

Memorandum

DATE: September 28, 2020

TO: City Manager Judie Zimomra

FROM: Community Services Director Keith Williams

RE: Tropical Storm Sally rain event

On Saturday, September 12th and Sunday, September 13th Tropical Storm Sally (later Hurricane Sally), travelling north, passed Sanibel approximately 50 miles west of the island. Outer bands of the storm reached Sanibel and resulted in wind gusts of 30 mph and significant rain.

Prior to the passing of TS Sally, Sanibel had already received 8.36 inches of rain in September, more than the entire month of August brought. As a result, the groundwater level around the island was higher than normal. Additionally, the weekend and following week featured extremely high tides as the lunar calendar approached a new moon phase on Thursday, September 17th; further influencing surface water elevations (see attached tide/lunar phase chart for Point Ybel, September 2020, with highlights of the pertinent dates).

The most intense and prolonged rain from TS Sally occurred throughout the day on Sunday, September 13th. Based on gauge data at Sanibel Public Works, 12.11 inches of rain fell on that day. **This rainfall volume unofficially qualifies as a 24-hour, 100-year rain event and may be the largest 24-hour rain event on record for Sanibel Island** (see attached Isohyetal Maps produced by the South Florida Water Management District).

As you are aware, in accordance with City Policy, Community Services Staff managed the interior water levels of the Sanibel River throughout the rains of early Septembers as well as during and after TS Sally by opening and closing the two water control structures at Tarpon Bay and Beach Road Canal. The opening and closing of the structures was conducted in an effort to relieve the interior water levels while also accounting for the extreme high tides to prevent saltwater inflow back to the Sanibel River. The chart below reflects the rainfall amounts as measured at Sanibel Public Works as well as the operations of the water control structures. I have also attached a copy of the City's Weir Control Policy for reference.

Please let me know if you have any questions regarding the weather experienced from TS Sally or any City operations related.

TROPICAL STORM SALLY AND PRIOR RAIN & WATER CONTROL OPERATIONS

Day	Date	Rain (inches)	Cumulative Rain (inches)	Weir Operation				
				East (Beach Road)			West (Tarpon Bay)	
				Open	Close	Reopen	Open	Close
Saturday	9/5	3.78	3.78	-	-	-	-	-
Sunday	9/6	0.00	3.78	8:00am	3:00pm		-	-
Monday	9/7	1.13	4.91	7:45am	3:00pm		-	-
Tuesday	9/8	1.27	6.18	9:10am	3:15pm		9:59am	3:48pm
Wednesday	9/9	0.05	6.23	8:12am	2:45pm		8:15am	3:58pm
Thursday	9/10	0.48	6.71	-	-	-	8:24am	3:30pm
Friday	9/11	0.90	7.61	7:15am	3:30pm		7:30am	3:45pm
Saturday	9/12	0.75	8.36	11:30am	4:30pm		12:00pm	4:30pm
Sunday	9/13	12.11	20.47	10:07am	9:09pm		10:10am	10:15pm
Monday	9/14	0.56	21.03	7:17am	—	-	7:47am	—
Tuesday	9/15	0.00	21.03	—	—		—	—
Wednesday	9/16	0.04	21.07	—	10:44am	2:30pm	—	—
Thursday	9/17	0.00	21.07	—	12:17pm		—	12:17pm
Friday	9/18	0.45	21.52					
Saturday	9/19	0.00	21.52	7:00am	1:30pm			
Sunday	9/20	0.24	21.76	8:00am	2:00pm			

SEPTEMBER 2020 TIDES, POINT YBEL, SANIBEL

Day	High	Low	High	Low	High	Phase	Sunrise	Sunset	Moonrise	Moonset
Tue 01	1:36 AM EDT 2.2 ft	6:32 AM EDT 1.6 ft	12:16 PM EDT 3.2 ft	8:03 PM EDT 0.4 ft			7:08 AM EDT	7:47 PM EDT	7:52 PM EDT	6:28 AM EDT
Wed 02	1:47 AM EDT 2.2 ft	7:13 AM EDT 1.4 ft	12:54 PM EDT 3.1 ft	8:27 PM EDT 0.6 ft		Full Moon	7:08 AM EDT	7:46 PM EDT	8:26 PM EDT	7:23 AM EDT
Thu 03	1:57 AM EDT 2.3 ft	7:52 AM EDT 1.2 ft	1:32 PM EDT 3.0 ft	8:49 PM EDT 0.7 ft			7:08 AM EDT	7:45 PM EDT	8:57 PM EDT	8:15 AM EDT
Fri 04	2:08 AM EDT 2.4 ft	8:31 AM EDT 1.1 ft	2:10 PM EDT 2.9 ft	9:11 PM EDT 0.9 ft			7:09 AM EDT	7:43 PM EDT	9:28 PM EDT	9:07 AM EDT
Sat 05	2:24 AM EDT 2.6 ft	9:12 AM EDT 0.9 ft	2:50 PM EDT 2.7 ft	9:32 PM EDT 1.1 ft			7:09 AM EDT	7:42 PM EDT	9:58 PM EDT	9:58 AM EDT
Sun 06	2:44 AM EDT 2.7 ft	9:57 AM EDT 0.8 ft	3:36 PM EDT 2.5 ft	9:55 PM EDT 1.3 ft			7:10 AM EDT	7:41 PM EDT	10:29 PM EDT	10:49 AM EDT
Mon 07	3:10 AM EDT 2.8 ft	10:46 AM EDT 0.8 ft	4:30 PM EDT 2.3 ft	10:19 PM EDT 1.5 ft			7:10 AM EDT	7:40 PM EDT	11:03 PM EDT	11:41 AM EDT
Tue 08	3:40 AM EDT 2.9 ft	11:44 AM EDT 0.7 ft	5:41 PM EDT 2.1 ft	10:43 PM EDT 1.7 ft			7:11 AM EDT	7:39 PM EDT	11:40 PM EDT	12:34 PM EDT
Wed 09	4:18 AM EDT 2.9 ft	12:55 PM EDT 0.7 ft	7:31 PM EDT 2.0 ft	11:04 PM EDT 1.9 ft			7:11 AM EDT	7:38 PM EDT		1:28 PM EDT
Thu 10	5:05 AM EDT 2.9 ft	2:17 PM EDT 0.7 ft				Last Quarter	7:11 AM EDT	7:37 PM EDT	12:21 AM EDT	2:23 PM EDT
Fri 11	6:09 AM EDT 2.9 ft	3:37 PM EDT 0.5 ft	11:51 PM EDT 2.1 ft				7:12 AM EDT	7:36 PM EDT	1:07 AM EDT	3:19 PM EDT
Sat 12		1:07 AM EDT 2.1 ft	7:31 AM EDT 3.0 ft	4:43 PM EDT 0.4 ft	11:57 PM EDT 2.2 ft		7:12 AM EDT	7:35 PM EDT	2:00 AM EDT	4:14 PM EDT
Sun 13		3:11 AM EDT 2.1 ft	8:54 AM EDT 3.1 ft	5:37 PM EDT 0.2 ft			7:13 AM EDT	7:33 PM EDT	2:58 AM EDT	5:06 PM EDT
Mon 14	12:15 AM EDT 2.2 ft	4:26 AM EDT 1.9 ft	10:04 AM EDT 3.2 ft	6:22 PM EDT 0.2 ft			7:13 AM EDT	7:32 PM EDT	4:00 AM EDT	5:55 PM EDT
Tue 15	12:33 AM EDT 2.2 ft	5:23 AM EDT 1.7 ft	11:03 AM EDT 3.4 ft	7:02 PM EDT 0.2 ft			7:13 AM EDT	7:31 PM EDT	5:05 AM EDT	6:40 PM EDT
Wed 16	12:49 AM EDT 2.3 ft	6:14 AM EDT 1.4 ft	11:57 AM EDT 3.4 ft	7:38 PM EDT 0.3 ft			7:14 AM EDT	7:30 PM EDT	6:12 AM EDT	7:23 PM EDT
Thu 17	1:06 AM EDT 2.4 ft	7:03 AM EDT 1.1 ft	12:50 PM EDT 3.4 ft	8:11 PM EDT 0.6 ft		New Moon	7:14 AM EDT	7:29 PM EDT	7:18 AM EDT	8:03 PM EDT
Fri 18	1:25 AM EDT 2.5 ft	7:53 AM EDT 0.8 ft	1:44 PM EDT 3.2 ft	8:41 PM EDT 0.9 ft			7:15 AM EDT	7:28 PM EDT	8:25 AM EDT	8:43 PM EDT
Sat 19	1:47 AM EDT 2.7 ft	8:45 AM EDT 0.5 ft	2:40 PM EDT 3.0 ft	9:09 PM EDT 1.2 ft			7:15 AM EDT	7:27 PM EDT	9:31 AM EDT	9:24 PM EDT
Sun 20	2:12 AM EDT 3.0 ft	9:41 AM EDT 0.4 ft	3:42 PM EDT 2.7 ft	9:35 PM EDT 1.5 ft			7:16 AM EDT	7:26 PM EDT	10:38 AM EDT	10:06 PM EDT
Mon 21	2:42 AM EDT 3.1 ft	10:42 AM EDT 0.3 ft	4:57 PM EDT 2.3 ft	9:57 PM EDT 1.8 ft			7:16 AM EDT	7:24 PM EDT	11:45 AM EDT	10:52 PM EDT
Tue 22	3:18 AM EDT 3.2 ft	11:53 AM EDT 0.3 ft	6:46 PM EDT 2.1 ft	10:11 PM EDT 2.0 ft			7:16 AM EDT	7:23 PM EDT	12:50 PM EDT	11:41 PM EDT
Wed 23	4:02 AM EDT 3.2 ft	1:15 PM EDT 0.4 ft				First Quarter	7:17 AM EDT	7:22 PM EDT	1:53 PM EDT	
Thu 24	5:01 AM EDT 3.1 ft	2:43 PM EDT 0.4 ft					7:17 AM EDT	7:21 PM EDT	2:52 PM EDT	12:34 AM EDT
Fri 25	6:28 AM EDT 3.0 ft	4:00 PM EDT 0.4 ft	11:44 PM EDT 2.3 ft				7:18 AM EDT	7:20 PM EDT	3:46 PM EDT	1:31 AM EDT
Sat 26		2:32 AM EDT 2.2 ft	8:17 AM EDT 2.9 ft	5:00 PM EDT 0.4 ft	11:51 PM EDT 2.3 ft		7:18 AM EDT	7:19 PM EDT	4:33 PM EDT	2:28 AM EDT
Sun 27		4:15 AM EDT 2.0 ft	9:42 AM EDT 3.0 ft	5:47 PM EDT 0.4 ft			7:18 AM EDT	7:18 PM EDT	5:16 PM EDT	3:26 AM EDT
Mon 28	12:06 AM EDT 2.3 ft	5:16 AM EDT 1.7 ft	10:45 AM EDT 3.0 ft	6:23 PM EDT 0.5 ft			7:19 AM EDT	7:17 PM EDT	5:53 PM EDT	4:22 AM EDT
Tue 29	12:20 AM EDT 2.4 ft	6:02 AM EDT 1.5 ft	11:35 AM EDT 3.0 ft	6:53 PM EDT 0.7 ft			7:19 AM EDT	7:16 PM EDT	6:27 PM EDT	5:17 AM EDT
Wed 30	12:32 AM EDT 2.5 ft	6:40 AM EDT 1.2 ft	12:17 PM EDT 2.9 ft	7:17 PM EDT 0.8 ft			7:20 AM EDT	7:14 PM EDT	6:59 PM EDT	6:10 AM EDT

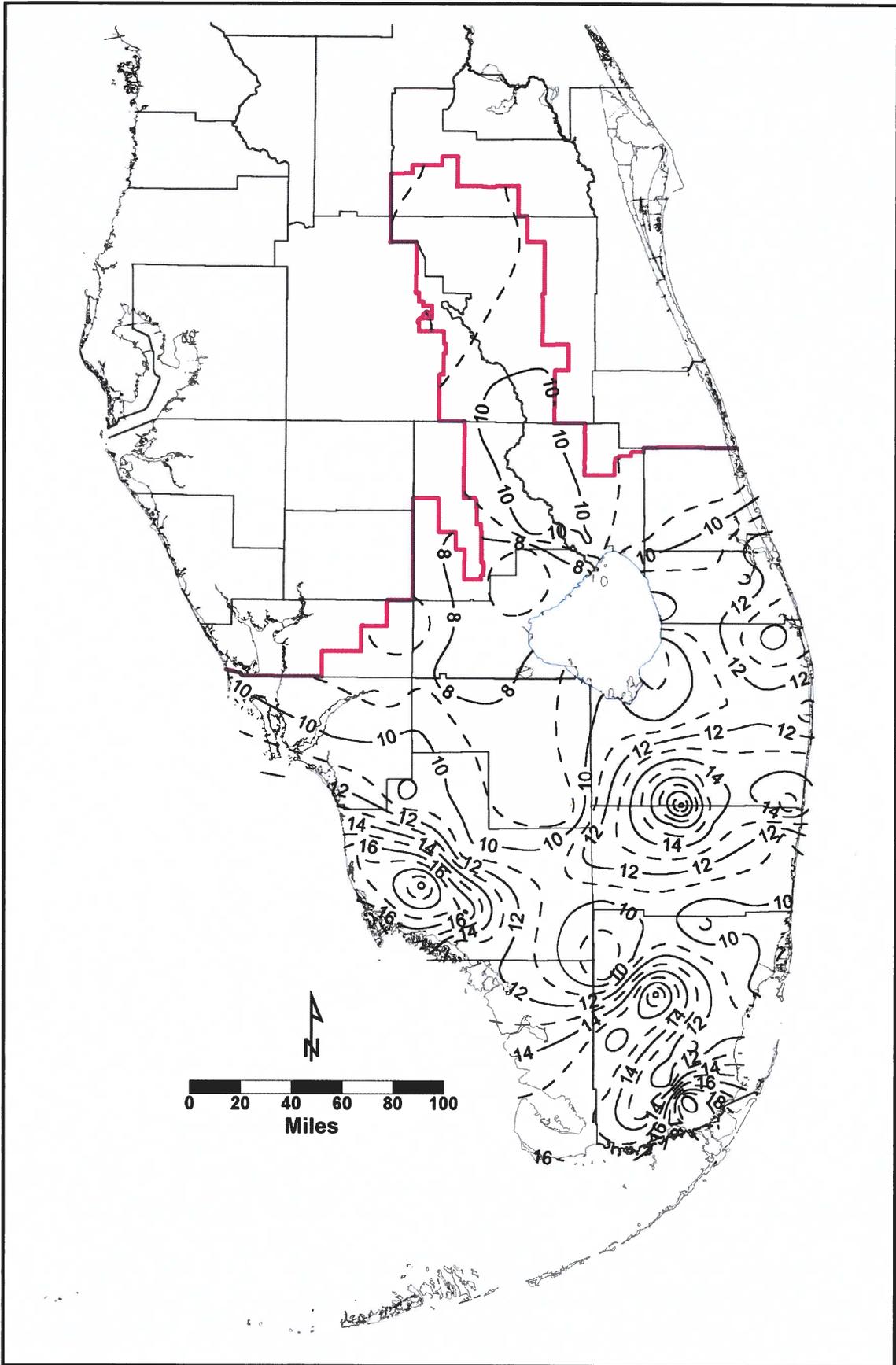


Figure 12. One - Day Maximum Rainfall (in inches): 100-Year Return Period

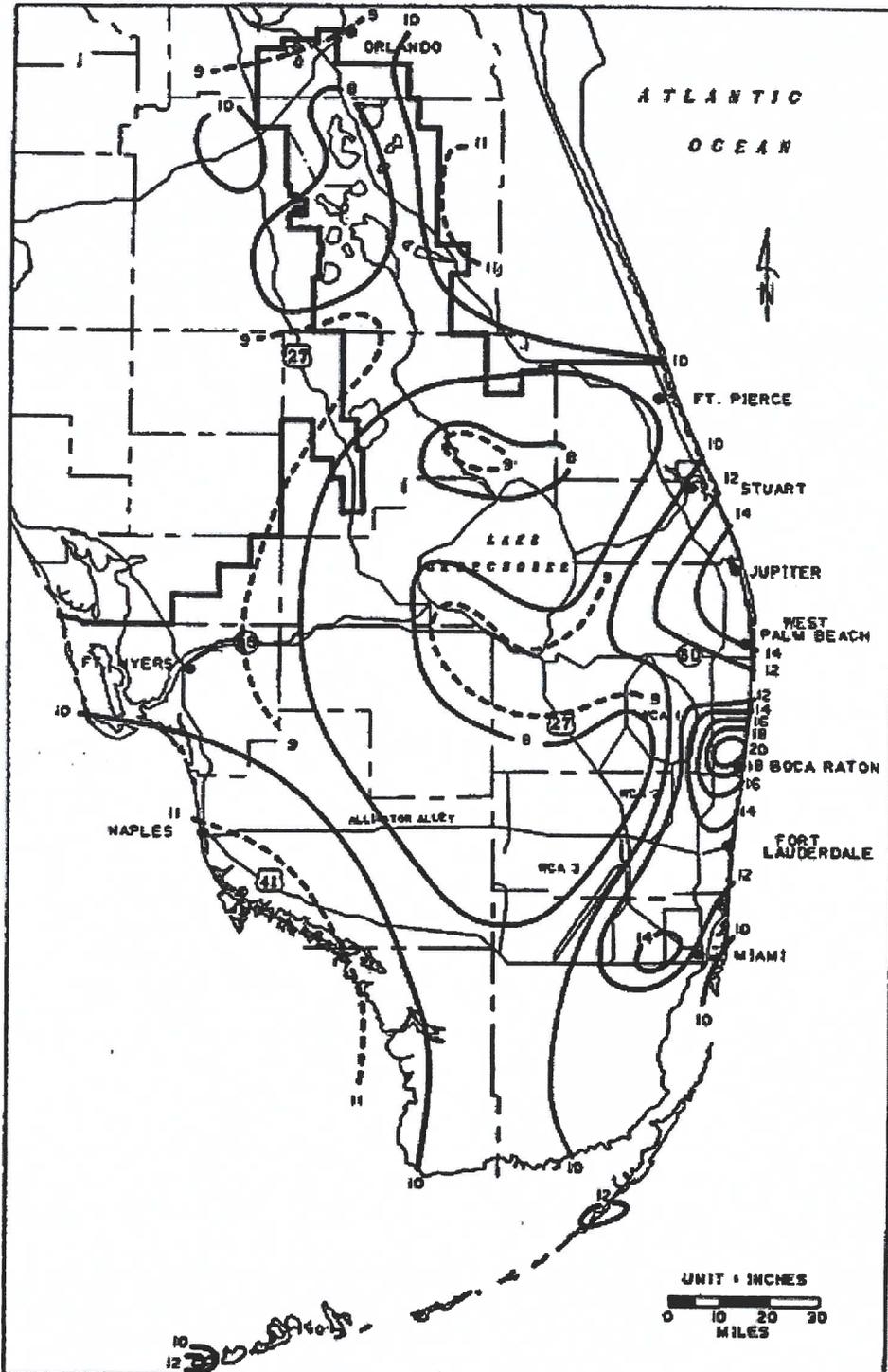


FIGURE C-6. 1-DAY RAINFALL: 100-YEAR RETURN PERIOD

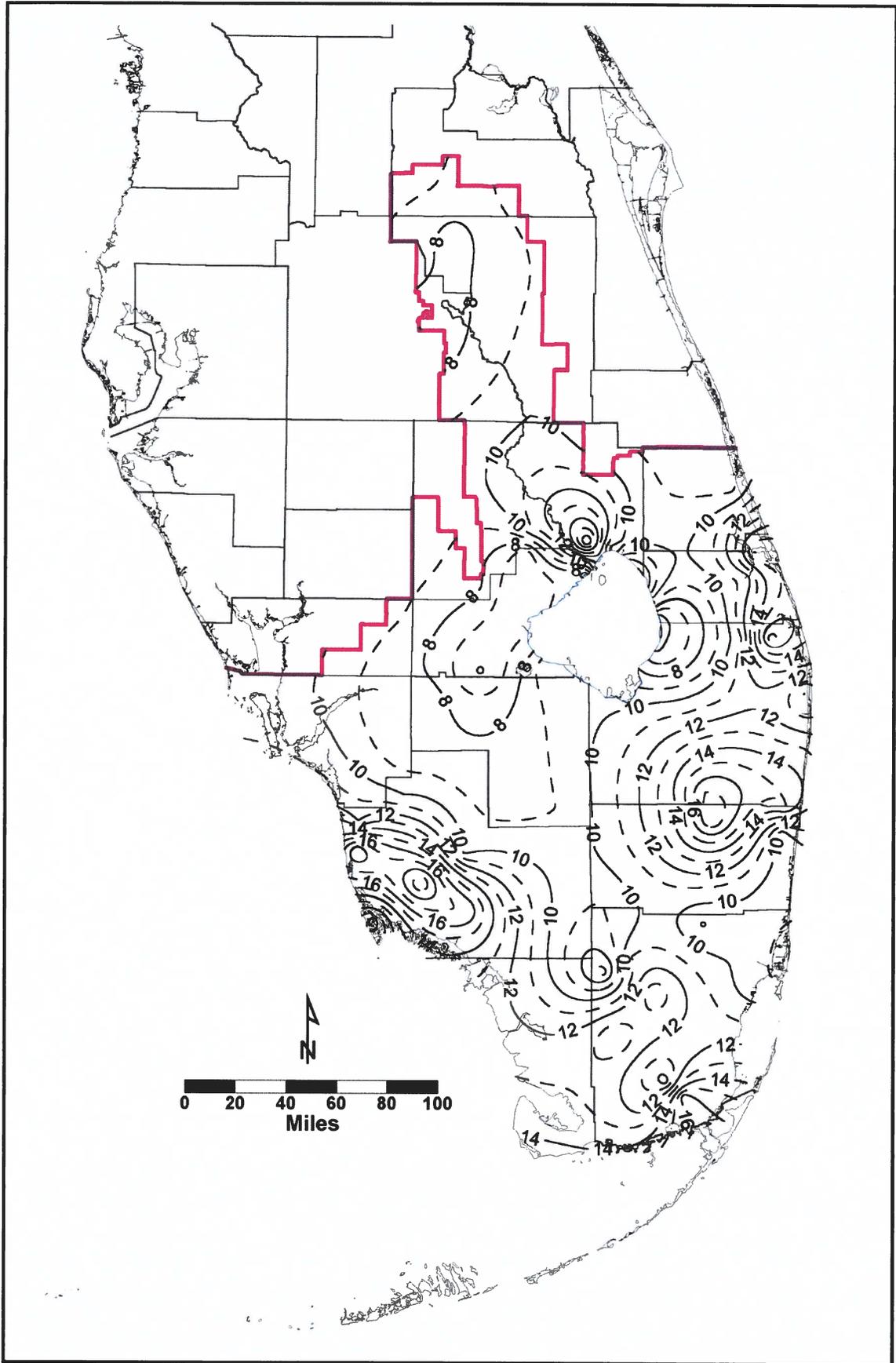


Figure 13. One - Day Maximum Rainfall (in inches): Maximum Recorded

CITY OF SANIBEL, FLORIDA

WEIR CONTROL POLICY

It is a policy of the City Council of the City of Sanibel that the City Manager or his designee shall have sole control of all aspects of the City's Surface Water Management System, and specifically of the weir structures at Tarpon Bay and Beach Road. It is an objective of the City to attempt to retain as much fresh surface water on the island as possible through the operation of the Surface Water Management System and its weirs for the environmental benefit of the islands Interior Wetlands System, so long as developed areas are not adversely impacted.

In order to achieve the objectives of the City's Surface Water Management Plan, the weirs at Tarpon Bay and Beach Road may be opened only under the following conditions:

1. Interior Flooding Conditions: The Tarpon Bay and Beach Road weirs may be opened during or subsequent to a period of heavy rainfall which results in interior flooding in the City. The City may, however, take other measures to alleviate interior flooding if conditions so dictate. The measures include the use of temporary portable pumps, if necessary.

For the purpose of this policy interior flooding is defined as follows:

Interior flooding occurs when any of the following conditions exist within the freshwater management area as defined by Johnson Engineering, Inc. in their Surface Water Management Study, dated April, 1987.

- A. When public or private streets are impassible to cars traveling at a slow rate of speed.
- B. When one of the City's river gauges adjacent to Gulf Pines Drive, Rabbit Road or Sanibel-Captiva Road is 3.3 feet NGVD (National Geodetic Vertical Datum) or above for a 24 hour period.

The Tarpon Bay weir may be opened only when these conditions occur west of Tarpon Bay Road. The Beach Road weir may be opened only when these conditions occur east of Tarpon Bay Road. Again, the City Manager or his designee may manipulate the Surface Water Management System other than by opening the weirs, if conditions so dictate, to alleviate interior flooding as defined above.

If the weir gates are manipulated, they shall be gradually opened and closed so that water is held at a level no greater than 2.8 feet NGVD at the Beach Road weir, and no greater than 3.3 feet NGVD at the Tarpon Bay weir or any of the City's river gauges adjacent to Gulf Pines Drive, Rabbit Road, or Sanibel-Captiva Road.

If condition B above occurs, it is the intent to manipulate the Surface Water Management System so that water levels at the City's river gauge at Gulf Pines Drive return to no more than approximately 3.2 feet NGVD.

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2. Pre-Storm Conditions: The Tarpon Bay or Beach Road weirs may be opened up to 36 hours in advance of a tropical storm or other predicated heavy rain event when advised by the City's weather consultant or SEMP Director that the storm could cause severe rainfall on Sanibel and the following conditions exist:

- A. The island is feeling the effects of the storm (i.e. experiencing precipitation as part of the storm system); or the storm is anticipated to pass within 100 miles of the City as determined by the City's weather consultant or SEMP Director; and

- B. For the Tarpon Bay weir to be opened, fresh water levels in the Sanibel River west of Tarpon Bay Road are at 3.2 feet NGVD or higher. For the Beach Road weir to be opened, fresh water levels in the Sanibel River east of Tarpon Bay Road are at 2.7 feet NGVD or higher.
3. Surface Water Duration Conditions: If during any calendar year, surface water as read at the City river gauges at Gulf Pines Drive, Rabbit Road or Sanibel-Captiva Road exceed 3.2 feet NGVD for 90 consecutive days, the City will manipulate the Surface Water Management System west of Tarpon Bay Road at a level no higher than 3.0 feet NGVD for the remainder of the calendar year.
4. Miscellaneous Conditions: The City Manager may deviate from the above standards when deemed necessary for the prevention of immediate harm to persons, property, or the environment.

General Provisions

At all times, the weirs should be secured by locks to prevent any unauthorized adjustments to the Surface Water Management System.

During periods that the weir gates are open, they shall be routinely inspected to insure against any possibility of salt water intrusion or overdrainage of the interior wetlands.

The City will make every reasonable effort to respond to citizen inquires and requests regarding the operation of the Surface Water Management System and its two weirs in accordance with the above conditions in a timely manner. It is the City's intent to adhere to these conditions as quickly as possible in every circumstance.

This policy was formulated under existing conditions in 1994, and assumes the completion of the necessary river restoration and culvert replacement projects in the Surface Water Management System. It is the intent of the City to implement this policy upon the completion of this work. Until that time, the weir policy adopted on August 4, 1992 will remain in effect.

If modifications are made to this system, this policy should be reexamined and altered if necessary. As the Surface Water Management System is implemented, this policy and its impact on the island will be continually monitored and reviewed by the City and amended by City Council as necessary to achieve the City's Surface Water Management goals.