------------
KBKV-BROOKSVILLE FL
28.47 -82.45    973.1 11/0553   020/033  11/0335   030/056 11/0333

KTPA-TAMPA INTERNATIONAL AIRPORT FL
27.97 -82.53    971.8 11/0553   350/040  11/0309   330/058 11/0343

KPIE-SAINT PETERSBURG FL
27.91 -82.69    975.0 11/0553   330/043  11/0553   360/064 11/0310

KSPG-ALBERT WHITTED FL
27.77 -82.63    973.8 11/0453   030/047  11/0053   030/060 11/0110

KSRQ-SARASOTA FL
27.40 -82.55    975.5 11/0353   350/042  11/0120   340/061 11/0226

KMCF-MACDILL AIRFORCE BASE FL
27.86 -82.52    980.3 11/0240   030/032  11/0109   030/045 11/0119

KGIF-WINTER HAVEN FL
28.05 -81.75    971.5 11/0453   120/044  11/0445   110/066 11/0445

KPGD-PUNTA GORDA FL
26.92 -81.99    962.7 11/0053   050/044  10/2153   030/064 10/2348

KFMY-FORT MYERS PAGE FIELD FL
26.58 -81.97    952.4 10/2253   040/050  10/2216   020/073 10/2216

KRSW-REGIONAL SOUTHWEST FL
26.54 -81.76    958.1 10/2353   060/054  10/2153   070/077 10/2150
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KRSW-REGIONAL SOUTHWEST FL
26.54 -81.76 958.1 10/2353 060/054 10/2153 070/077 10/2150

REMARKS:

NON-METAR OBSERVATIONS...
NOTE: ANEMOMETER HEIGHT IN METERS AND WIND AVERAGING PERIOD IN
MINUTES INDICATED UNDER MAXIMUM SUSTAINED WIND IF KNOWN

LOCATION ID LAT LON DEG DECIMAL	MIN PRES (MB)	DATE/ TIME (UTC)	MAX SUST (KT)	DATE/ TIME (UTC)	PEAK GUST (KT)	DATE/ TIME (UTC)
KVVG-THE VILLAGES FL 28.90 -82.00			050/032	110205	050/047	110205
KLAL-LAKELAND L. FIELD FL 27.99 -82.01			080/044	110415	080/058	110415
KLEE-LEESBURG FL 28.82 -81.81			130/037	110753	130/060	110753
KVDF-TAMPA EXECUTIVE 28.01 -82.34			350/027	110435	350/048	110455
KINF-INVERNESS AIRPORT 28.81 -82.32			020/022	101755	020/029	101755
KPCM-PLANT CITY 28.00 -82.16			040/036	110355	040/046	110355
KBOW-BARTOW 27.94 -81.78			050/037	110135	070/056	110255

REMARKS:

B. MARINE OBSERVATIONS...
NOTE: ANEMOMETER HEIGHT IN METERS AND WIND AVERAGING PERIOD IN
MINUTES INDICATED UNDER MAXIMUM SUSTAINED WIND IF KNOWN

LOCATION ID LAT LON DEG DECIMAL	MIN PRES (MB)	DATE/ TIME (UTC)	MAX SUST (KT)	DATE/ TIME (UTC)	PEAK GUST (KT)	DATE/ TIME (UTC)
CDRF1-CEDAR KEY-CMAN 29.14 -83.03	977.2	11/0936	258/031	11/1536	006/047	11/0730
OLD PORT TAMPA-PORTS 27.86 -82.55	972.5	11/0418	348/050		11/0254	348/060
SAINT PETERSBURG-PORTS 27.77 -82.63	975.1	11/0506	010/033	10/2342	353/052	11/0248

REMARKS:

C. STORM TOTAL RAINFALL FROM 0000 UTC JUL 31 UNTIL 0000 UTC AUG 01

CITY/TOWN LAT LON DEG DECIMAL	COUNTY	ID	RAINFALL (IN)
WASTEPLANT 26.63 -81.76	LEE	WTEP	11.59
ROMP 89 CUMPRESSCO 28.36 -82.04	SUMTER	1834	11.34

ARCADIA 7.1 WSW 27.18 -81.96	DESOTO	FL-DS-1	11.34
AUBURNDALE 3.0 SSW 28.03 -81.82	POLK	FL-PK-01	11.00
WEBSTER CITY 28.61 -82.05	SUMTER	9074	10.60
FORT MYERS - PAGE FIELD 26.59 -81.86	LEE	PAGEFIEL	10.60
THE VILLAGES 2.8 ESE 28.90 -81.97	SUMTER	FL-ST-26	10.59
ROMP 30 ZOLFO SPRINGS 27.46 -81.80	HARDEE	2794	10.58
SEBRING 4.7 WNW 27.52 -81.53	HIGHLANDS	FL-HL-13	10.54
WITHLACOOCHEE RIVER AT T 28.48 -82.18	HERNANDO	6082	10.31
HERNANDO 1.6 N 28.93 -82.37	CITRUS	FL-CT-11	10.28
ROMP 116 (TSALA APOPKA C 28.96 -82.34	CITRUS	6734	10.19
POINCIANA PLACE 2.5 SSW 28.12 -81.50	POLK	FL-PK-53	10.14
ROMP 45 FORT MEADE 27.76 -81.79	POLK	1354	10.11
LEHIGH ACRES 26.61 -81.65	LEE	LEHI	10.07
TEN MILE CANAL NR DANIEL 26.55 -81.86	LEE	10MILE	10.03
PANA VISTA (LK PANASOFFK 28.81 -82.14	SUMTER	8974	9.98
BONITA SPRINGS UTILITIES 26.34 -81.75	LEE	BSUTIL	9.92
BABSON PARK 0.9 NW 27.84 -81.54	POLK	FL-PK-58	9.85
LAKE WALES 0.7 SE 27.89 -81.58	POLK	FL-PK-59	9.84
ARCADIA 27.23 -81.84	DESOTO	490	9.83
WHIDDEN PROPERTIES 26.95 -81.57	CHARLOTTE	WHID	9.76
SOUTHWEST INTERNATIONAL 26.54 -81.76	LEE	RSW	9.70
N. RESV 26.71 -81.84	LEE	NRESV	9.68
ROMP 74X DAVENPORT 28.16 -81.57	POLK	8094	9.64
ROMP 88 ROCK RIDGE	POLK	1874	9.62

28.31 -81.91			
ROMP 87 GREEN SWAMP (NW 28.22 -82.03	POLK	1254	9.61
ROMP 12 PRAIRIE CREEK (S 27.04 -81.74	DESOTO	2834	9.51
NORTH KISSIMMEE RIVR 27.75 -81.18	POLK	KREF	9.48
ROMP 44 WARNER SOUTHERN 27.82 -81.60	POLK	8054	9.46
AVON PARK 0.6 NW 27.60 -81.51	HIGHLANDS	FL-HL-10	9.42
LP-6 COLEMAN 28.81 -82.09	SUMTER	2774	9.26
INDIAN LAKES FIRE T 27.79 -81.33	POLK	INDIANL	9.21
LAKES REGIONAL PARK 26.53 -81.89	LEE	LAKES	9.20
THE VILLAGES 2.7 NNW 28.90 -81.97	SUMTER	FL-ST-13	9.18
ROMP 28 JOSEPHINE CREEK 27.37 -81.44	HIGHLANDS	2634	9.18
SEBRING 27.42 -81.40	HIGHLANDS	470	9.03
ROMP 13 TIPPEN BAY (SE D 27.07 -81.62	DESOTO	2614	8.96
BOWLING GREEN 27.64 -81.84	HARDEE	7114	8.94
ROMP 17 HORSE CREEK 27.17 -81.98	DESOTO	1554	8.94
SADDLE CREEK (N OF BARTO 27.94 -81.85	POLK	1774	8.90
ROMP 5 CECIL WEBB 26.95 -81.81	CHARLOTTE	2754	8.86
LAKE HENRY 28.08 -81.66	POLK	1814	8.84
OLGA 26.72 -81.68	LEE	OLGA	8.81
ROMP 15 LONG ISL MARSH (27.21 -81.66	DESOTO	7934	8.80
LOVERS KEY 26.39 -81.87	LEE	LOVERSKE	8.78
ROMP 26 BROWNSVILLE SCHO 27.30 -81.82	DESOTO	4334	8.77
JOSHUA 27.26 -81.61	DESOTO	241	8.72
LAKE HAMILTON 28.04 -81.64	POLK	1754	8.68

DADE CITY 28.35 -82.20	PASCO	311	8.67
ROMP 90 DADE CITY 28.36 -82.14	PASCO	6174	8.67
ROMP 76 OLD POLK CITY 28.18 -81.83	POLK	8114	8.66
ROMP 14 HICORIA (NR ARCH 27.15 -81.35	HIGHLANDS	7554	8.65
LAKE GIBSON 2 28.10 -81.95	POLK	2434	8.59
WILDWOOD II 28.86 -82.03	SUMTER	7034	8.57
FLORAL CITY POOL 28.75 -82.28	CITRUS	2014	8.52
ROMP 112 RUTLAND 28.88 -82.23	SUMTER	8434	8.48
COLEY (NR FROSTPROOF) 27.74 -81.53	POLK	6070	8.45
PEACE RIVER (SW DESOTO C 27.09 -82.01	DESOTO	7394	8.43
LAKE LOWERY 28.13 -81.69	POLK	6184	8.41
LECANTO 28.83 -82.50	CITRUS	275	8.41
VENUS 27.08 -81.34	HIGHLANDS	VENUSR	8.40
ROMP 25 LILY (SW HARDEE 27.37 -82.01	HARDEE	7954	8.40
TICK ISLAND-KISS RVR 27.69 -81.19	POLK	TICK	8.38
ROMP 16.5 FORT OGDEN 27.06 -81.88	DESOTO	5094	8.38
AVON PARK BOMB RANGE 27.63 -81.26	HIGHLANDS	AVONPK	8.23
INVERNESS POOL 28.85 -82.32	CITRUS	2034	8.20
ROMP 43XX AVON PARK (ALP 27.60 -81.48	HIGHLANDS	7174	8.19
HERNANDO POOL 28.90 -82.37	CITRUS	2054	8.13
ROMP 16 JOSHUA CREEK 27.19 -81.77	DESOTO	1574	8.04
ROMP 9 NORTH PORT 27.08 -82.15	SARASOTA	7834	8.03
JOHNSON POND (NE CITRUS 29.50 -82.38	CITRUS	2294	7.98
ROMP TR 1-2 TROPICAL GUL 26.84 -81.98	CHARLOTTE	7754	7.98

CREEK RANCH 28.04 -81.46	POLK	CREEKR	7.93
CHIEFLAND 8.5 ENE 29.50 -82.72	LEVY	FL-LV-9	7.92
SEBRING 27.46 -81.35	HIGHLANDS	SEBRNG	7.92
ROMP 28X LAKE PLACID 27.27 -81.34	HIGHLANDS	1494	7.82
LORIDA-MCARTHUR PROP 27.44 -81.21	HIGHLANDS	MCARTH	7.79
ROMP 134 WILLISTON 29.44 -82.46	LEVY	1114	7.77
LESLIE HEIFNER (NR FLYIN 28.75 -82.23	CITRUS	6774	7.72
NORTH KISSIMMEE RIVR 27.66 -81.13	POLK	S65AMW	7.69
CHINSEGUT HILL 28.62 -82.37	HERNANDO	9174	7.65
ST PETE 42 (HWY 54 NR LA 28.18 -82.52	PASCO	3014	7.58
MCINTOSH (ALONG HWY 39 N 28.07 -82.14	HILLSBOROUGH	5074	7.51
CYPRESS CREEK TMR-5 28.26 -82.40	PASCO	2734	7.48
NORTH PORT 27.14 -82.34	SARASOTA	480	7.44
ROMP 73 WINTER HAVEN 28.02 -81.73	POLK	8034	7.43
ROMP TR 21-2 OZELLO 28.85 -82.60	CITRUS	1174	7.43
GATEWAY 26.57 -81.74	LEE	GATEWAY	7.38
WEEKI WACHEE 7.1 NNE 28.61 -82.54	HERNANDO	FL-HN-24	7.36
ROMP 105 HORSE LAKE (BRO 28.56 -82.40	HERNANDO	8454	7.33
ROMP TR 3-1 POINT LONESO 26.94 -82.22	CHARLOTTE	1594	7.33
BLOOMINGDALE 1.3 ESE 27.87 -82.24	HILLSBOROUGH	FL-HB-14	7.32
ROMP 131 (WILLISTON HIGH 29.33 -82.56	LEVY	4434	7.26
ROMP 32 MYAKKA HEAD 27.47 -82.06	MANATEE	1414	7.14
DV-2 DOVER 27.97 -82.15	HILLSBOROUGH	7714	7.12
ALVA	LEE	ALVA	7.05

26.71 -81.61			
ROMP 18 MURDOCK (ERN SAR 27.19 -82.13	SARASOTA	8514	7.00
DV-1 DOVER 27.99 -82.21	HILLSBOROUGH	1294	6.95
ROMP 35 (NW DESOTO CO AL 27.29 -82.04	DESOTO	3394	6.95
TAMPA SVC OFFICE (NR TAM 28.02 -82.35	HILLSBOROUGH	9274	6.87
RIVERVIEW 4.8 SSW 27.80 -82.34	HILLSBOROUGH	FL-HB-98	6.82
LAKE ISTOKPOGA 27.33 -81.25	HIGHLANDS	S68	6.82
BRONSON 29.40 -82.59	LEVY	230	6.81
ROMP TR 5-3 KNIGHTS TRAI 27.16 -82.40	SARASOTA	8574	6.79
ROMP 11 SHELL CREEK 26.98 -81.94	CHARLOTTE	1614	6.79
LAKE HATCHINEHA 28.05 -81.40	POLK	WRWX	6.78
YELLOW FEVER CREEK 26.68 -81.90	LEE	YELLOWFE	6.78
RUSKIN 1.8 ESE 27.71 -82.40	HILLSBOROUGH	FL-HB-44	6.78
ROMP TR 4-1 CASPERSEN (S 27.06 -82.44	SARASOTA	8634	6.71
STARKEY (NW JAY B. STARK 28.25 -82.65	PASCO	3154	6.69
ROMP 23 MYAKKA CITY 27.31 -82.18	MANATEE	1474	6.64
ROMP 33 WATERBURY (EAST 27.46 -82.26	MANATEE	7694	6.62
BROOKSVILLE 1.2 E 28.56 -82.37	HERNANDO	FL-HN-17	6.59
ROMP 61 LAKE MEDARD 27.91 -82.16	HILLSBOROUGH	1854	6.57
NORTH PORT 2.6 E 27.05 -82.15	SARASOTA	FL-SS-34	6.55
VALRICO 1.1 SE 27.93 -82.23	HILLSBOROUGH	FL-HB-3	6.52
S-161 (ALONG HARNEY RD) 28.02 -82.37	HILLSBOROUGH	6614	6.52
WOLFE (NR JUMPING GULLY 28.38 -82.50	PASCO	7254	6.49
ROMP TR 3-3 LEMON BAY 26.93 -82.33	CHARLOTTE	7594	6.49

ROMP CB-1NW KUKA (NR MAS 28.43 -82.48	PASCO	7274	6.47
SWFWMD HEADQUARTERS 28.47 -82.44	HERNANDO	7094	6.46
ROMP 39 (NR LITTLE MANAT 27.59 -82.25	MANATEE	2594	6.37
LAKE ARBUCKLE 27.66 -81.37	POLK	ARBCKL_P	6.36
ROMP 60 MULBERRY 27.89 -81.98	POLK	1314	6.36
ROMP 31 ONA 27.45 -81.92	HARDEE	1434	6.34
BIRD CREEK (WSW OF YANKE 29.01 -82.75	LEVY	4074	6.33
VALRICO 2.2 SE 27.91 -82.23	HILLSBOROUGH	FL-HB-4	6.31
ENGLEWOOD 3.7 NNW 27.00 -82.39	SARASOTA	FL-SS-44	6.30
ROMP 107 RINGGOLD (NR SK 28.66 -82.46	HERNANDO	1214	6.30
ISLAND FORD LAKE 28.15 -82.60	HILLSBOROUGH	1634	6.24
ROMP 22 UTOPIA (NR UTOPI 27.31 -82.34	SARASOTA	7474	6.21
ROMP 123 STARLING (SE OF 27.68 -82.25	HILLSBOROUGH	1374	6.20
HANNA LAKE 28.14 -82.45	HILLSBOROUGH	7534	6.07
ROMP 62 CRISTINA – RIVER 27.86 -82.31	HILLSBOROUGH	8414	6.06
GREATER NORTHDALE 0.4 EN 28.11 -82.51	HILLSBOROUGH	FL-HB-48	5.98
RIVERVIEW 0.9 ENE 27.87 -82.30	HILLSBOROUGH	FL-HB-11	5.95
CHASSAHOWITZKA 28.72 -82.55	CITRUS	6114	5.94
S KISSIMMEE RIVER 27.22 -80.97	HIGHLANDS	S84	5.91
TAMPA 6.5 NNE 28.03 -82.41	HILLSBOROUGH	FL-HB-29	5.88
ALICO RD NR LEE CO UTILI 26.46 -81.70	LEE	CORKPL	5.80
ROMP TR 13-3 RACE TRACK 28.07 -82.64	HILLSBOROUGH	4274	5.79
CRESCENT LAKE 28.15 -82.60	HILLSBOROUGH	1674	5.76
ROMP 20 OSPREY 27.19 -82.48	SARASOTA	7414	5.74

LAKE THONOTOSASSA AT FLI 28.07 -82.27	HILLSBOROUGH	6814	5.73
ELDRIDGE-WILDE 2N (NE PI 28.18 -82.65	PINELLAS	3094	5.61
ARCHOLD BIO STN 27.18 -81.35	HIGHLANDS	ACHF1	5.61
NORTH PORT 1.6 ENE 27.06 -82.17	SARASOTA	FL-SS-14	5.60
HILLSBOROUGH RIVER AT SU 28.02 -82.45	HILLSBOROUGH	6140	5.55
ROMP 19X MACARTHUR (NR M 27.17 -82.25	SARASOTA	1534	5.53
BRADEN RIVER 27.42 -82.44	MANATEE	2894	5.50
APOLLO BEACH 3.0 ENE 27.78 -82.36	HILLSBOROUGH	FL-HB-46	5.47
S-160 (NR ADAMO AND 78TH 27.96 -82.37	HILLSBOROUGH	6574	5.45
CLEARWATER 2.2 S 27.95 -82.76	PINELLAS	FL-PN-16	5.44
ROMP TR 6-1 SIESTA KEY 27.27 -82.55	SARASOTA	7974	5.38
ROMP TR 9-1 SIMMONS PARK 27.74 -82.46	HILLSBOROUGH	1334	5.37
ROMP TR 5-1 LAUREL PARK 27.14 -82.45	SARASOTA	1514	5.36
ENGLE PARK (NR HUDSON) 28.39 -82.63	PASCO	3134	5.35
INDIAN PRAIRIE 27.27 -81.20	HIGHLANDS	S82	5.33
FLINT PEN STRAND 26.43 -81.72	LEE	FPWX	5.30
BAY LAKE (NR CARROLLWOOD 28.07 -82.50	HILLSBOROUGH	1654	5.30
NEAR TUCKERS CORNER 26.85 -81.75	CHARLOTTE	CHARLT_P	5.28
PALM HARBOR 1.0 S 28.07 -82.77	PINELLAS	FL-PN-71	5.26
CITRUS PARK 1.3 ENE 28.08 -82.55	HILLSBOROUGH	FL-HB-5	5.22
WHITE TROUT LAKE – CARRO 28.04 -82.50	HILLSBOROUGH	1934	5.22
SARASOTA OFFICE (NR I-75 27.34 -82.43	SARASOTA	3054	5.19
ROMP 8 WARM MINERAL SPRI 27.08 -82.25	SARASOTA	9234	5.16
FROG CREEK (NR I-275 AND	MANATEE	2874	5.14

27.58 -82.51			
CYPRESS STRAND 27.51 -82.48	MANATEE	2854	5.12
INGLIS DAM 29.01 -82.62	LEVY	6154	5.10
LUTZ 2.0 E 28.14 -82.43	HILLSBOROUGH	FL-HB-37	5.07
ROMP TR 8-1 RUBONIA 27.58 -82.55	MANATEE	7774	5.06
TARPON SINK (LAKE TARPON 28.13 -82.74	PINELLAS	2114	5.04
INDIAN PRAIRIE 27.27 -81.18	HIGHLANDS	S83	5.01
S-162 (NR HWY 301 AND DR 27.99 -82.35	HILLSBOROUGH	6654	4.97
FT MYERS WASTEWATER 26.49 -81.93	LEE	FTMYERSP	4.91
S-163 (NR I-75 AND FLETC 28.07 -82.35	HILLSBOROUGH	1714	4.86
NORTH PORT 4.7 NNE 27.11 -82.17	SARASOTA	FL-SS-15	4.84
ST. PETERSBURG 4.5 NW 27.80 -82.70	PINELLAS	FL-PN-60	4.75
BAY PINES 0.5 NW 27.82 -82.78	PINELLAS	FL-PN-76	4.71
ROMP 58 WILSON ELEM (NR 27.92 -81.59	POLK	7874	4.65
GAMBLE CREEK (NR MULHOLL 27.53 -82.40	MANATEE	8694	4.63
ROMP TR 7-2 ONECO 27.44 -82.55	MANATEE	8614	4.63
ROMP 40 FOUR CORNERS 27.65 -82.05	POLK	1394	4.54
GOVERNMENT HAMMOCK (NR E 27.53 -82.50	MANATEE	8754	4.54
ROMP TR 14-1 SAFETY HARB 28.00 -82.69	PINELLAS	1274	4.52
LUTZ 0.6 WSW 28.13 -82.47	HILLSBOROUGH	FL-HB-11	4.51
FAIRWAYS 26.74 -81.94	LEE	FAIRWAYS	4.49
SEMINOLE 3.3 WNW 27.86 -82.83	PINELLAS	FL-PN-77	4.40
ROMP TR SA-1 (PIONEER PA 27.35 -82.55	SARASOTA	8994	4.29
APOLLO BEACH 2.7 ENE 27.78 -82.36	HILLSBOROUGH	FL-HB-13	4.29

ROMP TR 7-1 BAYSHORE GAR 27.42 -82.58	MANATEE	1454	4.27
PEARCE DRAIN 27.43 -82.52	MANATEE	8734	4.21
DOVER 28.02 -82.23	HILLSBOROUGH	360	4.20
S-155 (HILLSOROUGH RVR A 28.09 -82.35	HILLSBOROUGH	6694	4.08
PALMA SOLA DRAIN 27.47 -82.64	MANATEE	8674	3.94
SUMTER 13 (NR RUTLAND) 28.86 -82.20	SUMTER	8934	3.84
ST. PETERSBURG 2.4 NW 27.78 -82.67	PINELLAS	FL-PN-33	3.78
ROMP TR 9-2 APOLLO BEACH 27.77 -82.39	HILLSBOROUGH	7514	3.78
LAKE KISSIMMEE 27.97 -81.42	POLK	SNIVLY	3.69
S-551 (LAKE TARPON CANAL 28.05 -82.71	PINELLAS	6494	3.66
SAWGRASS LAKE 2 27.84 -82.67	PINELLAS	7614	3.57
WARES CREEK 27.47 -82.57	MANATEE	8714	3.57
CHANNEL A (HWY 580 NR TO 28.01 -82.61	HILLSBOROUGH	6414	3.54
S-159 (NR HWY 301 NR TEM 28.04 -82.34	HILLSBOROUGH	6534	3.24

REMARKS: THIS PSH IS THE FIRST OF SEVERAL UPDATES TO COME.

D. INLAND FLOODING...

HILLSBOROUGH...SOCIAL MEDIA VIDEO OF SIGNIFICANT STREET FLOODING WITH WATER ENTERING HOMES NEAR SAM ALLEN RD AND 39.

POLK...PUBLIC REPORTS VIA SOCIAL MEDIA 19 INCHES OF WATER IN HOME OFF YATES ROAD IN LAKELAND.

HILLSBOROUGH...BROADCAST MEDIA IS REPORTING STREET FLOODING ON MULRENNAN RD. IN VALRICO.

POLK...3 ROADS WASHED OUT. 1 CULVERT WASHED OUT BUT ROAD BED STILL PRESENT AND ANOTHER ROAD PARTIALLY WASHED OUT, BOTH SEVERAL MILES WEST OF FROST PROOF.

E. MAXIMUM STORM SURGE AND STORM TIDE...
OFFICIAL TIDE GAUGES NOTED WITH LEADING G

COUNTY	CITY/TOWN OR LOCATION	SURGE (FT)	TIDE (FT)	DATE/ TIME	BEACH EROSION
LEE	G FORT MYERS	3.88	3.55	11/1900	UNKNOWN

MANATEE	G PORT MANATEE	2.17	1.87	11/1518	UNKNOWN
PINELLAS	G SAINT PETERSBUR	2.17	1.96	11/1636	UNKNOWN
PINELLAS	G CLEARWATER BEAC	1.85	1.67	12/0254	UNKNOWN
LEVY	G CEDAR KEY	2.59	2.71	11/1730	UNKNOWN
HILLSBOROUGH	G MCKAY BAY	3.07	2.75	11/1724	UNKNOWN

REMARKS: SURGE INFORMATION UPDATED WITH NATIONAL OCEAN SERVICE
VALUES AND SURGE WAS LATER THAN PREVIOUS STATEMENT ISSUANCE.

F. TORNADOES...

(DIST)CITY/TOWN LAT LON (DEG DECIMAL	COUNTY	DATE/ TIME(UTC)	EF SCALE (IF KNOWN)
N WAUCHULA 27.55 -81.81	HARDEE	10/1300	I

REPORT OF ROOF DAMAGE TO BUSINESS IN WAUCHULA

4 WSW POLK CITY 28.15 -81.89	POLK	10/1615	EF2

7 WOODEN HIGH POWER TRANSMISSION POLES SNAPPED.

G. STORM IMPACTS BY COUNTY...

COUNTY	DEATHS	INJURIES	EVACUATIONS

$$

Legend:
I-Incomplete Data
E-Estimated

NOAH

Appendix F – Post-Tropical Cyclone Report from the Miami NWS WFO

344
ACUS72 KMFL 090932 AAF
PSHMFL

POST TROPICAL CYCLONE REPORT...HURRICANE IRMA...UPDATED
NATIONAL WEATHER SERVICE MIAMI FLORIDA
532 AM EDT MON OCT 9 2017

NOTE: THE DATA SHOWN HERE ARE PRELIMINARY....AND SUBJECT TO UPDATES
AND CORRECTIONS AS APPROPRIATE.

THIS REPORT INCLUDES EVENTS OCCURRING WHEN WATCHES AND/OR WARNINGS
WERE IN EFFECT...OR WHEN SIGNIFICANT FLOODING ASSOCIATED WITH IRMA

COUNTIES INCLUDED...MIAMI DADE...BROWARD...PALM BEACH...GLADES...
HENDRY...COLLIER...MAINLAND MONROE

SEP 28...UPDATED FOR...CORRECTIONS TO METAR/ASOS OBSERVATIONS,
NUMEROUS ADDITIONS TO NON-METAR OBSERVATIONS AND MARINE
OBSERVATIONS, NUMEROUS ADDITIONS TO STORM TIDE/SURGE SECTION BASED
ON NWS SURVEYS, TORNADO SECTION UPDATED TO ADD TORNADO IN COLLIER
COUNTY, AND ADDED STORM EFFECTS FOR EACH COUNTY BASED ON LATEST
INFORMATION.

SEP 28...UPDATED FOR...ADDITIONS/CORRECTIONS TO STORM RAINFALL FOR
PERIOD FROM 1200 UTC SEPTEMBER 9TH TO 1200 UTC SEPTEMBER 11TH.

OCT 03...UPDATED FOR...ADDITIONAL NON-METAR OBSERVATIONS FROM TEXAS
TECH UNIVERSITY RESEARCH TEAM STICKNET, AND USGS TIDE GAUGE DATA
FROM NAPLES BAY AT U.S. 41.

OCT 09...UPDATED FOR...ADDITIONAL STORM SURGE/TIDE INFORMATION FROM
USGS RAPID DEPLOYMENT GAUGES AND UPDATED FATALITY NUMBERS.

SEP 28...CORRECTED FOR...POMPANO BEACH AIRPARK (KPMP) METAR MAX
SUSTAINED WIND 60 KNOTS WITH MAX GUST 76 KNOTS

SEP 29...CORRECTED FOR...TIME FRAME OF RAINFALL OBSERVATIONS FROM
SEP 9 TO SEP 11.

A. LOWEST SEA LEVEL PRESSURE/MAXIMUM SUSTAINED WINDS AND PEAK GUSTS

METAR OBSERVATIONS...
NOTE: ANEMOMETER HEIGHT IS 10 METERS AND WIND AVERAGING IS 2 MINUTES

LOCATION ID LAT LON	MIN PRES (MB)	DATE/ TIME (UTC)	MAX SUST (KT)	DATE/ TIME (UTC)	PEAK GUST (KT)	DATE/ TIME (UTC)
KOPF-OPA LOCKA AIRPORT						
25.91 -80.28	988.8	10/2112	140/056	10/1903	110/074	10/1439
KTMB-MIAMI EXECUTIVE/WEST KENDALL						
25.65 -80.43	986.8	10/1718	110/048	10/1110 I	100/063	10/1110 I
KMIA-MIAMI INTERNATIONAL						
25.80 -80.29	988.8	10/2116	110/046	10/1303 I	100/063	10/1312 I
KFLL-FT LAUDERDALE INTERNATIONAL						
26.07 -80.15	989.0	10/2120	110/046	10/0153 I	110/061	09/2022 I
KFXE-FT LAUDERDALE EXECUTIVE						

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26.20 -80.17    989.5 10/2202   110/053  10/1847   120/072 10/1818

KHWO-HOLLYWOOD NORTH PERRY AIRPORT
26.00 -80.24    993.3 10/1701 I 120/049  10/1651 I 110/068 10/1422 I

KAPF-NAPLES MUNICIPAL AIRPORT
26.15 -81.77    959.4 10/1932 I 060/053  10/1801 I 070/071 10/1800 I

KPBI-WEST PALM BEACH INTERNATIONAL
26.68 -80.09    990.2 10/2320   130/057  10/2101   120/079 10/2055

KPMP - POMPANO BEACH AIRPARK
26.24 -80.11    990.1 10/2205 I 140/060  10/2039 I 120/076 10/2046 I

REMARKS:

NON-METAR OBSERVATIONS...
NOTE: ANEMOMETER HEIGHT IN METERS AND WIND AVERAGING PERIOD IN
MINUTES INDICATED UNDER MAXIMUM SUSTAINED WIND IF KNOWN
-------------------------------------------------------------------------
LOCATION  ID    MIN    DATE/     MAX      DATE/     PEAK    DATE/
LAT  LON        PRES   TIME      SUST     TIME      GUST    TIME
DEG DECIMAL     (MB)   (UTC)     (KT)     (UTC)     (KT)    (UTC)
-------------------------------------------------------------------------
CLWCH - NEAR N PERRY ARPT
26.04 -80.22                  I 157/070  10/1950   999/095 10/9999 I

NPLMP- 1 E NAPLES
26.15 -81.77                  I 999/081  10/2000   068/123 10/2035

DRFCE - DEERFIELD BEACH
26.31 -80.15                  I 158/061  10/2200   999/087 999/999 I

NPLCC - COLLIER COUNTY EOC
26.11 -81.69                  I 113/071  10/2000   113/106 10/2004

MMMCH - WEST MIAMI
25.74 -80.30                  I 113/059  10/1540   999/081 99/9999 I

MDFR4 - BAL HARBOUR
25.90 -80.12                    068/058  10/0900   999/069 10/1026 I

MDFR5 - SOUTH MIAMI HEIGHTS
25.57 -80.37                  I 113/049  10/1500   999/072 10/1413

PPFMS - COCONUT GROVE
25.74 -80.21                  I 113/037  10/0600   999/066 10/9999 I

MFR11 - MIAMI
25.77 -80.29                  I 145/049  10/1830   999/063 10/9999 I

WFORT - DORAL
25.79 -80.34                  I 090/041  10/1800   999/083 10/1837 I

MDFR1 - DORAL
25.80 -80.35                  I 113/046  10/2200   999/057 10/9999

MDFR8 - HOMESTEAD
25.44 -80.46                  I 999/040  10/1400 I 999/068 10/1256 I

MFRFC - COCONUT GROVE
25.73 -80.26                  I 999/999          I 999/078 10/1810 I

MNTLA - MIA SOUTH TERMINAL
25.79 -80.27                  I 999/999          I 999/067         I
                                29/MM

MDFR6 - KENDALL
25.71 -80.33                  I 999/999          I 999/070 10/1737 I

XURB - DORAL
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25.85 -80.37    984.7 10/2111   107/043  10/1701   110/067 10/1646
                                 15/05

XFLM - MIRAMAR
25.96 -80.30    982.0 10/2152   116/043  10/1827   114/073 10/1747
                                 15/05

LPIF1 - ROYAL PALM RANGER STATION
25.39 -80.68                  I 999/048  10/1623 I 999/079 10/1423 I
                                 06/10

CHKF1 - CHEKIKA
25.62 -80.58                    999/049  10/1723   999/078 10/1623
                                 06/10

STDF1 - HOMESTEAD
25.50 -80.50                  I 125/045  10/1700   121/063 10/1645
                                 10/15

S331W - THE REDLAND
25.61 -80.51                  I 113/044  10/1700   095/061 10/1403
                                 08/15

MIA/ITWS
25.80 -80.29                  I 999/058  10/1646 I 999/086 10/1719 I
                                 15/01

NWS MIAMI
25.76 -80.38    989.5         I 999/999          I 999/070 10/1708 I

HLLYW - PEMBROKE PARK
25.99 -80.16                  I 999/047  10/2200 I 999/075         I

3AS3W - MICCOSUKEE VILLAGE
25.85 -80.77                  I 118/059  10/1715   115/075 10/1658
                                 08/15

AVE MARIA
26.30 -81.43                  I 124/057  10/2200   109/077 10/2125
                                 08/15

BELLW - BELLE GLADE
26.65 -80.63                  I 152/044  10/2245   124/062 10/1935
                                 08/15

CFSW - CLEWISTON
26.73 -80.89                  I 127/043  10/2300   134/060 10/2344
                                 08/15

FHCHSX - WEST PALM BEACH
26.65 -80.07                    141/038  10/2130   141/067 10/2128
                                 08/15

LXWS - LOXAHATCHEE NWR
26.50 -80.22                    999/039  10/2245 I 999/058 10/2020 I
                                 08/15

ROTNWX - ROTENBERGER WMA
26.33 -80.88                    139/047  10/2130   133/065 10/2048
                                 08/15

S140W - BROWARD MICCOSUKEE RESERVATION
26.17 -80.83                    136/037  10/1945   121/056 10/1812
                                 08/15

S75WX - BRIGHTON
27.19 -81.13                    096/048  10/2345   115/068 11/0058
                                 08/15

S78W - ORTONA
26.79 -81.30                    149/044  11/0015   125/065 10/2327
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                                08/15

SGGEW - GOLDEN GATE ESTATES
26.14 -81.58                    160/047  10/2130   150/084 10/2120
                                 08/15

MRMRH - MIRAMAR HIGH SCHOOL
25.99 -80.28                    999/038  10/2200 I 999/085 10/1444 I

WSTNF - SOUTHWEST RANCHES
26.06 -80.39                    999/047  10/1700   999/085         I

FTBCM - DAVIE
26.08 -80.23                    999/037  10/1800   999/064         I

FRBCS - LAUDERHILL
26.12 -80.18                    999/043  10/1300   999/070         I

FLTLS - OAKLAND PARK
26.17 -80.16                    999/036  10/1300   999/062         I

XCVN - TAMARAC
26.19 -80.30    986.1 10/2123   106/043  10/1853   110/061 10/1858
                                 10/05

BEMA3 - BROWARD COUNTY EOC
26.12 -80.27                    999/050  10/2100   999/067         I

FTDST - SUNRISE
26.16 -80.25                    999/045  10/1700   999/071         I

SNRSC - SUNRISE
26.16 -80.29                    999/042  10/2100   999/085         I

FTPCS - OAKLAND PARK
26.20 -80.13                    999/043  10/2100   999/074         I

PMPNB - MARGATE
26.25 -80.19                    999/046  10/1925   999/069         I

CRLCG - CORAL SPRINGS
26.26 -80.30                    999/043  10/1900   999/077 10/1900

DFBS1 - DEERFIELD BEACH
26.29 -80.12                    999/051  10/2000   999/097         I
                                 15/MM

PRKLN - PARKLAND
26.30 -80.27                    999/042  10/2000   999/071

PBRPN - PEMBROKE PINES
26.01 -80.27                    999/053  10/1520   999/095 10/1440

FDLF1 - DAVIE
26.09 -80.24                    136/030  10/1800 I 136/057 10/1800
                                 10/15

NPLLV - URBAN ESTATES
26.27 -81.75                    999/048  10/2100   999/097 10/2134

RACF1 - RACCOON POINT
25.98 -80.90                    999/999            999/062
                                 06/10

OASF1 - OASIS RANGER STATION
25.86 -81.03                    999/039  10/1637   999/067 10/1737
                                 06/10

OCOF1 - OCHOPEE
25.90 -81.32                    999/055  10/1903   999/083 10/2003
                                 06/10
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RKIF1 - MILES CITY
26.24 -81.30 999/031 10/2045 999/065 10/2045
06/10

HMRF1 - HONEYMOON RAWS
26.19 -81.07 999/024 10/2145 999/059 10/2145
06/10

PSTF1 - PANTHER EAST RAWS
26.16 -81.36 999/031 10/1711 999/065 10/2111

PHWF1 - PANTHER WEST RAWS
26.17 -81.48 999/021 10/2211 999/059 10/2211
06/10

IMKF1 - IMMOKALEE
26.46 -81.44 143/056 10/2300 133/072 10/2245
10/15

MARCO ISLAND PD
25.94 -81.71 999/999 999/113 10/1900

MARCO ISLAND - SPOTTER REPORT
25.92 -81.73 936.9 I 999/097 I 999/112 I

XWPB - WEST PALM BEACH
26.65 -80.14 988.7 10/2318 119/033 10/2138 130/058 10/2108
10/05

DLRYD - DELRAY BEACH
26.44 -80.13 999/037 10/1900 999/069

MRHMG - MOORE HAVEN
26.83 -81.10 999/047 10/2300 999/068

PALF1 - PALMDALE
26.92 -81.40 143/036 11/0045 143/059 11/0045
10/15

AIRGL - AIRGLADES AIRPORT CLEWISTON
26.73 -81.05 152/059 11/0015 152/078 11/0015
10/15

0102A - 9 E Miles City
26.16 -81.19 148/045 10/1636 223/060 10/2029
02/01

0103A - 4 E Orangetree
26.29 -81.51 148/061 10/2151 146/077 10/2145
02/01

0104A - Miami Beach
25.76 -80.13 211/052 10/2239 210/064 10/2239
02/01

0105A - 6 E Miccosukee Village
25.76 -80.67 123/048 10/1703 I 114/066 10/1605 I
02/01

0106A - Hollywood Beach
26.04 -80.11 146/050 10/1955 147/060 10/2003
02/01

0108A - 10 ESE Ochopee
25.86 -81.15 145/035 10/1947 128/053 10/1815
02/01

0109A - Broward Miccosukee Reservation
26.17 -80.85 112/051 10/1727 110/068 10/1727
02/01

0111A - 2 NNW Royal Palm Hammock
26.04 -81.62 115/074 10/2008 113/099 10/2007
02/01

0112A - 9 ESE Golden Gate
26.15 -81.54 104/052 10/2052 112/077 10/2046
02/01

0214A - 5 SW Florida City
25.40 -80.56 113/066 10/1558 099/077 10/1345
02/01

0220A - Miles City
26.15 -81.34 113/055 10/2032 103/073 10/1944
02/01

REMARKS:

B. MARINE OBSERVATIONS...
NOTE: ANEMOMETER HEIGHT IN METERS AND WIND AVERAGING PERIOD IN MINUTES INDICATED UNDER MAXIMUM SUSTAINED WIND IF KNOWN

LOCATION LAT LON DEG DECIMAL	ID	MIN PRES (MB)	DATE/ TIME (UTC)	MAX SUST (KT)	DATE/ TIME (UTC)	PEAK GUST (KT)	DATE/ TIME (UTC)
FWYF1 - FOWEY ROCKS							
25.59 -80.10	I			127/073 44/00	10/1830	130/087	10/1828
VAKF1 - VIRGINIA KEY							
25.73 80.16		989.0	10/1918	110/046 10/06	10/1900	100/062	10/1754
NPSF1 - NAPLES PIER							
26.13 -81.81		939.7	10/2054	290/056 06/06	10/2200	290/072	10/2200
LKWF1 - LAKE WORTH PIER							
26.61 -80.03	I			130/055 06/06	10/2100	130/079	10/2100
XGVT - GOVERNMENT CUT							
25.75 -80.10		983.0	10/1907	143/065 23/05	10/1852	143/079	10/1852
XTKY - TURKEY POINT							
25.43 -80.35		977.4	10/1726	161/062 19/05	10/1746	140/081	10/1701
XMSP - MORNINGSIDE PARK MIAMI							
25.82 -80.18		987.5	10/1924	163/055 10/05	10/1854	144/073	10/1934
XKBS - BISCAYNE BAY LIGHT 20							
25.65 -80.19		987.2	10/1824	137/053 06/05	10/1824	137/075	10/1824
XDIN - DINNER KEY							
25.71 -80.21		990.3	10/1803	999/050 05/05	10/1828	999/071	10/1828
XDGE- DODGE ISLAND MIAMI							
25.76 -80.14		987.0	10/1917	144/048 12/05	10/1917	144/069	10/1917
XSOM - SOUTH MIAMI							
25.63 -80.30		986.4	10/1730	111/050 10/05	10/1300	I 110/071	10/1020 I

XCRN -CRANDON KEY BISCAYNE
25.72 -80.15   990.8 10/2120   108/048 10/1555   108/065 10/1555
                                   08/05

XNMI - NORTH MIAMI
25.90 -80.16   986.0 10/1930   184/039 10/1930   173/060 10/1645
                                   17/05

RSMAS - VIRGINIA KEY WEATHER STEM
25.73 -80.16   I 999/999   I 999/088 10/1732

XPEG - PORT EVERGLADES
26.08 -80.12   985.2 10/2145   137/061 10/2005   127/074 10/1835
                                   41/05

XDAN - DANIA PIER
26.05 -80.11   I 999/055 10/1839 I 999/070 10/1759 I
                                   09/05

XPES - PORT EVERGLADES SOUTH
26.06 -80.13   988.1 10/2137   129/040 10/1852   129/071 10/1822
                                   10/05

XCAP - ISLES OF CAPRI
26.03 -81.70   934.8 10/2012   089/062 10/1957   099/086 10/2002
                                   15/05

L006 - LAKE OKEECHOBEE SOUTH
26.82 -80.78   I 142/052 11/0030   147/062 11/0100
                                   08/15

L005 - LAKE OKEECHOBEE WEST
26.96 -80.94   I 147/055 11/0030   127/068 10/2307
                                   08/15

L001 - LAKE OKEECHOBEE NORTH
27.14 -80.79   I 134/052 11/0115   143/065 11/0151
                                   08/15

LZ40 - LAKE OKEECHOBEE CENTER
26.90 -80.79   I 158/052 11/0030   156/067 11/0014
                                   08/15

XBOC - BOCA RATON
26.37 -80.08   986.2 10/2058   127/044 10/2058   128/069 10/2043
                                   21/05

XBOY - BOYNTON BEACH
26.54 -80.05   989.4 10/2037   093/044 10/2017   102/068 10/2127
                                   10/05

XMGN -MANGONIA PARK
26.75 -80.07   987.2 10/2254   123/038 10/2154   123/065 10/2154
                                   23/05

XJUP - JUNO BEACH PIER
26.89 -80.06   987.9 10/2354   163/061 10/2354   163/074 10/2354
                                   06/05

XOAK - JUPITER
26.91 -80.07   987.5 10/2126   135/042 10/2301   124/067 10/2126
                                   15/05

REMARKS: WITH THE EXCEPTION OF LAKE OKEECHOBEE SITES AND FOWEY
ROCKS, OBSERVATIONS SITES ARE COASTAL WITHIN 1 MILE OF THE WATER.

C. STORM TOTAL RAINFALL FROM 1200 UTC SEP 09 UNTIL 1200 UTC SEP 11

CITY/TOWN LAT LON DEG DECIMAL	COUNTY	ID	RAINFALL (IN)
Chekika 25.63 -80.58	Miami-Dade	CHKF1	13.63
7 E Naples 26.17 -81.68	Collier	NPLF1	11.46
4 W Royal Palm Ranger 25.39 -80.68	Miami-Dade	LPIF1	11.31
7 W Plantation 26.13 -80.37	Broward	WSTF1	10.81
1 NW Miles City 26.17 -81.36	Collier	PSTF1	10.73
9 SW Big Cypress Seminol 26.19 -81.07	Collier	HMRF1	10.55
5 SE Golden Gate Estates 26.15 -81.58	Collier	PHWF1	10.41
13 E Golden Gate 26.17 -81.48	Collier	SGGEW	10.36
2 WNW LaBelle 26.76 -81.48	Hendry	FL-HY-3	10.31
7 NE Miles City 26.25 -81.30	Collier	RKIF1	10.23
1 S Wilton Manors 26.14 -80.13	Broward	D0271	9.94
1 WSW Miramar 25.98 -80.37	Broward	FL-BW-10	9.92
4 W Fort Lauderdale 26.14 -80.20	Broward	FTDF1	9.90
Oasis Ranger Station 25.86 -81.03	Collier	OASF1	9.90
3 SW Coral Springs 26.23 -80.30	Broward	CSGF1	9.72
1 W Ochopee 25.90 -81.32	Collier	OCOF1	9.61
Fort Lauderdale Executiv 26.20 -80.17	Broward	KFXE	9.57
12 W Boca Raton 26.36 -80.30	Palm Beach	WBCF1	9.24
2 WNW Aberdeen 26.58 -80.20	Palm Beach	FL-PB-2	8.96
2 SSE WESTON 26.13 -80.39	BROWARD	FL-BW-99	8.80
Aberdeen 26.56 -80.17	Palm Beach	FL-PB-77	8.68
Big Cypress Reservation 26.30 -80.98	Hendry	TS909	8.23

Biscayne Park 25.88 -80.18	Miami-Dade	FL-MD-33	8.19
2 SE Plantation 26.09 -80.23	Broward	PLAF1	8.10
Loxahatchee NWR 26.49 -80.43	Palm Beach	LOHF1	8.08
Opa-Locka Airport 25.91 -80.28	Miami-Dade	KOPF	8.03
2 NW Carol City 25.97 -80.30	Broward	LLUF1	8.00
Sunrise 26.16 -80.30	Broward	SNRF1	7.95
Lake Harbor 26.70 -80.81	Palm Beach	SLOF1	7.75
3 NNW Brighton Seminole 27.12 -81.08	Glades	TS896	7.74
25 ENE Ochopee 25.98 -80.90	Collier	RACF1	7.72
1 NE Moore Haven 26.84 -81.09	Glades	MHVF1	7.70
1 E Lauderdale Lakes 26.17 -80.18	Broward	LDLF1	7.68
1 WNW Boynton Beach 26.54 -80.10	Palm Beach	FL-PB-70	7.56
2 NNW Boca Raton 26.39 -80.11	Palm Beach	E5514	7.36
12 WSW Buckhead Ridge 27.03 -81.07	Glades	BRGF1	7.30
9 SW Buckhead Ridge 27.03 -81.00	Glades	NWLF1	7.11
3 NW Moore Haven 26.86 -81.14	Glades	MRHF1	6.98
University Park 25.75 -80.38	Miami-Dade	MFL	6.96
2 E Miami Springs 25.81 -80.26	Miami-Dade	MINF1	6.94
5 E Leisure City 25.49 -80.35	Miami-Dade	BHMF1	6.88
El Portal 25.85 -80.19	Miami-Dade	ELPF1	6.79
Princeton 25.54 -80.41	Miami-Dade	PRNF1	6.79
2 WNW Deerfield Beach 26.33 -80.13	Broward	BORF1	6.76
3 N Florida Gardens 26.67 -80.18	Palm Beach	FL-PB-87	6.61
2 E Lakeport 26.98 -81.09	Glades	LKPF1	6.60

5 SW Florida City 25.40 -80.56	Miami-Dade	EVGF1	6.49
3 NE Cutler Bay 25.61 -80.31	Miami-Dade	CTRF1	6.48
1 S Juno Beach 26.86 -80.06	Palm Beach	JUBF1	6.47
Pompano Beach 26.23 -80.12	Broward	PNOF1	6.39
Miami Lakes 25.91 -80.32	Miami-Dade	MMLF1	6.33
3 W Jupiter 26.93 -80.14	Palm Beach	JPTF1	6.32
15 W Buckhead Ridge 27.12 -81.16	Glades	IPRF1	6.18
7 WSW Buckhead Ridge 27.09 -81.01	Glades	IPEF1	6.18
7 WNW Richmond Heights 25.66 -80.48	Miami-Dade	RHWF1	6.18
9 W Sweetwater 25.76 -80.50	Miami-Dade	TTLF1	6.11
3 SSE Cutler Bay 25.54 -80.33	Miami-Dade	BCPF1	6.07
14 WNW Buckhead Ridge 27.19 -81.13	IPIF1	Glades	6.03
13 SSE South Bay 26.48 -80.65	Palm Beach	SWAF1	6.03
31 W Coral Springs 26.33 -80.78	Broward	HYDF1	5.90
3 NW Haverhill 26.72 -80.16	Palm Beach	D7488	5.90
1 SE Pompano Beach 26.22 -80.11	Broward	PSEF1	5.88
North Palm Beach 26.82 -80.08	Palm Beach	NPBF1	5.64
North Miami Beach 25.95 -80.26	Miami-Dade	NMBF1	5.59
Canal Point 26.86 -80.63	Palm Beach	CNPF1	5.59
2 WNW Leisure City 25.50 -80.47	Miami-Dade	LSCF1	5.47
Boynton Beach 26.54 -80.06	Palm Beach	BYBF1	5.39
4 S Cutler Bay 25.52 -80.35	Miami-Dade	BBBF1	5.28
1 E Weston 26.11 -80.36	Broward	D4511	5.23
2 NNW Country Walk	Miami-Dade	C4495	5.14

25.67 -80.44

REMARKS: DATA IS FOR PERIOD FROM SEPTEMBER 9TH AT 1200 UTC TO
SEPTEMBER 11TH AT 1200 UTC

D. INLAND FLOODING...

MIAMI-DADE...PUBLIC REPORTS FLOOD WATERS IN GARAGE OF HOME EAST OF US1 NEAR SW184TH ST

GLADES...GLADES COUNTY EMERGENCY MANAGEMENT REPORTS THAT STATE ROAD 29 IS CLOSED DUE TO STANDING WATER FROM STATE ROAD 78... EXTENDING NORTHEASTWARD... HALFWAY TO PALMDALE. STATE ROAD 78 IS ALSO CLOSED DUE TO STANDING WATER FROM STATE ROAD 29 TO US27. THESE ROADS HAVE BEEN CLOSED SINCE YESTERDAY... SEPTEMBER 12TH.

BROWARD...STREET FLOODING, NO MAJOR IMPACTS NOTED.

PALM BEACH...STREET FLOODING. NO MAJOR IMPACTS NOTED.

HENDRY...FLOODING OF LOW LYING AREAS, AS WELL AS SHEET FLOW FLOODING.

COLLIER...SIGNIFICANT FLOODING OF LOW LYING AREAS, WITH STANDING WATER IN MANY LOCATIONS OVER THE INTERIOR INCLUDING GOLDEN GATE ESTATES, BIG CYPRESS NATIONAL PRESERVE AND EVERGLADES NATIONAL PARK.

E. MAXIMUM STORM SURGE AND STORM TIDE...
OFFICIAL TIDE GAUGES NOTED WITH LEADING G

COUNTY		CITY/TOWN OR LOCATION	SURGE (FT)	TIDE (FT)	DATE/ TIME	BEACH EROSION	
MIAMI-DADE	G	VIRGNIA KEY	3.92	3.66	10/1630	MAJOR	
PALM BEACH	G	LAKE WORTH PIER	2.23	1.50	10/1542	MODERATE	
COLLIER	G	NAPLES	5.14	4.25	10/2306	MODERATE	
COLLIER		NAPLES BAY	5.00	4.13	11/0130	NONE	I
MIAMI-DADE		BLACK POINT	5.00	5.61	10/1748	UNKNOWN	
MIAMI-DADE		TURKEY POINT	3.50	4.07	10/1651	UNKNOWN	
MIAMI-DADE		BAL HARBOUR	3.80	3.32	10/1848	UNKNOWN	
MIAMI-DADE		MATHESON HAMMOC	5.00	5.36	10/1809	UNKNOWN	
MIAMI-DADE		COCONUT GROVE	6.00	5.75	10/2151	UNKNOWN	
BROWARD		DANIA BEACH	2.00	2.54	10/1556	MODERATE	
BROWARD		POMPANO BEACH	2.70	3.72	10/1558	MODERATE	
COLLIER		EVERGLADES CITY	6.50	8.92	10/2334	UNKNOWN	
COLLIER		GOODLAND	5.50	7.17	10/2210	UNKNOWN	
COLLIER		MARCO ISLAND	5.00	5.37	10/2238	MODERATE	

REMARKS: ENTRIES 4-14 ARE FROM USGS RAPID DEPLOYMENT GAUGES.

 COLLIER COUNTY: SURVEY INDICATED HIGHEST INUNDATION IN CHOKOLOSKEE OF 6-8 FEET AT WATERFRONT, APPROXIMATELY 8 FT ABOVE MEAN HIGHER HIGH

WATER (MHHW), WITH 3-5 FEET ACROSS MOST OF ISLAND. IN EVERGLADES CITY, MAXIMUM 6 FT OF INUNDATION AT EVERGLADES NATIONAL PARK GULF VISITOR CENTER, WITH 2-4 FEET ACROSS THE TOWN AND AS HIGH AS 5 FEET IN A FEW AREAS. USGS DATA INDICATES 1-2 FEET OF INUNDATION AS FAR INLAND AS TAMIAMI TRAIL BETWEEN STATE ROAD 29 AND COLLIER SEMINOLE STATE PARK. IN GOODLAND, 5-6 FT INUNDATION AT WATERFRONT, ABOUT 5.5 FT ABOVE MHHW, AND 3-4 FT ACROSS MOST OF TOWN. IN MARCO ISLAND, 2-4 FT INUNDATION MAINLY SOUTH AND EAST PARTS OF ISLAND WITH LESS THAN HALF-MILE INLAND PENETRATION. IN NAPLES, 3-4 FT INUNDATION ALONG GULF WATER FRONT WITHIN 1 BLOCK OF BEACH, WITH LESS THAN A HALF-MILE INLAND PENETRATION. HIGHEST INUNDATION VALUES NOTED IN VANDERBILT BEACH AS WELL AS SOUTH OF NAPLES PIER. ALONG NAPLES BAY, INUNDATION OF 1 TO 2 FEET ON WEST SIDE OF BAY JUST SOUTH OF TAMIAMI TRAIL, RESULTING IN ABOUT 2-3 FT ABOVE MHHW.

MIAMI-DADE COUNTY: 3-5 FEET INUNDATION ALONG BISCAYNE BAY SHORELINE FROM HOMESTEAD TO DOWNTOWN MIAMI/BRICKELL, WITH HIGHEST ESTIMATED VALUE OF 6 FEET IN MATHESON HAMMOCK PARK AND COCONUT GROVE. INLAND PENETRATION LESS THAN A HALF-MILE, PRIMARILY AFFECTING BAYFRONT PROPERTIES AND ADJACENT STREETS. LESSER INUNDATION NORTH OF DOWNTOWN MIAMI AND ALONG ATLANTIC OCEANFRONT.

BROWARD COUNTY: HIGHEST INUNDATION 2-3 FEET ALONG BARRIER ISLAND FROM FORT LAUDERDALE BEACH SOUTH. OVERWASH OF AIA IN FORT LAUDERDALE INTO ADJACENT STREETS. INLAND PENETRATION LESS THAN A HALF-MILE. LITTLE SIGNIFICANT INUNDATION NOTED NORTH OF FORT LAUDERDALE BEACH.

PALM BEACH COUNTY: LITTLE SIGNIFICANT INUNDATION NOTED.

F. TORNADOES...

(DIST)CITY/TOWN LAT LON (DEG DECIMAL	COUNTY	DATE/ TIME(UTC)	EF SCALE (IF KNOWN)
1 S WILTON MANORS 26.15 -80.13	COASTAL BROWARD	09/2235	EF0

A TORNADO WAS REPORTED BY A HAM RADIO OPERATOR IN OAKLAND PARK AT 635 PM EDT.

4 W HOMESTEAD PARK 25.44 -80.39	COASTAL MIAMI DA	09/2320	- I

A TORNADO WAS REPORTED BY MEMBER OF THE PUBLIC AROUND HOMESTEAD MOTOR SPEEDWAY AT 720 PM EDT.

2 W OCHOPEE 25.89 -81.33	WESTERN COLLIER	09/1620	EF1

LEANING WOOD POWER POLES ALONG TAMIAMI TRAIL/US 41 BETWEEN OCHOPEE AND CARNESTOWN/SR 29 INTERSECTION.

G. STORM IMPACTS BY COUNTY...

COUNTY	DEATHS	INJURIES	EVACUATIONS DESCRIPTION
COLLIER	1		17,000

SUBJECT TO CHANGE WITH SUBSEQUENT UPDATES. ESTIMATED $320 MILLION IN DAMAGE TO UNINCORPORATED COLLIER COUNTY, DOES NOT INCLUDE TOTALS FROM NAPLES, MARCO ISLAND AND EVERGLADES CITY. MAJORITY OF STRUCTURES IN EVERGLADES CITY SUFFERED MAJOR WIND AND/OR WATER DAMAGE. COUNTY-WIDE, AT LEAST 88 BUILDINGS DESTROYED AND 1,500 WITH MAJOR DAMAGE. HEAVY TREE AND POWER POLE DAMAGE IN AREAS AFFECTED BY

EYE WALL, INCLUDING PORT OF THE ISLANDS, MARCO ISLAND, COLLIER SEMINOLE STATE PARK, GOLDEN GATE, ORANGETREE AND PARTS OF CITY OF NAPLES CONSISTENT WITH TYPICAL DAMAGE CAUSED BY WINDS OVER 110 MPH. EVIDENCE OF POSSIBLE MINI-SWIRLS IN NE QUADRANT OF EYE WALL IN THE ORANGETREE/VALENCIA LAKES AREA NORTH OF GOLDEN GATE ESTATES AS SUGGESTED BY DAMAGE PATTERN. CONCENTRATED TREE DAMAGE IN PORT OF THE ISLANDS, COLLIER SEMINOLE STATE PARK AND MARCO ISLAND ALSO SUGGEST POSSIBLE MINI-SWIRLS, BUT NOT DETERMINED WITH SAME LEVEL OF CONFIDENCE AS IN ORANGETREE. 197,630 FPL CUSTOMERS LOST POWER, 94% OF TOTAL CUSTOMERS. OVER 30,000 INSURANCE CLAIMS FILED.

HENDRY 1

PRELIMINARY DAMAGE ESTIMATES INCLUDE 131 RESIDENTIAL STRUCTURES WITH MAJOR DAMAGE AND 42 DESTROYED. OVER 2,000 INSURANCE CLAIMS FILED AND ALMOST 10,000 CUSTOMERS LOST POWER, VIRTUALLY ALL CUSTOMERS IN THE COUNTY.

GLADES

334 STRUCTURES SUFFERED MAJOR DAMAGE, 118 UNINHABITABLE AND 33 DESTROYED WITH 50% OF COUNTY ASSESSMENT COMPLETED. TREE AND POWER POLE DAMAGE THROUGHOUT COUNTY WITH SEVERAL HOMES SUSTAINING TOTAL ROOF FAILURE. TOTAL OF 689 INSURANCE CLAIMS FILED.

MIAMI DADE 5 31,092

PRELIMINARY ASSESSMENT OF 1,000 RESIDENCES SUSTAINING SIGNIFICANT DAMAGE. ABOUT 50% OF AGRICULTURAL INDUSTRY DAMAGED WITH ESTIMATED LOSSES CLOSE TO $245 MILLION. TOTAL OF 888,530 FPL CUSTOMERS LOST POWER, 80% OF TOTAL CUSTOMERS IN COUNTY. MAJORITY OF DAMAGE COUNTY-WIDE WAS TO TREES AND FENCES, WITH FLOODING DAMAGE IN AREAS IMPACTED BY STORM SURGE ALONG THE BISCAYNE BAY SHORELINE. TOTAL OF 55,012 INSURANCE CLAIMS FILED IN THE COUNTY.

BROWARD 19 17,000

12 OF THE 19 REPORTED DEATHS OCCURRED IN NURSING HOME IN HOLLYWOOD FROM HYPERTHERMIA CAUSED BY LOSS OF POWER. TOTAL OF 689,500 FPL CUSTOMERS LOST POWER, ABOUT 74% OF TOTAL CUSTOMERS IN THE COUNTY. 38,836 INSURANCE CLAIMS FILED. DAMAGE PRIMARILY TO TREES AND FENCES.

PALM BEACH 3 17,263

TOTAL OF 566,240 FPL CUSTOMERS LOST POWER, OVER 75% OF TOTAL CUSTOMERS IN THE COUNTY. 18,930 INSURANCE CLAIMS FILED. MAJORITY OF DAMAGE WAS TO TREES AND FENCES.

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Legend:
I-Incomplete Data
E-Estimated

REYNES/MOLLEDA/HAGEN

Appendix G – Post Tropical-Cyclone Report from the Key West NWS WFO

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699
ACUS72 KKEY 291651 AAB
PSHKEY

POST TROPICAL CYCLONE REPORT...HURRICANE IRMA...UPDATED
NATIONAL WEATHER SERVICE KEY WEST FL
1250 PM EDT FRI SEP 29 2017

UPDATED TEXT IN HEADLINES AND INCLUDED BAHIA HONDA STATE PARK
RAINFALL TOTAL.

NOTE: THE DATA SHOWN HERE ARE PRELIMINARY....AND SUBJECT TO UPDATES
AND CORRECTIONS AS APPROPRIATE.

THIS REPORT INCLUDES EVENTS OCCURRING WHEN WATCHES AND/OR WARNINGS
WERE IN EFFECT...OR WHEN SIGNIFICANT FLOODING ASSOCIATED WITH IRMA
OR ITS REMNANTS WAS AFFECTING THE AREA.

COUNTIES INCLUDED...MONROE


A. LOWEST SEA LEVEL PRESSURE/MAXIMUM SUSTAINED WINDS AND PEAK GUSTS
------------------------------------------------------------------------
METAR OBSERVATIONS...
NOTE: ANEMOMETER HEIGHT IS 10 METERS AND WIND AVERAGING IS 2 MINUTES
------------------------------------------------------------------------
LOCATION  ID    MIN    DATE/     MAX      DATE/     PEAK    DATE/
LAT  LON        PRES   TIME      SUST     TIME      GUST    TIME
DEG DECIMAL     (MB)   (UTC)     (KT)     (UTC)     (KT)    (UTC)
------------------------------------------------------------------------
KEYW-KEY WEST INTERNATIONAL AIRPORT
24.56 -81.76                 I 020/052  10/1115   030/082 10/1113

KMTH-FLORIDA KEYS MARATHON INTERNATIONAL AIRPORT
24.73 -81.05                 I 060/044  09/2353   060/062 09/2345


NON-METAR OBSERVATIONS...
NOTE: ANEMOMETER HEIGHT IN METERS AND WIND AVERAGING PERIOD IN
MINUTES INDICATED UNDER MAXIMUM SUSTAINED WIND IF KNOWN
------------------------------------------------------------------------
LOCATION  ID    MIN    DATE/     MAX      DATE/     PEAK    DATE/
LAT  LON        PRES   TIME      SUST     TIME      GUST    TIME
DEG DECIMAL     (MB)   (UTC)     (KT)     (UTC)     (KT)    (UTC)
------------------------------------------------------------------------
KYWF1 - KEY WEST NOAA/NOS TIDE GAUGE
25.55 -81.81                   340/061  10/1224   340/078 10/1224
ANEMOMETER HEIGHT 15 M (49.2 FT AGL)
ADDITIONAL WIND REPORTS FOR THE NORTH KEY
LARGO HANDAR AND KEY DEER NWR RAWS IN SECTION A AND STORM TOTAL
RAINFALL REPORTS IN SECTION C.
VCAF1 - VACA KEY NOAA/NOS TIDE GAUGE
24.71 -81.11                   160/054  10/1342   160/081 10/1342
ANEMOMETER HEIGHT 6.5 M (21.3 FT AGL)

XSMS - WEATHERFLOW KEY WEST COAST GUARD SECTOR
24.57 -81.57    952.9 10/1225   014/053  10/1140   349/077 10/1245

XUMK - WEATHERFLOW UPPER MATECUMBE KEY
24.92 -80.64    976.3 10/1256   160/061  10/1436   158/081 10/1401

XSKL - WEATHERFLOW SOUTH KEY LARGO
25.10 -80.43    980.8 10/1347   135/054  10/1542   135/074 10/1542

TS607 - KEY DEER NATIONAL WILDLIFE REFUGE RAWS (BIG PINE KEY)
24.72 -81.39                   090/048  10/1438   104/104 10/1338
ANEMOMETER HEIGHT 6.1 M (20 FT AGL)
SUSTAINED WINDS 10-MIN AVERAGE
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KLNF1 - NORTH KEY LARGO HANDAR
25.19 -80.35 987.5 10/1400 110/045 10/1330 110/063 10/1300
                    10/1500

WFO KEY WEST (ROOFTOP RSOIS)
24.55 -81.79   030/079 10/1155

USCG ISLAMORADA STATION
24.95 -80.59   050/071 10/0430
ANEMOMETER HEIGHT 5.5 M (18 FT AGL)

104.1 FM STUDIO - UPPER SUGARLOAF KEY
24.67 -81.53 939.7 10/1315
REMARK: REPORTED AS 27.75 IN

B. MARINE OBSERVATIONS...
NOTE: ANEMOMETER HEIGHT IN METERS AND WIND AVERAGING PERIOD IN
MINUTES INDICATED UNDER MAXIMUM SUSTAINED WIND IF KNOWN

LOCATION ID LAT LON DEG DECIMAL	MIN PRES (MB)	DATE/ TIME (UTC)	MAX SUST (KT)	DATE/ TIME (UTC)	PEAK GUST (KT)	DATE/ TIME (UTC)
PLSF1 - PULASKI SHOAL LIGHT CMAN						
24.70 -82.77	986.5	10/1500	010/059	10/1200	010/072	10/1142
ANEMOMETER HEIGHT 17.7 M (58.1 FT AMSL)						
XSMS - WEATHERFLOW SMITH SHOAL LIGHT						
24.72 -81.92	964.6	10/1230	027/067	10/1210	035/084	10/0905
XALG - WEATHERFLOW ALLIGATOR REEF LIGHT						
24.85 -80.62	977.0	10/1204	106/062	10/1159	106/081	10/1159
MLRF1 - MOLASSES REEF LIGHT CMAN						
25.01 -80.38	884.7	10/1300 I	130/065	10/1200	140/080	10/1300
			140/065	10/1300		
ANEMOMETER HEIGHT 15.8 M (51.8 FT AMSL)						
XCFL - WEATHERFLOW CARYSFORT REEF LIGHT						
25.23 -80.21	986.8	10/1325	120/062	10/1240	124/081	10/1335
ANEMOMETER HEIGHT 47 FEET AMSL						

C. STORM TOTAL RAINFALL FROM 0400 UTC SEP 09 UNTIL 0400 UTC SEP 12

CITY/TOWN LAT LON DEG DECIMAL	COUNTY	ID	RAINFALL (IN)
KEY DEER NATIONAL WILDLIFE REFUGE RAWS (BIG PINE KEY)			
24.72 -81.39	MONROE	TS607	12.54
5.3 SW KEY LARGO			
25.05 -80.49	MONROE	COCORAHS	9.98
RAINFALL RECOVERED FOR PERIOD SEP 08 THROUGH SEP 15			
0.9 SSW CUDJOE KEY			
24.66 -81.51	MONROE	COCORAHS	9.76
RAINFALL RECOVERED FOR PERIOD SEP 09 THROUGH SEP 18			
6.8 ENE MARATHON			
24.74 -80.98	MONROE	COCORAHS	9.42
RAINFALL RECOVERED FOR PERIOD SEP 09 THROUGH SEP 19			
1.3 NE KEY WEST			
24.57 -81.76	MONROE	COCORAHS	9.03
1 WSW BAHIA HONDA KEY			
24.66 -81.28	MONROE	BPNF1	7.58
RAINFALL RECOVERED FOR PERIOD SEP 06 THROUGH SEP 22			

NORTH KEY LARGO HANDAR
24.19 -80.35 MONROE KLNF1 7.16

6.2 NE KEY LARGO
25.17 -80.37 MONROE COCORAHS 6.93
RAINFALL RECOVERED FOR PERIOD SEP 07 THROUGH SEP 13

1 SW KEY WEST
24.55 -81.79 MONROE KKEY 5.70

REMARKS (UPDATED): DUE TO INCOMPLETE RAINFALL RECORDS FROM FAILED AUTOMATED STATIONS AND MANDATORY RESIDENTIAL EVACUATION OF MONROE COUNTY FLORIDA KEYS...PLEASE NOTE SPECIFIC RAINFALL RECOVERY PERIODS AS RESIDENTS AND PARTNERS RETURNED TO REPORT TOTAL RAINFALL.

D. INLAND FLOODING...

MONROE FLORIDA KEYS...RAINFALL FLOODING OF 6 TO 18 INCHES IN DEPTH OBSERVED IN OCEAN REEF DURING MONROE EOC CONTINUITY OF OPERATIONS CLEARLY DISTINGUISHABLE FROM STORM SURGE. RAINFALL ON TOP OF EXISTING STORM SURGE RESULTED IN TOTAL WATER HEIGHT 6 TO 10 INCH HIGHER STORM SURGE VALUES IN NEW TOWN KEY WEST PER MEASURED WATERLINES.

REMARKS: STORM SURGE VALUES GREATLY EXCEEDED POTENTIAL RAINFALL FLOOD DEPTHS ACROSS MOST AREAS OF THE FLORIDA KEYS AND WILL B (TOP OF THE 5TH STOREY ABOVE GROUND)E VERY DIFFICULT TO DISTINGUISH.

E. MAXIMUM STORM SURGE AND STORM TIDE...
OFFICIAL TIDE GAUGES NOTED WITH LEADING G

COUNTY	CITY/TOWN OR LOCATION	SURGE (FT)	TIDE (FT)	DATE/ TIME	BEACH EROSION
MONROE	G KYWF1-KEY WEST	2.77	2.73	10/1742	I
MONROE	G KYWF1-KEY WEST	3.29	2.56	10/1424	I
MONROE	G VCAF1-VACA KEY	2.77	2.21	11/0118	I
MONROE	G VCAF1-VACA KEY	2.80	2.19	11/0130	I
MONROE	G MANATEE BAY CR		4.05	10/1000	I

REMARKS: FOR EACH STATION...
...FIRST ROW DENOTES TIME OF MAX STORM TIDE IN FT NAVD88
...SECOND ROW DENOTES TIME OF MAX STORM SURGE IN FT
...MANATEE BAY CREEK USGS GAUGE

ADDITIONAL REMARKS:
BASED ON DAMAGE SURVEYS...THE ESTIMATED INUNDATION OR PEAK FLOODING ABOVE GROUND (ABOVE MEAN HIGHER HIGH WATER - MHHW) REACHED 5 TO 8 FEET OVER PORTIONS OF THE LOWER AND MIDDLE KEYS. THIS INCLUDES PORTIONS OF SUGARLOAF KEY...CUDJOE KEY...RAMROD KEY...BIG PINE KEY...BAHIA HONDA KEY...VACA KEY (MARATHON AND KEY COLONY BEACH)...AND DUCK KEY.

OFFICIAL GAUGES AT KEY WEST AND VACA KEY ARE LOCATED ON THE GULF OF MEXICO COAST AND BAYSIDE RESPECTIVELY. KEY WEST STORM TIDE LEVELS WERE OBSERVED TO BE CONSISTENT WITH OBSERVED STORM SURGE FLOODING IN KEY WEST. VACA KEY BAYSIDE WAS IN THE LEE OF THE MAXIMUM SOUTH WINDS WITH MAXIMUM STORM TIDE VALUES OCCURRING WELL AFTER HURRICANE IRMA WAS CENTERED 35 MILES EAST-NORTHEAST OF FORT MYERS.

F. TORNADOES...

(DIST)CITY/TOWN COUNTY DATE/ EF SCALE
LAT LON (DEG DECIMAL TIME(UTC) (IF KNOWN)
DESCRIPTION

REMARKS: NO DISCERNABLE TORNADO DAMAGE PATHS WERE DETERMINED AT THIS TIME. THERE WAS EVIDENCE OF NON-UPDRAFT-INDUCED MESO-VORTICY DAMAGE RESULTING IN OPPOSITE FALL OF A CONTINUOUS STRETCH OF WOOD AND HOLLOW SPUN CONCRETE POWER DISTRIBUTION POLES ALONG KEY DEER BOULEVARD ALMOST TWO MILES NORTHWEST OF AN AREA OF LOCALLY EXTREME WIND DAMAGE ON BIG PINE KEY. THIS WIND DAMAGE LIKELY OCCURRED WITHIN THE ALMOST TWO-HOUR PASSAGE OF THE EASTERN EYEWALL OF HURRICANE IRMA.

G. STORM IMPACTS BY COUNTY...

COUNTY	DEATHS	INJURIES	EVACUATIONS	DESCRIPTION
MONROE	9	SEE REMARKS	SEE REMARKS	

THE FOLLOWING REPORT IS PRELIMINARY AND MAY BE REVISED PENDING OFFICIAL JURISDICTIONAL AND DIVISIONAL REPORTS.

REMARKS: FATALITY INFO RELEASED BY THE MONROE COUNTY SHERIFFS OFFICE. THIS VALUE MAY BE REVISED PENDING RELEASE OF ADDITIONAL INFORMATION FROM AN OFFICIAL MONROE COUNTY SOURCE. INCLUDES BOTH DIRECT AND INDIRECT CAUSES.

MORE THAN 40 INJURIES WERE IMMEDIATELY REPORTED WITHIN ONE DAY OF HURRICANE IRMA'S DEPARTURE...BUT TOTAL INJURIES BOTH DIRECT AND INDIRECT ARE PENDING.

PRELIMINARY EVACUATION TOTALS PRIOR TO THE ARRIVAL OF HURRICANE IRMA OUT OF APPROXIMATLEY 73,000 RESIDENTS OF MONROE COUNTY INDICATE APPROXIMATELY A 75 PERCENT EVACUATION RATE.

MONROE LOWER KEYS...KEY WEST THROUGH LITTLE DUCK KEY

OVER BAHIA HONDA THROUGH LITTLE TORCH KEY...THE STRONGEST ESTIMATED WINDS WERE EVIDENT...POSSIBLY ATTRIBUTABLE TO A MESO-VORTEX CIRCULATION WITHIN THE EYEWALL. A GENERAL PATH OF MAXIMUM WIND DAMAGE OCCURRED FROM JUST SOUTH OF BIG PINE KEY PARK THROUGH KEY DEER BOULEVARD NORTH OF SOUTH STREET. COMPLETE ROOF STRUCTURE FAILURE INVOLVING SNAPPED WOOD TRUSSES WAS OBSERVED ON SEVERAL HOMES ALONG WITH COMPLETE EXTERIOR WALL FAILURE ON A WATERFRONT HOME. THE PATH CONTINUED ACROSS KEY DEER BOULEVARD WHERE UTILITY POLES BOTH OF WOOD AND HOLLOW-SPUN CONCRETE DESIGN WERE SNAPPED WITH NUMEROUS SPANS LYING IN COMPLETELY OPPOSITE DIRECTIONS...THE SOUTHERN SPANS OPPOSITE TO THE PATH DIRECTION. PEAK WIND GUSTS ESTIMATED 150 TO 160 MPH ALONG THE NORTHERN SIDE OF THE POSSIBLE CIRCULATION. ELSEWHERE ACROSS BIG PINE KEY...SIGNFICANT ROOF LOSS/EXTERIOR WALL COLLAPSE OF OLDER MOBILE HOMES...LARGE SECTIONS OF ROOF COVERINGS ALL TYPES...SOFFET DAMAGE AND LARGE METAL ROOF...WALL...AND DOOR FAILURES ON A MODERN METAL BUILDING SYSTEM INDICATED MORE WIDESPREAD ESTIMATED PEAK WIND GUSTS OF 120 TO 130 MPH.

FROM RAMROD KEY THROUGH SUGARLOAF KEY...WIDESPREAD AND BUSINESS - RESIDENTIAL ROOF COVERING DAMAGE OF ALL TYPES WAS OBSERVED...WITH ISOLATED ROOF TRUSS OR GABLE END FAILURES OF OLDER DESIGN. IT WAS NOTED A DIAGONAL METAL CROSS BRACE ON THE POWER TRANSMISSION LINE ACROSS NILES CHANNEL BECAME DETACHED FROM ONE VERTICAL CONCRETE COLUMN INDICATIVE OF SIGNIFICANT FLEXING OF THE TRANSMISSION TOWERS. ESTIMATED PEAK WIND GUST 110 TO 120 MPH.

FROM LOWER SUGARLOAF THROUGH BIG COPPITT KEY...WIDESPREAD SMALL RESIDENTIAL AND BUSINESS ROOF COVERINGS WITH ISOLATED STRUCTURAL GABLE END OR OVERHANG DAMAGE WAS NOTED ESPECIALLY IN AREAS OF OPEN

NORTH WIND EXPOSURE. ISOLATED MOBILE HOME DESTRUCTION INCLUDING COLLAPSE OF ALL WALLS...ALTHOUGH SOME MODERN MOBILE HOMES ADJACENT TO PROPERTIES WITH SEVERE DESTRUCTION EXHIBITED FEW SIGNS OF COSMETIC DAMAGE. ESTIMATED PEAK WIND GUSTS 100 TO 110 MPH.

FROM BOCA CHICA KEY THROUGH KEY WEST...LOSSES OF ROOF COVERINGS...SOFFET DAMAGE TO RESIDENTIAL HOMES AND CONDOMINIUMS WERE NOTED...WITH TWO LODGING PROPERTIES INDICATED WITH GABLE END WOOD TRUSS FAILURES OF BOTH MID-RISE AND TWO-STOREY DESIGN. PEAK ESTIMATED WIND GUSTS 90 TO 100 MPH...ALTHOUGH THE MID-RISE ROOF STRUCTURE FAILURE LOCATED WITH OPEN NORTH WIND EXPOSURE OFF THE GULF OF MEXICO MAY HAVE INDICATED ISOLATED STRONGER WIND GUSTS OF 100 TO 110 MPH AT ROOFTOP LEVEL IN THIS HOUR.

TREE DAMAGE WAS WIDESPREAD AND EXTENSIVE.

MONROE MIDDLE KEYS...PIGEON KEY/MARATHON THROUGH CRAIG KEY

WIND DAMAGE FROM LONG KEY/LAYTON THROUGH GRASSY KEY INCLUDED SEVERAL SECTIONS OF PULLED METAL BUILDING SYSTEM WALL PANELS...DAMAGE TO BUILT-UP AND SHINGLE ROOF COVERINGS...VINYL SIDING...AND PLASTIC PANELED SIGNS. PEAK WIND GUSTS ESTIMATED 90 TO 100 MPH.

THE FOLLOWING REPORT IS PRELIMINARY AND MAY BE REVISED PENDING OFFICIAL JURISDICTIONAL AND DIVISIONAL REPORTS.
IN THE KEY COLONY BEACH AND MARATHON VICINITY...AREAL OVERFLIGHT FROM LOCAL AGENCIES REVEALED SIGNIFICANT ROOF COVERING LOSS AND ISOLATED ROOF TRUSS DAMAGE ON OLDER DESIGN OCEANFRONT HOMES. OLDER RETAIL STORES AND A STRIP MALL DISPLAYED COMPLETE UPLIFT AND COLLAPSE OF ROOF STRUCTURES OF BOX TRUSS TYPE...WHILE MODERN DESIGN STRUCTURES DISPLAYED SIGNIFICANT SECTIONS OF ROOF COVERING LOSS...INCLUDING METAL PANEL-OVER WOOD SHEATHING AND BUILT-UP TAR/RUBBER COVERINGS. SOME OLDER SERVICE STATION CANOPIES DISPLAYED COLUMN BUCKLING WHEREAS MODERN DESIGNS PERFORMED WELL OR HAD SLIGHT RACKING. SIGNIFICANT ROOF PANEL DAMAGE TO MOBILE HOMES OVER BOTH OLDER AND MODERN DESIGN. WHILE TRAFFIC SIGNAL MASTS REMAINED IN PLACE SOME HORIZONTALLY MOUNTED SIGNALS WERE STILL BLOWN 90 DEGREES OUT OF ALIGNMENT. PEAK WIND GUSTS ESTIMATED 100 TO 115 MPH.

TREE DAMAGE WAS WIDESPREAD AND EXTENSIVE.

MONROE UPPER KEYS...LOWER MATECUMBE KEY THROUGH OCEAN REEF

WIND DAMAGE FROM OCEAN REEF THROUGH KEY LARGO WAS CONSISTENT WITH ESTIMATED PEAK GUSTS NEAR 90 MPH WITH LIMITED LOSSES OF BUILT-UP ROOF COVERINGS...AND METAL FASCIA FROM GAS STATION CANOPIES. SOME OLDER STRIP MALLS IN KEY LARGO DISPLAYED LARGE LOSSES OF SHINGLE AND BARRELL TILE COVERINGS.

IN TAVERNIER...MODERN DESIGN LARGE METAL BUILDING SYSTEMS DISPLAYED FAILURE OF OVERHEAD DOORS ON EAST AND SOUTHEAST-FACING SIDES...WITH OLDER DESIGNS INCLUDING SOME PULLED EXTERIOR SHEET PANELS. PEAK GUSTS NEAR 100 MPH ESTIMATED. SIGN DAMAGE WAS MORE PREVALENT THAN IN KEY LARGO.

IN ISLAMORADA...WIND ESTIMATION AMONG MOBILE HOMES WAS DIFFICULT DUE TO IMPACTS OF STORM SURGE FLOODING...HOWEVER ROOF PANELS WERE STRIPPED FROM SOME HOMES ALONG WITH VINYL SIDING DAMAGE ON MODERN SINGLE FAMILY HOMES. ONE SERVICE STATION CANOPY WAS COMPLETELY OVERTURNED...HOWEVER THERE WAS NO DISCERNABLE DAMAGE TO THE FOUNDATION FLANGES OR COLUMNS. PEAK WIND GUSTS ESTIMATED AT 90 TO 100 MPH.

TREE DAMAGE WAS WIDESPREAD AND EXTENSIVE.

THROUGHOUT THE KEYS--WIDESPREAD LOSS OF ELECTRIC POWER...CELLULAR COMMUNICATIONS AND WATER PRESSURE OCCURRED. MOST POWER PROBLEMS WERE DUE TO FAILURE OF DISTRIBUTION SYSTEMS...ALTHOUGH SIGNICANT

INSULATOR DAMAGE OCCURRED NEAR THE EAST END OF LONG KEY ON THE
TRANSMISSION LINE. THE WATER TRANSMISSION PIPE WAS LARGELY
INTACT...HOWEVER NUMEROUS NEIGHBORHOOD DISTRIBUTION LEAKS OCCURRED
AS TREES UPROOTED. NO COMMUNICATIONS TOWERS WERE REPORTED COLLAPSED
OR DEFORMED...ALTHOUGH MOUNTED ANTENNAS ON THE TOWERS WERE DAMAGED
OR FELL OUT OF ALIGNMENT. A FEW MICROWAVE RELAY DISHES WERE TORN
FROM THEIR TOWERS. WIDESPREAD DAMAGE TO TELECOM AND FIBER CABLES DUE
TO FALLING TREES AND DIRECT WIND IMPACTS STRIPPING FROM POLES AND
BEING STRETCHED ACROSS STREETS.

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LEGEND:
I-INCOMPLETE DATA
E-ESTIMATED

RIZZO/MORELAND

Hurricane Matthew – A Major 2016 Hurricane That Brushed Florida But Had Major Impacts

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20 October 2016

General Overview

Figure 1: MODIS imagery from NASA's Terra satellite of Hurricane Matthew approaching the eastern coast of Florida on 7 October. Courtesy: NASA.

The center of Hurricane Matthew tracked just east of Florida's Atlantic coast on 7 October (Figure 2). It did so after quite a spectacular history. An easterly wave exited western Africa around 22 September, after which it moved just south of Cape Verde. By the time the wave had approached the Lesser Antilles, thunderstorm activity

developed. Passing by Barbados and having developed the requisite closed circulation, the tropical low was christened as Tropical Storm Matthew on the 28th. Thereafter, steered due westward by strong pressure and height ridging to the north, Matthew entered the Caribbean Sea and encountered very warm waters and a marginal wind shear environment. On the 29th, Matthew strengthened into a Category One hurricane. Despite the presence of northwesterly wind shear, the storm underwent explosive development and rose to Category Five strength by the afternoon of the 30th at a latitude of 13.3 degrees north of the Equator, making it the strongest hurricane on record at such a low latitude. Matthew also maintained Category Four or Five strength for the longest duration on record of any hurricane in the eastern Caribbean Sea. Slowing down and weakening slightly to Category Four strength, Matthew eventually turned northward on the 2nd and accelerated. On the morning of the 4th, it made landfall on Haiti at Category Four strength, making it the strongest hurricane to make landfall on the nation since Hurricane Cleo in 1964. That evening, it made landfall on eastern Cuba. Although the mountains of the Cuba disrupted the structure of the storm, Matthew was able to re-strengthen to Category Four strength between Cuba and the Bahamas. The storm then crossed the Bahamas -- making it the only storm on record to make landfall on all three of Haiti, Cuba, and the Bahamas as a major hurricane (Category Three or greater) -- and approached the eastern coast of Florida in the Melbourne area on the 7th. Thereafter, it paralleled the coast, with the center of the eye remaining 30 to 40 miles off shore, until it moved into waters off shore of Georgia late on the 7th. Ultimately, having maintained Category Three strength or greater for 7.25 days, Matthew was the longest-duration major (Category Three or greater) Atlantic tropical cyclone on record after 25 September.

Despite its notable impacts on Florida, discussed further in the next section, it is emphasized that Hurricane Matthew never, by definition, made landfall on Florida. The National Hurricane Center, which is the authority responsible for identifying hurricane landfalls and the locations of those landfalls, provides the following definition and explanation of landfall on its Web site:

> *[Landfall is] the intersection of the surface center of a tropical cyclone with a coastline. Because the strongest winds in a tropical cyclone are not located precisely at the center, it is possible for a cyclone's strongest winds to be experienced over land even if landfall does not occur. Similarly, it is possible for a tropical cyclone to make landfall and have its strongest winds remain over the water. Compare direct hit, indirect hit, and strike.*

As Matthew did not make landfall on Florida, the record streak of no major hurricanes making landfall on the state continues, stretching back to the landfall of Hurricane Wilma, rated Category Three, on 24 October 2005. Although Matthew did make landfall on South Carolina, it was not a major hurricane at that time. Therefore, the record streak of no major Atlantic-basin hurricanes making landfall on the United States also continues, stretching back to the landfall of Wilma in 2005.

Figure 2: Map showing track and intensity of Hurricane Matthew. Courtesy: Aaron Steckelberg, The Washington Post.

Impacts on Florida

Despite never making a landfall on the state, Hurricane Matthew had a considerable impact on the eastern coast of the Florida peninsula from the Treasure Coast northward. It brought historically high and damaging storm surge, tropical-storm- to hurricane-force winds, and heavy rains to the land mass.

Matthew may be most notable for its historically high storm surge, especially in Duval, Flagler, Nassau, and St. Johns Counties. Storm-surge heights for selected locations are shown in the following table.

LOCATION, BODY OF WATER	COUNTY	STORM SURGE HEIGHT (feet)
Fernandina Beach, Atlantic Ocean	Nassau	6.91[1]
Palm Coast, Saltwater Canal	Flagler	6
Mayport, St. Johns River	Duval	5.22[2]
Racy Point, St. Johns River	St. Johns	5.05
Dames Point Bridge, St. Johns River	Duval	4.19
Trident Pier, Atlantic Ocean	Brevard	4.09
Buckman Bridge, St. Johns River	Duval	2.43
Lake Worth, Atlantic Ocean	Palm Beach	1.68
Virginia Key, Atlantic Ocean	Miami-Dade	1.02

Notes:
[1]*Third-highest storm surge on record after 9.68 feet on 2 October 1898 (from a major hurricane that made landfall near Brunswick, Georgia) and 7.10 feet on 19 October 1944 (from the so-called Cuba-Florida hurricane of 1944).*
[2]*Second-highest storm surge on record after 8.50 feet on 2 October 1898.*

The storm surge flooded near-coastal roadways and structures, especially in such communities along the First Coast and St. Johns River as Flagler Beach, Jacksonville Beach, Palm Coast, St. Augustine, and St. Augustine Beach (Figure 3). The surge, along with high waves, severely eroded beaches and dunes and, in some cases, compromised structures and roadways (Figure 4).

Figure 3: Storm-surge flooding in St. Augustine Beach on the afternoon of 7 October. Courtesy: News4JAX.

Figure 4: Damage to the A1A in Flagler Beach from beach erosion caused by storm surge and high waves. Courtesy: Miami Herald.

Hurricane-force wind gusts were registered along and near the Space Coast, and tropical-storm-force sustained winds and gusts were registered at stations throughout the eastern half of the peninsula from near Miami northward. The following table displays storm-maximum sustained winds and wind gusts at selected stations.

LOCATION[1]	COUNTY	MAXIMUM SUSTAINED WIND (miles per hour)	MAXIMUM WIND GUST (miles per hour)
Cape Canaveral – USAF Tower No. 3[2]	Brevard	77	107
Vero Beach International Airport	Indian River	55	74
Daytona Beach International Airport[3]	Volusia	52	71
Melbourne International Airport	Brevard	53	70
Jacksonville Craig Municipal Airport	Duval	N/A	69
Jacksonville Naval Air Station	Duval	N/A	68
St. Lucie County International Airport	St. Lucie	45	68
Sanford Airport	Seminole	47	63
De Land Municipal Airport	Volusia	41	62
Stuart – Witham Field	Martin	41	61
Orlando International Airport	Orange	46	61
Fernandina Beach Municipal Airport	Nassau	N/A	60

Mayport Naval Station	Duval	N/A	60
Orlando Executive Airport	Orange	41	58
West Palm Beach International Airport[4]	Palm Beach	34	51
Gainesville Regional Airport	Alachua	N/A	48
Leesburg International Airport	Lake	31	48
Pompano Beach Air Park	Broward	38	47
Fort Lauderdale International Airport	Broward	24	45
Fort Lauderdale Executive Airport	Broward	30	44
Kissimmee Gateway Airport	Osceola	36	44
Hollywood Airport	Broward	26	41
Lake City Municipal Airport	Columbia	N/A	41
Opa-Locka Airport	Miami-Dade	28	40
Ocala Municipal Airport	Marion	N/A	39
Okeechobee County Airport	Okeechobee	31	39

Notes:
[1]All locations are associated with observation stations using either the Automated Surface Observation System (ASOS) or Automated Weather Observation System (AWOS) unless otherwise noted. Anemometer height is 10 meters and wind averaging is over two-minute intervals at ASOS/AWOS stations.
[2]U.S. Air Force (USAF) wind tower anemometers are mounted at a height of 54 feet, and their wind-averaging period is five minutes.
[3]This station stopped transmitting and recording data after 11:37 AM EDT on the 7th, likely because of power failure.
[4]Data from the duration of the storm are incomplete, likely because of power failure.

These strong winds caused structural damage that ranged from sporadic and minor in near-coastal southeastern Florida (e.g., a few trees and branches blown down, awnings ripped off buildings) to widespread and more substantial along the Space and First Coasts (e.g., many trees and branches down, building roofs de-shingled, many power lines and poles blown down). At the peak of the storm on the 7th, 1.1 million electric customers had lost electric power statewide. In the city of Jacksonville, widespread power failure caused many sewage lift stations maintained by the Jacksonville Electric Authority (JEA) to be non-operational, leaving the operational ones with an increased demand, which was only increased by run-off from heavy rainfall from the storm. As a result, the JEA was forced to dump 7.4 million gallons of raw sewage into the St. Johns River.

Rainfall totals due to Matthew were moderate to high in proximity to the coast from parts of the Treasure Coast northward and exhibited a sharp gradient westward across the peninsula that is typical of the more western half of tropical cyclones in the Atlantic basin (Figure 5). The greatest totals were in portions of Duval, St. Johns, Volusia, Putnam, and Flagler Counties.

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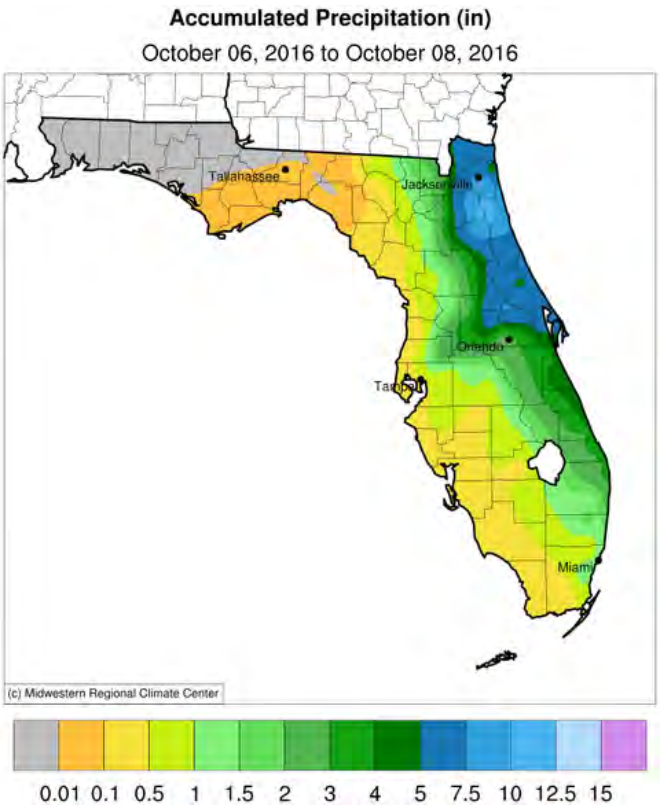

Figure 5: Plot showing Hurricane Matthew storm-total rainfall in Florida. Produced using the cli-MATE utility on the Web site of the Midwestern Regional Climate Center.

The following table displays storm-total rainfall amounts for select specific stations that recorded 3.00 inches or greater.

GAUGE LOCATION	COUNTY	RAINFALL TOTAL (inches)	OBSERVATION NETWORK
St. Augustine 12.2 WNW	St. Johns	9.97	CoCoRaHS
Jacksonville 12.0 SSE	Duval	9.63	CoCoRaHS
Jacksonville 3.8 ESE	Duval	9.55	CoCoRaHS
Fleming Island 2.2 S	Clay	9.29	CoCoRaHS
Sanford	Seminole	8.99	NWS COOP
Jacksonville 10.3 SW	Duval	8.15	CoCoRaHS
Orange Park 3.0 WNW	Clay	8.03	CoCoRaHS
Fleming Island 1.7 SE	Clay	7.91	CoCoRaHS
Jacksonville 11.4 ESE	Duval	7.89	CoCoRaHS
Lakeside 2.9 S	Clay	7.79	CoCoRaHS
Oak Hill 2.8 WSW	Volusia	7.75	CoCoRaHS
Jacksonville 4.8 SW	Duval	7.55	CoCoRaHS
Orange Park 4.1 WSW	Clay	7.54	CoCoRaHS
St. Augustine South 2.1 SSW	St. Johns	7.48	CoCoRaHS
Jacksonville 7.8 SW	Duval	7.44	CoCoRaHS

East Palatka 3.5 NNW	Putnam	7.20	CoCoRaHS
Sanford 1.9 WNW	Seminole	7.07	CoCoRaHS
Orange Park 0.7 NNE	Clay	7.05	CoCoRaHS
Jacksonville 5.9 SW	Duval	6.97	CoCoRaHS
Jacksonville 6.7 WSW	Duval	6.87	CoCoRaHS
Jacksonville 10.0 WSW	Duval	6.83	CoCoRaHS
Jacksonville 4.2 NE	Duval	6.82	CoCoRaHS
Lake Mary 5 WNW	Seminole	6.81	USGS
Jacksonville Craig Municipal Airport	Duval	6.75	ASOS
Hastings 4 NE	St. Johns	6.72	NWS COOP
Jacksonville 9.6 SE	Duval	6.70	CoCoRaHS
Jacksonville International Airport	Duval	6.63	ASOS
De Land 5.7 NW	Volusia	6.61	CoCoRaHS
Interlachen 10.4 NNE	Putnam	6.60	CoCoRaHS
Geneva 5 ESE	Seminole	6.33	USGS
De Leon Springs 6.4 ENE	Volusia	6.32	CoCoRaHS
Federal Point	Putnam	6.01	NWS COOP
Palm Coast 5.9 S	Flagler	6.00	CoCoRaHS
Palm Bay 2.6 SSE	Brevard	5.74	CoCoRaHS
Jacksonville 12.0 SSE	Duval	5.66	CoCoRaHS
Daytona Beach Shores 1.8 SSE	Volusia	5.65	CoCoRaHS
Jacksonville Naval Air Station	Duval	5.62	AWOS
Ormond Beach 3.5 SE	Volusia	5.53	CoCoRaHS
Orlando 7.4 WNW	Orange	5.52	CoCoRaHS
Keystone Heights 7.6 ENE	Clay	5.43	CoCoRaHS
Oviedo 4.0 W	Seminole	5.43	CoCoRaHS
Orange Park 4.8 SSW	Clay	5.28	CoCoRaHS
Titusville 3.5 NW	Brevard	5.26	CoCoRaHS
DeLand 2.0 W	Volusia	5.26	CoCoRaHS
Mount Plymouth 0.2 WSW	Lake	5.22	CoCoRaHS
Oviedo 1.6 SE	Seminole	5.22	CoCoRaHS
De Land 1.4 WSW	Volusia	5.20	CoCoRaHS
Keystone Heights 6.9 ENE	Clay	5.12	CoCoRaHS
Astor Park 5 SW	Lake	5.02	USGS
Orlando 7.2 WNW	Orange	5.01	CoCoRaHS
Keystone Heights 9.1 NE	Clay	4.98	CoCoRaHS
Palm Shores 4.3 NNW	Brevard	4.89	CoCoRaHS
Chuluota 0.9 N	Seminole	4.86	CoCoRaHS
Titusville 8 ENE	Brevard	4.76	USGS
Satsuma 4.0 NE	Putnam	4.72	CoCoRaHS
Pierson 2 WSW	Volusia	4.65	USGS

Keystone Heights 3.5 ENE	Clay	4.61	CoCoRaHS
Orlando 4.9 N	Orange	4.44	CoCoRaHS
Palm Bay 2.7 SSE	Brevard	4.38	CoCoRaHS
Middleburg 3.8 NW	Clay	4.34	CoCoRaHS
Keystone Heights 10.0 NE	Clay	4.30	CoCoRaHS
Orlando 4.8 NNW	Orange	4.19	CoCoRaHS
Sebastian 1.7 SSE	Indian River	4.18	CoCoRaHS
Orange 11.2 NE	Lake	4.15	CoCoRaHS
St. Augustine Airport	St. Johns	4.13	AWOS
Merritt Island 20 N	Brevard	4.10	USGS
Clermont 0.4 SW	Lake	4.07	CoCoRaHS
Vero Beach 3.4 W	Indian River	4.02	CoCoRaHS
Port St. Lucie 4.4 NNW	St. Lucie	3.98	CoCoRaHS
Winter Garden 6.1 SW	Orange	3.96	CoCoRaHS
Union Park 2.9 SSE	Orange	3.90	CoCoRaHS
Fort Pierce 8.6 NW	St. Lucie	3.82	CoCoRaHS
Astatula 1.0 E	Lake	3.80	CoCoRaHS
Melbourne – NWS Office	Brevard	3.80	NWS COOP
Stuart 3.7 SW	Martin	3.75	CoCoRaHS
Palm Shores 1.4 W	Brevard	3.74	CoCoRaHS
Ponce Inlet 0.5 S	Volusia	3.68	CoCoRaHS
Cocoa 2.6 WNW	Brevard	3.62	CoCoRaHS
Merritt Island 3.8 N	Brevard	3.62	CoCoRaHS
St. Lucie County International Airport	St. Lucie	3.62	ASOS
Interlachen 1.3 SW	Putnam	3.60	CoCoRaHS
Melbourne International Airport	Brevard	3.59	ASOS
Vero Beach 3.5 SSW	Indian River	3.58	CoCoRaHS
Groveland 1.7 E	Lake	3.58	CoCoRaHS
Daytona Beach International Airport	Volusia	3.58	ASOS
Savannas Preserve	St. Lucie	3.58	S. Fla. Water Mgmt. Dist.
Orlando 2.9 NNE	Orange	3.54	CoCoRaHS
Fort Pierce	St. Lucie	3.50	NWS COOP
Vero Beach International Airport	Indian River	3.42	ASOS
Bithlo 10 SSW	Orange	3.33	USGS
Port St. Lucie 2.4 N	St. Lucie	3.31	CoCoRaHS
Port Orange 2.9 WSW	Volusia	3.26	CoCoRaHS
Port St. Lucie 4.0 NE	St. Lucie	3.20	CoCoRaHS
Union Park 3.8 ESE	Orange	3.06	CoCoRaHS

Inland flooding of creeks and low-lying, poorly drained land and roadways was reported in Volusia, northern Brevard, Flagler, St. Johns, Putnam, and Duval Counties. Farmers in Putnam and St. Johns Counties reported substantial losses to their crops, averaging 30 to 60 percent, and a few farmers reported total losses. Recently planted crops of Asian vegetables and snap beans were especially damaged, with losses due to that damage estimated by the University of Florida Agricultural Extension at $1.6 million. Crops of cabbage, cauliflower, broccoli, winter squash, mustard greens, sweet corn, and sweet potatoes were also affected. Farmers blamed flooding and soggy soils from excessive rainfall due to both the hurricane and a stalled surface front just before the time of the hurricane.

No tornadoes occurred in Florida because of Hurricane Matthew.

Conclusion

Hurricane Matthew was the first hurricane to have such a high impact on Florida since the historically active 2005 season. It also appears to have been the strongest hurricane, or nearly so, to affect the First Coast region since at least September 1964, when Hurricane Dora made landfall near St. Augustine. Anticipating a more direct hit from the storm, emergency-management officials collectively called for the largest evacuation in Florida history. Nonetheless, even though Matthew did not make as direct a hit on the state as anticipated, nine Floridians perished as a direct result of the storm, and early estimates put damages in the hundreds of millions of dollars in Florida alone.

Supplemental Links

Each Florida National Weather Service Weather Forecast Office (WFO) whose County Warning Area was impacted by Hurricane Matthew published a post-storm summary…
Jacksonville:
http://nws.weather.gov/blog/nwsjacksonville/2016/10/09/quick-review-of-major-hurricane-matthew/
Melbourne:
http://forecast.weather.gov/product.php?site=NWS&issuedby=MLB&product=PSH&format=CI&version=1&glossary=0
Miami:
http://forecast.weather.gov/product.php?site=NWS&issuedby=MFL&product=PSH&format=CI&version=1&glossary=1

The Capital Weather Gang, the Washington Post's weather department, provided excellent near-real-time coverage of the storm while it affected Florida but also the Caribbean Sea before that and the rest of the Southeast after that. The stories published by its reporters can be found here:
https://www.washingtonpost.com/news/capital-weather-gang/

Brian McNoldy of the Rosenstiel School of Marine and Atmospheric Science at the University of Miami has archived radar imagery of Matthew on his Web site:
http://andrew.rsmas.miami.edu/bmcnoldy/tropics/matthew16/Matthew_6-8Oct16_southeast.gif

The following link leads to an article from Fresh Plaza that discusses agricultural losses due to Matthew in St. Johns County as well as in the Caribbean and in the balance of the Southeast:
http://www.freshplaza.com/article/165207/May-take-a-decade-for-ag-to-recover-from-Hurricane-Matthew - .WAeR-NpYde4.twitter

The following link leads to the 17 October 2016 Florida Crop Condition and Progress Report published by the National Agricultural Statistics Service:
https://www.nass.usda.gov/Statistics_by_State/Florida/Publications/Crop_Progress_&_Condition/2016/wc101716.pdf

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:                                                  SNOW   SNOW  WATER
:                                          PCPN    FALL  DEPTH  EQUIV
:
FLPK01  : AUBURNDALE 3.0 SSW          *   : 11.00 /  MM /   MM /   MM
FLCT11  : HERNANDO 1.6 N              *   : 10.22 /  MM /   MM /   MM
FLDS01  : ARCADIA 7.1 WSW             *   : 10.06 /  MM /   MM /   MM
FLST26  : THE VILLAGES 2.8 ESE        *   : 10.05 /  MM /   MM /   MM
FLPK53  : POINCIANA PLACE 2.5 SSW     *   : 9.85 /  MM /   MM /   MM
FLPK58  : BABSON PARK 0.9 NW          *   : 9.70 /  MM /   MM /   MM
FLHL13  : SEBRING 4.7 WNW             *   : 9.68 /  MM /   MM /   MM
FLPK59  : LAKE WALES 0.7 SE           *   : 9.65 /  MM /   MM /   MM
FLPK39  : BARTOW 7.8 SE               *   : 9.53 /  MM /   MM /   MM
FLPS55  : DADE CITY 4.1 SSE           *   : 9.13 /  MM /   MM /   MM
FLST13  : THE VILLAGES 2.7 NNW        *   : 8.77 /  MM /   MM /   MM
FLLV09  : CHIEFLAND 8.5 ENE           *   : 7.92 /  MM /   MM /   MM
FLHB54  : BRANDON 2.6 SW              *   : 7.53 /  MM /   MM /   MM
FLHL10  : AVON PARK 0.6 NW            *   : 7.50 /  MM /   MM /   MM
FLHB14  : BLOOMINGDALE 1.3 ESE        *   : 7.32 /  MM /   MM /   MM
FLHN24  : WEEKI WACHEE 7.1 NNE        *   : 7.30 /  MM /   MM /   MM
FLPS06  : LUTZ 3.4 NE                 *   : 6.93 /  MM /   MM /   MM
FLHB98  : RIVERVIEW 4.8 SSW           *   : 6.77 /  MM /   MM /   MM
FLHB44  : RUSKIN 1.8 ESE              *   : 6.71 /  MM /   MM /   MM
FLHN17  : BROOKSVILLE 1.2 E           *   : 6.45 /  MM /   MM /   MM
FLHB03  : VALRICO 1.1 SE              *   : 6.25 /  MM /   MM /   MM
FLSS44  : ENGLEWOOD 3.7 NNW           *   : 6.13 /  MM /   MM /   MM
FLSS34  : NORTH PORT 2.6 E            *   : 6.09 /  MM /   MM /   MM
FLHB114 : RIVERVIEW 0.9 ENE           *   : 5.88 /  MM /   MM /   MM
FLHB29  : TAMPA 6.5 NNE               *   : 5.75 /  MM /   MM /   MM
FLHB48  : GREATER NORTHDALE 0.4 ENE*  *   : 5.72 /  MM /   MM /   MM
FLHB46  : APOLLO BEACH 3.0 ENE        *   : 5.43 /  MM /   MM /   MM
FLPN16  : CLEARWATER 2.2 S            *   : 5.41 /  MM /   MM /   MM
FLSS14  : NORTH PORT 1.6 ENE          *   : 5.38 /  MM /   MM /   MM
FLPN71  : PALM HARBOR 1.0 S           *   : 5.22 /  MM /   MM /   MM
FLHB05  : CITRUS PARK 1.3 ENE         *   : 5.16 /  MM /   MM /   MM
FLPS43  : LAND O LAKES 1.5 SSE        *   : 5.04 /  MM /   MM /   MM
FLHB37  : LUTZ 2.0 E                  *   : 4.94 /  MM /   MM /   MM
FLPN60  : ST. PETERSBURG 4.5 NW       *   : 4.75 /  MM /   MM /   MM
FLSS15  : NORTH PORT 4.7 NNE          *   : 4.67 /  MM /   MM /   MM
FLPN34  : ST. PETERSBURG 3.2 NNW      *   : 4.46 /  MM /   MM /   MM
FLPN77  : SEMINOLE 3.3 WNW            *   : 4.40 /  MM /   MM /   MM
FLHB116 : LUTZ 0.6 WSW                *   : 4.35 /  MM /   MM /   MM
FLHB130 : APOLLO BEACH 2.7 ENE        *   : 4.25 /  MM /   MM /   MM
FLPN76  : BAY PINES 0.5 NW            *   : 4.21 /  MM /   MM /   MM
FLPN33  : ST. PETERSBURG 2.4 NW       *   : 3.76 /  MM /   MM /   MM
FLHB107 : SUN CITY CENTER 0.9 SSE     *   : 2.63 /  MM /   MM /   MM
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.END
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:                                                  SNOW   SNOW  WATER
:                                          PCPN    FALL  DEPTH  EQUIV
:
FLBV01  : PALM BAY 2.6 SSE           *   : 8.42 /  MM /   MM /   MM
FLBV02  : PALM SHORES 1.4 W          *   : 10.01 /  MM /   MM /   MM
FLBV06  : MELBOURNE 1.1 N            *   : 8.45 /  MM /   MM /   MM
FLBV28  : MICCO 1.3 NW               *   : 6.56 /  MM /   MM /   MM
FLBV38  : TITUSVILLE 3.5 NW          *   : 10.52 /  MM /   MM /   MM
FLBV50  : MELBOURNE 4.7 N            *   : 8.67 /  MM /   MM /   MM
FLBV59  : PALM BAY 2.7 SSE           *   : 9.68 /  MM /   MM /   MM
FLBV72  : PALM BAY 3.2 S             *   : 5.45 /  MM /   MM /   MM
FLBV85  : COCOA 4.6 NW               *   : 8.24 /  MM /   MM /   MM
FLIR24  : VERO BEACH 3.4 W           *   : 8.07 /  MM /   MM /   MM
FLIR27  : VERO BEACH 2.5 S           *   : 7.79 /  MM /   MM /   MM
FLLK03  : GROVELAND 1.7 E            *   : 7.38 /  MM /   MM /   MM
FLLK10  : CLERMONT 0.4 SW            *   : 9.15 /  MM /   MM /   MM
FLLK16  : LADY LAKE 2.5 SSW          *   : 10.50 /  MM /   MM /   MM
FLLK21  : LADY LAKE 1.2 ESE          *   : 9.91 /  MM /   MM /   MM
FLMT19  : JENSEN BEACH 2.2 NW        *   : 4.49 /  MM /   MM /   MM
FLMT21  : PALM CITY 3.1 NW           *   : 3.91 /  MM /   MM /   MM
FLMT33  : JUPITER 4.0 NNW            *   : 3.80 /  MM /   MM /   MM
FLOB05  : OKEECHOBEE 18.0 NNW        *   : 6.21 /  MM /   MM /   MM
FLOR23  : ORANGE 11.2 NE             *   : 11.30 /  MM /   MM /   MM
FLOR28  : ORLANDO 2.9 NNE            *   : 7.20 /  MM /   MM /   MM
FLOR31  : UNION PARK 3.8 ESE         *   : 8.78 /  MM /   MM /   MM
FLOR36  : WINTER GARDEN 2.3 SSW      *   : 9.23 /  MM /   MM /   MM
FLOS01  : POINCIANA PLACE 2.6 NNW    *   : 7.85 /  MM /   MM /   MM
FLSL17  : TRADITION 5.6 W            *   : 3.94 /  MM /   MM /   MM
FLSL19  : PORT ST. LUCIE 4.0 NE      *   : 5.43 /  MM /   MM /   MM
FLSL41  : FORT PIERCE 9.3 NNW        *   : 10.73 /  MM /   MM /   MM
FLSL43  : PORT ST. LUCIE 4.1 SW      *   : 4.73 /  MM /   MM /   MM
FLSM04  : SANFORD 0.4 ENE            *   : 0.00 / 0.0 /   MM /   MM
FLSM18  : SANFORD 1.9 WNW            *   : 6.11 /  MM /   MM /   MM
FLSM20  : OVIEDO 1.6 SE              *   : 11.54 /  MM /   MM /   MM
FLVL21  : DELAND 2.0 W               *   : 9.98 /  MM /   MM /   MM
FLVL36  : DE LAND 1.4 WSW            *   : 8.77 /  MM /   MM /   MM
FLVL38  : OAK HILL 2.8 WSW           *   : 5.07 /  MM /   MM /   MM
FLVL40  : EDGEWATER 0.1 SW           *   : 4.33 /  MM /   MM /   MM
FLVL46  : DE LAND 1.3 WSW            *   : 7.75 /  MM /   MM /   MM
FLVL49  : MIMS 8.5 W                 *   : 12.11 /  MM /   MM /   MM
FLVL50  : PIERSON 1.5 SW             *   : 7.90 /  MM /   MM /   MM
:
.END
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PUBLIC INFORMATION STATEMENT
NATIONAL WEATHER SERVICE TAMPA BAY RUSKIN FL
1103 AM EDT MON SEP 11 2017

..WIND GUSTS LAST 48 HOURS

WE ARE CURRENTLY WORKING ON THE POST STORM REPORT WHICH MAY INCLUDE SLIGHTLY DIFFERENT VALUES THAN WHAT YOU SEE BELOW. ONLY TROPICAL STORM FORCE WIND GUSTS OR HIGHER WERE INCLUDED BELOW.

LOCATION	SPEED	TIME/DATE	
PROVIDER			
..CHARLOTTE COUNTY			
CHARLOTTE COUNTY AIRPORT	74 MPH	0748 PM 09/10	
ASOS			
1 SE GROVE CITY	72 MPH	0702 PM 09/10	
WXFLOW			
1 SW SOLANA	59 MPH	0900 PM 09/10	
AWS			
..CITRUS COUNTY			
1 N BEVERLY HILLS	64 MPH	1245 AM 09/11	
CWOP			
..DESOTO COUNTY			
1 E ARCADIA	46 MPH	0900 PM 09/10	FL-
MESO			
..HERNANDO COUNTY			
HERNANDO COUNTY AIRPORT	64 MPH	1133 PM 09/10	
ASOS			
WEEKI WACHEE	41 MPH	0549 AM 09/11	
WXFLOW			
..HIGHLANDS COUNTY			
2 W SPRING LAKE	68 MPH	1046 PM 09/10	
RAWS			
12 N LORIDA	60 MPH	1122 PM 09/10	
RAWS			
3 NNE LAKE JOSEPHINE	57 MPH	1030 PM 09/10	
AWS			
2 NNW AVON PARK	55 MPH	0940 PM 09/10	
AWS			
LAKE PLACID	52 MPH	0925 PM 09/10	
AWS			
..HILLSBOROUGH COUNTY			
2 NE GIBSONTON	68 MPH	0841 PM 09/10	

CWOP
1 SE TAMPA 67 MPH 0944 PM 09/10
CWOP
TAMPA INTL AIRPORT 67 MPH 1143 PM 09/10
ASOS
1 W MACDILL AIR FORCE 66 MPH 0829 PM 09/10
AWOS
3 WNW TEMPLE TERRACE 56 MPH 0859 PM 09/10
CWOP
TAMPA EXECUTIVE 55 MPH 1255 AM 09/11
AWOS
PLANT CITY MUNICIPAL AIRPORT 53 MPH 1155 PM 09/10
AWOS
3 SE GIBSONTON 45 MPH 0844 PM 09/10
CWOP
1 NW TEMPLE TERRACE 44 MPH 1139 PM 09/10
CWOP
1 SSE VALRICO 43 MPH 0858 PM 09/10
CWOP

..LEE COUNTY

SOUTHWEST FLORIDA INTERNATIO 89 MPH 0550 PM 09/10
ASOS
FORT MYERS FAA/AP 84 MPH 0616 PM 09/10
ASOS
1 E MORSE SHORES 73 MPH 0705 PM 09/10
WXFLOW
2 SW CAPE CORAL 72 MPH 0350 PM 09/10
CWOP
2 SSW CAPE CORAL 71 MPH 0700 PM 09/10
WXFLOW
1 NW FORT MYERS 67 MPH 0654 PM 09/10 NOS-
NWLON
2 S BOCA GRANDE 67 MPH 0220 AM 09/11
WXFLOW
SOUTHWEST INTERNAT 54 MPH 0615 PM 09/10
AWS
SANIBEL 54 MPH 0517 PM 09/10
RAWS
1 SW BONITA SPRINGS 43 MPH 0524 PM 09/10
AWS
1 SSW FORT MYERS 43 MPH 0644 PM 09/10
AWS
2 NNE CAPE CORAL 41 MPH 0640 PM 09/10
AWS
1 ESE FORT MYERS VILLAS 41 MPH 0644 PM 09/10
AWS
2 WNW NORTH FORT MYERS 40 MPH 0720 PM 09/10
AWS
2 WNW CAPE CORAL 39 MPH 0639 PM 09/10
AWS

..LEVY COUNTY

6 SSW YELLOW JACKET	55 MPH	0347 AM 09/11	
RAWS			
CEDAR KEY	46 MPH	0200 AM 09/11	
MARITIME			

..MANATEE COUNTY

SARASOTA-BRADENTON AIRPORT	70 MPH	1026 PM 09/10	
ASOS			
6 WNW MYAKKA CITY	43 MPH	0725 PM 09/10	
CWOP			
4 WNW LAKE MANATEE STATE PAR	42 MPH	0827 PM 09/10	
CWOP			

..PASCO COUNTY

4 E ODESSA	55 MPH	0946 PM 09/10	
WXFLOW			
ARIPEKA	45 MPH	0554 AM 09/11	
MARITIME			
2 NE HOLIDAY	43 MPH	0132 AM 09/11	
CWOP			
LAND O' LAKES	41 MPH	0826 PM 09/10	
CWOP			
3 ENE DARBY	40 MPH	0103 AM 09/11	
CWOP			

..PINELLAS COUNTY

BELLEAIR	87 MPH	1200 AM 09/11	
CWOP			
ST PETERSBURG-CLEARWATER INT	74 MPH	1110 PM 09/10	
ASOS			
3 NW DUNEDIN	72 MPH	0115 AM 09/11	
WXFLOW			
BELLEAIR	69 MPH	1152 PM 09/10	
WXFLOW			
ALBERT WHITTED AIRPORT	69 MPH	0910 PM 09/10	
ASOS			
2 SSW KENNETH CITY	63 MPH	1254 AM 09/11	
CWOP			
2 E SAINT PETERSBURG	59 MPH	1048 PM 09/10	NOS-
NWLON			
2 NW BELLEAIR	58 MPH	1200 AM 09/11	
AWS			
1 WNW PINELLAS PARK	58 MPH	1123 PM 09/10	
CWOP			
BASKIN	47 MPH	0100 AM 09/11	
AWS			
1 SE KENNETH CITY	46 MPH	0914 PM 09/10	
CWOP			
SEMINOLE	44 MPH	1147 PM 09/10	
CWOP			
1 WNW PALM HARBOR	43 MPH	1142 PM 09/10	
CWOP			

1 SSE BASKIN 41 MPH 1253 AM 09/11
CWOP

..POLK COUNTY

2 SW EAGLE LAKE 82 MPH 1147 PM 09/10
CWOP
9 SSW LAKE KISSIMMEE 81 MPH 1218 AM 09/11
CWOP
WINTER HAVENS GILBERT AIRPOR 76 MPH 1245 AM 09/11
ASOS
2 ESE BARTOW 73 MPH 1112 PM 09/10
CWOP
3 WSW INWOOD 68 MPH 1205 AM 09/11
CWOP
1 N INWOOD 67 MPH 1217 AM 09/11
CWOP
4 N WILLOW OAK 67 MPH 1215 AM 09/11
AWOS
2 SSW KATHLEEN 67 MPH 1232 AM 09/11
WXFLOW
2 ENE POLK CITY 66 MPH 0143 AM 09/11
CWOP
BARTOW MUNICIPAL AIRPORT 64 MPH 1055 PM 09/10
AWOS
5 WNW LOUGHMAN 64 MPH 1128 PM 09/10
CWOP
6 SSW ANIMAL KINGDOM 62 MPH 0200 AM 09/11
CWOP
2 WNW FROSTPROOF 61 MPH 0945 PM 09/10
CWOP
3 NNE KATHLEEN 57 MPH 1241 AM 09/11
CWOP
9 SE POINCIANA PLACE 52 MPH 1245 AM 09/11
SFWMD
1 WNW HIGHLAND CITY 51 MPH 0107 AM 09/11
CWOP
1 NNW FROSTPROOF 51 MPH 1130 PM 09/10 FL-
MESO
4 WNW LOUGHMAN 46 MPH 1238 AM 09/11
CWOP
2 SW CRYSTAL LAKE 45 MPH 1148 PM 09/10
CWOP
4 ENE FORT MEADE 43 MPH 1132 PM 09/10
CWOP
2 SSE WAVERLY 40 MPH 1205 AM 09/11
CWOP

..SARASOTA COUNTY

1 N RIDGE WOOD HEIGHTS 81 MPH 0907 PM 09/10
CWOP
2 ENE SARASOTA 54 MPH 0843 PM 09/10
WXFLOW
VENICE MUNICIPAL AIRPORT 45 MPH 0835 AM 09/11

AWOS			
3 SE BEE RIDGE	44 MPH	0708 PM 09/10	
CWOP			
1 N LAUREL	43 MPH	0906 PM 09/10	
CWOP			

..SUMTER COUNTY

3 WSW THE VILLAGES	61 MPH	0946 PM 09/10	
CWOP			
THE VILLAGES	54 MPH	0610 AM 09/11	
AWOS			
2 ESE WILDWOOD	39 MPH	1245 AM 09/11	
CWOP			

..MARITIME STATIONS

6 NNW ANNA MARIA ISLAND	92 MPH	1246 AM 09/11	
WXFLOW			
3 NNW BELLEAIR	88 MPH	1248 AM 09/11	NOS-
NWLON			
2 W TARPON SPRINGS	81 MPH	0154 AM 09/11	
MARITIME			
8 SE SAINT PETERSBURG	78 MPH	0900 PM 09/10	
MARITIME			
6 E SAINT PETERSBURG	76 MPH	1145 PM 09/10	
WXFLOW			
20 SW LONGBOAT KEY	76 MPH	1030 PM 09/10	
MARITIME			
7 NW PALMETTO	75 MPH	1208 AM 09/11	
WXFLOW			
1 WNW SARASOTA	75 MPH	0930 PM 09/10	
WXFLOW			
1 SSE VENICE	74 MPH	1000 PM 09/10	
MARITIME			
3 W MACDILL AIR FORCE	68 MPH	1218 AM 09/11	NOS-
PORTS			
1 ESE GULFPORT	62 MPH	1053 PM 09/10	
WXFLOW			
2 W PALM RIVER-CLAIR MEL	59 MPH	0830 PM 09/10	NOS-
PORTS			
TPA CRUISE TERMINAL 2	55 MPH	1018 PM 09/10	NOS-
PORTS			
3 W LONGBOAT KEY	54 MPH	1032 PM 09/10	
CWOP			
CEDAR KEY	53 MPH	0406 AM 09/11	
NWLON			

OBSERVATIONS ARE COLLECTED FROM A VARIETY OF SOURCES WITH VARYING EQUIPMENT AND EXPOSURES. WE THANK ALL VOLUNTEER WEATHER OBSERVERS FOR THEIR DEDICATION. NOT ALL DATA LISTED ARE CONSIDERED OFFICIAL.

PRELIMINARY LOCAL STORM REPORT
NATIONAL WEATHER SERVICE MELBOURNE FL
348 PM EDT SUN SEP 10 2017

.TIME... ...EVENT... ...CITY LOCATION... ...LAT.LON

.DATE... ....MAG.... ..COUNTY LOCATION..ST.. ...SOURCE.

..REMARKS..

0325 PM TROPICAL STORM 5 SSE PLAYALINDA BEACH 28.57N 80.59W
09/10/2017 BREVARD FL OTHER FEDERAL

US AIR FORCE WIND TOWER 1102 MEASURED A PEAK WIND GUST OF 56KT/64MPH FROM THE EAST-NORTHEAST.

0325 PM TROPICAL STORM 8 SSE PLAYALINDA BEACH 28.54N 80.57W
09/10/2017 BREVARD FL OTHER FEDERAL

US AIR FORCE WIND TOWER 0108 MEASURED A PEAK WIND GUST OF 58KT/67MPH FROM THE EAST-NORTHEAST.

0325 PM TROPICAL STORM 2 S PLAYALINDA BEACH 28.61N 80.62W
09/10/2017 BREVARD FL OTHER FEDERAL

US AIR FORCE WIND TOWER 0108 MEASURED A PEAK WIND GUST OF 52KT/60MPH FROM THE EAST-NORTHEAST.

0311 PM TROPICAL STORM 5 N BAREFOOT BAY 27.96N 80.53W
09/10/2017 AMZ552 FL MESONET

MEASURED GUST OF 54 MPH/47 KT FROM THE EAST WITH SUSTAINED 39 MPH/34 KT AT WXFLOW SITE XIND.

0437 PM TROPICAL STORM DAYTONA BEACH AIRPORT 29.17N 81.07W
09/10/2017 VOLUSIA FL ASOS

MEASURED GUST OF 52 MPH/45 KT FROM THE NE WITH 40 MPH/35 KT SUSTAINED.

0549 PM TROPICAL STORM 3 SSE GIFFORD 27.63N 80.39W
09/10/2017 INDIAN RIVER FL MESONET

WEATHERFLOW SITE XVER IN VERO BEACH REPORTED A PEAK WIND GUST OF 60MPH/52KT FROM THE EAST-SOUTHEAST.

0545 PM TROPICAL STORM 4 WNW CAPE CANAVERAL 28.40N 80.66W
09/10/2017 BREVARD FL MESONET

52 MPH/45 KT GUST FROM THE EAST AT WXFLOW SITE XMER WITH SUSTAINED 40 MPH/35 KT.

0706 PM TROPICAL STORM SANFORD AIRPORT 28.78N 81.24W
09/10/2017 SEMINOLE FL ASOS

SANFORD AIRPORT ASOS MEASURED A PEAK WIND GUST OF 63MPH / 55 KT FROM THE EAST.

0710 PM 09/10/2017 — TROPICAL STORM — 4 W INDIALANTIC, BREVARD, FL — 28.10N 80.64W — MESONET

A MESONET SITE AT THE NWS MELBOURNE MEASURED A PEAK WIND GUST OF 69MPH / 60KT.

0756 PM 09/10/2017 — HURRICANE — ORLANDO INTERNATIONAL A, ORANGE, FL — 28.42N 81.32W — ASOS

ASOS AT ORLANDO INTERNATIONAL AIRPORT MEASURED A PEAK WIND GUST OF 76MPH / 66KT FROM THE EAST-NORTHEAST. SUSTAINED WINDS ARE AT 58MPH / 50KT.

0755 PM 09/10/2017 — TROPICAL STORM — 2 NW OKEECHOBEE, OKEECHOBEE, FL — 27.27N 80.85W — AWOS

AWOS AT OKEECHOBEE COUNTY AIRPORT MEASURED A PEAK WIND GUST OF 50KT / 58MPH. SUSTAINED WINDS ARE AROUND 40MPH.

0808 PM 09/10/2017 — TROPICAL STORM — KISSIMMEE AIRPORT, OSCEOLA, FL — 28.29N 81.44W — AWOS

KISSIMMEE GATEWAY AIRPORT AWOS MEASURED A PEAK WIND GUST OF 58KT/67MPH FROM THE EAST.

0849 PM 09/10/2017 — TROPICAL STORM — SANFORD AIRPORT, SEMINOLE, FL — 28.78N 81.24W — ASOS

ASOS AT SANFORD AIRPORT MEASURED A PEAK WIND GUST OF 69MPH/60KT FROM THE EAST. SUSTAINED WINDS AROUND 45-50MPH.

0627 PM 09/10/2017 — TSTM WND DMG — 6 NNE EUSTIS, LAKE, FL — 28.93N 81.67W — EMERGENCY MNGR

POSSIBLE TORNADO DAMAGE. LAKE COUNTY FIRE REPORTED THAT THE UMATILLA TAVERN ON US-19 IN UMATILLA SUSTAINED SUBSTANTIAL DAMAGE. TIME ESTIMATED FROM RADAR.

0921 PM 09/10/2017 — TROPICAL STORM — LEESBURG AIRPORT, LAKE, FL — 28.82N 81.81W — ASOS

LEESBURG ASOS MEASURED A PEAK WIND GUST OF 56KT/64MPH FROM THE NORTHEAST.

0939 PM 09/10/2017 — TROPICAL STORM — 5 N EDGEWATER, VOLUSIA, FL — 29.05N 80.90W — MESONET

WEATHERFLOW SITE IN NEW SMYRNA BEACH MEASURED A PEAK WIND GUST OF 70MPH/61KT FROM THE EAST-NORTHEAST. SUSTAINED WINDS AROUND 50MPH.

0950 PM	HURRICANE	3 NNE CAPE CANAVERAL		28.43N 80.57W
09/10/2017		BREVARD	FL	OTHER FEDERAL

US AIR FORCE WIND TOWER 0001 MEASURED A PEAK WIND GUST OF 85MPH/74KT FROM THE EAST.

1035 PM	COASTAL FLOOD	OKEECHOBEE		27.24N 80.83W
09/10/2017		OKEECHOBEE	FL	AWOS

AWOS AT OKEECHOBEE COUNTY AIRPORT MEASURED A PEAK WIND GUST OF 57KT/66MPH FROM THE SOUTH-SOUTHEAST. SUSTAINED WINDS AT 45MPH.

1002 PM	HURRICANE	DAYTONA BEACH AIRPORT		29.17N 81.07W
09/10/2017		VOLUSIA	FL	ASOS

ASOS AT DAYTONA BEACH INT. AIRPORT MEASURED A PEAK WIND GUST OF 78MPH/68KT FROM THE NORTHEAST.

1018 PM	HURRICANE	SAINT LUCIE AIRPORT		27.50N 80.38W
09/10/2017		ST. LUCIE	FL	ASOS

TREASURE COAST INT. AIRPORT KFPR MEASURED A PEAK WIND GUST OF 84MPH/73KT FROM THE SOUTH-SOUTHEAST. SUSTAINED WINDS ARE AROUND 50MPH.

1039 PM	TROPICAL STORM	SANFORD AIRPORT		28.78N 81.24W
09/10/2017		SEMINOLE	FL	ASOS

SANFORD AIRPORT ASOS MEASURED A PEAK WIND GUST OF 72MPH/63KT FROM THE EAST. SUSTAINED WINDS AROUND 40MPH.

1115 PM	TROPICAL STORM	DELAND		29.04N 81.30W
09/10/2017		VOLUSIA	FL	AWOS

AWOS AT DELAND AIRPORT MEASURED A PEAK WIND GUST OF 63MPH/55KT FROM THE EAST NORTHEAST.

0119 AM	HURRICANE	ORLANDO INTERNATIONAL A		28.42N 81.32W
09/11/2017		ORANGE	FL	ASOS

ASOS MEASURES WIND GUST OF 68KT/78MPH FROM ESE. SUSTAINED WINDS OF 50KT/57MPH.

0331 AM	HURRICANE	SANFORD AIRPORT		28.78N 81.24W
09/11/2017		SEMINOLE	FL	ASOS

ASOS MEASURED WIND GUST OF 65KT/75MPH FROM SE

0300 AM	HURRICANE	6 ENE CAMP HOLLY FISH C		28.12N 80.67W
09/11/2017		BREVARD	FL	PUBLIC

PUBLIC MEASURED WIND GUST OF 78MPH

0346 AM	TROPICAL STORM	LEESBURG AIRPORT		28.82N 81.81W
09/11/2017		LAKE	FL	ASOS

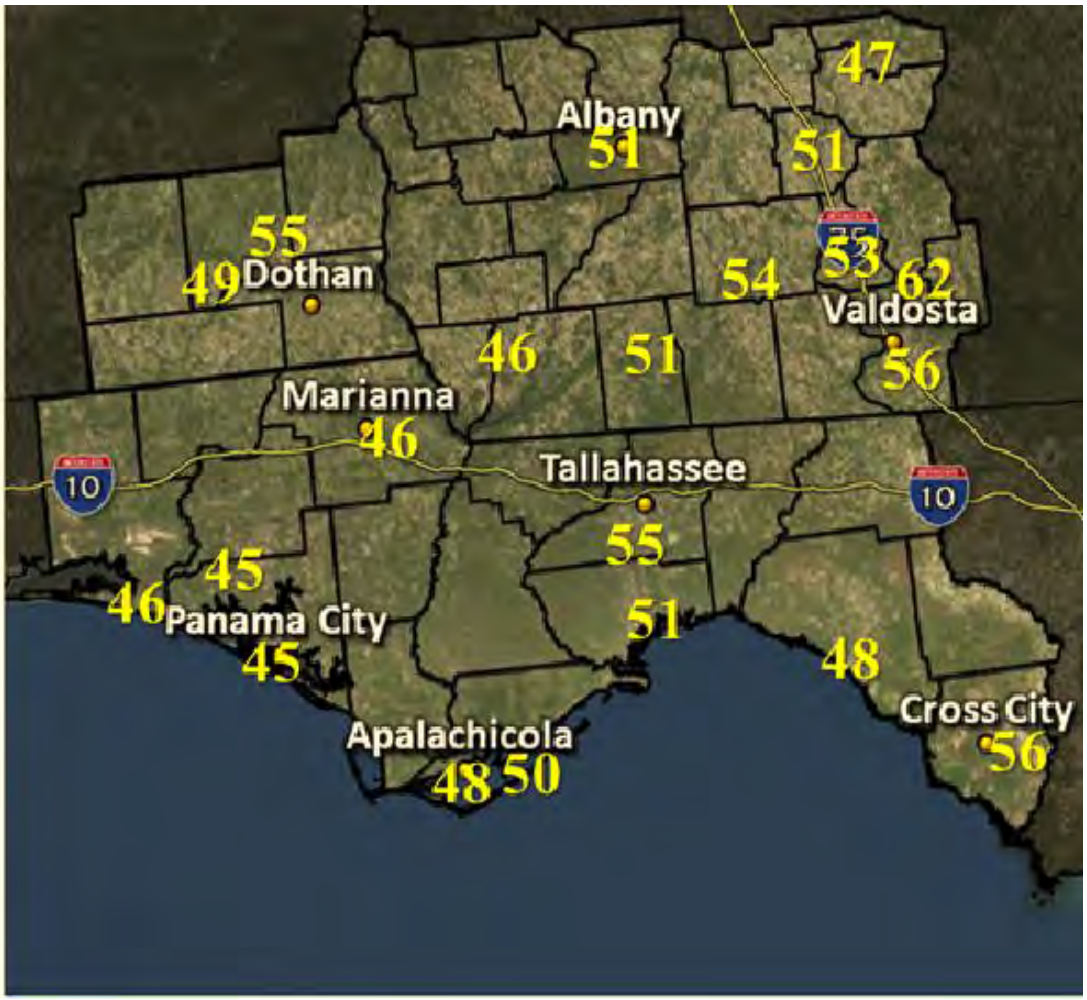
ASOS MEASURED WIND GUST OF 60KT/69MPH FROM SE

0355 AM	HURRICANE	ORLANDO EXECUTIVE AIRPO		28.55N 81.34W
09/11/2017		ORANGE	FL	ASOS

ASOS MEASURED WIND GUST OF 65KT/75MPH FROM SE

Peak measured wind gusts on 11 Sep 17 (MPH)

Moody AFB, GA	62
Valdosta Airport, GA	56
Cross City Airport, FL	56
Tallahassee Airport, FL	55
Dothan Airport, AL	55
Moultrie Airport, GA	54
1 S Adel, GA	53
Shell Point, FL	51
Tifton Airport, GA	51
Thomasville, GA	51
Saint George Island, FL	50
Ozark, AL	49
Keaton Beach, FL	48
Apalachicola Airport, FL	48
Fitzgerald, GA	47
Marianna Airport, FL	46
1 WNW Blue Mountain Beach, FL	46
Bainbridge, GA	46
Panama City Airport, FL	45
1 S Panama City, FL	45



Attachments responsive to question #29

DEF photos responsive to question #29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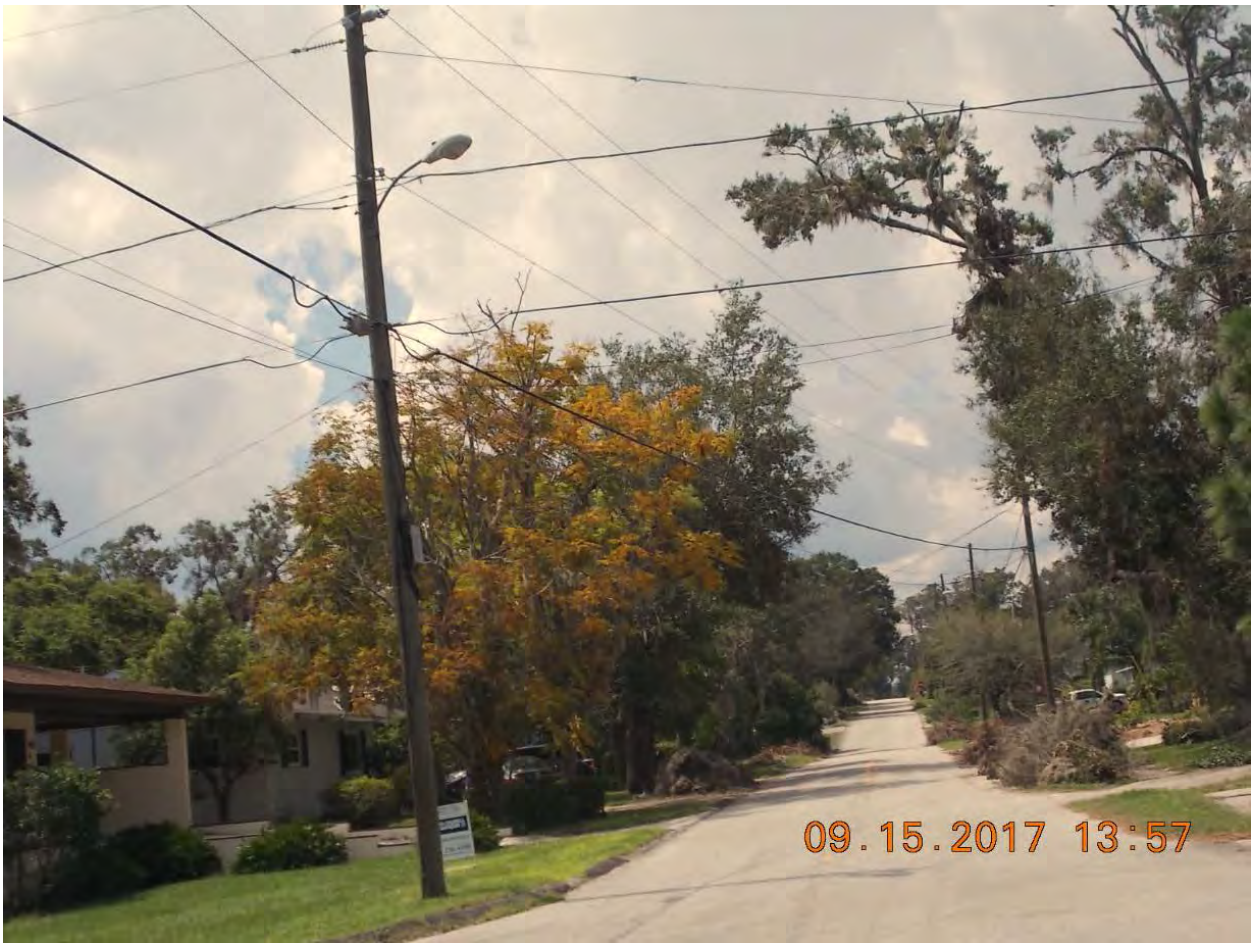
09.15.2017 13:44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