2018 RED TIDE IMPACT & RESPONSE

Volume 2: Response Assessment
Tampa Bay & Sarasota Bay

2018 Red Tide Impact and Response

Volume 2: Regional Red Tide Response
For Tampa Bay and Sarasota Bay

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1 INTRODUCTION

Low-level red tide blooms occur regularly in Gulf and coastal waters of Southwest Florida. Severe blooms that negatively impact public health, businesses, and coastal habitats and wildlife are more rare and require coordinated emergency response. The severity and extended duration of the sixteen-month 2017–2019 red tide event along 120 miles of coastline in Southwest Florida was unprecedented in recent years. The last severe event occurred in 2005–2006. Given the extreme conditions, the actions and sacrifices of county and local partner staffs were remarkable. Dozens of staff across multiple departments and local jurisdictions worked long strenuous hours above and beyond their regular duties. Managers worked collaboratively and creatively to adapt and implement new strategies and procedures to respond to rapidly changing conditions.

This study of the Tampa Bay and Sarasota Bay regional response to the red tide event is intended to help identify opportunities to coordinate response efforts, recognize successes, and share lessons learned. The report summarizes the regional response to the red tide event, highlights some of the notable actions and innovations inspired by necessity, identifies gaps and challenges, lists recommendations for future red tide response, and provides a template for a Red Tide Response Operations Plan. It complements the Regional Red Tide Impact Study described in Volume 1, which summarizes red tide impacts across eighteen measures of community health.

The findings herein are derived from semi-structured interviews conducted with emergency response and natural resource managers from each of the five counties of the Tampa Bay and Sarasota Bay region, including Pasco, Pinellas, Hillsborough, Manatee, and Sarasota Counties. Further details were obtained from county documents provided by staff and from media reports. A summary of each county's red tide response is provided in the Appendices, along with a Draft Red Tide Response Operations Plan for each county based upon the best practices and recommendations generated during this study.

2 OVERVIEW OF REGIONAL RESPONSE

While severe red tide conditions developed in Charlotte Harbor as early as November 2017, consistently high levels of red tide cells (>100,000 cells per liter) reached Sarasota County and Manatee County waters in July 2018 and Pinellas County waters in August 2018. Hillsborough County and Pasco County coastlines did not experience prolonged elevated red tide cell counts, but nonetheless monitored conditions and staged equipment in preparation.

County response efforts began in their respective Parks or Environmental Departments, where resource managers were the first to assess and document impacts and organize cleanup efforts. On August 13, 2018 the Governor declared a state of emergency for all of Southwest Florida from Pinellas County to Collier County. Counties then activated their Emergency Operations Centers to manage the response, except Pinellas County, which assigned Incident Command to Public Works.

Sarasota County focused cleanup efforts exclusively on beaches and boat launches and with the help of a contractor and the Sheriff's Offender Work Program removed 255 tons of red tide debris. In Manatee County and its island communities, 316 tons of red tide debris was cleaned from beaches, bay causeways, boat ramps, and some inshore bays where a contractor was utilized. Pinellas County's strategy was to detect, prioritize, and harvest dead fish offshore and inshore to try to minimize the onshore impact to beaches and coastal marsh, while also keeping beaches clean and open. The combined effort of county and city staffs, the debris contractor, and subcontracted fishermen and charter captains resulted in cleanup of 1862 tons of red tide debris from Pinellas County waters. Counties were awarded FDEP grant funds to reimburse the costs of cleanup contractors, rental equipment, disposal fees, and overtime hours for regular employees. Reports indicate Pinellas received $7.5 million, Manatee $750,000, and Sarasota $1.5 million.

Waste management was a major logistical aspect of the overall response, to ensure timely staging and hauling of dumpsters. In addition to cleanup activities, counties increased red tide sampling to augment beach conditions monitoring; some counties also sampled offshore to enhance early detection of red tide heading inshore. Counties hosted weekly countywide update calls for division managers and county partners. Reporting and communications among affected counties and agencies across Southwest Florida occurred weekly via conference call. Throughout the red tide event, county communication departments and visitor bureaus prepared and distributed public information on websites, social media, and via email and call centers, including daily red tide updates, beach condition reports, and PSA videos.

Detailed notes on individual county responses can be found in Appendices A-E.

3 NOTABLE ACTIONS AND INNOVATIONS

3.1 NEW DATA TOOLS

3.1.1 Developing New Tools

Pinellas County and Manatee County developed GIS-based dumpster management tools to monitor the location and fill status of dumpsters and roll-off containers. This was an important tool for tracking and verifying Contractor services, tracking debris quantity, ensuring full dumpsters did not stay in place too long, and reporting to the public the location and fill status of available dumpsters.

Pinellas County also developed a GIS-based Online Red Tide Reporting Tool for the public to communicate their observations of red tide conditions quickly and track staff response. Citizens and municipalities could use the app to select the type of problem and add comments, contact info, photos, and location.

3.1.2 Utilizing New Data

Pinellas County collaborated with Gulf of Mexico Coastal Ocean Observation System (GCOOS) and National Oceanic and Atmospheric Administration (NOAA) to develop a HABScope Experimental Red Tide Respiratory Forecast tool. This Experimental Forecast tool provides information on when red tide could impact area beaches with respiratory irritation risk forecasted every three hours. This tool combines current wind forecasts produced by the National Weather Service with red tide cell counts at local beaches collected by county staff and volunteers.

High resolution satellite imagery for coastal areas is available from NOAA. Pinellas County found daily satellite imagery of the nearshore Gulf very helpful for visualizing the location of red tide impacts and to prepare for harvesting dead fish offshore or pre-staging beach cleaning equipment in anticipation of fish heading onshore.

3.2 Cleanup Best Practices

3.2.1 Minimizing Dumpster Odor

Management of hazardous and odoriferous red tide debris in dumpsters located in public places was improved by lining the dumpsters and depositing a layer of sand at the bottom to minimize leakage, using biodegradable cherry bomb deodorizer, and securely tarping if left overnight. Depositing debris from beach rakes directly into following dump trucks provided the timeliest transport of dead fish offsite.

3.2.2 Prioritizing Cleanup of Floating Debris

Pinellas County and Hillsborough County prioritized cleanup of floating red tide debris to remove as much from the water as possible before it impacted shorelines or sunk to the bottom. Besides obvious impacts to beaches and sensitive coastal marsh, dead fish left to decay in the water may contribute to a longer red tide bloom[1], more severe water fouling that may be responsible for seagrass die-offs, and increased long-term nutrient loads in the bay. With detailed planning and execution by the Incident Commander, Pinellas County utilized a variety of vessels and manpower of local fishermen and charter captains, who themselves were recruited and hired as subcontractors by the County's Prime Contractor for debris removal, DRC Emergency Services.

Hillsborough County monitored Tampa Bay with aerial surveillance, captains' reports, and augmented red tide sampling to establish an early warning for red tide and dead fish that could impact their shorelines. Their cleanup operations in Lower Tampa Bay helped keep fish out of other bay segments. Pasco County was staged and ready to deploy a similar offshore cleanup tactic, but dead fish never entered their waters. In addition, although never executed, the US Coast Guard approved an operational plan to boom-off a portion of John's Pass, a narrow 650-foot inlet connecting the Gulf and Boca Ciega Bay in Pinellas County to prevent fish from entering the pass.

[1] Burton, R. *et al.* 2020. State of the Science for *Karenia brevis* (Red Tide) in Florida. UF/IFS Extension Florida Sea Grant. SGR 139. 6 pp.

3.3 COMMUNICATIONS

The Pinellas County Convention and Visitor's Bureau, known as Visit St. Petersburg/Clearwater (VSPC), took a proactive approach in its communications strategy to acknowledge resident and visitor concerns about red tide impacting their activities. Using the new Experimental Red Tide Respiratory Forecast tool for beaches developed by NOAA, GCOOS, and Pinellas County (see 3.1.1), VSPC established a beaches update website that reported which beaches were experiencing red tide impacts and which were clear. This helped visitors and residents find the best beach to visit on any given day. VSPC also shifted their marketing emphasis to arts, culture, and other attractions beyond beaches.

Sarasota County produced a series of 1-2 minutes PSA videos showing the county's red tide response in action. Division managers were recorded on location explaining various aspects of the operations, for example, how cleanup sites were evaluated and prioritized. Links to the videos were shared on social media and daily red tide updates.

Mote Marine Laboratory maintains an online Beach Conditions Reporting System (BCRS) for Southwest Florida that provides daily eyes-on reports from trained monitors, both County Lifeguards and volunteers. In Sarasota County, lifeguards reported beach conditions (including dead fish and respiratory irritation) twice daily. This proved to be an important source of information for the public.

4 GAPS AND CHALLENGES

4.1 AUTHORITY

4.1.1 Declaration of Emergency

In the early days of the red tide bloom as conditions continued to persist and worsen, responders were faced with rapidly expanding workload and expenses and uncertainty about how to budget these demands. There is broad agreement that an earlier declaration of emergency by Governor's Executive Order would result in a more robust, effective, and coordinated response. For most counties, the trigger for activating a private contractor for debris cleanup was the declaration of emergency that ensured the availability of FDEP grant funds. The Governor could provide additional emergency relief support by activating coastal units of the Florida National Guard as occurs during hurricane response.

4.1.2 Emergency Management Plan

Red tide is not listed in Threat and Hazard Identification and Risk Assessments, and none of the five counties in the Tampa Bay and Sarasota Bay region had a Red Tide Emergency Response Plan prior to the incident. Only Pinellas County documented their plan after the event. Furthermore, many staff had no direct prior experience responding to harmful algal blooms (HABs), and those who did found little institutional memory from the last major red tide event in 2005–2006. As a consequence, staff were tasked with creating and adapting procedures in real time.

4.2 COORDINATION

4.2.1 Local Partners

Countywide coordination was managed by Incident Command through daily email reports and weekly all-hands conference calls. In some cases, coordinating responsibilities around beach closures among counties and municipalities and County FDOH was confusing with regard to barricades, signs, and press releases. Multiple points of contact for departments also created confusion.

4.2.2 Regional Partners

Using weekly updates by conference call and email between counties, staff were able to track impacts to and responses of neighboring areas and learn what was working, or what was not. Since red tide impacts moved northward up the coast and were spatially patchy even in affected areas, not all counties were responding to the same intensity at the same time. Other than sharing situation reports, counties did not have a formal process for coordinating response efforts between neighboring counties, for example sharing surveillance data, equipment, or contractors to respond to hotspots in waterbodies that span adjacent counties. For example, Hillsborough County might partner with Manatee and Pinellas County to harvest dead fish offshore to keep red tide debris out of Tampa Bay. Likewise, Sarasota County and Manatee County might cooperate to harvest fish from Sarasota Bay. Pinellas and Pasco Counties might cooperate similarly for cleanup along contiguous coastline.

4.3 STAFFING

4.3.1 Fatigue and Burnout

The long duration and intensity of the 2018 red tide event contributed to staff burn out and fatigue. For example, Manatee County teams worked 10–12 hours per day, 7 days per week, for 64 continuous days through August and September. Incident Commanders and Operations Chiefs in the most affected counties worked even longer hours. Those working in the field experienced tiring and hazardous conditions dealing with red tide debris and respiratory irritation. These heroic efforts were generally recognized by County Leadership but were largely unknown and underappreciated by the public.

4.3.2 Training

With all new procedures being implemented, staff and volunteers required training in conditions assessment, red tide sampling procedures, and data reporting requirements. There were also shortages of licensed and trained drone operators and heavy equipment operators.

4.3.3 Activity and Time Tracking

Incident Command is responsible for coordinating activities among a number of county divisions/departments and relies on staff to report their activities and time. At the department level, timely and accurate activity reporting is essential for situational awareness. At the staff level, systematic tracking and reporting of staff time and activities are important for budgeting and possible grant reimbursement for overtime. Some counties had no system for tracking staff time and activities, and some managers were frustrated by delayed or deferred reporting from other departments.

4.4 DEBRIS CONTRACTORS

4.4.1 Contract Terms

For assistance with red tide debris cleanup, most counties relied on debris management contractors already under contract for hurricane storm debris cleanup. However, some contracts did not include cleanup of hazardous biological materials, and thus needed to be amended before work could begin.

4.4.2 Competition

At least one county's debris cleanup contractor had difficulty employing subcontractors due to competition with other locations. When other neighboring counties are also heavily impacted, contractors had difficulty securing the necessary manpower and equipment, especially if those companies also had debris management contracts with additional impacted counties.

4.4.3 Subcontractors

Some counties struggled with issues of liability, cost, and contracting related to hiring civilian captains who wanted to assist with cleanup, because there was no established process or procedure. Other counties were able to rely on their Prime Contractor to recruit and hire charter captains and fishers.

4.5 CONDITIONS ASSESSMENT

4.5.1 Standard Data Collection

Emergency response staff required daily early morning assessments of all locations to plan that day's response operations, so BCRS (see 3.3) data was not adequate for this purpose. Instead, county responders developed their own procedures for daily assessment of conditions offshore, inshore, and onshore. For example, county staff conducted daily beach surveillance to estimate debris volume and report qualitative measures of water color, respiratory irritation, and odor. Standardizing subjective qualitative measurements like "slight", "mild", or "strong" among observers was challenging. Conditions assessment procedures were not consistent across counties, and thus not comparable.

4.5.2 Reporting Tools

Without existing standardized procedures, data collection and reporting tools were developed as needed by Operations Managers and sometimes department managers. Because of the complexity of operations, there were different streams of data being reported to different managers in different formats. Some counties used primarily WebEOC, a centralized web-based incident command app for coordinating and standardizing reporting across departments. However, it appears that reports were submitted as narratives making quick data summaries and visualization cumbersome or impractical. Other counties managed data collection and storage with a set of excel sheets shared on internal servers or cloud based shared SmartSheets. Overall, most counties seemed to lack a centralized open data reporting, management, and visualization tool.

4.6 CLEANUP

4.6.1 Equipment

Existing equipment was insufficient for the magnitude of the cleanup required. In some cases, essential tools like beach rakes were unavailable because they were already rented out to private property

owners. Counties lacked the variety of vessels needed for inshore and offshore cleanup, for example, wave runners, skiffs, trawlers, and trash skimmers. Private property owners also lacked appropriate equipment but made do with nets and buckets and free disposal provided by the county. Lack of vessels and manpower likely resulted in cleanup efforts focused mostly on removing dead fish from beaches, instead of preemptively harvesting floating masses of dead fish before they impacted shorelines. Leaving dead fish in the water may contribute to a longer red tide bloom, more severe water fouling that may be responsible for seagrass die-offs, and increased long-term nutrient loads in the bay.

4.6.2 Debris Management

All red tide debris was disposed at the landfill or incinerated, which may have been a missed opportunity to generate soil enriching compost. The efficacy of safely composting red tide debris is unknown. In 2020, Mote Marine Laboratory and Florida Gulf Coast University initiated a study to determine nutrient loads from decomposing fish and to explore conditions for effectively deactivating red tide brevetoxins during composting.

5 RECOMMENDATIONS

The following recommendations could improve regional coordination and response to the next severe red tide event. Further details are provided in the Draft Red Tide Response Operations Plans in the Appendices.

- Develop and adopt countywide Red Tide Response Operations Plans with surveillance and prioritization of offshore, inshore, and onshore areas for cleanup. See Appendices A-E.
- Develop a process or MOU for cooperation between neighboring counties for mobilizing Gulf and Bay surveillance, equipment, and subcontractors in shared waterbodies.
- Develop a process or MOU for cooperation with FDEP State Parks to share equipment, such as emergency use of invasive aquatic plant harvesters that could be used to cleanup floating fish.
- Develop a process with FDEP for determining what conditions warrant a red tide emergency declaration from the Governor in order to activate an early and robust response.
- Utilize local tourist development tax revenue on an emergency basis to fund initial county mobilization and cleanup response before State emergency response grants become available. See Florida Statute Chapter 125.0104(5)(a)(5) for the description of authorized uses of revenue related to beach and estuary maintenance and cleanup.
- Ensure access to adequate and appropriate equipment to be responsive in all types of locations and conditions, including flat bottom skiffs, outrigger vessels, trash skimmers, beach rakes, wave runners, blowers, turbidity barriers, soft-sided dumpster bags, and PPE. County or Contractor should source equipment early and secure through purchase, lease, loan, or subcontract.
- Prime Contractor considerations:
    - Ensure contract covers class 3 biological hazards;
    - Ensure contract covers subcontracting civilian captains and fishermen to assist in cleanup;
    - Limit the number of counties in the same region that any given debris management company can contract with to avoid overextending;

    - Allow county contractors to cooperate/subcontract with county contractors in adjacent area (e.g., Hillsborough helps Manatee or Pinellas).
- Develop standard procedures and training (SOP) for open water surveillance and size estimation of dead fish patches. Adopt standard procedures across the region for comparability. Recruit civilian fishing guides, fishers, lifeguards, and licensed drone operators to assist.
- Develop standard procedures and training (SOP) for daily Conditions Assessments, especially for qualitative indicators like smell and respiratory irritation and for estimation of volume of debris *in situ*. Adopt standard procedures across the region for comparability. Consider coordinating with Mote's Beach Conditions Report System and recruit trained volunteers to assist. Increase number of locations, trained observers, and daily reporting of beach conditions especially in Pinellas County for upload to the BCRS.
- Continue improving HABScope technology for accuracy. Develop standard procedures and training (SOP) for red tide cell counts using HABScope for improved beach conditions reporting. Adopt standard procedures across the region for comparability. Consider coordinating reporting with Mote's Beach Conditions Report System and recruit trained volunteers to assist.
- Develop centralized open data management and visualization tools and training guide (SOP) for systematic department-level reporting of all activities and metrics for Command Operations and for systematic reporting of all staff and contractor time and activities for budget and grant purposes. In the midst of the crises, reporting tools should be simple and fast for staff to use consistently, and data summaries and visualizations should be easily accessible by leadership.
- Promote FWC's regional tracking and reporting mobile app (https://myfwc.com/news/all-news/sighting-app/) for more responsive public reporting of high importance red tide affected fish and wildlife and open the database to web-based data queries.
- Develop and share software code or templates for setting up county dumpster management apps.
- Pending outcomes of Mote Marine Laboratory and Florida Gulf Coast University's red tide debris composting study, designate FDEP permitted/registered Compost Processing Facilities or explicitly exempt sites (as per F.A.C. 62-706.305) for intake of red tide debris.
- Develop a communications plan that includes:
    - Recognition that the red tide emergency responders are heroes;
    - Specific stories with photos or video about how the county is responding;
    - Daily web and social media updates of conditions at public beaches and boat launches;
    - Health advisories and remedies for exposure.

6 RED TIDE RESPONSE OPERATIONS PLAN TEMPLATE

This section contains a template for coastal counties to create an emergency red tide response operations plan tailored to their unique physical geography, command structure, and resources. Some sections may not be applicable to all plans. See Appendices A though E for examples of draft operations plans for counties in the Tampa Bay and Sarasota Bay region, based upon best practices developed during the 2018 red tide response.

Red Tide Operations Plan Template

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APPENDIX A - PASCO COUNTY

This section contains:

1. Summary Notes on Pasco County's 2018 Red Tide Response

2. Draft Pasco County Red Tide Response Operations Plan

Pasco County Response Notes

26 February 2020

Contacts

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Monica Santiago, Operations Manager (Pasco County Emergency Management) (727) 847-8137 x 2384; msantiago@mypasco.net

Impact

No aerosols, no fish kills onshore, no beach closures

Priority Assets of Concern

Anclote Gulf Park, Robert Strickland Memorial Park, Green Key (Robert K. Rees Memorial Park), Key Vista Nature Park

Response

Approach

- Standard Operating Procedure for red tide response before/after 2018 red tide (No/No)
- Interest in SOP development workshop (Yes)
- For most people, this was their first time responding to a HAB emergency.
- Took a proactive approach. They got ready and then stood by.
- Preferred approach was to deter/block dead fish from moving inshore.

State of Emergency/Injury Status

- Drafted a local State of Emergency if needed to green light emergency procurement
- Worked with Governor's office to be added to emergency declaration
- Small Business Administration added Pasco Co. to the Economic Injury Declaration
- Drafted agreement with FDEP in preparation to receive recovery funds if Executive Order 18-221 extends into Pasco Co.

Data/Information used

- Forecasts from NOAA (Gulf of Mexico HAB Bulletin) and USF (K. brevis Forecast Model)
- Used FWC's "Red Tide Facts and Information" educational brochure to communicate facts to the public.
- Used educational information from Sea Grant
- Followed the operational efforts of Pinellas and Hillsborough Counties.
- Followed messaging coming from Charlotte, Sarasota, and Manatee Counties.

Data collected (or could be collected)

- PRNR conducted water quality sampling using FWRI methodology. They did grid sampling 3-6-9 miles offshore. Initially 2 times per week during peak counts, then once per week after. Samples were analyzed by FWRI.
- Visuals of fish masses
- Number of days Parks staff puts out DOH signs (mentioned in Situation Reports)
- Two County boat launches require a $5 pass. These data could be researched. Ramps at Port Richey and New Port Richey have no tracking.
- Lifeguards at Anclote Park might record user estimates. These data could be researched.

Data shared

- Water quality monitoring data were shared with FWRI for inclusion in mapping and for USF Forecast Models

Personnel/Departments

- Emergency Operations Center
- Parks, Recreation, and Natural Resources (lead beachfront department)
- Solid Waste (dumpster coordination, dumpsters were on standby)
- Public Information Office
- Pasco Tourism Department
- Marine units of Sheriff's office
- Fire Rescue is working to get their boat operational (at time of interview)
- Didn't track personnel time; could track in future. Probably 3 hours per SitRep plus 2-3 hours per week. Sampling took all day and involved Parks staff and Marine Unit vessel. Fuel costs were not tracked.

Special training

- Staff were trained on marine mammal stranding
- Staff were trained on water quality monitoring methodology
- Passive Parks staff trained in turtle rescue. For birds, they call Owl's Nest Sanctuary for assistance.

Equipment and supplies

- Didn't need to use boom or react inshore
- They have their own vessel now that can go offshore.

Removal of dead marine life

- None

Communication (situation reports, staff communications, policymaker communications, and public communications)

- Drafted public information to be ready. Public information was hosted on county website. It was hidden until "go". Coordinated with Public Information Office.

- Situational reports updated to department heads, FDOH, School Board, and BCC every other day. Sit-Reps were for official use only.
- Pasco Tourism Department (Destination Management) would check in regularly with Parks, Recreation, and Natural Resources (PRNR).
- Customer service calls were not counted. They were transferred to Natural Resource Manager.
- Facebook accounts include PRNR, individual park sites, and the Public Information Office (PIO, media relations and communications)
- Twitter accounts include Emergency Operations Center (EOC), PRNR, PIO
- Participated in a weekly call involving other coastal EOCs.
- PRNR posted some kind of FDOH signage (not clear what this was), but they did not have specific red tide educational signage.

Contractors

- Did not have a contractor on standby. Probably would have used disaster debris contractor.

Other

- We have an example of a Pasco County Situation Report (#07, 9-25-2018)

Coordination and collaboration

- Might there be support for a regional MOU for coordination and collaboration (Yes)
- Communicated with Pinellas, Hillsborough, and other coastal county EOCs by phone.

DRAFT
Pasco County Red Tide Response Operations Plan

CONTENTS

Last Revision Date: December 2020

1 SCOPE

This plan provides guidance to Pasco County staff for operational response to severe Florida red tide events. While low-level red tide blooms occur regularly in Gulf and coastal waters of Southwest Florida, more rare severe blooms negatively impact Pasco County residents, facilities, and coastal habitats and require coordinated emergency response. Procedures outlined herein relate to oversight, coordination, communication, field operations, and resources to help reduce human exposure to hazardous red tide debris, protect wildlife and coastal habitats, and provide red tide status updates to partners and the public.

2 OBJECTIVES

- Track and report conditions offshore, along public beach shorelines and boat ramps, and in bays and canals using remote and direct surveillance methods.
- Remove red tide debris offshore to prevent onshore washup onto beaches and coastal wetlands.
- Remove red tide debris from bay waters, the intracoastal waterway, and associated canals to manage and mitigate excess nutrient input.
- Remove red tide debris from beach shorelines and boat ramps to reduce public exposure and mitigate business and tourism losses.
- Track and coordinate cleanup and disposal of red tide debris to optimize equipment and personnel and minimize conflicts.
- Contribute to enhanced water quality sampling efforts to detect and track red tide.
- Communicate timely and accurate red tide status updates to partners, citizens, visitors, and businesses.
- Oversee contractor operations and expenditures to ensure full disaster grant reimbursement.

3 ROLES AND RESPONSIBILITIES

3.1 PRINCIPAL POINTS OF CONTACT

Incident Commander:
Monica Santiago
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Operations Manager:
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3.2 COMMAND AND COORDINATION

Pasco County Emergency Management serves as lead command and provides daily operational management coordination with the following County departments:

- Emergency Operations Center
- Parks, Recreation, and Natural Resources
- Solid Waste
- Public Information Office
- Pasco Tourism Department
- Marine units of Sheriff's office
- Tourism

Other coordinating partners include:

- Pasco County School Board
- Florida Department of Health in Pasco County
- City of Port Richey
- City of New Port Richey

Pasco County participates in regular incident status update calls with regional governments and agencies, including other affected counties, Florida Fish and Wildlife Commission (FWC), University of South Florida (USF), Florida Department of Health (FDOH), Florida Department of Environmental Protection (FDEP), and the Florida Division of Emergency Management (FDEM) Region 4 and 6 Liaisons.

An organizational chart showing Pasco County command structure and roles is distributed at the start of the incident response, including updated contact information for department POCs and coordinating partner POCs. See Section 5.1 for a list of coordinating partner POCs.

4 OPERATIONAL PROCEDURES

4.1 OVERVIEW

4.1.1 Daily Workflow

Time / Action [Customize for Pasco County operations]

- 0530 staff briefing
- 0000 staff deployment for situation assessment surveillance
- 0730 staff reporting on conditions and debris volumes and locations
- 0800 Situation Report published
- 0000 sea turtle nest monitoring all clear
- 0000 debris contractor resources mobilization
- 0000 waste management resources mobilization
- 0900 FDEP status report submitted
- 0000 water samples collection (certain days)
- 0000 Sheriff flight surveillance report (AS SCHEDULED)

- 0000 County and Municipal conference call (WEEKLY)
- 1430 regional conference call (WEEKLY)
- 0000 water sample report
- 0000 status report posting on website, social media
- 0000 operations update email to all partners

4.1.2 Time and activities tracking

All staff track their time, activities, and expenditures related to red time emergency response using a common database (see 4.5.1).

4.2 CONDITIONS MONITORING AND REPORTING

4.2.1 Gulf, Beach, and Bay Conditions

4.2.1.1 Offshore Conditions

1. Review red tide location using USF IRIS and NOAA imagery. See 5.2.1 and 5.2.4.

2. Review the USF HAB Tracking maps. See 5.2.2.

3. Review NOAA HAB Bulletin and GCOOS Forecast. See 5.2.3.

4. Review Pasco County offshore red tide sampling data. See 5.3.2.

5. Report location, intensity, and spatial extent of red tide patches forecast to enter Pasco County waters within 24 hours. If risk of onshore impacts is imminent or increasing, request aerial support for assessment (see 4.2.1.3).

4.2.1.2 Beach and Bay Shoreline Conditions

1. Conduct rapid assessment of boat ramps via vehicle and of beaches using ATV or drone to identify hotspots for cleanup. FWC guidelines shall be followed when driving on the beach. All employees shall wear N95 respirator masks when respiratory irritation is present.

2. Record and report observational data at designated locations using ArcGIS Collector. See 5.3.1.

3. Review conditions data and prioritize areas for cleanup mobilization. Prioritization should consider volume and concentration of debris, accessibility to motorized vehicles, high-profile public areas, permit requirements, and subject to County beach cleaning policy.

4. Report priority list of cleanup locations. Notify FWC permitted Turtle Monitors for an all-clear of beach cleanup areas during turtle nesting season (May 1 – Nov 1).

4.2.1.3 Bay Waters Conditions

1. Conduct rapid assessment of bay waters via vessel, drone, or helicopter to identify and prioritize hotspots for cleanup. Request aerial support from Sheriff or Coast Guard through Emergency Management.

2. Record and report observational data using ArcGIS Collector. See 5.3.1.

3. Review conditions data and prioritize areas for cleanup mobilization. Prioritization should consider volume and concentration of debris, accessibility to motorized vessels, high-profile public areas, proximity to shore, vulnerability of nearby assets and habitats where debris could washup.

4. Report priority list of cleanup locations.

4.2.2 Wildlife Strandings

Record observational data using ArcGIS Collector. See 5.3.1.

4.2.2.1 Sea turtles

Report to FWC (888-404-3922) with the following information:

- Exact location of the animal
- Status: alive or dead
- Approximate size
- Presence of tags or spray paint markings
- Closest beach access point

4.2.2.2 Manatees, Dolphins, Whales

Report to FWC (888-404-3922) with the following information:

- Exact location of the animal
- Status: alive or dead
- Length of observation time
- Approximate size
- Presence of tags or spray paint markings
- Closest public boat ramp

4.2.2.3 Birds

Report sick or injured birds to Seaside Seabird Sanctuary (727-391-6211) or Birds in Heling Hands (727-365-4592)

4.2.2.4 Fish Kills

Report to FWC Fish Kill Hotline (800-636-0511) or online form
https://public.myfwc.com/FWRI/FishKillReport/Submit.aspx

4.2.3 Citizen Requests

1. Review public notifications of fish kills and/or cleanup requests (i.e., See Click Fix or Pasco 311).

2. Investigate and update database with observations and service needs.

3. Upon notice of work completed, re-inspect and update App accordingly.

4.2.4 Red Tide Monitoring

Depending on the severity and extent of the red tide bloom, county staff will implement the red tide monitoring plan to augment routine water quality sampling with twice weekly sampling at sites 3-6-9 mile offshore as an early warning. All activities shall follow the county's SOP for phytoplankton monitoring and field data collection, to be consistent with state protocols to ensure comparability. Samples are analyzed by FWRI.

1. Develop the weekly schedule for sampling depending on current and forecast conditions.

2. Collect samples following standard procedures. See 5.3.2.

3. Deliver samples to FWRI for analysis.

4.3 CLEANUP

4.3.1 Contractor Activation and Management

1. Activate the county approved Debris Management Contract with an amended scope and line item cost list specific to class 3 biological hazards. See 5.5 and 5.6.3.

2. Confirm and coordinate contractor operations with Operations Manager, to include:

- manual and mechanical beach cleaning,
- offshore harvesting, and
- container delivery, maintenance, and hauling.

3. Coordinate with municipality POC and contractor to ensure access and equipment staging. Prior to moving into a location, the contractor notifies the county of the schedule, and the county makes contact with the POC for the city or county-owned property and advises the contractor on specific allowable locations for container location and equipment staging (see 5.4.1).

4. Monitor contractual services performed at primary work locations and record activities (see 4.5.3) using the daily tracking form (ArcGIS Collector), to include:

- Date, time, and location of contracted work
- Number of contracted staff working, position titles, and duration of work
- Assets that the contractor is utilizing and duration of use
- Number of bags, containers, or truck loads and estimated tons of debris removed
- Number, location, and fill volume of containers
- Date and time containers are removed for disposal

5. Communicate issues or concerns related to contractor performance immediately to Operations Manager.

6. Share contractor activity reports with Operations Manager for review.

4.3.2 Cleanup Protocols

4.3.2.1 Beach

Tractors with beach rakes begin at beach access points. Each go in a different direction and return to access points to unload into awaiting container. If available, dump trucks follow tractors/rakes to expedite unloading. As each area is cleaned, crews mobilize to the next access point and operations will resume. Small areas are raked by hand and debris bagged.

4.3.2.2 Offshore

It is a priority to harvest floating masses of dead fish before they impact mangrove shorelines. Turbidity barriers can be used to corral fish or shield shorelines short-term until fish are harvested. Wave runners and blowers can be used to move fish out of mangroves and out from under docks and bridges.

Charter Captains, shrimp and mullet fisherman can be subcontracted through debris contractor. Skimmer vessel harvest fish, and once the vessel's nets are full, a push boat with barge with assist excavator and container meets the skimmer vessel and debris is transferred to the awaiting container. Once the container is at capacity, barge transits to off-loading area where the full container is taken off the barge and replaced with an empty container.

For smaller volumes, debris is bagged on the skimmer vessel. A work assist boat meets the skimmer vessel to off-load debris bags. Skimmer continues operations while the work assist boat transits filled debris bags to the off-load site where they are transferred via forklift to awaiting container.

4.3.2.3 Islands

A landing craft style work boat transports a small ATV with small trailer to the island. Crews clean the beach by hand with rakes and shovels. Beach debris is transported to a holding container on the work vessel. Once the container on the work vessel has reached capacity, the crew transports debris to the off-loading site and debris is transferred to awaiting container. Transporting and transferring debris continues during the operations while the beach crew continues cleaning the beach area.

4.3.3 Waste Management

4.3.3.1 Container Management

Depositing red tide debris directly from beach rake into trash trucks instead of containers is preferred for timely transport to landfill. For high volume, a lined roll-off container is preferred over a standard trash dumpster. FWC guidelines shall be followed when driving on the beach. All workers shall wear personal protective equipment when respiratory irritation is present.

Container odor management:

- Line containers and add a sand layer to minimize leakage and to minimize tears in the liner.
- Cover, secure, and deodorize containers that remain overnight.
- Remove all full containers by COB.
- Do not leave debris in containers in populated places for more than 24 hours.
- Do not overfill containers. Maximum capacity for service trucks is 10,000 lbs.
- Pressure wash container staging areas using an environmentally safe deodorizing product, following all NPDES guidelines. Use garden lime in vegetated areas.

4.3.3.2 Solid Waste Coordination

1. Pre-register all contractor vehicles and containers with Solid Waste.

2. Call 1 hour in advance of drop off (727-861-3053). Hours of operation Mon-Sat, 0700-1700.

3. Consider designating alternative sites for red tide debris composting instead of landfill disposal.

4.4 COMMUNICATIONS

4.4.1 Partners

Regular communication among cooperating partners is essential.

1. Prepare bi-daily (or weekly as conditions warrant) Situation Reports for distribution to Pasco County leaders, leaders of municipalities, neighboring counties, FDOH in Pasco County, and FDEM Region 4 and Region 6 Liaisons.

2. Participate in weekly calls with regional cooperating partners, including Gulf Coast Counties of the red tide declared emergency area, FWC, USF, FDEM Region 4 and Region 6, and FDOH.

4.4.2 Public

A coordinated multi-media communications plan is essential.

1. Set up a Red Tide information page on the County website to include:

- an explanation of red tide as a harmful algal bloom
- potential acute adverse health effects from aerosols
- contact information to report wildlife strandings and fish kills
- red tide information resources from FWC, NOAA, USF, FDOH, FDEP, FDEO, Mote Marine Laboratory, and Visitor's Bureau
- links to current and prior county red tide updates
- daily beaches update to help residents and visitors find the best beaches on any given day

2. Plan and execute daily (weekly as conditions warrant) social media posts on specific red tide conditions and the county's response. Highlight information to aid residents and visitors in understanding the course of the event and how they can best manage their own activities and exposure. Feature stories about the county staff disaster response heroes who are working long days to serve the public.

3. Set up and promote a County Red Tide Hotline and provide the phone operators talking points and answers to frequently asked questions, such as FWC's "Red Tide Facts and Information".

4. Prepare and distribute daily (or weekly as conditions warrant) Red Tide Media Updates in the form of a newsletter or press release with information pulled from the Situation Reports.

5. Produce and distribute short (1–2 minute) PSA videos explaining elements of the county's response, including the daily assessment and cleanup process and highlighting county staff disaster response heroes who are working long days to serve the public.

6. Collect metrics on:

- Number of hotline calls
- Social media hits (likes, shares, retweets, etc)
- Number of website visitors, unique and returning
- Number of video views

4.5 RECORDS MANAGEMENT

4.5.1 Data Forms

The following data forms are used to document conditions and activities during the course of daily operations. Forms are pre-formatted for simple, unambiguous, and standardized data collection in the field [via e.g., ArcGIS Collector, Open Data Kit (ODK), Quantum GIS (QGIS)] and in the office [via e.g., WebEOC, SmartSheets, Google Sheets, or other collaborative spreadsheet or database]. Data forms include:

1. Staff time, activities, and expenditures (office)

2. Beach and Boat Ramp and Bay Conditions Assessment (see SOP 5.3.1) (field)

3. Red tide cell counts (see SOP 5.3.2) (field/office)

4. Contractor time, activities, and materials (field/office)

5. Volume/weight of debris and solid waste fees (removed by staff or contractor) (field)

6. Communications and outreach metrics (office)

4.5.2 Data Storage and Access

Data collected (See 4.5.1) to document conditions and activities during the course of daily operations is uploaded and stored on a centrally accessible local or cloud server to provide secure access by all authorized county staff and designated partners. Databases are connected to a simple dashboard (via e.g., Google Data Studio) to display key response metrics for Leadership and for preparation of Situation Reports and Red Tide Media Updates.

All departments are required to report on activities and metrics using these common tools and procedures under the coordination of the Operations Manager.

4.5.3 FDEP Grant Requirements

With the Governor's Declaration of State of Emergency for affected counties, grant funds are made available through FDEP to those designated counties and municipalities for reimbursement of costs associated with emergency response. Because grant funds are awarded as reimbursement, careful and complete documentation and verification of expenses is essential.

1. Assign Grant Fiscal Manager to coordinate with Operations Manager.

2. Review terms of FDEP grant agreement and invoicing requirements for reimbursement. Generally, grant invoices must be accompanied by verified itemized invoices for labor, equipment use, consumables, and other costs.

3. Submit daily reports to FDEP.

4. Review contractor invoices against county monitoring reports (see 4.3.1), document any discrepancies, and send back to contractor for corrections.

5. Submit invoices that have been reviewed and pre-approved by Operations Manager and Grant Fiscal Manager to Finance Department.

5 RESOURCES

5.1 POINTS OF CONTACT

- County Call Center (Red Tide Hotline)
- Debris Removal Contractor
- City of Port Richey
- City of New Port Richey
- Florida Department of Health in Pasco County
- Florida Department of Environmental Protection
- Florida Fish and Wildlife Commission

5.2 DATA SOURCES

5.2.1 Integrated Red Tide Information System

https://optics.marine.usf.edu/projects/IRIS.html
Contact: Contact Chaunmin Hu, 727-553-3987, huc@usf.edu

The USF Integrated Red Tide Information System (IRIS) integrates satellite observations, numerical models, and water sampling to provide information on the location, intensity, spatial extent, and surface transport of red tides and other types of discolored waters. The information is updated daily through a user-friendly web portal, where a user can bring all data layers to Google Earth to navigate and to add other data layers. Three data layers are used in the IRIS: satellite remote sensing from NASA and NOAA, numerical modeling of ocean currents from the West Florida Coastal Ocean Model (WFCOM), and water sample analysis of *K. brevis* cell concentrations from Florida Fish and Wildlife Research Institute.

5.2.2 HAB Tracking Tool

http://ocgweb.marine.usf.edu/hab_tracking/
Contact: Dr. Robert H. Weisberg, 727-553-1568, weisberg@usf.edu

The College of Marine Science, University of South Florida Ocean Circulation Group provides seasonal predictions of major red tide events and short-term tracking of red tide once an event occurs. *K. brevis* cell counts from FWRI are input into the WFCOM to forecast where cells may go over the next 3.5 days. Short-term red tide trajectory forecast products (upper and lower water columns) are updated daily in the early morning. Similar forecasts are also available for the Tampa Bay region using high resolution ocean circulation model.

5.2.3 Respiratory Forecast

1. NOAA HAB Conditions Report for Southwest Florida
https://tidesandcurrents.noaa.gov/hab/gomx_condition.html?region=swfl

NOAA monitors conditions daily and issues twice-weekly 3–4 day forecasts for red tide blooms and potential respiratory irritation for coastal regions (2–3 regions per county). These forecasts provide an analysis of the *K. brevis* bloom location and reported impacts, as well as forecasts of potential development, intensification, transport, and impacts. Reports can be received by email by making a subscription request to NOAA at https://tidesandcurrents.noaa.gov/hab/gomx.html.

2. HABScope-GCOOS Forecast
https://habscope.gcoos.org/forecasts

This Experimental Forecast provides information on when red tide could be impacting area beaches. This tool is produced using current wind forecasts produced by the National Weather Service that are combined with *K. brevis* cell counts from beaches. Beach forecasts include:

- the day and time for the potential risk of respiratory impacts to beachgoers;
- forecasts in 3-hour increments projected over 24 hours;
- wind speed and direction;
- day and time of day water samples were collected; and
- day and time of day that the forecast model was produced.

Barb Kirkpatrick, GCOOS, 941-724-4320, barb.kirkpatrick@gcoos.org
Rick Stumpf, NOAA, 240-533-0338, richard.stumpf@noaa.gov

5.2.4 Red Tide Monitoring

https://myfwc.com/research/redtide/statewide/
Contact: Katherine Hubbard, 727-502-4961, Katherine.Hubbard@MyFWC.com

FWC Fish and Wildlife Research Institute provides daily updates of red tide sampling from a network of partners monitoring coastal waters around the State. The Daily Sample Map contains the last eight days of sampling — not all locations are sampled at the same frequency. Cell count results are color-coded by severity. Red Tide Status Reports are published weekly.

5.2.5 NOAA Satellite Imagery

https://coastalscience.noaa.gov/research/stressor-impacts-mitigation/hab-monitoring-system/red-tide-from-satellite-for-southwest-florida/

High resolution satellite imagery for coastal areas is available. Daily satellite imagery of the nearshore Gulf is very helpful for pre-staging equipment to anticipate floats of dead fish that are heading onshore.

5.3 DATA COLLECTION SOPS

5.3.1 Beach and Bay Conditions Evaluation

[Insert Conditions Assessment SOP to include a detailed and standardized data collection methodology and training procedure, especially for qualitative assessments like odor, respiratory irritation, water color, and volume of red tide debris. Consider coordinating protocol and data upload to a regionally standardized database, such as Mote's Beach Conditions Reporting System. Contact: Dr. Tracy Fanara, tfanara@mote.org, 941-302-2046]

For example:
Odors: none, slight, mild, or strong
Respiratory Irritation: none, slight, mild/moderate, strong/high
Water color: clear, slightly discolored, dark/cloudy
Dead fish: none, few, many
Cleanup status: none, manual, tractor/beach rake, skimmer boat, etc
Time of next high tide

Wildlife strandings
Location Photographs

For aerial surveillance:
aerial extent of bloom and floating debris
proximity to shore
large animal strandings lat/long.

FWC Guidelines for driving on the beach: https://myfwc.com/conservation/you-conserve/wildlife/beach-driving/

5.3.2 Red Tide Sampling

[Insert phytoplankton monitoring SOP. Refer to Pinellas County SOP. Recommend sampling 7-days per week then reduce to every other day as conditions improve. Upload beach cell counts to HABScope to generate beach specific respiratory forecasts. See 5.2.3]

5.4 Operations Maps

5.4.1 Equipment and container staging areas

Maps indicate exact location of container placement and equipment staging, with vehicle access points, delineation of maintenance responsibility (City, County, Contractor), and POCs.

[Insert sample]

5.4.2 Red Tide sample locations

(see 5.3.2)

5.5 Equipment List

The following minimum equipment and supplies are needed for County staff mobilization and cleanup of beaches.

N95 respirator masks
Reinforced nitrile or leather work gloves
Beach Rake with Tractor
Trash Dump Trucks
4WD Carts
4WD pickup trucks
Wheel barrows
5-gallon buckets
Trash pickers
Pitch forks
Cell phones or two-way radios
Drones (with licensed operators)
Tablets with cellular data service

The following equipment and supplies are needed for Contractor mobilization and cleanup of beaches, bays, and islands. Cost rates are itemized in the Debris Management contract (see 5.6.3).

< 14' Work Boat
> 14' Work Boat
Skimmer Boat *Inshore
Skimmer Boat *Offshore
Beach Rake with Tractor
Boom

Barge 12x40
Roll off Containers
Roll Off Truck
ATV
Loader 3 yd
Loader 1 yd
Pickup Truck, 1/2 Ton unmanned
Flatbed Truck max 15,000 lbs
Trailer Equipment
Vehicle Use- Pickup, Van, Car
Vehicle Use- Trailers, Heavy Trucks
Office Trailer
Hand Tools per employee
Handheld Radios
Forklift Max 12,000 lbs
20' Response Trailer
Light Tower
Small Compressor
Airhose Section
First Aid Station
Rain Suit
PVC Gloves
Leather Work Gloves
PVC Boots
N95 Respirator mask

5.6 Access Agreements and Permits and Contracts

5.6.1 Access Agreement for Coordinating Partner Facilities

[Insert sample agreement]

5.6.2 FDEP Permit for Mechanical Beach Raking

[Insert sample permit]

5.6.3 Contractor Agreement for Debris Cleanup

[Insert sample contract]

5.6.4 County Beach Cleaning Policy

[Insert sample policy]

5.6.5 FDOT Permit for Operating in ROW

[Insert sample permit]

5.7 Authority

5.7.1 State Emergency Management Act

Chapter 252.31-252.63 governing the State's response to disasters in support of local emergency response efforts, including the declaration of state of emergency by Executive Order (252.36), allocation of funds (252.37), and emergency management powers of counties and municipalities (252.38).

5.7.2 Executive Order Number 18-221

Declaration of State of Emergency for Pinellas, Hillsborough, Manatee, Sarasota, Charlotte, Lee, and Collier Counties on August 13, 2018 due to Florida Rede Tide.

5.7.3 Local Option Tourist Development Act

Chapter 125.0104(5)(a)(5) governing the local use of Tourist Development Tax "To finance beach park facilities, or beach, channel, estuary, or lagoon improvement, maintenance, renourishment, restoration,

and erosion control, including construction of beach groins and shoreline protection, enhancement, cleanup, or restoration of inland lakes and rivers to which there is public access as those uses relate to the physical preservation of the beach, shoreline, channel, estuary, lagoon, or inland lake or river."

5.7.4 Public Trust Doctrine

Article X, Section 11 of the Florida Constitution clarifies that the State holds the tidal waters and shores seaward of the mean high tide line in trust for the use and benefit of the public. This in turn defines the cleanup responsibility of public lands and waters versus privately held lands and waters. (see 5.6.4)

6 LIST OF ACRONYMS

ATV all-terrain vehicle
COB close of business
FDEM Florida Department of Emergency Management
FDEO Florida Department of Economic Opportunity
FDEP Florida Department of Environmental Protection
FDOH Florida Department of Health
FWC Florida Fish and Wildlife Commission
FWRI Fish and Wildlife Research Institute
GCOOS Gulf of Mexico Coastal Ocean Observation System
GIS geographic information system
HAB harmful algal bloom
IRIS Integrated Red Tide Information System
MML Mote Marine Laboratory
NASA National Aeronautics and Space Administration
NOAA National Oceanic and Atmospheric Administration
NPDES National Pollutant Discharge Elimination System
POC point of contact
SOP standard operating procedure
USF University of South Florida
WFCOM West Florida Coastal Ocean Model

APPENDIX B - PINELLAS COUNTY

This section contains:

1. Summary Notes on Pinellas County's 2018 Red Tide Response

2. Draft Pinellas County Red Tide Response Operations Plan

Pinellas County Response Notes

21 February 2020

Contacts

Kelli Hammer Levy, Director (Pinellas County Public Works), Incident Commander during 2018 red tide, (727) 464-3317; klevy@co.pinellas.fl.us

Others

- Sean Tipton, Operations Chief (Pinellas County Public Works), Contractor POC, (727) 464-8809
- Sean Hannigan, Operations (Pinellas County Public Works) (727) 464-3089
- Michelle Monteclaro, Operations (Pinellas County Public Works) (7272) 464-8899

Impact

Priority Assets of Concern

Beaches, Bay waters, ICW and associated canals; Public health and safety at public beaches

Response

Approach

- Standard Operating Procedure for red tide response before/after 2018 red tide (No/Yes)
- Interest in SOP development workshop (Yes)
- Key strategies: Remove red tide debris offshore to prevent onshore washup. Safeguard public health and safety at public beaches by removal of red tide debris from beaches, bays, ICW, and priority canals, and timely communications to partners, citizens, visitors, hoteliers, media
- Established a Daily Workflow (general outline):
    Time: Actions
    - 0700: Morning Staff Briefings
    - 0730: County staff deployed
    - 0730: Debris Contractor resources mobilized
    - 0730: Waste Management resources mobilized.
    - 0800: Debris Volume available
    - 0830: Sea turtle monitoring all clear
    - 0900: FDEP Status Reports
    - 0730 –1130: PC Staff water samples collected
    - 0900 –1030: PCSO flights radio communication (as scheduled)
    - 1000 Prior Day Status Report and Beach Conditions Reports
    - 1000 ONLY FRIDAY: County and Municipal Conference Call
    - 1200: Situation report published by Emergency Management (as needed)
    - 12-1230 Lunch
    - 1430 ONLY THURSDAY: Regional Conference Call
    - 1130: Water sample reports available (M,W,F, Sat)

    - 1500: Report posted on Red Tide Webpage and Facebook
    - 1500: Report emailed with operational update to all partners.

State of Emergency/Injury Status

- State Executive Order 18-221 (13 August 2018) State of Emergency in Pinellas, Hillsborough, Manatee, Sarasota, Charlotte, Lee, and Collier Counties.

Data/Information used

- NOAA satellite imagery
- USF IRIS - https://optics.marine.usf.edu/projects/IRIS.htmlContact Chaunmin Hu, 727-553-3987, huc@usf.edu
- USF Ocean Circulation Group Red Tide Prediction and Tracking http://ocgweb.marine.usf.edu/hab_tracking/Dr. Robert H. Weisberg, 727-553-1568, weisberg@usf.edu
- FWC Red Tide Group and HabScope training http://myfwc.com/redtidestatusKatherine Hubbard, 727-502-4961, Katherine.Hubbard@MyFWC.com
- Respiratory Forecast and HabScope data https://habscope.gcoos.org/forecastsBarb Kirkpatrick, GCOOS, 941-724-4320, barb.kirkpatrick@gcoos.org
- NOAA respiratory forecast

Data collected

- Sampled, analyzed, and reported on red tide cell concentrations 4-7 times per week. For next time, they recommend starting at 7 days per week then reducing to every other day (M-W-F-S) as appropriate. Pinellas County can share their sampling and reporting SOP.
- Helicopter-collected aerial data and photographs
- Personnel hours
- Number, location, fill volume of dumpsters
- Tons of red tide debris collected (1,862 net tons of marine debris from offshore waters, inshore waters, and beaches).
- Created own Beach conditions Report
    - Odors: none, slight, mild, or strong
    - Irritation: none, slight, mild, or strong
    - Dead fish: none, few, many, and clean up status
    - Water-color: clear, cloudy, slightly discolored, or dark/discolored

Data shared

- *K. brevis* cell count data
- Red Tide Update Report
- Beach Conditions Report
- Injured/dead sea turtles, birds, manatees, fish
- Dumpster volumes

Personnel/Departments

- Pinellas County Public Works
- Pinellas County Solid Waste
- Pinellas County Sheriff
- US Coast Guard
- Pinellas County Communications
- Pinellas County GIS
- Pinellas County Parks

Special training

- Water quality monitoring
- Turtle, marine mammal, bird response
- Personal protection (PPE)

Equipment and supplies

Available in SOPs

Removal of dead marine life

- First line of defense: remove red tide debris offshore to prevent onshore washup. Requests made through Emergency Management for aerial support from the Pinellas County Sheriff or US Coast Guard
- Protocol/SOP for cleanup available including documentation
- Remove red tide debris form bay waters, ICW, and canals
- Hand removal and machine rake beach shoreline in coordination with municipalities
- Maintained adequate roll off dumpster rotation to support cleanup efforts and minimize conflicts
- Developed app that published location and status of dumpsters
- Developed app for the public to report red tide debris for clean-up .App also provided status update on clean up request
- Contractor removes debris (see Contractor section), which is supplemented by staff on beaches. Clearwater maintained their north beach with assistance as required
- Pinellas County Solid Waste processed all debris
- Dumpster protocol available, including app, map of staging areas, use of dumpster liners plus a layer of sand to minimize leakage and tearing, pressure washing, use of garden lime, deodorizing, and covering with tarps
- Injured animals were reported to FWC, injured birds were reported to Birds in Helping Hands Wildlife Rescue, Manatees were reported to FWC
- There was a Coast Guard approved plan for booming passes (e.g., John's Pass)
- Contractor hired local fishers to skim waters (shrimpers) or hand remove (mullet fishers)

Communication (Situational reports, staff communications, policymaker communications, and public communications)

- Provided accurate and timely red tide cell count status to partners, citizens, visitors, and hoteliers through a variety of platforms
- County website www.pinellascounty.org/redtide
- Daily media updates
- Alert Pinellas notifications
- Produced a daily red tide update report and posted it to the Red Tide Update Group, web, and social media on Mon-Wed-Fri-Sat
    - County Facebook
    - County Environmental News Facebook
    - Twitter
    - Nextdoor
- Promoted an experimental red tide respiratory tool that forecast potential respiratory irritation due to airborne toxins https://habscope.gcoos.org/forecasts
- Morning staff briefings (see daily workflow in Approach section)
- Thursday Regional Conference Call
- Friday County and Municipal partners Conference Call
- Daily (or as needed) Situation Report published by Emergency Management
- State EOC phone calls as scheduled
- Beach Conditions email group receives compiled Beach Conditions information
- NOAA Respiratory Forecast posted to Facebook (Tue-Thu-Sat-Sun)

Contractors

- Approved Debris Management Contract with amended scope and line item list specific to class 3 biological hazards (time and materials contract). Pinellas Co. is willing to share contract language.
- Operations Chief (coordination) and Incident Commander (approval) supervise contractor
    - manual and mechanical beach operations
    - offshore and onshore harvesting activities
    - dumpster delivery, maintenance, and hauling

Other

- Next time they would like to track large common species (e.g., gag grouper, red fish) and dead coral (e.g., 2018 had 3-mile long impact)
- Share NOAA satellite imagery (post-script 2020 – these data are now shared)
- Emergency grant funding from the state was initially $1.3 million, which grew to $7.5 million.

Coordination and collaboration

State, regional counties, Pinellas municipalities, FWC, NOAA, Birds in Helping Hands Rescue

DRAFT
Pinellas County Red Tide Response Operations Plan

CONTENTS

Last Revision Date: December 2020

1 SCOPE

This plan provides guidance to Pinellas County staff for operational response to severe Florida red tide events. While low-level red tide blooms occur regularly in Gulf and coastal waters of Southwest Florida, more rare severe blooms negatively impact Pinellas County residents, facilities, and coastal habitats and require coordinated emergency response. Procedures outlined herein relate to oversight, coordination, communication, field operations, and resources to help reduce human exposure to hazardous red tide debris, protect wildlife and coastal habitats, and provide red tide status updates to partners and the public.

2 OBJECTIVES

- Track and report conditions offshore, along public beach shorelines and boat ramps, and in bays and canals using remote and direct surveillance methods.
- Remove red tide debris offshore to prevent onshore washup onto beaches and coastal wetlands.
- Remove red tide debris from bay waters, the intracoastal waterway, and associated canals to manage and mitigate excess nutrient input.
- Remove red tide debris from beach shorelines and boat ramps to reduce public exposure and mitigate business and tourism losses.
- Track and coordinate cleanup and disposal of red tide debris to optimize equipment and personnel and minimize conflicts.
- Contribute to enhanced water quality sampling efforts to detect and track red tide.
- Communicate timely and accurate red tide status updates to partners, citizens, visitors, and businesses.
- Oversee contractor operations and expenditures to ensure full disaster grant reimbursement.

3 ROLES AND RESPONSIBILITIES

3.1 PRINCIPAL POINTS OF CONTACT

Incident Commander:
Kelli Hammer Levy
Public Works
727-464-3317
klevy@co.pinellas.fl.us

Operations Chief (Contractor POC):
Sean Tipton
Public Works
727-464-8809

3.2 COMMAND AND COORDINATION

The Incident Commander serves as lead command and along with the Operations Chief provides daily operational management coordination with the following County departments:

- Emergency Management
- Public Works
- Parks and Conservation Resources
- Solid Waste
- Enterprise GIS
- Marketing and Communications
- Economic Development
- Visit St. Petersburg-Clearwater

Other coordinating partners include:

- [list twenty-four Cities]
- Eckerd College
- FDEP State Parks
- FDOH Pinellas County
- US Coast Guard
- NOAA

Pinellas County participates in regular incident status update calls with regional governments and agencies, including other affected counties, Florida Fish and Wildlife Commission (FWC), University of South Florida (USF), Florida Department of Health (FDOH), Florida Department of Environmental Protection (FDEP), and the Florida Division of Emergency Management (FDEM) Region 4 and 6 Liaisons.

An organizational chart showing Pinellas County command structure and roles is distributed at the start of the incident response, including updated contact information for department POCs and coordinating partner POCs. See Section 5.1 for a list of coordinating partner POCs.

4 OPERATIONAL PROCEDURES

4.1 OVERVIEW

4.1.1 Daily Workflow

Time : Action

- 0700: Morning Staff Briefings
- 0730: County staff deployed
- 0730: Debris Contractor resources mobilized
- 0730: Waste Management resources mobilized.
- 0800: Debris Volume available
- 0830: Sea turtle monitoring all clear
- 0900: FDEP Status Reports

- 0730 –1130: PC Staff water samples collected
- 0900 –1030: PCSO flights radio communication (as scheduled)
- 1000 Prior Day Status Report and Beach Conditions Reports
- 1000 ONLY FRIDAY: County and Municipal Conference Call
- 1200: Situation report published by Emergency Management (as needed)
- 12-1230 Lunch
- 1430 ONLY THURSDAY: Regional Conference Call
- 1130: Water sample reports available (M,W,F, Sat)
- 1500: Report posted on Red Tide Webpage and Facebook
- 1500: Report emailed with operational update to all partners.

4.1.2 Time and activities tracking

All staff track their time, activities, and expenditures related to red time emergency response using a common database (see 4.5.1).

4.2 Conditions Monitoring and Reporting

4.2.1 Gulf, Beach, and Bay Conditions

4.2.1.1 Offshore Conditions

1. Review red tide location using USF IRIS and NOAA imagery. See 5.2.1 and 5.2.4.

2. Review the USF HAB Tracking and Forecast maps. See 5.2.2.

3. Review NOAA HAB Bulletin and GCOOS Forecast. See 5.2.3.

4. Report location, intensity, and spatial extent of red tide patches forecast to enter Pinellas County waters within 24 hours. If risk of onshore impacts is imminent or increasing, request aerial support for assessment (see 4.2.1.3).

4.2.1.2 Beach and Bay Shoreline Conditions

1. Conduct rapid assessment of boat ramps via vehicle and of beaches using ATV or drone to identify hotspots for cleanup. FWC guidelines shall be followed when driving on the beach. All employees shall wear N95 respirator masks when respiratory irritation is present.

2. Record and report observational data at designated locations using ArcGIS Collector. See 5.3.1.

3. Review conditions data and prioritize areas for cleanup mobilization. Prioritization should consider volume and concentration of debris, accessibility to motorized vehicles, high-profile public areas, permit requirements, and subject to County beach cleaning policy.

4. Report priority list of cleanup locations. Notify FWC permitted Turtle Monitors for an all-clear of beach cleanup areas during turtle nesting season (May 1 – Nov 1).

4.2.1.3 Bay Waters Conditions

1. Conduct rapid assessment of bay waters via vessel, drone, or helicopter to identify and prioritize hotspots for cleanup. Request aerial support from Sheriff or Coast Guard through Emergency Management.

2. Record and report observational data using ArcGIS Collector. See 5.3.1.

3. Review conditions data and prioritize areas for cleanup mobilization. Prioritization should consider volume and concentration of debris, accessibility to motorized vessels, high-profile public areas, proximity to shore, vulnerability of nearby assets and habitats where debris could washup.

4. Report priority list of cleanup locations.

4.2.2 Wildlife Strandings

Record observational data using ArcGIS Collector. See 5.3.1.

4.2.2.1 Sea turtles

Report to FWC (888-404-3922) with the following information:

- Exact location of the animal
- Status: alive or dead
- Approximate size
- Presence of tags or spray paint markings
- Closest beach access point

4.2.2.2 Manatees, Dolphins, Whales

Report to FWC (888-404-3922) with the following information:

- Exact location of the animal
- Status: alive or dead
- Length of observation time
- Approximate size
- Presence of tags or spray paint markings
- Closest public boat ramp

4.2.2.3 Birds

Report sick or injured birds to Seaside Seabird Sanctuary (727-391-6211) or Birds in Heling Hands (727-365-4592)

4.2.2.4 Fish Kills

Report to FWC Fish Kill Hotline (800-636-0511) or online form
https://public.myfwc.com/FWRI/FishKillReport/Submit.aspx

4.2.3 Citizen Requests

1. Review work requests in public Red Tide Reporting App.

2. Investigate and update database with observations and service needs.

3. Upon notice of work completed, re-inspect and update App accordingly.

4.2.4 Red Tide Monitoring

Depending on the severity and extent of the red tide bloom, county staff will implement the red tide monitoring plan to augment routine water quality sampling. All activities shall follow the county's SOP for phytoplankton monitoring, field data collection, and analysis and be consistent with state protocols to ensure comparability.

1. Develop the weekly schedule for sampling depending on current and forecast conditions.

2. Collect and analyze samples following standard procedures. See 5.3.2.

3. Report cell count data: update County GIS Red Tide Map, share with FWC Red Tide Group (Katherine Hubbard, 727-502-4961, Katherine.Hubbard@MyFWC.com), upload to HABScope.

4.3 CLEANUP

4.3.1 Contractor Activation and Management

1. Activate the county approved Debris Management Contract with an amended scope and line item cost list specific to class 3 biological hazards. See 5.5 and 5.6.3.

2. Confirm and coordinate contractor operations with Operations Manager, to include:

- manual and mechanical beach cleaning,
- offshore harvesting, and
- container delivery, maintenance, and hauling.

3. Coordinate with municipality POC and contractor to ensure access and equipment staging. Prior to moving into a location, the contractor notifies the county of the schedule, and the county makes contact with the POC for the city or county-owned property and advises the contractor on specific allowable locations for container location and equipment staging (see 5.4.1).

4. Monitor contractual services performed at primary work locations and record activities (see 4.5.3) using the daily tracking form and dumpster app (ArcGIS Collector), to include:

- Date, time, and location of contracted work
- Number of contracted staff working, position titles, and duration of work
- Assets that the contractor is utilizing and duration of use
- Number of bags, containers, or truck loads and estimated tons of debris removed
- Number, location, and fill volume of containers
- Date and time containers are removed for disposal

5. Communicate issues or concerns related to contractor performance immediately to Operations Manager.

6. Share contractor activity reports with Operations Manager for review.

4.3.2 Cleanup Protocols

4.3.2.1 Beach

Tractors with beach rakes begin at beach access points. Each go in a different direction and return to access points to unload into awaiting container. If available, dump trucks follow tractors/rakes to

expedite unloading. As each area is cleaned, crews mobilize to the next access point and operations will resume.

4.3.2.2 Bay and Intracoastal

Skimmer vessel works throughout the bay. Once the vessel's nets are full, a push boat with barge with assist excavator and container meets the skimmer vessel and debris is transferred to the awaiting container. Once the container is at capacity, barge transits to off-loading area where the full container is taken off the barge and replaced with an empty container.

For smaller volumes in the ICW and canals, debris is bagged on the skimmer vessel. A work assist boat meets the skimmer vessel to off-load debris bags. Skimmer continues operations while the work assist boat transits filled debris bags to the off-load site where they are transferred via forklift to awaiting container.

The US Coast Guard has an operational plan to boom John's Pass, if warranted. Wave runners and blowers can be used to move fish out of mangroves and out from under docks and bridges. Turbidity barriers can be used to corral fish floats or block off canals until fish are harvested. Charter Captains, shrimp and mullet fisherman can be subcontracted through debris contractor. Consider providing temporary exemption permits for speed zones to facilitate faster transit.

4.3.2.3 Islands

A landing craft style work boat transports a small ATV with small trailer to the island. Crews clean the beach by hand with rakes and shovels. Beach debris is transported to a holding container on the work vessel. Once the container on the work vessel has reached capacity, the crew transports debris to the off-loading site and debris is transferred to awaiting container. Transporting and transferring debris continues during the operations while the beach crew continues cleaning the beach area.

4.3.3 Waste Management

4.3.3.1 Container Management

Depositing red tide debris directly from beach rake into trash trucks instead of containers is preferred for timely transport to landfill. For high volume, a lined roll-off container is preferred over a standard trash dumpster. FWC guidelines shall be followed when driving on the beach. All workers shall wear personal protective equipment when respiratory irritation is present. Manage capacity using Dumpster App.

Container odor management:

- Line containers and add a sand layer to minimize leakage and to minimize tears in the liner.
- Cover, secure, and deodorize containers that remain overnight.
- Remove all full containers by COB.
- Do not leave debris in containers in populated places for more than 24 hours.
- Do not overfill containers. Maximum capacity for service trucks is 10,000 lbs.
- Pressure wash container staging areas using an environmentally safe deodorizing product, following all NPDES guidelines. Use garden lime in vegetated areas.

4.3.3.2 Solid Waste Coordination

1. Pre-register all contractor vehicles and containers with Solid Waste.

2. Call 1 hour in advance of drop off 727-464-7500). Hours of operation Mon-Fri, 0600-1800 and Sat 0700-1700. On Sunday, temporary staging s available at SW's FOG Plant from 0700-1700.

3. Consider designating alternative sites for red tide debris composting instead of landfill disposal.

4.4 COMMUNICATIONS

4.4.1 Partners

Regular communication among cooperating partners is essential.

1. Prepare daily (or weekly as conditions warrant) Situation Reports for distribution to Pinellas County leaders, leaders of municipalities, neighboring counties, FDOH in Pinellas County, and FDEM Region 4 and Region 6 Liaisons.

2. Participate in weekly calls with County and Municipalities.

3. Participate in weekly calls with regional cooperating partners, including Gulf Coast Counties of the red tide declared emergency area, FWC, USF, FDEM Region 4 and Region 6, and FDOH.

4.4.2 Public

A coordinated multi-media communications plan is essential.

1. Set up a Red Tide information page on the County website to include:

- an explanation of red tide as a harmful algal bloom
- potential acute adverse health effects from aerosols
- contact information to report wildlife strandings and fish kills
- red tide information resources from FWC, NOAA, USF, FDOH, FDEP, FDEO, Mote Marine Laboratory, and Visitor's Bureau
- links to current and prior county red tide updates
- daily beaches update to help residents and visitors find the best beaches on any given day

2. Plan and execute daily (weekly as conditions warrant) social media (Facebook, Twitter, Nextdoor) posts on specific red tide conditions and the county's response. Highlight information to aid residents and visitors in understanding the course of the event and how they can best manage their own activities and exposure. Feature stories about the county staff disaster response heroes who are working long days to serve the public.

3. Set up and promote a County Red Tide Hotline and provide the phone operators talking points and answers to frequently asked questions.

4. Prepare and distribute daily (or weekly as conditions warrant) Red Tide Media Updates in the form of a newsletter or press release with information pulled from the Situation Reports.

5. Produce and distribute short (1–2 minute) videos explaining elements of the county's response, including the daily assessment and cleanup process and highlighting county staff disaster response heroes who are working long days to serve the public.

6. Collect metrics on:

- Number of hotline calls
- Social media hits (likes, shares, retweets, etc)
- Number of website visitors, unique and returning
- Number of video views

4.5 RECORDS MANAGEMENT

4.5.1 Data Forms

The following data forms are used to document conditions and activities during the course of daily operations. Forms are pre-formatted for simple, unambiguous, and standardized data collection in the field [via e.g., ArcGIS Collector, Open Data Kit (ODK), Quantum GIS (QGIS)] and in the office [via e.g., SmartSheets, Google Sheets, or other collaborative spreadsheet or database]. Data forms include:

1. Staff time, activities, and expenditures (office)

2. Beach and Boat Ramp and Bay Conditions Assessment (see SOP 5.3.1) (field)

3. Red tide cell counts (see SOP 5.3.2) (field/office)

4. Contractor time, activities, and materials (field/office)

5. Volume/weight of debris and solid waste fees (removed by staff or contractor) (field)

6. Communications and outreach metrics (office)

4.5.2 Data Storage and Access

Data collected (See 4.5.1) to document conditions and activities during the course of daily operations is uploaded and stored on a centrally accessible local or cloud server to provide secure access by all authorized county staff and designated partners. Databases are connected to a simple dashboard (via e.g., WebEOC, Google Data Studio) to display key response metrics for Leadership and for preparation of Situation Reports and Red Tide Media Updates.

All departments are required to report on activities and metrics using these common tools and procedures under the coordination of the Operations Manager.

4.5.3 FDEP Grant Requirements

With the Governor's Declaration of State of Emergency for affected counties, grant funds are made available through FDEP to those designated counties and municipalities for reimbursement of costs associated with emergency response. Because grant funds are awarded as reimbursement, careful and complete documentation and verification of expenses is essential.

1. Assign Grant Fiscal Manager to coordinate with Operations Manager.

2. Review terms of FDEP grant agreement and invoicing requirements for reimbursement. Generally, grant invoices must be accompanied by verified itemized invoices for labor, equipment use, consumables, and other costs.

3. Submit daily reports to FDEP.

4. Review contractor invoices against county monitoring reports (see 4.3.1), document any discrepancies, and send back to contractor for corrections.

5. Submit invoices that have been reviewed and pre-approved by Operations Manager and Grant Fiscal Manager to Finance Department.

5 RESOURCES

5.1 POINTS OF CONTACT

- County Call Center (Red Tide Hotline)
- DRC Emergency Services
- [List Twenty-four Municipalities]
- Florida Department of Health in Pinellas County
- Florida Department of Environmental Protection
- FDEP State Parks
- Florida Fish and Wildlife Commission
- Eckerd College

5.2 DATA SOURCES

5.2.1 Integrated Red Tide Information System

https://optics.marine.usf.edu/projects/IRIS.html
Contact: Contact Chaunmin Hu, 727-553-3987, huc@usf.edu

The USF Integrated Red Tide Information System (IRIS) integrates satellite observations, numerical models, and water sampling to provide information on the location, intensity, spatial extent, and surface transport of red tides and other types of discolored waters. The information is updated daily through a user-friendly web portal, where a user can bring all data layers to Google Earth to navigate and to add other data layers. Three data layers are used in the IRIS: satellite remote sensing from NASA and NOAA, numerical modeling of ocean currents from the West Florida Coastal Ocean Model (WFCOM), and water sample analysis of *K. brevis* cell concentrations from Florida Fish and Wildlife Research Institute.

5.2.2 HAB Tracking Tool

http://ocgweb.marine.usf.edu/hab_tracking/
Contact: Dr. Robert H. Weisberg, 727-553-1568, weisberg@usf.edu

The College of Marine Science, University of South Florida Ocean Circulation Group provides seasonal predictions of major red tide events and short-term tracking of red tide once an event occurs. *K. brevis* cell counts from FWRI are input into the WFCOM to forecast where cells may go over the next 3.5 days. Short-term red tide trajectory forecast products (upper and lower water columns) are updated daily in the early morning. Similar forecasts are also available for the Tampa Bay region using high resolution ocean circulation model.

5.2.3 Respiratory Forecast

1. NOAA HAB Conditions Report for Southwest Florida

https://tidesandcurrents.noaa.gov/hab/gomx_condition.html?region=swfl

NOAA monitors conditions daily and issues twice-weekly 3–4 day forecasts for red tide blooms and potential respiratory irritation for coastal regions (2–3 regions per county). These forecasts provide an analysis of the *K. brevis* bloom location and reported impacts, as well as forecasts of potential development, intensification, transport, and impacts. Reports can be received by email by making a subscription request to NOAA at https://tidesandcurrents.noaa.gov/hab/gomx.html.

2. HABScope-GCOOS Forecast
https://habscope.gcoos.org/forecasts

This Experimental Forecast provides information on when red tide could be impacting area beaches. This tool is produced using current wind forecasts produced by the National Weather Service that are combined with *K. brevis* cell counts from beaches. Beach forecasts include:

- the day and time for the potential risk of respiratory impacts to beachgoers;
- forecasts in 3-hour increments projected over 24 hours;
- wind speed and direction;
- day and time of day water samples were collected; and
- day and time of day that the forecast model was produced.

Barb Kirkpatrick, GCOOS, 941-724-4320, barb.kirkpatrick@gcoos.org
Rick Stumpf, NOAA, 240-533-0338, richard.stumpf@noaa.gov

5.2.4 Red Tide Monitoring

https://myfwc.com/research/redtide/statewide/
Contact: Katherine Hubbard, 727-502-4961, Katherine.Hubbard@MyFWC.com

FWC Fish and Wildlife Research Institute provides daily updates of red tide sampling from a network of partners monitoring coastal waters around the State. The Daily Sample Map contains the last eight days of sampling — not all locations are sampled at the same frequency. Cell count results are color-coded by severity. Red Tide Status Reports are published weekly.

5.2.5 NOAA Satellite Imagery

https://coastalscience.noaa.gov/research/stressor-impacts-mitigation/hab-monitoring-system/red-tide-from-satellite-for-southwest-florida/

High resolution satellite imagery for coastal areas is available. Daily satellite imagery of the nearshore Gulf is very helpful for pre-staging equipment to anticipate floats of dead fish that are heading onshore.

5.3 DATA COLLECTION SOPS

5.3.1 Beach and Bay Conditions Evaluation

[Insert Conditions Assessment SOP to include a detailed and standardized data collection methodology and training procedure, especially for qualitative assessments like odor, respiratory irritation, water color, and volume of red tide debris. Consider coordinating protocol and data upload to a regionally standardized database, such as Mote's Beach Conditions Reporting System. Contact: Dr. Tracy Fanara, tfanara@mote.org, 941-302-2046]

For example:
Odors: none, slight, mild, or strong
Respiratory Irritation: none, slight, mild/moderate, strong/high
Water color: clear, slightly discolored, dark/cloudy
Dead fish: none, few, many
Cleanup status: none, manual, tractor/beach rake, skimmer boat, etc
Time of next high tide
Wildlife strandings
Location Photographs

For aerial surveillance:
aerial extent of bloom and floating debris
proximity to shore
large animal strandings lat/long.

FWC Guidelines for driving on the beach: https://myfwc.com/conservation/you-conserve/wildlife/beach-driving/

5.3.2 Red Tide Sampling

[Insert phytoplankton monitoring SOP. Refer to Pinellas County SOP. Recommend sampling 7-days per week then reduce to every other day as conditions improve. Upload beach cell counts to HABScope to generate beach specific respiratory forecasts. See 5.2.3]

5.4 Operations Maps

5.4.1 Equipment and container staging areas

Maps indicate exact location of container placement and equipment staging, with vehicle access points, delineation of maintenance responsibility (City, County, Contractor), and POCs.

[Insert sample]

5.4.2 Red Tide sample locations

(see 5.3.2)

5.5 Equipment List

The following minimum equipment and supplies are needed for County staff mobilization and cleanup of beaches.

N95 respirator masks
Reinforced nitrile or leather work gloves
Beach Rake with Tractor
Trash Dump Trucks
4WD Carts
4WD pickup trucks
Wheel barrows
5-gallon buckets
Trash pickers
Pitch forks
Cell phones or two-way radios
Drones (with licensed operators)
Tablets with cellular data service

The following equipment and supplies are needed for Contractor mobilization and cleanup of beaches, bays, and islands. Cost rates are itemized in the Debris Management contract (see 5.6.3). Local fishermen can be subcontracted to increase capacity for open water cleanup.

< 14' Work Boat
> 14' Work Boat
Skimmer Boat *Inshore
Skimmer Boat *Offshore
Beach Rake with Tractor
Boom
Barge 12x40
Roll off Containers
Roll Off Truck
ATV
Loader 3 yd
Loader 1 yd
Pickup Truck, 1/2 Ton unmanned
Flatbed Truck max 15,000 lbs
Trailer Equipment
Vehicle Use- Pickup, Van, Car
Vehicle Use- Trailers, Heavy Trucks
Office Trailer
Hand Tools per employee
Handheld Radios
Forklift Max 12,000 lbs
20' Response Trailer
Light Tower
Small Compressor
Airhose Section
First Aid Station
Rain Suit
PVC Gloves
Leather Work Gloves
PVC Boots
N95 Respirator mask

5.6 Access Agreements and Permits and Contracts

5.6.1 Access Agreement for Coordinating Partner Facilities

[Insert sample agreement]

5.6.2 FDEP Permit for Mechanical Beach Raking

[Insert sample permit]

5.6.3 Contractor Agreement for Debris Cleanup

[Insert sample contract]

5.6.4 County Beach Cleaning Policy

[Insert sample policy]

5.6.5 FDOT Permit for Operating in ROW

[Insert sample permit]

5.7 AUTHORITY

5.7.1 State Emergency Management Act

Chapter 252.31-252.63 governing the State's response to disasters in support of local emergency response efforts, including the declaration of state of emergency by Executive Order (252.36), allocation of funds (252.37), and emergency management powers of counties and municipalities (252.38).

5.7.2 Executive Order Number 18-221

Declaration of State of Emergency for Pinellas, Hillsborough, Manatee, Sarasota, Charlotte, Lee, and Collier Counties on August 13, 2018 due to Florida Rede Tide.

5.7.3 Local Option Tourist Development Act

Chapter 125.0104(5)(a)(5) governing the local use of Tourist Development Tax "To finance beach park facilities, or beach, channel, estuary, or lagoon improvement, maintenance, renourishment, restoration, and erosion control, including construction of beach groins and shoreline protection, enhancement, cleanup, or restoration of inland lakes and rivers to which there is public access as those uses relate to the physical preservation of the beach, shoreline, channel, estuary, lagoon, or inland lake or river."

5.7.4 Public Trust Doctrine

Article X, Section 11 of the Florida Constitution clarifies that the State holds the tidal waters and shores seaward of the mean high tide line in trust for the use and benefit of the public. This in turn defines the cleanup responsibility of public lands and waters versus privately held lands and waters. (see 5.6.4)

6 LIST OF ACRONYMS

ATV all-terrain vehicle
COB close of business
FDEM Florida Department of Emergency Management
FDEO Florida Department of Economic Opportunity
FDEP Florida Department of Environmental Protection
FDOH Florida Department of Health
FWC Florida Fish and Wildlife Commission
FWRI Fish and Wildlife Research Institute
GCOOS Gulf of Mexico Coastal Ocean Observation System
GIS geographic information system
HAB harmful algal bloom
IRIS Integrated Red Tide Information System
MML Mote Marine Laboratory
NASA National Aeronautics and Space Administration
NOAA National Oceanic and Atmospheric Administration
NPDES National Pollutant Discharge Elimination System
POC point of contact
SOP standard operating procedure
USF University of South Florida
WFCOM West Florida Coastal Ocean Model

APPENDIX C - HILLSBOROUGH COUNTY

This section contains:

1. Summary Notes on Hillsborough County's 2018 Red Tide Response

2. Draft Hillsborough County Red Tide Response Operations Plan

Hillsborough Response Notes

February 11 and 14, 2020

Contacts

- Tom Ash, Assistant Director Water Division, Environmental Protection Commission, Hillsborough County 813-627-2600 x1011; ash@epchc.org
- Chris Pratt, General Manager Water Division, Environmental Protection Commission, Hillsborough County 813-627-2600 x1047
- Billie Graham, Parks and Recreation Athletics Manager, Hillsborough County GrahamB@hillsboroughcounty.org
- Robin Caton, Manager Compliance, Communities & Conservation Emergency Support 813-274-6664; catonr@HillsboroughCounty.org (RETIRED)
- Mike Ryan, Deputy Emergency Manager, Hillsborough County 813-272-6628; RyanMi@hillsboroughcounty.org
- Michelle Van Dyke, Community Relations Coordinator, Hillsborough County 813-272-5305; VanDykeM@hillsboroughcounty.org

Impact

No significant impacts to the County. Weekly calls for several months to prepare for a potential impact but did not need to activate resources beyond daily routines.

Priority Assets of Concern

Egmont Key (shared), mangrove shorelines of Big Bend and Cockroach Bay

Response

Approach

- Standard Operating Procedure for red tide response before/after 2018 red tide (No/No)
- Interest in SOP development workshop (unknown, follow up with Mike Ryan).
- Proactive approach to prepare, monitor, and stand ready
- Sample early, sample often, stay ahead of it
- All hands on deck and interdepartmental cooperation, clear chain of command and responsibilities

State of Emergency/Injury Status

- Federal Disaster Declaration – SBA Economic Injury Loans
- Set up Federal Incident Command Structure, followed protocol to get Federal funding for remediation and response
- Governor's State of Emergency EO 18-275
- State funds remediation conditions are strict

Data/Information used

- Early warning observations from Egmont Key reported by USFWS, Tampa Pilots Association, Coast Guard, and FDEP
- FWC red tide sampling, early warning of red tide entering Tampa Bay
- USF HAB forecast trajectories
- NOAA HAB Forecast Bulletins

Data collected

- K. brevis monitoring
    - EPC collected and processed water quality samples from seventeen locations inside Tampa Bay to augment FWC coastal sampling
    - Developed red tide maps for Tampa Bay with the same color scheme as FWC maps; Data not incorporated into FWC database, a composite map would be useful
    - Sampling coordinated by Tom Ash (EPC) and Robin Caton (Marine Safety – now organized as Compliance, Communities & Conservation Emergency Support and lead by Billie Graham), Marine Safety follow up on hotspots
    - Presence/absence cell counts weekly and water quality monthly
    - QA/QC conducted internally, with a few weeks lag time
    - 100's of hours
- Aerial surveillance by Sheriff helicopter 1-2x per week to locate fish kills, follow up with marine patrols at hotspots
- Monitor Emergency Department visits associated with red tide
- Call center calls and web site analytics
- Department reports logged via WebEOC – an online database for departments to provide narrative reports

Data shared

- Cell count data shared with Pinellas County, Manatee County, and TBEP
- Good communication between counties important e.g., share aerial observations
- Weekly cell count maps posted on EPC website, reported monthly to EPC Commission, reported bimonthly to Hillsborough County Commission

Personnel/Departments

- OEM, EPC, Marine Safety, Sheriff, Public Works, Solid Waste, EDC, Health, Communications, City of Tampa
- Time spent on red-tide related planning, monitoring, and response recorded in WebEOC
- But expenditures for tasks associated with the monitoring efforts were not separated from daily routines of the various departments that assisted in this effort

Special training

- Need training for fishing guides, fishermen, lifeguards to surveil and quantify fish

Equipment and supplies

- Staged roll-off dumpsters at boat ramps, scheduled by Marine Safety with Solid Waste
- Equipment could be shared in a regional response
- Need boats that can sample in all locations e.g., shallow shoreline and bay
- Need blowers and wave runners to get fish out of mangroves and from under docks and bridges
- Need turbidity barriers to corral fish or block off channel
- Need Big Home Depot bags on fishing vessels, forklift to shore (like Pinellas)
- Need boats with conveyor belts

Removal of dead marine life

- Contractors set up staging areas at boat ramps (Port Sutton Big Bend and Cockroach Bay)
- Charter Captains and mullet fisherman were recruited to assist with cleanup using nets – used Pinellas County operations as a model
- Some given temporary exemption permits for speed zones to allow faster travel
- Fisherman met Contractors at boat ramps where roll-off dumpsters were staged for landings to be offloaded
- All debris went to landfill versus Pinellas who disposed organic offshore debris to incinerator

Communication (Situational reports, staff communications, policymaker communications, and public communications)

- Office of Emergency Management (Mike Ryan) coordinated county wide response with EPC, Marine Safety, Sheriff, Public Works, Solid Waste, EDC, Health, Communications, City of Tampa
- Info for Situation Reports collected in weekly phone briefings and logged in WebEOC by each participating department
- Monthly reports to EPC Commission, bimonthly reports to Hillsborough County Commission
- OEM work closely with Communications to provide information to citizens
- Call center fielded red tide related phone calls and Communications set up a Red Tide web page
- No After Action Report

Contractors

- Storm debris cleanup contractors were in place and responded to red tide cleanup
- Prime contractor could be available to sub out in a regional response

Other

- We have a copy of the last SitRep Report from December.
- Need to follow up again with Michelle to ask about response data contained in WebEOC. Apparently, reports are in narrative form and not database form?

Coordination and collaboration

- Might there be support for a regional MOU for coordination and collaboration (Yes)
- Open to sharing equipment and contractor for regional response
- Regional aerial surveillance – work with Manatee and Pinellas to keep fish from getting into bay

DRAFT
Hillsborough County Red Tide Response Operations Plan

CONTENTS

Last Revision Date: December 2020

1 SCOPE

This plan provides guidance to Hillsborough County staff for operational response to severe Florida red tide events. While low-level red tide blooms occur regularly in Gulf and coastal waters of Southwest Florida, more rare severe blooms negatively impact Hillsborough County residents, facilities, and coastal habitats and require coordinated emergency response. Procedures outlined herein relate to oversight, coordination, communication, field operations, and resources to help reduce human exposure to hazardous red tide debris, protect wildlife and coastal habitats, and provide red tide status updates to partners and the public.

2 OBJECTIVES

- Track and report conditions offshore, along public beach shorelines and boat ramps, and in bays and canals using remote and direct surveillance methods.
- Remove red tide debris offshore to prevent onshore washup onto beaches and coastal wetlands.
- Remove red tide debris from bay waters, the intracoastal waterway, and associated canals to manage and mitigate excess nutrient input.
- Remove red tide debris from beach shorelines and boat ramps to reduce public exposure and mitigate business and tourism losses.
- Track and coordinate cleanup and disposal of red tide debris to optimize equipment and personnel and minimize conflicts.
- Contribute to enhanced water quality sampling efforts to detect and track red tide.
- Communicate timely and accurate red tide status updates to partners, citizens, visitors, and businesses.
- Oversee contractor operations and expenditures to ensure full disaster grant reimbursement.

3 ROLES AND RESPONSIBILITIES

3.1 PRINCIPAL POINTS OF CONTACT

Incident Commander:
Mike Ryan
Deputy Emergency Manager
Hillsborough County Emergency Management
(813) 272-6628
RyanMi@hillsboroughcounty.org

Operations Manager: [Update POC]
Billie Graham
Manager
Hillsborough County Compliance, Communities & Conservation Emergency Support
(813) 274-6664

3.2 COMMAND AND COORDINATION

Hillsborough County Office of Emergency Management serves as lead command and provides daily operational management coordination with the following County departments:

- Office of Emergency Management
- Environmental Protection Commission
- Compliance, Communities & Conservation Emergency Support (formerly Marine Safety)
- Sheriff
- Public Works
- Solid Waste
- Communications
- Economic Development

Other coordinating partners include:

- City of Tampa
- Florida Department of Health in Hillsborough County

Incident Command coordinates weekly conference calls with County department leaders and City of Tampa. Hillsborough County participates in regular incident status update calls with regional governments and agencies, including other affected counties, Florida Fish and Wildlife Commission (FWC), University of South Florida (USF), Florida Department of Health (FDOH), Florida Department of Environmental Protection (FDEP), and the Florida Division of Emergency Management (FDEM) Region 4 and 6 Liaisons.

An organizational chart showing Hillsborough County command structure and roles is distributed at the start of the incident response, including updated contact information for department POCs and coordinating partner POCs. See Section 5.1 for a list of coordinating partner POCs.

4 OPERATIONAL PROCEDURES

4.1 OVERVIEW

4.1.1 Daily Workflow

Time / Action [Customize for Hillsborough County operations]

- 0000 staff briefing
- 0000 staff deployment for situation assessment surveillance
- 0730 staff reporting on conditions and debris volumes and locations
- 0800 Situation Report published
- 0000 debris contractor resources mobilization
- 0000 waste management resources mobilization
- 0900 FDEP status report submitted
- 0000 water samples collection (certain days)
- 0000 Sheriff flight surveillance report (AS SCHEDULED)

- 0000 County and Municipal conference call (WEEKLY)
- 1430 regional conference call (WEEKLY)
- 0000 water sample report
- 0000 status report posting on website, social media
- 0000 operations update email to all partners

4.1.2 Time and activities tracking

All staff track their time, activities, and expenditures related to red time emergency response using a common database (see 4.5.1).

4.2 CONDITIONS MONITORING AND REPORTING

4.2.1 Gulf and Bay Conditions

4.2.1.1 Offshore Conditions

1. Review red tide location using USF IRIS and NOAA imagery. See 5.2.1 and 5.2.4.

2. Review the USF HAB Tracking maps. See 5.2.2.

3. Review NOAA HAB Bulletin and GCOOS Forecast. See 5.2.3.

4. Review Tampa Bay condition observations reported from Egmont Key area by USFWS, FDEP, Tampa Pilot's Association, and US Coast Guard.

5. Report location, intensity, and spatial extent of red tide patches forecast to enter Hillsborough County waters within 24 hours. If risk of onshore impacts is imminent or increasing, request aerial support for assessment (see 4.2.1.3).

4.2.1.2 Bay Shoreline Conditions

1. Conduct rapid assessment of boat ramps via vehicle and of public bay shorelines using ATV or drone to identify hotspots for cleanup. All employees shall wear N95 respirator masks when respiratory irritation is present.

2. Record and report observational data at designated locations using ArcGIS Collector. See 5.3.1.

3. Review conditions data and prioritize areas for cleanup mobilization. Prioritization should consider volume and concentration of debris, accessibility to motorized vehicles, high-profile public areas, permit requirements.

4. Report priority list of cleanup locations.

4.2.1.3 Bay Waters Conditions

1. Conduct rapid assessment of bay waters via vessel, drone, or helicopter to identify and prioritize hotspots for cleanup. Request aerial support from Sheriff or Coast Guard through Emergency Management.

2. Record and report observational data using ArcGIS Collector. See 5.3.1.

3. Review conditions data and prioritize areas for cleanup mobilization. Prioritization should consider volume and concentration of debris, accessibility to motorized vessels, high-profile public areas, proximity to shore, vulnerability of nearby assets and habitats where debris could washup.

4. Report priority list of cleanup locations.

4.2.2 Wildlife Strandings

Record observational data using ArcGIS Collector. See 5.3.1.

4.2.2.1 Sea turtles

Report to FWC (888-404-3922) with the following information:

- Exact location of the animal
- Status: alive or dead
- Approximate size
- Presence of tags or spray paint markings
- Closest beach access point

4.2.2.2 Manatees, Dolphins, Whales

Report to FWC (888-404-3922) with the following information:

- Exact location of the animal
- Status: alive or dead
- Length of observation time
- Approximate size
- Presence of tags or spray paint markings
- Closest public boat ramp

4.2.2.3 Birds

Report sick or injured birds to Seaside Seabird Sanctuary (727-391-6211) or Birds in Heling Hands (727-365-4592)

4.2.2.4 Fish Kills

Report to FWC Fish Kill Hotline (800-636-0511) or online form
https://public.myfwc.com/FWRI/FishKillReport/Submit.aspx

4.2.3 Citizen Requests

1. Review work requests in App (i.e., See Click Fix or Hillsborough 311).

2. Investigate and update database with observations and service needs.

3. Upon notice of work completed, re-inspect and update App accordingly.

4.2.4 Red Tide Monitoring

Depending on the severity and extent of the red tide bloom, Hillsborough County EPC will implement the red tide monitoring plan to augment routine monthly water quality sampling with weekly *K. brevis* sampling at 17 locations inside Tampa Bay. All activities follow the county's SOP for phytoplankton monitoring, field data collection, and analysis and are consistent with FWC protocols to ensure comparability.

1. Develop the weekly schedule for sampling depending on current and forecast conditions.

2. Collect and analyze samples following standard procedures. See 5.3.2.

3. Report cell count data: Pinellas County, Manatee County, Tampa Bay Estuary Program, update EPC website, FWC Red Tide Group (Katherine Hubbard, 727-502-4961, Katherine.Hubbard@MyFWC.com).

4.3 CLEANUP

4.3.1 Contractor Activation and Management

1. Activate the county approved Debris Management Contract with an amended scope and line item cost list specific to class 3 biological hazards. See 5.5 and 5.6.3.

2. Confirm and coordinate contractor operations with Operations Manager, to include:

- manual and mechanical beach cleaning,
- offshore harvesting, and
- container delivery, maintenance, and hauling.

3. Coordinate with contractor to ensure access and equipment staging at boat ramps — Port Sutton Big Bend and Cockroach Bay. Advise contractor on specific allowable locations for container placement and equipment staging (see 5.4.1).

4. Monitor contractual services performed at primary work locations and record activities (see 4.5.3) using the daily tracking form (ArcGIS Collector), to include:

- Date, time, and location of contracted work
- Number of contracted staff working, position titles, and duration of work
- Assets that the contractor is utilizing and duration of use
- Number of bags, containers, or truck loads and estimated tons of debris removed
- Number, location, and fill volume of containers
- Date and time containers are removed for disposal

5. Communicate issues or concerns related to contractor performance immediately to Operations Manager.

6. Share contractor activity reports with Operations Manager for review.

4.3.2 Cleanup Protocols

4.3.2.1 Beach

Tractors with beach rakes begin at beach access points. Each go in a different direction and return to access points to unload into awaiting container. If available, dump trucks follow tractors/rakes to expedite unloading. As each area is cleaned, crews mobilize to the next access point and operations will resume.

4.3.2.2 Bay

Contractor staging areas are set up at Port Sutton Big Bend and Cockroach Bay. Charter Captains, shrimp and mullet fisherman can be subcontracted through debris contractor. Consider providing temporary exemption permits for speed zones to facilitate faster transit.

Skimmer vessel works throughout the bay. Once the vessel's nets are full, a push boat with barge with assist excavator and container meets the skimmer vessel and debris is transferred to the awaiting container. Once the container is at capacity, barge transits to off-loading area where the full container is taken off the barge and replaced with an empty container.

For smaller volumes, debris is bagged on the skimmer vessel. A work assist boat meets the skimmer vessel to off-load debris bags. Skimmer continues operations while the work assist boat transits filled debris bags to the off-load site where they are transferred via forklift to awaiting container.

Wave runners and blowers can be used to move fish out of mangroves and out from under docks and bridges. Turbidity barriers can be used to corral fish floats or block off canals until fish are harvested.

4.3.2.3 Islands

A landing craft style work boat transports a small ATV with small trailer to the island. Crews clean the beach by hand with rakes and shovels. Beach debris is transported to a holding container on the work vessel. Once the container on the work vessel has reached capacity, the crew transports debris to the off-loading site and debris is transferred to awaiting container. Transporting and transferring debris continues during the operations while the beach crew continues cleaning the beach area.

4.3.3 Waste Management

4.3.3.1 Container Management

Depositing red tide debris directly from beach rake into trash trucks instead of containers is preferred for timely transport to landfill. For high volume, a lined roll-off container is preferred over a standard trash dumpster. FWC guidelines shall be followed when driving on the beach. All workers shall wear personal protective equipment when respiratory irritation is present.

Container odor management:

- Line containers and add a sand layer to minimize leakage and to minimize tears in the liner.
- Cover, secure, and deodorize containers that remain overnight.
- Remove all full containers by COB.
- Do not leave debris in containers in populated places for more than 24 hours.
- Do not overfill containers. Maximum capacity for service trucks is 10,000 lbs.
- Pressure wash container staging areas using an environmentally safe deodorizing product, following all NPDES guidelines. Use garden lime in vegetated areas.

4.3.3.2 Solid Waste Coordination

1. Pre-register all contractor vehicles and containers with Solid Waste.

2. Call 1 hour in advance of drop off (813)272-5680. Hours of operation Mon-Sat, 0730-1700.

3. Consider designating alternative sites for red tide debris composting instead of landfill disposal.

4.4 COMMUNICATIONS

4.4.1 Partners

Regular communication among cooperating partners is essential.

1. Prepare daily (or weekly as conditions warrant) Situation Reports for distribution to Hillsborough County leaders, City of Tampa, neighboring counties, FDOH in Hillsborough County, and FDEM Region 4 and Region 6 Liaisons.

2. Coordinate weekly county-wide update calls with County department leaders and City of Tampa.

3. Participate in weekly calls with regional cooperating partners, including Gulf Coast Counties of the red tide declared emergency area, FWC, USF, FDEM Region 4 and Region 6, and FDOH.

4.4.2 Public

A coordinated multi-media communications plan is essential.

1. Set up a Red Tide information page on the County website to include:

- an explanation of red tide as a harmful algal bloom
- potential acute adverse health effects from aerosols
- contact information to report wildlife strandings and fish kills
- red tide information resources from FWC, NOAA, USF, FDOH, FDEP, FDEO, Mote Marine Laboratory, and Visitor's Bureau
- links to current and prior county red tide updates

2. Plan and execute daily (weekly as conditions warrant) social media posts on specific red tide conditions and the county's response. Highlight information to aid residents and visitors in understanding the course of the event and how they can best manage their own activities and exposure. Feature stories about the county staff disaster response heroes who are working long days to serve the public.

3. Set up and promote a County Red Tide Hotline and provide the phone operators talking points and answers to frequently asked questions.

4. Prepare and distribute daily (or weekly as conditions warrant) Red Tide Media Updates in the form of a newsletter or press release with information pulled from the Situation Reports.

5. Produce and distribute short (1–2 minute) PSA videos explaining elements of the county's response, including the daily assessment and cleanup process and highlighting county staff disaster response heroes who are working long days to serve the public.

6. Collect metrics on:

- Number of hotline calls
- Social media hits (likes, shares, retweets, etc)
- Number of website visitors, unique and returning
- Number of video views

4.5 RECORDS MANAGEMENT

4.5.1 Data Forms

The following data forms are used to document conditions and activities during the course of daily operations. Forms are pre-formatted for simple, unambiguous, and standardized data collection in the field [via e.g., ArcGIS Collector, Open Data Kit (ODK), Quantum GIS (QGIS)] and in the office [via e.g., WebEOC, SmartSheets, Google Sheets, or other collaborative spreadsheet or database]. Narrative reporting is discouraged as non-standardized responses inhibit rapid analysis and visualization. Data forms include:

1. Staff time, activities, and expenditures (office)

2. Beach and Boat Ramp and Bay Conditions Assessment (see SOP 5.3.1) (field)

3. Red tide cell counts (see SOP 5.3.2) (field/office)

4. Contractor time, activities, and materials (field/office)

5. Volume/weight of debris and solid waste fees (removed by staff or contractor) (field)

6. Communications and outreach metrics (office)

4.5.2 Data Storage and Access

Data collected (See 4.5.1) to document conditions and activities during the course of daily operations is uploaded and stored on a centrally accessible local or cloud server to provide secure access by all authorized county staff and designated partners. Databases are connected to a simple dashboard (via e.g., Google Data Studio) to display key response metrics for Leadership and for preparation of Situation Reports and Red Tide Media Updates.

All departments are required to report on activities and metrics using these common tools and procedures under the coordination of the Operations Manager.

4.5.3 FDEP Grant Requirements

With the Governor's Declaration of State of Emergency for affected counties, grant funds are made available through FDEP to those designated counties and municipalities for reimbursement of costs associated with emergency response. Because grant funds are awarded as reimbursement, careful and complete documentation and verification of expenses is essential.

1. Assign Grant Fiscal Manager to coordinate with Operations Manager.

2. Review terms of FDEP grant agreement and invoicing requirements for reimbursement. Generally, grant invoices must be accompanied by verified itemized invoices for labor, equipment use, consumables, and other costs.

3. Submit daily reports to FDEP.

4. Review contractor invoices against county monitoring reports (see 4.3.1), document any discrepancies, and send back to contractor for corrections.

5. Submit invoices that have been reviewed and pre-approved by Operations Manager and Grant Fiscal Manager to Finance Department.

5 RESOURCES

5.1 POINTS OF CONTACT

- County Call Center (Red Tide Hotline)
- Debris Management Contractor
- City of Tampa
- Florida Department of Health in Hillsborough County
- Florida Department of Environmental Protection
- Florida Fish and Wildlife Commission

5.2 DATA SOURCES

5.2.1 Integrated Red Tide Information System

https://optics.marine.usf.edu/projects/IRIS.html
Contact: Contact Chaunmin Hu, 727-553-3987, huc@usf.edu

The USF Integrated Red Tide Information System (IRIS) integrates satellite observations, numerical models, and water sampling to provide information on the location, intensity, spatial extent, and surface transport of red tides and other types of discolored waters. The information is updated daily through a user-friendly web portal, where a user can bring all data layers to Google Earth to navigate and to add other data layers. Three data layers are used in the IRIS: satellite remote sensing from NASA and NOAA, numerical modeling of ocean currents from the West Florida Coastal Ocean Model (WFCOM), and water sample analysis of *K. brevis* cell concentrations from Florida Fish and Wildlife Research Institute.

5.2.2 HAB Tracking Tool

http://ocgweb.marine.usf.edu/hab_tracking/
Contact: Dr. Robert H. Weisberg, 727-553-1568, weisberg@usf.edu

The College of Marine Science, University of South Florida Ocean Circulation Group provides seasonal predictions of major red tide events and short-term tracking of red tide once an event occurs. *K. brevis* cell counts from FWRI are input into the WFCOM to forecast where cells may go over the next 3.5 days. Short-term red tide trajectory forecast products (upper and lower water columns) are updated daily in the early morning. Similar forecasts are also available for the Tampa Bay region using high resolution ocean circulation model.

5.2.3 Respiratory Forecast

1. NOAA HAB Conditions Report for Southwest Florida
https://tidesandcurrents.noaa.gov/hab/gomx_condition.html?region=swfl

NOAA monitors conditions daily and issues twice-weekly 3–4 day forecasts for red tide blooms and potential respiratory irritation for coastal regions (2–3 regions per county). These forecasts provide an analysis of the *K. brevis* bloom location and reported impacts, as well as forecasts of potential

development, intensification, transport, and impacts. Reports can be received by email by making a subscription request to NOAA at https://tidesandcurrents.noaa.gov/hab/gomx.html.

2. HABScope-GCOOS Forecast
https://habscope.gcoos.org/forecasts

This Experimental Forecast provides information on when red tide could be impacting area beaches. This tool is produced using current wind forecasts produced by the National Weather Service that are combined with *K. brevis* cell counts from beaches. Beach forecasts include:

- the day and time for the potential risk of respiratory impacts to beachgoers;
- forecasts in 3-hour increments projected over 24 hours;
- wind speed and direction;
- day and time of day water samples were collected; and
- day and time of day that the forecast model was produced.

Barb Kirkpatrick, GCOOS, 941-724-4320, barb.kirkpatrick@gcoos.org
Rick Stumpf, NOAA, 240-533-0338, richard.stumpf@noaa.gov

5.2.4 Red Tide Monitoring

https://myfwc.com/research/redtide/statewide/
Contact: Katherine Hubbard, 727-502-4961, Katherine.Hubbard@MyFWC.com

FWC Fish and Wildlife Research Institute provides daily updates of red tide sampling from a network of partners monitoring coastal waters around the State. The Daily Sample Map contains the last eight days of sampling — not all locations are sampled at the same frequency. Cell count results are color-coded by severity. Red Tide Status Reports are published weekly.

5.2.5 NOAA Satellite Imagery

https://coastalscience.noaa.gov/research/stressor-impacts-mitigation/hab-monitoring-system/red-tide-from-satellite-for-southwest-florida/

High resolution satellite imagery for coastal areas is available. Daily satellite imagery of the nearshore Gulf is very helpful for pre-staging equipment to anticipate floats of dead fish that are heading onshore.

5.3 DATA COLLECTION SOPS

5.3.1 Beach and Bay Conditions Evaluation

[Insert Conditions Assessment SOP to include a detailed and standardized data collection methodology and training procedure, especially for qualitative assessments like odor, respiratory irritation, water color, and volume of red tide debris. Consider coordinating protocol and data upload to a regionally standardized database, such as Mote's Beach Conditions Reporting System. Contact: Dr. Tracy Fanara, tfanara@mote.org, 941-302-2046]

For example:
Odors: none, slight, mild, or strong
Respiratory Irritation: none, slight, mild/moderate, strong/high
Water color: clear, slightly discolored, dark/cloudy

Dead fish: none, few, many
Cleanup status: none, manual, tractor/beach rake, skimmer boat, etc
Time of next high tide
Wildlife strandings
Location Photographs

For aerial surveillance:
aerial extent of bloom and floating debris
proximity to shore
large animal strandings lat/long.

5.3.2 Red Tide Sampling

[Insert phytoplankton monitoring SOP from EPC. Recommend sampling 7-days per week then reduce to every other day as conditions improve.]

5.4 Operations Maps

5.4.1 Equipment and container staging areas

Maps indicate exact location of container placement and equipment staging, with vehicle access points, delineation of maintenance responsibility (City, County, Contractor), and POCs.

[Insert sample]

5.4.2 Red Tide sample locations

(see 5.3.2)

5.5 Equipment List

The following minimum equipment and supplies are needed for County staff mobilization and cleanup of beaches.

N95 respirator masks
Reinforced nitrile or leather work gloves
Beach Rake with Tractor
Trash Dump Trucks
4WD Carts
4WD pickup trucks
Wheel barrows
5-gallon buckets
Trash pickers
Pitch forks
Cell phones or two-way radios
Drones (with licensed operators)
Tablets with cellular data service

The following equipment and supplies are needed for Contractor mobilization and cleanup of beaches, bays, and islands. Cost rates are itemized in the Debris Management contract (see 5.6.3).

< 14' Work Boat
> 14' Work Boat
Skimmer Boat *Inshore
Skimmer Boat *Offshore
Beach Rake with Tractor
Boom

Barge 12x40
Roll off Containers
Roll Off Truck
ATV
Loader 3 yd
Loader 1 yd
Pickup Truck, 1/2 Ton unmanned
Flatbed Truck max 15,000 lbs
Trailer Equipment
Vehicle Use- Pickup, Van, Car
Vehicle Use- Trailers, Heavy Trucks
Office Trailer
Hand Tools per employee
Handheld Radios
Forklift Max 12,000 lbs
20' Response Trailer
Light Tower
Small Compressor
Airhose Section
First Aid Station
Rain Suit
PVC Gloves
Leather Work Gloves
PVC Boots
N95 Respirator mask

5.6 Access Agreements and Permits and Contracts

5.6.1 Access Agreement for Coordinating Partner Facilities
[Insert sample agreement]

5.6.2 FDEP Permit for Mechanical Beach Raking
[Insert sample permit]

5.6.3 Contractor Agreement for Debris Cleanup
[Insert sample contract]

5.6.4 County Beach Cleaning Policy
[Insert sample policy]

5.6.5 FDOT Permit for Operating in ROW
[Insert sample permit]

5.7 Authority

5.7.1 State Emergency Management Act
Chapter 252.31-252.63 governing the State's response to disasters in support of local emergency response efforts, including the declaration of state of emergency by Executive Order (252.36), allocation of funds (252.37), and emergency management powers of counties and municipalities (252.38).

5.7.2 Executive Order Number 18-221
Declaration of State of Emergency for Pinellas, Hillsborough, Manatee, Sarasota, Charlotte, Lee, and Collier Counties on August 13, 2018 due to Florida Rede Tide.

5.7.3 Local Option Tourist Development Act
Chapter 125.0104(5)(a)(5) governing the local use of Tourist Development Tax "To finance beach park facilities, or beach, channel, estuary, or lagoon improvement, maintenance, renourishment, restoration,

and erosion control, including construction of beach groins and shoreline protection, enhancement, cleanup, or restoration of inland lakes and rivers to which there is public access as those uses relate to the physical preservation of the beach, shoreline, channel, estuary, lagoon, or inland lake or river."

5.7.4 Public Trust Doctrine

Article X, Section 11 of the Florida Constitution clarifies that the State holds the tidal waters and shores seaward of the mean high tide line in trust for the use and benefit of the public. This in turn defines the cleanup responsibility of public lands and waters versus privately held lands and waters. (see 5.6.4)

6 LIST OF ACRONYMS

ATV all-terrain vehicle
EPC Hillsborough County Environmental Protection Commission
COB close of business
FDEM Florida Department of Emergency Management
FDEO Florida Department of Economic Opportunity
FDEP Florida Department of Environmental Protection
FDOH Florida Department of Health
FWC Florida Fish and Wildlife Commission
FWRI Fish and Wildlife Research Institute
GCOOS Gulf of Mexico Coastal Ocean Observation System
GIS geographic information system
HAB harmful algal bloom
IRIS Integrated Red Tide Information System
MML Mote Marine Laboratory
NASA National Aeronautics and Space Administration
NOAA National Oceanic and Atmospheric Administration
NPDES National Pollutant Discharge Elimination System
POC point of contact
SOP standard operating procedure
USF University of South Florida
WFCOM West Florida Coastal Ocean Model

APPENDIX D - MANATEE COUNTY

This section contains:

1. Summary Notes on Manatee County's 2018 Red Tide Response

2. Draft Manatee County Red Tide Response Operations Plan

Manatee County Response Notes

28 February 2020

Contacts

- Steve Litschauer, Emergency Management Chief (Manatee County Emergency Management Public Safety Department); (941) 840-4004; steve.litschauer@mymanatee.org
- Carmine DeMilio, Parks & Grounds Manager (Manatee County Property Management Department); (941) 348-7565; carmine.demilio@mymanatee.org

Impact

Manatee County began addressing red tide 1 August 2019. Manatee County experienced significant volumes of dead sea life washing ashore and rotting plus strong *K. brevis* aerosols. Conditions change without notice and frequently.

Priority Assets of Concern

- Gulf beaches and preserves (e.g., Manatee Beach, Coquina Beach, Coquina Bayside, Bayfront Park)
- Boat ramps (e.g., Coquina Boat Ramp)
- Causeway

Response

Approach

- Red tide is not listed in the Manatee County Comprehensive Emergency Management Plan (CEMP) or the Threat and Hazzard Identification and Risk Assessment (THIRA).
- Standard Operating Procedure for red tide response before/after 2018 red tide (No/No), but existing threat assessment and management plans were effective in coordinating response efforts.
- Created a “Red Tide After Action Report” 11 September 2018
- Interest in SOP development workshop (Yes).
- Clean up affected areas, removing dead sea life and other marine debris to reduce resident’s exposure to hazardous conditions, to protect residents, animals, the ecosystem, and to provide a positive community experience
- Response followed a daily routine:
    - 5:30 AM briefing
    - 730-8 am reporting on conditions
    - Nine-person crew conducted beach surveillance by Gator

State of Emergency/Injury Status

- State Executive Order 18-221 (13 August 2018) State of Emergency in Pinellas, Hillsborough, Manatee, Sarasota, Charlotte, Lee, and Collier Counties.
- Manatee County BCC Resolution R-18-145 (21 August 2018) Local State of Emergency, extended 27 August 2018 and expired on 4 September 2018.

Data/Information used

- Mote Beach Conditions Report
- NOAA information

Data collected

- Contact Joe Westerman, Chief Rescue for lifeguard/Beach patrol data. He should have beach visitor counts from eight lifeguard towers.
- EOC collected narratives and photos from beach surveys
- Qualitative air quality. Could benefit by standardizing this.
- Tons of marine debris sent to the Manatee County Landfill (Jennae Detweiler). Data available in Situation Reports and summarized in After Action report.
- Number of calls to Citizen Information Center (Red Tide Hotline)
- Manatee County Redevelopment and Economic Opportunity Department participated in door to door surveys of beach businesses (Carmine may share data of number of businesses reporting impacts)
- Water quality monitoring (Damon Moore, Mike Elswick)

Data shared

- Water quality data
- Tons of marine debris

Personnel/Departments

- Carmine may have man-hour data. 20-25 staff, 64 days, 7 days per week, 10-12 hour days.
- Duration of the emergency caused burnout of cleanup staff
- County Administrator
- Department of Public Safety
- Emergency Management
- Property Management
- Parks, Recreation, and Natural Resources
- County DOH
- County Public Works
- County Utilities
- County Financial Management
- Bradenton Convention and Visitors Bureau
- EMS/Fire
- County Information Outreach

- Redevelopment and Economic Opportunity Department
- County Landfill
- County Sheriff

Special training

- 11-12 staff trained to use drones for rapid surveillance

Equipment and supplies

- Staged dumpsters and had a GIS map app of dumpster locations. Dumpsters should be lined to prevent leakage.
- Equipment was staged at County Compound
- They dropped off nets, buckets, roll-offs for private collection.
- They now have 7 drones
- Manatee County needs a skimmer boat for dead fish removal in the water. They have identified one for $270k.
- Manatee County Sheriff provided helicopter time for aerial surveys
- Respirators were available to staff

Removal of dead marine life

- Staff assisted in debris removal
- Used contractors Waste Pro and Aptim SWS Environmental.
- PRNR conducted some skimming (Damon Moore worked with contractors) but there was too much volume to make much of a difference.

Communication (Situational reports, staff communications, policymaker communications, and public communications)

- Situation reports were produced daily during peak impact, then weekly. They were distributed to County leadership, Island community leadership, neighboring coastal counties, FDOH in Manatee County, and Florida Division of Emergency Management 4 and 6.
- Staffed a Red Tide Phone Hotline 8am-5pm, M-F. Staff were provided with timely talking points
- Daily reports to Elliott Falcione, ED of the Bradenton Area Convention and Visitors Bureau
- Nick Azzarra knows about social media and news media efforts
- PRNR does social media
- Need better ways to coordinate and engage fishers to help with cleanup
- Could benefit from better beach warning signage
- Municipalities monitored local conditions and relayed updates to Manatee County Emergency Management (Town of Longboat Key, City of Anna Maria, City of Holmes Beach, City of Bradenton Beach, City of Bradenton).
- Economic Development worked with Island businesses and the Manatee Chamber of Commerce to assist local businesses.
- Information Outreach updated the County website with useful, timely information

- An online map showed the locations of dumpsters for citizens to dispose of collected marine debris.
- Installed permanent signs that were later removed warning about red tide (Mike Elswick knows more about these). They did not use DOH signs on the beaches.

Contractors

Waste Pro and Aptim SWS Environmental. Manatee County had a contract for debris removal, but it did not include dead fish. The new contract will include fish.

Other

- We have copies of the After Action Report (11 September 2018), and example Situation Reports from 5 September 2018 and 8 October 2018.
- Manatee County received a $750,000 grant from FDEP
- An SBA Disaster Loan Outreach Center was opened at the Manatee County Library
- Nets to Neighbors program provided citizens with nets and buckets to help with cleanup.

Coordination and collaboration

- Might there be support for a regional MOU for coordination and collaboration (unknown)
- Need for better cooperation with City of Bradenton Beach for beach closures, including physical barricades and press releases.
- Need for better reporting from agencies/departments/divisions
- Need better tracking of staff activities and time. Recommend using ICS214 form.
- Called Mote if debris was heavier than 50 pounds, e.g., sea turtles, marine mammals.

DRAFT
Manatee County Red Tide Response Operations Plan

CONTENTS

Last Revision Date: December 2020

1 SCOPE

This plan provides guidance to Manatee County staff for operational response to severe Florida red tide events. While low-level red tide blooms occur regularly in Gulf and coastal waters of Southwest Florida, more rare severe blooms negatively impact Manatee County residents, facilities, and coastal habitats and require coordinated emergency response. Procedures outlined herein relate to oversight, coordination, communication, field operations, and resources to help reduce human exposure to hazardous red tide debris, protect wildlife and coastal habitats, and provide red tide status updates to partners and the public.

2 OBJECTIVES

- Track and report conditions offshore, along public beach shorelines and boat ramps, and in bays and canals using remote and direct surveillance methods.
- Remove red tide debris offshore to prevent onshore washup onto beaches and coastal wetlands.
- Remove red tide debris from bay waters, the intracoastal waterway, and associated canals to manage and mitigate excess nutrient input.
- Remove red tide debris from beach shorelines and boat ramps to reduce public exposure and mitigate business and tourism losses.
- Track and coordinate cleanup and disposal of red tide debris to optimize equipment and personnel and minimize conflicts.
- Contribute to enhanced water quality sampling efforts to detect and track red tide.
- Communicate timely and accurate red tide status updates to partners, citizens, visitors, and businesses.
- Oversee contractor operations and expenditures to ensure full disaster grant reimbursement.

3 ROLES AND RESPONSIBILITIES

3.1 PRINCIPAL POINTS OF CONTACT

Incident Commander:
Steve Litschauer
Emergency Management Chief
Manatee County Emergency Management Public Safety Department
(941) 840-4004
steve.litschauer@mymanatee.org

Operations Manager:
Carmine DeMilio
Parks & Grounds Manager
Manatee County Property Management Department
(941) 348-7565
carmine.demilio@mymanatee.org

3.2 COMMAND AND COORDINATION

Manatee County Emergency Management serves as lead command and provides daily operational management coordination with the following County departments:

- County Administrator
- Public Safety
- Property Management
- Parks, Recreation, and Natural Resources
- Public Works
- Utilities
- Financial Management
- Information Outreach
- Redevelopment and Economic Opportunity
- Bradenton Convention and Visitor's Bureau

Other coordinating partners include:

- City of Anna Maria
- City of Holmes Beach
- City of Bradenton Beach
- Town of Longboat Key
- City of Bradenton
- Florida Department of Health in Manatee County
- Manatee Chamber of Commerce

Manatee County participates in regular incident status update calls with regional governments and agencies, including other affected counties, Florida Fish and Wildlife Commission (FWC), University of South Florida (USF), Florida Department of Health (FDOH), Florida Department of Environmental Protection (FDEP), and the Florida Division of Emergency Management (FDEM) Region 4 and 6 Liaisons.

An organizational chart showing Manatee County command structure and roles is distributed at the start of the incident response, including updated contact information for department POCs and coordinating partner POCs. See Section 5.1 for a list of coordinating partner POCs.

4 OPERATIONAL PROCEDURES

4.1 OVERVIEW

4.1.1 Daily Workflow

Time / Action [Customize for Manatee County operations]

- 0530 staff briefing
- 0000 staff deployment for situation assessment surveillance
- 0730 staff reporting on conditions and debris volumes and locations
- 0800 Situation Report published

- 0000 sea turtle nest monitoring all clear
- 0000 debris contractor resources mobilization
- 0000 waste management resources mobilization
- 0900 FDEP status report submitted
- 0000 water samples collection (certain days)
- 0000 Sheriff flight surveillance report (AS SCHEDULED)
- 0000 County and Municipal conference call (WEEKLY)
- 1430 regional conference call (WEEKLY)
- 0000 water sample report
- 0000 status report posting on website, social media
- 0000 operations update email to all partners

4.1.2 Time and activities tracking

All staff track their time, activities, and expenditures related to red time emergency response using a common database (see 4.5.1).

4.2 CONDITIONS MONITORING AND REPORTING

4.2.1 Gulf, Beach, and Bay Conditions

4.2.1.1 Offshore Conditions

1. Review red tide location using USF IRIS and NOAA imagery. See 5.2.1 and 5.2.4.

2. Review the USF HAB Tracking maps. See 5.2.2.

3. Review NOAA HAB Bulletin and GCOOS Forecast. See 5.2.3.

4. Report location, intensity, and spatial extent of red tide patches forecast to enter Manatee County waters within 24 hours. If risk of onshore impacts is imminent or increasing, request aerial support for assessment (see 4.2.1.3).

4.2.1.2 Beach and Bay Shoreline Conditions

1. Conduct rapid assessment of boat ramps via vehicle and of beaches using ATV or drone to identify hotspots for cleanup. FWC guidelines shall be followed when driving on the beach. All employees shall wear N95 respirator masks when respiratory irritation is present.

2. Record and report observational data at designated locations using ArcGIS Collector. See 5.3.1.

3. Review conditions data and prioritize areas for cleanup mobilization. Prioritization should consider volume and concentration of debris, accessibility to motorized vehicles, high-profile public areas, permit requirements, and subject to County beach cleaning policy.

4. Report priority list of cleanup locations. Notify FWC permitted Turtle Monitors (Mote Marine Laboratory) for an all-clear of beach cleanup areas during turtle nesting season (May 1 – Nov 1).

4.2.1.3 Bay Waters Conditions

1. Conduct rapid assessment of bay waters via vessel, drone, or helicopter to identify and prioritize hotspots for cleanup. Request aerial support from Sheriff or Coast Guard through Emergency Management.

2. Record and report observational data using ArcGIS Collector. See 5.3.1.

3. Review conditions data and prioritize areas for cleanup mobilization. Prioritization should consider volume and concentration of debris, accessibility to motorized vessels, high-profile public areas, proximity to shore, vulnerability of nearby assets and habitats where debris could washup.

4. Report priority list of cleanup locations.

4.2.2 Wildlife Strandings

Record observational data using ArcGIS Collector. See 5.3.1.

4.2.2.1 Sea turtles

Report to Mote Marine Laboratory (888-345-2335) or FWC (888-404-3922) with the following information:

- Exact location of the animal
- Status: alive or dead
- Approximate size
- Presence of tags or spray paint markings
- Closest beach access point

4.2.2.2 Manatees, Dolphins, Whales

Report to Mote Marine Laboratory (888-345-2335) or FWC (888-404-3922) with the following information:

- Exact location of the animal
- Status: alive or dead
- Length of observation time
- Approximate size
- Presence of tags or spray paint markings
- Closest public boat ramp

4.2.2.3 Birds

Report sick or injured birds to Save our Seabirds (941-388-3010)

4.2.2.4 Fish Kills

Report to FWC Fish Kill Hotline (800-636-0511) or online form
https://public.myfwc.com/FWRI/FishKillReport/Submit.aspx

4.2.3 Citizen Requests

1. Review work requests in App (i.e., See Click Fix or Manatee 311).

2. Investigate and update database with observations and service needs.

3. Upon notice of work completed, re-inspect and update App accordingly.

4.2.4 Red Tide Monitoring

Depending on the severity and extent of the red tide bloom, county staff will implement the red tide monitoring plan to augment routine water quality sampling. All activities shall follow the county's SOP for phytoplankton monitoring, field data collection, and analysis and be consistent with state protocols to ensure comparability.

1. Develop the weekly schedule for sampling depending on current and forecast conditions.

2. Collect and analyze samples following standard procedures. See 5.3.2.

3. Report cell count data: update County GIS Red Tide Map, share with FWC Red Tide Group (Katherine Hubbard, 727-502-4961, Katherine.Hubbard@MyFWC.com), upload to HABScope.

4.3 CLEANUP

4.3.1 Contractor Activation and Management

1. Activate the county approved Debris Management Contract with an amended scope and line item cost list specific to class 3 biological hazards. See 5.5 and 5.6.3.

2. Confirm and coordinate contractor operations with Operations Manager, to include:

- manual and mechanical beach cleaning,
- offshore harvesting, and
- container delivery, maintenance, and hauling.

3. Coordinate with municipality POC and contractor to ensure access and equipment staging. Prior to moving into a location, the contractor notifies the county of the schedule, and the county makes contact with the POC for the city or county-owned property and advises the contractor on specific allowable locations for container location and equipment staging (see 5.4.1).

4. Monitor contractual services performed at primary work locations and record activities (see 4.5.3) using the daily tracking form (ArcGIS Collector), to include:

- Date, time, and location of contracted work
- Number of contracted staff working, position titles, and duration of work
- Assets that the contractor is utilizing and duration of use
- Number of bags, containers, or truck loads and estimated tons of debris removed
- Number, location, and fill volume of containers
- Date and time containers are removed for disposal

5. Communicate issues or concerns related to contractor performance immediately to Operations Manager.

6. Share contractor activity reports with Operations Manager for review.

4.3.2 Cleanup Protocols

4.3.2.1 Beach

Tractors with beach rakes begin at beach access points. Each go in a different direction and return to access points to unload into awaiting container. If available, dump trucks follow tractors/rakes to expedite unloading. As each area is cleaned, crews mobilize to the next access point and operations will resume.

4.3.2.2 Bay

Charter Captains, shrimp and mullet fisherman can be subcontracted through debris contractor. Consider providing temporary exemption permits for speed zones to facilitate faster transit.

Skimmer vessel works throughout the bay. Once the vessel's nets are full, a push boat with barge with assist excavator and container meets the skimmer vessel and debris is transferred to the awaiting container. Once the container is at capacity, barge transits to off-loading area where the full container is taken off the barge and replaced with an empty container.

For smaller volumes, debris is bagged on the skimmer vessel. A work assist boat meets the skimmer vessel to off-load debris bags. Skimmer continues operations while the work assist boat transits filled debris bags to the off-load site where they are transferred via forklift to awaiting container.

Wave runners and blowers can be used to move fish out of mangroves and out from under docks and bridges. Turbidity barriers can be used to corral fish floats or block off canals until fish are harvested.

4.3.2.3 Islands

A landing craft style work boat transports a small ATV with small trailer to the island. Crews clean the beach by hand with rakes and shovels. Beach debris is transported to a holding container on the work vessel. Once the container on the work vessel has reached capacity, the crew transports debris to the off-loading site and debris is transferred to awaiting container. Transporting and transferring debris continues during the operations while the beach crew continues cleaning the beach area.

4.3.3 Waste Management

4.3.3.1 Container Management

Depositing red tide debris directly from beach rake into trash trucks instead of containers is preferred for timely transport to landfill. For high volume, a lined roll-off container is preferred over a standard trash dumpster. FWC guidelines shall be followed when driving on the beach. All workers shall wear personal protective equipment when respiratory irritation is present.

Container odor management:

- Line containers and add a sand layer to minimize leakage and to minimize tears in the liner.
- Cover, secure, and deodorize containers that remain overnight.
- Remove all full containers by COB.
- Do not leave debris in containers in populated places for more than 24 hours.
- Do not overfill containers. Maximum capacity for service trucks is 10,000 lbs.
- Pressure wash container staging areas using an environmentally safe deodorizing product, following all NPDES guidelines. Use garden lime in vegetated areas.

4.3.3.2 Solid Waste Coordination

1. Pre-register all contractor vehicles and containers with Solid Waste.

2. Call 1 hour in advance of drop off (941-748-5543). Hours of operation Mon-Sat, 0800-1700.

3. Consider designating alternative sites for red tide debris composting instead of landfill disposal.

4.4 COMMUNICATIONS

4.4.1 Partners

Regular communication among cooperating partners is essential.

1. Prepare daily (or weekly as conditions warrant) Situation Reports for distribution to Manatee County leaders, leaders of municipalities, neighboring counties, FDOH in Manatee County, and FDEM Region 4 and Region 6 Liaisons.

2. Participate in weekly calls with regional cooperating partners, including Gulf Coast Counties of the red tide declared emergency area, FWC, USF, FDEM Region 4 and Region 6, and FDOH.

4.4.2 Public

A coordinated multi-media communications plan is essential.

1. Set up a Red Tide information page on the County website to include:

- an explanation of red tide as a harmful algal bloom
- potential acute adverse health effects from aerosols
- contact information to report wildlife strandings and fish kills
- red tide information resources from FWC, NOAA, USF, FDOH, FDEP, FDEO, Mote Marine Laboratory, and Visitor's Bureau
- links to current and prior county red tide updates
- daily beaches update to help residents and visitors find the best beaches on any given day

2. Plan and execute daily (weekly as conditions warrant) social media posts on specific red tide conditions and the county's response. Highlight information to aid residents and visitors in understanding the course of the event and how they can best manage their own activities and exposure. Feature stories about the county staff disaster response heroes who are working long days to serve the public.

3. Set up and promote a County Red Tide Hotline and provide the phone operators talking points and answers to frequently asked questions.

4. Prepare and distribute daily (or weekly as conditions warrant) Red Tide Media Updates in the form of a newsletter or press release with information pulled from the Situation Reports.

5. Produce and distribute short (1–2 minute) videos explaining elements of the county's response, including the daily assessment and cleanup process and highlighting county staff disaster response heroes who are working long days to serve the public.

6. Collect metrics on:

- Number of hotline calls
- Social media hits (likes, shares, retweets, etc)
- Number of website visitors, unique and returning
- Number of video views

4.5 RECORDS MANAGEMENT

4.5.1 Data Forms

The following data forms are used to document conditions and activities during the course of daily operations. Forms are pre-formatted for simple, unambiguous, and standardized data collection in the field [via e.g., ArcGIS Collector, Open Data Kit (ODK), Quantum GIS (QGIS)] and in the office [via e.g., SmartSheets, Google Sheets, or other collaborative spreadsheet or database]. Data forms include:

1. Staff time, activities, and expenditures (office)

2. Beach and Boat Ramp and Bay Conditions Assessment (see SOP 5.3.1) (field)

3. Red tide cell counts (see SOP 5.3.2) (field/office)

4. Contractor time, activities, and materials (field/office)

5. Volume/weight of debris and solid waste fees (removed by staff or contractor) (field)

6. Communications and outreach metrics (office)

4.5.2 Data Storage and Access

Data collected (See 4.5.1) to document conditions and activities during the course of daily operations is uploaded and stored on a centrally accessible local or cloud server to provide secure access by all authorized county staff and designated partners. Databases are connected to a simple dashboard (via e.g., Google Data Studio) to display key response metrics for Leadership and for preparation of Situation Reports and Red Tide Media Updates.

All departments are required to report on activities and metrics using these common tools and procedures under the coordination of the Operations Manager.

4.5.3 FDEP Grant Requirements

With the Governor's Declaration of State of Emergency for affected counties, grant funds are made available through FDEP to those designated counties and municipalities for reimbursement of costs associated with emergency response. Because grant funds are awarded as reimbursement, careful and complete documentation and verification of expenses is essential.

1. Assign Grant Fiscal Manager to coordinate with Operations Manager.

2. Review terms of FDEP grant agreement and invoicing requirements for reimbursement. Generally, grant invoices must be accompanied by verified itemized invoices for labor, equipment use, consumables, and other costs.

3. Submit daily reports to FDEP.

4. Review contractor invoices against county monitoring reports (see 4.3.1), document any discrepancies, and send back to contractor for corrections.

5. Submit invoices that have been reviewed and pre-approved by Operations Manager and Grant Fiscal Manager to Finance Department.

5 RESOURCES

5.1 POINTS OF CONTACT

- County Call Center (Red Tide Hotline)
- Waste Pro
- Aptim SWS Environmental
- City of Anna Maria
- City of Holmes Beach
- City of Bradenton Beach
- Town of Longboat Key
- City of Bradenton
- Manatee Chamber of Commerce
- Florida Department of Health in Manatee County
- Mote Marine Laboratory
- Florida Department of Environmental Protection
- Florida Fish and Wildlife Commission

5.2 DATA SOURCES

5.2.1 Integrated Red Tide Information System

https://optics.marine.usf.edu/projects/IRIS.html
Contact: Contact Chaunmin Hu, 727-553-3987, huc@usf.edu

The USF Integrated Red Tide Information System (IRIS) integrates satellite observations, numerical models, and water sampling to provide information on the location, intensity, spatial extent, and surface transport of red tides and other types of discolored waters. The information is updated daily through a user-friendly web portal, where a user can bring all data layers to Google Earth to navigate and to add other data layers. Three data layers are used in the IRIS: satellite remote sensing from NASA and NOAA, numerical modeling of ocean currents from the West Florida Coastal Ocean Model (WFCOM), and water sample analysis of *K. brevis* cell concentrations from Florida Fish and Wildlife Research Institute.

5.2.2 HAB Tracking Tool

http://ocgweb.marine.usf.edu/hab_tracking/
Contact: Dr. Robert H. Weisberg, 727-553-1568, weisberg@usf.edu

The College of Marine Science, University of South Florida Ocean Circulation Group provides seasonal predictions of major red tide events and short-term tracking of red tide once an event occurs. *K. brevis* cell counts from FWRI are input into the WFCOM to forecast where cells may go over the next 3.5 days.

Short-term red tide trajectory forecast products (upper and lower water columns) are updated daily in the early morning. Similar forecasts are also available for the Tampa Bay region using high resolution ocean circulation model.

5.2.3 Respiratory Forecast

1. NOAA HAB Conditions Report for Southwest Florida
https://tidesandcurrents.noaa.gov/hab/gomx_condition.html?region=swfl

NOAA monitors conditions daily and issues twice-weekly 3–4 day forecasts for red tide blooms and potential respiratory irritation for coastal regions (2–3 regions per county). These forecasts provide an analysis of the *K. brevis* bloom location and reported impacts, as well as forecasts of potential development, intensification, transport, and impacts. Reports can be received by email by making a subscription request to NOAA at https://tidesandcurrents.noaa.gov/hab/gomx.html.

2. HABScope-GCOOS Forecast
https://habscope.gcoos.org/forecasts

This Experimental Forecast provides information on when red tide could be impacting area beaches. This tool is produced using current wind forecasts produced by the National Weather Service that are combined with *K. brevis* cell counts from beaches. Beach forecasts include:

- the day and time for the potential risk of respiratory impacts to beachgoers;
- forecasts in 3-hour increments projected over 24 hours;
- wind speed and direction;
- day and time of day water samples were collected; and
- day and time of day that the forecast model was produced.

Barb Kirkpatrick, GCOOS, 941-724-4320, barb.kirkpatrick@gcoos.org
Rick Stumpf, NOAA, 240-533-0338, richard.stumpf@noaa.gov

5.2.4 Red Tide Monitoring

https://myfwc.com/research/redtide/statewide/
Contact: Katherine Hubbard, 727-502-4961, Katherine.Hubbard@MyFWC.com

FWC Fish and Wildlife Research Institute provides daily updates of red tide sampling from a network of partners monitoring coastal waters around the State. The Daily Sample Map contains the last eight days of sampling — not all locations are sampled at the same frequency. Cell count results are color-coded by severity. Red Tide Status Reports are published weekly.

5.2.5 NOAA Satellite Imagery

https://coastalscience.noaa.gov/research/stressor-impacts-mitigation/hab-monitoring-system/red-tide-from-satellite-for-southwest-florida/

High resolution satellite imagery for coastal areas is available. Daily satellite imagery of the nearshore Gulf is very helpful for pre-staging equipment to anticipate floats of dead fish that are heading onshore.

5.3 DATA COLLECTION SOPS

5.3.1 Beach and Bay Conditions Evaluation

[Insert Conditions Assessment SOP to include a detailed and standardized data collection methodology and training procedure, especially for qualitative assessments like odor, respiratory irritation, water color, and volume of red tide debris. Consider coordinating protocol and data upload to a regionally standardized database, such as Mote's Beach Conditions Reporting System. Contact: Dr. Tracy Fanara, tfanara@mote.org, 941-302-2046]

For example:
Odors: none, slight, mild, or strong
Respiratory Irritation: none, slight, mild/moderate, strong/high
Water color: clear, slightly discolored, dark/cloudy
Dead fish: none, few, many
Cleanup status: none, manual, tractor/beach rake, skimmer boat, etc
Time of next high tide
Wildlife strandings
Location Photographs

For aerial surveillance:
aerial extent of bloom and floating debris
proximity to shore
large animal strandings lat/long.

FWC Guidelines for driving on the beach: https://myfwc.com/conservation/you-conserve/wildlife/beach-driving/

5.3.2 Red Tide Sampling

[Insert phytoplankton monitoring SOP. Refer to Pinellas County SOP. Recommend sampling 7-days per week then reduce to every other day as conditions improve. Upload beach cell counts to HABScope to generate beach specific respiratory forecasts. See 5.2.3]

5.4 OPERATIONS MAPS

5.4.1 Equipment and container staging areas

Maps indicate exact location of container placement and equipment staging, with vehicle access points, delineation of maintenance responsibility (City, County, Contractor), and POCs.

[Insert sample]

5.4.2 Red Tide sample locations

(see 5.3.2)

5.5 EQUIPMENT LIST

The following minimum equipment and supplies are needed for County staff mobilization and cleanup of beaches.

N95 respirator masks
Reinforced nitrile or leather work gloves
Beach Rake with Tractor
Trash Dump Trucks
4WD Carts
4WD pickup trucks
Wheel barrows
5-gallon buckets
Trash pickers
Pitch forks
Cell phones or two-way radios
Drones (with licensed operators)
Tablets with cellular data service

The following equipment and supplies are needed for Contractor mobilization and cleanup of beaches, bays, and islands. Cost rates are itemized in the Debris Management contract (see 5.6.3).

< 14' Work Boat
> 14' Work Boat
Skimmer Boat *Inshore
Skimmer Boat *Offshore
Beach Rake with Tractor
Boom
Barge 12x40
Roll off Containers
Roll Off Truck
ATV
Loader 3 yd
Loader 1 yd
Pickup Truck, 1/2 Ton unmanned
Flatbed Truck max 15,000 lbs
Trailer Equipment
Vehicle Use- Pickup, Van, Car
Vehicle Use- Trailers, Heavy Trucks
Office Trailer
Hand Tools per employee
Handheld Radios
Forklift Max 12,000 lbs
20' Response Trailer
Light Tower
Small Compressor
Airhose Section
First Aid Station
Rain Suit
PVC Gloves
Leather Work Gloves
PVC Boots
N95 Respirator mask

5.6 ACCESS AGREEMENTS AND PERMITS AND CONTRACTS

5.6.1 Access Agreement for Coordinating Partner Facilities

[Insert sample agreement]

5.6.2 FDEP Permit for Mechanical Beach Raking

[Insert sample permit]

5.6.3 Contractor Agreement for Debris Cleanup

[Insert sample contract]

5.6.4 County Beach Cleaning Policy

[Insert sample policy]

5.6.5 FDOT Permit for Operating in ROW

[Insert sample permit]

5.7 AUTHORITY

5.7.1 State Emergency Management Act

Chapter 252.31-252.63 governing the State's response to disasters in support of local emergency response efforts, including the declaration of state of emergency by Executive Order (252.36), allocation of funds (252.37), and emergency management powers of counties and municipalities (252.38).

5.7.2 Executive Order Number 18-221

Declaration of State of Emergency for Pinellas, Hillsborough, Manatee, Sarasota, Charlotte, Lee, and Collier Counties on August 13, 2018 due to Florida Rede Tide.

5.7.3 Local Option Tourist Development Act

Chapter 125.0104(5)(a)(5) governing the local use of Tourist Development Tax "To finance beach park facilities, or beach, channel, estuary, or lagoon improvement, maintenance, renourishment, restoration, and erosion control, including construction of beach groins and shoreline protection, enhancement, cleanup, or restoration of inland lakes and rivers to which there is public access as those uses relate to the physical preservation of the beach, shoreline, channel, estuary, lagoon, or inland lake or river."

5.7.4 Public Trust Doctrine

Article X, Section 11 of the Florida Constitution clarifies that the State holds the tidal waters and shores seaward of the mean high tide line in trust for the use and benefit of the public. This in turn defines the cleanup responsibility of public lands and waters versus privately held lands and waters. (see 5.6.4)

6 LIST OF ACRONYMS

ATV	all-terrain vehicle
COB	close of business
FDEM	Florida Department of Emergency Management
FDEO	Florida Department of Economic Opportunity
FDEP	Florida Department of Environmental Protection
FDOH	Florida Department of Health
FWC	Florida Fish and Wildlife Commission
FWRI	Fish and Wildlife Research Institute
GCOOS	Gulf of Mexico Coastal Ocean Observation System
GIS	geographic information system
HAB	harmful algal bloom
IRIS	Integrated Red Tide Information System
MML	Mote Marine Laboratory
NASA	National Aeronautics and Space Administration

NOAA National Oceanic and Atmospheric Administration
NPDES National Pollutant Discharge Elimination System
POC point of contact
SOP standard operating procedure
USF University of South Florida
WFCOM West Florida Coastal Ocean Model

APPENDIX E - SARASOTA COUNTY

This section contains:

1. Summary Notes on Sarasota County's 2018 Red Tide Response

2. Draft Sarasota County Red Tide Response Operations Plan

Sarasota Response Notes

February 18, 2020

Contacts (updated as of 3-9-21)

- Shawn Yeager, Senior Manager Parks, Recreation and Natural Resources, Sarasota County 941-861-5483; syeager@scgov.net
- Scott Moranda, Beaches and Water Access Manager Parks, Recreation and Natural Resources, Sarasota County 941-479-0442; smoranda@scgov.net
- Kyle Carson, BPIII Parks, Recreation and Natural Resources, Sarasota County 941-404-6539; kcarson@scgov.net
- Scott Montgomery, Chief Lifeguard, Sarasota County Emergency Management
- Ryan Murphy, Emergency Management Officer, Sarasota County Emergency Management, 941-706-6193; rmurphy@scgov.net

Impact

- major catastrophic impacts for gulf, beaches, and bay resources; difficult, unsettling, and exhausting for personnel

Priority Assets of Concern

- Siesta Key Beach (largest, most visited), Casperson, Venice, Manasota, Nokomis, Blind Pass, Lido

Response

Approach

- Standard Operating Procedure for red tide response before/after 2018 red tide (No/No*)
    - *Draft Beaches Environmental Event Operations Plan includes procedures, roles and responsibilities, training, records, references, equipment/supplies/data needs
- Emergency Response handled coordination after Emergency Declaration, early response and cleanup largely handled by Sarasota County Parks Beaches Team with daily reconnaissance, 2x daily planning meetings, 7 days per week; used Smartsheet internally for staff coordination and data collection

State of Emergency/Injury Status

- State of Emergency August 13, 2018
- Need to declare earlier so contractors can be identified, assessed, and activated
- Sarasota County applied for DEP grant; municipalities piggy-backed
    - required strict tracking of debris tonnage and expenses (overseen by Grant Manager Patricia (Patty) Wilken)
    - Note: Sarasota County measured in dumpster yardage, then DEP reporting required tonnage

Data/Information used

- Maps of locations of concentrations of the Red Tide (from USF),
- Maps of FWC Red Tide current status,
- # of calls into Sarasota County Contact Center related to Red Tide,
- Map of NOAA Gulf of Mexico Harmful Algae Bloom Bulletin

Data collected

- Aerosols: none, light, moderate, heavy
- Fish kills: none, minor, moderate, heavy
    - took photos to share with Communications
    - Look at FEMA debris management tools for a more objective way to quantify
- Debris collected: weekly by beach
- Estimated expenditures: by County and Municipalities for labor, equipment, contract, misc.
- Economic Impact: reported losses from Visit Sarasota survey
- Sheriff aerial recon included in-person, photo, and aerial evaluation of the impacted areas

Data shared

- Mote responded to sea turtles and marine Mammals
- Save Our Seabirds responded to sea and shorebirds
- FWC responded to tarpon
- Lifeguards shared data with PRNR

Personnel/Departments

- OEM (incl Sheriff and lifeguards), PRNR, Office of Financial Management (Procurement and Grants), DOH, Public Works, Communications, Municipalities, Visit Sarasota

Special training

- Sheriff's offender work program (SOWP) recruited 10-20 people to complete hand pick-up at a beach for the day over many days throughout the impact timeframe. Participation dwindled due to harsh conditions.

Equipment and supplies

- Need County owned beach rake (rentals tied up on private property)
- Need PPE

Removal of dead marine life

- Daily early morning recon of beaches, boat ramps and bays, 5-8 people for an hour each morning then meet to plan and prioritize high use beaches accessible by equipment.
- Debris conditions reset at each high tide when the most fish accumulate
- Sarasota County Board of County Commissioners (BCC) approved beach cleaning policy includes criteria for when and how beaches are cleaned, including private beaches. In general, no private property, no rocks or dangerous shorelines, no dunes or fragile habitat.

- Lifeguards work from air-conditioned vehicles or rotate in and out of air-conditioned offices. Lifeguards provided face coverings, masks, and respirators
- Mechanical raking of beaches
- City of Sarasota offered special pickups of debris at no charge
- County coordinated with City of Sarasota and City of Venice for placing roll-off dumpsters at beaches
- Mobilized Crowder Gulf for contractor assistance with cleanup
- PRNR monitored and cleaned beaches and boat ramps
- Public Works monitored and ready to collect from water (with Crowder boats) but not triggered, so did not clean (why?)
- Stop work ~3pm to give time to get debris to landfill; call ahead, dig hole then cover

Communication (Situational reports, staff communications, policymaker communications, and public communications)

- Office of Emergency Management (Rich Collins, James Podlucky, Scott Montgomery) coordinated county wide response with weekly calls: Parks, Office of Financial Management (Procurement and Grants), DOH, Public Works, Communications, Municipalities, Visit Sarasota
- Twelve weekly Situation Reports containing:
    - Maps of locations of concentrations of the Red Tide (from USF),
    - Maps of FWC Red Tide current status,
    - # of calls into Sarasota County Contact Center related to Red Tide,
    - Map of NOAA Gulf of Mexico Harmful Algae Bloom Bulletin
    - Graph of lbs./tons of dead fish collected at area beaches,
    - Expenses (labor, Equipment, Contracts, misc.) for the County and each municipality,
    - Reported Business Losses (from our local Visit Sarasota agency)
    - And current actions of the County and municipalities
- Emergency Management Facebook page and Facebook Live Q&A
- Public Red Tide information webpage linked from PRNR>>Parks>>Beaches, i.e., https://www.scgov.net/government/parks-recreation-and-natural-resources/find-a-park/beaches/red-tide-status
- Red Tide Update/PSA Video Series on YouTube (Aug 16, Aug 21, Aug 23, Aug 24, Aug 30, Sept 19)
- Red Tide Updates as email newsletters daily August 23-31, then weekly September 5 – October 3 e.g., https://myemail.constantcontact.com/Sarasota-County-Red-Tide-Update---Oct--3--2018.html?soid=1102715362124&aid=QhkS0htMsjc including: beach debris update, link to SitRep, links to news and updates from other agencies, links to PSA videos
- Sarasota County Lifeguards updated beach conditions twice daily (1000am and 2:00pm) using the www.visitbeaches.org website at Lido, Siesta, Nokomis, North Jetty, Venice, and Manasota. Items captured on this site for the beaches included:

    - Flag, water color, drift algae, drift algae location, air temp, water temp, weather summary, respiratory irritation, dead fish, beach debris rip currents, surf, crowds.

Contractor

- Crowder Gulf already contracted for storm debris removal
- Contract already included marine life and seaweed
- Difficult finding and keeping contractor subs due to competing jobs with other Counties
- Limit number of Counties that a contractor can lock-in for service contracts

Other

- We have a copy of all SitRep Reports #1-#12 from August-October. Links on the PRNR>>Parks>>Beaches page https://www.scgov.net/government/parks-recreation-and-natural-resources/find-a-park/beaches/red-tide-status and Search "Red Tide Situation Report" from home page
- No After Action Report was not completed by Office of Emergency management
- Parks Beaches and Water Access Manager prepared Draft Beaches Environmental Event Operations Plan to document lessons learned

Coordination and collaboration

- Might there be support for a regional MOU for coordination and collaboration (unknown)
- Other Counties also heavily impacted so no time or resources to share
- Challenge of staff placement and capacity as the conditions changed daily; it helped when contractor activated
- In some ways easier in worse conditions because all hands-on deck, and normal operations stopped
- One point of contact for each department
- Need sufficient training on equipment
- Need sufficient PPE
- Need to limit residence time of fish in dumpsters
- Need cleanup inside bays
- Concern about criticism for overspending in cleanup

DRAFT
Sarasota County Red Tide Response Operations Plan

CONTENTS

Last Revision Date: December 2020

1 SCOPE

This plan provides guidance to Sarasota County staff for operational response to severe Florida red tide events. While low-level red tide blooms occur regularly in Gulf and coastal waters of Southwest Florida, more rare severe blooms negatively impact Sarasota County residents, facilities, and coastal habitats and require coordinated emergency response. Procedures outlined herein relate to oversight, coordination, communication, field operations, and resources to help reduce human exposure to hazardous red tide debris, protect wildlife and coastal habitats, and provide red tide status updates to partners and the public.

2 OBJECTIVES

- Track and report conditions offshore, along public beach shorelines and boat ramps, and in bays and canals using remote and direct surveillance methods.
- Remove red tide debris offshore to prevent onshore washup onto beaches and coastal wetlands.
- Remove red tide debris from bay waters, the intracoastal waterway, and associated canals to manage and mitigate excess nutrient input.
- Remove red tide debris from beach shorelines and boat ramps to reduce public exposure and mitigate business and tourism losses.
- Track and coordinate cleanup and disposal of red tide debris to optimize equipment and personnel and minimize conflicts.
- Contribute to enhanced water quality sampling efforts to detect and track red tide.
- Communicate timely and accurate red tide status updates to partners, citizens, visitors, and businesses.
- Oversee contractor operations and expenditures to ensure full disaster grant reimbursement.

3 ROLES AND RESPONSIBILITIES

3.1 PRINCIPAL POINTS OF CONTACT

Incident Commander:
James Podlucky
Emergency Management Chief
Sarasota County Emergency Management
(941) 861-5932
jpodlucky@scgov.net

Operations Manager:
Shawn Yeager
Senior Manager
Parks, Recreation and Natural Resources
(941) 861-5483
syeager@scgov.net

3.2 COMMAND AND COORDINATION

Sarasota County Emergency Management serves as lead command and provides daily operational management coordination with the following County departments:

- County Administrator
- Emergency Management (including Sheriff and Lifeguards)
- Parks, Recreation, and Natural Resources
- Public Works
- Financial Management
- Communications
- Visit Sarasota

Other coordinating partners include:

- Town of Longboat
- City of Sarasota
- City of Venice
- City of North Port
- Florida Department of Health in Sarasota County
- Sheriff's Work Offenders Program

Incident Command coordinates weekly conference calls with County leaders, the Municipalities, and Visit Sarasota. Sarasota County also participates in regular incident status update calls with regional governments and agencies, including other affected counties, Florida Fish and Wildlife Commission (FWC), University of South Florida (USF), Florida Department of Health (FDOH), Florida Department of Environmental Protection (FDEP), and the Florida Division of Emergency Management (FDEM) Region 4 and 6 Liaisons.

An organizational chart showing Sarasota County command structure and roles is distributed at the start of the incident response, including updated contact information for department POCs and coordinating partner POCs. See Section 5.1 for a list of coordinating partner POCs.

4 OPERATIONAL PROCEDURES

4.1 OVERVIEW

4.1.1 Daily Workflow

Time / Action [Customize for Sarasota County operations]

- TBD staff briefing
- 0000 staff deployment for situation assessment reconnaissance
- 0730 staff reporting on conditions and debris volumes and locations
- 0800 Situation Report published
- TBD sea turtle nest monitoring all clear
- TBD debris contractor resources mobilization

- TBD waste management resources mobilization
- 0900 FDEP status report submitted
- TBD water samples collection (certain days)
- TBD Sheriff flight surveillance report (AS SCHEDULED)
- TBD County and Municipal conference call (WEEKLY)
- 1430 regional conference call (WEEKLY)
- TBD water sample report
- TBD status report posting on website, social media
- TBD operations update email to all partners

4.1.2 Time and activities tracking

All staff track their time, activities, and expenditures related to red time emergency response using a common database (see 4.5.1).

4.2 CONDITIONS MONITORING AND REPORTING

4.2.1 Gulf, Beach, and Bay Conditions

4.2.1.1 Offshore Conditions

1. Review red tide location using USF IRIS and NOAA imagery. See 5.2.1 and 5.2.4.

2. Review the USF HAB Tracking maps. See 5.2.2.

3. Review NOAA HAB Bulletin and GCOOS Forecast. See 5.2.3.

4. Report location, intensity, and spatial extent of red tide patches forecast to enter Sarasota County waters within 24 hours. If risk of onshore impacts is imminent or increasing, request aerial support for assessment (see 4.2.1.3).

4.2.1.2 Beach and Bay Shoreline Conditions

1. Conduct rapid assessment of boat ramps via vehicle and of beaches using ATV or drone to identify hotspots for cleanup. FWC guidelines shall be followed when driving on the beach. All employees shall wear N95 respirator masks when respiratory irritation is present.

2. Record and report observational data at designated locations using ArcGIS Collector. See 5.3.1.

3. Review conditions data and prioritize areas for cleanup mobilization. Prioritization should consider volume and concentration of debris, accessibility to motorized vehicles, high-profile public areas, permit requirements, and subject to County beach cleaning policy.

4. Report priority list of cleanup locations. Notify FWC permitted Turtle Monitors (Mote Marine Laboratory) for an all-clear of beach cleanup areas during turtle nesting season (May 1 – Nov 1).

4.2.1.3 Bay Waters Conditions

1. Conduct rapid assessment of bay waters via vessel, drone, or helicopter to identify and prioritize hotspots for cleanup. Request aerial support from Sheriff or Coast Guard through Emergency Management.

2. Record and report observational data using ArcGIS Collector. See 5.3.1.

3. Review conditions data and prioritize areas for cleanup mobilization. Prioritization should consider volume and concentration of debris, accessibility to motorized vessels, high-profile public areas, proximity to shore, vulnerability of nearby assets and habitats where debris could washup. Consult and coordinate with Public Works.

4. Report priority list of cleanup locations.

4.2.2 Wildlife Strandings

Record observational data using ArcGIS Collector. See 5.3.1.

4.2.2.1 Sea turtles

Report to Mote Marine Laboratory (888-345-2335) or FWC (888-404-3922) with the following information:

- Exact location of the animal
- Status: alive or dead
- Approximate size
- Presence of tags or spray paint markings
- Closest beach access point

4.2.2.2 Manatees, Dolphins, Whales

Report to Mote Marine Laboratory (888-345-2335) or FWC (888-404-3922) with the following information:

- Exact location of the animal
- Status: alive or dead
- Length of observation time
- Approximate size
- Presence of tags or spray paint markings
- Closest public boat ramp

4.2.2.3 Birds

Report sick or injured birds to Save our Seabirds (941-388-3010)

4.2.2.4 Fish Kills

Report to FWC Fish Kill Hotline (800-636-0511) or online form
https://public.myfwc.com/FWRI/FishKillReport/Submit.aspx

4.2.3 Citizen Requests

1. Review work requests in App (i.e., See Click Fix).

2. Investigate and update database with observations and service needs.

3. Upon notice of work completed, re-inspect and update App accordingly.

4.2.4 Red Tide Monitoring

Depending on the severity and extent of the red tide bloom, county staff will implement the red tide monitoring plan to augment routine water quality sampling. All activities shall follow the county's SOP for phytoplankton monitoring, field data collection, and analysis and be consistent with state protocols to ensure comparability.

1. Develop the weekly schedule for sampling depending on current and forecast conditions.

2. Collect and analyze samples following standard procedures. See 5.3.2.

3. Report cell count data: update County GIS Red Tide Map, share with FWC Red Tide Group (Katherine Hubbard, 727-502-4961, Katherine.Hubbard@MyFWC.com), upload to HABScope.

4.3 CLEANUP

4.3.1 Contractor Activation and Management

1. Activate the county approved Debris Management Contract with an amended scope and line-item cost list specific to class 3 biological hazards. See 5.5 and 5.6.3.

2. Confirm and coordinate contractor operations with Operations Manager, to include:

- manual and mechanical beach cleaning,
- offshore harvesting, and
- container delivery, maintenance, and hauling.

3. Coordinate with municipality POC and contractor to ensure access and equipment staging. Prior to moving into a location, the contractor notifies the county of the schedule, and the county makes contact with the POC for the city or county-owned property and advises the contractor on specific allowable locations for container location and equipment staging (see 5.4.1).

4. Monitor contractual services performed at primary work locations and record activities (see 4.5.3) using the daily tracking form (ArcGIS Collector), to include:

- Date, time, and location of contracted work
- Number of contracted staff working, position titles, and duration of work
- Assets that the contractor is utilizing and duration of use
- Number of bags, containers, or truck loads and estimated tons of debris removed
- Number, location, and fill volume of containers
- Date and time containers are removed for disposal

5. Communicate issues or concerns related to contractor performance immediately to Operations Manager.

6. Share contractor activity reports with Operations Manager for review.

4.3.2 Cleanup Protocols

4.3.2.1 Beach

Tractors with beach rakes begin at beach access points. Each go in a different direction and return to access points to unload into awaiting container. If available, dump trucks follow tractors/rakes to

expedite unloading. If no trucks are available, an ATV accompanies the tractor for safety to keep beachgoers clear. As each area is cleaned, crews mobilize to the next access point and operations will resume.

4.3.2.2 Bay

Charter Captains, shrimp and mullet fisherman can be subcontracted through debris contractor. Consider providing temporary exemption permits for speed zones to facilitate faster transit.

Skimmer vessel works throughout the bay. Once the vessel's nets are full, a push boat with barge with assist excavator and container meets the skimmer vessel and debris is transferred to the awaiting container. Once the container is at capacity, barge transits to off-loading area where the full container is taken off the barge and replaced with an empty container.

For smaller volumes, debris is bagged on the skimmer vessel. A work assist boat meets the skimmer vessel to off-load debris bags. Skimmer continues operations while the work assist boat transits filled debris bags to the off-load site where they are transferred via forklift to awaiting container.

Wave runners and blowers can be used to move fish out of mangroves and out from under docks and bridges. Turbidity barriers can be used to corral fish floats or block off canals until fish are harvested.

4.3.2.3 Islands

A landing craft style work boat transports a small ATV with small trailer to the island. Crews clean the beach by hand with rakes and shovels. Beach debris is transported to a holding container on the work vessel. Once the container on the work vessel has reached capacity, the crew transports debris to the off-loading site and debris is transferred to awaiting container. Transporting and transferring debris continues during the operations while the beach crew continues cleaning the beach area.

4.3.3 Waste Management

4.3.3.1 Container Management

Depositing red tide debris directly from beach rake into trash trucks instead of containers is preferred for timely transport to landfill. For high volume, a lined roll-off container is preferred over a standard trash dumpster. FWC guidelines shall be followed when driving on the beach. All workers shall wear personal protective equipment when respiratory irritation is present.

Container odor management:

- Line containers and add a sand layer to minimize leakage and to minimize tears in the liner.
- Cover, secure, and deodorize containers that remain overnight.
- Remove all full containers by COB.
- Do not leave debris in containers in populated places for more than 24 hours.
- Do not overfill containers. Maximum capacity for service trucks is 10,000 lbs.
- Pressure wash container staging areas using an environmentally safe deodorizing product, following all NPDES guidelines. Use garden lime in vegetated areas.

4.3.3.2 Solid Waste Coordination

1. Pre-register all contractor vehicles and containers with Solid Waste.

2. Call 1 hour in advance of drop off (941-861-1573). Hours of operation Mon-Fri, 0800-1700 and Sat 0800-1400.

3. Consider designating alternative sites for red tide debris composting instead of landfill disposal.

4.4 COMMUNICATIONS

4.4.1 Partners

Regular communication among cooperating partners is essential.

1. Prepare daily (or weekly as conditions warrant) Situation Reports for distribution to Sarasota County leaders, leaders of municipalities, neighboring counties, FDOH in Sarasota County, and FDEM Region 4 and Region 6 Liaisons.

2. Coordinate weekly county-wide calls with Emergency Management, Parkes, Recreation and Natural Resources, Office of Financial Management, Public Works, Communications, Department of Health, Visit Sarasota, and Municipalities.

3. Participate in weekly calls with regional cooperating partners, including Gulf Coast Counties of the red tide declared emergency area, FWC, USF, FDEM Region 4 and Region 6, and FDOH.

4.4.2 Public

A coordinated multi-media communications plan is essential.

1. Set up a Red Tide information page on the County website to include:

- an explanation of red tide as a harmful algal bloom
- potential acute adverse health effects from aerosols
- contact information to report wildlife strandings and fish kills
- red tide information resources from FWC, NOAA, USF, FDOH, FDEP, FDEO, Mote Marine Laboratory, and Visitor's Bureau
- links to current and prior county red tide updates
- daily beaches update to help residents and visitors find the best beaches on any given day

2. Plan and execute daily (weekly as conditions warrant) social media posts on specific red tide conditions and the county's response. Highlight information to aid residents and visitors in understanding the course of the event and how they can best manage their own activities and exposure. Feature stories about the county staff disaster response heroes who are working long days to serve the public.

3. Set up and promote a County Red Tide Hotline and provide the phone operators talking points and answers to frequently asked questions.

4. Prepare and distribute daily (or weekly as conditions warrant) Red Tide Media Updates in the form of a newsletter or press release with information pulled from the Situation Reports.

5. Produce and distribute short (1–2 minute) PSA videos explaining elements of the county's response, including the daily assessment and cleanup process and highlighting county staff disaster response heroes who are working long days to serve the public.

6. Collect metrics on:

- Number of Call Center (Hotline) calls
- Social media hits (likes, shares, retweets, etc.)
- Number of website visitors, unique and returning
- Number of video views

4.5 RECORDS MANAGEMENT

4.5.1 Data Forms

The following data forms are used to document conditions and activities during the course of daily operations. Forms are pre-formatted for simple, unambiguous, and standardized data collection in the field [via e.g., ArcGIS Collector, Open Data Kit (ODK), Quantum GIS (QGIS)] and in the office [via e.g., Smartsheet, Google Sheets, or other collaborative spreadsheet or database]. Data forms include:

1. Staff time, activities, and expenditures (office)

2. Beach and Boat Ramp and Bay Conditions Assessment (see SOP 5.3.1) (field)

3. Red tide cell counts (see SOP 5.3.2) (field/office)

4. Contractor time, activities, and materials (field/office)

5. Volume/weight of debris and solid waste fees (removed by staff or contractor) (field)

6. Communications and outreach metrics (office)

4.5.2 Data Storage and Access

Data collected (See 4.5.1) to document conditions and activities during the course of daily operations is uploaded and stored on a centrally accessible local or cloud server to provide secure access by all authorized county staff and designated partners. Databases are connected to a simple dashboard (via e.g., Google Data Studio) to display key response metrics for Leadership and for preparation of Situation Reports and Red Tide Media Updates.

All departments are required to report on activities and metrics using these common tools and procedures under the coordination of the Operations Manager.

4.5.3 FDEP Grant Requirements

With the Governor's Declaration of State of Emergency for affected counties, grant funds are made available through FDEP to those designated counties and municipalities for reimbursement of costs associated with emergency response. Because grant funds are awarded as reimbursement, careful and complete documentation and verification of expenses is essential.

1. Assign Grant Fiscal Manager to coordinate with Operations Manager.

2. Review terms of FDEP grant agreement and invoicing requirements for reimbursement. Generally, grant invoices must be accompanied by verified itemized invoices for labor, equipment use, consumables, and other costs.

3. Submit daily reports to FDEP.

4. Review contractor invoices against county monitoring reports (see 4.3.1), document any discrepancies, and send back to contractor for corrections.

5. Submit invoices that have been reviewed and pre-approved by Operations Manager and Grant Fiscal Manager to Finance Department.

5 RESOURCES

5.1 POINTS OF CONTACT

- County Call Center (Red Tide Hotline)
- Crowder Gulf
- City of Sarasota
- City of Venice
- City of North Port
- Town of Longboat Key
- Florida Department of Health in Sarasota County
- Mote Marine Laboratory
- Florida Department of Environmental Protection
- Florida Fish and Wildlife Commission

5.2 DATA SOURCES

5.2.1 Integrated Red Tide Information System

https://optics.marine.usf.edu/projects/IRIS.html
Contact: Contact Chaunmin Hu, 727-553-3987, huc@usf.edu

The USF Integrated Red Tide Information System (IRIS) integrates satellite observations, numerical models, and water sampling to provide information on the location, intensity, spatial extent, and surface transport of red tides and other types of discolored waters. The information is updated daily through a user-friendly web portal, where a user can bring all data layers to Google Earth to navigate and to add other data layers. Three data layers are used in the IRIS: satellite remote sensing from NASA and NOAA, numerical modeling of ocean currents from the West Florida Coastal Ocean Model (WFCOM), and water sample analysis of *K. brevis* cell concentrations from Florida Fish and Wildlife Research Institute.

5.2.2 HAB Tracking Tool

http://ocgweb.marine.usf.edu/hab_tracking/
Contact: Dr. Robert H. Weisberg, 727-553-1568, weisberg@usf.edu

The College of Marine Science, University of South Florida Ocean Circulation Group provides seasonal predictions of major red tide events and short-term tracking of red tide once an event occurs. *K. brevis* cell counts from FWRI are input into the WFCOM to forecast where cells may go over the next 3.5 days. Short-term red tide trajectory forecast products (upper and lower water columns) are updated daily in the early morning. Similar forecasts are also available for the Tampa Bay region using high resolution ocean circulation model.

5.2.3 Respiratory Forecast

1. NOAA HAB Conditions Report for Southwest Florida
https://tidesandcurrents.noaa.gov/hab/gomx_condition.html?region=swfl

NOAA monitors conditions daily and issues twice-weekly 3–4 day forecasts for red tide blooms and potential respiratory irritation for coastal regions (2–3 regions per county). These forecasts provide an analysis of the *K. brevis* bloom location and reported impacts, as well as forecasts of potential development, intensification, transport, and impacts. Reports can be received by email by making a subscription request to NOAA at https://tidesandcurrents.noaa.gov/hab/gomx.html.

2. HABScope-GCOOS Forecast
https://habscope.gcoos.org/forecasts

This Experimental Forecast provides information on when red tide could be impacting area beaches. This tool is produced using current wind forecasts produced by the National Weather Service that are combined with *K. brevis* cell counts from beaches. Beach forecasts include:

- the day and time for the potential risk of respiratory impacts to beachgoers;
- forecasts in 3-hour increments projected over 24 hours;
- wind speed and direction;
- day and time of day water samples were collected; and
- day and time of day that the forecast model was produced.

Barb Kirkpatrick, GCOOS, 941-724-4320, barb.kirkpatrick@gcoos.org
Rick Stumpf, NOAA, 240-533-0338, richard.stumpf@noaa.gov

5.2.4 Red Tide Monitoring

https://myfwc.com/research/redtide/statewide/
Contact: Katherine Hubbard, 727-502-4961, Katherine.Hubbard@MyFWC.com

FWC Fish and Wildlife Research Institute provides daily updates of red tide sampling from a network of partners monitoring coastal waters around the State. The Daily Sample Map contains the last eight days of sampling — not all locations are sampled at the same frequency. Cell count results are color-coded by severity. Red Tide Status Reports are published weekly.

5.2.5 NOAA Satellite Imagery

https://coastalscience.noaa.gov/research/stressor-impacts-mitigation/hab-monitoring-system/red-tide-from-satellite-for-southwest-florida/

High resolution satellite imagery for coastal areas is available. Daily satellite imagery of the nearshore Gulf is very helpful for pre-staging equipment to anticipate floats of dead fish that are heading onshore.

5.3 DATA COLLECTION SOPS

5.3.1 Beach and Bay Conditions Evaluation

[Insert Conditions Assessment SOP to include a detailed and standardized data collection methodology and training procedure, especially for qualitative assessments like odor, respiratory irritation, water color, and volume of red tide debris. Consider coordinating protocol and data upload to a regionally

standardized database, such as Mote's Beach Conditions Reporting System. Contact: Dr. Tracy Fanara, tfanara@mote.org, 941-302-2046]

For example:
Odors: none, slight, mild, or strong
Respiratory Irritation: none, slight, mild/moderate, strong/high
Water color: clear, slightly discolored, dark/cloudy
Dead fish: none, few, many
Cleanup status: none, manual, tractor/beach rake, skimmer boat, etc.
Time of next high tide
Wildlife strandings
Location Photographs

For aerial surveillance:
aerial extent of bloom and floating debris
proximity to shore
large animal strandings lat/long.

FWC Guidelines for driving on the beach: https://myfwc.com/conservation/you-conserve/wildlife/beach-driving/

5.3.2 Red Tide Sampling

[Insert phytoplankton monitoring SOP. Refer to Pinellas County SOP. Recommend sampling 7-days per week then reduce to every other day as conditions improve. Upload beach cell counts to HABScope to generate beach specific respiratory forecasts. See 5.2.3]

5.4 Operations Maps

5.4.1 Equipment and container staging areas

Maps indicate exact location of container placement and equipment staging, with vehicle access points, delineation of maintenance responsibility (City, County, Contractor), and POCs.

[Insert sample]

5.4.2 Red Tide sample locations

(see 5.3.2)

5.5 Equipment List

The following minimum equipment and supplies are needed for County staff mobilization and cleanup of beaches.

N95 respirator masks
Reinforced nitrile or leather work gloves
Beach Rake with Tractor
Trash Dump Trucks
4WD Carts
4WD pickup trucks
Wheelbarrows
5-gallon buckets

Trash pickers
Pitch forks
Cell phones or two-way radios
Drones (with licensed operators)
Tablets with cellular data service

The following equipment and supplies are needed for Contractor mobilization and cleanup of beaches, bays, and islands. Cost rates are itemized in the Debris Management contract (see 5.6.3).

< 14' Work Boat
> 14' Work Boat
Skimmer Boat *Inshore
Skimmer Boat *Offshore
Beach Rake with Tractor
Boom
Barge 12x40
Roll off Containers
Roll Off Truck
ATV
Loader 3 yd
Loader 1 yd
Pickup Truck, 1/2 Ton unmanned
Flatbed Truck max 15,000 lbs.
Trailer Equipment
Vehicle Use- Pickup, Van, Car
Vehicle Use- Trailers, Heavy Trucks
Office Trailer
Hand Tools per employee
Handheld Radios
Forklift Max 12,000 lbs.
20' Response Trailer
Light Tower
Small Compressor
Air hose Section
First Aid Station
Rain Suit
PVC Gloves
Leather Work Gloves
PVC Boots
N95 Respirator mask

5.6 Access Agreements and Permits and Contracts

5.6.1 Access Agreement for Coordinating Partner Facilities

[Insert sample agreement]

5.6.2 FDEP Permit for Mechanical Beach Raking

[Insert sample permit]

5.6.3 Contractor Agreement for Debris Cleanup

[Insert sample contract]

5.6.4 County Beach Cleaning Policy

[Insert sample policy]

5.6.5 FDOT Permit for Operating in ROW

[Insert sample permit]

5.7 AUTHORITY

5.7.1 State Emergency Management Act

Chapter 252.31-252.63 governing the State's response to disasters in support of local emergency response efforts, including the declaration of state of emergency by Executive Order (252.36), allocation of funds (252.37), and emergency management powers of counties and municipalities (252.38).

5.7.2 Executive Order Number 18-221

Declaration of State of Emergency for Pinellas, Hillsborough, Manatee, Sarasota, Charlotte, Lee, and Collier Counties on August 13, 2018 due to Florida Rede Tide.

5.7.3 Local Option Tourist Development Act

Chapter 125.0104(5)(a)(5) governing the local use of Tourist Development Tax "To finance beach park facilities, or beach, channel, estuary, or lagoon improvement, maintenance, renourishment, restoration, and erosion control, including construction of beach groins and shoreline protection, enhancement, cleanup, or restoration of inland lakes and rivers to which there is public access as those uses relate to the physical preservation of the beach, shoreline, channel, estuary, lagoon, or inland lake or river."

5.7.4 Public Trust Doctrine

Article X, Section 11 of the Florida Constitution clarifies that the State holds the tidal waters and shores seaward of the mean high tide line in trust for the use and benefit of the public. This in turn defines the cleanup responsibility of public lands and waters versus privately held lands and waters. (see 5.6.4)

6 LIST OF ACRONYMS

ATV all-terrain vehicle
COB close of business
FDEM Florida Department of Emergency Management
FDEO Florida Department of Economic Opportunity
FDEP Florida Department of Environmental Protection
FDOH Florida Department of Health
FWC Florida Fish and Wildlife Commission
FWRI Fish and Wildlife Research Institute
GCOOS Gulf of Mexico Coastal Ocean Observation System
GIS geographic information system
HAB harmful algal bloom
IRIS Integrated Red Tide Information System
MML Mote Marine Laboratory
NASA National Aeronautics and Space Administration
NOAA National Oceanic and Atmospheric Administration
NPDES National Pollutant Discharge Elimination System
POC point of contact
SOP standard operating procedure
USF University of South Florida
WFCOM West Florida Coastal Ocean Model