Hurricane Matthew

October 3, 2016 – October 17, 2016

After Action Report/Improvement Plan

3/10/2017

Florida Division of Emergency Management

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ADMINISTRATIVE HANDLING INSTRUCTIONS

1. The title of this document is Hurricane Matthew After-Action Report (AAR).

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EVENT SUMMARY

Hurricane Matthew was a powerful, long-lived and deadly tropical cyclone which became the first Category 5 Atlantic hurricane since 2007. Matthew formed from a tropical wave that moved off the African coast on September 22. On September 28, it reached tropical storm strength near the Windward Islands. Once Matthew reached the eastern Caribbean, it became a hurricane on September 29 and rapidly intensified, ultimately achieving Category 5 intensity the following day. Its peak intensity was late September 30 into early October 1 when maximum sustained winds reached 160 mph.

Matthew made landfall in Haiti and eastern Cuba on October 4 as a Category 4 hurricane. From there, Matthew battered the Bahamas October 5-6 at Category 3 and Category 4 strength.

Preparations began in Florida on October 3 as Matthew approached, with the State Emergency Operations Center (State EOC/SEOC) activating and Governor Scott issuing an Executive Order (EO 16-230) declaring a state of emergency for the entire state. Hurricane and Tropical Storm Watches were issued by the National Hurricane Center for the east coast of Florida at 11am on October 4 and were upgraded to warnings later that night. In all, tropical cyclone wind watches or warnings were issued for 43 counties. Widespread evacuations were ordered for extensive areas of the coast beginning on October 5. Also on October 5, the Governor sent a request to the President for a Federal Emergency Declaration. The Emergency Declaration (EM-3377) was granted on October 6.

Hurricane Matthew paralleled the coast of the southeastern United States over the next 36 hours, gradually weakening while remaining just offshore before making its fourth and final landfall in South Carolina as a Category 1 hurricane on the morning of October 8. Matthew was declared post-tropical by the National Hurricane Center as it moved away from North Carolina on October 9.

In Florida, over 1 million lost power as the storm passed to the east. Sustained tropical storm force winds were observed in Palm Beach, Martin, St. Lucie and Nassau counties, with tropical storm force gusts occurring in Miami-Dade, Broward, Okeechobee, Lee, Charlotte, Highlands, Manatee, Hillsborough, Pinellas, Polk, Osceola, Orange, Seminole, Lake, Marion, Putnam, Clay, Alachua, Columbia and Baker counties. Sustained tropical storm force winds and hurricane wind gusts were observed in Indian River, Brevard, Volusia, Flagler, St. Johns and Duval counties. The highest wind gusts recorded were 107 mph at Kennedy Space Center, 91 mph in Daytona Beach, 86 mph at St. Augustine, and 83 mph in both Flagler Beach and Palm Coast.

Storm surge flooding of 6-7 feet affected the St. Augustine area, where water was reported to be 2.5-4 feet above ground level in the city and bayfront. To the south in nearby Flagler Beach, parts of A1A were washed out by a storm surge of more than 3-6 feet. On October 7, a peak surge of 9.88 feet above normal was measured at a National Ocean Service tide gauge at Fernandina Beach. Surge heights of 3-6 feet also

occurred in Volusia County southward through Martin County. The surge and accompanying large waves resulted in extensive beach erosion along over 200 miles of the Florida coast. At Ponte Vedra Beach, the sand dune lines were moved inland 30-40 feet. This extreme erosion undermined numerous structures along the beachfront. The National Weather Service Forecast Office in Jacksonville conducted a storm survey and found that a new inlet was carved between Marineland and Matanzas Inlet, between Palm Coast and St. Augustine Beach.

Major river flooding occurred on the St. Johns River and its associated tributaries. Surge heights on the St. Johns River ranged from 2.3-5.2 feet. The St. Johns River at Racy Point and Dames Bridge observed its highest surges on record, with the Buckman Bridge and Naval Station Mayport recording their second highest surges. Deep Creek in St. Johns County reported major flooding and a storm tide of 5.72 feet on October 8. Julington Creek in Duval County also reported major flooding and a storm tide of 4.61 feet. Moderate flooding occurred on the Trout River, Clapboard Creek, Pottsburg Creek and Dunn Creek in Duval County and on Haw Creek in Flagler County with storm tides around 4-5 feet each.

Rainfall amounts ranged from to 5-10.30 inches in coastal counties from Nassau County to Brevard County, plus the inland counties of Clay, Putnam and Seminole, from October 6-8. Rainfall amounts of 2-5 inches fell along the Treasure Coast and inland counties of north and central Florida.

A Federal Disaster Declaration was requested on October 7 and granted on October 8 (DR-4283) for Public Assistance (categories A and B; categories C-G were added later). An amendment to this declaration to include Individual Assistance was issued on October 17.

EVENT TIMELINE

Table 1: Event Summary (All times are EDT)

Date	Time	Action
9/29/2016	1115 hrs	Situational awareness conference calls with counties and National Hurricane Center initiated
10/03/2016	0700 hrs	State EOC goes to Level 2 Activation for Hurricane Matthew
10/03/2016		Executive Order 16-230 signed by Governor Scott, declaring a state of emergency
10/04/2016	0700 hrs	State EOC goes to Level 1 Activation for Hurricane Matthew
10/05/2016		Federal Emergency Declaration requested by Governor Scott
10/06/2016		Federal Emergency Declaration (EM-3377) granted

Date	Time	Action
10/07/2016		Federal Disaster Declaration requested
10/08/2016		Federal Disaster Declaration (DR-4283) granted for Public Assistance
10/10/2016	0900 hrs	State EOC returns to Level 2 Activation
10/17/2016		Amendment to DR-4283 to include Individual Assistance issued
10/17/2016	0800 hrs	State EOC returns to Level 3; activity shifts to Joint Field Office

PURPOSE

The purpose of this report is to analyze the actions of the State Emergency Response Team (SERT) by identifying strengths to be maintained and built upon, identifying potential areas for further improvement, and to support development of corrective actions. Please note that the time frame for this report (October 3-October 17) encompasses the response and *initial* recovery phases. Some actions were taken prior to the start of the time frame, and recovery actions are ongoing as of the date of this document.

MAJOR STRENGTHS AND BEST PRACTICES

Upon analysis of after-action information provided by Command and General Staff, Branches and Emergency Support Functions (ESFs), the items below were identified as major strengths:

Early Stand Up and Prestaging
A common trend of success was standing up the SERT early. The State EOC activated on Monday, October 3; however, situational awareness conference calls began on Thursday, September 29. Additionally, The Division of Emergency Management (DEM) and Florida Department of Transportation (FDOT) met to discuss any issues regarding major evacuation routes in preparation for potential South Florida evacuations. This meeting was prompted by concern for the storm's rapid intensification and movement. In advance of the storm, the State sought a Federal Emergency Declaration (also known as a Pre-Disaster Declaration), granted only under special conditions. Aggressive pre-staging of Law Enforcement, Search and Rescue and National Guard resources was successful. Requesting All Hazards Incident Management Teams through the Emergency Management Assistance Compact (EMAC), in anticipation of a worst case scenario, helped to address staffing gaps. In addition to the SERT's "lean forward" approach to this storm, aggressive messaging from the Governor in advising citizens and visitors to heed the watches and warnings were beneficial as well.

SERT Liaisons and Other SERT Support Elements

The support from SERT liaisons contributed greatly to the improvements during the Hurricane Matthew response. The Regional Coordination Team—with the RC Supervisor as the central coordination point—played a key coordination role in coordinating the county liaisons. Regional Coordinators were strategically placed in northern, central, and south Florida counties. SERT liaisons consisting of a mix of National Guard and DEM personnel were placed in between, giving coverage to the entire east coast of the State. These liaisons served as a point of contact for the State EOC to speak to without causing undue burden on the counties in requesting information. In addition to the SERT liaisons, the Florida Department of Transportation's liaisons were considered a benefit to the counties as they provided information on road and bridge conditions within the local areas.

SERT support was also provided to the State Logistics Response Center (SLRC) as well as the State EOC. National Guard personnel provided logistics support to the SLRC along with its associated Logistical Staging Areas in Orlando. Guard personnel also provided valuable staffing support to the State EOC Planning Section, Logistics Section, and Air Operations Branch.

Communication and Information Sharing

Communication as a whole was considered improved from the previous activation. The Florida Emergency Information Line was activated earlier this time, prior to the onset of Hurricane Matthew's impacts, and there was a more proactive approach in conducting intergovernmental relations calls and updates. Both of these items were identified during Hurricane Hermine as areas for improvement. This was also the first full scale activation of the new Alert Florida statewide notification system. Several information sharing tools provided more streamlined communication as well. Specifically, switching to PAT LIVE to take calls for the state phone lines proved to be useful as call volumes increased rapidly. The use of social media outlets also aided in better communication. Monitoring social media feeds yielded useful information on gas stations, helping quell rumors about fuel shortages.

Availability of Necessities and Supplies

A priority was to make sure food was available at the shelters. The Salvation Army quickly deployed food and established a successful relationship with ESF 11. There were approximately 1 million meals before the storm. ESF 18 (Business, Industry, and Economic Stabilization) was also able to find several free resources.

Air Operations

The decision to bring representation in the room ahead of landfall was key to airspace management. An airspace coordination area (ACA) was established to warn users of increased response air traffic in storm impacted areas. The decision to implement a temporary flight restriction was to be executed in the event of safety of flight issues arising from excessive air traffic, unmanned aerial systems (UAS) concerns and potential degraded air traffic control coverage. As the potential for significant storm

impacts increased, the Air Operations Branch continued to bring in appropriate partners to support operations. At the peak of operations, the following agencies were represented in the building as part of the branch (not including assistance provided by the US Department of Defense):

- Florida Fish and Wildlife Commission
- Florida Army National Guard
- Florida Air National Guard
- Florida Department of Transportation
- Florida Forest Service
- Florida State University
- Federal Emergency Management Agency
- Federal Aviation Administration
- Civil Air Patrol

Immediately available by phone or located elsewhere in the SEOC were the Florida Highway Patrol (aviation) and Florida Department of Law Enforcement (aviation).

Also, the Air Operations Branch, in conjunction with the US Department of Defense and National Guard, worked together to ensure that there were enough Federal air assets available and on standby to handle any issues associated with Lake Okeechobee. This effort freed up State air assets for other Hurricane Matthew response operations.

Logistics
Overall, the vendors met needs quickly and were able to get resources to the area of operations in time. Heavy equipment was staged at the Orlando Airport site. Logistics and staging of commodities at the SLRC from the original projections were large due to the original forecasts of the storm, but they were not all needed; accordingly, they were pushed to secondary staging areas in the Orlando area: Lockheed-Martin, Orange County Convention Center, Orlando International Airport, and Sea World. Once the updated forecast of the storm was noted, Florida Department of Agriculture and FEMA logistics orders were stopped, but because many of the trucks had already departed their sites, the shipments had to be accepted. All excess heavy equipment that was not under a mission tasking was returned early.

Interaction/Coordination with Private Sector
The Florida Virtual Business Emergency Operations Center (VBEOC) received over 200 responses for Matthew. This tool—which allows businesses to share information through the ESF 18 system—provided a quick and effective method to obtain situational awareness from the private sector regarding damage assessments and availability of resources, among other essential elements of information. Additionally, private sector entities proved valuable in identifying available lodging both within Florida and bordering states—as it was learned that there were some residents evacuating north into Georgia.

Wellness Checks to Electrically and Medically-Dependent Populations
For the first time, automated wellness checks to electrically and medically-dependent residents were conducted. This was accomplished by acquiring contact information from the US Department of Health and Human Services' Centers for Medicare and Medicaid Services dataset and using DEM's Everbridge notification system to perform the calls. The calls—in essence a phone survey—asked persons to press "1" if they were ok or press "2" if they had urgent health safety needs which were not immediately life threatening. Persons were also encouraged to call 911 if there was an immediate emergency. If someone responded by pressing "2," that information was passed along to the Department of Health and county emergency management agencies for any follow-up calls or other actions.

Other items that were noted as successful include the following:

- Evacuation Liaison Team (ELT) teleconferences between FEMA Region IV and the potentially impacted Region IV states proved useful in obtaining evacuation and traffic information from neighboring states.

- No reported issues with private sector infrastructure entities accessing their facilities post-impact according to the DHS Protective Security Advisor for Florida.

- Successful coordination among the State, Federal, and private sector to obtain credentials for truck drivers who needed access to certain terminals to load fuel.

- Deployment of assessment teams to ascertain status of healthcare facilities in the impacted areas.

- Information about the status of port conditions was more timely.

- Better incorporation of components of the Recovery Support Functions, specifically Economic Recovery and Health & Social Services.

- Better integration of Recovery into the daily State EOC operations during the response phase.

- Efficient coordination between Finance and Human Resources to acquire disaster reservists for Recovery field operations.

- Utility outage reporting (every three hours instead of hourly) went more smoothly, and working to establish base camps ahead of time for incoming power crews was successful.

- The Fuel Reporting Application, developed by the Division's Information Technology and Management section, was found useful by ESF 12 (fuels).

- Aggressive engagement from the Housing and Unmet Needs Task Force. Housing will be a continuing issue as there is no State agency that has this function on a daily basis, but a local or regionally applicable Recovery Support Function was created for this event and may be employed in future events.

- Deployment of Finance staff to the SLRC was beneficial in obtaining quotes and handling any procurement issues.

- First time using volunteer-based crisis cleanup teams; this concept will be enacted sooner in future events.

OPPORTUNITIES FOR IMPROVEMENT

Several opportunities for improvement in the SERT's overall ability to respond to the incident were identified.

Host Sheltering

As Hurricane Matthew approached the east coast of Florida, it was determined that host shelters would need to be opened in counties on the west side of the peninsula, away from the immediate impact area. The decision to open host shelters was considered almost last-minute as there was concern about having enough time to reconfigure facilities for use as host shelters. Additionally, more shelters were opened than what was needed, impacting staffing. This also had financial impacts as the State took care of the cost, and it was counter to the current evacuation philosophy of encouraging people to evacuate tens of miles (away from the storm surge zones) instead of hundreds of miles. Also, population numbers for these shelters were not being reported in the shelter database. Decision triggers and timelines for host sheltering should be revisited. It is also recommended that, instead of requesting that counties accommodate a certain number of people, let the counties inform the State of how many people they can accommodate. The State EOC should mission task counties to establish host shelters, with the Logistics Section—Mutual Aid Branch completing a Statewide Mutual Aid Agreement mission form and working with the host county(-ies) on cost. The county(-ies), in turn, would track their expenses, retain receipts and personnel time sheets and submit for reimbursement.

Shelter Staffing and Feeding

While the National Guard provided valuable assistance with filling gaps in shelter staffing, the issue of American Red Cross shelter staffing was brought to the forefront by at least one county in that shelter support was late in arriving and there were issues regarding meal provision. Additionally, as was mentioned with host sheltering, shelter population numbers were not being accurately reported. The topic of alternatives to traditional shelter support was addressed. Future operations should allow for earlier and clearer communication among all partners at all levels to minimize delays in sheltering operations and maximize the utilization of sheltering facilities. This includes exploring how the SERT can use data better to support mass care efforts, particularly

with feeding, as any data gathered has the potential to help better prepare and position resources. Also, there needs to be unequivocal assurance that all mass care partners are solidly prepared to support local sheltering and that any unmet needs with respect to staffing or other resources is addressed well ahead of any sheltering operations.

Mission Management
Mission management was the one area for improvement which was addressed in all of the after action review meetings.

Some missions—during both the response and initial recovery operations—were being handled solely through emails and/or phone calls rather than properly documenting the requests in the EM Constellation (EMC) resource and information tracking tool. Some missions were being executed prior to their being entered into EMC, resulting in what was described as "backfilling missions," creating missions after they've been executed. In addition, missions being entered were sometimes vague, unclear, and non-specific. Once missions were entered into EMC, some of them were assigned or tasked to the wrong branch or function. This was also noted during the transition to Recovery operations. It was also noted that there were special cases where missions that would normally go to one Branch or Emergency Support Function had to be assigned or tasked to another. These instances were not well communicated to all parties involved, resulting in unnecessary confusion. There was also disagreement between branches as to where missions were assigned, resulting in the Operations Support Branch receiving conflicting information about how to assign missions.

Some counties were preloading missions into the system based on a worst case scenario. While this displayed good intentions in leaning forward, it brought some confusion in that resources were having to be placed on hold until after the storm made impact. An Emergency Services Branch mission was nearly missed due to the clutter of the missions that were placed on hold.

With respect to Federal mission requests, Resource Request Forms (RRFs) were very difficult to keep track of. Once the request was sent, there was no way of knowing whether or not the mission was approved by FEMA. Additionally, there were instances where there was no corresponding EMC mission request to accompany the Federal resource request.

There is a need for continued training on mission management for all personnel working in an Emergency Operations Center, Joint Field Office, Logistical Staging Area, or other coordination element, with emphasis on ensuring that all mission requests—during both response and recovery operations—are to be *documented* through EM Constellation while emails and phone calls are appropriate only for *discussing* missions. This training should include instruction on writing missions that are clear, answering the "who," "what," "when," "where", and "why" of any mission request as well as financial considerations. Also, training needs to continue on how missions are assigned and tasked. When special cases regarding mission tasking

arise it should be agreed to by all the applicable sections, branches, and Emergency Support Functions and then clearly conveyed to the Operations Support Branch. Section Chiefs and Branch Directors should review the mission assignment list to ensure that assignments for each type of mission request are up to date as they are the most knowledgeable about what their section or branch can or cannot do. This review should be done after each significant event and at a minimum of at least once a year. The Operations Support Branch is the triage unit for the State EOC, so it is imperative that it has the most up to date information to guarantee proper assigning/tasking.

There also needs to be mission management training extended to counties—what they can request, what to gather locally themselves, and how it works financially when they request certain resources through the system. While it is understood that county personnel have had such training, staffing turnover in the field of emergency management and significant time in-between events have an impact on muscle memory. It was recommended that a basic informational guide be created and made available to all SERT partners—before an event—with the goal of managing expectations and preventing any misunderstandings.

Finally, there needs to be a better understanding of how multiple entities that provide the same resources coordinate together. Two areas in particular that were identified during this operation were food acquisition and generator/pump sourcing.

Situational Awareness from Counties
Because of Hurricane Matthew's forecast path, there was uncertainty regarding the impacts to the state. Forecast solutions ranged from the storm remaining far enough offshore and producing minimal impacts to making landfall in Southeast Florida and moving up the eastern half of the peninsula. This uncertainty resulted in some counties waiting longer to initiate protective actions. Correspondingly, this had some effect on the SERT as local actions have an impact on how SERT operations will proceed. Additionally, limited information from the counties concerning their unmet needs was being shared during the 1115 and 1715 daily conference calls. One county commented during the after action review that there may have been concern that such sensitive information was being heard by the media or those without a valid reason to participate in these calls as the conference calls were attended by upwards of 200 participants. It is incumbent upon all partners to ensure that participation in information sharing conference calls are as limited as possible. Also, SERT leadership should continue to emphasize to the counties the importance of communicating unmet needs. This is especially important when the State is seeking Federal pre-disaster and disaster declarations.

Incident Management Teams
Three out-of-state All Hazards Incident Management Teams (AHIMTs) were requested through the Emergency Management Assistance Compact (EMAC). These teams were considered a valuable asset in providing field operations. It was decided to

combine the three teams to ensure adequate coverage in the event of 24-hour operations. One of the teams, as it was discovered, performed well in their task of setting up a Logistical Staging Area (LSA); however, it was out of its comfort zone in that this team was more prepared to support an EOC than a LSA. There needs to be better deciphering what teams are right for which mission. Additionally, there needs to be more specificity when requesting AHIMTs for certain missions and clear communication of their roles, expectations, and authorities prior to their deployment.

Joint Incident Action Planning

FEMA deployed a regional Incident Management Assistance Team (IMAT) to the State EOC. This team was subsequently augmented with a National IMAT, who took over the lead for the Incident Command System sections. The IMAT requested that joint State/Federal incident action planning be conducted as it was the expressed desire of the Federal leadership on site in Florida. While both State and Federal planning sections utilize the Planning "P," the Incident Action Plan (IAP) format used by the State is more simplified, streamlined and conducive to State EOC operations as opposed to the more extensive Federal IAP. It was emphasized that during response operations in which FEMA is present the State IAP format and process is employed. During recovery operations in a Joint Field Office the State will align with the Federal IAP format. For this operation, it was decided that each entity would use its own forms. Tactics meetings were conducted separately while objectives meetings and planning meetings would be jointly conducted.

There were difficulties in establishing IAP planning/operational periods as each entity had its own requirements and protocols. Additionally, there were delays in posting the IAP as Federal personnel had to drive from the State EOC to their Interim Operating Facility—approximately 4 miles away—to get a signature from the Federal Coordinating Officer or another designated signing authority. Also, because FEMA requires IAPs with original signatures (referred to as "wet signatures") for their records, their recommendation was to have two IAPs for signature. The counter recommendation was that the State would make a color copy of the signature page and give FEMA the one with original signatures. Further, as FEMA was present for both the response to Hurricane Matthew and the recovery for Hurricane Hermine, there was an effort to combine IAPs for both operations which was not favored by the State. While it was strongly emphasized that response operations for Hurricane Hermine were completed and that IAPs were no longer being produced for Hermine, the final IAP for the Hurricane Matthew response operations addressed Hurricane Hermine.

There was a definite lack of understanding of State-level Planning Section operations by Federal personnel on scene, specifically by elements of the National IMAT, as they may not be as aware of State-level processes and procedures as Regional IMAT personnel are.

Technology

Multiple issues related to technology were identified during this after action review:

There is a gap in getting aerial reconnaissance photos to GIS for processing, resulting in imagery taking too long to get updated to the GATOR (Geospatial Assessment Tool for Operational Response) common operating picture. At present, a file transfer protocol (FTP) site is utilized where aerial photos/video can be uploaded by personnel in the field. With this solution there is no ability to identify when new photos have been uploaded, and, according to field personnel, there were difficulties in utilizing the system. Additionally, the inability to get aerial video/pictures north of Cape Canaveral processed from the FTP site in a timely manner led to not using the information for recon planning. There is a need for a simpler mechanism for pilots to upload their recon photos and videos for processing and triaging. Having access to aerial recon photos when they are taken is key to making informed decisions for ground recon planning, especially in first 48 hours post impact.

Another technology-related issue involved the floridadisaster.org website. At one point during the operations, the website crashed for what was described as a significant amount of time.

In the later phases of the response operation, technical difficulties arose with the conference call system. There were instances where callers dialed the conference call number and the call would not connect; instead, there would be silence. This occurred on at least two occasions. Phone calls to the teleconference provider for technical assistance yielded no results, at least not at the moment of the failure. An emergency solution was to use the integrated audio feature within the dedicated webinar program. This presented two challenges: (1) the audio was substandard and inadequate and (2) there is no global muting capability, leaving the responsibility to each caller to mute his or her individual phone line which, as past events have shown, is not always successful.

The website is crucial for sharing critical preparedness and recovery information, and the conference calls are key events within the SERT's battle rhythm as they provide a forum for information sharing and communication of needs. Going forward, there must be assurances of resiliency among these and other SERT communication systems, especially during response and recovery operations.

Logistics Staging Areas
In addition to the State Logistics Response Center (SLRC), the SERT used other facilities in the Orlando area for staging areas, including Sea World, the Orange County Convention Center, Orlando International Airport, and Lockheed-Martin. While these facilities were adequate, SERT Logistics will continue to pursue alternate locations for staging areas as the owners of these locations were eager to resume normal business operations on their property once the storm passed. Also, while needs were anticipated well in advance, it still took a long time to get adequate office space to the staging areas, causing problems with doing necessary paperwork for receiving and shipping. There were also issues with computer and communications equipment not

working properly or not working at all. Additionally, there were traffic control issues at some of the LSAs due to the large number of trucks and the LSAs' proximity to major intersections. It was also noted that one LSA was used without a written agreement executed.

A major takeaway is to ensure that IT (Information Technology) personnel are deployed to the SLRC to handle any hardware, software, and network issues both there as well as at the surrounding staging areas. In addition, equipment caches dedicated for staging area use should be thoroughly checked prior to deployment.

Traffic control at the SLRC and LSAs will be a recurring and required mission. The issue is the management and direction of 200-400 semi-trucks at a site. While traffic lights are a very important issue in the surrounding areas, both Variable Message Boards and sworn Law Enforcement (LE) personnel are required to hand direct drivers to the appropriate areas. At one site where LE was present there was a minor accident. The officer was able to take a report, which contributed to the documentation required to resolve the matter. At another site, however, where there was a major accident, there was no LE support. Consequently, there was no accident report and there was difficulty determining the company responsible for the accident, an accident that resulted in property damage to the site.

Written agreements for LSAs need to be executed well before a storm's impact. This is critical because any damages incurred to a facility while utilizing it as a LSA cannot be paid for by the State if no agreement has been executed. This could jeopardize the State's ability to use potential LSA sites in the future if facility owners believe that they will not be compensated for any damages.

Finally, because of the substantial amount of work involved with Logistics and a limited number of personnel with Logistics expertise, additional staffing is required to maintain depth and continuity. A separate conversation will be needed to discuss training needs, roles, and responsibilities.

Recovery Transition
While response operations for Hurricane Matthew ended sooner than expected, the transition to recovery was considered slow. It should be noted that recovery operations for Hurricane Hermine were also occurring simultaneously. Individual Assistance and Public Assistance damage assessments were a cause for concern as it was learned that FEMA was more stringent on the damage assessment process, leading to discrepancies in values determined by the State and those determined by FEMA. This scrubbing process needs to be addressed further with FEMA prior to future recovery operations. Of additional note on damage assessments, the tablets that were prepared by GIS to assist Recovery with the damage assessments were, once again, not used. This was an issue which was raised during the after action review for Hurricane Hermine.

Approaches used during the Hurricane Matthew recovery transition were described as unique, with non-standard issues having to be addressed—particularly beach and river debris. Other issues included debris on private property and accessing private property for debris removal. This prompted conference calls to be conducted twice (or more) daily solely to discuss debris concerns. While the approaches used were unique, for future operations, rules and procedures that are already in place should be followed to avoid or limit any confusion and promote more effective operations. Also, there is a need to forecast transition issues that the SERT should be prepared for. There should be no uncertainty about who owns what part of a waterbody, permitting, etc. Memoranda of Understanding and policies that clearly define roles, responsibilities, and expectations should be developed and executed well before the next incident occurs. Additionally, the number of conference calls concerning recovery should be limited, and any "pop-up" problems that may arise can be handled on a case-by-case basis rather than scheduling additional conference calls.

To enhance overall awareness about the Recovery function, it is also recommended that a concept of operations (CONOPS) be developed for recovery operations, similar to the concept of operations already developed for response operations. This recovery CONOPS can be integrated with the existing CONOPS and briefed to the SERT.

IMPROVEMENT PLAN

Below is a compilation of additional challenges along with opportunities and recommendations for improvement. Information was provided by Command and General Staff along with Branches and Emergency Support Functions. This table will serve as an improvement plan and should be considered as an outline for improving processes and procedures through planning, organization, equipment, training and/or exercises. This Improvement Plan has been developed specifically for the State Emergency Response Team as a result of the SERT's response to Hurricane Matthew.

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Table 2: Improvement Plan Matrix

Challenges/Observations	Opportunities for Improvement / Recommendations	Primary Responsibility
Recovery needs to have staff trained to handle ICS sections once a JFO is stood up. In the event of a subsequent response operation, or simultaneous response and recovery operations, there may not be enough staff from other areas to support them.	Recommend that Recovery work with the ICS sections to identify personnel who may be required to serve as an ICS section lead and ensure that these personnel are included in annual training conducted by these sections.	Recovery, Operations, Planning, Logistics
Recovery personnel also staff the Human Services Branch, resulting in staffing shortages during the initial phases of Recovery	Explore the possibility of utilizing reservists from the local area, perhaps even students from the local colleges, to work on mission management and other tasks that would free up other Recovery staff to travel in support of Recovery.	Recovery
At the beginning of SLRC/LSA operations, there were sworn Law Enforcement Officers present prior to switching to unarmed contract security. There were a couple of incidents at the staging areas and the SLRC that required, if not sworn LE, at least armed security. The contract security officers were quick to point out that all they could do was call 9-1-1.	Logistics will discuss the issue with the contracted security company (meeting slated for January, 2017).	Logistics
Logistics staff were unable to make badges for personnel at the SLRC. Because all doors leading into the warehouse require a badge to open, doors had to be propped open, violating security systems.	There is a need to get the badging system at the SLRC operational.	Logistics, Operations
There was a disconnect between SERT staff and National Guard personnel at the LSAs with respect to roles. The guard was, reportedly, not working their chain of command and their officers weren't aware of what their staff was doing because they weren't calling through their chain of command.	Logistics and National Guard representatives will meet to discuss training needs, roles, responsibilities, etc.	Logistics, ESF 13
Recon reports were significantly delayed in uploading to GATOR. This was especially evident during the height of the activation where it took 5 minutes or longer for the triaged reports to upload to GATOR, if the reports loaded at all.	Determine if this issue is related to bandwidth in the State EOC or a processing issue with GATOR. Additionally, there needs to be an ability to sort and export Recon reports for leadership. This was asked for by Recovery Chief and Legal.	Information Management/Tech Services, Planning
The Essential Elements of Information (EEI) tool was not being updated consistently. The Regional Coordination Team Supervisor with assistance from the Planning Section/Documentation Unit was updating based on Regional Coordinator reports.	Continue to encourage counties or county liaisons to update the tool. Also, remind users that the "comments" feature can be used to add additional information to better de-conflict situations.	Operations, Planning/Technical Services

USDA food acquisition procedures were not followed as outlined in the CEMP.	Will utilize own resources first and ensure that future operations will follow established plans.	ESF 11
Acquiring rental vehicles through the State contract rental agency was difficult, if not impossible. The lack of available rental vehicles made it difficult to get personnel into the counties.	A larger conversation is needed between the contract rental agency and the State. In the meantime, personnel should be made aware that other rental agencies can be used if the contract agency has no vehicles available.	SERT
Post-impact entry planning was conducted as the storm approached. While this effort had a level of success, there should be more advanced planning for such a situation, particularly if future storms provide little lead time for planning.	Going forward, efforts will be made to formalize the initial reconnaissance missions, working with ESFs 4, 9, 12 (fuels) and 13, to develop an entry plan that is scalable to any size storm. This will reduce the amount of planning required between the time the SEOC is activated and a storm's landfall.	Planning, ESF 4, 9, 12, 13
Some counties had difficulty in contacting their State ESF counterparts as there was no phone/contact information posted.	Post state ESF phone numbers to EMC so that counties have contact information readily available	All Sections, Branches and ESFs
Air assets were requested for areas that already had multiple air assets. Counties were contacting FWC directly and getting to ESF 16 on the back end. Also, USACE was also utilizing state assets while USCG had assets in state.	See "Mission Management" section above. Additionally, there should not be state support to Federal assets.	SCO, SERT Chief, Operations, Air Operations
Minor structural issue with Water Management Districts being under both ESF 1/3 and ESF 10, creating tasking issues.	Issue will be worked out at the Branch levels	Infrastructure Branch, Emergency Services Branch
Management of the FEIL line required a lot of resources. If ESF-14 continues to manage the FEIL line internally utilizing the staff and resources of other agencies, then it must be noted that that in and of itself is a full time job. In making staffing plans, ESF 14 would need at least two additional individuals to exclusively manage the FEIL line, taking them away from other operations. One individual would be needed for the day shift and another for the night.	ESF 14 is filled with talented people. Cross training will only improve ESF 14's capabilities. The goal is to prevent ESF-14 from being siloed or segmented. Each person should have a minimal level of understanding and be trained on every aspect of ESF 14. That way if someone is out or unavailable, ESF 14 continues to function at its peak level.	ESF 14
Private sector utilization of the Virtual Business EOC (VBEOC) was good, but there is a need to get more businesses to use the VBEOC, especially major retailers.	Continue to provide awareness of the tool to the private sector and its usefulness.	ESF 18
There is a question about using private sector sources to provide housing, which might have a fee involved, and how does that work legally.	Determine legalities related to using private sector sources for housing.	ESF 18

The FEMA model changed with respect to Individual Assistance, Disaster Recovery Centers, Disaster Survivor Assistance Teams, etc., and it was a challenge to introduce this new model to the counties while working a recovery operation.	Set up training for DEM staff and counties on the new concepts.	Recovery
There was difficulty in purchasing propane because multiple small vendors in different counties would not register at MyFloridaMarketPlace for a $100 purchase when they were busy during the event with their established contracted clients.	Explore the establishment of a P-card purchasing ability for propane.	Finance
Clarification on mission requests involving fuels	Mission requestors need to notify ESF 12-Fuels "hours" before they change locations so the truck drivers are notified in advance. There needs to be verbal communication on this as well and a mission update on the new address.	SERT
Disaster reservists are not getting P-Card receipts in on time	Look at the technology currently being issued to reservists. Instead of providing them multiple devices, perhaps look at one device (i.e. smartphone) that has photo and email capability.	Recovery
Toward the end of the activation, the SERT went from a Level 1 Activation to a Level 2 for overnight operations, returning to Level 1 the following day.	Although this was done for staffing, the SERT needs to maintain one level of activation to prevent sending mixed messages.	SCO, SERT Chief
Some personnel requested for certain functions were not necessarily skilled for those functions.	There needs to be better clarification of skill sets required for certain roles (i.e., GIS), and these skill sets must be made clear in mission requests.	SERT
Waste water was a concern this time. Storm drains pumps were rendered inactive by salt water which made it hard to open schools.	In addition to focusing on power restoration, there needs to be a focus on wastewater facilities and any other potential hindrances to opening schools (SERT Standing Order #5).	Infrastructure

There were too many conference calls, especially during the initial Recovery operations. Also, the number of meetings was excessive. These meetings, most of which were overcrowded, pulled many key personnel away from their primary EOC tasks. It should be noted, however, that there were multiple operations ongoing for two separates storms (also addressed on page 15). The twice a day conference calls during the Response phase, while important, sometimes went for 30-45 minutes. The requests for information was exactly the same information that was provided to the regional coordinators during their twice a day calls and the exact same information that is on the EEI tool. Asking for the same information we have already provided twice is not an efficient use of our time. EOC briefings were unnecessarily lengthy, particularly the evening shift-change briefing.	Limit the number of conference calls and meetings being conducted. If calls are being conducted twice a day during Response, they should be conducted no more than twice a day during Recovery. Essential personnel need to take priority for attendance, allowing other personnel to continue the functions of their respective areas. Better coordinate with other branches/ESFs to avoid duplicating calls on a specific topic. The format of the teleconferences—specifically during the Response phase—needs to be revisited, more so for the quality of calls instead of the length of the calls. Any redundancies in information requests should be eliminated. For briefings, emphasis needs to be placed on items/tasks related to the EOC Action Plan/Incident Action Plan. Additionally, briefing slides do not need to be read verbatim, and personnel should be encouraged to not brief if there is no significant information to be conveyed or if there is no new information to share.	SCO, SERT Chief, Operations, Planning, Recovery
Overnight meals were only re-heated food from the previous dinner or lunch hours before. Overnight staff are there to support the State in its needs, and if their "midnight meals" are sub-par then supporting the State could be difficult to complete.	While the Division has a contract with a vendor, the possibility of other local restaurants should be considered.	Finance
As the potential for a significant storm impact increased, the need for increased staffing in the Air Operations branch grew. There was concern that certain planning elements which fall under a support coordination role were not coordinated early enough. As a result, there were outstanding request for information related to logistical support (fuel, landing zone locations, lodging, etc.) which needed to be addressed. Additionally, there was a need early on in the activation for a Deputy Air Operations Branch Director due to the high demand for coordination and decision making at the branch level.	When the Air Operations Branch is activated, initial manning needs to include staffing for the following positions at a minimum: Air Support Coordinator, Air Operations Coordinator, and a Deputy Branch Director (in addition to the National Guard support as required). The organization will be expanded upon from that point as response dictates.	Air Operations

During the activation there was a lot of time spent on developing products that could have been created beforehand and used as a template. While there were some templates in place, such as the kneeboard card, more work needs to be done to refine it and similar products.	Develop product templates (and update current products) for the following: • Pilot kneeboard • Aircraft Location Storyboard • Pre-identified LZ/PZ for barrier islands • AOB Organization Presentation (include aircraft assets) • Pre-identified potential landing areas • ICS 220 completed with existing state assets • Airport excel data sheet (check with FDOT) • Aircraft fuel burn rates	Air Operations
Following Hurricane Matthew there was potential (worst case planning) for many of the barrier islands to be isolated all along the east coast. A concern was raised about locations for dropping off survivors from the barrier islands if there were multiple extractions done via helicopter. This discussion spawned several other concerns including landing zone security (i.e. keeping the area clear of people and ensuring suitability) and meeting survivor medical needs (i.e. will some survivors need direct medical attention, and if so where are the helicopter crews supposed to take them?)	A planning/coordination meeting needs to be held with air ops and appropriate branches/ESFs to plan for these types of operations (to include coordination with the FLARNG for pathfinder support). Additionally, potential landing zone locations may already be identified in each county (such as with Monroe). Requests for this information needs to be addressed with the counties.	Air Operations
During this event, the majority of the FLNG, to include its organic support, were deployed. The air support for Matthew was to be conducted via EMAC with other states and from organic civil (law enforcement/forest service) support. The initial plan was to establish a base of helicopter operations in three geographical regions (Palm Beach, Patrick AFB, and the Jacksonville area). Given that there would be multiple agencies/services working together to support the response, it would appear that logistical support should be requested and provided through the SEOC rather than solely through the NG.	Hold a coordination meeting with appropriate branches/ESFs to identify needs and work within established methods for logistical support services.	Air Operations
When missions were initially being coordinated there was confusion related to flying passengers/observers on FLNG aircraft. Additionally, there needs to be some clarification related to reimbursement of specific mission requests for the FLNG.	Have the FLNG Liaison provide an initial brief/factsheet with applicable practices/procedures. This will enable all Air Ops Branch partners who may be assigning or tasking missions to be made aware of possible limitations. Additionally, follow-on discussions need to be held with the SERT related to reimbursable operations.	Air Operations, ESF 13

When Air Operations was creating a mission, Ops Support would task that mission to the party deemed suitable to handle the request when the intent was for it to be sent back to air operations to be tasked. Similar confusion existed between the Air Ops Branch and ESF-16.	When Air Operations creates and mission that needs to be assigned back to the branch, the requestor must add a line in the "Resource Description" that states the mission needs to be assigned back to Air Operations. Similarly, if an air mission is tasked to ESF-16 and the coordination has already been made with the appropriate law enforcement air unit, then a statement to that effect must be included in the mission request.	Air Operations, ESF 16
While the daily "roll-out" reporting to Governor's Office staff was more effective this time, there is still some disconnect between the ESFs and the agencies. Reports included a combination of agency activity and ESF activity, and it was uncertain who was responsible for approving the agency activity and whether the information had been vetted via the agency. Additionally, there were issues with clarification of certain terminology (e.g., "open" meaning fully open or partially open).	Prior to any event, ESF-14 should have a discussion about what information is needed for the reports to the Governor and what times the reports are due, and make sure this information is communicated throughout the SERT at the outset of an activation. Engage all State agency communication teams and get them involved with this process. Become better acquainted on acronyms and certain terminology (e.g. port condition "whiskey", "tango," etc..) to promote uniformity of information, and provide training/awareness to Governor's Office.	ESF 14
Understanding of when purchases were needed to be made went well; however, an agreed upon damage projection model should be created that can be set to trigger purchasing certain foods and other necessities.	Create a projection tool, that is approved by each ESF and the SERT Chief, that should also include triggers for purchasing.	Human Services, ESF 6, ESF 11
Receiving consolidated school closure information was slow. Information was having to be obtained from multiple sources, increasing the risk for errors in situation reporting and an incomplete common operating picture.	School closure updates should be provided as they are received without having to wait for a completed list that has to be vetted.	ESF 6

CONCLUSION

The response and initial recovery operations for Hurricane Matthew were considered better than those of Hurricane Hermine. Lessons learned in the previous storm—which occurred only a few weeks prior—were applied for Matthew, and new opportunities for improvement were discovered. Going forward, there is a continued need for all SERT partners to review and, if needed, refine decision matrices and key indicators, ensuring their alignment with the state's Comprehensive Emergency Management Plan and the SERT's concept of operations. This includes plans for continuity of operations. Standard operating procedures and guides which have not been updated in several years need to be revisited and updated as some concepts may have changed. Lastly, the involvement that agency heads had in their ESFs was valuable. It is recommended that agency heads meet at least annually in the State EOC for training and awareness of the State EOC, the SERT, and how each agency contributes to the SERT's functioning.