PASCO COUNTY FLORIDA

OPEN SPACES. VIBRANT PLACES.

Public Works Emergency Action Plan

First to Respond. Last to Leave

Pasco County Public Works
Emergency Action Plan

Issued:	2/5/2016	Revised:		Reviewed:	

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Pasco County Public Works
Emergency Action Plan

Issued:	1/19/2016	Revised:		Reviewed:	
Abstract:	Public Works is required to be prepared for and respond to Emergencies				

EMERGENCY ACTION PLAN
INTRODUCTION

PURPOSE

The Public Works *Emergency Action Plan* (EAP) is intended to provide Department staff guidance in preparation and response for emergency operations. Many of the documents presented in this "manual" give specific direction, by staff position, or procedures to achieve adequate preparation and a safe and effective response. The current procedures, guidelines and checklists presented have been developed by best practices utilized by the Department during past Events and Incidents. All documents are subject to revision at anytime and additional documents inserted into the manual to assure content is relevant and updated as lessons are learned. To this purpose, hard copy manuals should only be printed for presentation purposes. The contents of the manual are intended to be reviewed or printed on-demand as needed. The latest and current Department EAP is located electronically on the shared drive:
G:\DevSvcs Documents\Road and Bridge\Emergency Operations\EAP

SCOPE

This Emergency Action Plan is currently under development. In present form, content is heavily populated with weather related preparation and response. Public Works conducts emergency weather response activities within the Department and/or at a multi-agency level, annually. There is intent to include all-hazards documents, however, much of the guidelines presented are relevant to actions taken for many different emergency types the Department may need to prepare for, or respond to.

COMPLIANCE

The EAP is intended to be the Department's reflection of Pasco County's Comprehensive Emergency Management Plan (CEMP). Guidelines and Procedures are derived from the CEMP for the Department and provide for a main concept, multi-agency response. The EAP is also a supplement to the Public Works Field Operations Manual (FOM) which describes procedures for all operational tasks. All emergency operations shall follow FOM procedures where applicable. Lastly, all documents of the EAP comply with Pasco County's Administrative Directives and the Career Service Manual.

MISSION

Being prepared to respond to emergencies at all times, recover from them, and mitigate against their impacts, regardless of magnitude.

MOTTO

Public Works; First to Respond, Last to Leave.

Pasco County Public Works
Emergency Action Plan

Issued:	2/21/2014	Revised:	1/28/2016	Reviewed:	1/28/2016
Abstract:	Department Preparedness is a 365 day project				

ANNUAL FIELD SUPERVISOR'S CHECKLIST

The purpose of this document is to provide Field Supervisors an annual checklist of requirements necessary for seasonal storm preparedness. Being adequately prepared is our best proactive measure to conduct an organized response in an often chaotic environment. This checklist is intended to be a living document drafted from lessons learned and updated as necessary to provide readiness for our most common emergency response, summer seasonal storms. Hurricane Season begins on June 1 annually, all datelines are purposely derived to approach that date with any given procedure to provide maximum benefit for the season.

October 1

- Review all equipment, supply and material annual awards typically rented or purchased for the purpose of storm response. Revise as necessary and identify Vendors of resources by March 1.

_____ Barricades Type II, Type III, Barrels, Pumps and Equipment

April 1

- First Week of April, Labor Supervisors discuss pre-season schedule with staff.
- Inventory Barricades, inventory Barricade parts needed to repair damaged barricades so they can be put into service. Order parts for Barricades (**see Barricade Readiness Checklist)**.

_____

May 1

- Have all barricades repaired with parts that have been ordered and re-inventory all barricades.
- Order Barricades to achieve pre-determined storm season inventory as listed below:

  East and West Division shall **<u>each</u>** have on hand –

  SW 200 Type II
  RB 100 Type II
  RB 20 Type III total for Department (Sign Shop responsibility)
- Rotate all Pumps in for pre-season PMI.
- Inventory all pump hoses and other necessary resources available. Discuss with Management current inventory and determine purchase needs.
- Determine rental needs and departments plans on pre-staging rental pumps and hoses. Determine lead time for delivery. Determine quantities to keep for readiness.
- Inventory Vactor Truck critical equipment, reliability and maintenance needs. Schedule pre-storm PMI.
- Check all operable SW structures, perform maintenance and report deficiencies. Gates in Duck Slough, Gates in Rock Sink, etc…
- Hold Emergency Operations readiness meeting within department during first week in May.

  Review lessons learned from past storm preparations.
  Review with Operations staff state of readiness and supervisors projected needs.
  Review schedules for training possibilities for upcoming season.

_____ Determine schedules and content of individual crews readiness plans.

May 15
- Inventory Sand and Sand Bags by end of second week in May, share current inventory amounts with the OEM.

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May 21

During the third week of May:
- Develop Season Office Management Plan, by third week of May.
  - Time ticket an material ticket plan, to be disseminated to field staff.
  - WebEOC delegation.
  - WebEOC training needs.
  - Storm Staffing plan.
  - Individual staff responsibilities.
  - Personal, importance of securing family, assets and valuables.
- Field and Labor Supervisors develop Crew Specific plans of manpower usage and crew specific duties and responsibilities turn in written plan to Maint. Supervisor by weeks end.

_____

May 31

During the last week in May:
- Service Permanent Pumps (Jarvis, Gainsboro, etc…)

_____

June 1

During the first week of June:
- Maintenance, Field and Labor Supervisors hold Operational Pre-Storm Season meetings with all crews.
  - Review staff relevant documents from the PW Emergency Operations link, SOPs etc...
  - Crew specific likely duties and responsibilities.
  - Time ticket and material ticket plan.
  - Event reporting procedure and requirements.
  - Closing and opening roads.
  - Concept of “Heads Up Meetings”.
  - Safety.
  - Leave policy.
  - Lessons learned.
  - Best management practices.
  - Incident Command System.
  - EOA Plan, - Base locations, Staging, staffing and equipment requirements.
  - Personal Emergency Action Plans
- Make contact with approved annual vendors for storm related rental resources to determine availability and capability of supplying possible County needs.
- Preform pre-storm proactive maintenance to mitigate possible problem areas.
  - All low road areas, hill bottoms and bad road drainage areas for high shoulders that will prevent drainage in abnormal events and cause possible transportation (hydroplaning, etc.) issues.
  - Delineate shoulder areas of high susceptibility to flooding.
  - Delineate all headwalls and shoulder structures in areas that may become flooded.
  - Etc…
- Inventory all water level gauge markers, Tidal and Freshwater, correct for obscured markers and clear vegetation for necessary line of sight for all.
- Conduct Yard and Borrow Pits for tidiness. Clear and secure items that will cause damage, can be lost or are susceptible to wind damage.

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Pasco County Public Works
Emergency Action Plan

Issued:	1/28/2016	Revised:		Reviewed:	
Abstract:	Items shall be performed in the 72 hours pre-storm				

72 HOUR STORM ACTIVATION CHECK LIST

This checklist is to be performed during the 72 hour period before forecast Tropical Storms and Hurricanes. Assumptions are made for this planning document that there exists an advanced forecast for these types of storms that are given 72 hours, more or less, before impact. 72 hours is an optimum preparation lead time for this checklist, however, the exact nature of the storm itself will dictate the compression or expansion of time frames presented. This is a checklist that presents activities that should be conducted whether a compressed time frame does or does not exist.

___ 72 to **48** hours pre-impact – Dissemination to all Public Works staff that there has been notification received from the NWS via OEM that a Tropical Storm or Hurricane could impact Pasco County.

___ 72 to **48** hours pre-impact – PW Administration and Supervisory staff meet to develop timeline of staffing and scheduling needs. Storm preparation plans from EAP are discussed and a storm preparation plan developed for existing needs.

___ 72 to **48** hours pre-impact – PW Supervisor meetings with Staff take place to discuss storm preparation activities and the anticipated scheduling changes.

___ 48 to **24** hours pre-impact – Preparation activities are underway. Adjustments to staff's hours takes place to align with pre-determined staffing requirements of the Alpha/Bravo 12 hour teams.

___ 48 to **24** hours pre-impact – Staff meetings take place to discuss the EOA Plan and PW EOA assignment plan for individuals, such as: the Incident Command System Structure, Chain of Command, Communications Plan, Accountability Plan, Area of Responsibility, probable assignments, Life Safety, etc…

___ 24 to **12** hours pre-impact – Area of Responsibility (SOA Maps) are posted in the PW dispatch offices marked up with Supervisors listed in each area.

___ 24 to **12** hours pre-impact – Alpha and Bravo teams are working as scheduled. Teams are assigned an EOA and their lock down EOA Base. Teams are responding to any incident needs within those areas while making final storm preparations. Some pre-staging of equipment to specific EOA Bases is taking place.

___ 12 to **6** hours pre-impact – Final determination of Alpha and Bravo scheduling adjustments take place. At this time there is an opportunity to consider the duration and fatigue implications of the impending storm as anticipated and adjust start/stop times of these teams as appropriate. Staging of equipment and staff EOA is finalized.

___ **6** hours up to impact – Staff is strictly following Chain of Command, Communications Plan, Area of Responsibility, and Staff Accountability Plans. Staff stays within reasonable proximity to their assigned EOA Base to ensure successful lock down if necessary.

___ **40 mph sustained winds** – Following Communication and Accountability Plans, staff is locked down in their assigned EOA Base.

Pasco County Public Works
Emergency Action Plan

Issued:	2/1/2016	Revised:		Reviewed:	
Abstract:	Identified problem areas and preemptive activities				

PRE-STORM CHECKLIST

In addition to the Annual Field Supervisor's Checklist, this checklist lists actions to be performed shortly before or during the beginning of severe weather. There is an assumption here that Public Works operations has moved out of most routine maintenance and into storm preparation and response operations when this checklist is deployed. This checklist is to be used as a pre-storm planning tool by supervisors to coordinate efforts and to task specific individuals to perform certain identified tasks in order to mitigate the effects of severe weather.

STORM STRATEGY MEETINGS:

___ Field Supervisor and Supervisors meet to discuss areas of responsibility and Geographic Zones and/or other planning topics. This meeting could take place up to 24 hours before a predicted weather event, if forecast lead time is provided.

___ Supervisors hold short "Heads Up" meetings with staff to discuss forecast, group and crew Operations Plan and Safety Awareness. To be conducted at the beginning of each Operational Period.

___ SOA maps are posted in PW Dispatch offices: C-Barn and NPR PW Admin. Office and marked up with supervisor Zone responsibility.

PUMP MONITORING: Staff assigned to this task shall be equipped with barricades.

___ Using the current EAP section 2_3 Permanent Pumps, assign staff to continuously monitor the operation of these pumps.

HARD PIPE LOCATION MONITORING: Staff assigned to this task shall be equipped with barricades. If pumps have not been pre-deployed, monitor for necessity. If pumps are deployed, monitor for activation.

___ Using the current EAP section 2_2 Pumping Hard Piped Areas, evaluate these areas for possible pump set up and monitor operation.

TEMPORARY PUMP LOCATIONS: Staff assigned to this task shall be equipped with barricades. If pumps have not been pre-deployed, monitor for necessity. If pumps are deployed, monitor operation.

___ Using the current EAP section 2_5 Pumping Locations, evaluate these areas for possible pump set up and monitor operation.

GATE MONITORING:

___ At the direction of the Chief Project Manager, Public Works Director or Manager, Inspection staff with operate and monitor flood gates as necessary.

STAFF AND TIDAL GUAGE MONITORING:

___ Inspection staff read, record and report staff gauge readings.

___ If requested by Emergency Management, Sign Shop Staff begin Tidal Gauge reading, record and report.

CLEAR DRAINAGE STRUCTURE OBSTRUCTIONS: Staff assigned to this task shall be equipped with barricades. This staff will also monitor and report flooded areas as they occur and evaluate possible mitigation actions.

___ Using the current EAP sections 1_2a and 1_2b Check List Areas, assign crews to monitor and take necessary actions in these areas.

PRE-STORM STAGING: Specific staging of equipment and manpower for forecast Tropical Storms and Hurricanes is detailed in the current EAP section 5_5 Emergency Operations Areas. Many storms may not be forecast to reach these levels yet will require a coordinated response from our Department. Prior to and/or at the beginning of Operational Periods that are predicted to include severe storms likely to cause imminent localized and/or widespread flooding and/or wind damage, at a minimum, equipment and materials shall be available and ready for deployment at D&E and C-Barn:

___ Tree Truck

___ Vactor Truck

___ 2 Tandems loaded with Sand Bag Sand

___ 2 Tandems loaded with Millings

___ Flatbed with millings

___ Flatbed hooked to trailer loaded with Skid Steer/bucket/forks

___ Grapple Truck

___ Transport Tractor and Trailer

___ 3000 Sand Bags accessible and ready for deployment

___ 300 Barricades accessible and ready for deployment

___ 1 pallet of Cold Patch accessible and ready for deployment

___ Tractor or Front End Loader

Pasco County Public Works
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Abstract:	Taking preemptive actions can avoid or lesson impacts				

CHECK LIST AREAS - WEST

Staff with Pickups or Flatbeds equipped with barricades shall be deployed to the following areas (and other areas as the incident may dictate) to clear inlet and outfall drainage obstructions, and to monitor and report flooded areas as they occur and evaluating possible mitigation actions.

___ Jasmine Lakes

___ Gulf Highlands

___ Embassy Hills

___ Holiday Lakes

___ Forest Hills

___ Trinity Oaks

___ Thousand Oaks

___ Timber Oaks

___ Aloha Gardens

___ Magnolia Valley

___ Seven Springs

___ Lakewood Ranches/Villas (Cypress Knoll/Runnel)

Pasco County Public Works
Emergency Action Plan

Issued:	2/3/2016	Revised:		Reviewed:	
Abstract:	Taking preemptive actions can avoid or lesson impacts				

CHECK LIST AREAS – EAST

Staff with Pickups or Flatbeds equipped with barricades shall be deployed to the following areas (and other areas as the incident may dictate) to clear inlet and outfall drainage obstructions, and to monitor and report flooded areas as they occur and evaluating possible mitigation actions.

___ Turtle Lakes

___ Meadow Point

___ Double Branch

___ Hilldale Dr. and Highview Dr.

___ Hickory Hill Acres

___ Fort King @ Sargent

___ Quail Hollow/Angus Valley

___ Carpenters Run

Pasco County Public Works
Emergency Action Plan

Issued:	11/20/2015	Revised:		Reviewed:	
Abstract:	Owned and rented pumps shall be available pre-storm				

PUMP READINESS AND DEPLOYMENT

Pumps, hoses and other related equipment are owned and rented resources of critical need during rain events and hurricanes. Proactively assuring that our inventory of owned equipment is at determined levels and an approved annual award vendor for rentals is “on-board” pre-event, will determine our success of having these resources available when needed.

Public Works Pumps and Equipment on-hand inventory requirements

East Side Drainage Labor Supervisor II is assigned and responsible for the maintenance, operational readiness, storage, deployment and status reporting of the following pumps and equipment:

38385 4 inch trailer mounted pump
200 feet of 4 inch lay-flat hose
20 feet of suction hose
1 - 4 inch 90° pump to hose elbow
1 - 4 inch strainer
1 - 4 inch floating tee

35743 6 inch trailer mounted pump
200 feet of 6 inch lay-flat hose
20 feet of 6 inch suction hose
1 - 6 inch 90° pump to hose elbow
1 - 6 inch strainer
1 - 6 inch floating tee

West Side Drainage Labor Supervisor II is assigned and responsible for the maintenance, operational readiness, storage, deployment and status reporting of the following pumps and equipment:

38384 4 inch trailer mounted pump
200 feet of 4 inch lay-flat hose
20 feet of suction hose
1 - 4 inch 90° pump to hose elbow
1 - 4 inch strainer
1 - 4 inch floating tee

35744 6 inch trailer mounted pump
35745 6 inch trailer mounted pump
400 feet of 6 inch lay-flat hose
40 feet of 6 inch suction hose

2 - 6 inch 90° pump to hose elbow
2 - 6 inch strainer
2 - 6 inch floating tee

Permanent pump stations

Currently there are two permanent pump stations; Gainsboro Dr. and Jarvis St. These pumps are electric driven with generators as backup power. These pumps and generators require maintenance through a bid contract twice per year. Maintenance services take place in January and June annually and are (currently) Project Manager Efrain Figueroa's responsibility to coordinate maintenance and any needed repairs. Because of the flood prone areas they were installed to mitigate, any breakdowns by these pumps will require the stationing of backup pumps whether the pumps are required to pump or not. Efrain may require PW operations assistance from the West Side Drainage Crew.

Rental pumps and Equipment

Our Annual Award for pumps and equipment requires that cost and availability be considered when purchasing the rental of this equipment. There are four vendors currently approved to supply the equipment. Because of the lack of lead time presented by rain events or hurricanes, investigation of the capabilities of these vendors is necessary annually to determine a reliable, delivered supply. Lessons learned during the past 4 years has identified that United Rental is a vendor with the capability to supply our demands within 24 hours or less. They have proven this while lower bidders could not and they are not the lowest bidder for this contract. Time should not be spent during crucial hours before a forecast significant event to secure a vendor. Test the these vendors annually in May or decide whether continuing to use United as the vendor who can provide the lowest possible cost for available equipment.

The current term for this award; IFB-KB-15-164, 10/01/2015 to 9/30/2018. Below is a relevant sample price configuration for the four vendors, for 1 month rental:

Item	**Hertz**	**Sunbelt**	**Xylem**	**United**
6" Pump	$1,850.00	$2,425.00	$1,650.00	$1,800.00
20' Suction	120.00	180.00	75.00	175.00
50' discharge	150.00	165.00	90.00	160.00
90º elbow	35.00	110.00	33.00	65.00
strainer	15.00	3.00	36.00	5.00
tee float	75.00	110.00	207.00	120.00
Total	**$2,245.00**	**$2,993.00**	**$2,091.00**	**$2,325.00**

United Rental	(813) 685-9944	Kevin Abernathy	Cell – (813) 918-4689
Hertz	(863) 644-2946		
Sunbelt	(800) 508-4762		
Xylem	(863) 682-8800	Jed Church	Cell – (813)323-3478

During the rain event of July 2015, 23 temporary pumps were set up over a two month period. 48 to 24 hours before a forecast event of 6 inches of rain or more, 10 pumps, 3,000 feet of

discharge and 200 feet of suction shall be ordered. If we are in the path of a tropical storm or hurricane, lead time to order shall be 72 hours before predicted impact and quantities doubled at minimum.

Tracking of rental pumps is vital for accountability. There is an existing standard operating procedure in place (see Pump Tracking). Essentially, all rental pumps are tagged with a simple numbering system by the Drainage Supervisors upon arrival. Relevant information about the details of the pump are recorded and reference by this tag number. As pumps are set up or re-located the equipment accompanying the pump, location, hours etc… are recorded and tracked in a Pump Deployment record until the pump is returned to the vendor.

Depending on the season, existing water tables and water body elevations, draw down of problem areas should already be identified and pumping activity in action as approved by the SWFWMD. This pumping may be done by owned pumps or rented as the need presents. Analysis of such areas shall be tasked to the SW Engineering group with Administration directing Operations on pumping instructions.

Hard piped areas

Currently there are 5 areas of concern that have existing buried hard pipe used to minimize pump equipment and set up time. See the “Hard Piped Areas” document. There are imminent plans to install hard pipe at three additional areas. This portion of the EAP plan will be updated as necessary.

Pasco County Public Works
Emergency Action Plan

Issued:	1/1/2016	Revised:		Reviewed:	
Abstract:	Pump readiness required annually				

PUMP READINESS CHECKLIST

	Description of Task	Due	Initials
___	Inventory of owned pumps, hoses, etc..	4/1	___
___	Order pump needs	4/30	___
___	Contact Annual Award Vendor, discuss availability for upcoming season	5/1	___
___	Review temporary pump locations, maintain site readiness	6/1	___
___	Review hard piped pump and connection locations, maintain site readiness	6/1	___
___	Determine Pre-Season Pump Staging Inventory, order	6/1	___
	_____		
___	Inventory of owned pumps, hoses, etc..	10/1	___
___	Order pump needs	10/30	___
___	Contact Annual Award Vendor, discuss availability for winter season	12/1	___
___	Review temporary pump locations, maintain site readiness	1/14	___
___	Review hard piped pump and connection locations, maintain site readiness	1/14	___
___	Determine winter season Pump Staging Inventory, order	1/14	___

Pasco County Public Works
Emergency Action Plan

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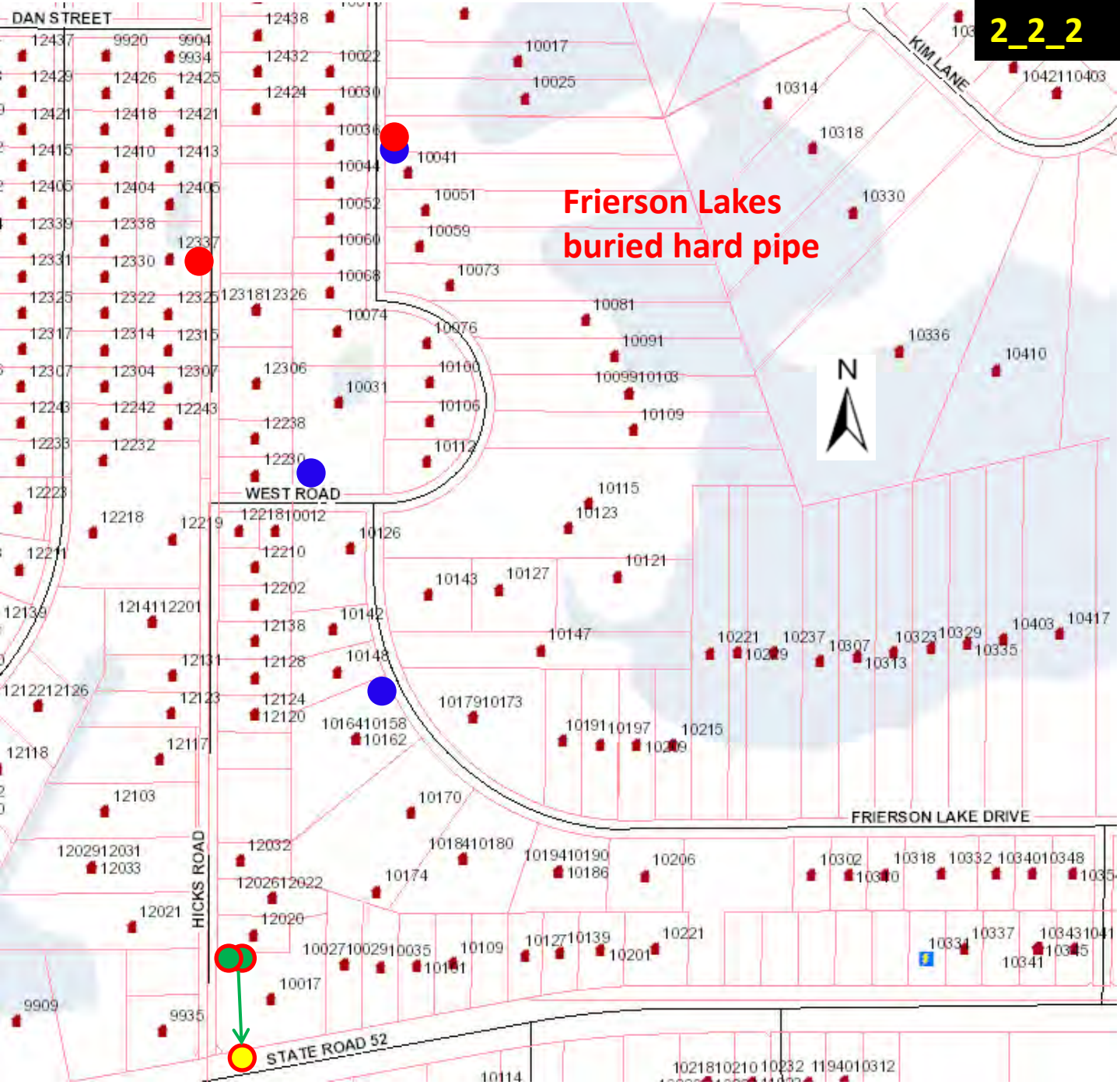
Abstract:	Hard pipe is installed for proactive flood mitigation				

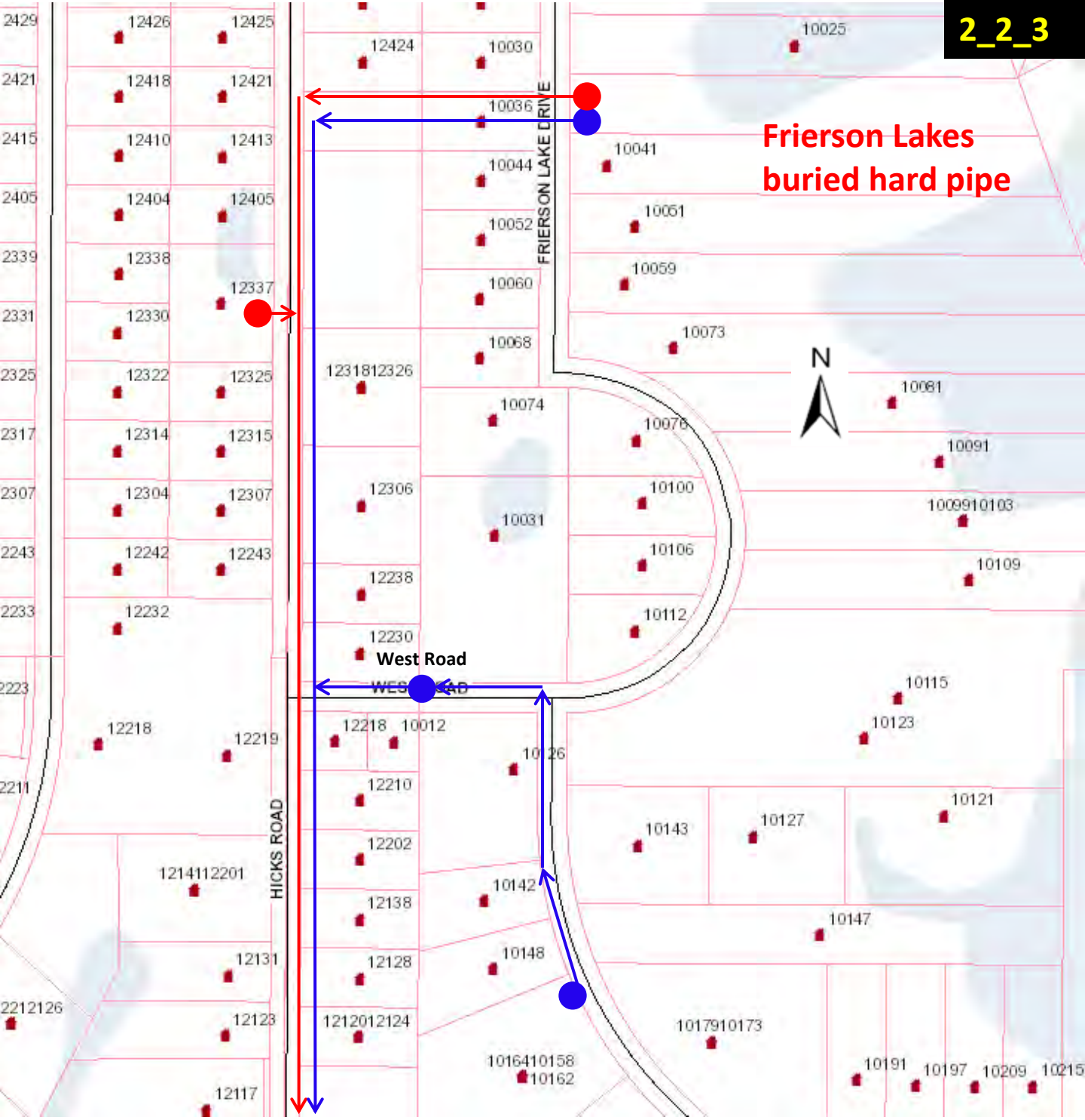
PUMPING HARD PIPED AREAS

There are several flood prone areas that Public Works has identified as having other areas in the vicinity that will accept flood water transferred to, without negatively impacting those areas. The Department has installed up to 5,000 feet of hard pipe in order to pump from affected areas to these identified relief areas. During predicted flooding events the Department may draw down some of these flood prone areas, with proper SWFWMD Emergency Authorization, or activate pumping when the areas are threatened. A quick hook up of a 6 or 8 inch pump is all that is needed for deployment. The following are current maps of these hard piped areas.



Indicates where ground level 6” female PVC connections are located. Pumps are set up near these locations with suction drawing from the high water level areas and discharged into these PVC connections. Bauer/MPT adapter needed for pump discharge hose.

Indicates where ground level 6” female PVC connections are located. This is the discharge from the northern pumping locations. A PVC male adaptor sleeved with a short section of PVC pipe and a bauer connection is needed to hook up discharge hose → The hose is fed into the driveway culvert pipe under the 7-11 driveway, over sidewalk and into curb inlet basin on SR52.



Indicates where ground level 6” female PVC connections are located.

Red Line Run, buried 6” PVC pipe.

Blue Line Run, buried 6” PVC pipe.

2_2_4

Houston Avenue buried hard pipe

10” pump

10” PVC Pipe

10” Lay flat

10” FPT PVC

A 10” High head Hydraulic pump has been used here. 10” PVC Pipe is elevated out of the ground next to the pipe crossing. 25’ of suction placed near the culvert, pump and 25’ lay flat to the PVC pipe. On the west end, 1000’ of 10” lay flat is needed from a female PVC connection located on the northeast corner ROW of US 19 and Houston Ave.

6" Pump → 6" Suction Hose → 6" PVC Pipe

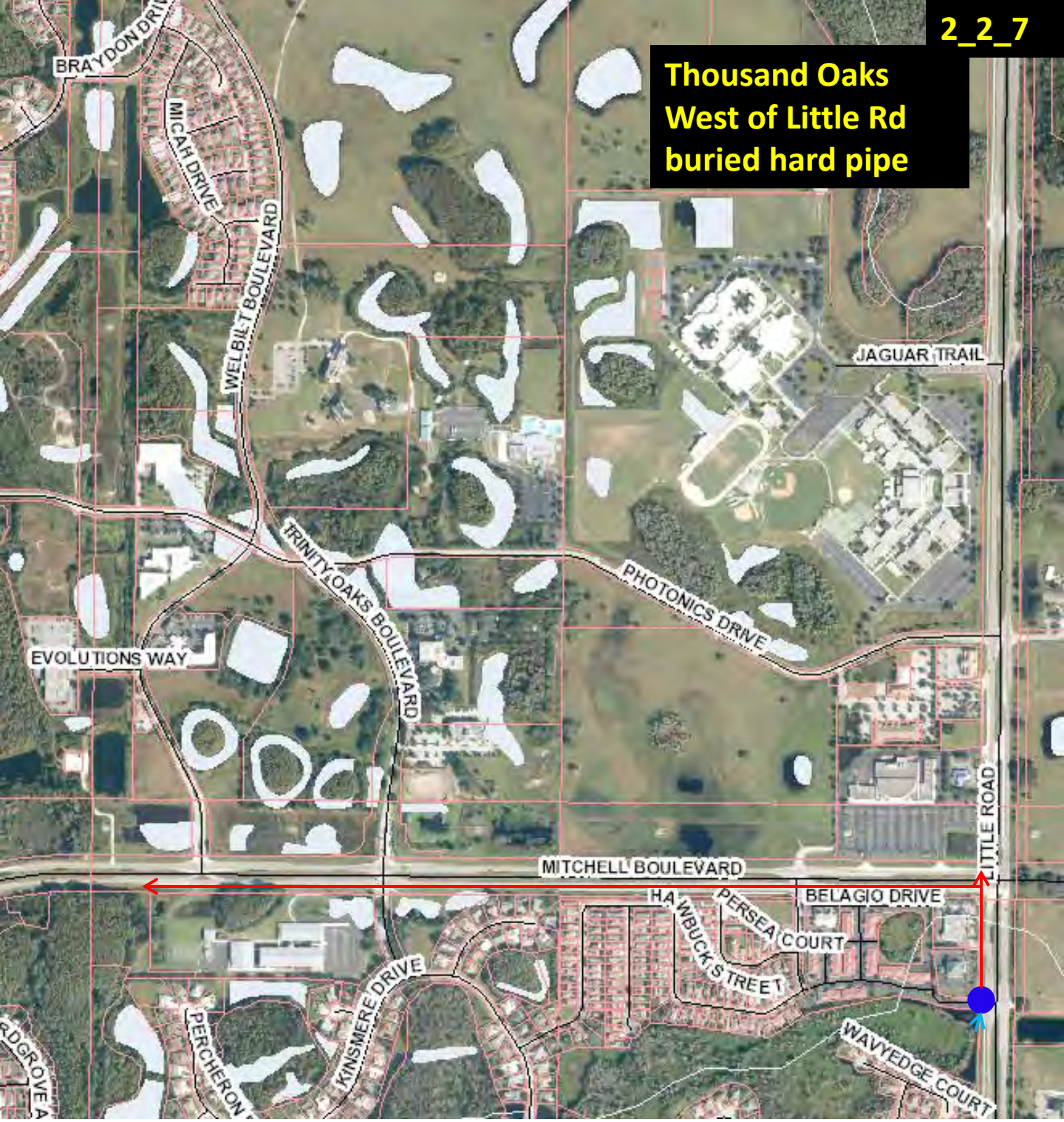
6" suction hose is fed from the ditch on the west side of Rees St. at the intersection of Springer Dr. through the culvert to the east side of Rees St. The pump is hooked to the suction at the culvert. Discharge from the pump is connected to PVC hard pipe located on the SE side of this intersection. Outfall is in a box culvert that discharges under US 19.

● 6” pump

↑ Suction hose

← 6” PVC pipe

← 6” Discharge hose


2_2_7
Thousand Oaks
West of Little Rd
buried hard pipe
BRAYDON DRIVE
MICAH DRIVE
WELBILT BOULEVARD
JAGUAR TRAIL
TRINITY OAKS BOULEVARD
PHOTONICS DRIVE
EVOLUTIONS WAY
LITTLE ROAD
MITCHELL BOULEVARD
BELAGIO DRIVE
HAWBUCK STREET
PERSEA COURT
KINSMERE DRIVE
PERCHERON
WAVYEDGE COURT
8” Pump
8” PVC Pipe
8” Suction Hose
N


2_2_8
Thousand Oaks
East of Little Rd
buried hard pipe
JAGUAR TRAIL
PHOTONICS DRIVE
TRINITY OAKS BOULEVARD
LITTLE ROAD
MITCHELL BOULEVARD
BELAGIO DRIVE
PERSEA COURT
MAHALET DRIVE
HAWBUCK STREET
KINSMERE DRIVE
WAVYEDGE COURT
REGAL MIST LOOP
8” Pump
8” PVC Pipe
8” Suction Hose
N


Youth Lane
buried hard pipe
2_2_9
MIGUEL PLACE
LITTLE ROAD
YOUTH LANE
8” Pump
8” PVC Pipe
8” Suction Hose
N

Pasco County Public Works
Emergency Action Plan

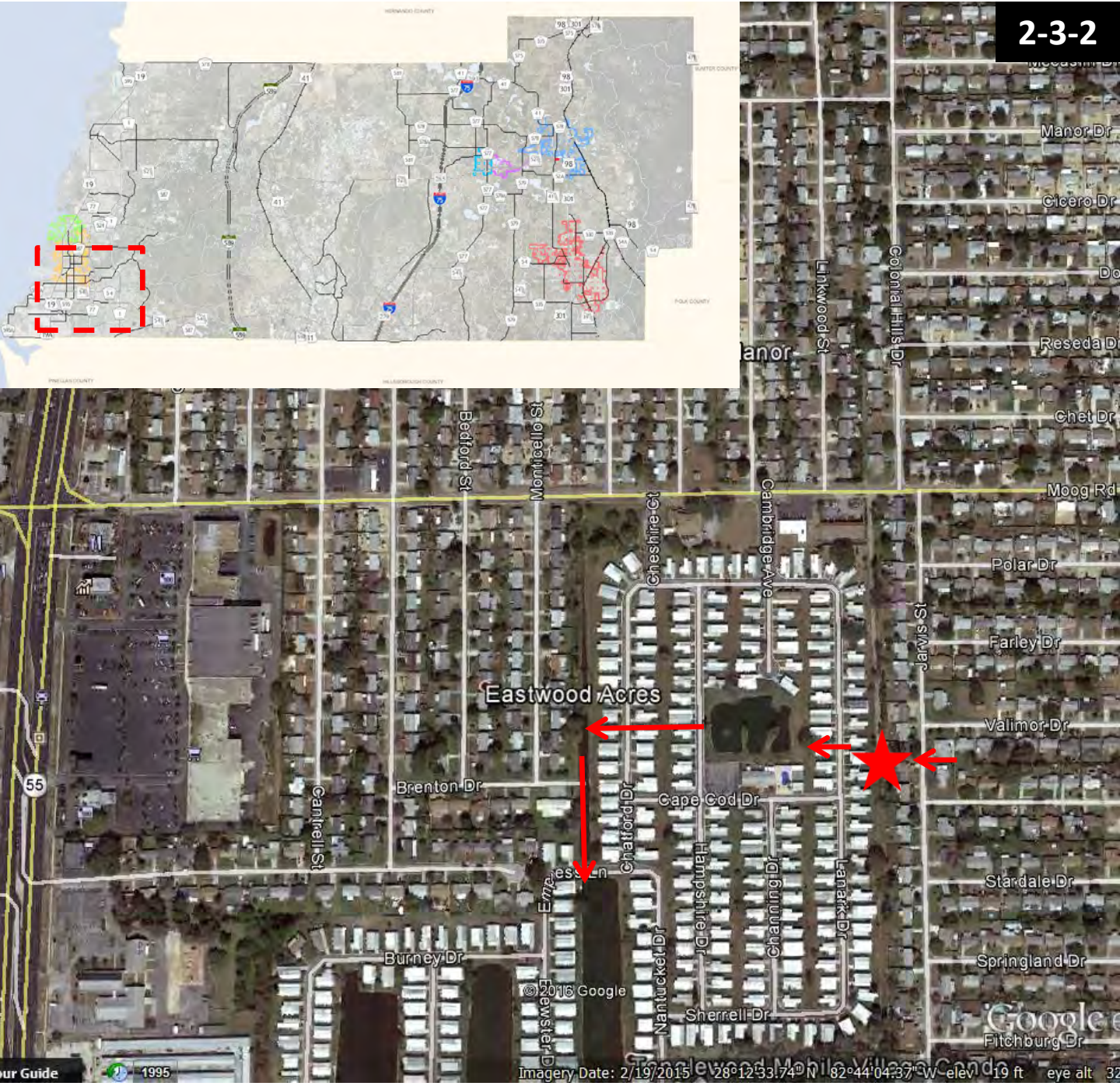
Issued:	1/28/2016	Revised:		Reviewed:	
Abstract:	Permanent Pumps activated for flood control				

PERMANENT PUMP STATIONS

Public Works currently operates and maintains two permanent pump stations. These pumps are necessary because of the consistent flooding of roads in their respective subdivisions during heavy rain events. One pump station is located in the Holiday Hills subdivision on Gainsboro Drive, and the other is in the Colonial Manor subdivision just west of Jarvis Street.

Both pumps are Utility electric powered with backup generators. In addition to the electric pump and backup generator at the Jarvis St. location, the Department stages an emergency backup diesel pump at this station. To back up the Gainsboro pump, a portable diesel pump is transported and setup when necessary. Access to the pump is roadside, simple and a quick setup.

Property ownership of the former Magnolia Valley Golf Course is currently under negotiations. Tentative plans are for Pasco County to gain ownership. When/if this occurs there are two pumps at the outfall from the golf course that pump through pipes under Rowan Road that will likely become the Department's responsibility. Currently there is an electric pump servicing an 18 inch pipe and a diesel pump servicing a 48 inch pipe. Both pumps must be manually turned on which is the responsibility of others. However, Public Works staff monitors the necessity for pumping regarding the Magnolia Valley subdivision and initiates pump operation requests when warranted.



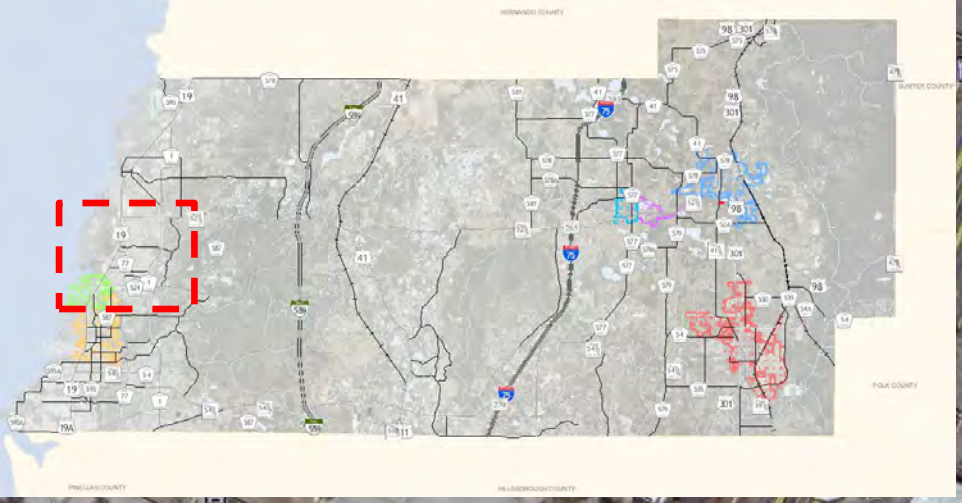
Jarvis Pump Station

Legend

Flow direction

Pump location

N



Gainsboro Pump Station

Legend

Flow direction

Pump location

N

Magnolia Valley Pump Station

Legend

Flow direction

Pump location

N

Pasco County Public Works
Emergency Action Plan

Issued:	11/20/2015	Revised:		Reviewed:	
Abstract:	Permanent Pumps activated for flood control				

Pump Tracking

Tracking pumps is essential to controlling pump inventory, rental, deployment, status and reporting. Failure to track pump status can cost time, money and efficiency. Tracking pumps is a continuous process used during dry periods when owned pumps are on standby or deployed along with many rentals. As a season progresses and pumps are added and deployed, the same process is used from having only our owned inventory to having any number of rentals.

Owned pumps are tracked by their County assigned five digit number. Rental and outside agency (i.e. SWFWMD) pumps are tracked by a number we assign when we receive them. Each season begins with very few if any rental pumps. As we receive them, pump information is recorded and a number assigned with the first pump being assigned the number 1. A brass tag with the assigned number stamped on it is affixed to the pump. The information reflecting the tag number to the specific pump information is forwarded on to the individual charged with controlling tracking information and reporting deployment and status updates. During the past two seasons, the PW Maintenance Supervisor has been the individual.

When pumps are deployed, relocated, returned to standby, taken out of service or returned to the vendor, the information is recorded and a chronological record is permanently filed. When a pump is taken out of service or returned, the assigned tag number is retired for the season to avoid duplicate numbering of different pumps.

Below is an example one pump's season record with received, deployed and returned record.

New pump set up or relocation	
Date received (rental)	7/24/2015
Date of setup	8/1/2015
Location	Headsail Dr 4228
Ownership	United Rental
Number	5
Serial # (if not PC)	10312437
Size (in)	6"
Suction (ft)	10'
Discharge (ft)	200'
Strainer (ea.)	1
T - Float (ea.)	
90° (ea.)	1
Setup begining hrs.	2198.10

New pump set up or relocation	
Date received (rental)	7/24/2015
Date of setup	8/21/2015
Location	Relocated from Headsail to WMY
Ownership	United Rentals
Number	#5
Serial # (if not PC)	10312437
Size (in)	6"
Suction (ft)	N/A
Discharge (ft)	N/A
Strainer (ea.)	N/A
T - Float (ea.)	N/A
90° (ea.)	N/A
Setup begining hrs.	Ending hours: 2458.6

New pump set up or relocation	
Date received (rental)	7/24/2015
Date of setup	8/26/2015
Location	WMY to Benton Dr
Ownership	United Rentals
Number	#5
Serial # (if not PC)	10312437
Size (in)	6"
Suction (ft)	20 ft
Discharge (ft)	450 ft
Strainer (ea.)	N/A
T - Float (ea.)	N/A
90° (ea.)	N/A
Setup begining hrs.	2517

New pump set up or relocation	
Date received (rental)	7/24/2015
Date of setup	10/14/2015
Location	Benton to Liman
Ownership	United Rentals
Number	#5
Serial # (if not PC)	10312437
Size (in)	6"
Suction (ft)	60FT
Discharge (ft)	300FT
Strainer (ea.)	N/A
T - Float (ea.)	Yes
90° (ea.)	N/A
Setup begining hrs.	3011.00

New pump set up or relocation	
Date recieved (rental)	7/24/2015
Date of setup	8/1/2015
Location	Headsail Dr 4228
Location	Standby WMY 8/21/2015
Location	Redeployed 8/26/2015 to Benton Dr.
Location	Redeployed 10/15/15 to Liman Dr.
Ownership	United Rental
Number	5
Serail # (if not PC)	10312437
Size (in)	6"
Date removed	10/29/2015
Date returned	11/3/2015
Ending hours	3011

Pasco County Public Works
Emergency Action Plan

Issued:	1/29/2016	Revised:		Reviewed:	
Abstract:	Temporary pumps are often set up at previous pumping locations as well as newly identified locations				

TEMPORARY PUMP LOCATIONS

The Public Works Department has 5 portable diesel pumps and an annual rental contract to rent pumps, hoses and other accessories as required. The Department may also request pumps and hoses from the SWFWMD. The tracking of pumps and locations they are set up, is critical for situational awareness, inventory control and accountability.

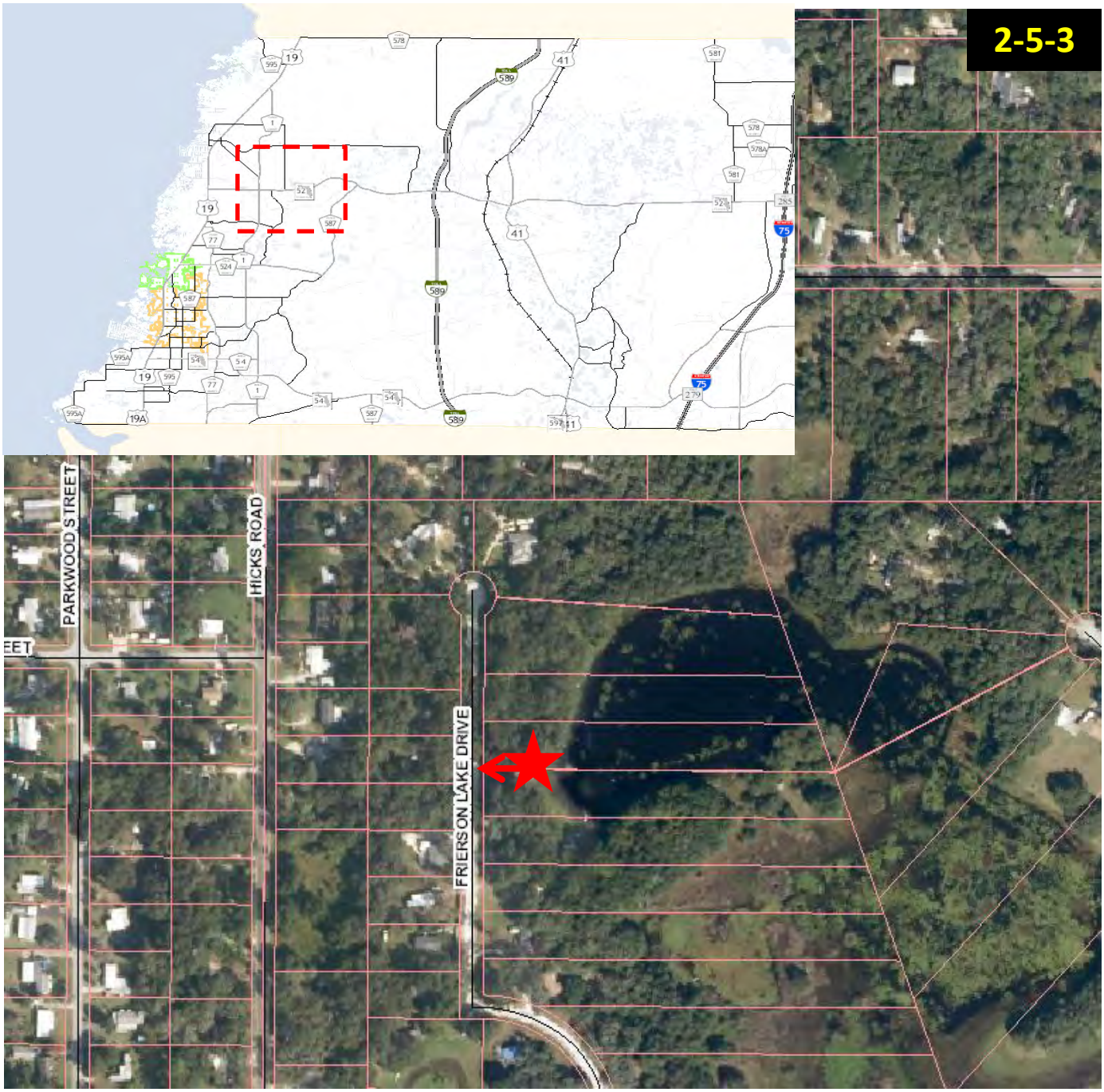
During heavy rain events, severe storms, tropical storms and hurricanes, pumps are temporarily set up to mitigate flooding or in an effort to prevent property damage. Pumps are often set up to draw down flood prone areas before or at the beginning of rain events. Some areas have PVC pipe installed for easy hook up for a pump. In many cases, areas that were previously pumped may or may not need to be pumped depending on the nature of the event. Rain impacts vary geographically throughout the County from year to year and from event to event. For this reason a historical record of pumping locations may save time and effort when determining temporary pump set up requirements.

This is the first attempt at a comprehensive list of all previous pumping locations. The information provided here should be updated at any time a new temporary pump location is identified. In the event an area has undergone drainage improvement or a flood causing issue has been resolved, the location should be removed from this section.

West Side Locations		East Side Locations	
Frierson Lake Dr	Lakewood Acres Sub	Rix Ln	Hickory Hill Acres Sub
Headsail Dr	Flor-A-Mar Sub	Yellow Perch Pl	Crystal Lake Sub
Timber Oaks(Golf Course)	Timber Oaks Sub	16th St	Cambridge Clark Estates
Ranch Rd and Ponderosa	Timber Oaks Sub	Sunshine Rd	Cunningham Estates
Elgin Dr	Timber Oaks Sub	Lost Lake	Zephyr Oaks
Rees at Springer	Pine Sub	Tammy Ln	Beverly Manor Estates
Rowan Rd	Magnolia Valley Sub	Carpenters Run	Carpenters Run Sub
Hilltop Dr (Yellow Lk)	Cranes Roost Sub	Ehren Cemetery Rd	LOL
Little Rd (Dollar General)	Cranes Roost Sub	Pump Station Rd	Jerome Road Sub
Youth Ln	Cranes Roost Sub		
Galen Wilson Blvd	Cranes Roost Sub		
Planters Ln	Cranes Roost Sub		
Scenic Dr	Jasmine Lakes Sub		
Mimosa Dr	Jasmine Lakes Sub		
Amadeus Dr	Jasmine Lakes Sub		
Pineapple Ln	Jasmine Lakes Sub		
Winston Dr Pond	Beacon Hill Sub		
Davenport Dr	Thousand Oaks Sub		
Little Rd (East)	Thousand Oaks Sub		
Little Rd (West)	Thousand Oaks Sub		
Mahaleb Dr/Persea Ct	Thousand Oaks Sub		

OTHER SUPPORTING SECTIONS:

1_2 Pre-Storm Maintenance Checklist
2_0 Pump Readiness and Deployment
2_2 Pumping Hard Piped Areas
2_4 Pump Tracking



Frierson Lake Dr.

Legend

Flow direction

Pump location

N

* See Pumping Hard Piped Areas

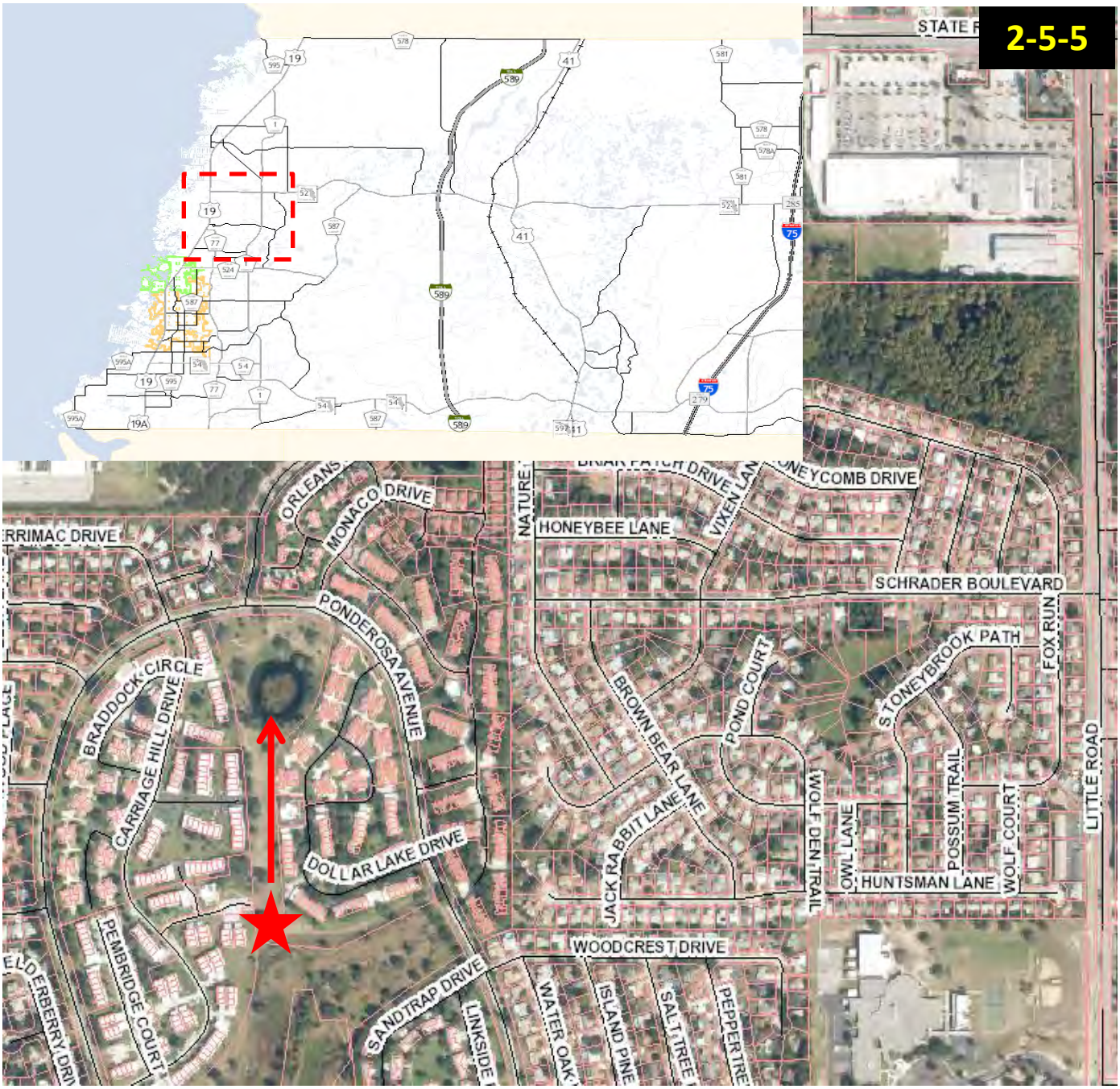
Headsail Dr.

Legend

Flow direction

Pump location

N



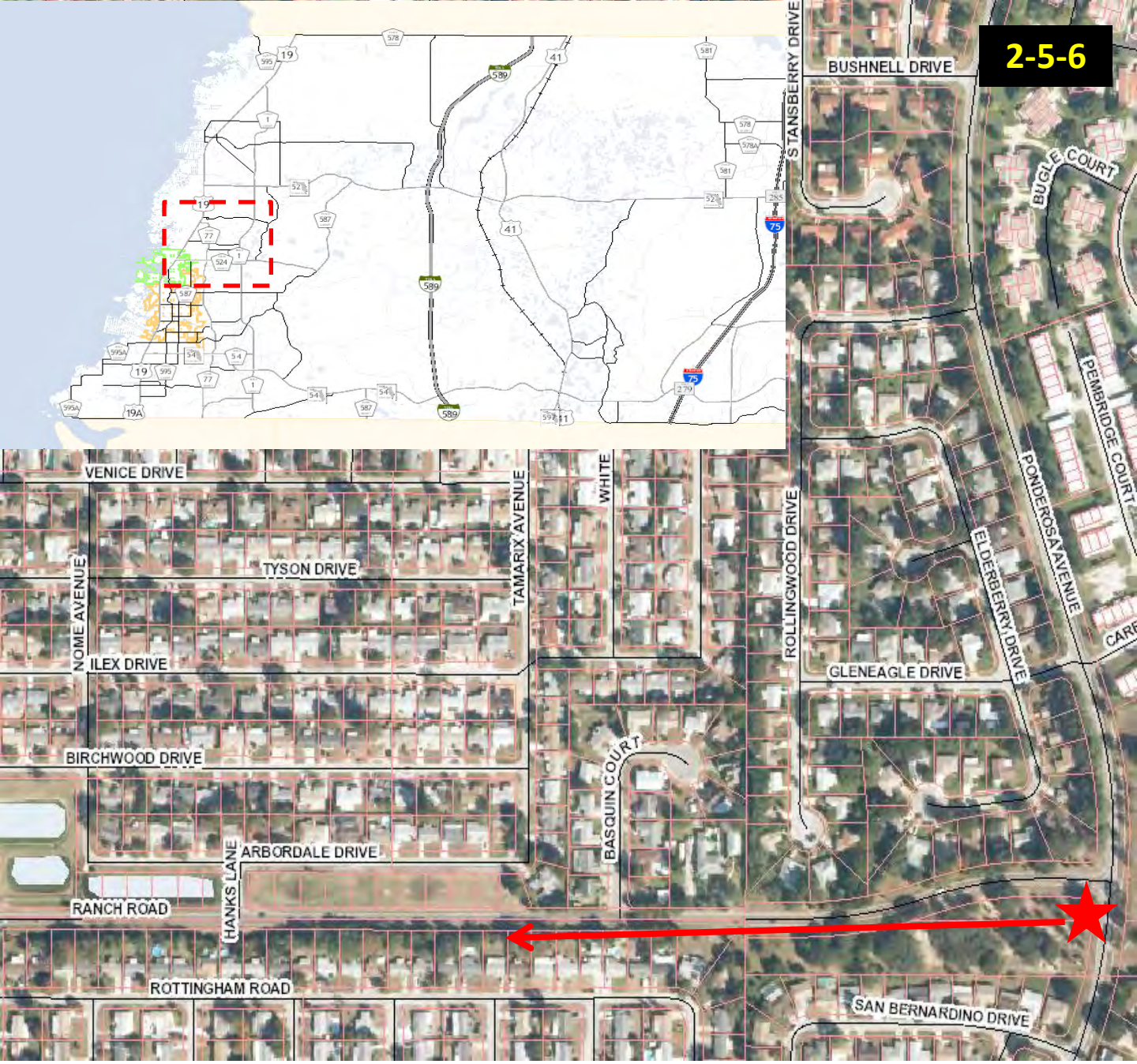
Timber Oaks

Legend

Flow direction

Pump location

N



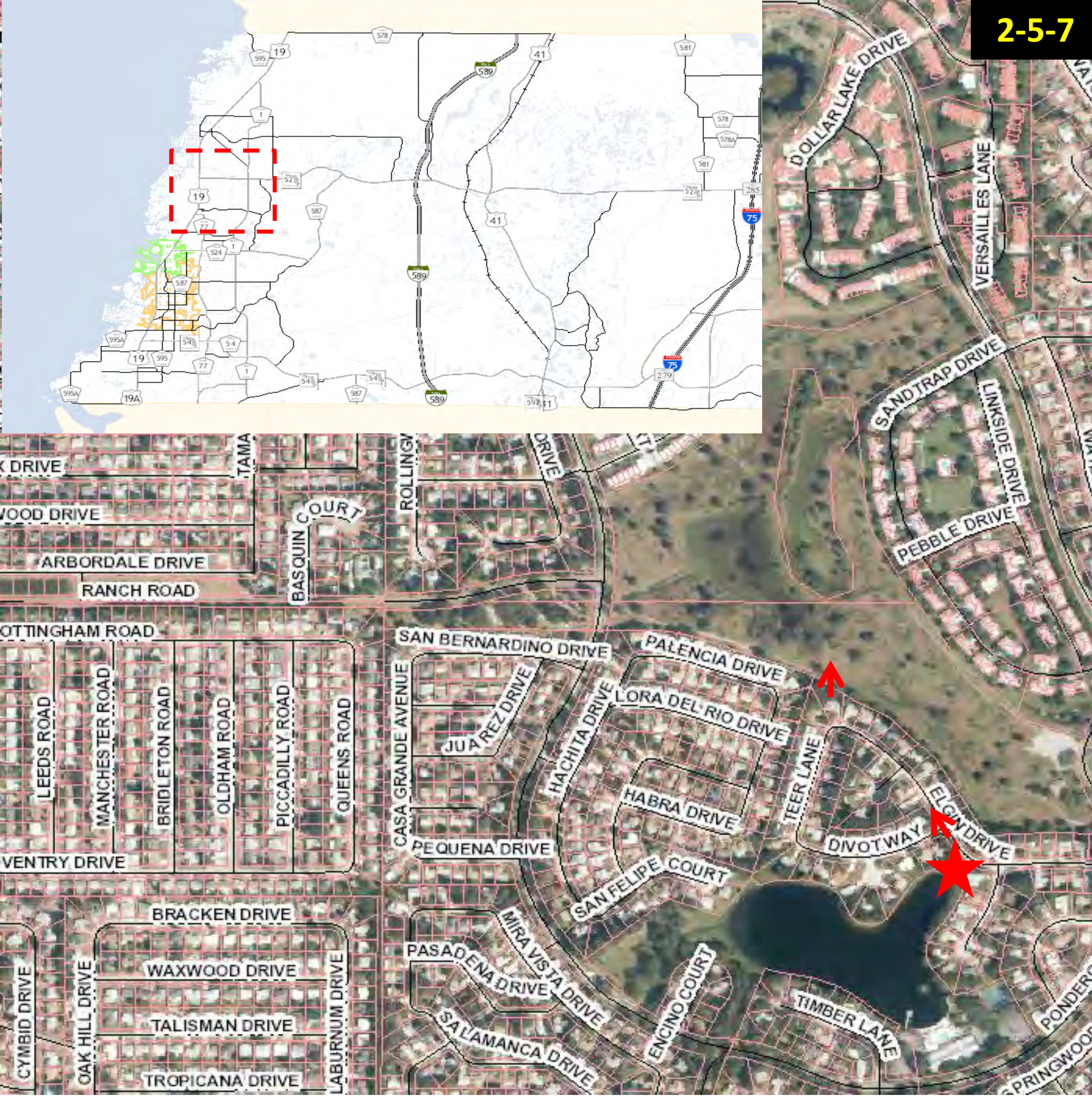
Ranch Rd and Ponderosa Ave

Legend

Flow direction

Pump location

N



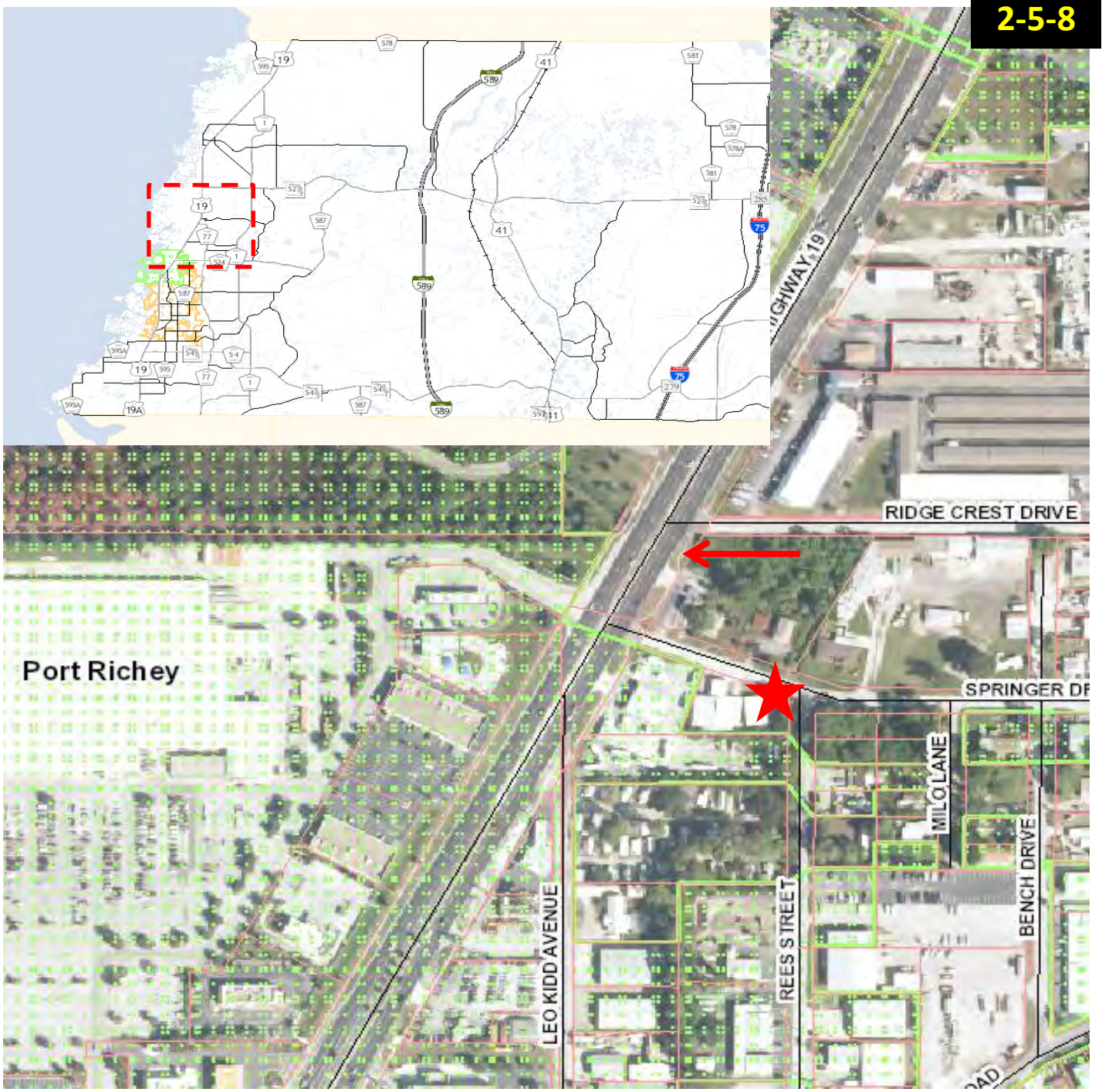
Elgin Dr.

Legend

Flow direction

Pump location

N



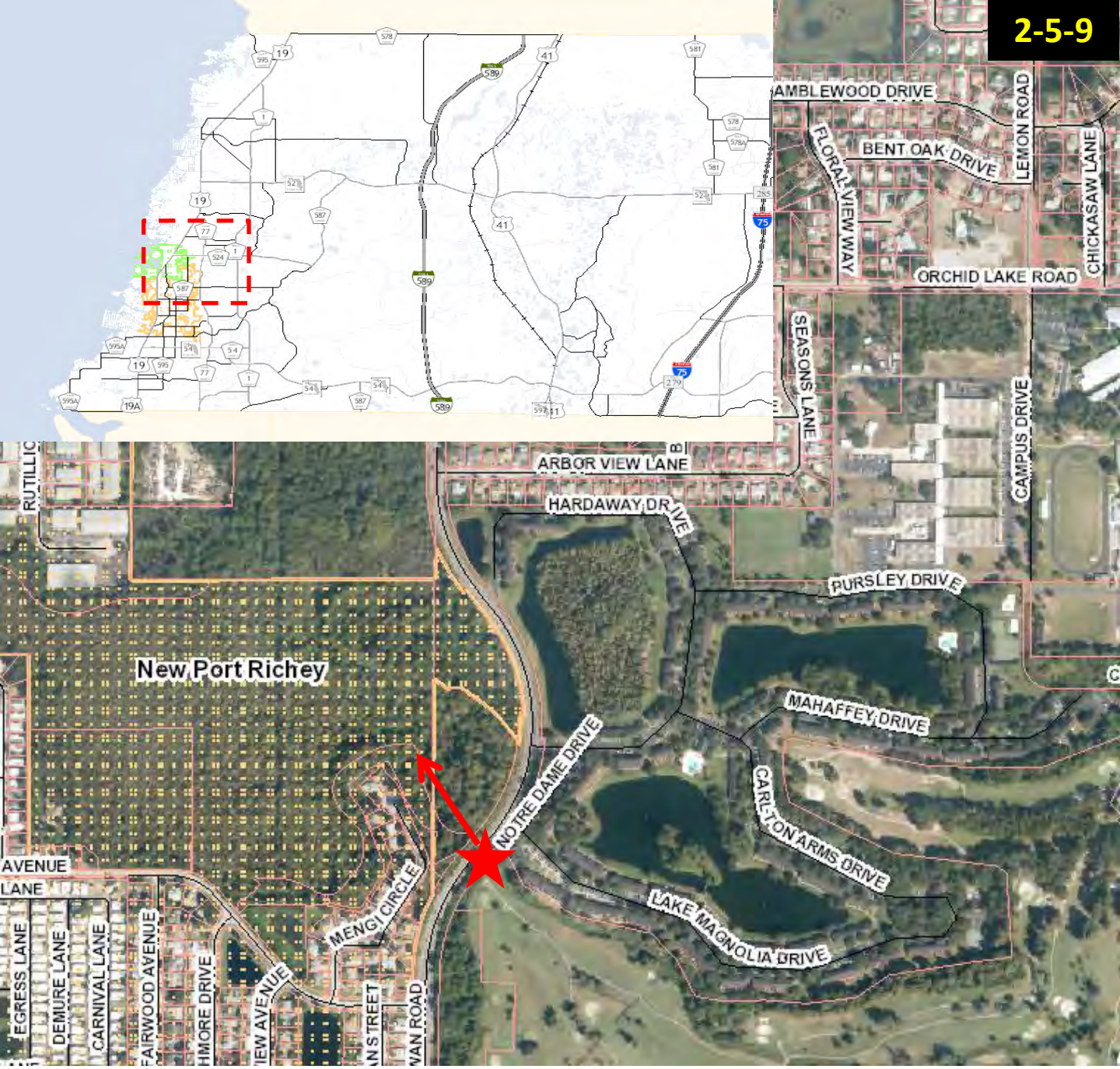
Rees at Springer

Legend

Flow direction

Pump location

N



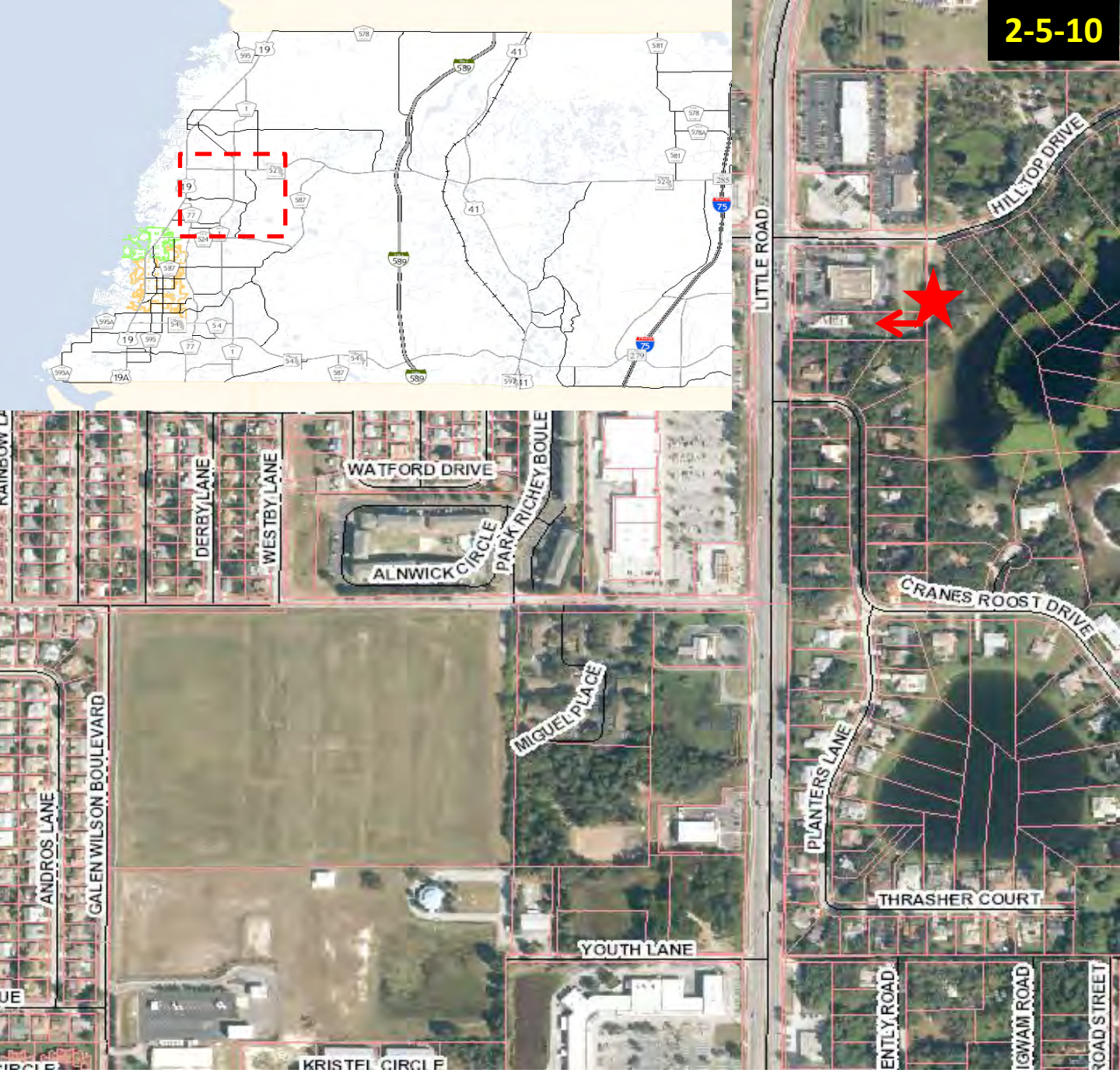
Rowan Rd

Legend

Flow direction

Pump location

N



Hilltop Dr.

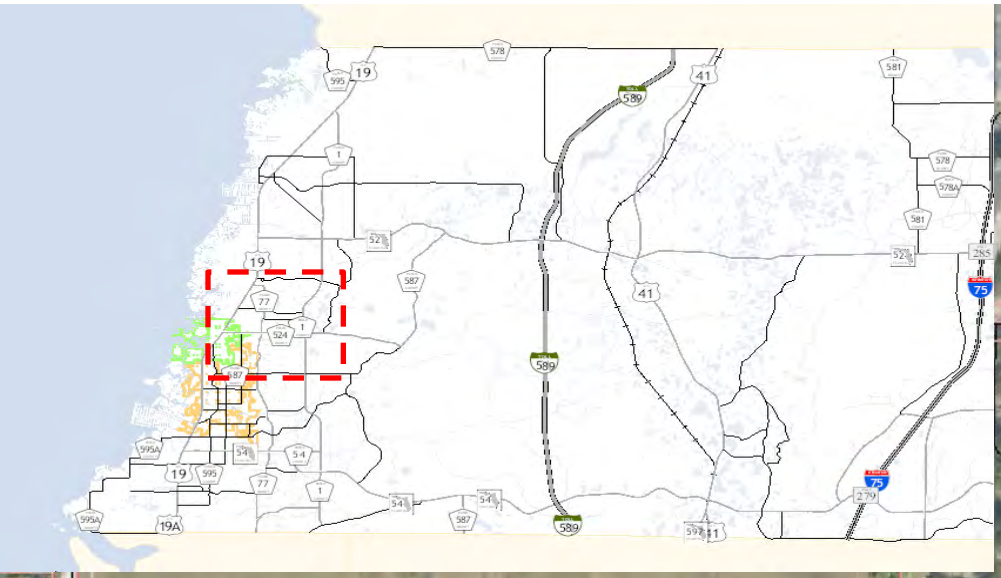
Legend

Flow direction

Pump location

N

2-5-11



Little Rd. 8859

Legend

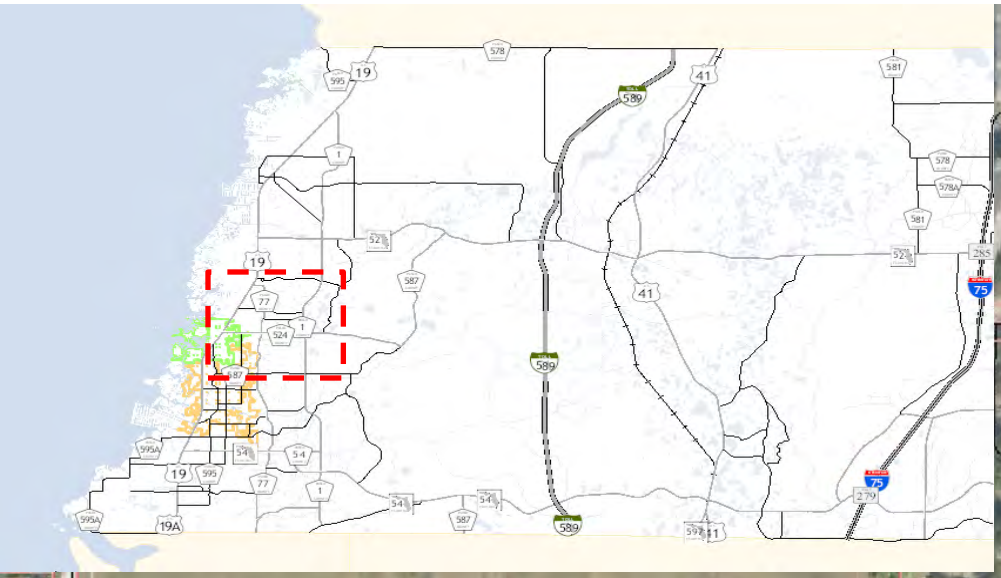
Flow direction

Pump location

N

* See Pumping Hard Piped Areas

2-5-12



Youth Ln.

Legend

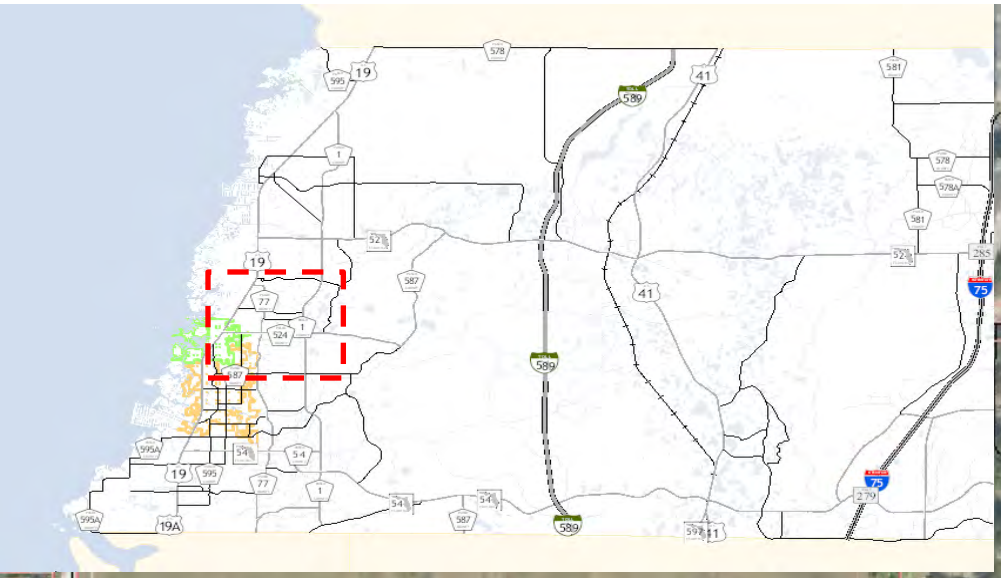
Flow direction

Pump location

N

* See Pumping Hard Piped Areas

2-5-13



Youth Ln.

Legend

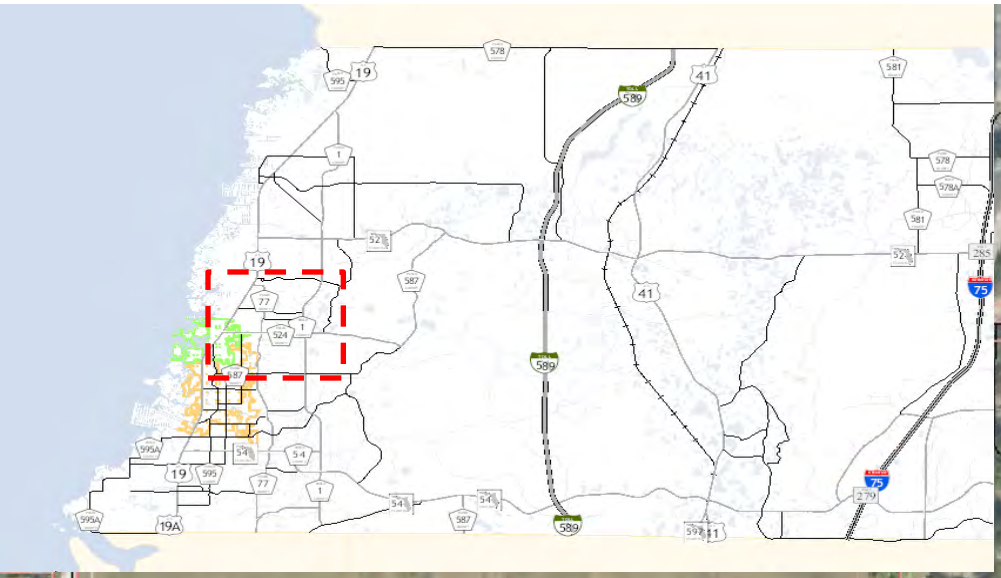
Flow direction

Pump location

N

* See Pumping Hard Piped Areas

2-5-14



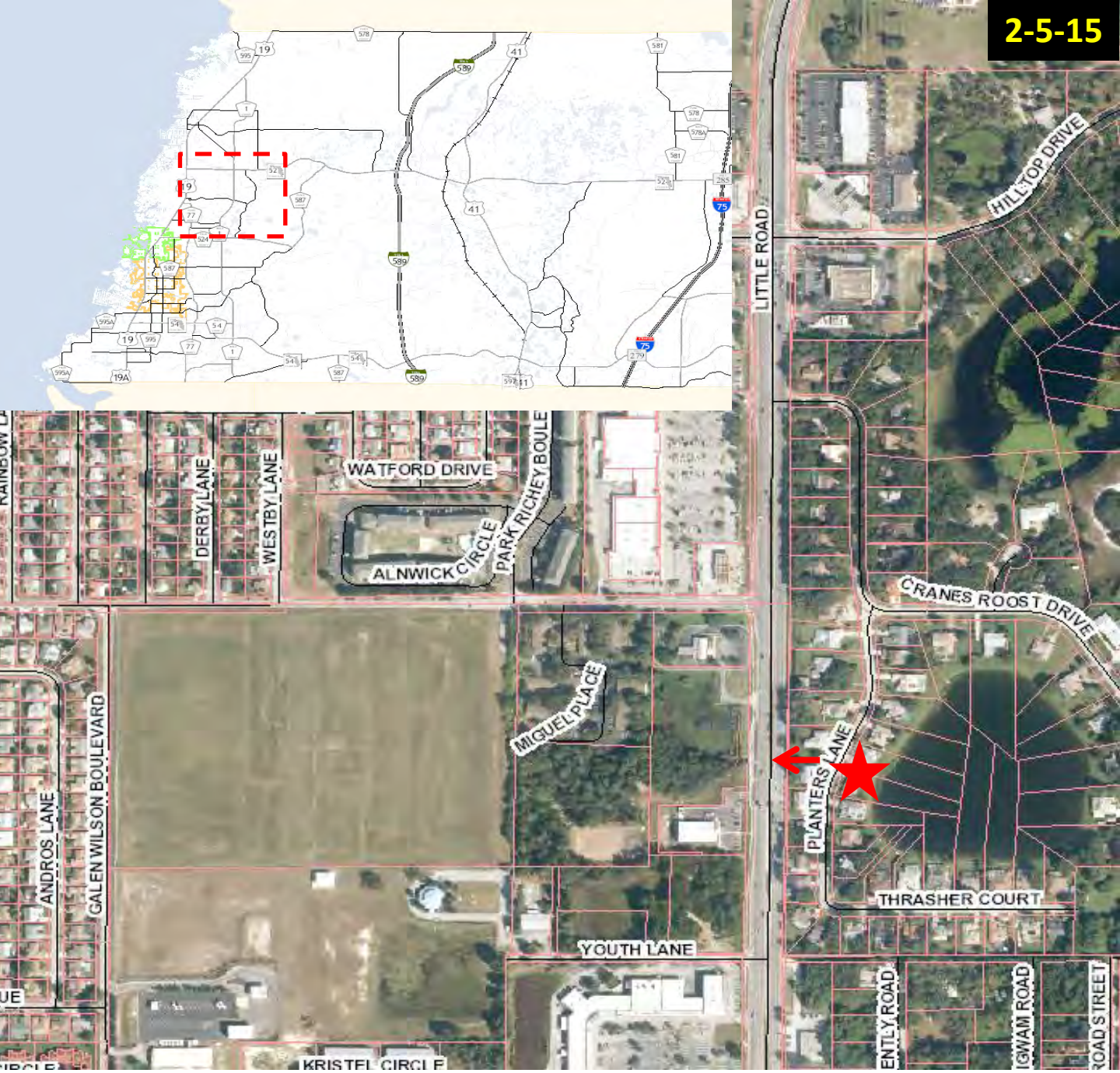
Galen Wilson Blvd.

Legend

Flow direction

Pump location

N



Planters Lane

Legend

Flow direction

Pump location

N

2-5-16

Scenic Drive

Legend

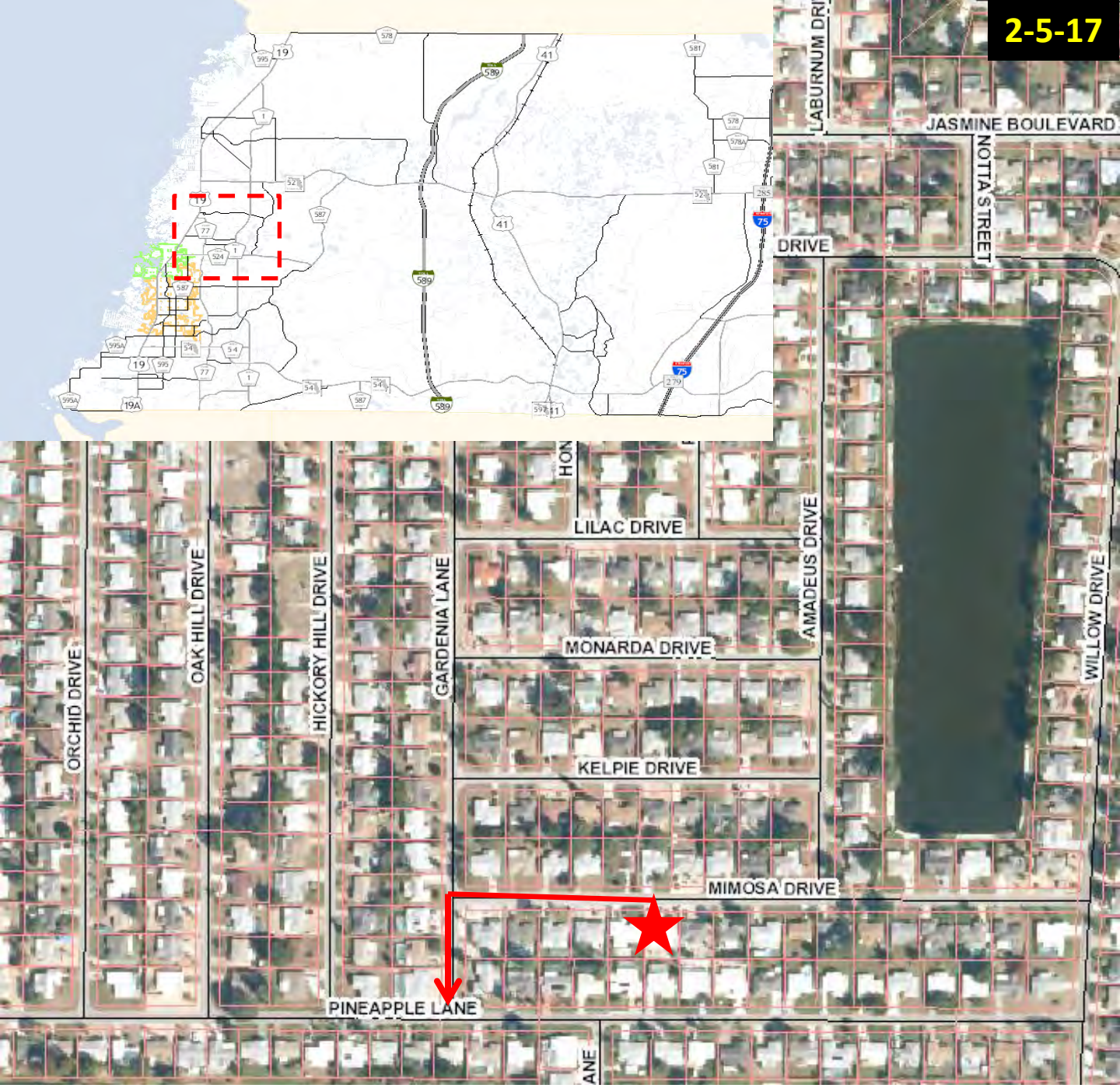
Flow direction

Pump location

N

* See Pumping Hard Piped Areas

2-5-17



Mimosa Dr

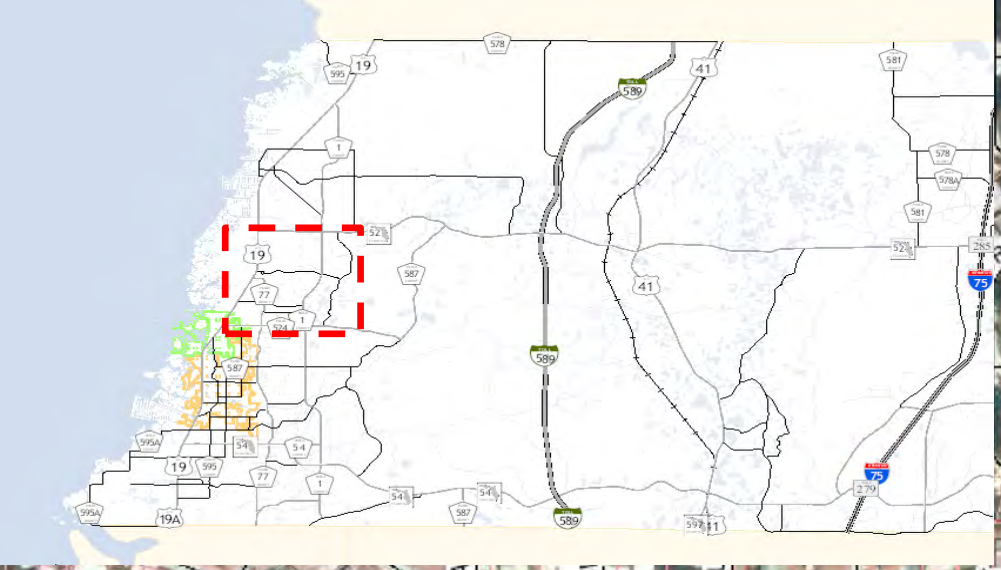
Legend

Flow direction

Pump location

N

2-5-18



Amadeus Dr.

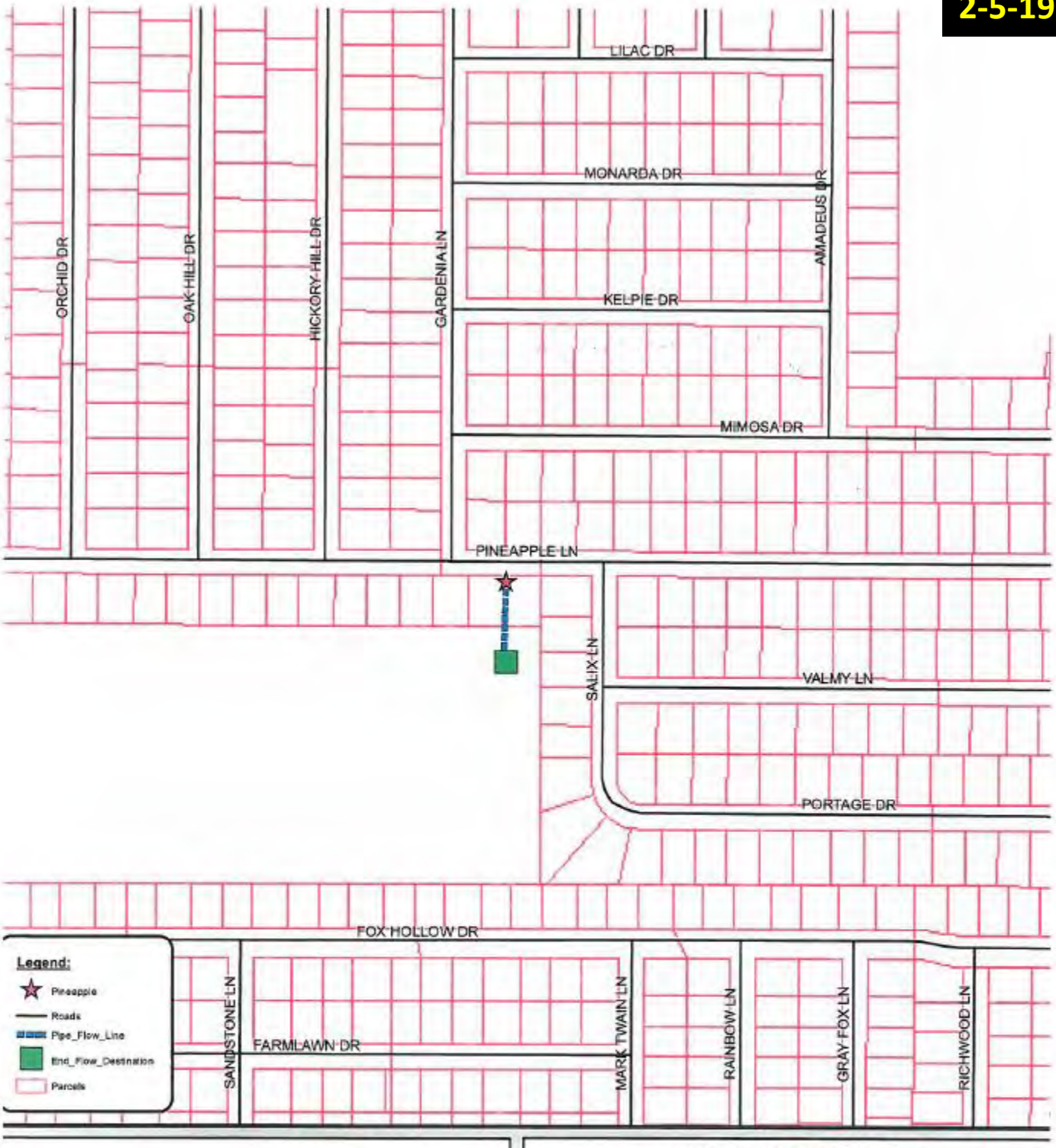
Legend

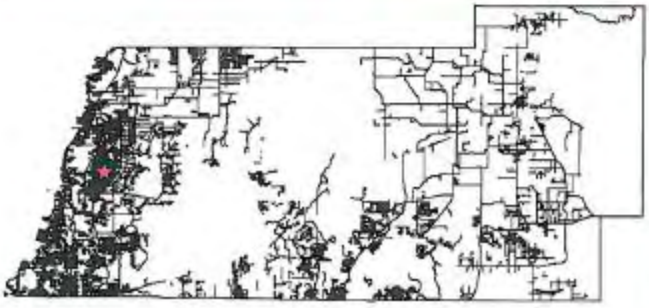
Flow direction

Pump location

N

2-5-19





PUMP LOCATION MAP

Location:
7814 Pineapple Lane
Port Richey, FL 34668

Field Authorization Number:
XXXXX

S.T.R.
Section: 15 Township: 25 Range: 16

N
W E
S

0 125 250 500 Feet

2-5-20

PUMP LOCATION MAP

Location:
Winston Dr & SR 54
New Port Richey, FL

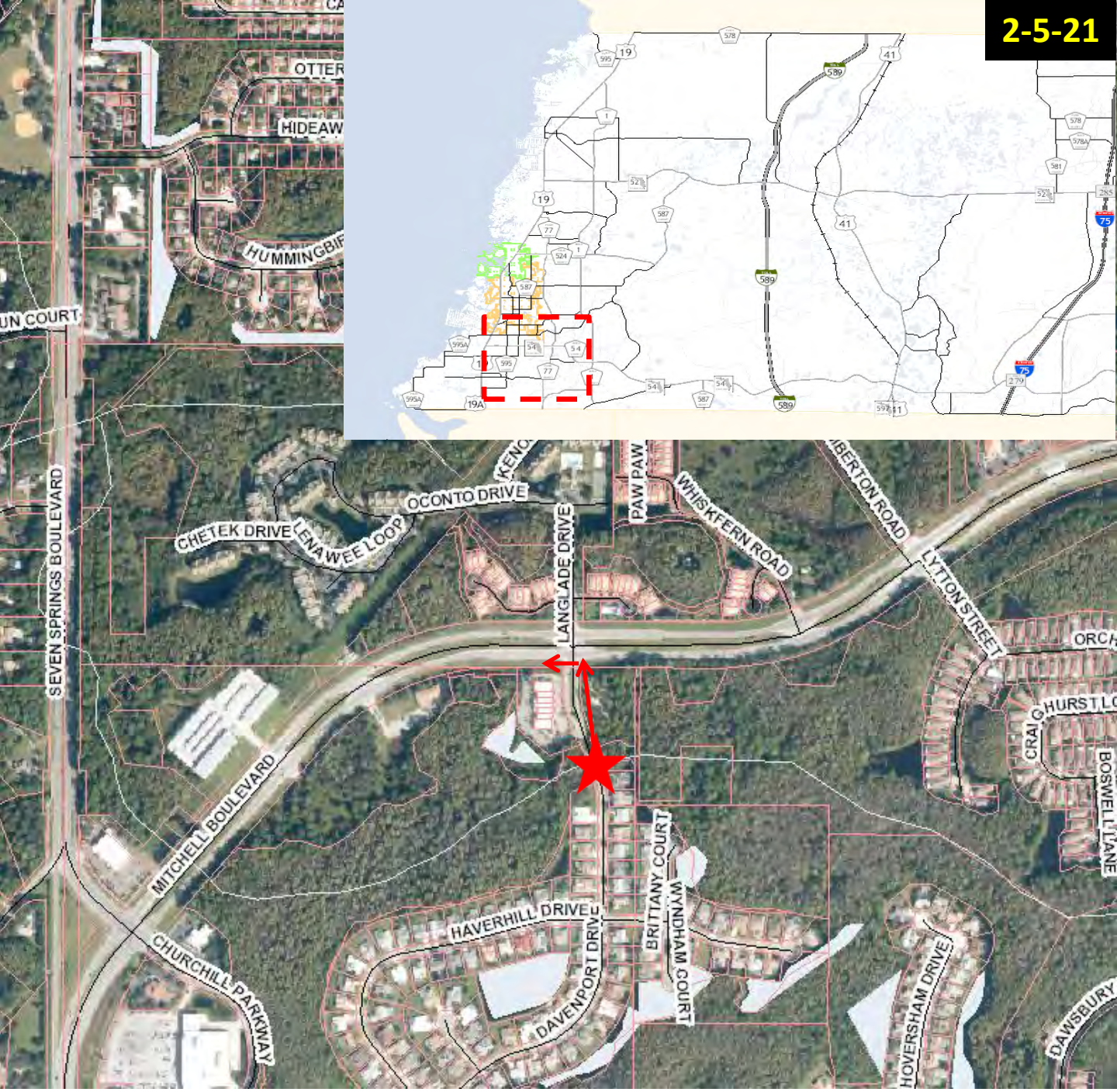
Field Authorization Number:
CT358712

S.T.R.
Section: 20 Township: 26 Range: 16

N W E S

0 0.035 0.07 0.14 Miles

* See Pumping Hard Piped Areas



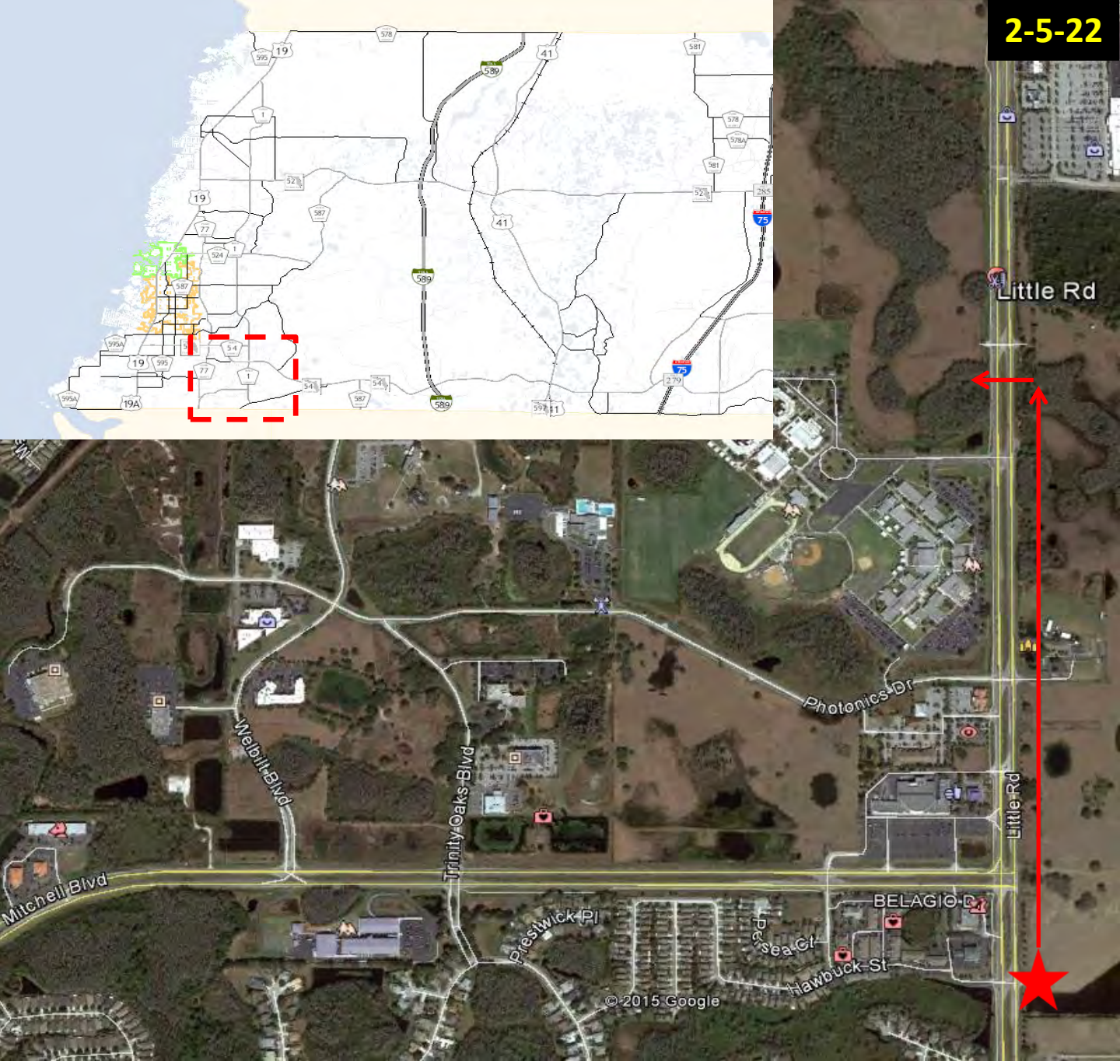
Davenport Dr.

Legend

Flow direction

Pump location

N



Little Rd. Thousand Oaks (2)

Legend

Flow direction

Pump location

N

* See Pumping Hard Piped Areas

2-5-23

Little Rd. Thousand Oaks (1)

Legend

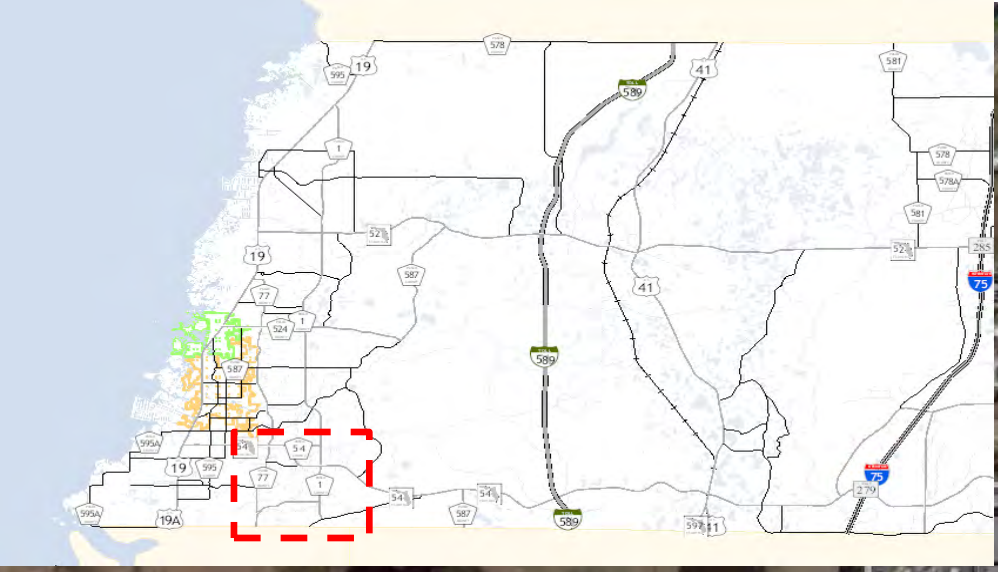
Flow direction

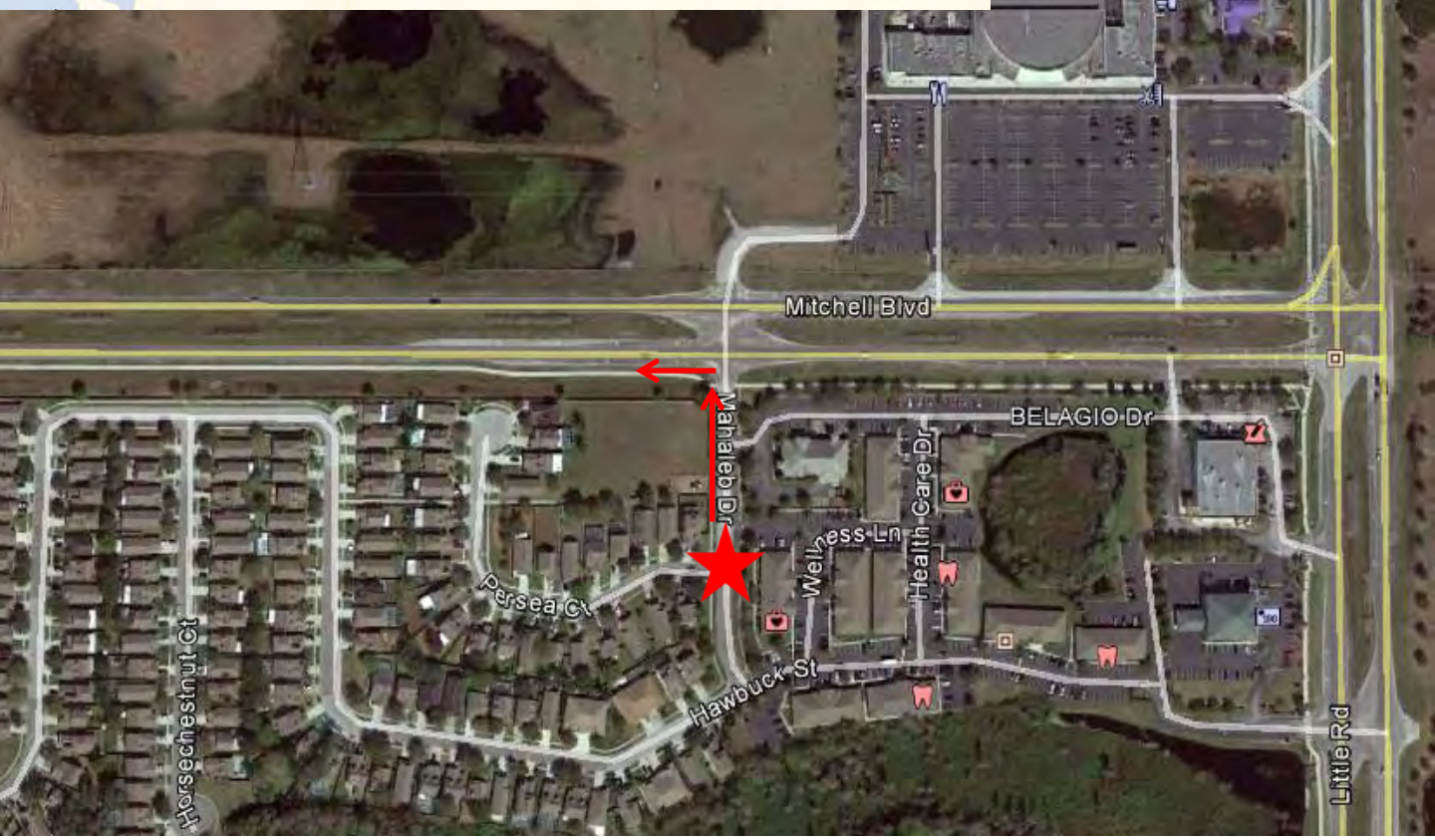
Pump location

N

* See Pumping Hard Piped Areas

2-5-24





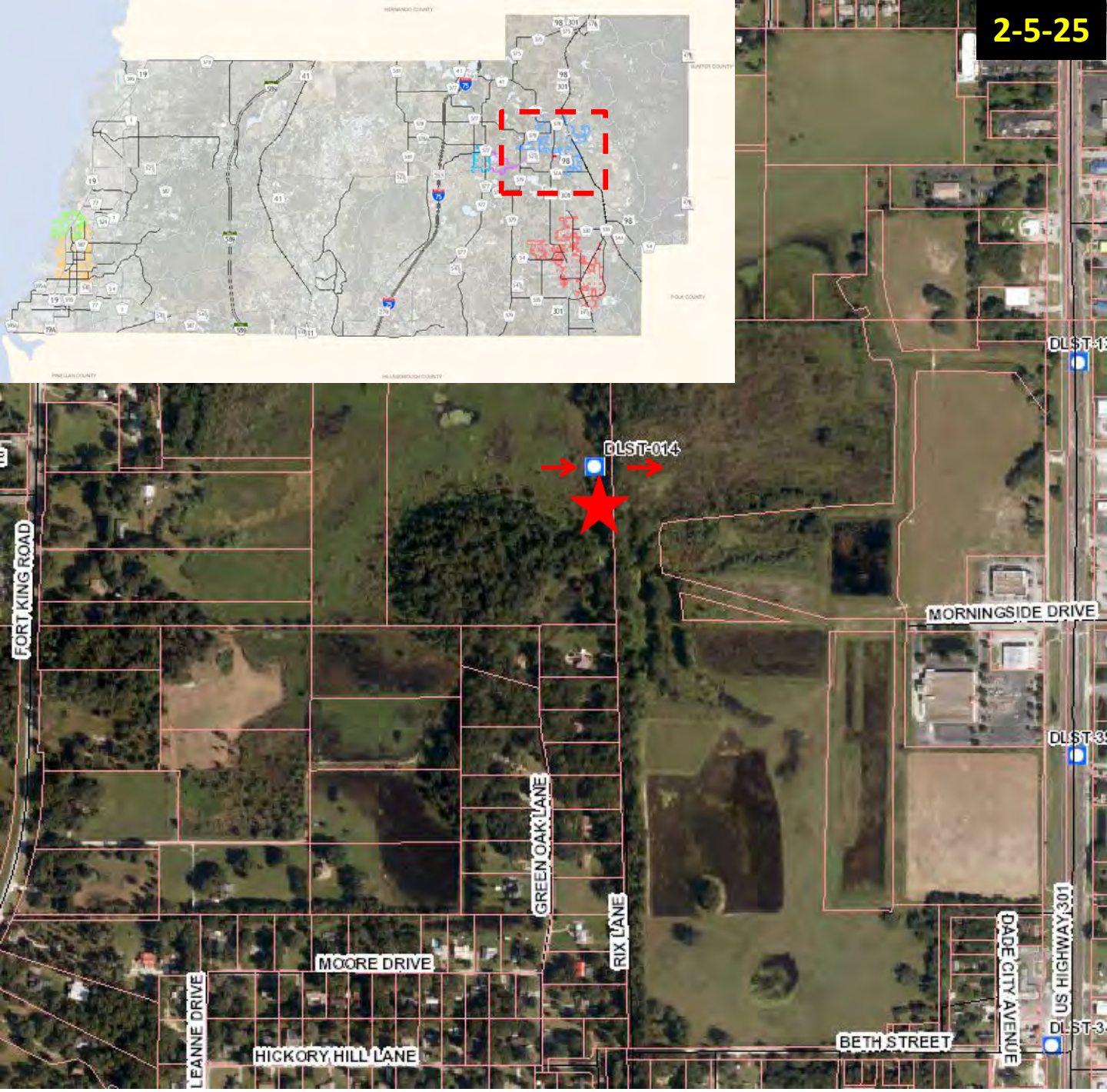
Mahaleb Dr. @ Persea Ct

Legend

Flow direction

Pump location

N



Rix Ln

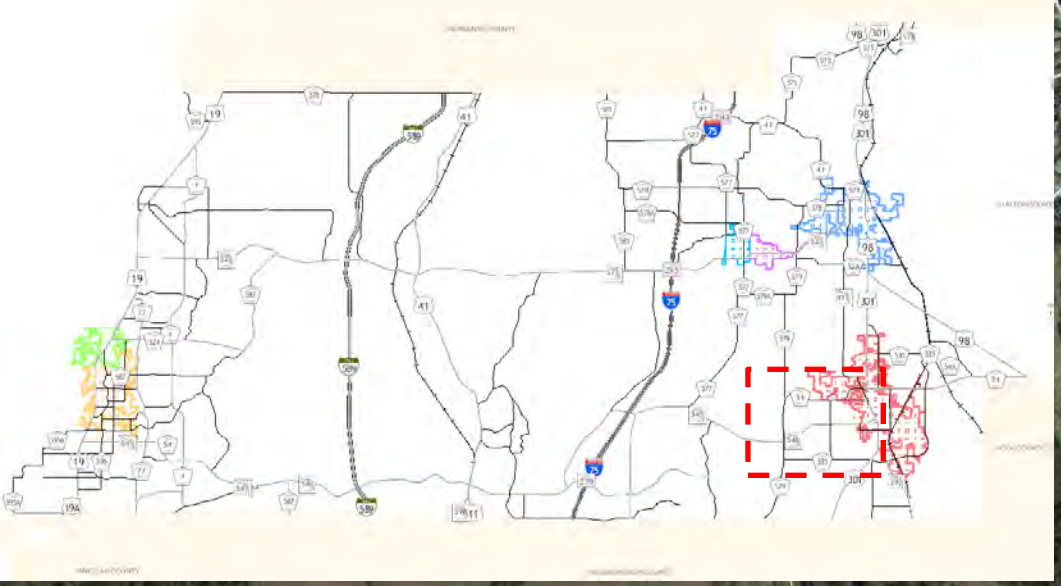
Legend

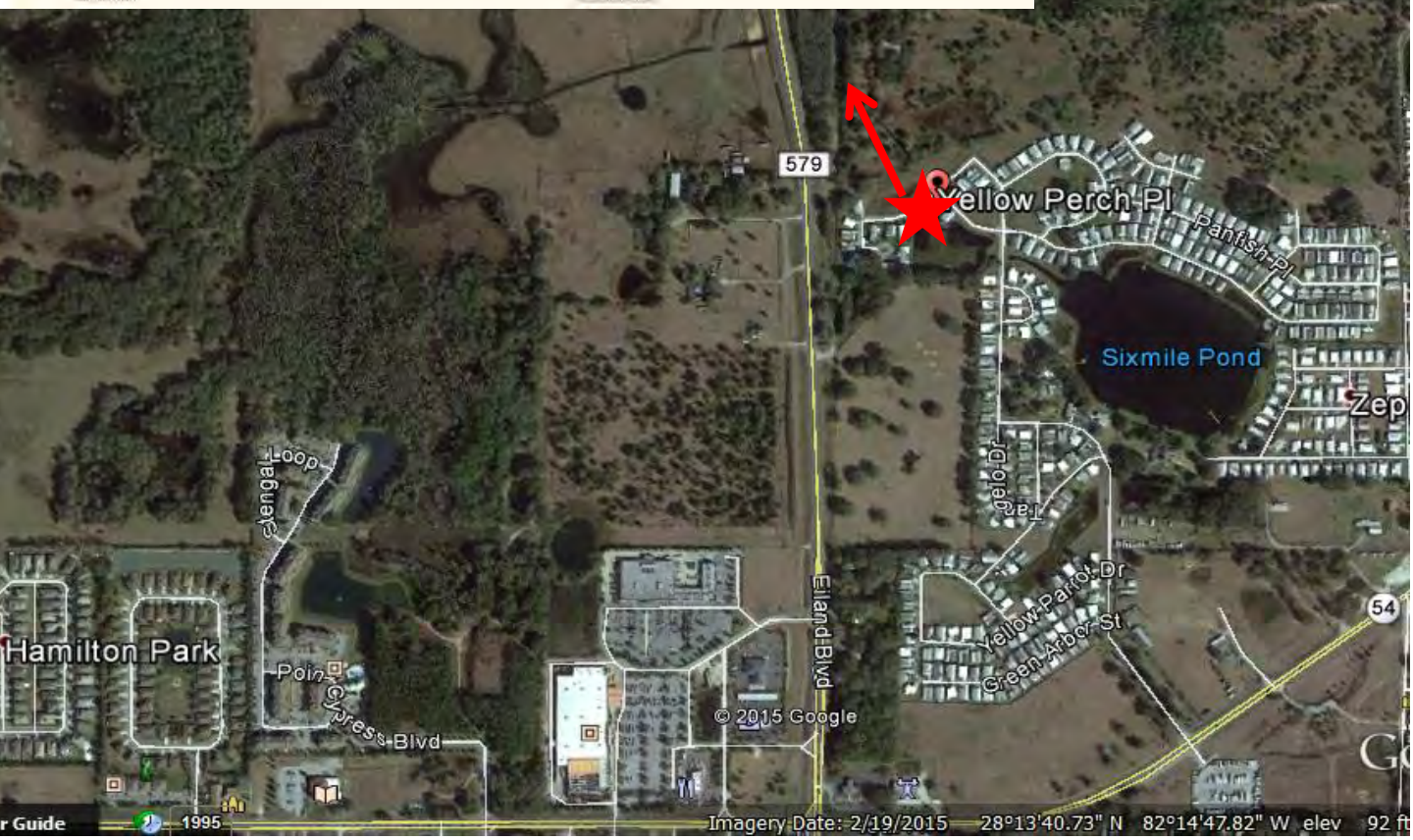
Flow direction

Pump location

N

2-5-26





Yellow Perch Pl.

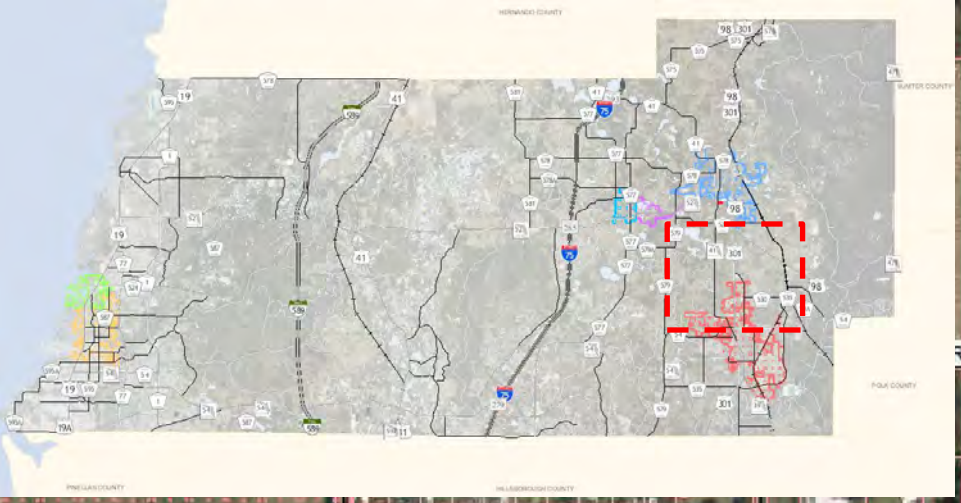
Legend

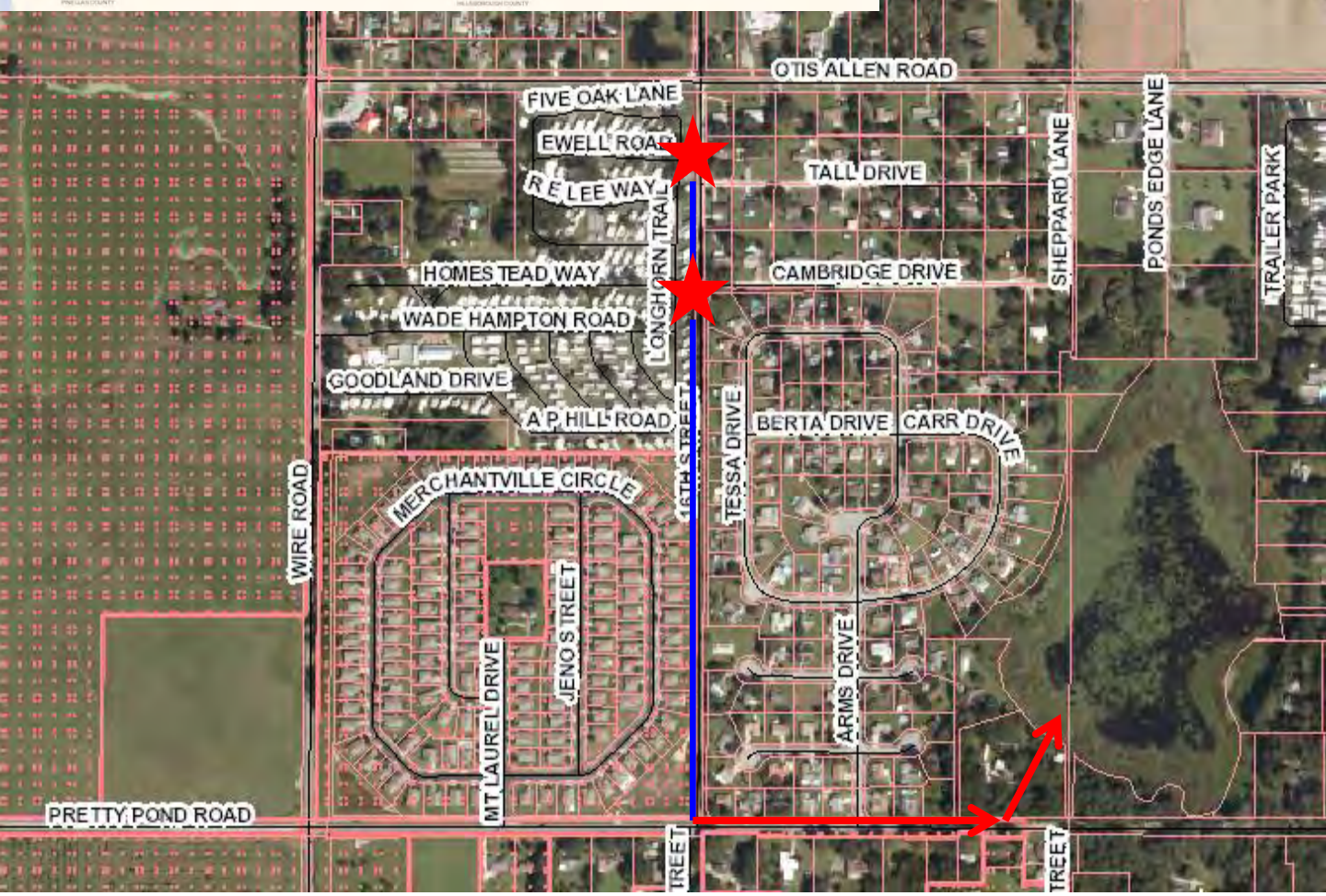
Flow direction

Pump location

N

2-5-27





16th St.

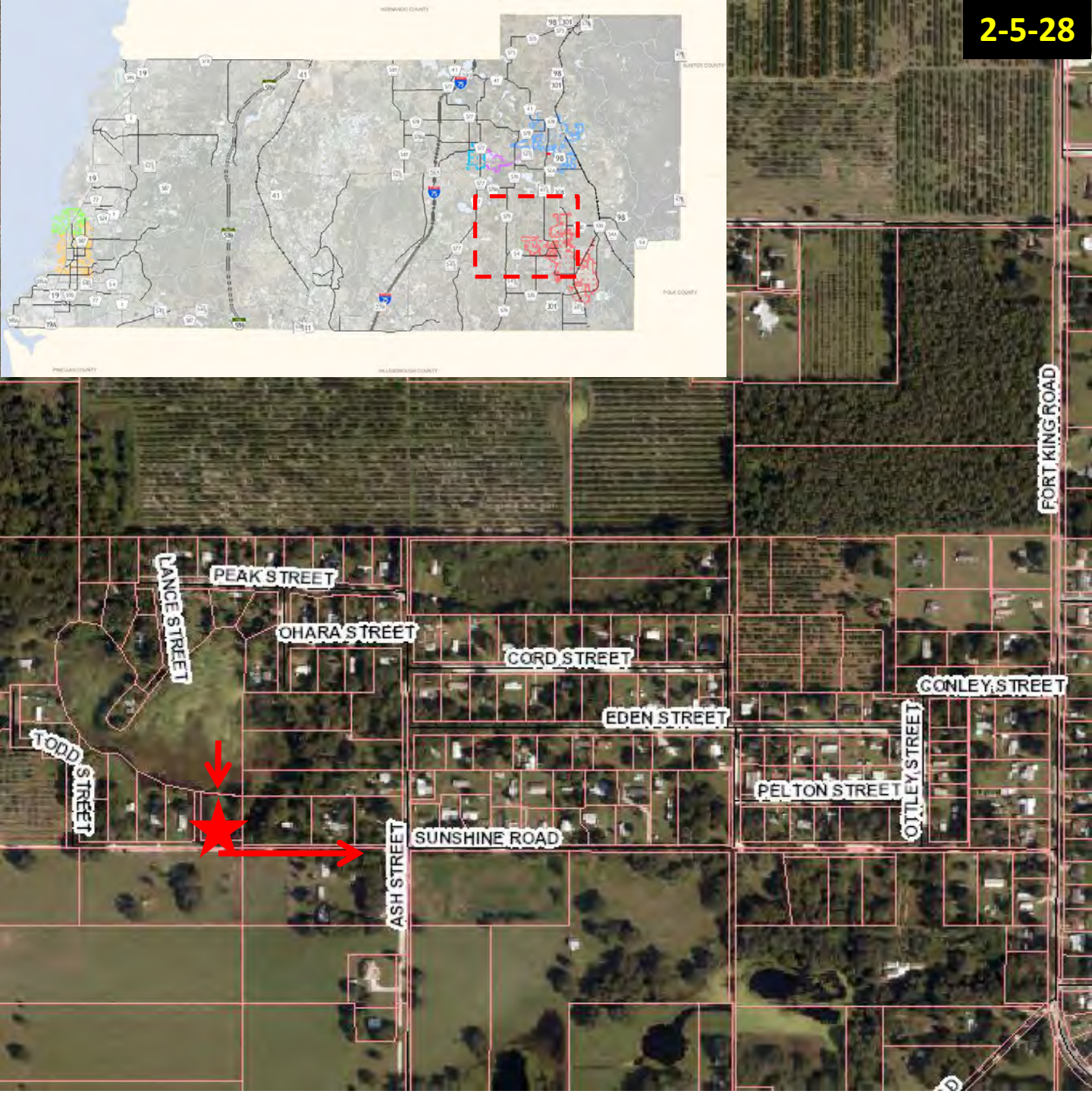
Legend

N

Flow Direction

Pump

Hose



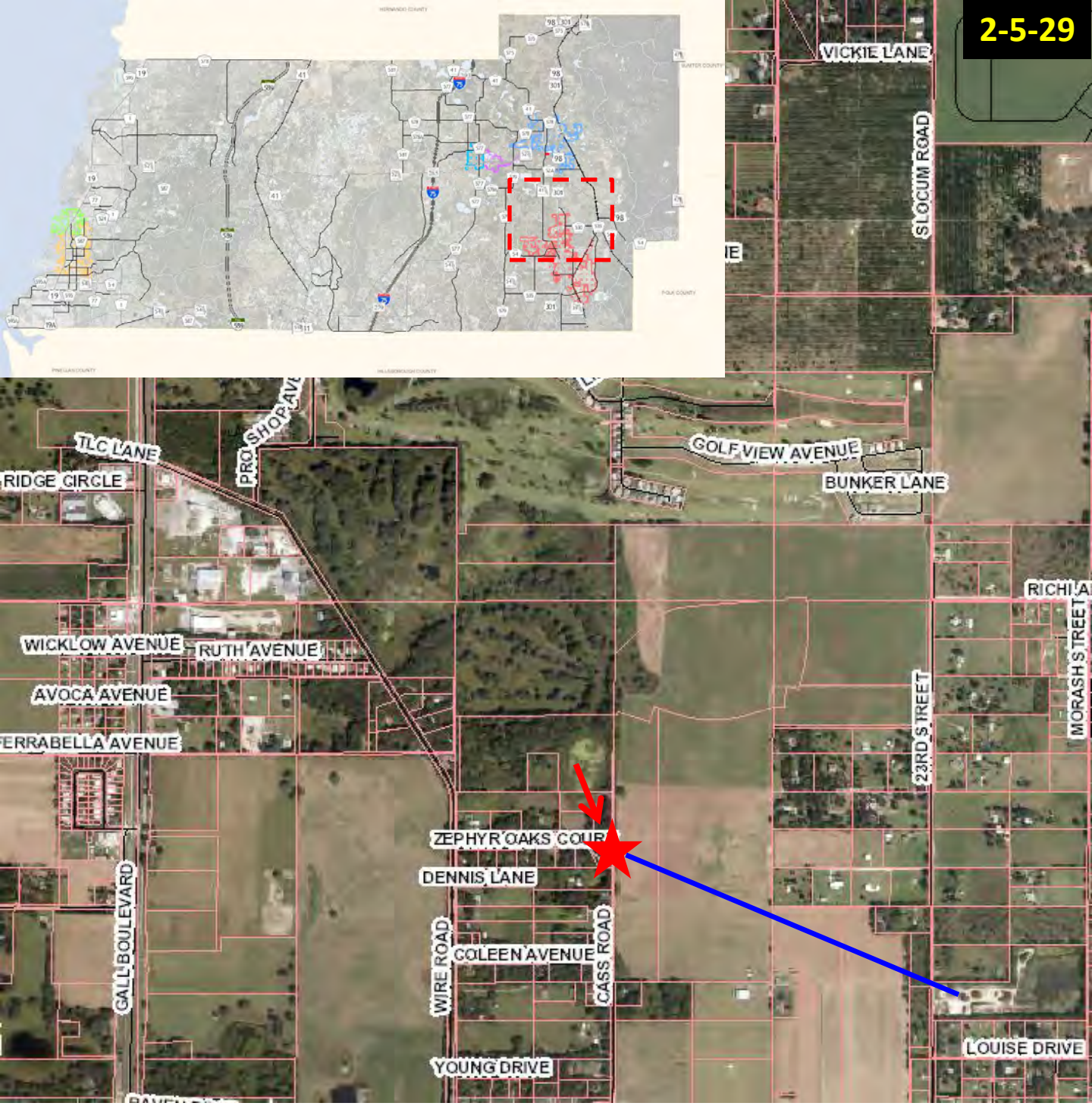
Sunshine Rd.

Legend

Flow direction

Pump location

N



Lost Lake

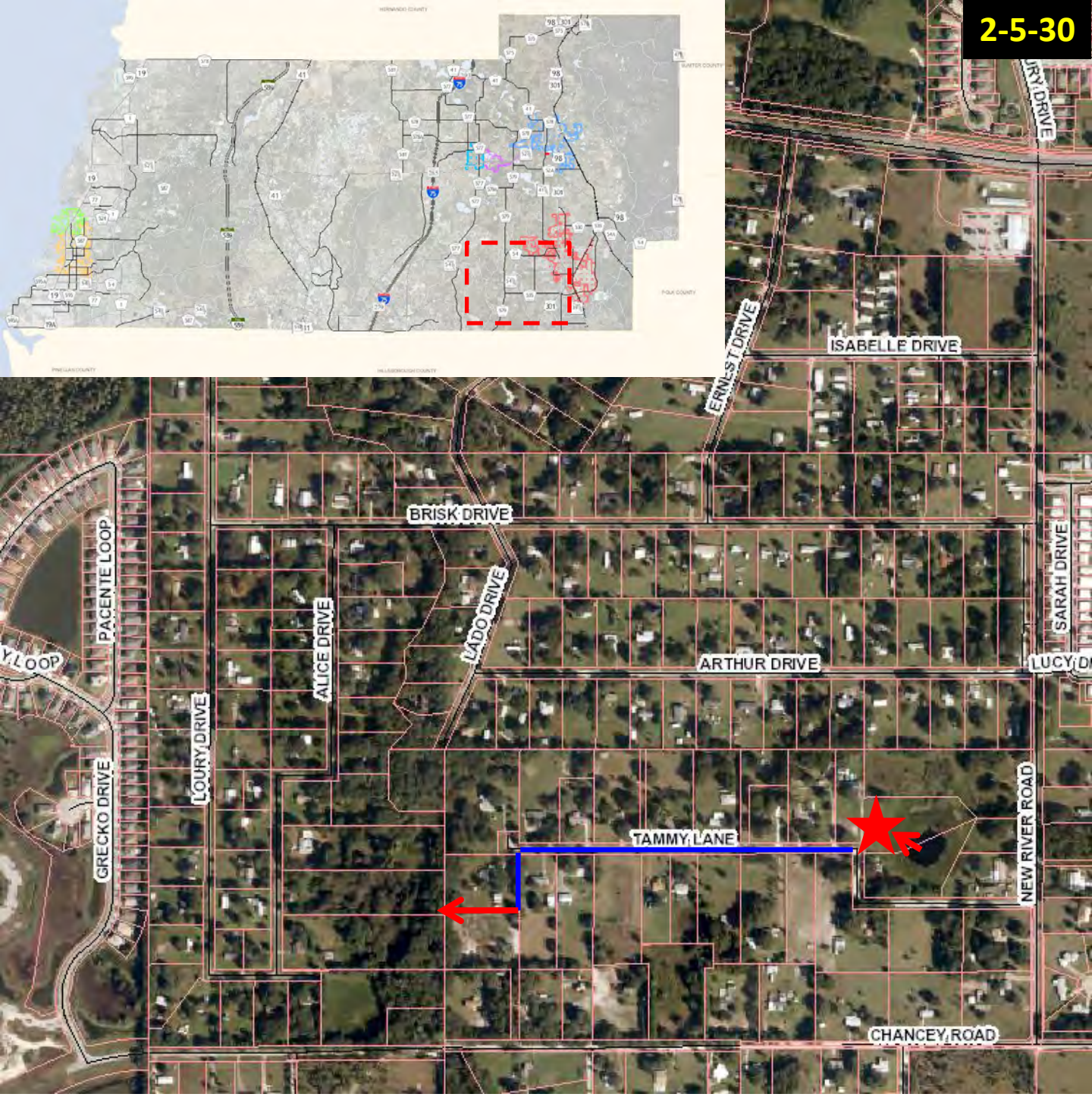
Legend

N

Flow Direction

Pump

Hose



Tammy Lane

Legend

N

Flow Direction

Pump

Hose

Carpenter's Run

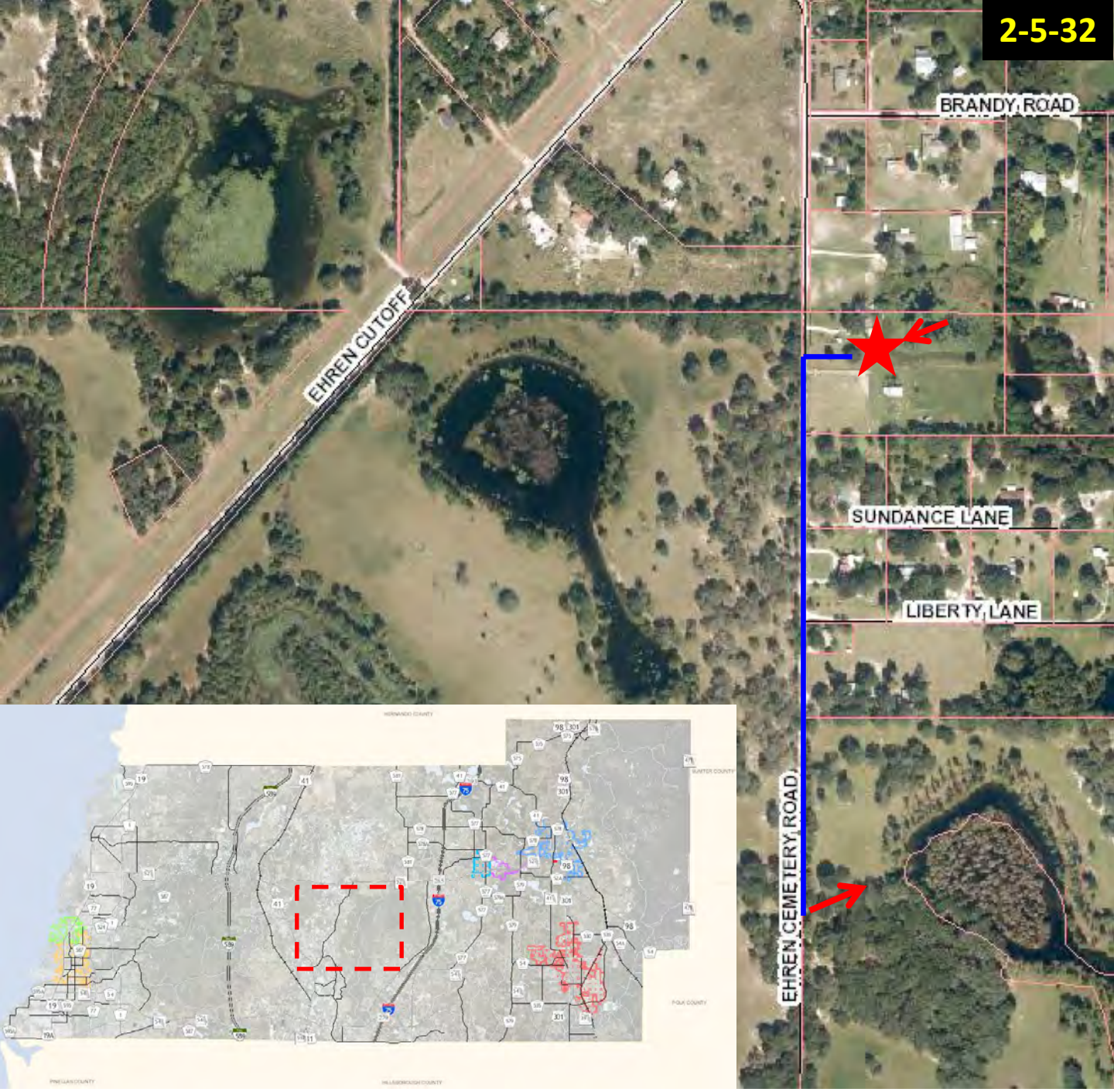
Legend

N

Flow Direction

Pump

Hose



Ehren Cemetery Rd

Legend

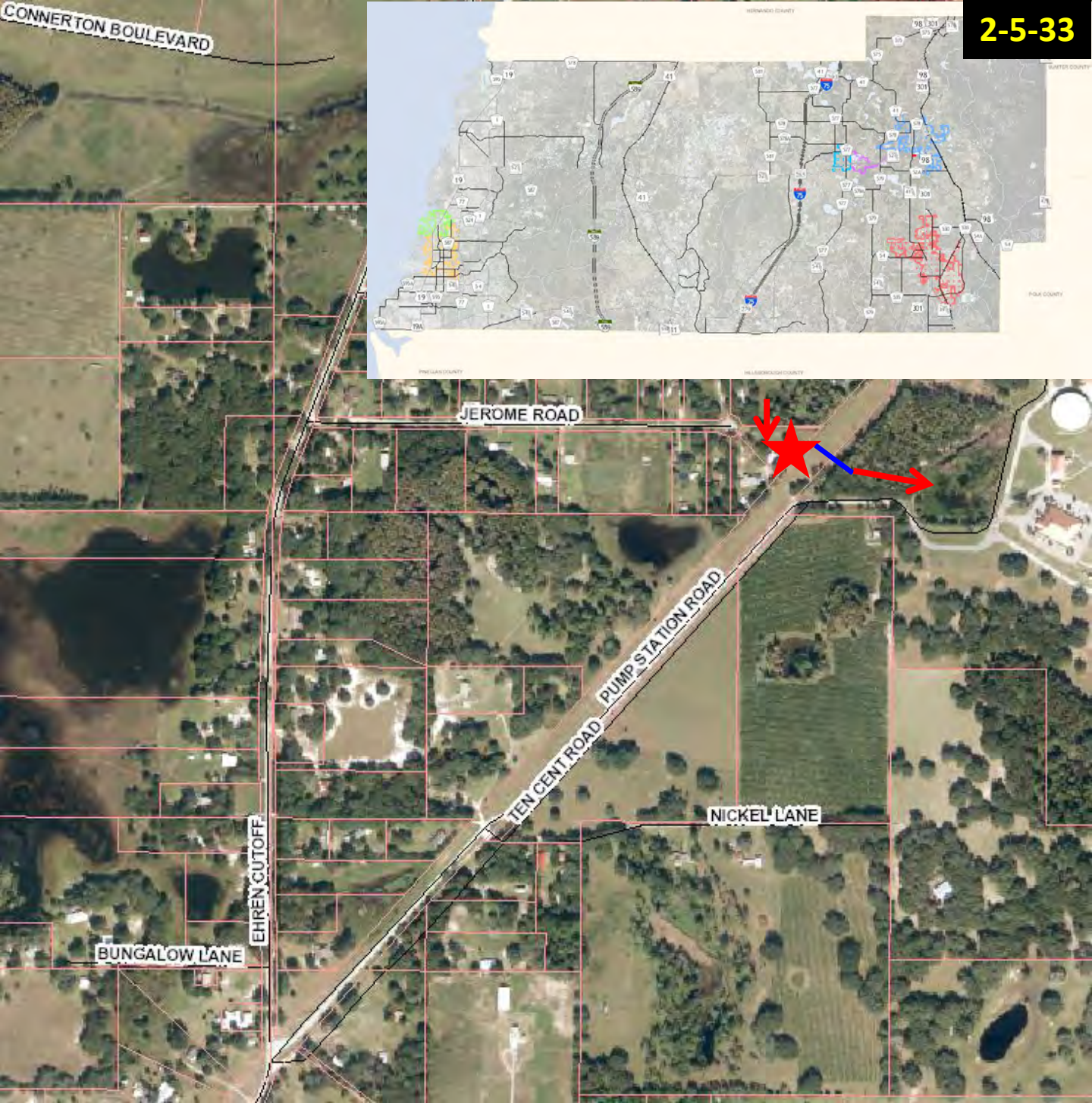
N

Flow Direction

Pump

Hose

2-5-33



Pump Station Rd

Legend

N

Flow Direction

Pump

Hose

Pasco County Public Works
Emergency Action Plan

Issued:	11/20/2015	Revised:		Reviewed:	
Abstract:	Gauges and markers require maintenance, gates are operated in accordance with permit requirements.				

FRESHWATER ELEVATION GAUGES, TIDAL MARKERS AND GATES

Freshwater Elevation Gauges, Tidal Markers and Gates are critical Stormwater assets that require routine maintenance and specifically assigned staff and resources before and during rain events.

Freshwater elevation gauges

The 29 Freshwater Gauges are placed at rivers, ponds and creeks in the various Watersheds throughout the County. They provide real time information of water elevations. Before, during and after rain events, Stormwater Inspectors record elevation readings from the gauges logging the information in a shared folder or directly to staff tasked with reporting to emergency operations staff or Administration. This is a planned incident task requiring two to four Inspectors and is integral to emergency response or elevated flood monitoring situations.

There are 18 gauges on the West Side of the County and 11 on the East. Year-round maintenance to clear vegetation and make sure the face of the gauges are legible is required. Each Field Supervisor is responsible for assigning staff to ensure these gauges are clearly visible, within their jurisdiction.

During the month of May, a comprehensive inspection of each Freshwater Elevation Gauge is required and any upgrade or maintenance performed before June 1.

Tidal Markers

There are nine Tidal Markers installed along the coast to monitor tide levels in the event of potential coastal flooding. These markers are specifically maintained by Sign Shop staff in the same manner that the Freshwater Gauges are maintained. During events that present potential coastal flooding, Sign Shop staff routes the markers logging elevation readings and reporting to PW Administration staff via 800 MHz radios. The information is logged into WebEOC and/or directly to emergency operations staff and Administration.

Tidal Marker monitoring is a planned incident task requiring two to four Sign Shop personnel and is integral to emergency response or elevated flood monitoring situations.

During the month of May, a comprehensive inspection of each Tidal Marker is required and any upgrade or maintenance performed before June 1.

Gates

There are four areas within the County that have gates or gate systems installed. Gates are normally closed as this holds back water in wetlands keeping them charged. When a rain event is imminent, these gates may be opened to help avoid upstream flooding. However, opening gates may only take place in accordance with SWFWMD permit conditions. Single gates are installed at the north end of Lake Conley at Gulf Trace and in the Carpenter’s Run Subdivision. Duck Slough and Rocky Sink are two multi-gate systems.

Water from Lake Conley is held back by a mechanical gate which also has a fish gate affixed to the structure to prevent fish from being depleted from the lake. The Carpenter's Run gate is installed within an outflow culvert structure as the drainage system flows out of the subdivision into FDOT ROW and eventually Cypress Creek. These two systems require monitoring and are opened ahead of a forecast rain event. FDOT requires notification when the Carpenter's Run drainage system is discharged.

Permit conditions of the Duck Slough and Rocky Sink systems require levels to reach certain elevations at various points in the system dictating sequence and opening or closing of individual gates. These gate systems have elevation gauges in the vicinity of each gate. On a daily basis Stormwater Inspectors record the elevations of all gauges in these systems daily and report by email to Administration and all relevant Stormwater staff. Before, during and after a rain event, the opening and closing of gates shall be the responsibility of the Stormwater Inspections staff, under the direction of Stormwater's Chief Project Manager, in accordance with permit conditions. If necessary, Stormwater Inspections staff may require assistance from Drainage Crew personnel and exerciser equipment.

Periodic routine maintenance is performed on gate structures by Drainage Crew staff, either east or west depending on jurisdiction (only the Carpenter's Run gate is in the east Jurisdiction). Maintenance includes clearing any debris in and around the structure flow and greasing and "exercising" the gates by running them open and closed. Special consideration for structure maintenance before a forecast event is not necessary because the periodic maintenance routinely keeps these structures operating correctly. However, the waterways shall be inspected frequently to ensure the structures are clear of obstruction with unimpeded flow.

Note:
As part of this draft, there should be discussion about the numbering of all Freshwater Elevation Gauges. These gauges and the gauges stationed at the gates are not continuous or related to each other. The numbering of gauges should be discussed to come up with a less cumbersome and more continuum.

Pasco County Public Works
Emergency Action Plan

Issued:	11/20/2015	Revised:	5/4/2016	Reviewed:	
Abstract:	Barricades and Portable Changeable message signs have predetermined inventory levels as well as approved annual award vendors for rental				

BARRICADES AND PORTABLE CHANGEABLE MESSAGE SIGNS

Barricades and Portable Changeable Message Signs are owned and rented resources of critical need during rain events and hurricanes. Proactively assuring that our inventory of owned equipment is at functional and determined levels and that an approved vendor for rentals is "on-board" pre-event, will determine our success of having these resources available when needed.

Public Works Barricade on-hand inventory requirements:

Type II – 600

Stormwater inventory, East and West shall include **200 each side**.

E/W Drainage Labor Supervisor II – responsible for inventory, storage and condition.

Road and Bridge inventory shall include **100 each side.**

East Mowing Labor Supervisor II – responsible for inventory, storage and condition.

West Landscape Labor Supervisor II – responsible for inventory, storage and condition.

Type III - 20

Road and Bridge inventory shall include **20 for all of Public Works**.

Sign Shop Labor Supervisor II – responsible for inventory, storage and condition.

The supervisors responsible for Public Works barricades shall quarterly review their inventory for quantity and condition including a deployment record. Unless quantities on-hand reach less than 50%, purchasing new barricades is done once annually. Purchasing barricades requires a specification (existing) and purchase by Request for Quote (RFQ) through the Purchasing Department. The RFQ needs to be coordinated division wide with Accounting staff and through the Field Supervisor. Purchased barricades are purchased without lights and batteries as these are part of an annual award through Central Stores. Before barricade inventories are finalized for purchasing quotas, damaged lights and spent batteries need to be accounted for and added to light and battery purchases.

Inventories stated must be on hand June 1 annually. The purchase requests for lights and batteries through Central Stores and the barricades through Purchasing, shall be completed by April 1 annually.

Rental Barricades

Approved vendors of our Annual Award for barricade rental are required by contract to supply barricades within 48 hours. Administration shall decide at the onset of a forecast incident when and if barricades will be ordered.

The Annual Award for Type II and III barricades and barrels (IFB-RT-14-175), runs through 9/30/2016. The renewal will be solicited in the spring/summer of 2016 for an award that will begin 10/01/2016. Bob's Barricades is currently the first vendor to contact because of lowest bid. If for any reason they can't supply the needed barricades within 48 hours we may choose, in succession, the remaining two vendors.

Bob's Barricades:	(954) 423-2627
Traffic Control Products:	(813) 621-8484
Acme Barricades:	(813) 623-2263

Barricade Deployment/Tracking

During an incident, barricade deployment is conducted by virtually all operational staff members. In order to keep track of where barricades are, for what reason they are deployed and to avoid loss, any staff that deploys barricades will call in on the 800 MHz radio to their designated office base at the time of deployment.

Call takers record all calls regarding affected roads by recording dispatch, problem type, resolved issues, etc… on an Affected Road Log to be later input into WebEOC. Staff deploying barricades shall provide call takers with the information required to input that record.

AT MINIMUM, THE FOLLOWING INFORMATION SHALL BE REPORTED AT THE TIME BARRICADES ARE DEPLOYED:

Affected road name
Area (city)
Nearest cross street
Reason for barricades
Number of barricades
Ownership of barricades
Name of staff and radio call number
Status of the affected road – Open/Closed/Limited Access.

After the Affected Road Log information has been input into WebEOC, the log is given to the Sign Shop Labor Supervisor II. The supervisor accumulates the log sheets. During recovery from the incident, these logs, WebEOC information and any other relevant barricade information, will be used to form an efficient round up of deployed barricades coordinated by the Sign Shop Supervisor.

When staff picks up barricades, during the incident or recovery, they will report in the same manner and state the affected road, number of barricades picked up, their name and radio call number. If the issue requiring barricades has been resolved, state the issue addressed, if known. Call takers record this information as a new record on the Affected Road Log input the resolved information on the existing WebEOC entry and provide the logs to the Sign Shop Supervisor.

Portable Changeable Message Signs (PCMS)

Currently, Public Works owns six Portable Changeable Message Signs. These are assigned to and maintained by the Sign Shop Supervisor. At all times, incident or not, the Sign Shop Supervisor tracks status, deployment and stored location. During incidents, the Sign Shop Supervisor's responsibility for the PCMS does not change. Any deployment, redeployment, storing location or status changes for these boards is coordinated through the Sign Shop Supervisor. The Sign Shop Supervisor is responsible for knowing the status and location of the PCMS at all times.

There is an annual award available for the rental of PCMS (portable changeable message signs), RFQ-JV-16-1084. If rented during future incidents, the Sign Shop Supervisor will be responsible for coordinating the rental of, deployment and knowing the status and location of rented PCMS at all times.

Acme Barricades is currently the first vendor to contact because of lowest bid. If for any reason they can't supply the needed barricades within 24 hours we may choose, in succession, the remaining two vendors.

Acme Barricades	(850)766-5877
Hertz Equipment Rental	(727)560-7412
Sunbelt Rentals	(954)275-9559

Pasco County Public Works
Emergency Action Plan

Issued:	1/11/2016	Revised:		Reviewed:	
Abstract:	A quarterly review of barricade inventory and rental ability is required to be continually prepared for deployment.				

BARRICADE READINESS CHECKLIST

	Description of Task	Due	Initials
___	Inventory of owned Barricades versus required inventory (report to Maintenance Supervisor)	3/30	___
___	Inventory of repairable Barricades and parts needed	3/30	___
___	Lights/batteries purchase request to Central stores for repair and for the new barricades that will be ordered	4/1	___
___	Barricade inventory deficiencies ordered	4/1	___
___	Contact Annual Award vendor(s), evaluate supply capability	5/1	___
___	Barricade inventory at required levels	6/1	___
___	Report number and location of barricades to Maintenance Supervisor	6/1	___
___	Post number and location of barricades in Field Offices	6/1	___
___	Inventory of repairable Barricades order lights/batteries needed	9/30	___
___	Report number and location of barricades to Maintenance Supervisor	9/30	___
___	Repairable Barricades Repaired	10/15	___
___	Report number and location of barricades to Maintenance Supervisor	1/15	___

Pasco County Public Works
Emergency Action Plan

Issued:	12/18/2015	Revised:		Reviewed:	
Abstract:	As Severe Weather notification is received into the Department, the information flows to all staff.				

EAP WARNING AND NOTIFICATION PROCESSES

Forecast Severe Weather

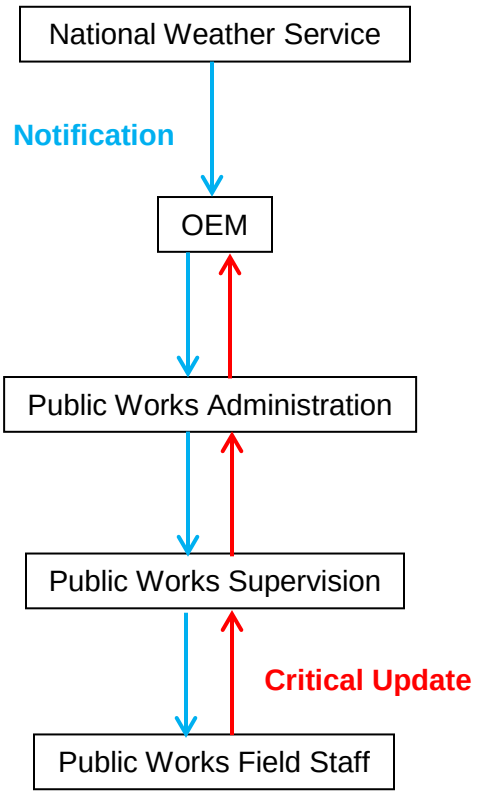
Current communication technology available to Public Works includes; land-line telephones, personal cell phones, Outlook email, WebEOC, Verizon Droid phones, Verizon PTT phones (without texting capability) and 800 MHz Radios (without Tactical Groups).

Public Works Administrative and Supervisory Staff are notified of impending severe weather as well as updated notifications, as they are known, by the Office of Emergency Management (OEM) via email. Email notification is followed up with a phone conversation describing the alert and discussion regarding current status. Chain of succession for availability and urgency of verbal notification in Public Works is; Director – Manager – Maintenance Supervisor, until contact is made. Public Works, in turn, updates Department status via email to the OEM or by phone depending on critical nature and/or urgency.

The Department's Supervisory staff informs all staff under their supervision by way of; Operational Meetings, Verizon PTT phones, 800 MHz Radio and, in limited instances, by email. Future and current operational planning, contingencies and situation/status updates are continuously conveyed between Public Works Administration, Supervision and Staff. All critical and urgent updates regarding preparation are conveyed from the Department to the OEM and County Administration as necessary.

Public Works email notification list:

Michael Garrett	Director
DiAnna Rawleigh	Manager
David Sua	Chief Project Engineer
Paul Dean	Prog. Administrator
Cindy Jolly	Prog. Manager
Floyd Wilson	Maintenance Supervisor
Mike Murray	West Field Supervisor
Scott Ewald	East Field Supervisor
Debbie Tanner	Project Supervisor
Lori Bushway	Administrative Assistant
Joella Schultz	Proj. Manager
Mike Myrick	W. Labor Sup. II
Craig Conrad	W. Labor Sup. II
John DiLandro	W. Labor Sup. II
Neal Barga	W. Labor Sup. II
Tim Bedard	W. Labor Sup. II
Chris Binder	W. Labor Sup. II
Jason Wellman	W. Labor Sup. II
Johnny Bozeman	E. Labor Sup. II
Scott Denney	E. Labor Sup. II
Joel Dixon	E. Labor Sup. II
John Groover	E. Labor Sup. II
Wesley Croft	E. Labor Sup. II
Kenneth Riggs	Lead Eng. Inspector



EAP WARNING AND NOTIFICATION PROCESSES

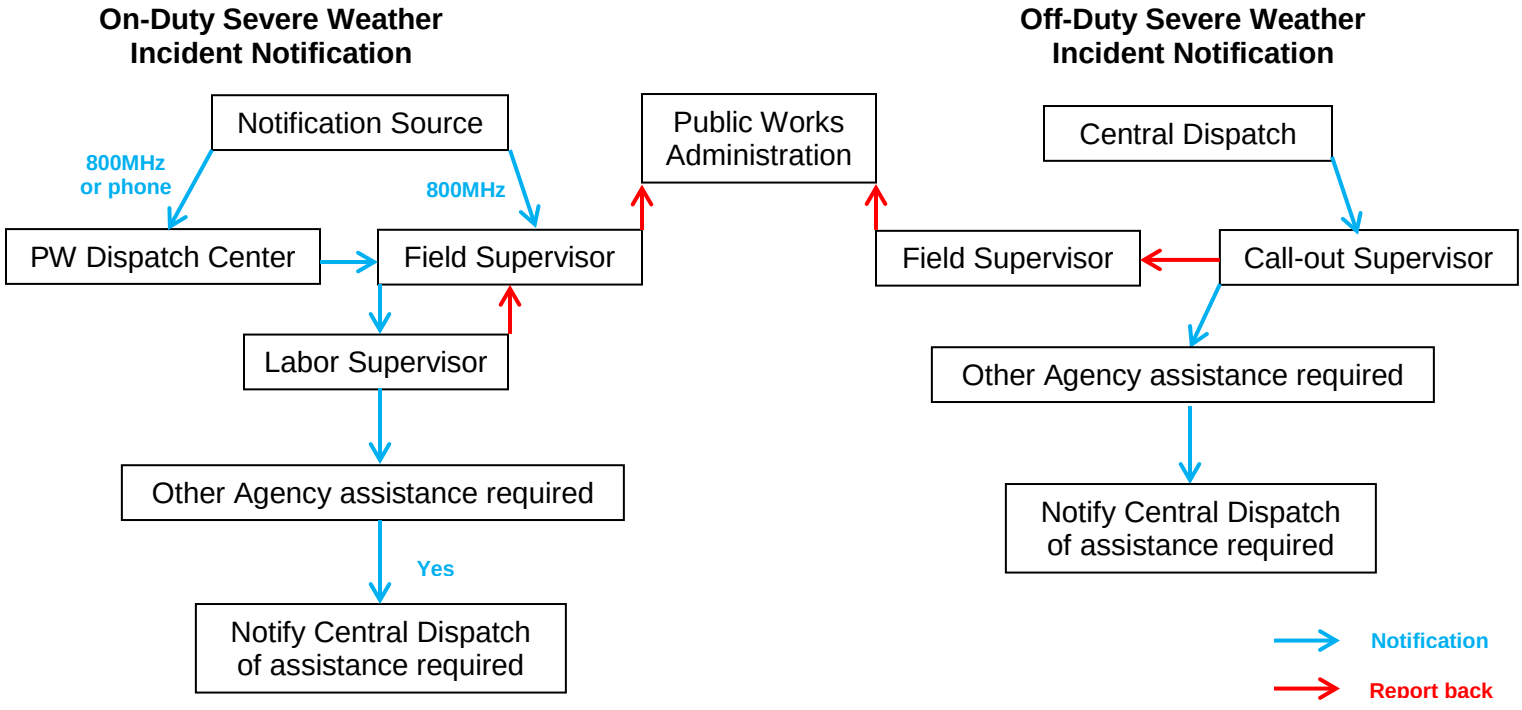
Current and Post Severe Weather Incident

Regardless of an early notification or not, actual damage that occurs and where, is not predictable. Likewise the timing of a damaging incident may occur during working hours or off-duty hours. There are also many different sources that may notify Public Works of such incidents. The OEM emails NWS information to the same Public Works Group as for forecast severe weather. However, working crews require immediate notification as an event occurs as well as being notified that damage has occurred in order to respond.

On-Duty Incidents: **If a tornado has actually been sighted within the County, an All Call alert is broadcast over the 800 MHz radio system over the Systems Universal Group. Staff within the area of the alert should cease operations and seek shelter immediately.**

The most effective manner in which to notify Public Works during, or immediately following a damaging incident, is either by telephone or over the 800 MHz Radio system. Depending on location, the East or West side Field Supervisor will be notified. The Field Supervisor will dispatch a Labor Supervisor while heading to the scene. Upon arrival at the scene, an initial assesment is conducted. If other agency assistance is required, Central Dispatch shall be notified using the Systems Universal Group over the 800 MHz Radio System. The Field Supervisor or his designee shall notify Public Works Administration of the situation.

Off-Duty Incidents: During weekends and other non-working hours, Public Works response to emergencies is instigated by Call-Out. Pasco County's Central Dispatch is provided with a geo zoned call out list that is updated as changes occur and consistently current. Labor Supervisor's, with crew lead personnel as alternates, respond to calls from Central Dispatch to investigate, resolve and call out additional Public Works resources as necessary. After arriving on-scene and initial assessment conducted and the responding Supervisor, or alternate, determines that other agency assistance is required, Central Dispatch shall be notified using the Systems Universal Group over the 800 MHz Radio System. The Supervisor, or alternate, shall then notify his Field Supervisor providing situational awareness who will provide same to Public Works Administration if necessary. *Please refer to the Emergency Call-Out Zone Map and the (current) Public Works – Emergency Call Out list*.



EAP WARNING AND NOTIFICATION PROCESSES

Off-Duty Employee Notification from Public Works

In accordance with the Career Service Manual, ALL Public Works Personnel, unless an exceptional circumstance has been approved, is required to report for assignment when Public Works Administration, or their designees, deems necessary. It is the responsibility of ALL employees to ensure current contact information is on file with the Department.

Administration or assigned designees notify personnel via on file employee phone contact information and record notification details on the *Employee Notification Roster*. If this process is carried out in the field, the notifying Supervisor or designee shall record the date and time of contact or the lack there of. Employees shall be notified of their reporting location and reporting time, if not immediate.

Off-Duty Employee Notification from Pasco County OEM

For employee notification Pasco County has been using *The Communicator* as a program to be able to contact and check on employees in a mass notification program. This program is a part of the County's Warning and Notification process. The communication that the OEM distributes regarding details of *The Communicator* are included here:

The Communicator© and Know Your Role

Pasco County has a computer program known as The Communicator©. The Communicator© can be (and is) used to call, text or email groups of people very rapidly. Pasco County's Office of Emergency Management, E-911 and Utilities use The Communicator© regularly to call out specialty teams like S.W.A.T. or to let the Fire Chiefs know that there is a big incident occurring . The Communicator© can also be used to reach a specific neighborhood to let them know that they've had a water main break and they should boil their water for a few days or to let them know about an Amber Alert or a Silver Alert and to ask that neighborhood to be on the lookout for the missing child or elderly person.

There is a plan to use The Communicator© to reach all of Pasco County's employees and their families if we've had a hurricane. We call this plan "Are you ok?" and the idea is to use the system to check on you if you aren't at work already and find out if you and your family made it through okay.

The Pasco County Office of Emergency Management has been working with Human Resources and the secretaries and supervisors of each division and department to make sure that we have a good "profile" of each employee. You've filled out these profile sheets for us: we call this project "Know Your Role". Through Know Your Role we have gathered your phone number(s) and information about your emergency contacts. We've also asked you to tell us about your skills. That information is all in a database that is linked to The Communicator©; from that information we know that more than 800 employees live in an evacuation zone! We also see that many employees have skills that would be important during a disaster and we understand that some employees are caregivers to their elderly parents or kids and that most of us have pets.

During a hurricane about half of us will be sent home. That means that we will be "off the clock". It will be an important priority to bring you back to work so that, whether your home is damaged or not, whether you've had to evacuate or not, you can get back to earning a paycheck. Human Resources will rely on the information in the

EAP WARNING AND NOTIFICATION PROCESSES

Know Your Role database to get you back to work. And they'll most likely use The Communicator© to contact you to tell you when and where to report and what to expect; many of us might end up working a job that relates to disaster recovery instead of our normal job, at least for a while.

Because of all of this, we think it is important to test whether or not we can reach you. Do we have the right phone number for you? Will you take the time to listen to an "automatic" message? Will you understand the "prompts" (for example "push 1 if you are okay") and respond accordingly? If your child or your spouse or someone else answers your phone, will they know that it's us and that they should either pass the phone to you or that they should listen and respond?

Information and Instructions for the drill

- If you have caller ID, the number will appear on the device as **EOC** or **Pasco County** or **727-847-8137** or a combination of those identifiers. You have to say "hello" (or something like that) so that they system "knows" you are there
- When you answer the phone, a message will begin with "This is Pasco County Emergency Management calling; press a numeric key now to retrieve an important message."
    - Press any key.

Message to be delivered during the call, questions we will ask and how to finish the call

"This is Jim Johnston, Emergency Management Coordinator. The call you are receiving is to test Pasco County's ability to reach you during an emergency with important information or check on your safety. Please explain to your family how important this will be during an emergency. Stand by to complete the call. Thank you"

- "Do you want to have the message repeated? Press 1 for yes or 2 for no"
    - Press 2
- "Are you safe and ok? Press 1 for Yes or 2 for no"
    - Press 1 (even if you're having a rough night!)
- "Do you have a preferred contact number for future notification? Press 1 for yes or 2 for no"
    - Press 1 (even if the number you enter is the number we called you at; it will help us validate which number to use for this hurricane season)
- "Please enter your preferred 10 digit telephone number"
    - Please enter the 10 digit phone number you want to be notified at during a real event, this season.
    - There will be a slight pause while The Communicator© logs your response
- "you entered (The Communicator© will repeat the phone number you entered)"
- "Is that correct? Press 1 for yes or 2 for no"
    - If you made a mistake, press 2 and re-enter the correct number, otherwise press 1
- "You have successfully checked in. thank you, goodbye"

Most common reasons the message is not received or a second call is received

The last call out was done during the 2011 season. Failure to reach employees was due to:

- Hanging up – make sure your family knows about the call and that they don't just hang up on us!;
- Abandoned/No answer – the system made 2 attempts without an answer or answering machine;
- Operator intercept –if the employee has "Call Block" which only accepts known numbers, the call fails;
- Busy line;
- Answering machine – not all answering machines allow us to leave a message;
- No response or no answer –the message will not start until a human interacts; say "hello";

- Wrong numbers – not having current contact information in the “Know Your Role” program;
- If the program interprets the numeric responses as “no contact”, it will attempt a second notification.

What you should do after the exercise

- Notify your department supervisor if you do not get a call.
- Let your supervisor know if you have any recommendations about how to improve this process.

Employee Notification Roster

Date	Time	Employee Name	Contacted	Reporting Location	Time Reported	Comment

Pasco County Public Works
Emergency Action Plan

Issued:	12/7/2015	Revised:		Reviewed:	
Abstract:	Department communications shall be broadcast over the 800 MHz radio system as a matter of protocol				

EAP Communications

One of the most important elements for controlling the chaos that many incidents present is to have an efficient Communications Plan. As issues develop during an incident, the flow of information for assigning response and reporting status, requires control through specified paths. The following are general guidelines based on Public Works lessons learned while responding to previous incidents.

This plan shall be implemented at the onset of Public Works response. If a multi-agency Communications Plan is implemented because of an expanded incident, Public Works will implement all elements of the multi-agency Communications Plan.

SITUATIONAL AWARENESS: The most convenient, effective and immediate way of communicating what is happening, where it is happening, the magnitude of what happened, what we are doing, who is doing it, what resources are needed, etc…is the 800MHz radio system. Conversely, while using a phone or other individual communication may be easier, this method does not provide the response community situational awareness and can lead to inefficiency of response.

By using the 800MHz radio to communicate incident issues we allow all units in the field and dispatch offices the opportunity to know what is going on and to assist if necessary. Units better positioned or more capable to respond to a given issue will not be available if the issue is communicated privately and not over our radio system. Additionally, being aware of a hazardous area can increase factors of safety if openly communicated. Therefore: **All Public Works Situational Assignment and Situational Status is Communicated over the 800MHz radio.**

RADIO GROUPS: Communication within the Department is transmitted over the **PW1** group. During incidents when both sides of the County are responding to an incident, radio traffic volume may become extremely high making transmittal difficult. Under these circumstances, the Field Supervisors may request a split. The West Side would communicate over PW1 and the East Side over PW2. This radio group split shall be communicated to all Public Works staff. Administration, Supervision and PW Dispatch, however, shall have radios set to scan both channels under this condition.

Communication with other groups such as Utilities and Traffic may be communicated over the **County Universal** group. Although these two agencies will likely respond via County Universal, most other agencies either don't monitor this group or don't have the group available. Communication between Central Dispatch (aka Public Safety Communications), Fire Rescue and Law Enforcement shall be communicated over the **Systems Universal** group during incidents. For an urgent emergency, use the 911 phone system. Such emergencies should be communicated up the chain of command after the 911 call has been placed and as the situation allows.

INCIDENT ISSUE ASSIGNMENT: All issues of the incident; Assignment, Status and Resolution, shall be input into WebEOC!

Major problems, Life Safety issues and Critical Field information shall pass through the Field Supervisor for his delegation. Some of these issues may be reported by other sources to lower subordinates, when this occurs the Field Supervisor shall be looped in to the issue (see figure 1).

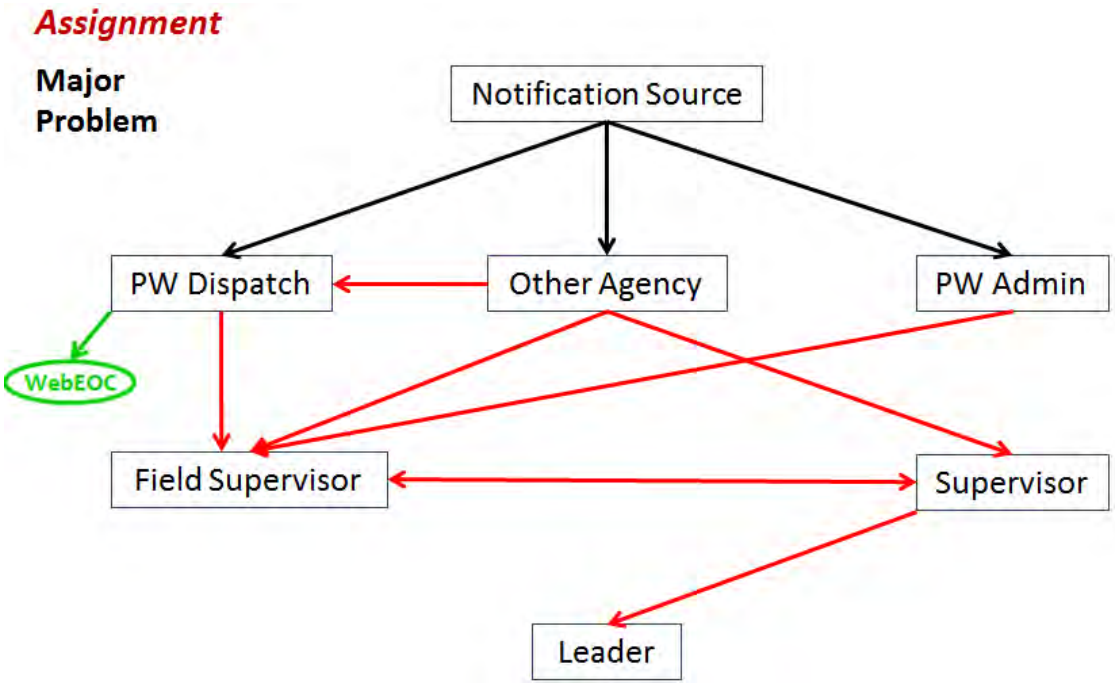


Figure 1

At the beginning of weather incidents that are forecast to be widespread within the County, operations staff will assign crews to geographical zones of responsibility (see Severe Weather Response and Emergency Operations Areas sections). Since there are an overwhelming number of common incident type of issues being reported at the same time, these assignments shall pass though the Supervisor assigned to the zone. However, if designated strike teams and/or task forces have been identified within zones, these type of assignments may go directly from dispatch to pre-identified field unit Leaders (see figure 2).

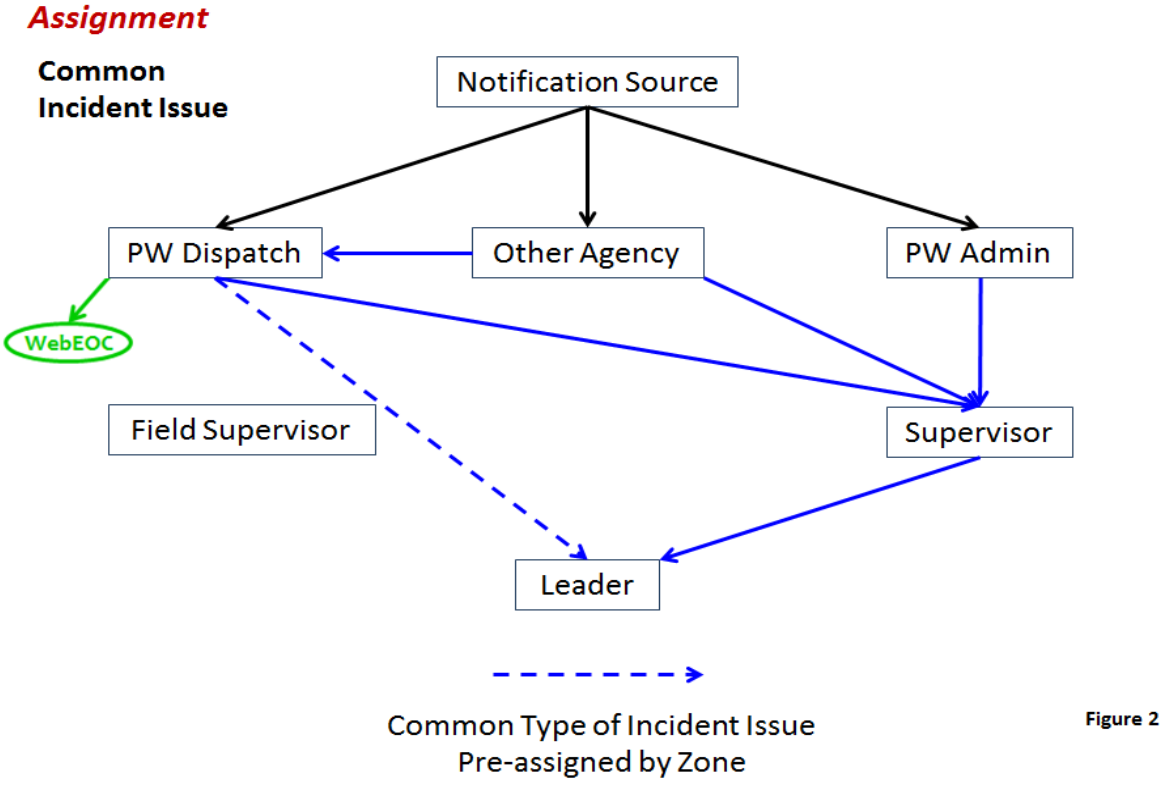


Figure 2

Staff assigning field units should use caution and not assign tasks outside of the pre-determined scope that certain field units have been identified to respond to. Unity of Command and Chain of Command are elements of the Incident Command System used during response. Going outside of these pre-determined roles can violate the Supervisors Chain of Command, his ability to accomplish assigned missions or tasks, and/or a field unit's Unity of Command. When there is doubt, the Supervisor shall receive the assignment to be delegated.

REPORT BACK: All issues of the incident; Assignment, Status and Resolution, shall be input into WebEOC!

As shown above, notification of incident issues may originate from various sources. Resolution or an update on the current status of major issues should be reported back through the same chain, in reverse, as received. Two elements of this communication shall be adhered to; if the issue is mission specific for a Supervisor, he must receive the update and the updated information shall be input into WebEOC.

Example 1: Barricades put out on a flooded residential road reported by PW Dispatch to Barricade Strike Team – Zone 1 (recorded in WebEOC). Strike Team put barricades out and updates status to PW Dispatch (update WebEOC record).

Example 2: Tree down on residential road reported by PW Dispatch to Supervisor – Zone 1 (recorded in WebEOC). Supervisor dispatched crew to tree down. Tree removed by field unit, update back to Supervisor, then PW Dispatch.

Example 3: Large tree(s) down on Collector or Arterial road reported in Zone 1 by Central Dispatch to Field Supervisor. Field Supervisor assigns to Supervisor in Zone 1 who dispatches crew. Crew reports back help needed, Supervisor assigns more staff or asks Field Supervisor for more assistance. All of this is done over the 800MHz radio so PW Dispatch, Field Supervisor, Supervisor and other Zone Supervisors know situation (PW Dispatch inputs affected road into WebEOC). Problem resolved; report back up the chain, including Central Dispatch, and issue closed out in WebEOC.

Date: ______________________

Affected Road Name	Area	Cross Street	Cross Street	Barricades	Reason	Reported By	Verified By	Status (Open / Closed / Limited Access)	Time of Call

Pasco County Public Works
Emergency Action Plan

Issued:	12/18/2015	Revised:		Reviewed:	
Abstract:	This Procedure shall correspond with the Pasco County Severe Weather Coordinating Procedure				

Severe Weather Response Procedure

PURPOSE

The Public Works *Severe Weather Response Procedure* provides guidance necessary for the notification, response and coordination of operations due to severe weather events. Damage similar to an actual tornado can be caused by strong thunderstorms which contain straight line winds, in addition to actual tornadoes during severe weather events. However, in order to simplify references, this procedure will use the term Severe Weather to mean both. References to Tornado Warnings and Watches are specific terminology used to describe National Weather Service (NWS) notices. This Department procedure is intended to align with the *Pasco County Severe Weather Coordinating Procedure* that supplements the *Pasco County Comprehensive Emergency Management Plan* (CEMP) providing the overall policy and guidance for emergency operations in Pasco County.

For the purposes of Public Works Initial Response, the focus of this procedure is to guide Public Works Operations staff from the point of notification to the point that an Incident Command (IC) or Unified Command (UC) is initiated to manage the event. If an IC or UC is initiated, the *Pasco County Severe Weather Coordinating Procedure* shall provide expanded guidance with relation to other agencies. Some aspects of that County plan are elaborated here as it relates to Public Works. Procedures covering preparation and initial response by Public Works for predicted Tropical Storms and Hurricanes are put forth in the Department's *Emergency Action Plan* (EAP).

NOTIFICATION

Please refer to the Department's *Warning and Notification Process* section of the EAP.

Department notification varies by the nature of Severe Storms presented. Tornado Watches and Warnings are officially issued by the NWS in response to conditions which indicate imminent potential or notifications of an event. The Pasco County Office of Emergency Management (OEM) or any of the five Public Safety Answering Points (PSAP) may, receive notice of a tornado watch or warning from the NWS, via National Oceanic and Atmosphere Association (NOAA) weather radio or from the Florida State Warning Point. Public Works may receive notification from any of these agencies. However, a damaging storm may come upon us with little or no notification and during hours that staff is on or off-duty.

During working hours, at a minimum, the Public Works Director is the first Point of Contact (POC) for severe weather watches and warnings. Once notification is received, the severe weather alert is disseminated to all staff through chain of command.

If a tornado has actually been sighted within the County, an All Call alert is broadcast over the 800 MHz radio system over the Systems Universal Group. Staff within the area of the alert shall cease operations and seek shelter immediately until the threat has passed.

Depending on the source of notification to Public Works for severe weather related damage during working hours, the path of internal and external notification may vary, yet shall cover all necessary agencies. The first arriving Public Works response unit shall conduct an initial assessment and report to

his supervisor and up the chain of command to the Field Supervisor. If damage is such that another agency's assistance is required, the initial assessment information shall be shared with Public Safety Communications (PSC, aka Central Dispatch) over the 800 MHz radio using the Systems Universal Group. The Field Supervisor, or his designee, shall be responsible for communicating initial damage assessment and additional agency involvement and/or resources required, to the OEM and Public Works Administration.

During weekends and other non-working hours, Public Works response to emergencies is instigated by Call-Out. Pasco County's PSC is provided with a geo zoned call out list that is updated as changes occur and consistently current. Labor Supervisor's, with crew lead personnel as alternates, respond to calls from the PSC to investigate, resolve and call out additional Public Works resources as necessary. Once on – scene, additional notifications are carried out as described above. Please refer to the *Emergency Call-Out Zone Map* and the (current) *Public Works – Emergency Call Out* list.

For incidents that require expanded operations and multi-agency involvement, a formal field response structure shall be coordinated with on-scene and arriving units. *Please see Response and Coordination of Operations below.*

RESPONSE AND COORDINATION OF OPERATIONS

During an initial assessment where a multi-agency response has been determined necessary, and in accordance with the principles and practices of the Incident Command System (ICS), the first arriving response unit(s) should establish an Incident Command (IC). The identity of the Incident Commander (which may be the first arriving PW response leader) and location of the Incident Command Post (ICP) shall be communicated to Central Dispatch. As other agencies arrive and in accordance with guidance provided for in the *Pasco County Severe Weather Coordinating Procedure*, a Unified Command (UC) may be initiated. For incidents involving a major role for Public Works such as debris clearance, major road damage, flooding, etc… the responding Labor Supervisor, an additional Labor Supervisor or the Field Supervisor, will likely staff the UC.

Arriving response units shall report to their assigned on-scene leader and all response units directed to respond to the incident shall be assigned a leader. The Public Works Field Supervisor of the area, or his designee, shall coordinate these assignments, delegate the assignments or coordinate the UC checkpoint for these assignments to take place. As will be the case in many of these incidents, the initial responding response leader or Call-Out responder will be all arriving units' assigned leader if; an IC or UC has not been organized or no other Public Works command structure has been identified. The Field Supervisor, or his designee, shall explicitly communicate the response leadership structure to current and arriving units. The Call-Out responding leader is a designee until communicated otherwise.

All Public Works Operational SOPs shall be adhered to during these operations. All safety precautions shall be adhered to, i.e. MOT set up, electrical hazards, etc… Any deviations from policy and tasking of response activities will only vary from Public Works standards by direction of the Field Supervisor or through the IC/UC with Public Works approval.

DEBRIS REMOVAL

Pasco County has a *Disaster Recovery and Debris Removal Services* contract. If the event is of a magnitude that the activation of our debris contract is considered, PC Utilities is responsible for the management of the vendor and its operations. Depending on the magnitude of the incident and volume of debris, a determination of whether or not to initiate this contract will occur late in the response phase. Public Works will not likely instigate the initiation of this contract for incidents involving a few trees down and the volume of debris manageable.

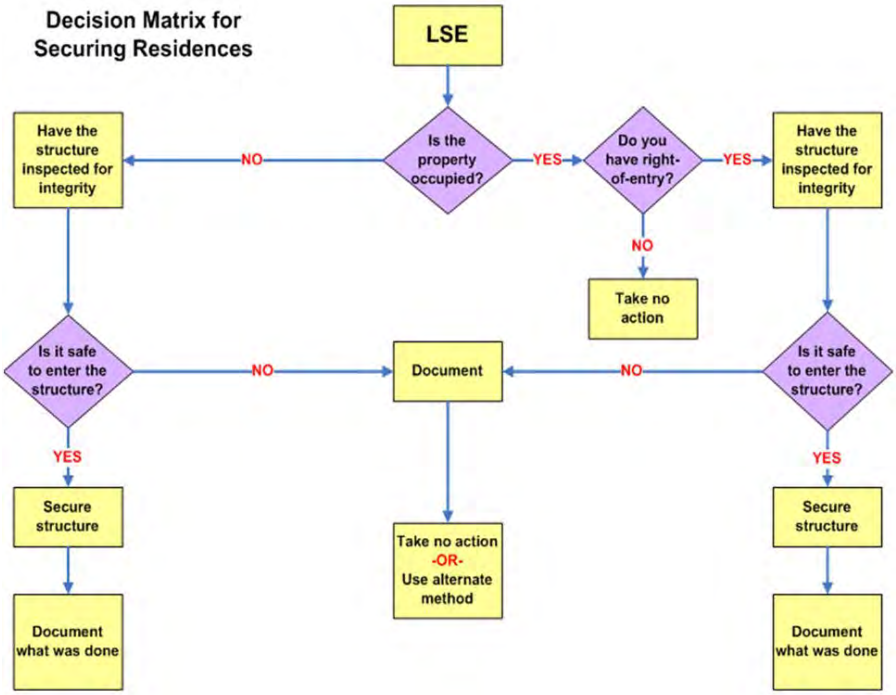
During response, an assessment by Public Works shall determine its ability to clear major County roadways as well as determine the clearance needs of State roadways. If more than one operational period (the period initial crews are able to work) is necessary to clear major transportation routes, the Department shall notify the OEM of its recommendation to consider activating the contract. Clearance of State roadways by Public Works shall only be undertaken upon approval from the IC, UC, OEM or Field Supervisor through Public Works Administrative approval.

Initial response debris removal efforts should focus on the clearing of roadways for travel. During these Cut and Toss operations, crews move debris to roadsides and continue to the next affected area. Because debris removal, debris transportation and disposal may later be contracted, debris should not be removed from roadsides, stored or transported to a waste facility unless the debris on the roadside itself poses a threat to transportation. Responding crews need to be cautious when performing Cut and Toss operations of encroaching, blocking or damaging private property, i.e. debris should not be stacked or bulldozed damaging fences, driveways or other components of private property.

OPERATIONS SECTION TEMPORARY REPAIR GROUP

Damage to private property may be significant in many Severe Weather Incidents. To the interest of the citizens of our County who have experienced damage, Pasco County Administration may authorize repairs **only to secure damaged property and prevent additional damage** as outlined in the *Pasco County Severe Weather Coordinating Procedure*. The repairs may include tarps on a roof, boarding windows, doors or other openings which may allow unauthorized access or additional damage to occur. This process is reserved for localized events which damage resident's homes **and** assistance is or will be delayed or unavailable.

Public Works will assist in repair operations if the Department is not consumed with other emergency operations requiring Department resources. The Operations Section of the ICS will form a Temporary Repair Group or Groups. Several agencies such as Facilities, Parks and Recreation and Utilities will comprise these groups. A typical Strike Team from this Group tasked with tarping roofs will consist of 6 members, a ground and ladder safety monitor, a material handler and 4 working members together on the roofs to secure the tarps. Such work will only take place after a structure has been inspected for integrity.



Pasco County Public Works
Emergency Action Plan

Issued:	11/13/2013	Revised:	12/4/2015	Reviewed:	
Abstract:	Public Works may implement an EOA Plan before a coordinated County activation.				

Public Works Emergency Operations Area Plan

Events such as Tropical Storms and Hurricanes require a coordinated response from Pasco County's first responder agencies. An Emergency Operations Area (EOA) Plan will be implemented during such events to ensure the Life Safety of responders and provide the necessary multi-agency response. Essential to developing and continually improving the plan, the identification of specific agency procedures that support it is evident. To this purpose, Public Works has identified its role and will implement a successive order of procedures leading up to sustained 40 mph winds; the EOA Plan's established threshold for First Responder lock down. Coordinated multi-agency response after winds have diminish below 40 mph, ending the lock down period, will be developed by the Emergency Operations Community and is not part of this outline.

As a First Responding agency, Public Works will commit its entire operational staff and resources in support of all other agencies, and the community as a whole, when implementation of this plan is necessary. Primary functions include debris clearance (Debris removable is Contracted by Utilities), traffic control (closures, barricading and detours), flood mitigation, infrastructure repairs and other support activities as identified. The operational force coordinates response through support provided by Administration, Management, Clerical, and an Emergency Support Function staff (ESF 3) assigned to the Emergency Operations Center (EOC). Operational force is approximately one-hundred-twenty.

Public Works has developed a department EOA plan aligned with the County's EOA Plan for Tropical Storms up to Cat 3 Hurricanes for staging staff and equipment at six EOA Bases (Fire Stations dispersed throughout the County) and the West Pasco Government Center. The nature of the event will determine which if not all of the EOA Bases will need to be staffed. Staffing and equipment staging is designed with functional capability to accomplish anticipated operational needs in two, twelve hour shifts (Alpha/Bravo) for each EOA. This department EOA plan is updated with present equipment and staff before June 1 of each year and disseminated to the Office of Emergency Management (OEM).

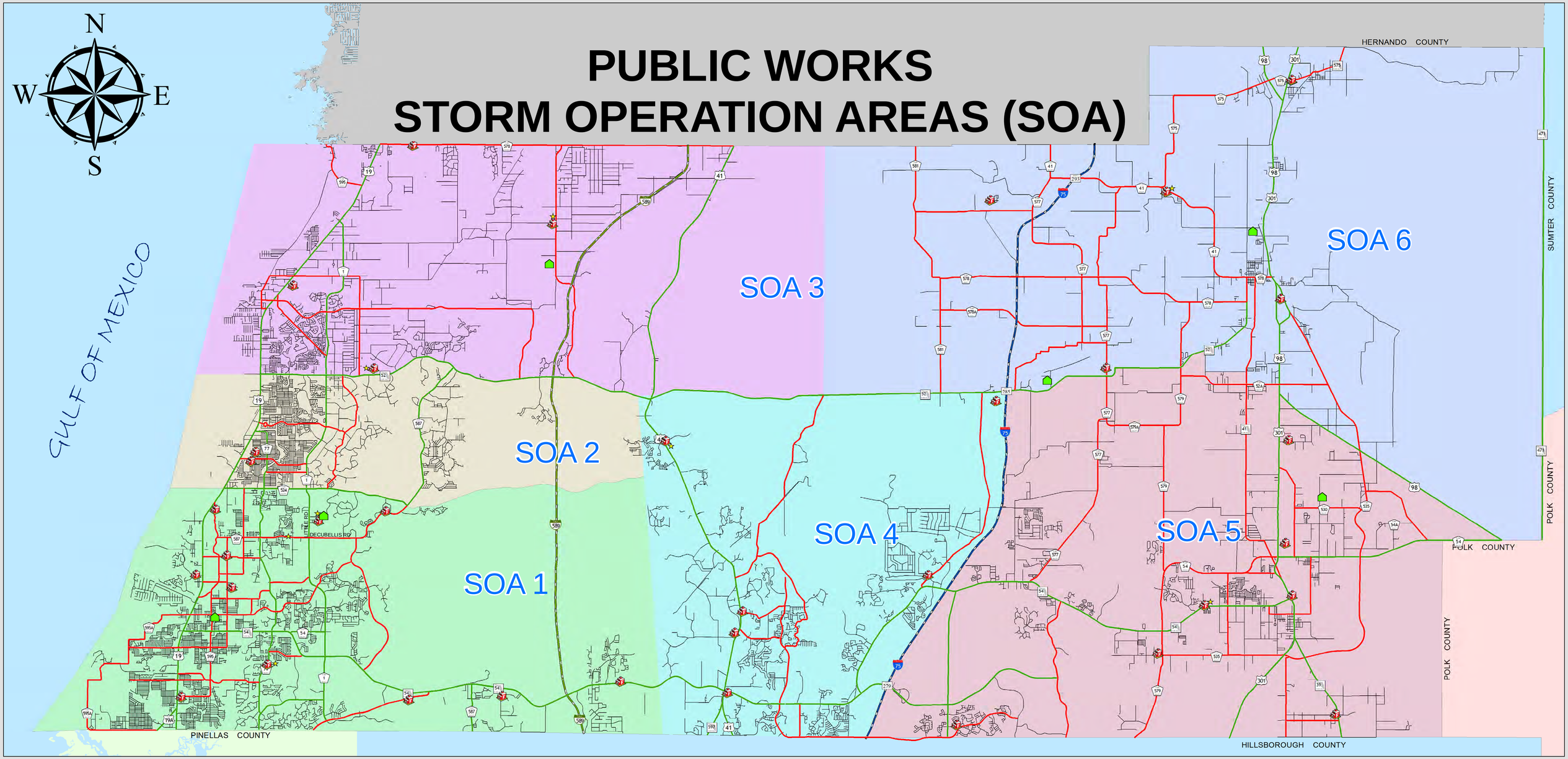
Public Works may, indeed will most likely, move into the department EOA plan up to 48 hours before the County EOA plan is implemented. Public Works must take necessary actions as part of the department's Emergency Action Plan in order to prepare for a forecast event. Assigning resources to defined areas is normal for such operations and will assist the department when/if merging resources with other agencies is necessary.

For Hurricanes likely to reach or exceed Category 3, the locations of Staging areas are different but the staging of Public Works equipment and staff are not planned to change.

Depending on the severity of forecasted local impact, Public Works may move into 24 hour operations within 48 hours of impact. The decision to "stand up" Public Works will be determined by the department's Director in coordination with Emergency Management, Pasco County Administration and other First Responder agencies. In addition, when the EOC is activated, Public Works' ESF Staff is assigned for all hours of operation.

Public Works' normal hours of operation are 7:00 AM to 5:30 PM Monday through Friday with operations staff working four, ten-hour shifts. Scheduling two, twelve hour shifts for continuous twenty-four hour coverage, is a major departure from standard operating hours and is strategically planned to match staffing capabilities with equipment positioning.

PUBLIC WORKS
STORM OPERATION AREAS (SOA)



WESTSIDE

Mike Murray, Field Supervisor (727) 247-0687

SOA 1 - Pinellas County to Ridge Rd – Gulf to LOL (Oakstead Blvd/Henley Rd.)

BASE – West Pasco Government Center, 7536 State Street – New Port Richey

BASE – Fire Station # 17, 2951 Seven Springs Blvd – New Port Richey

SOA 2 – Ridge Road to SR 52 – Gulf to US 41 (not including LOL)

BASE – Fire Station # 21, 10417 Frierson Lake Dr. - Hudson

SOA 3 – S.R. 52 N. to Hernando County – Gulf to US 41

BASE – Fire Station # 20, 15900 Little Ranch Rd. – Shady Hills

EASTSIDE

Scott Ewald, Field Supervisor (727) 277-0024

SOA 4 – Hillsborough County Line N. to S.R. 52 – I-75 W. to LOL (Oakstead Blvd/Henley Rd.)

BASE – Fire Station #22, 9930 Land O Lakes Blvd – Land O Lakes

SOA 5 – Hillsborough County Line N. to SR 52 – I-75 E to Sumter Co. Line

BASE – Fire Station # 16, 35801 S.R. 54 - Zephyrhills

SOA 6 - SR 52 N. to Hernando Co. Line – Bellamy Bros. Rd to Polk Co. Line

BASE - Fire Station # 36, 34516 Blanton Rd. – Dade City

Legend

- Zone 1
- Zone 2
- Zone 3
- Zone 4
- Zone 5
- Zone 6
- Arterial
- Collector
- Interstate
- Toll
- County Maintained
- PW Facilities
- Fire Stations
- Bases

0 1 2 4 6 8 Miles

PUBLIC WORKS EMERGENCY NUMBERS
(727) 847-8143

ADMINSITRATION:

Michael Garrett, Public Works Director	(727) 247-3900
Dianna Rawleigh, Public Works Manager	(727) 247-8566
Floyd (Bud) Wilson, Maintenance Supervisor	(727) 457-8530
Debbie Tanner, Administrative Secretary	(727) 457-8492

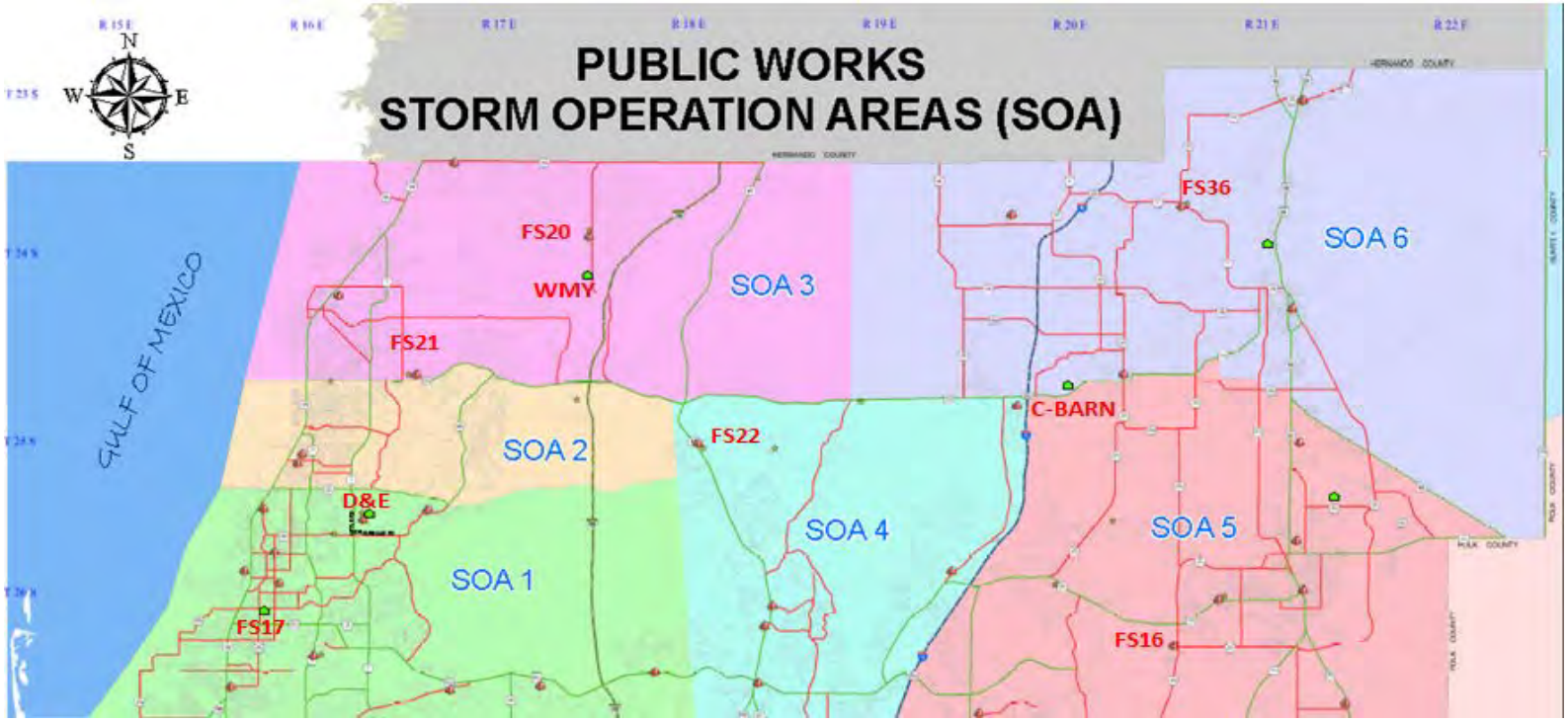
Pasco County, Florida
Geographic Information Systems
NPDES
Stormwater Management

Title: PUBLIC WORKS STORM OPERATION AREAS

Created: DJS
Printed: 04JUN2014
Reviewed:

S:\DevSvcs Documents\STORMWATER MANAGEMENT\People\Bud W

Public Works
Storm Operations Areas
Equipment/Vehicles and Staff



2015

Pasco County Public Works
Emergency Action Plan

Issued:	2/28/2015	Revised:	11/17/2015	Reviewed:	
Abstract:	Accountability means life safety as well as providing for an organized response				

EOA ACCOUNTABILITY PLAN

When an incident of significant magnitude affects Pasco County involving multiple agency response and recovery operations, one or up to seven, Emergency Operations Areas (EOA) may be implemented over defined geographical areas. Each EOA will have a centralized and designated staging and lockdown Base. Each EOA will also have predetermined Public Works staff and equipment assigned for effective operations determined by the nature and magnitude of incident. This Public Works Accountability Plan is to be implemented during incidents that involve the use of an EOA or multiple EOAs to best assure that all department individuals whereabouts are known at all times.

Equipment Operators: All individuals assigned to Incident Operations shall follow chain of command within a Strike Team or Task Force under one Leader within a manageable span of control. The operator shall never deviate from planned operations and assignments without reporting deviations to their designated Leader. Leaders shall keep an updated Accountability Roster at all times reporting changes as they occur to their supervisor. At minimum, Leaders shall have a communication device allowing contact with their supervisor with them at all times. If an incident specific Communications Plan has been implemented, all PW Operations Staff shall be briefed thoroughly at the beginning of each Operations Period.

Labor Supervisors: Labor Supervisors shall produce an Accountability Roster and assist the Field Supervisor in assembling an ICS 204 form for the upcoming Operations Period. Labor Supervisors shall assign Leaders to assist them in accomplishing objectives as needed while maintaining effective span of control. Labor Supervisors shall keep an updated Accountability Roster of their designated Leaders and assigned Operators including tasks and locations of assignments. The Supervisor shall produce these "real-time" Accountability Rosters up their chain of command – on demand. For expanded operations under a multi-agency Incident within an EOA, there typically will be an Incident Command System (ICS) in place. When an ICS is implemented the Labor Supervisor shall produce the Accountability Roster on demand up their chain of command within the ICS structure. When appropriate, and as the incident allows, the Field Supervisor may also require this roster. There will be times during any given Incident when an ICS is in place and when it is not. In either case the Accountability Roster shall be constantly updated as operational objectives and tasks change, to be disseminated from the Labor Supervisor up the chain of command, on demand. Labor Supervisors are responsible for implementing or coordinating a formal communications plan. Whether the plan is implemented by an ICS, an EOA Plan or otherwise; the plan shall ensure those within the Labor Supervisor's chain of command can communicate effectively via the chosen device.

Field Supervisors: The East and West Field Supervisors shall assign Labor Supervisors an EOA of responsibility, objectives, personnel and equipment, during briefings at the beginning of each Operations Period. The Field Supervisors shall also produce ICS 204 forms designed to accomplish objectives for his assigned area groups before moving into the next Operational Period. Objectives will be determined by the Incident's and other agencies' needs, with consideration and support from PW Administration, the Maintenance Supervisor and the Emergency Operations Center (EOC), until an ICS has been implemented. If an ICS is implemented the Field Supervisor may be assigned a position within the ICS structure. Field Supervisors will assist the Maintenance Supervisor in keeping the current operational plan updated as activities develop to be posted in the PW Administration Office and the EOC.

Maintenance Supervisor: The Maintenance Supervisor shall collect the ICS 204 forms from the Field Supervisors before moving into the next Operations Period. He shall post an Operational Planning Worksheet (ICS 215) for current operations and for the next Operational Period, as it becomes available, in the PW Administration Office. The Maintenance Supervisor shall also disseminate the ICS 204 and ICS 215 forms to the EOC as they become available. If Action Plans become an ICS function, the Maintenance Supervisor will be involved in such planning and disseminate the Operational Planning documents back to PW Administration.

Alternates: All supervisors must have designees to cover their responsibilities for events of a longer duration, to cover leave periods or other cases of unavailability. Designees need to be trained on the ICS framework and paperwork to ensure continuity of operations and employee accountability. These alternates are especially critical in the Maintenance and Field Supervisor positions where organizationally there are no predefined backup.

Chain of Command: In this Accountability Plan there has been mention of Operations being conducted with a multi-agency ICS and without. Most incidents begin without an ICS structure present and many never develop to the extent of ICS formation. Regardless of the organizational structure of coordinated response, this Accountability Plan shall be implemented at the onset of Public Works' response to a specific incident of significance. Focus must remain on the supervisor's responsibility to account for every subordinate within his chain of command; what their assignments and locations are at all times. Chain of command shall be defined for any given Operations Period. Unity of Command (every individual reports to only one supervisor and maintains formal communication relationship with only that supervisor) shall be strictly adhered to.

Objectives: Throughout the incident, objectives are established based on the following priorities –

First Priority: Life Safety
Second Priority: Incident Stabilization
Third Priority: Property Preservation

Life Safety is the First Priority superseding all other objectives. Life Safety starts within the organization by ensuring the safety of those working the incident. Accountability is a primary requirement to ensure Life Safety. Knowing where all individuals are assigned at all times is the first and most important step in providing for a safe work environment, organizing response efforts effectively, and providing needed support for responders within the organization. It is the responsibility and duty of all individuals to provide accountability for themselves and those within their chain of command.

Supervisor/Leader Accountability Roster

Incident Name:	Date:		Ops Period Hours:	Division:	EOA # or Group:	Supervisor:	
Name	**Rank**	**Time In**	**Leader**	**Location**	**Equipment Assigned**	**Work Type**	**Com Type/Identifier**

From:	Kristopher E. Miller
To:	Gayle Nipper
Cc:	Dennis Cockrell; Justin Eddy
Subject:	FW: Thousand Oaks/Trinity Oaks BMP Improvements
Date:	Wednesday, November 27, 2013 3:39:49 PM
Attachments:	20131024 - BMP 1A Gate Operations Manual.docx image001.png

LOGGED

Kristopher Miller
Regulation Processing Specialist
Southwest Florida Water Management District
7601 Highway 301 North, Tampa, Fl 33637
Phone: 813.985.7481 Ext 2070
Fax: 813.987.6467

From: Scott Hickerson
Sent: Wednesday, November 27, 2013 2:47 PM
To: Dennis Cockrell; Kristopher E. Miller; Justin Eddy
Subject: FW: Thousand Oaks/Trinity Oaks BMP Improvements

Please upload to 678767

Scott Hickerson, P.E., LEED AP
Senior Professional Engineer
Environmental Resource Permitting Bureau
7601 US Highway 301 North
Southwest Florida Water Management District
813.985.7481, ext. 2033
800.836.0797 (Florida only)
scott.hickerson@watermatters.org

From: Jay Hunting [mailto:jhunting@fldesign.com]
Sent: Monday, October 28, 2013 11:00 AM
To: Scott Hickerson
Cc: Cindy Jolly; Michael Garrett; Kevin Sumner; Dave DeLoach
Subject: Thousand Oaks/Trinity Oaks BMP Improvements

Scott,

Attached is the operations and maintenance information for BMP1A that we discussed last week. It follows the general format of the O&M document that was previously submitted to the District for the original set of BMPs under ERP 4434034.000
Let me know if you need any additional information.
Thanks

--
Jay Hunting
Senior Ecologist/Project Manager
Florida Design Consultants, Inc.
3030 Starkey Boulevard
New Port Richey, FL 34655
Phone: (727) 849-7588 ● Fax: (727) 848-3648 ● Cell: (727) 249-2921

Introduction

Pasco County operates and maintains facilities that provide increased emergency stormwater conveyance capacity within the Duck Slough Watershed. The facilities are designed to reduce peak flood elevations and durations in historically flood-prone areas. In cases of emergency flood conditions, numerous culverts with gated operational control structures can be opened to relieve local flooding.

The operation and maintenance procedures discussed here are supplemental to those that were previously developed procedures for the Duck Slough stormwater facilities, and are specific to BMP 1A (located between Seven Springs and Mitchell Boulevard). These procedures are based upon generally accepted practices.

Site Descriptions

BMP No. 1A
This BMP adds two 36-inch diameter RCPs extending from west of Mitchell Boulevard to east of Seven Springs, with operational gates installed on the downstream face (located at Seven Springs Boulevard). The BMP provides a mechanism for enhanced drawdown of an upstream wetland (located east of Mitchell Boulevard). The gated structure is operated only in anticipation of a significant rainfall event (i.e., one that is expected to result in flood risk to upstream properties).

Rainfall Forecast/Monitoring

Decisions will be made by Pasco County regarding operation of the above facility for flood control, and will be conditioned upon forecast and observed rainfall amounts for the entire Duck Slough Watershed area. A forecast of storm event or multi-day rainfall in excess of two inches in depth would warrant consideration of operation of the structure.

Operations Schedule

Ordinarily, the BMP 1A facility will be closed to preserve normal local drainage patterns, as well as to maintain water levels and hydroperiod in the upstream wetland. The gated structure is only to become operational for purposes of pre-storm drawdown of the upstream wetland. In that case, the gates will be opened and discharges performed to increase available surface storage in anticipation of significant rainfall events. The BMP 1A gate structure is to be closed at the onset of significant rainfall and will remain closed for the duration of that event.

Maintenance Procedures

The following presents a generalized schedule of maintenance activities.

- Structures are to be inspected on a semi-annual basis.
- Debris shall be removed from structures on a semi-annual basis, at a minimum.
- Gates are to be maintained in accordance with manufacturer's specifications.
- The system is to be visually inspected after rainfall events larger than three (3) inches.

Duck Slough BMP Engineering
Gate Operations and Maintenance Manual

Prepared for:
Pasco County Engineering Services
Stormwater Management Division

For Submittal to:
Southwest Florida Water Management District
2379 Broad Street
Brooksville, FL 34604-6899

Prepared by:
Ardaman & Associates, Inc.
8008 South Orange Avenue
Orlando, FL 32809-6712

May 15, 2008
Permit No. 44034034.000

Ms. Andrea Bolling, P.E.
Senior Professional Engineer
Brooksville Regulation Department
Southwest Florida Water Management District
2379 Broad Street
Brooksville, FL 34604

Subject: Gate Operations and Maintenance Manual for Duck Slough Best Management Practice Engineering in Pasco County, Florida

Dear Ms. Bolling:

Ardaman & Associates, Inc. staff has prepared a Gate Operations and Maintenance Manual for best management practice locations within the Duck Slough Watershed. The following report describes the location of each operable structure, the conditions in which they should be operated, and the maintenance requirements necessary for proper operation. If you have any questions, or if we can be of further service to you, please do not hesitate to call.

Very Truly Yours,
ARDAMAN & ASSOCIATES, INC.

Michael B. Salisbury, E.I.
Staff Engineer

5/15/08

David A. DeLoach, P.E.
V.P, Director of Water Resources
Florida Registration No. 47761

TABLE OF CONTENTS

LIST OF APPENDICES

Introduction

Pasco County plans to construct facilities that will provide increased emergency stormwater conveyance capacity within the Duck Slough Watershed. The planned improvements are designed to be operated for reduced peak flood elevations and durations in historically flood-prone areas. These modifications include installing additional culverts with gated operational control structures. In cases of emergency flood conditions, the gates can be opened to relieve local flooding.

The operating procedures described herein are based upon the capacity of the Anclote River and Brooker Creek Watershed to receive increased discharges from the Duck Slough Watershed so as not to cause adverse impacts downstream. Over time, these operational procedures are to be refined (e.g., updated every five years, or when deemed appropriate) using the accumulated records of water surface elevations and reports of structure operations.

The maintenance procedures that are discussed in this manual are based upon the manufacturer's recommendations and generally accepted practices. Specific recommendations from the manufacturer for the maintenance of equipment (i.e., gate mechanisms) are provided in the appendix.

Site Descriptions

The facilities described herein are designed to permit enhanced flood discharge capability from Duck Slough to the Anclote River. The following describes the specific elements of the system that have operational gates associated with them.

BMP No. 1
The existing condition consists of a single 24-in diameter RCP with a concrete headwall and grated drop inlets on each side of Millstone Drive (Section 33, Township 26, Range 16). This structure is part of a diversion system that conveys flow from a south tributary to a north tributary for higher flow events. The proposed BMP adds two 24-in diameter RCPs, similar to the existing pipe, with operational gates on the upstream face to provide more conveyance only during emergency flood conditions.

BMP No. 2
The existing condition consists of a single 54-in diameter RCP under Oak Meadow Point (Section 33, Township 26, Range 16) with a concrete headwall and wingwalls. This structure is the last control point before water discharges from the Duck Slough Watershed to the Lower Anclote River. The proposed BMP removes the wingwalls and adds two 60-in diameter RCPs with operational gates on the upstream face to provide more conveyance only during emergency flood conditions. Consideration of water levels in the Anclote River needs to be given prior to gate operation at this location since this site controls discharge to the Lower Anclote River.

BMP No. 4
The existing condition consists of a single 54-in diameter CMP with a 72-in half-moon vertical riser pipe (Section 33, Township 26, Range 16). This structure creates significant flow restriction during flood events. The proposed BMP removes the pipe and vertical riser and constructs a 25-foot concrete weir in its place with a 42-in circular orifice. The orifice will remain open in order to maintain the existing normal pool elevation and to match existing conveyance capacity; however, the weir will include a flush-mounted gate that will remain closed except to provide more conveyance only during emergency flood conditions.

BMP No. 6
The existing condition consists of two 10-ft wide by 6-ft high concrete box culverts that cross Seven Springs Boulevard (Section 34, Township 26, Range 16) with a fixed concrete weir on the upstream (east) face of the culverts. The weir spans the entire opening of both box culverts and blocks approximately 78% of the flow capacity available through the culverts. The proposed BMP replaces the concrete weir on the upstream face of the culverts with flush-mounted operable gates. Under normal flow conditions, the gates will cover approximately 78% of the culvert opening to mimic existing structure capacity. Normal pool elevations in the wetland upstream of this structure are controlled at a point well upstream of this proposed BMP, and will not be impacted by the work. During emergency flood conditions, the gates will be opened to allow for full flow capacity through the culverts.

BMP No. 8
The existing condition consists of a single 24-in RCP under Kinsmere Drive (Section 35, Township 26, Range 16) with a grated drop inlet. The proposed BMP adds a similar 24-in RCP with an operational gate that will only be opened during emergency flood conditions.

BMP No. 9
The existing condition consists of two 36-in by 48-in RCPs under Kinsmere Drive (Section 35, Township 26, Range 16) with a grated drop inlet on the upstream and downstream ends. The proposed BMP replaces the existing pipes with two 4-ft wide by 3-ft deep box culverts with an operational gate on the upstream face. The gate will remain partially opened during normal flow conditions in order to maintain existing water elevations in the upstream wetland and match existing conveyance capacity, but the gate can be opened to provide additional flow capacity during emergency flood conditions.

BMP No. 10
The existing condition consists of four 30-in by 60-in RCPs under Arlinbrook Drive (Section 35, Township 26, Range 16) with a 100-ft weir just upstream. The proposed BMP adds two 60-in diameter RCPs with operable gates on the upstream end that will be opened during emergency flood events. This structure provides an outfall from the Duck Slough Watershed to the adjacent (downstream) Brooker Creek Watershed. Before the gates are opened, careful consideration will need to be given to conditions in the Brooker Creek Watershed to make sure that the system can handle the additional inflow that will result from the increased discharge from Duck Slough.

Staff Gauge Monitoring

Decisions will be made in the field regarding the operation of the above facilities for flood control, and will be conditioned upon stage (water surface elevation) readings at the following locations: 1) at the confluence of Duck Slough with the Anclote River; 2) at the connection between Duck Slough and Brooker Creek (BMP No. 10); and 3) at the upstream face of each operational structure described herein. County staff will maintain a historical record of water surface elevations at these locations, including routine (weekly during the first year, monthly thereafter) monitoring of staff gauges. During operation of the system, staff gauge readings shall be recorded on an hourly basis during daylight hours and at least once during the night.

Operations Schedule

Ordinarily, the proposed drainage facilities will be closed to maintain normal water levels and hydroperiods in area lakes and wetlands. The structures are only to become operational for emergency flood control purposes.

Controlled discharges to the Anclote River and Brooker Creek shall be performed so as not to cause or exacerbate flooding conditions in areas downstream of Duck Slough. Additionally, the operation of the gated structures will be sequenced to avoid unnecessary discharges from the watershed and to prevent additional local flooding in areas within the Duck Slough Watershed.

The operational (trigger) elevations for each location are identified in the table below. Should the water level at any of these locations exceed the operational elevations specified below, the system can be operated according to the Gate Structure Operation Sequence to alleviate flood conditions within the watershed.

The trigger elevations specified for BMP Nos. 1, 2, 4, and 6 are based on the simulated 1-day, 25-year storm event, and the elevations specified for BMP Nos. 8, 9, and 10 are based on the simulated 1-day, 10-year storm event (reference the accompanying drainage report for supporting documentation). BMP Nos. 8, 9, and 10 are located within the Trinity Oaks community (adjacent to Thousand Oaks community), which is a historically flood prone area. The 1-day, 10-year storm event elevations are specified as operational elevations to help prevent or reduce the duration of localized roadway flooding.

	Operational Elevation	
BMP No.	feet NAVD	feet NGVD
1	10.7	11.5
2	8.4	9.3
4	11.5	12.3
6	18.1	19.0
8	23.4	24.3
9	21.3	22.1
10*	**23.5**	**24.3**

*** Operational discharge to the Brooker Creek Watershed through BMP No. 10 will not be allowed until it has been determined that the Brooker Creek Watershed has the capacity to receive the increased discharge from Duck Slough. Currently, a consultant for SWFWMD is working on a watershed management plan for the Brooker Creek Watershed that will, in part, identify the capacity of the watershed to receive discharge from adjacent watersheds. Until this is completed, a stage level downstream of BMP No. 10 cannot be identified that indicates an increase in discharge from Duck Slough will not cause adverse impacts in the Brooker Creek Watershed. Therefore, BMP No. 10 will remain non-operational until such time as that SWFMWD study has been completed.**

Prior to the release of flood waters from Duck Slough, the water surface elevation in the Anclote River must be below 3.16 ft, NAVD (4.0 ft, NGVD). This elevation is lower than the lowest identified floor slab, road, and bulkhead elevation immediately downstream of the confluence of Duck Slough with the Anclote River, and will not cause adverse impacts to adjacent property owners. Upon completion of the SWFWMD re-study of the Anclote River, this operation elevation may be re-visited.

Gate Structure Operation Sequence

When the foregoing operational constraints are met, the gated structures must be opened in order from downstream to upstream. However, in the event that operational elevations have been exceeded in upstream areas only (i.e. BMP Nos. 8, 9, and 10), then that set of upstream structures can be operated independently from the set of downstream structures. Return of the gated structures to their normal positions shall be done in reverse order (that is, from upstream to downstream).

Maintenance Procedures

The following presents a generalized schedule of maintenance activities.

- Structures are to be inspected on a semi-annual basis.
- Debris shall be removed from channels and structures on a semi-annual basis, at a minimum.
- Erosion will be addressed by backfilling with clean fill and stabilizing with sod or concrete rip-rap, as necessary, to prevent additional erosion.
- Gates are to be maintained in accordance with manufacturer's specifications.
- The system is to be visually inspected after rainfall events larger than three (3) inches.

The operational elevations presented in this manual are based, in part, on modeled conditions. Records of actual conditions (water surface elevations at gauge locations) should be compared to the modeled conditions, and the system operations schedule revised accordingly, following each emergency operation.

Appendix A

BMP Location Maps

Appendix A

BMP Location Maps

FIGURE A1

N
W E
S

SCALE: 1" = 400'

Feet
0 200 400

Legend
- BMP and Staff Gauge Location
- Staff Gauge Location
- Network Nodes
- Network Reaches
- BASINSHD

Project: 07-101	Projection: Florida West Stateplane	
Prepared: 03-14-08	Horizontal Datum: NAD83	Vertical Datum: N/A
Prepared by: C.A.C.	Modified by:	Modified:
File: W:\Projects\2007\07-101\ArcGIS_ArcLayouts\20080314\Figure_A1.mxd		

PROJECT LOCATION MAP
DUCK SLOUGH BMP LOCATIONS # 1 - 5

Ardaman & Associates, Inc.
Geotechnical, Environmental and Materials Consultants
Phone: 407-855-3860 Fax: 407-859-8121
8008 South Orange Avenue
Orlando, Florida 32809

FIGURE A3

N
W E
S

SCALE: 1" = 400'

Feet
0 200 400

Legend
- BMP and Staff Gauge Location
- Staff Gauge Location
- Network Nodes
- Network Reaches
- BASINSHD

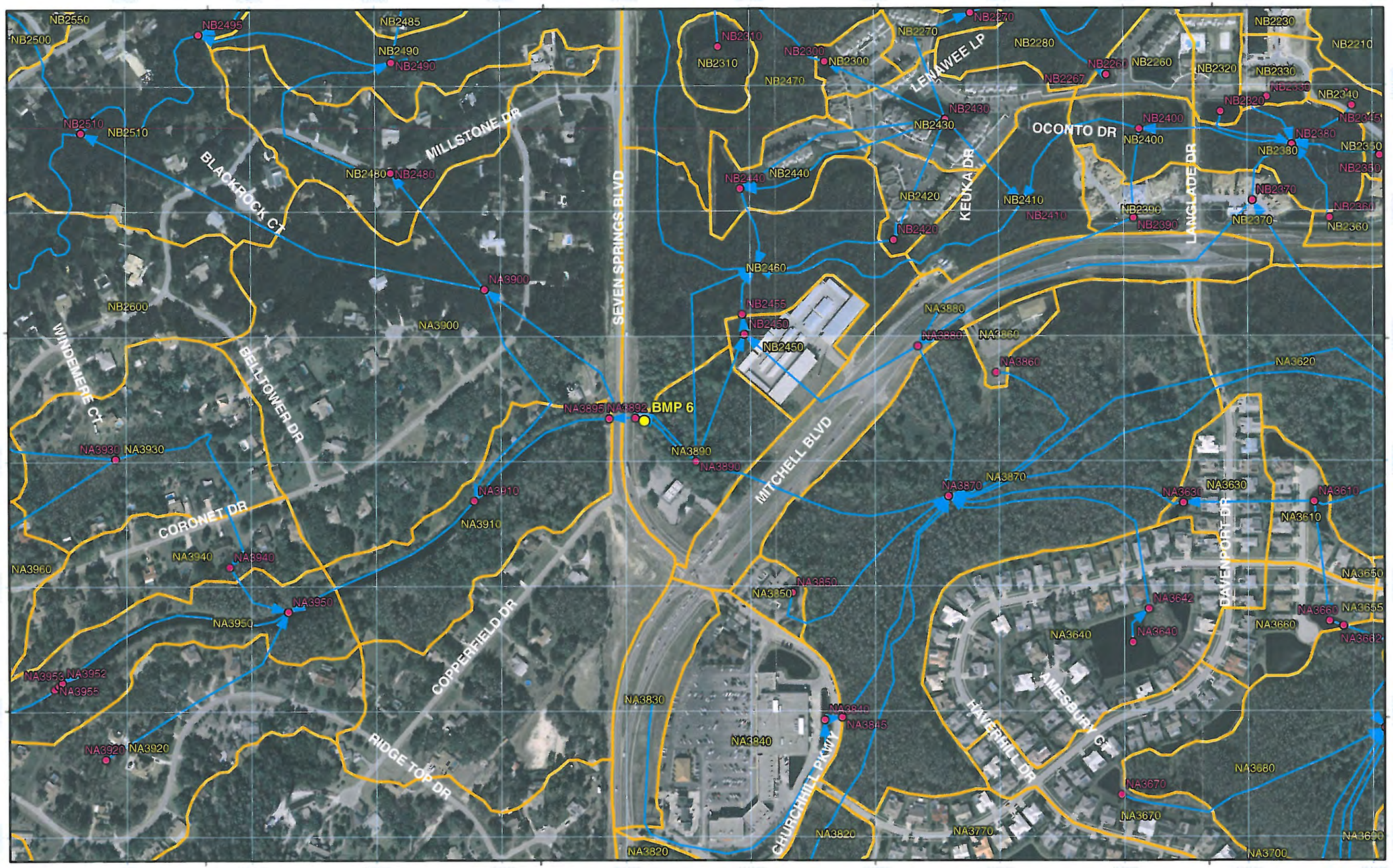
Project: 07-101	Projection: Florida West Stateplane	
Prepared: 03-14-08	Horizontal Datum: NAD83	Vertical Datum: N/A
Prepared by: C.A.C.	Modified by:	Modified:
File: W:\Projects\2007\07-101\ArcGIS_ArcLayouts\20080314\Figure_A3.mxd		

PROJECT LOCATION MAP

DUCK SLOUGH BMP LOCATIONS # 7 - 10

Ardaman & Associates, Inc.
Geotechnical, Environmental and Materials Consultants
Phone: 407-855-3860 Fax: 407-859-8121
8008 South Orange Avenue
Orlando, Florida 32809

FIGURE A2



N
W E
S

SCALE: 1" = 400'

Feet
0 200 400

Legend
- BMP and Staff Gauge location
- Network Nodes
- Network Reaches
- BASINSHD

Project: 07-101	Projection: Florida West Stateplane	
Prepared: 03-14-08	Horizontal Datum: NAD83	Vertical Datum: N/A
Prepared by: C.A.C.	Modified by:	Modified:
File: W:\Projects\2007\07-101\ArcGIS_ArcLayouts\20080314\Figure_A2.mxd		

PROJECT LOCATION MAP
DUCK SLOUGH BMP LOCATIONS # 6

Ardaman & Associates, Inc.
Geotechnical, Environmental and Materials Consultants
Phone: 407-855-3860 Fax: 407-859-8121
8008 South Orange Avenue
Orlando, Florida 32809

Duck Slough BMP Engineering
Project Number 07-101

Appendix B

Gate Manufacturer's Guidelines

Fabricated Sluice Gate, Slide Gate and Stop Gate Installation, Operation & Maintenance Manual

Introduction

This manual describes the recommended methods of installation, initial operation and maintenance for Whipps, Inc. fabricated sluice gates, slide gates, weir gates, operating mechanisms and related components. This manual should be used in conjunction with the approved installation drawings provided by Whipps, Inc.

Whipps, Inc. gates are custom built to meet the requirements of each specific application. The gates provided have low leakage characteristics. However, care must be taken in the handling, storage and installation of the equipment to ensure that it will function as intended and restrict leakage within the specified parameters.

The information in this manual is intended only as a recommendation for the proper and satisfactory installation of our equipment. Whipps, Inc. assumes no liability, expressed or implied, for the interpretation of the recommendations or faulty installation of the gates. Whipps, Inc.'s responsibility is limited to defects in manufacturing.

Handling and Storage

To prevent personal injury or equipment damage, follow standard safety procedures when handling equipment and be sure rigging equipment is properly set and in safe working condition.

When unloading the equipment from the box trailer or flat bed truck, use care during removal and storage. If the equipment has been shipped mounted to a wooden skid, lift the skidded material from the bottom.

If damage has occurred in transit, file the necessary report with the freight carrier and contact Whipps, Inc. immediately.

Thoroughly review the packing list and compare the items on the list to the equipment received.

Although Whipps Inc. gates are durable and heavily constructed, care is necessary during storage, handling and installation. Stem threads and hoists have precision surfaces that should be protected from damage.

Equipment should be stored on planks or timbers on a flat surface to keep them off the ground and to prevent distortion. Equipment should be covered with tarps to protect the equipment from foreign matter while stored. Where there are a number of medium or small gates and where storage space is limited, it maybe necessary to stack the gates with heavy timber blocking placed

between the gates to prevent damage. When stacking equipment, take care to avoid damaging operator pinion shafts or other components that may extend upward or outward.

If electric actuators or hydraulic cylinders are provided, extra care is required to protect this precision equipment. This equipment should be stored indoors in accordance with the original manufacturer's instructions. For electric actuators, this may include the energizing of heaters upon receipt of units to prevent corrosion of controls. For hydraulic cylinders, this includes storing cylinders vertically to prevent damage to seals.

To prevent bending when handling and storing, stems should be supported over their full length. They should be stored on a flat surface and the threaded portion should be covered and protected from damage. Couplings and thrust nuts (when applicable) may be shipped on the stems and may require removal prior to installation. Stop collars and anchor bolt hardware is normally shipped in a bag or box. Operating mechanisms should be handled and treated as precision machinery and protected accordingly.

Installation

Installation - General

The most important aspects of a gate installation are listed in this section. If these recommendations are followed, a proper gate installation is assured.

Carefully review the installation drawing for each gate prior to installation to confirm proper setting and component location. If the installation drawings are not available, please contact Whipps Inc. at 978-249-7924 or www.whipps.com.

If upstop bolts (upward opening gates) or downstop bolts (downward opening gates) have been removed from the side frames to facilitate installation, they must be re-installed.

Installation - Embedded Frames

1. On gates with embedded side frames and/or an embedded invert member, box-outs or recesses are required in the channel walls and/or the channel floor during the concrete pour. The box-outs shall be of sufficient size to accommodate the gate. See installation drawings for dimensional information.

2. The frame must be well supported prior to the addition of grout to prevent distortion. Distortion of the frame will cause excessive operating effort due to binding of the slide. Distortion of the frame can also cause excessive leakage.

3. Care should be taken to keep the seals and slide free from grout.

Installation – Gate and/or Components Mounted with Anchor Bolts

When anchor bolts are furnished for mounting the gate or components such as pedestals, stem guides and/or wall brackets, the location and projection of the anchor bolts will be shown on the installation drawing. In most cases, epoxy or wedge type anchor bolts will be utilized. When hook type anchor bolts are utilized, the anchor bolts should be placed in the holes drilled in the forms at locations indicated on the drawings. The hook ends of the anchor bolts should then be wired to the opposite form or to reinforcing rods to hold the bolts firmly in place.

Where gates are mounted with anchor bolts it is necessary that a uniform grout pad (non-shrink grout) or a resilient gasket be placed between the flange of the gate and the concrete wall. This grout or gasket is necessary to serve as a seal between the gate and wall and the type will be indicated on the installation drawings. The projection of the anchor bolts, shown on the installation drawings, includes provisions for the grout or gasket. Grout pads might also be required for pedestals, stem guides or wall brackets.

When a gasket is utilized to seal between the gate and the wall, the wall will need to be straight and plumb. If the wall is not straight and plumb, leakage can occur between the gate and the wall. Removal of the gate, modifications to the wall and re-installation of the gate may be required to rectify this situation.

Gates should not be mounted directly to a wall without grout or a gasket as this will result in leakage between the gate and wall.

1. All anchor bolts should be checked to prior to installation to ensure that the threads are undamaged. Anchor bolts should be installed as recommended by the anchor bolt manufacturer.

2. **Do not install the gates without mounting the jacking nuts on the anchor bolts as shown on the installation drawing.** If the jacking nuts are not installed and the outside nuts are overtightened, frame distortion can occur and this can lead to excessive leakage. Frame distortion can pull the seal away from the slide thus creating a path for leakage.

3. In most cases, two nuts will be provided for each anchor bolt. Refer to the installation drawings for details. The jacking nut, should be installed on the anchor bolt prior to mounting the gate, leaving approximately 1 inch for the insertion of grout. The jacking nut needs to be positioned to ensure that the gate will be mounted vertically even if the concrete wall is not straight and plumb.

4. After anchor bolt and jacking nut installation, the gate should be lifted and carefully set in place in such a way as to not damage the threads on the bolts. After the gate is mounted on the anchor bolts, attach the other nuts on the anchor bolts. The use of the double nut arrangement helps to ensure that the gate will be mounted straight and plumb and can be firmly tightened into position without distortion.

5. With the gate flange located approximately 1 inch from the wall, forms should be mounted around the flange and a non-shrink grout should be placed between the flange and the concrete wall. The grout needs to be completely applied around the perimeter of the gate as shown on the installation drawings. All voids should be filled with grout to ensure that leakage cannot occur between the gate and the wall.

6. Care should be taken to avoid getting grout on the seals or the slide. All grout that adheres to the seals or the slide should be removed.

7. **Closely review the installation drawings, as it might be necessary to grind or cut off a portion of the anchor studs to provide clearance for unimpeded vertical travel of the slide**. In particular, check the anchor bolt projection on the anchor bolts across the top of the opening on upward opening gates with top seals and check the anchor bolt projection across the bottom of the opening on downward opening gates. Where shown, the anchor studs should be cut down to the nut.

8. If any upstop bolts (upward opening gates) or downstop bolts (downward opening gates) were removed from the side frames to facilitate installation, they need to be re-installed.

Installation - Wall Thimbles

1. The front face of the wall thimbles, whether rectangular, square or circular, are marked with vertical centerlines and with "TOP" stamped on the top of the wall thimble. **Wall thimbles should be set in place with the "TOP" mark up and top and bottom centerline marks plumb.**

2. After being set at the proper elevation, the wall thimble must be internally braced to carry the weight of the concrete. Care should be used in placement of the braces so as not to distort the wall thimble. Gate attachment hardware will be misaligned if the wall thimble is distorted.

3. The wall thimble should be firmly supported on the form. Forms should be supported and stiffened against movement. If forms move, they will distort the wall thimble mounting flange and the gate may leak.

4. The tapped holes in the face of the wall thimble must be plugged or capped to prevent concrete from entering the holes.

5. After the concrete has hardened and the forms removed, the front surface of the wall thimble should be thoroughly cleaned. Make sure to remove all concrete that has flowed onto the surface from the edges. All tapped holes should be inspected and cleaned of concrete if necessary.

Installation - Gate Mounted to New Wall Thimble

1. The face of the wall thimble should be thoroughly cleaned and all wall thimble studs in place. Care should be taken to prevent damage to the studs during installation.

2. A gasket material is required between the surface of the wall thimble and the mounting flange of the gate. Mastic is normally used for this purpose and should be applied in accordance with the label directions.

3. If a gasket material other then mastic is used, it should be installed over the studs to provide a smooth mounting surface for the gate. If the gasket is other than one piece, the gasket joints should be aligned in accordance with the match markings and cemented with a liquid-type gasket material. When applying gasket materials, care should be taken to ensure that excessive amounts of lumpy, dried materials are not present when the gate is drawn tightly and evenly to the wall thimble.

4. The mounting flange of the gate should be thoroughly cleaned.

5. The gate can then be lifted and set over the studs and the nuts put in place and tightened. Care should be taken during this process to help ensure that the threads on the studs are not damaged. The sequence of tightening should be done in multiple passes by applying progressively larger force each pass. Equal torque should be applied to all nuts so that the gate is firmly and evenly tightened to the mounting flange without distortion. See following "Nut Tightening Torque" schedule.

Installation - Gate Mounted to an Existing Wall Thimble

See instructions for "Installation - Gate Mounted to a New Wall Thimble" after a close inspection of the existing wall thimble once the front flange is accessible. If the mounting flange of the existing wall thimble is damaged, contact the factory prior to installation.

Installation – Gate Mounted to a Pipe Flange

Where gates are mounted on pipe flanges, the procedure is the same as when the gate is mounted on a wall thimble. The type of attachment hardware shall be as shown on the installation drawings.

Consult the factory for assistance if the flange on which the gate is to be installed is damaged or unusable for any reason.

Nut Tightening Torque

Proper tightening of the nuts on anchor bolts holding the gate to the wall or studs holding the gate to the wall thimble may prevent serious problems in operation or performance of the gate. Tabulated below, are recommended torque values for common fastener sizes.

*DIAMETER (in.)	TORQUE (ft.-lb.)
1/2	35
5/8	75
3/4	100
7/8	150
1	200

Installation – Assembly

On non-self contained gates, some field assembly is required. Refer to the installation drawings for the location and position of all components.

When assembling gates that have dual stems, make sure that the stems are installed straight and plumb. When the operators are installed, it is important that both stems be in proper time and the top of the slide be level.

All pedestals are identified by the installation drawing and/or drawing number and should be used with the proper gate and stem.

1. After the stem has been completely assembled and positioned in place, the operator can be lowered onto the stem and turned into position by operation of the handwheel or crank.

2. Jacking nuts should be placed on the anchor bolts between the operating floor and the base of the pedestal so that it is plumb and the base is approximately 1" above the operating floor.

3. Approximately 1" of grout should then be placed between the pedestal base and the operating floor.

4. After the grout has hardened, the outside anchor nuts should be tightened firmly in place.

5. For manual operators, after the operator has been installed, tension should be applied to the stem by the handle or crank in a direction that would normally open the gate. However, the gate should not be opened. The intent is merely to apply tension that will result in a straight stem.

6. For electric actuators, the gate should be opened with the manual handwheel at least 3 inches before using the electric controls. In this manner, the proper phasing and direction of rotation of the motor can be determined without damaging the gate assembly. Once the unit has been installed, the manufacturer's directions should be followed closely in setting the closing and opening limit switches. The torque switches have been properly set at the factory and should not need adjustment. Follow the manufacturer's instructions if it appears that adjustment is necessary

7. The stem guide, when applicable, should be anchor bolted to the wall in accordance with the installation drawings with uniform clearance possible between the stem and the stem guide bushing.

8. The stem should be thoroughly cleaned and lubricated with a heavy duty industrial grease, such as Shell Alvania #2EP or similar. See lubrication chart.

9. The gates should be placed in the fully closed position. On upward opening gates, the slide should be lowered so that there is minimum compression of the slide onto the invert seal. On downward opening gates, the slide should be positioned as shown on the installation drawing.

10. Stop collars are provided on manually operated gates. The stop collar should be threaded onto the top of the stem only after the operator has been installed and the gate is in the fully closed position. Set the stop collar so there is approximately 1/16" of clearance between the bottom of the stop collar and the top of the operator nut. Set screws should then be tightened to hold the stop collar in place.

11. The crank or handwheel should turn easily. If there is any binding or noise during operation, check to be sure that the stem guides, pedestal and stem are properly aligned and the stem threads are lubricated.

Hydraulic Cylinder Operators

Hydraulic cylinders should be stored in the vertical position and filled with hydraulic fluid. If it is necessary to store them horizontally for a short period, they should be rotated every two weeks to help prevent damage to the seals.

1. Hydraulic cylinders should be mounted on the anchor bolts in such a way that the piston rod and stem are in proper alignment and there is sufficient clearance for piping, fitting, etc.

2. The coupling between the piston rod and the stem should be screwed into place and locked.

3. With the gate in the closed position, the piston should be lowered so that it is in contact with the bottom head of the cylinder.

4. With the piston in this position, the thrust nut should be adjusted on the stem so that it is in contact with the bottom of the thrust nut pocket. Set screws should be tightened to lock it in place. In most cases, the top area of the piston is larger than the underside. Therefore, if pressure applied to both surfaces is the same, more force will be applied in the closing direction than in the opening direction. For that reason, pressure-reducing valves should be provided in the line to the top of the cylinder to lower the pressure to that required to properly close the gate. In this way, full operating pressure can be applied to the bottom of the piston resulting in more opening than closing force. All piping should be thoroughly flushed and cleaned prior to making connection to the hydraulic cylinder.

Prior to Operating

1. Clean both sides of the slide, the guides, seals and stem of all grout, sand, paint and other debris.

2. Check to make sure that stem guides are positioned correctly and are securely fastened.

3. Clean and lubricate the stem threads.

Operating Instructions

Whipps, Inc. fabricated gates are constructed to operate satisfactorily under the specified operating conditions. These gates should be operated with care so as not to exceed the specified conditions. If, in the operation of the gate, an obstruction is met, either in the opening or closing direction, the obstruction should be removed before continuing in the operation. When the gate is fully opened or closed, excessive force should not be placed on the handwheel, crank or gate stem by personnel in an effort to move the gate further. There should never be a need for a pipe extension or other additional leverage applied to the handwheel or crank. If excessive force is required, a thorough visual inspection of the gate assembly and stem is strongly recommended.

If a problem arises in the operation of the gate, such as an unusual head condition or evidence of excessive corrosion, the factory should be consulted before the gate is used or operated.

Installation Inspection Check List

Manually Operated Gates

1. Check hoist, stem guide, and gate attaching bolts for proper tightness.

2. Apply tension to stem and check any stem guides for proper alignment. There must be a uniform clearance between the operating stem and all stem guides.

3. Visually inspect all gate seals, including the invert seal, and both sides of the slide. Thoroughly clean off all foreign matter.

4. Visually inspect the threaded portion of the stem. It must be clean and free of foreign matter, including dirt or sand, and lubricated with a suitable industrial grease. If a wire brush is used to clean the stem, use only a stainless steel type. Do not use carbon steel brush.

5. Adjust stem stop collar to within 1/16" of the top of the hoist operating nut and lock in place.

6. Install stem cover and stem cover indicator strips if applicable.

Maintenance Instructions

Gates

Gates should be visually inspected at regular intervals (at least every six months) for signs of misalignment, damage or corrosive attack. Please keep in mind that corrosion, when it occurs, is most prominent at the water line.

Please note that gates with non-rising stems typically require additional maintenance. If the water level rises to the threaded portion of the stem, the threads may become coated with grit or debris. If the threads become grit laden, the following procedure is recommended to prolong the useful service life of the operating nut (mounted on the slide):

1. The threaded portion of stem should be cleaned and re-greased. The stem must remain free of grit and be sufficiently lubricated to prevent accelerated wear to the operating nut (mounted on the slide).

Manual Operators

At least once a year, all grease fittings (if applicable) should be lubricated with a small amount of heavy duty grease which will not harden in cold weather nor become liquid in warm weather. See Lubrication Chart. Some manual operators may be permanently sealed and these units will not have lubrication fittings.

Electric And Hydraulic Operators

Periodic maintenance schedules should be set-up in accordance with the original manufacturer's operation and maintenance manual.

Modulating Electric Operators

These operators can cause accelerated wear in the operating nut since the stem and gates are operated more frequently and at times continuously.

1. The threaded portion of the stem must be clean and greased at all times.

2. The operating nuts should be removed and inspected for wear after the first six months of operation and every year thereafter.

3. Replace bronze operating nut as soon as noticeable wear is evident.

Operating Stems

It is important that operating stems be periodically cleaned and greased. Even though some environmental conditions are more severe than others and the use of pipe covers will protect stems, they still need to be cleaned and greased at least once every six months, more often if the grease becomes dirty. This is especially important on large gates and/or frequently operated gates such as gates with modulating electric actuators. See Lubrication Chart.

Installation Drawings

The drawings submitted by Whipps, Inc. for approval and/or field use, are planned so that the installation drawing is the master reference.

The drawings depict as much as possible of the structure surrounding the supplied equipment. The location of embedded material such as anchor bolts and wall thimbles are shown. The identification of fasteners and components (studs, anchor bolts, gate assemblies, hoists, stems, stem guides, stem couplings, adaptor plates, wall thimbles, thrust nuts, stop collars and other equipment) is done by calling out physical sizes and/or assembly or detail drawing numbers. More information is available on the detail drawings, which have been included with the installation drawing.

Spare Parts

Whipps, Inc. does not typically recommend the stocking of spare parts by customers or owners since the equipment is designed for a very long service life when recommended maintenance procedures are followed.

If a repair part is required, contact the PARTS DEPARTMENT at Whipps, Inc. at 978-249-7924 or www.whipps.com with as much of the following information as possible:

1. Plant name and location.
2. Original (four or five digit) shop order number which is indicated on correspondence and installation drawings.
3. The installation drawing number, and a description of the part, with any other available drawing numbers or the size (width x height) and location of the gate in the plant.
4. Description of damage and cause. (Digital photos of damage are useful.)
5. Approximate delivery requirements.

Field Service Policy

The equipment furnished on this order has been inspected prior to leaving the factory and has been accepted by the freight carrier. Please check the packing list accompanying the shipment for shortages and examine the equipment for damages prior to accepting the shipment. Before handling, storing or installing this equipment, read the installation manual that accompanies the shipment.

Damage In Transit

If the equipment has been damaged in transit, the purchaser is responsible for filing the claim with the transport company. Contact Whipps, Inc. for assistance in filing the claim.

Installation, Inspection and Adjustment

Installation supervision, inspection of installed equipment, setting of limit switches and certification of satisfactory initial operation are not included unless specifically indicated on the customer's purchase order and accepted by the company. Otherwise, Whipps, Inc. will provide this service at the standard published charges.

Field Issues

If trouble develops either in the installation, operation or performance of the equipment, the installation manual and drawings should be checked to determine if the equipment has been installed properly. If proper performance or operation cannot be obtained and assistance from the factory is desired, please contact Whipps Inc or the local representative. Arrangements will be made to send a service technician to the job site if this is required. The service technician will make a thorough examination of the problem and if the equipment is faulty in workmanship or material, the necessary repairs will be made by the factory at no cost to the purchaser if within the warranty period.

If, however, the problem is due to faulty installation or adjustment, the cost of the field service will be charged to the purchaser.

If repairs are made in the field by the purchaser or authorized by the purchaser, backcharges for these repairs will not be accepted by the company unless the company has been notified prior to the incurring of these costs and has accepted the responsibility for these repairs.

Whipps, Inc. will not be liable for contingent costs or costs of delays due to the faculty equipment and the repairs thereof.

Field Service Charges

Field service charges begin from the time of departure until the return of the service person and include a daily rate plus travel and subsistence expenses. Premium day and hour rates will be charge on Saturdays, Sundays, and Holidays and for time spent before 6 a.m. or after 5 p.m., or over eight hours per day. A schedule of Field Service charges is available from the Whipps, Inc. Field Service Department.

Operation and Maintenance Manual

Rocky Sink/Boggy Creek Stormwater Infrastructure Facilities
Pasco County, Florida

for

Pasco County

and

The Southwest Florida Water Management District

August 2006
(Revised)

Ardaman & Associates, Inc.

Geotechnical, Environmental and
Materials Consultants

August 4, 2006
File Number 04-107

Florida Design Consultants, Inc.
3030 Starkey Boulevard
New Port Richey, Florida 34655

Attention: Mr. Jim Choncholas, P.E.

Subject: Operation and Maintenance Manual (Revised), Rocky Sink/Boggy Creek Stormwater Infrastructure Facilities, Pasco County, Florida, for Pasco County and the Southwest Florida Water Management District.

Gentlemen:

As requested and authorized by Florida Design Consultants, Inc., we submit this revised Operation and Maintenance Manual for the Rocky Sink/Boggy Creek Stormwater Infrastructure Facilities in Pasco County, Florida.

This manual has been prepared for the exclusive use of Florida Design Consultants, Inc., Pasco County and the Southwest Florida Water Management District for specific application to the subject project in accordance with generally accepted water resources engineering practice. No other warranty, expressed or implied, is made.

We trust that the following report satisfies your current needs. Please contact the undersigned if you have any questions or when we can be of further service.

Very truly yours,
ARDAMAN & ASSOCIATES, INC.

8/4/06

David A. DeLoach, P.E.
Director, Water Resources
Florida Registration No. 47761

DAD:dad

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FIGURES

INTRODUCTION

Pasco County operates and maintains drainage system facilities to provide enhanced stormwater conveyance capacity in the vicinity of Rocky Sink and Boggy Creek. The facilities were designed to reduce peak flood elevations and to shorten flood durations in the historically flood-prone Lake Worrell area. This manual describes procedures that are to be followed during operation and maintenance of those drainage facilities.

The operating procedures described herein are based upon: (1) an evaluation of analytical modeling results (simulating the hydrologic and hydraulic response of the contributing watershed, primary conveyance system and receiving waters under various storm event conditions); (2) a review of historical records of stage and flow conditions at Lake Worrell and in the Pithlachascotee River; and (3) careful consideration of other identified constraints. Over time, these operational procedures are to be refined (e.g., updated every five years, or when deemed appropriate) using the accumulated records of water surface elevations and reports of structure operations.

The maintenance procedures that are discussed in this manual are based upon manufacturer's recommendations and generally accepted practices. Specific recommendations from the manufacturer for the maintenance of equipment (gate mechanisms, stage recorders, etc.) are provided in the appendix.

Facility Locations

Figure 1 presents a general location map of the facilities that are described in this manual.

Operational Overview

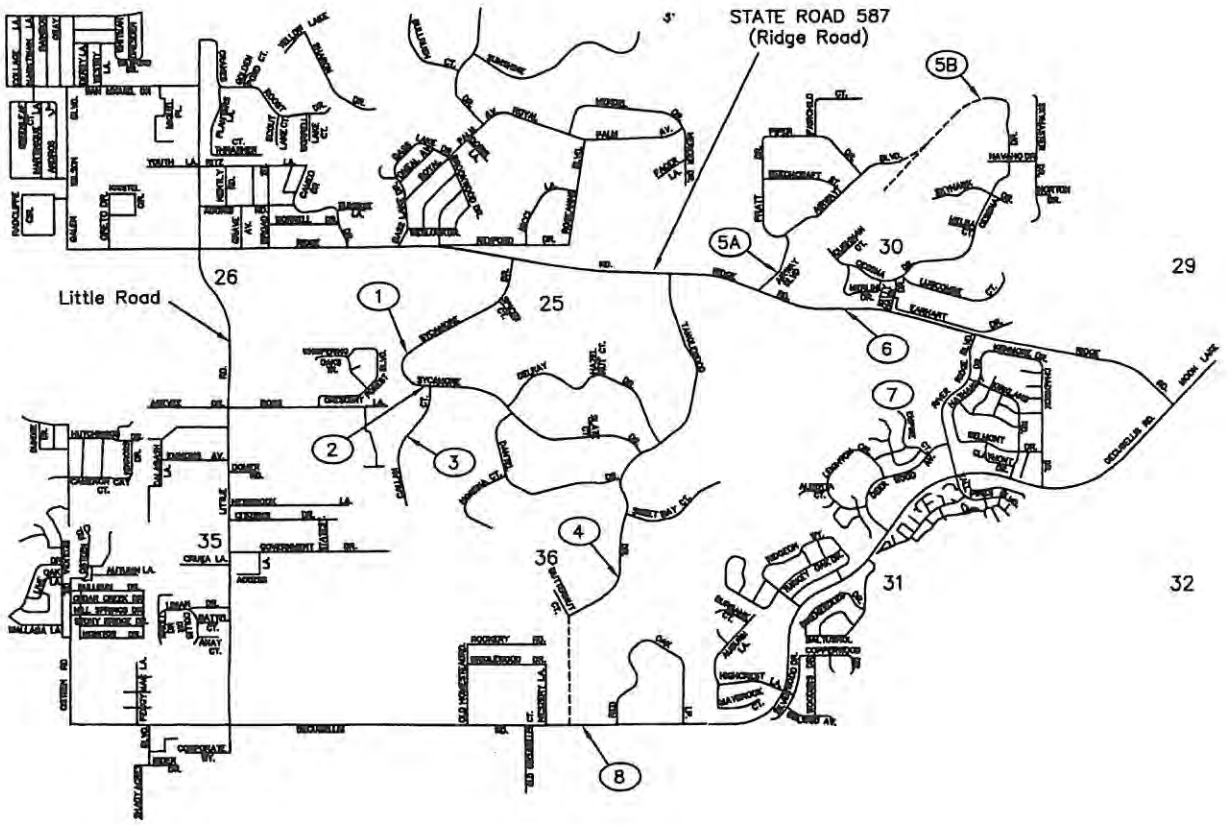
The drainage facilities described in this manual provide enhanced discharge capability from the Rocky Sink/Boggy Creek watershed to the Pithlachascotee River, using enlarged roadway crossings in combination with gated water control structures.

In cases of extreme or prolonged flooding in the vicinity of Lake Worrell, the gated structures may be operated in a manner so as to safely and efficiently convey standing floodwater southward to the Pithlachascotee River. Controlled discharges to the Pithlachascotee River will be made in strict accordance with the specific conditions that are set forth in this detailed operations manual and will be performed in a manner that does not cause or exacerbate flooding conditions on the river itself. No operational discharges are to be performed until the Pithlachascotee River has been observed to have receded from its peak for a period of not less than three hours.

Maintenance Overview

Maintenance of channels and structures will be performed on a quarterly basis by Pasco County. Scheduled maintenance activities shall consist of inspection, mowing, debris removal, and erosion control/repair. Sluice gates and stage recorders are to be maintained in accordance with manufacturer's specifications. In addition to scheduled (quarterly) maintenance, the system of channels and conveyance structures is to be visually inspected after rainfall events larger than three (3) inches.

FIGURE 1



SITE LOCATION

N

1. NORTHERN SYCAMORE DRIVE CROSSING
2. SOUTHERN SYCAMORE DRIVE CROSSING
3. CALLAN COURT CROSSING (F.K.A. CEDAR COURT)
4. TANGLEWOOD DRIVE CROSSING
5A. HIDDEN LAKE AIRPORT SOUTH
5B. HIDDEN LAKE AIRPORT NORTH
6. STATE ROAD 587
7. NEW DIVERSION STRUCTURE NEAR PASCO–HERNANDO COMMUNITY COLLEGE
8. DECUBELLIS ROAD CROSSING

FACILITY DESCRIPTIONS

As previously described, the facilities described here are designed to permit enhanced flood discharge capability from Rocky Sink to the Pithlachascotee River. The following describes the specific elements of the system. The reader should also refer to as-built construction plans to become familiar with the facilities.

Northern Sycamore Drive

Consists of double 12x4 foot box culverts, with inverts at elevation 17.00 feet, NGVD. The box culverts have vertical headwalls and rounded entrances to reduce entrance losses.

Immediately upstream of the box culverts, a reinforced concrete box facility holds four 4x4 foot underflow gates, which are normally closed. The inverts of the gate openings are at elevation 17.25 feet, NGVD. In addition, the structure contains an additional opening, with a sill elevation at 19.07 feet, NGVD. That opening is equipped with stop logs to allow additional flexibility in operations.

Approach and exit channels consist of a five foot bottom width trapezoidal channel, with 3:1 side slopes, and a flow line at elevation 17.00 feet, NGVD.

Southern Sycamore Drive

Consists of double 12x4 foot box culverts, with inverts at elevation 17.00 feet, NGVD. The box culverts have vertical headwalls and rounded entrances to reduce entrance losses.

Immediately upstream of the box culverts, a reinforced concrete box facility holds four 4x4 foot underflow gates, which are normally closed. The inverts of the gate openings are at elevation 17.25 feet, NGVD. In addition, the structure contains an additional opening, with a sill elevation at 18.30 feet, NGVD. That opening is equipped with stop logs to allow additional flexibility in operations.

Approach and exit channels consist of a five foot bottom width trapezoidal channel, with 3:1 side slopes, and a flow line at elevation 17.00 feet, NGVD.

Callan (formerly Cedar) Court

Consists of double 12x4 foot box culverts, with inverts at elevation 17.25 feet, NGVD. The box culverts have vertical headwalls and rounded entrances to reduce entrance losses.

Approach and exit channels consist of a five foot bottom width trapezoidal channel, with 3:1 side slopes, and a flow line at elevation 17.00 feet, NGVD.

Tanglewood Drive

Consists of double 12x4 foot box culverts, with inverts at elevation 17.00 feet, NGVD. The box culverts have vertical headwalls and rounded entrances to reduce entrance losses.

Immediately upstream of the box culverts, a reinforced concrete box facility holds four 4x4 foot underflow gates, which are normally closed. The inverts of the gate openings are at elevation

17.25 feet, NGVD. In addition, the structure contains an additional opening, with a sill elevation at 20.15 feet, NGVD. That opening is equipped with stop logs to allow additional flexibility in operations.

Approach and exit channels consist of a five foot bottom width trapezoidal channel, with 3:1 side slopes, and a flow line at elevation 17.00 feet, NGVD.

DeCubellis Road

Consists of double 12x4 foot box culverts, with inverts at elevation 17.25 feet, NGVD. The box culverts have vertical headwalls and rounded entrances to reduce entrance losses. Four elliptical pipe culverts beneath DeCubellis Road are located adjacent to these box culverts.

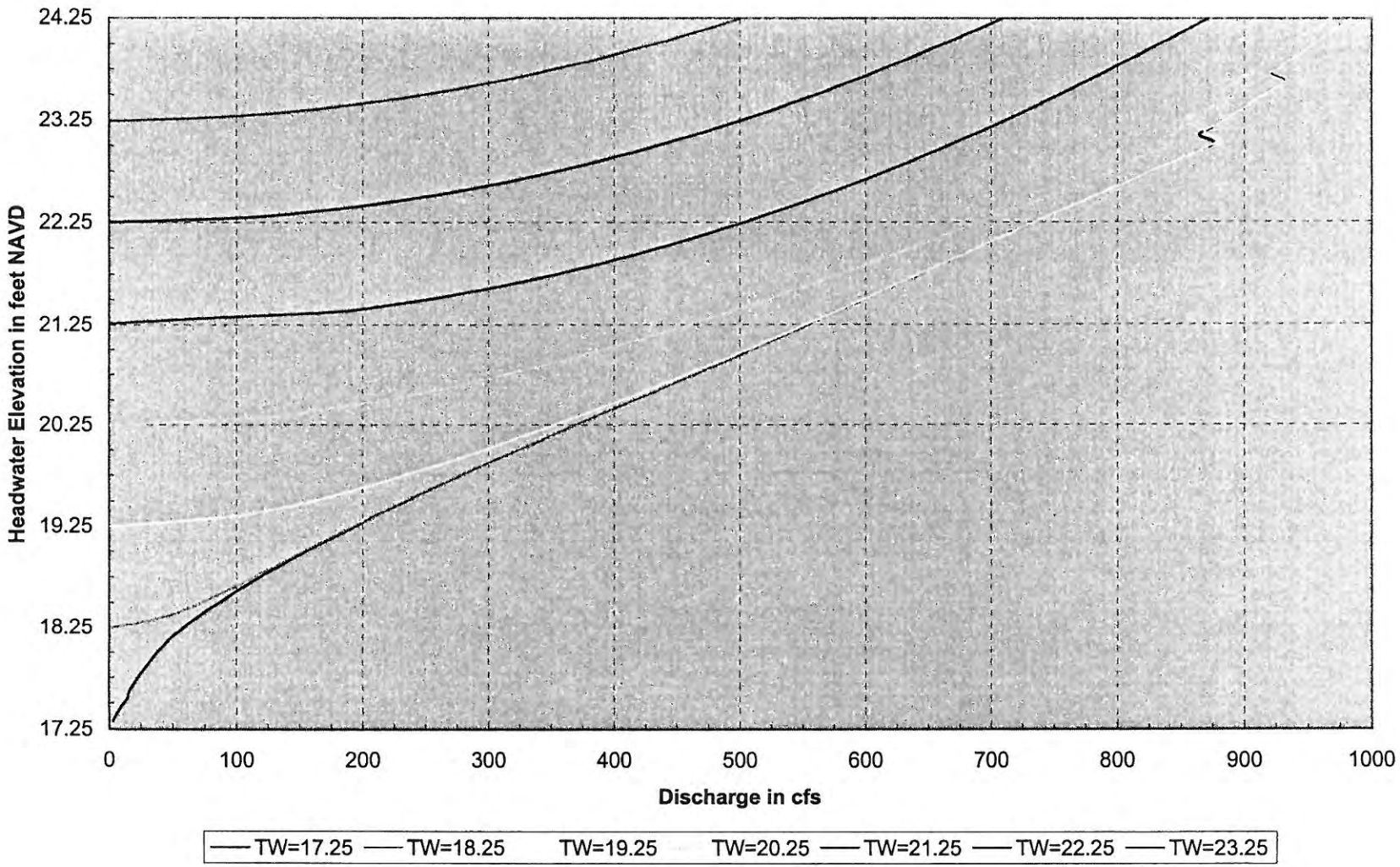
Immediately upstream of the box culverts, a reinforced concrete box facility holds four 4x4 foot underflow gates, which are normally closed. The inverts of the gate openings are at elevation 17.25 feet, NGVD.

STAFF GAGE AND STAGE RECORDER LOCATIONS

Decisions will be made in the field regarding the operation of the above facilities for flood control, and will be conditioned upon stage (water surface elevation) readings at two locations. The first is on Lake Worrell, at a staff gage located on the north side of Ridge Road. The second is on the Pithlachascotee River, at a staff gage located on the east side of Little Road. Stage-recording equipment will be maintained at each of those two locations, in order to develop a continuous historical record of conditions. Staff gages will be installed upstream and downstream of the DeCubellis Road control structure for recording of discharge information and calculation of volume mitigation requirements. Staff gages will also be installed upstream and downstream of each gated structure to provide localized information of head conditions across each structure.

Monitoring. County staff will maintain a historical record of water surface elevation for all sites described above. This includes routine (weekly) monitoring and reporting of staff gages on Lake Worrell and on the Pithlachascotee River, as well as, monthly downloading and reporting of strip charts for the stage recorders on Lake Worrell and on the Pithlachascotee River. During operation of the system, staff gage readings shall be recorded on an hourly basis at the DeCubellis Road control structure. Those staff gage readings shall be used later, in conjunction with a family of hydraulic rating curves (provided herein) to calculate volume discharged during the operation. Also, during operation of any other structure, staff gage readings shall be recorded on an hourly basis to describe upstream and downstream conditions during the operation.

DeCubellis Road Operational Rating Curve



OPERATIONAL PROCEDURES

Ordinarily, these drainage facilities are used to maintain normal water levels and hydroperiods in area lakes and wetlands. The facilities are to become "operational" for flood control purposes when Lake Worrell exceeds elevation 19.25 feet (NGVD) and when rainfall forecasts are such that flood conditions are judged to be imminent.

Interpretation of rainfall forecasts and impending flood conditions will require some judgment, and experience will be gained over time. Forecasts of significant rainfall events associated with tropical depressions, tropical storms, and hurricanes, as well as slow-moving frontal systems, should certainly prompt consideration of initiating structure operations. While operating the system, constant re-evaluation of all the "conditions" described in this section should continue, allowing for quick and deliberate response to changes in monitored stage and rainfall.

Controlled discharges to the Pithlachascotee River shall be made in accordance with the following description of operational procedures (observation points and structural operations) and will be performed in a manner so as not to cause or exacerbate flooding conditions on the river itself. No operational discharges are to be performed until the Pithlachascotee River has been observed to have receded from its peak for a period of not less than three hours.

Observation: Staff Gages and Stage Recorders on Lake Worrell and Pithlachascotee River

Normal Observation: Routine (weekly) monitoring of staff gage at Lake Worrell during wet season and (monthly) download of strip charts.

Flood Control Observation: Hourly observation of staff gages.

Only when both of the following conditions are met:

Condition 1: Lake Worrell Stage is GREATER than Elevation 19.25 feet, NGVD.
Condition 2: Rainfall forecast / flooding conditions on Lake Worrell judged imminent.

Return to Normal: Routine monitoring and download of strip charts when Lake Worrell Stage recedes to Elevation 19.25 Feet, NGVD.

Location 1: Northern Sycamore Drive

Normal Status: All Gates Fully Closed.

Flood Control Operation: All Gates Fully Opened

Only when all three (3) of the following conditions are met:

Condition 1: Lake Worrell Stage is GREATER than Elevation 19.25 feet, NGVD.
Condition 2: Pithlachascotee River Stage receding from peak.
Condition 3: Rainfall forecast / flooding conditions on Lake Worrell judged imminent.

Return to Normal: Close All Gates when Lake Worrell Stage recedes to Elevation 19.25 Feet, NGVD.

Location 2: Southern Sycamore Drive

Normal Status: All Gates Fully Closed.

Flood Control Operation: All Gates Fully Opened

Only when all three (3) of the following conditions are met:

Condition 1: Lake Worrell Stage is GREATER than Elevation 19.25 feet, NGVD.
Condition 2: Pithlachascotee River Stage receding from peak.
Condition 3: Rainfall forecast / flooding conditions on Lake Worrell judged imminent.

Return to Normal: Close All Gates when Lake Worrell Stage recedes to Elevation 19.25 Feet, NGVD.

Location 3: Callan (formerly Cedar) Court

Not an operational structure.

Location 4: Tanglewood Drive

Normal Status: All Gates Fully Closed.

Flood Control Operation: All Gates Fully Opened

Only when all three (3) of the following conditions are met:

Condition 1: Lake Worrell Stage is GREATER than Elevation 19.5 feet, NGVD.
Condition 2: Pithlachascotee River Stage receding from peak.
Condition 3: Rainfall forecast / flooding conditions on Lake Worrell judged imminent.

Return to Normal: Close All Gates when Lake Worrell Stage recedes to Elevation 19.50 Feet, NGVD.

Location 8: DeCubellis Road

Normal Status: All Gates Fully Closed.

Flood Control Operation: All Gates Fully Opened

Only when all three (3) of the following conditions are met:

Condition 1: Lake Worrell Stage is GREATER than Elevation 19.5 feet, NGVD.
Condition 2: Pithlachascotee River Stage receding from peak.
Condition 3: Rainfall forecast / flooding conditions on Lake Worrell judged imminent.

Return to Normal: Close All Gates when Lake Worrell Stage recedes to Elevation 19.50 Feet, NGVD.

Gate Structure Operation Sequence

When the foregoing operational constraints are met, the gated structures are to be opened in order from downstream to upstream starting at DeCubellis Road and moving toward Rocky Sink (i.e., first Location 8, then Location 4, then Location 2, then Location 1).

Operation (opening) of the gated structures should only be performed when there is a positive head differential between the upstream and downstream water body of at least 0.1 foot and the downstream stage should be steady or falling prior to opening the gated structure. This will require monitoring of local staff gages on the upstream and downstream ends of the structure during the operation.

MAINTENANCE PROCEDURES

The following presents a generalized schedule of maintenance activities:

- Debris shall be removed from channels and structures on a quarterly basis, at a minimum.
- Channels are to be mowed on a quarterly basis.
- Concurrent with mowing operations, channel bottoms and sides will be inspected for erosion. Erosion will be addressed by backfilling with clean fill and stabilizing with sod or concrete rip-rap, as necessary, to prevent additional erosion.
- Structures are to be inspected on a quarterly basis.
- Sluice gates are to be maintained in accordance with the manufacturer's specifications.
- The system is to be visually inspected after rainfall events larger than three (3) inches.
- Stage recorders on Lake Worrell at north side of Ridge Road and on the Pithlachascotee River at the east side of Little Road are to be serviced and strip charts downloaded in accordance with the manufacturer's specifications.

(Specific Sluice Gate information will be forwarded to the District prior to construction commencement.)

REFERENCES

Ardaman & Associates, Inc., 2004. Hydraulic Design Evaluation - Rocky Sink/Boggy Creek Watershed Improvement Project, Final Engineering Report.

Ghioto & Associates, Inc., 1993. Bear Creek Stormwater Management Master Plan, Final Report.

Ghioto & Associates, Inc., 1997. The Pithlachascotee River Flood Plain Analysis.