MEMORANDUM

To: Elizabeth Wong, PE (City of North Port)
From: Dave DeLoach, PE; Trillian Baldassari, PE
Copy: Rod Ghioto, PE
File: 16-00400-00

Subject: Tasks 1.5 and 2.3 Big Slough Flood Reduction Study, Evaluate Performance of Selected Set of Alternatives (revised)

July 14, 2017

Hydraulic Performance of Alternatives to Achieve Flood Reduction

A set of alternatives was previously identified by the project team from among numerous potential solutions considering expected performance, constraints on implementation, and other factors. Those selected alternatives have been combined and incorporated into the Big Slough watershed model to allow for an initial screening-level review of hydraulic performance. This memorandum summarizes work performed to incorporate the alternatives into the model, summarizes hydraulic performance for the mean annual, 10-year, and 100-year 24-hour storm events, and presents a synopsis of take-aways from the associated April 28, 2017 team meeting to discuss hydraulic performance.

Alternatives may be applicable to either Task 1 Myakkahatchee Creek at I-75 and Jockey Club areas or Task 2 regional flood reduction objectives, or both. Thus, work performed and information presented in this memorandum addresses the following elements of the Project Plan (Task 1.5 and Task 2.3).

- Task 1.5 Evaluate Hydraulic Performance of Selected Set of Alternatives
  - Perform Hydraulic Analyses
  - Summarize Hydraulic Performance
  - Meeting to Review and Discuss Performance of Alternatives
  - Identify Preferred Plan(s) of Improvements
- Task 2.3 Evaluate Hydraulic Performance of Selected Set of Alternatives
  - Perform Screening-Level Hydraulic Analyses
  - Summarize Hydraulic Performance
  - Meeting to Review and Discuss Performance of Alternatives
  - Identify Preferred Plans for Regional Improvements

Alternatives Considered

A project team meeting was held on December 20, 2016 to (1) discuss potential solutions to achieve flood reduction and (2) select a set of alternatives for initial hydraulic evaluation. Some flood reduction concepts, including raising roads out of the floodplain, pumping for stormwater control, and installation of flood barriers, were rejected by the project team as they were not appealing options for large-scale flood reduction. A more complete discussion regarding initial selection of alternatives is provided in the January 30, 2017 memorandum on Task 1.4 completion.

The following set of alternatives was selected by the team for initial hydraulic evaluation.

- Internal Flow Diversion and Increased Conveyance Capacity
    - Parallel Relief Channel Construction
    - Channel Improvements along R-580
    - R-36 Improvements to South of WCS-101
    - Snover Waterway to Cocoplum Waterway
    - Other Miscellaneous Improvements
- External Flow Diversion
    - Connection to Deer Prairie Slough
    - Enhanced Discharges Along Southern Boundary to Port Charlotte – Tidal Outfalls Only
- Offsite Storage
    - Constrain Inflows to City with Increased Upstream Floodplain Storage
    - Creation of Upstream Detention, Reservoirs, or Joint Use Facilities
- Acquisition
    - Purchase of Flood Prone Lands and/or Flood Prone Structures

Incorporation of Storage and Conveyance Alternatives into Big Slough Watershed Model

Selected alternatives were combined and incorporated into the Big Slough watershed model to allow for an initial screening-level review of hydraulic performance. The attached tables describe changes made to model elements to represent conceptual improvements. The tables also include notes on limitations and the manner in which alternatives were incorporated.

Hydraulic Performance

Proposed condition simulations were performed for the mean annual, 10-year, and 100-year 24-hour storm events, with stages and flows compared to the existing condition. Flood inundation areas for each simulation were mapped and used to depict areas removed from the floodplain. Flood reduction concepts are generally effective in reducing flood levels in the watershed, particularly in the I-75 study area, given assumptions and simplifications made while developing the screening-level models. Potential adverse impacts can also be seen in the model results. These initial storm event simulation results provide general information on potential performance characteristics of the flood reduction concepts. A more refined plan may not result in these same reductions, and preliminary model results and flood mapping should not be construed as a proposed future watershed condition.

Team Meeting

A Team Meeting was held on April 28, 2017 to discuss concepts and preliminary hydraulic performance. A copy of the presentation is attached and, for brevity, the reader is referred to that presentation for viewing of preliminary model results. The following summarizes notable points that were raised during the team meeting and the important issues that will be addressed as the project moves forward.

- Refinement and future performance evaluations of structure modifications at the upstream inflow point (to constrain and reduce inflows to the City of North Port) should consider a wider range of control elevations and results used by the District for decision-making on allowable changes to area, depth, and duration of inundation in upstream District lands.
- Refinement and future performance evaluations of the R-36 conceptual plan for improvements should consider channel widening with and without structure improvements providing additional conveyance beneath Tropicaire and I-75.
- Refinement of the R-36 conceptual plan for improvements should include matching pre/post discharge rates westward into the Deer Prairie system, so as to minimize increased flows downstream in the City of North Port. Preliminary modeling did not make full use of available discharge capacity to the west. No increase in rate of discharge to the Deer Prairie system should be considered, at this time.
- Refinement of the R-36 conceptual plan for improvements should consider (and preferably conform to) existing rights-of-way and drainage easements. City of North Port can provide existing ROW information as depicted on drainage system as-builts. However, acquisition of additional drainage easements along the western boundary from Sarasota County is not out of the question.
- Refinement of the R-36 conceptual plan for improvements should look more closely at existing bridge crossings and available right-of-way for channel enlargement to its confluence with R-226 and further downstream to Myakkahatchee Creek.
- Two culvert locations on the west boundary of Jockey Club should be evaluated and recommendations made regarding sufficiency and/or modifications needed to reduced flooding in the Jockey Club area (considering any increase in water levels that may result from the R-36 improvements and associated re-routing of flows).
- Refinement and future performance evaluations of the parallel bypass canal should include a more accurate representation of the combined conveyance, and should eliminate double accounting of conveyance as a result of overlapping open channel cross sections. A request has been made to the District for cross section source data, cross section extents, surveyed point locations, conveyance way boundaries, etc., from the District's North Port/Big Slough WMP project files (including intermediate deliverables).
- Only two Price Boulevard drop structures are scheduled to be replaced with the widening project. City of North Port will identify those structures and the other remaining structures will be revised to again match the existing condition model configuration. Future performance evaluations will include the two identified structures as operable gates.

Identification of the Preferred Plan

Based upon the Project Team's review and discussion of preliminary hydraulic evaluation results, the following set of alternatives are recommended for further development of the "preferred plan" of improvements to achieve flood reduction.

- Internal Flow Diversion and Increased Conveyance Capacity
    - Parallel Relief Channel Construction
        - Option 1 – Tier 1 only, reduced width, deeper excavation
        - Option 2 – Tier 1 only, full width, shallower excavation
        - Option 3 – No parallel relief channel
    - Channel Improvements along R-580
        - Option 1 – Constrained width, remains within existing available ROW
        - Option 2 – Unconstrained width, requires ROW or easement acquisition
        - Option 3 – No R-580 channel improvements
    - R-36 Improvements to South of WCS-101
        - Option 1
            - Constrained width, remains within existing available ROW
            - Additional culvert capacity beneath Tropicaire
        - Option 2
            - Unconstrained width, requires ROW or easement acquisition
            - Additional culvert capacity beneath Tropicaire
        - Option 3
            - Additional culvert capacity beneath Tropicaire
    - Snover Waterway to Cocoplum Waterway Improvements, as needed to mitigate impacts
    - Price Boulevard Structures and Other Miscellaneous Improvements, as planned by City
- External Flow Diversion
    - Connection to Deer Prairie Slough – maintain pre/post, no increased offsite discharge
- Offsite Storage
    - Constrain Inflows to City with Increased Upstream Floodplain Storage
        - Option 1 – No structure overflow up to 5-year event
        - Option 2 – No structure overflow up to 10-year event
- Acquisition
    - Purchase of Flood Prone Lands and/or Flood Prone Structures, as needed
    - Acquisition of Additional Drainage Easements, as needed

The above concepts and options will be further refined and combined into a small number of candidate plans. Hydraulic performance of the candidate plans will be evaluated using the Big Slough watershed model. The project team will select a plan of improvements from among the candidate plans, based on performance. The preferred plan will then be finalized and evaluated for costs and benefits, etc.

Reduce Inflow			
Flood Reduction Concept: Raise existing earthen berms on the northwest City boundary at the intersection of Big Slough canal with R-36 and R- 580 waterways. Also, raise earthen weirs farther north at the intersection of Big Slough canal and Power Line Road. Improvements would leave the Big Slough canal as the only conveyance system into the western portion of the City. Inflows would be reduced, dropping peak stages along Myakkahatchee Creek.			
Notes: Additional configurations to be evaluated as part of preferred plan evaluation. Field visit required to better understand and conceptualize configuration.			
Reach ID	Waterway	Structure	Description of Model Revision
RB0620B			Change to Bridge w/, 150' control at 24.0, 4' notch at 17.5
RB0620C			Change to Culvert Riser, 25'control at 24.0
W13208_W W4701_W W4707_W			Raise weir sub-elements above 5-year flood to 25.0001

Channel Improvements along R-580			
Flood Reduction Concept: The R-580 waterway's bottom profile could be reconfigured, creating a more uniform and hydraulically efficient conveyance way. Improvement of the R-580 Waterway would induce more flow eastward from Big Slough along the City's northern boundary toward Creighton Waterway, resulting in reduced flows and flood stages in Myakkahatchee Creek.			
Notes: Enlargement of the R-580 canal reflects preliminary sizing performed by Ardaman & Associates, Inc. during the prior Big Slough WMP project. Node bottom elevations associated with this channel were adjusted to provide a uniform slope from the Big Slough canal eastward to Creighton Waterway.			
Reach ID	Waterway	Structure	Description of Model Revision
RP0003 RP0010A RP0016 RP0020 RP0030 RP0040A RP0050 RP0060 RP0070 RP0080 RP0090	R-580		Widen channel to 60ft bottom width trapezoidal

R-36 Improvements to South of WCS-101			
Flood Reduction Concept: A whole series of improvements could be made to canal segments and structures to enhance the overall conveyance capacity of the R-36 waterway system. The additional stormwater conveyance capacity may induce higher westward flow out of Big Slough at the north boundary of the City. Diverting those higher flows southward to WCS-101 would reduce flow and stages along the more flood prone segments of Myakkahatchee Creek.			
Notes: Enlargement of the R-36 canal reflects preliminary sizing performed by Ardaman & Associates, Inc. during the prior Big Slough WMP project. Improvements to conveyance structures located beneath Tropicaire and I-75 were included with the R-36 canal layout for initial screening. Additional work will be performed to evaluate system performance without those culvert improvements.			
Reach ID	Waterway	Structure	Description of Model Revision
RB5695B RR3010 RR3020 RR3025 RR3030 RR3040 RR3050 RR3060 RR3070 RR3080 RR3090 RR3100 RR3110 RR3120 RR3125 RR3130 RR3140 RR3150 RR3220 RR3230 RR3250 RR3270 RR3290 RR3300 RR3310 RR3320 RR3330 RR3340 RR3350 RR3360 RR3370 RR3190 RR3200	R-36		Widen channel to 60ft bottom width trapezoidal
RR3160A			Increase weir length US of Tropicaire
RR0170A			Additional 60" culvert at Tropicaire
RR0170B			Additional 60” culvert at Tropicaire
RR3160B			Increase weir length US of Tropicaire
RR3160C		WCS 162	Additional gate US of Tropicaire
RR3210A RR3210B RR3380A RR3380B RR3380C RR3420A RR3420B RR3420C			Increase capacity at select bridge crossings (I-75, Bullard St, S. Biscayne Dr)

BYPASS			
Flood Reduction Concept: A new, parallel canal could be constructed from the northern City boundary to Price Boulevard along Tier 1 and Tier 2 lots that have been acquired on the west side of the Myakkahatchee Creek. The additional conveyance may reduce flow rate and thus peak stages along the main channel from start to end of the parallel relief channel.			
Notes: Placement into the model network did not account for overlapping of proposed bypass cross sections with existing cross sections describing the Big Slough/Myakkahatchee Creek conveyance system. Conceptual designs and the model will need to be refined (and overlap removed) if it is decided to continue with the bypass alternative in the preferred plan of improvements.			
Reach ID	Waterway	Structure	Description of Model Revision
RBY0020 RBY0030 RBY0060 RBY0070 RBY0100 RBY0110 RBY0140 RBY0150 RBY0160 RBY0190 RBY0220	Big Slough		New Channel, 60ft bottom width trapezoidal
RBY0010			New Weir, 200ft at 15.75ft, 2ft above bottom
RBY0030X			New Weir, 200ft at 17.67, 5ft above bottom
RBY0040			New Weir, 200ft at 14.72ft, 2ft above bottom
RBY0050			New Weir, 200ft at 14.72ft, 2ft above bottom
RBY0070X			New Weir, 200ft at 17.37ft, 5ft above bottom
RBY0080			New Weir, 200ft at 15.5ft, 2ft above bottom
RBY0090			New Weir, 200ft at 13.9ft, 2ft above bottom
RBY0110X			New Weir, 200ft at 15.14ft, 5ft above bottom
RBY0120			New Weir, 200ft at 11.48, 2ft above bottom
RBY0130			New Weir, 200ft at 11.48, 2ft above bottom
RBY0150X			New Weir, 200ft at 14.13, 5ft above bottom
RBY0160X			New Weir, 200ft at 12.46, 5ft above bottom
RBY0170			New Weir, 200ft at 5.38, 2ft above bottom
RBY0180			New Weir, 200ft at 5.38, 2ft above bottom
RBY0200			New Weir, 200ft at 4.05, 2ft above bottom
RBY0210			New Weir, 200ft at 4.05, 2ft above bottom
RBY0230			New Weir, 200ft at 3.25, 2ft above bottom

Snover Waterway to Cocoplum Waterway			
Flood Reduction Concept: Improvements could be made to existing structures along Snover Waterway and beneath Price Boulevard to increase flow through canals that connect with Cocoplum Waterway. The additional conveyance capacity may induce higher eastward flow out of Big Slough into Snover Waterway. Diverting those higher flows southward to Cocoplum Waterway would reduce flow and stages along the more flood prone segments of Myakkahatchee Creek.			
Notes: Controls set to reflect current operations of other area structures, specifically based on water surface elevation of Myakkahatchee Creek at Tropicaire Boulevard. All four (4) Price Boulevard structures were assumed to be replaced. City direction followed that only two (2) of the structures are scheduled to be replaced and future model revisions will reflect that case.			
Reach ID	Waterway	Structure	Description of Model Revision
RE0040A RE0040B RE0040C	Blueridge	DS 119	2 5ft gates added, 10ft of weir removed from riser
RI0030A	Creighton	DS 129	6 5ft gates added, 30ft of weir removed from riser
RI0030B			
RI0040A RI0040B RI0040C			Replaced with RI0040D (removes riser from culverts)
RI0040D			New culverts to replace RI0040A/B/C
RD0030A RD0030B RD0030C	Lagoon	WCS 126	2 5ft gates added, 10ft of weir removed from riser
RS5430A RS5430B RS5430F	Snover	WCS 115	Updated to reflect proposed condition

Miscellaneous Planned Improvements			
Flood Reduction Concept: Canals and structures throughout the area will be reviewed for opportunities to increase conveyance.			
Notes: Revisions to reflect ongoing work at City of North Port to refurbish the existing system. Changes made using conceptual-level design information provided by the City. Como Water Control Structure provides structural connection from the Cocoplum Waterway to a Port Charlotte canal system outfall where there is currently a berm located on the south side of the Cocoplum Waterway.			
Reach ID	Waterway	Structure	Description of Model Revision
RC0900A RC0900D RC0900H RC0900I	Cocoplum	WCS 106	Updated to reflect proposed condition (by others)
RC0600B RC0600C	Como	Como WCS	New weir control structure US of existing culverts
RS5430A RS5430B RS5430F	Snover	WCS 115	Updated to reflect proposed condition

North Port Big Slough Flood Reduction Study

Team Progress Meeting

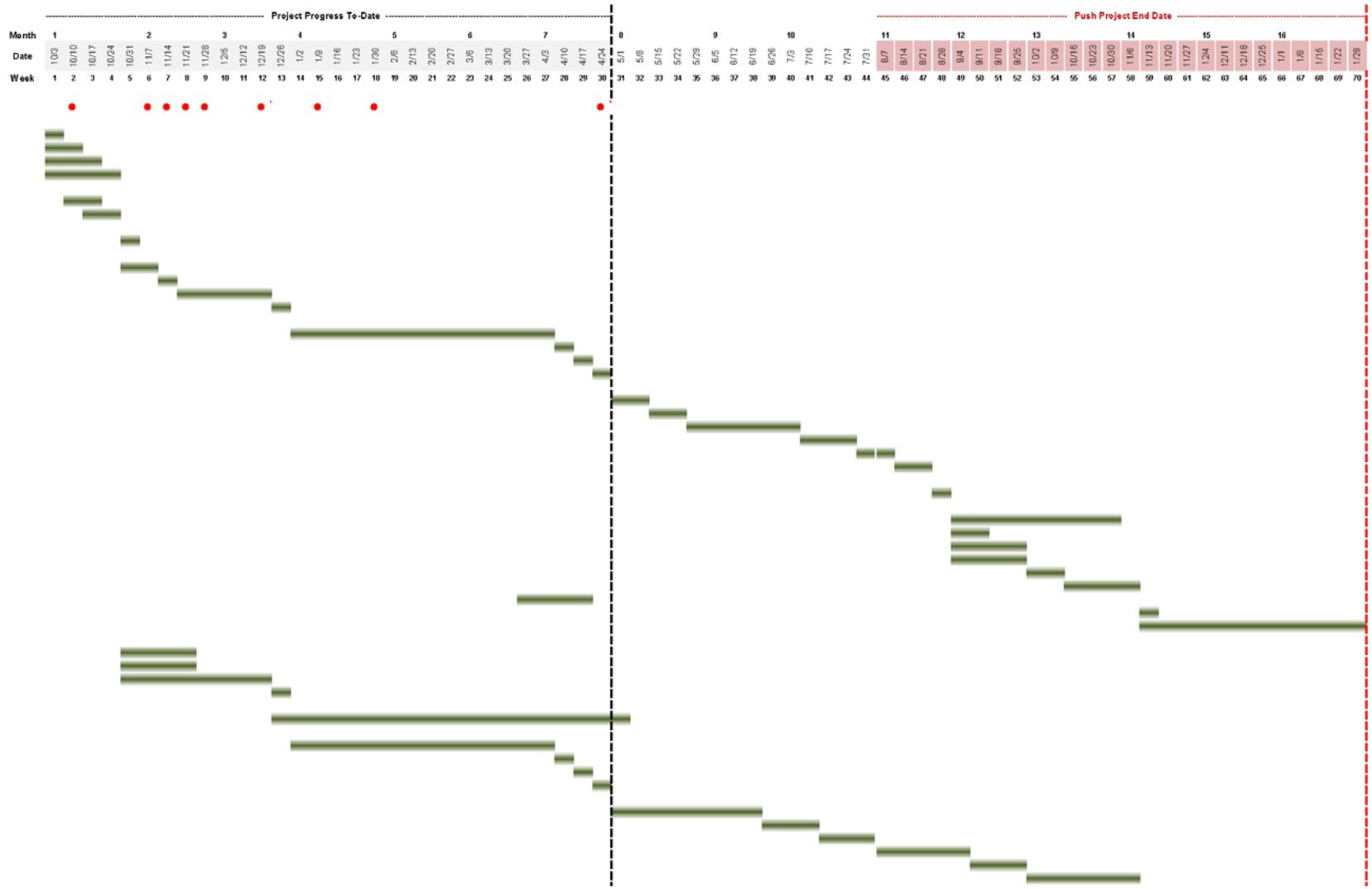
April 28, 2017

Plan Concepts and Preliminary Performance

Project Status

Revised Timeline and Cooperative Agreement Extension

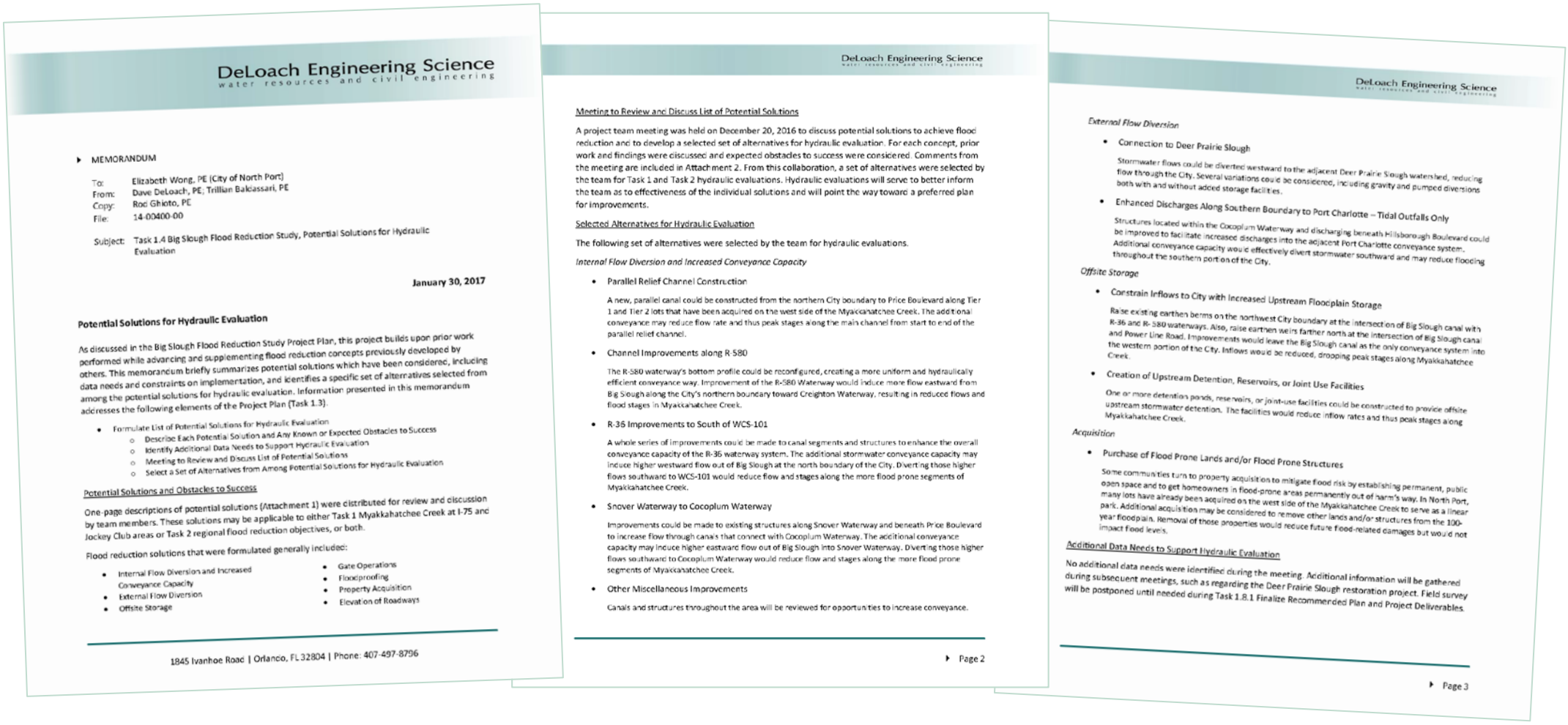
BIG SLOUGH FLOOD REDUCTION FEASIBILITY STUDY for CITY OF NORTH PORT
3/3/2017 (update)



1.1	**Project Development**
1.1.1	Kickoff Meeting and Initial Field Visit
1.1.2	Data Collection and Assembly
1.1.3	Summary of Prior Work Performed, Alternatives and Findings
1.1.4	Project Plan Formulation
1.2	**Define Existing Flooding Problems**
1.2.1	Confirm Ability to Reproduce WMP Project Model Results
1.2.2	Characterize Local Flooding Conditions
1.3	**Operations Staff Meeting and Team Field Visit**
1.3.1	Meeting Topics (Preparation, Attendance, and Field Visit)
1.4	**Formulate List of Potential Solutions for Hydraulic Evaluation**
1.4.1	Describe Each Potential Solution and Any Known or Expected Obstacles to Success
1.4.2	Identify Additional Data Needs to Support Hydraulic Evaluation
1.4.3	Meeting to Review and Discuss List of Potential Solutions
1.4.4	Select a Set of Alternatives from Among Potential Solutions for Hydraulic Evaluation
1.5	**Evaluate Hydraulic Performance of Selected Set of Alternatives**
1.5.1	Perform Hydraulic Analyses
1.5.2	Summarize Hydraulic Performance
1.5.3	Meeting to Review and Discuss Performance of Alternatives
1.5.4	Identify Preferred Plan(s) of Improvements
1.6	**Refine Preferred Plan(s) of Improvements**
1.6.1	Evaluate Site Conditions and Design/Permitting Constraints of Preferred Plan(s)
1.6.2	Refine Preferred Plan(s) to Address Site Conditions and Design/Permitting Constraints
1.6.3	Perform Hydraulic Analyses of Refined Plan(s)
1.6.4	Perform Cost-Benefit Analysis of Refined Plan(s)
1.6.5	Meeting to Review and Discuss Refined Plan(s)
1.6.6	Select Recommended Plan
1.7	**Community Outreach Meeting**
1.7.1	Meeting Topics
1.8	**Summarize and Present Recommended Plan of Improvements**
1.8.1	Finalize Recommended Plan and Project Deliverables
1.8.1.1	Pre/Post Models and Result Tabulations
1.8.1.2	Conceptual-Level Design Drawings (w/ estimated $10,000 Field Survey by PLS)
1.8.1.3	Opinion of Probable Cost (incl. detailed design, permitting, land, and construction)
1.8.1.4	Cost-Benefit
1.8.1.5	Report and Mapping
1.8.1.6	Training City staff in use of CHAN Modeling Software
1.8.2	Meeting with City Administrative Staff
1.8.3	Statewide Environmental Resource Permitting (with Response to 2 RAIs)
2.1	**Formulate List of Regional Flood Reduction Concepts**
2.1.1	Describe Each Potential Solution and Known or Expected Obstacles to Success
2.1.2	Identify Additional Data Needs to Support Hydraulic Evaluation
2.1.3	Meeting to Review and Discuss List of Potential Solutions
2.1.4	Select a Set of Alternatives for Further Evaluation
2.2	**Landowner Outreach Meeting(s) (including State agencies)**
2.2.1	Meeting Topics
2.3	**Evaluate Hydraulic Performance of Selected Set of Alternatives**
2.3.1	Perform screening-level Hydraulic Analyses
2.3.2	Summarize Hydraulic Performance
2.3.3	Meeting to Review and Discuss Performance of Alternatives
2.3.4	Identify Preferred Plan(s) for Regional Improvements
2.4	**Summarize and Present Preferred Plan(s) for Regional Improvements**
2.4.1	Screening-Level Hydraulic Model Pre/Post and Result Tabulations
2.4.2	Conceptual-Level Drawings and Plan Descriptions
2.4.3	Site Conditions and Design Constraints
2.4.4	Relevant Permitting Requirements
2.4.5	Opinion of Probable Cost (for detailed analysis, design, permitting, land, and construction)
2.4.6	Planning-Level Report and Mapping

Project Status

Task 1.4 Completion: Selected Alternatives for Hydraulic Evaluation (January 2017)



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MEMORANDUM

To: Elizabeth Wong, PE (City of North Port)
From: Dave DeLoach, PE; Trillian Bakiassari, PE
Copy: Rod Ghioto, PE
File: 14-00400-00

Subject: Task 1.4 Big Slough Flood Reduction Study, Potential Solutions for Hydraulic Evaluation

January 30, 2017

Potential Solutions for Hydraulic Evaluation

As discussed in the Big Slough Flood Reduction Study Project Plan, this project builds upon prior work performed while advancing and supplementing flood reduction concepts previously developed by others. This memorandum briefly summarizes potential solutions which have been considered, including data needs and constraints on implementation, and identifies a specific set of alternatives selected from among the potential solutions for hydraulic evaluation. Information presented in this memorandum addresses the following elements of the Project Plan (Task 1.3).

- Formulate List of Potential Solutions for Hydraulic Evaluation
  - Describe Each Potential Solution and Any Known or Expected Obstacles to Success
  - Identify Additional Data Needs to Support Hydraulic Evaluation
  - Meeting to Review and Discuss List of Potential Solutions
  - Select a Set of Alternatives from Among Potential Solutions for Hydraulic Evaluation

Potential Solutions and Obstacles to Success

One-page descriptions of potential solutions (Attachment 1) were distributed for review and discussion by team members. These solutions may be applicable to either Task 1 Myakkahatchee Creek at I-75 and Jockey Club areas or Task 2 regional flood reduction objectives, or both.

Flood reduction solutions that were formulated generally included:

- Internal Flow Diversion and Increased Conveyance Capacity
- External Flow Diversion
- Offsite Storage
- Gate Operations
- Floodproofing
- Property Acquisition
- Elevation of Roadways

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Meeting to Review and Discuss List of Potential Solutions

A project team meeting was held on December 20, 2016 to discuss potential solutions to achieve flood reduction and to develop a selected set of alternatives for hydraulic evaluation. For each concept, prior work and findings were discussed and expected obstacles to success were considered. Comments from the meeting are included in Attachment 2. From this collaboration, a set of alternatives were selected by the team for Task 1 and Task 2 hydraulic evaluations. Hydraulic evaluations will serve to better inform the team as to effectiveness of the individual solutions and will point the way toward a preferred plan for improvements.

Selected Alternatives for Hydraulic Evaluation

The following set of alternatives were selected by the team for hydraulic evaluations.

Internal Flow Diversion and Increased Conveyance Capacity

- Parallel Relief Channel Construction

  A new, parallel canal could be constructed from the northern City boundary to Price Boulevard along Tier 1 and Tier 2 lots that have been acquired on the west side of the Myakkahatchee Creek. The additional conveyance may reduce flow rate and thus peak stages along the main channel from start to end of the parallel relief channel.

- Channel Improvements along R-580

  The R-580 waterway's bottom profile could be reconfigured, creating a more uniform and hydraulically efficient conveyance way. Improvement of the R-580 Waterway would induce more flow eastward from Big Slough along the City's northern boundary toward Creighton Waterway, resulting in reduced flows and flood stages in Myakkahatchee Creek.

- R-36 Improvements to South of WCS-101

  A whole series of improvements could be made to canal segments and structures to enhance the overall conveyance capacity of the R-36 waterway system. The additional stormwater conveyance capacity may induce higher westward flow out of Big Slough at the north boundary of the City. Diverting those higher flows southward to WCS-101 would reduce flow and stages along the more flood prone segments of Myakkahatchee Creek.

- Snover Waterway to Cocoplum Waterway

  Improvements could be made to existing structures along Snover Waterway and beneath Price Boulevard to increase flow through canals that connect with Cocoplum Waterway. The additional conveyance capacity may induce higher eastward flow out of Big Slough into Snover Waterway. Diverting those higher flows southward to Cocoplum Waterway would reduce flow and stages along the more flood prone segments of Myakkahatchee Creek.

- Other Miscellaneous Improvements

  Canals and structures throughout the area will be reviewed for opportunities to increase conveyance.

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External Flow Diversion

- Connection to Deer Prairie Slough

  Stormwater flows could be diverted westward to the adjacent Deer Prairie Slough watershed, reducing flow through the City. Several variations could be considered, including gravity and pumped diversions both with and without added storage facilities.

- Enhanced Discharges Along Southern Boundary to Port Charlotte – Tidal Outfalls Only

  Structures located within the Cocoplum Waterway and discharging beneath Hillsborough Boulevard could be improved to facilitate increased discharges into the adjacent Port Charlotte conveyance system. Additional conveyance capacity would effectively divert stormwater southward and may reduce flooding throughout the southern portion of the City.

Offsite Storage

- Constrain Inflows to City with Increased Upstream Floodplain Storage

  Raise existing earthen berms on the northwest City boundary at the intersection of Big Slough canal with R-36 and R-580 waterways. Also, raise earthen weirs farther north at the intersection of Big Slough canal and Power Line Road. Improvements would leave the Big Slough canal as the only conveyance system into the western portion of the City. Inflows would be reduced, dropping peak stages along Myakkahatchee Creek.

- Creation of Upstream Detention, Reservoirs, or Joint Use Facilities

  One or more detention ponds, reservoirs, or joint-use facilities could be constructed to provide offsite upstream stormwater detention. The facilities would reduce inflow rates and thus peak stages along Myakkahatchee Creek.

Acquisition

- Purchase of Flood Prone Lands and/or Flood Prone Structures

  Some communities turn to property acquisition to mitigate flood risk by establishing permanent, public open space and to get homeowners in flood-prone areas permanently out of harm's way. In North Port, many lots have already been acquired on the west side of the Myakkahatchee Creek to serve as a linear park. Additional acquisition may be considered to remove other lands and/or structures from the 100-year floodplain. Removal of those properties would reduce future flood-related damages but would not impact flood levels.

Additional Data Needs to Support Hydraulic Evaluation

No additional data needs were identified during the meeting. Additional information will be gathered during subsequent meetings, such as regarding the Deer Prairie Slough restoration project. Field survey will be postponed until needed during Task 1.8.1 Finalize Recommended Plan and Project Deliverables.

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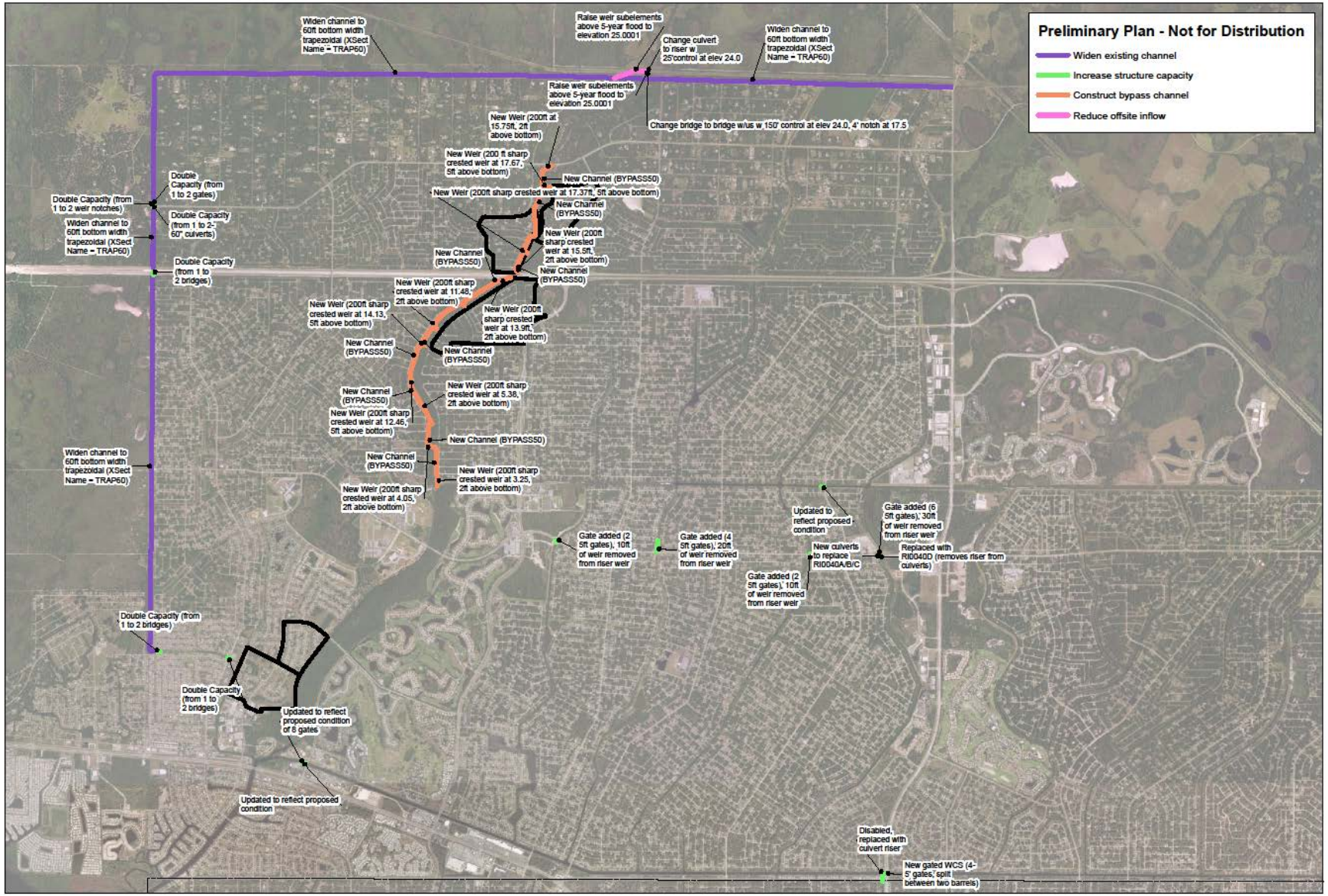
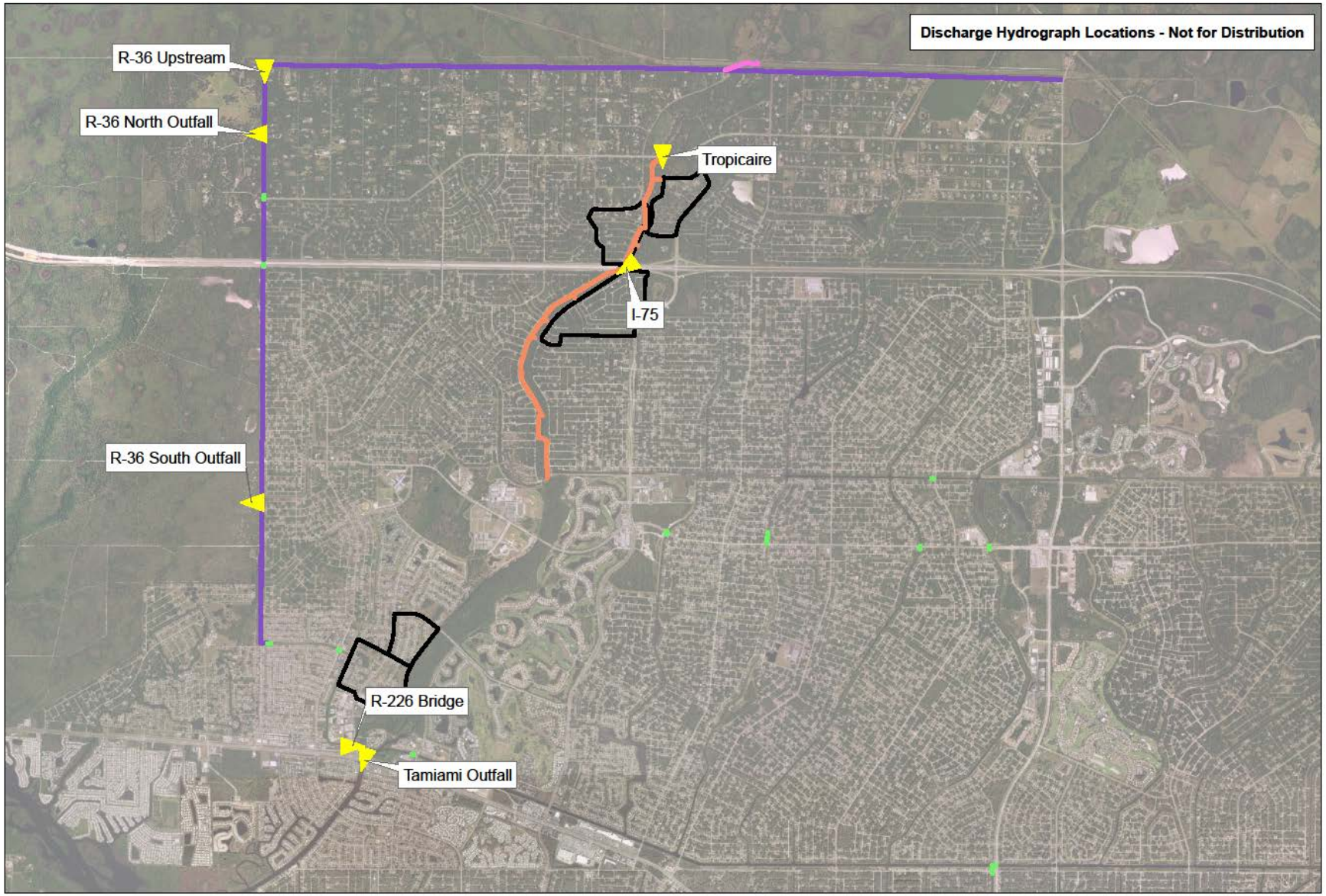
Preliminary Plan Components

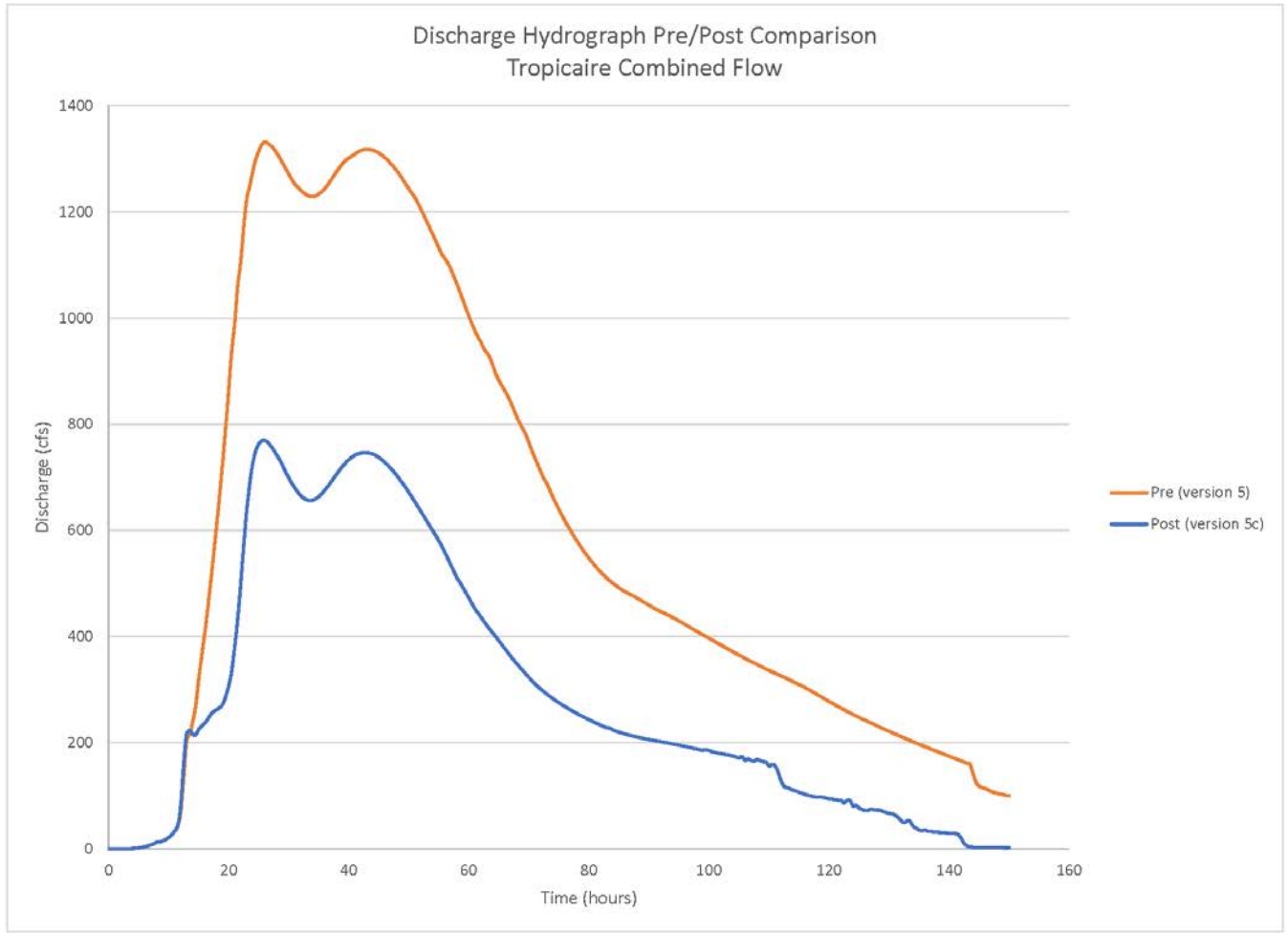


Hydrograph Locations for Discussion

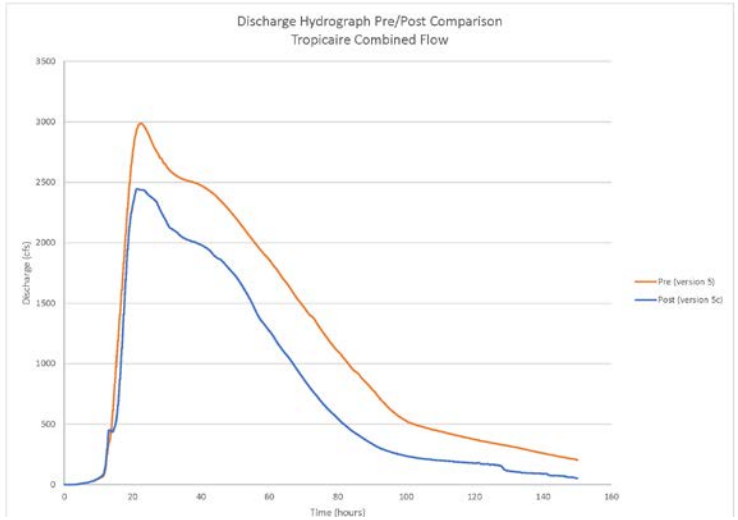


Pre/Post Discharge at Tropicaire

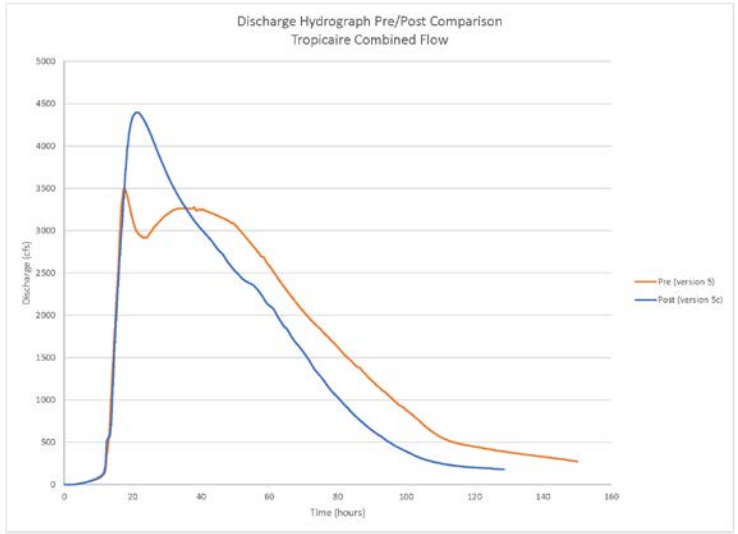
Mean Annual 24-Hour Storm Event



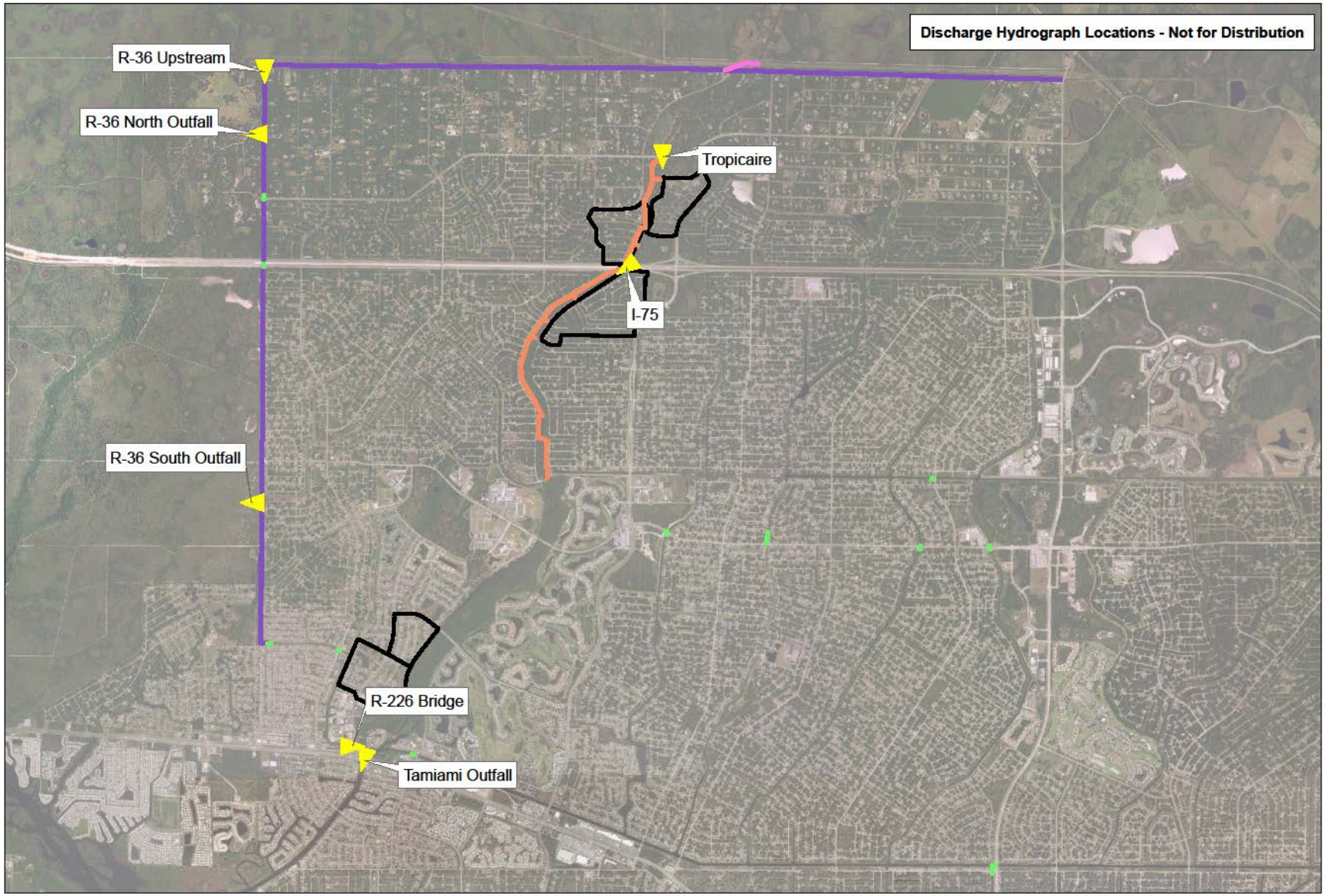
10-Year 24-Hour Storm Event



100-Year 24-Hour Storm Event

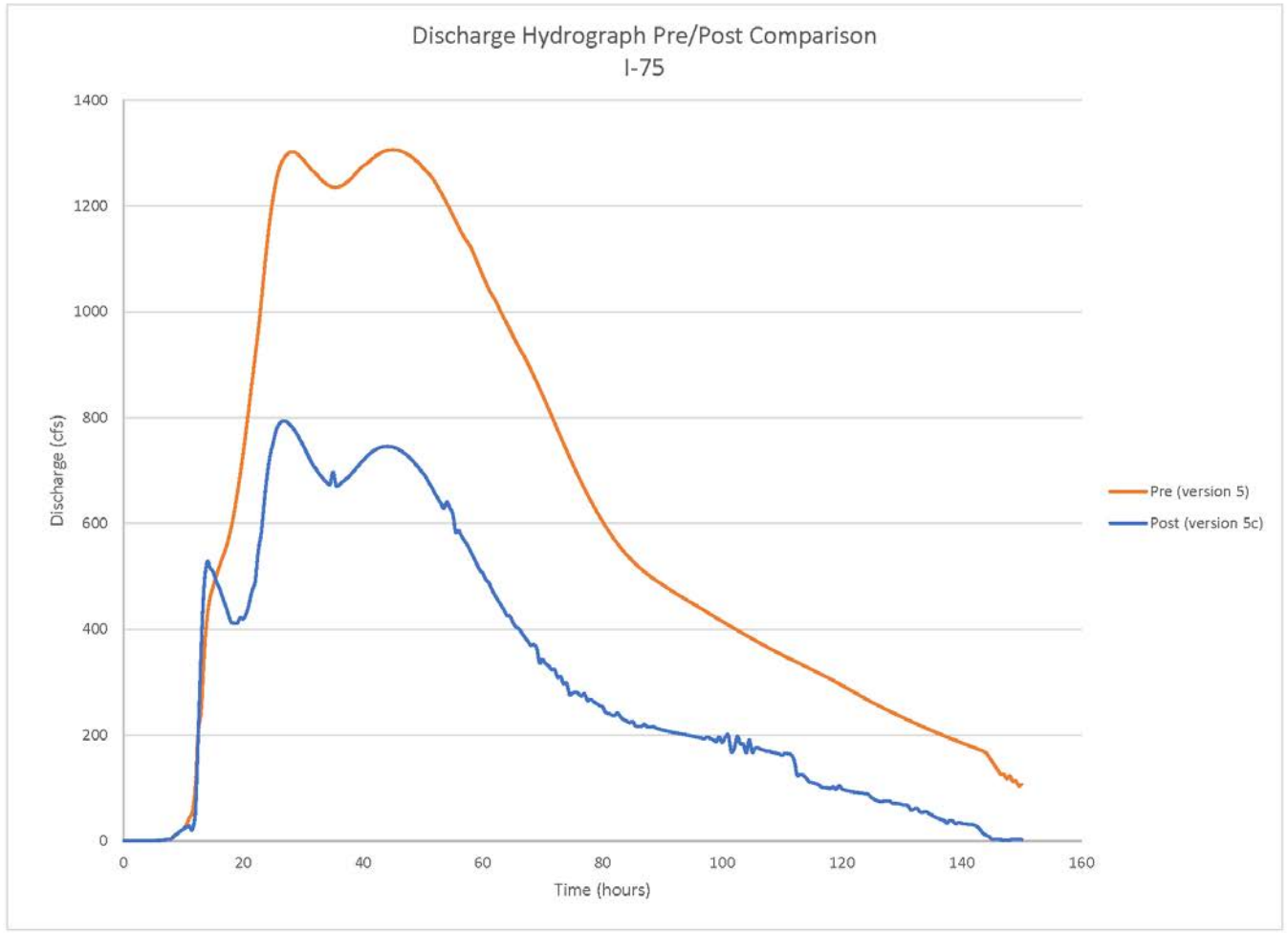


Hydrograph Locations for Discussion

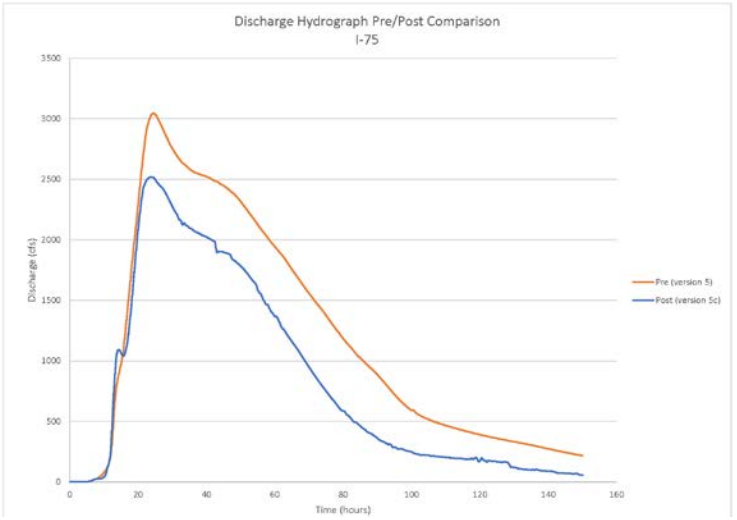


Pre/Post Discharge at I-75

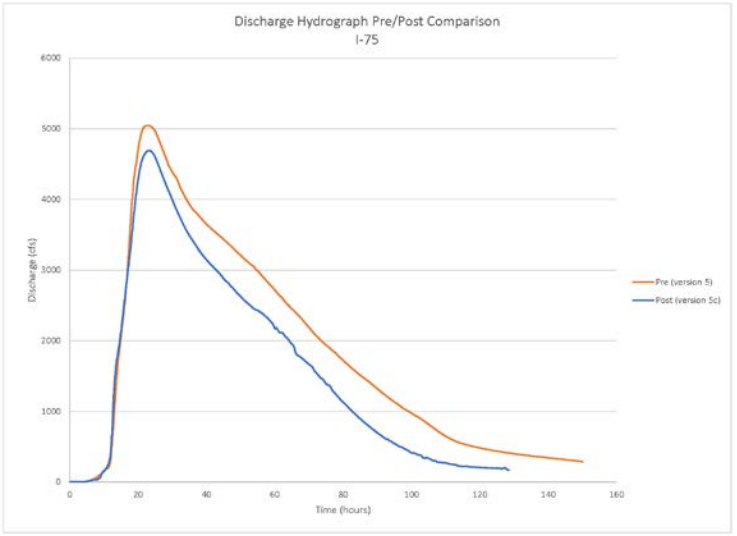
Mean Annual 24-Hour Storm Event



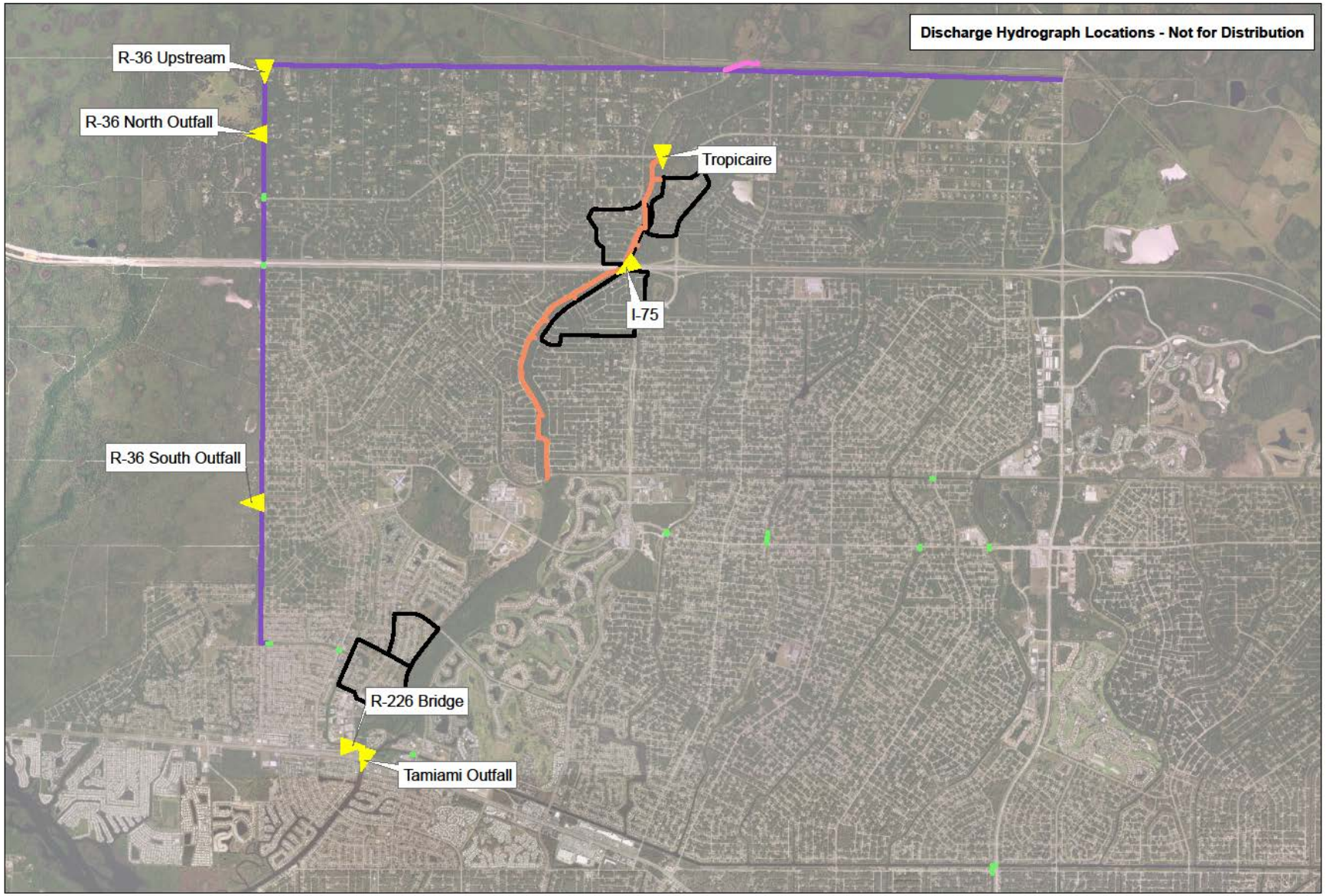
10-Year 24-Hour Storm Event



100-Year 24-Hour Storm Event

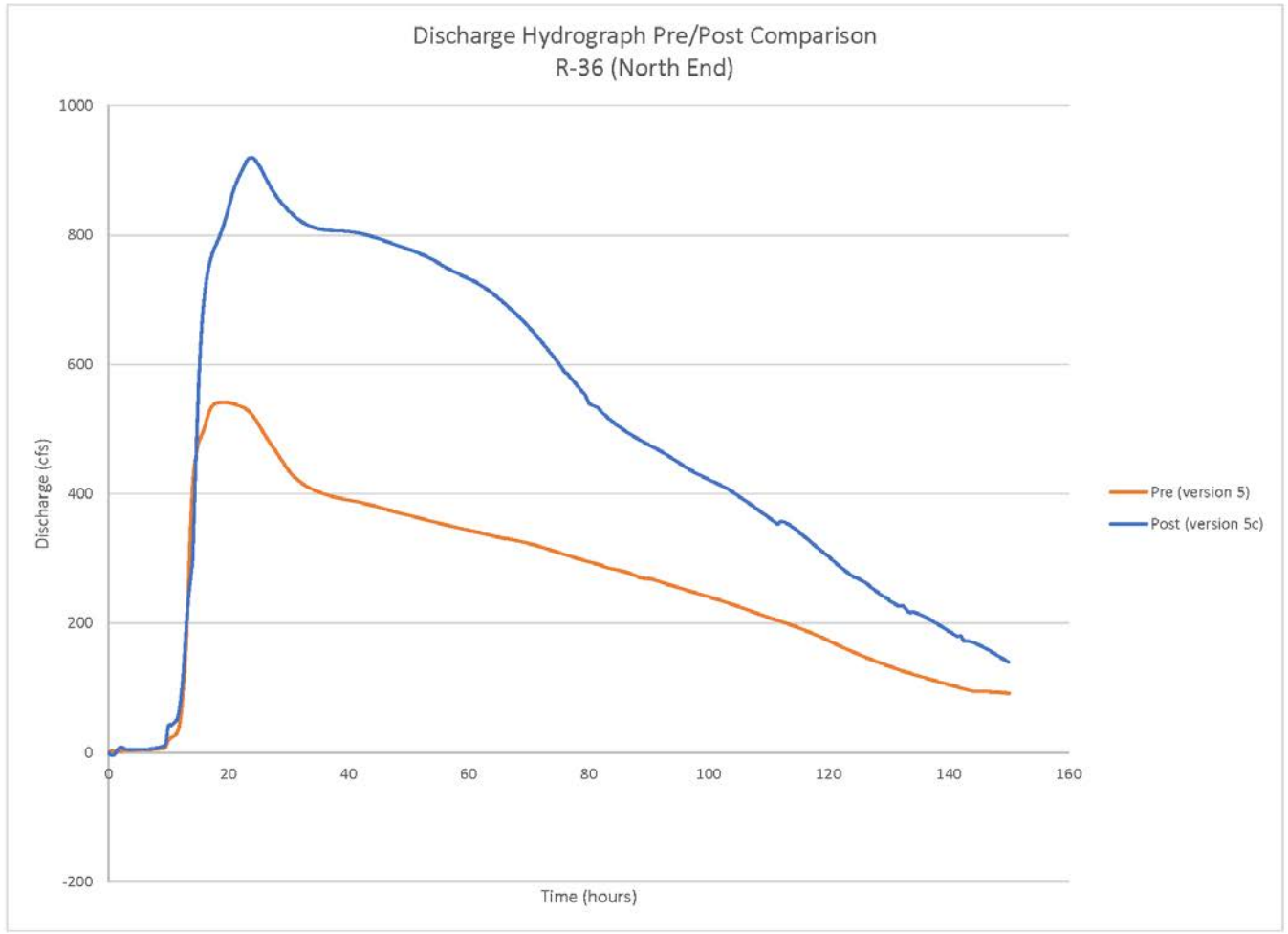


Hydrograph Locations for Discussion

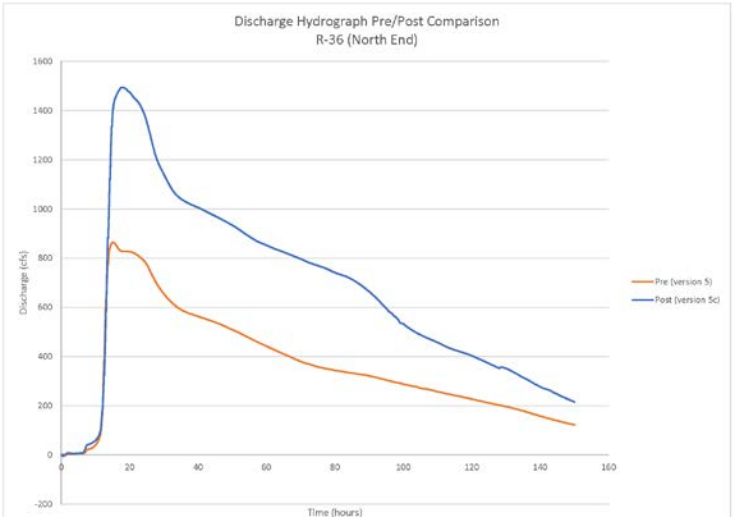


Pre/Post Discharge at R-36 (North End)

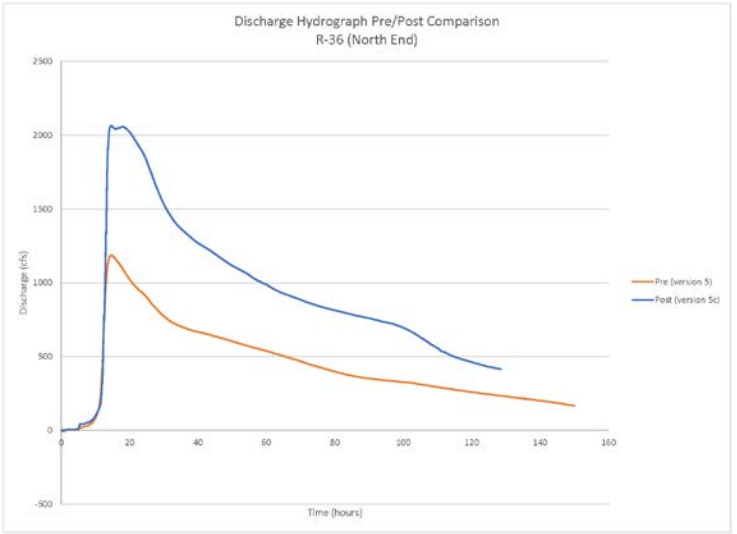
Mean Annual 24-Hour Storm Event



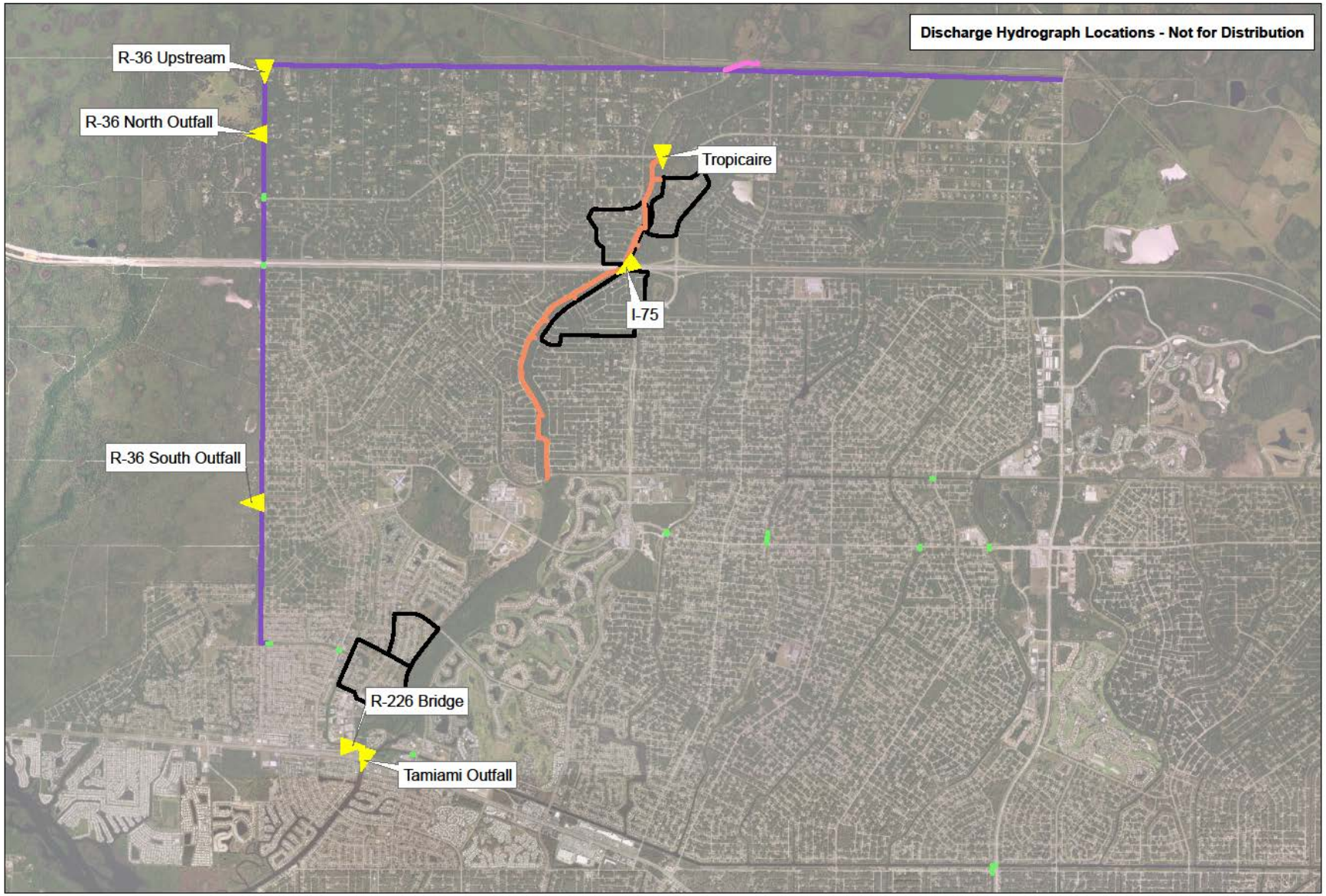
10-Year 24-Hour Storm Event



100-Year 24-Hour Storm Event

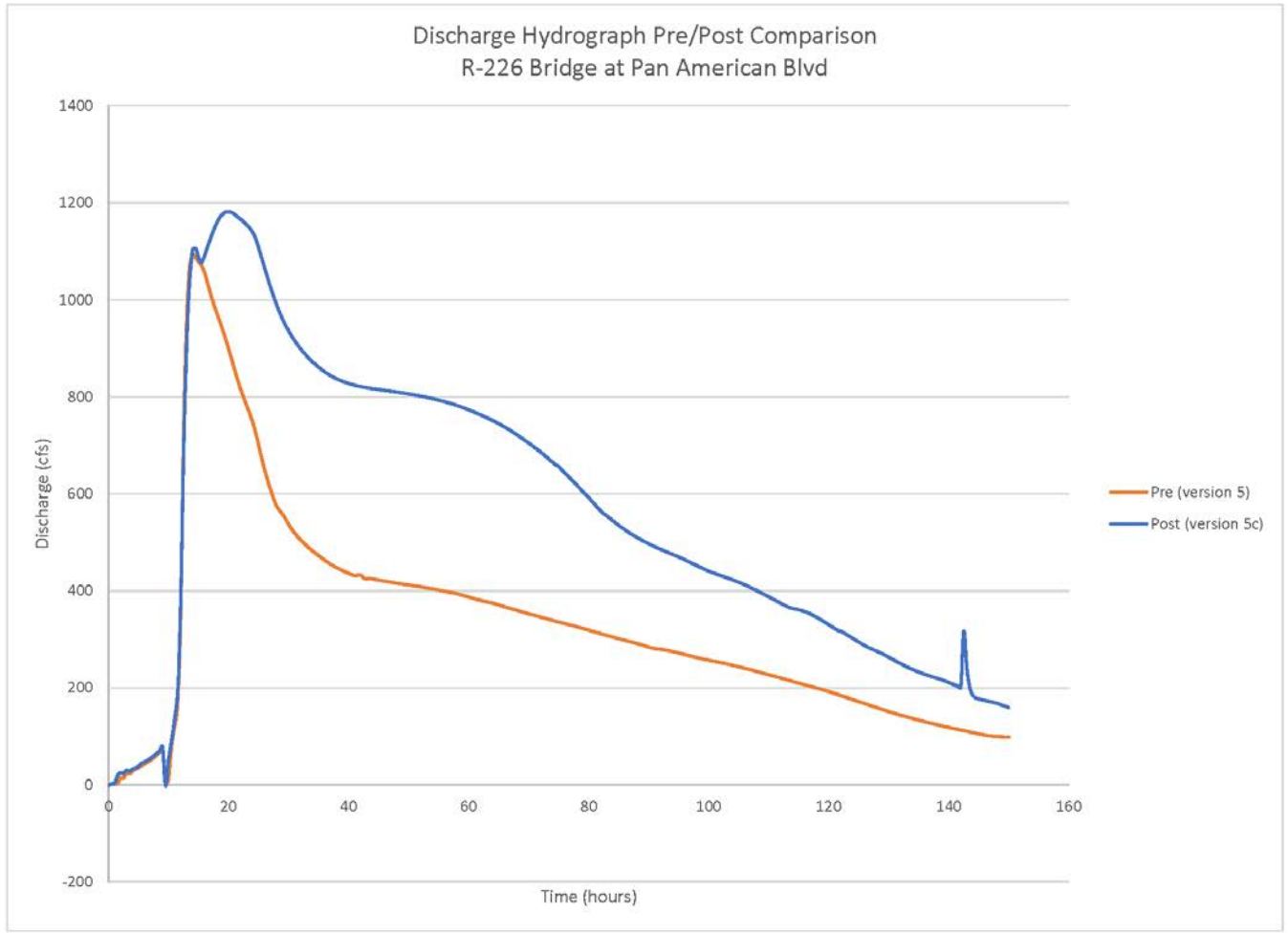


Hydrograph Locations for Discussion

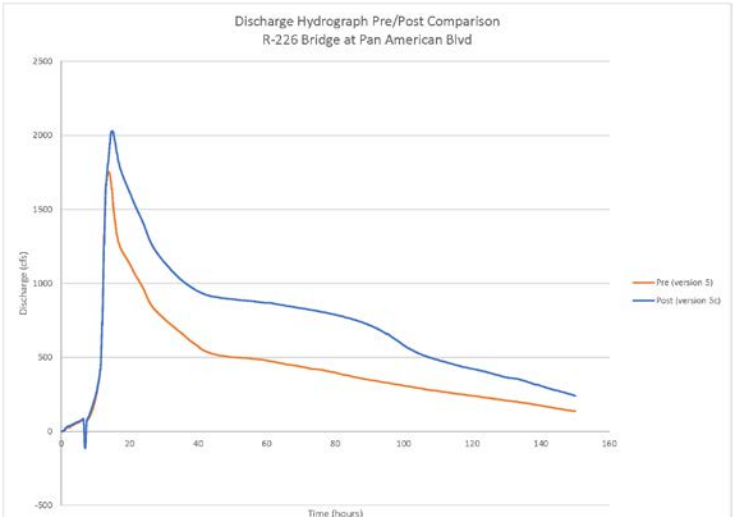


Pre/Post Discharge at R-226 Bridge at Pan American Blvd

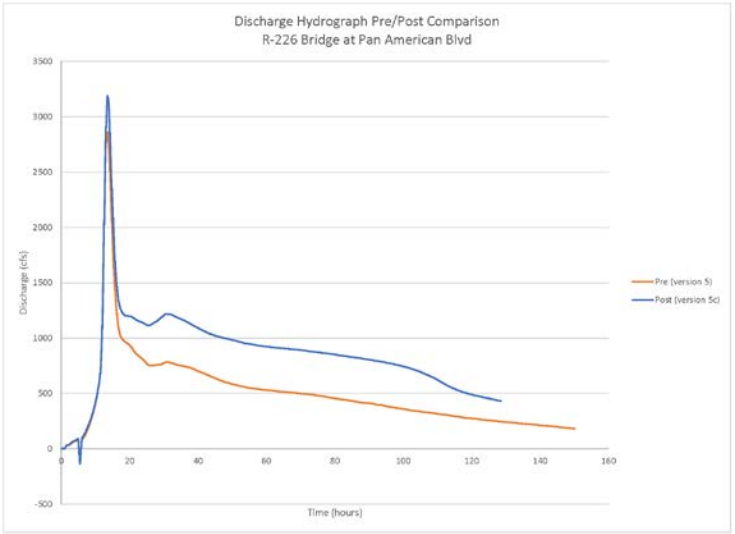
Mean Annual 24-Hour Storm Event



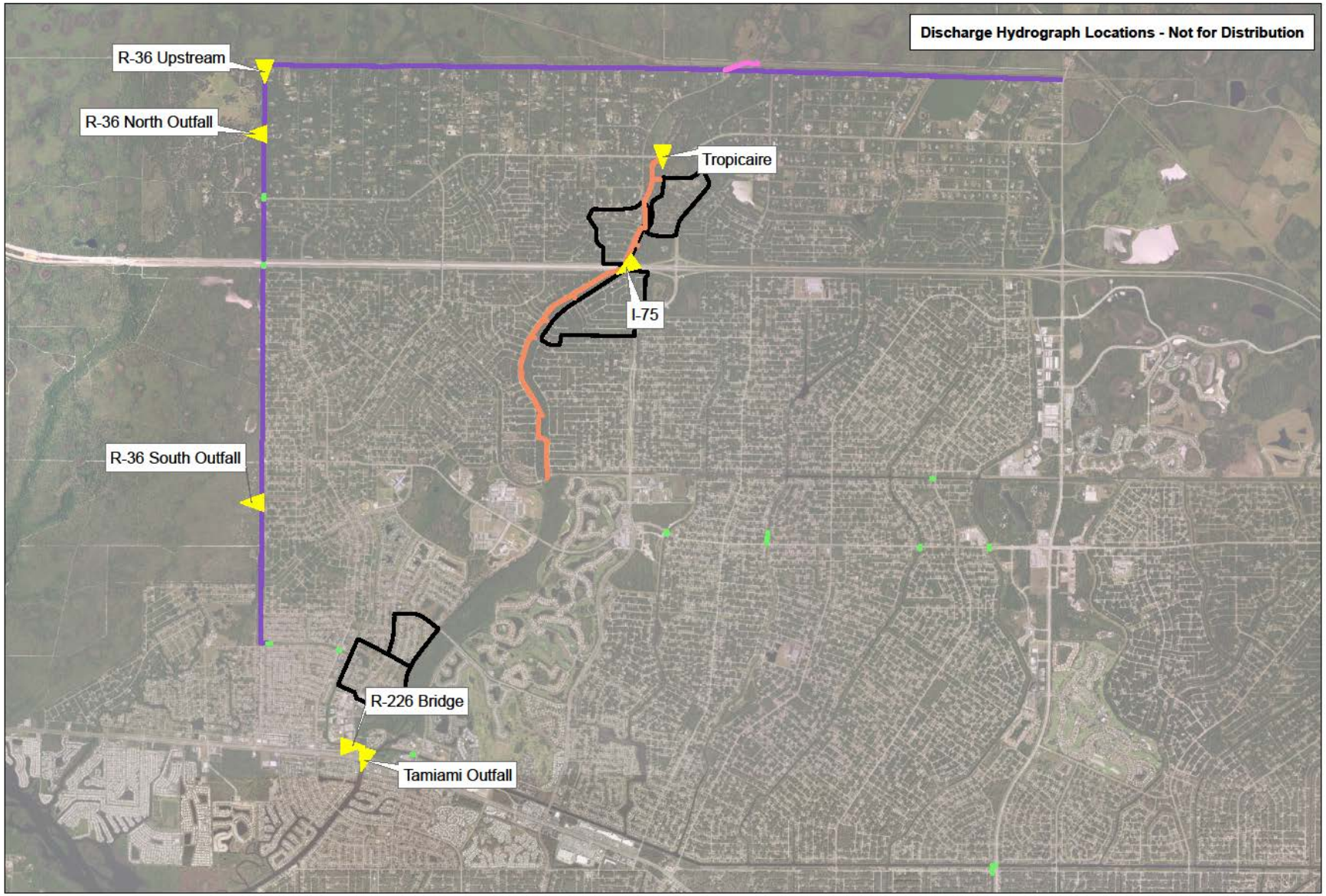
10-Year 24-Hour Storm Event



100-Year 24-Hour Storm Event

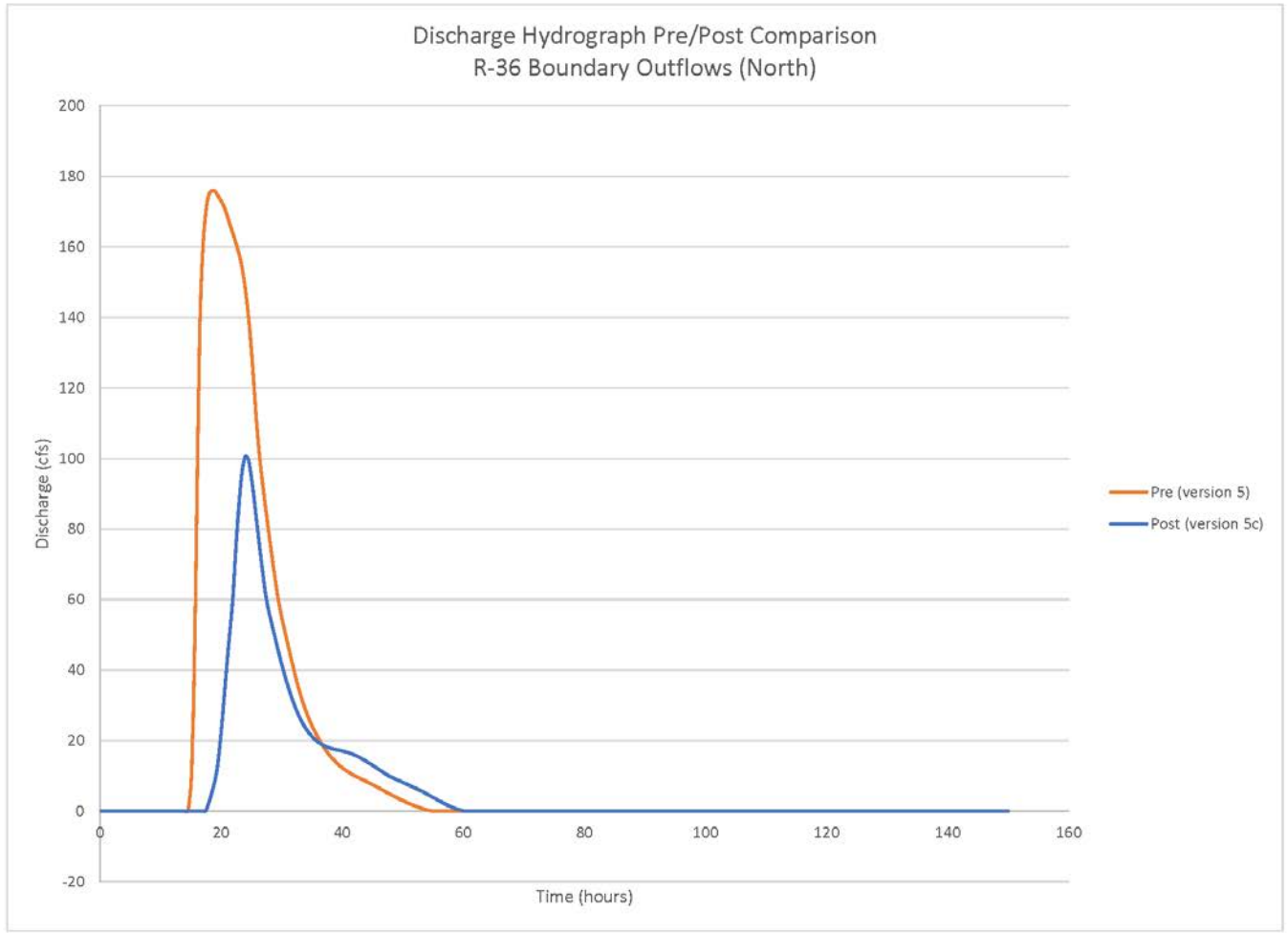


Hydrograph Locations for Discussion

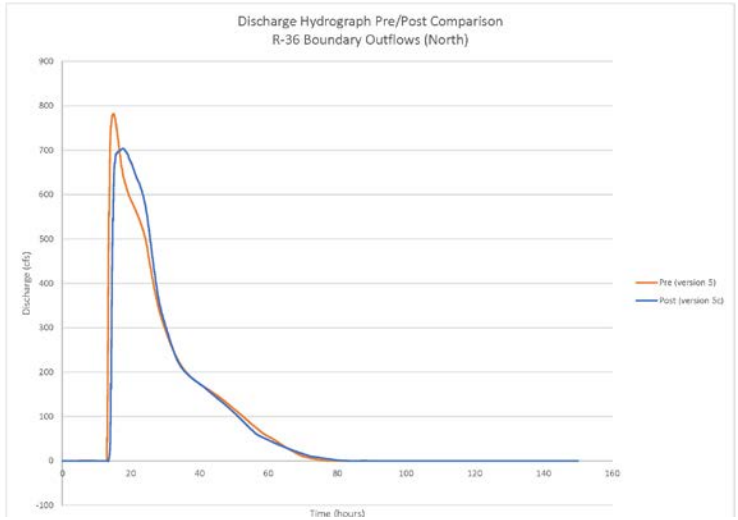


Pre/Post Discharge at R-36 Boundary Outflow (North)

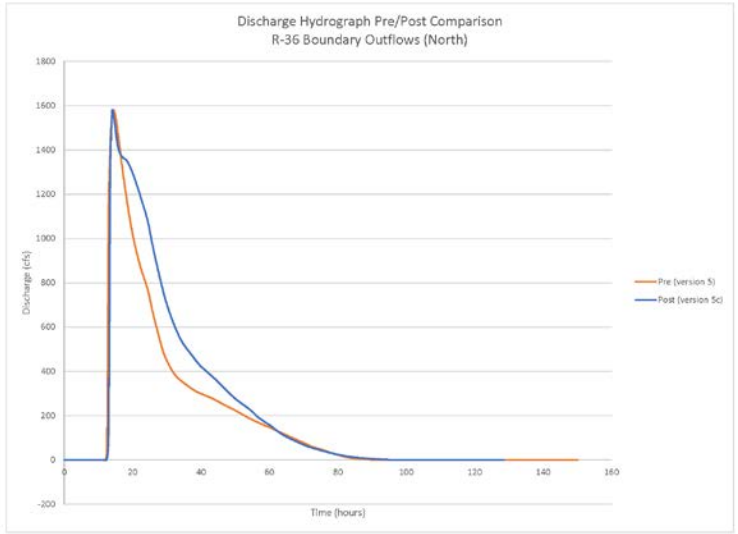
Mean Annual 24-Hour Storm Event



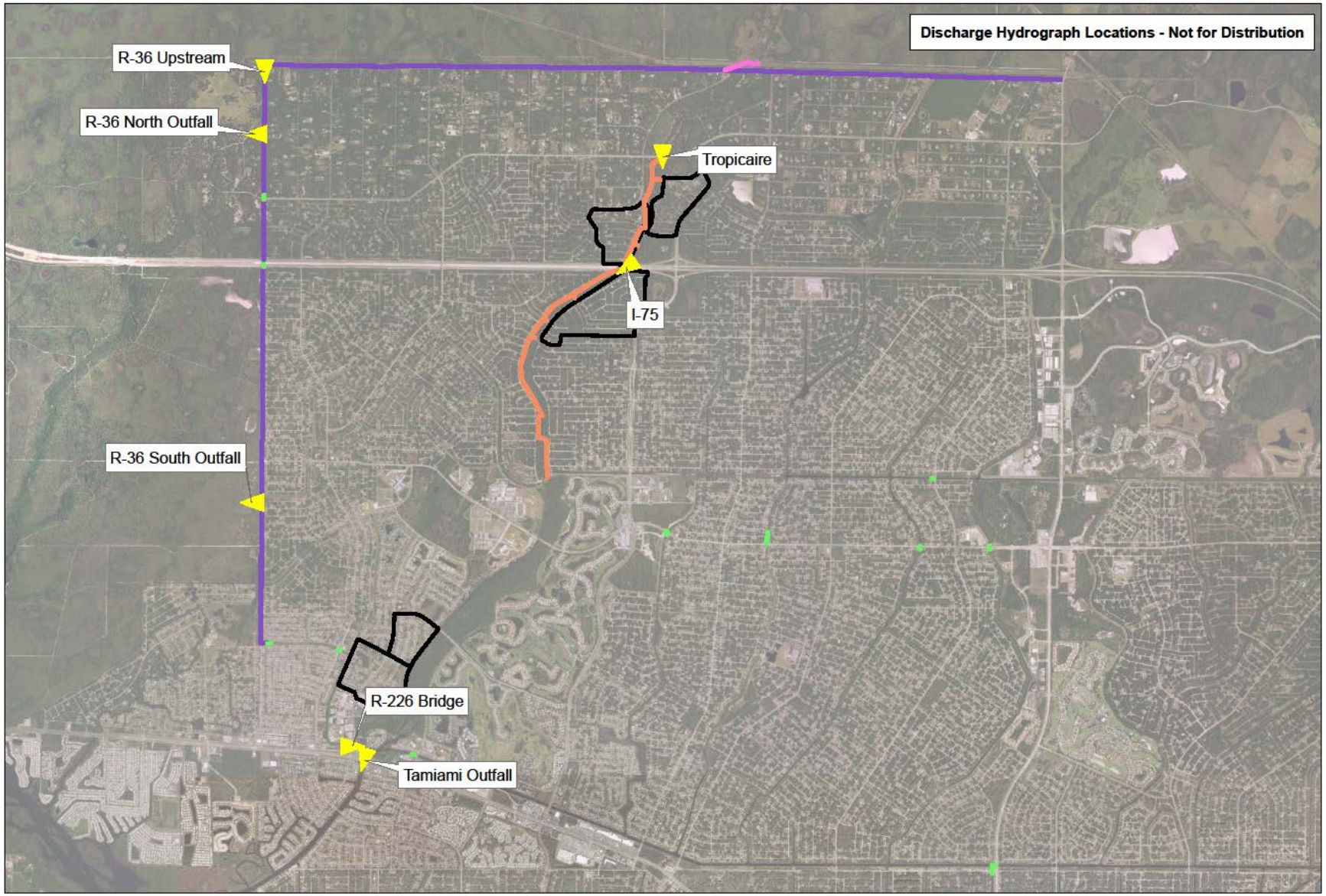
10-Year 24-Hour Storm Event



100-Year 24-Hour Storm Event

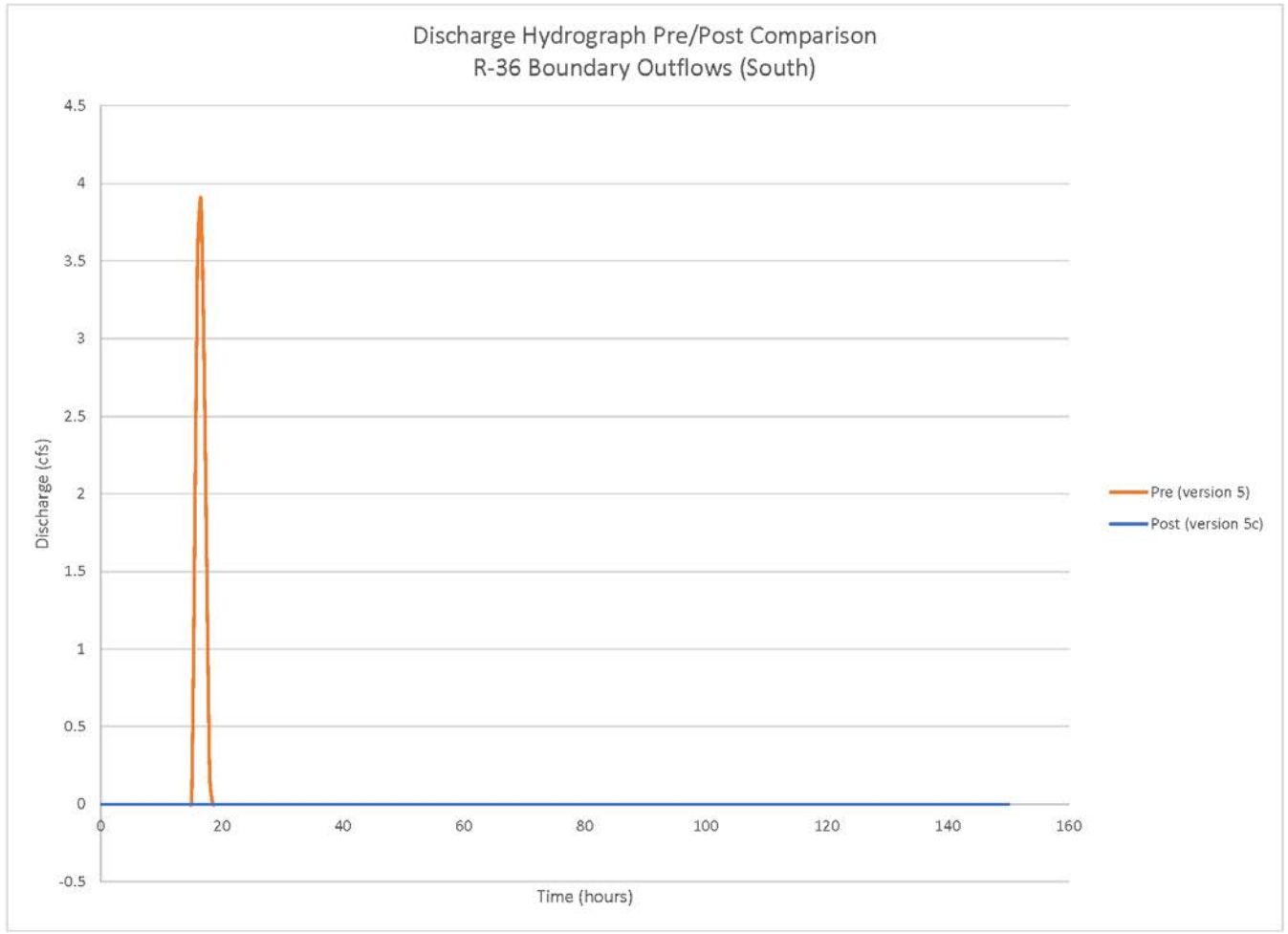


Hydrograph Locations for Discussion

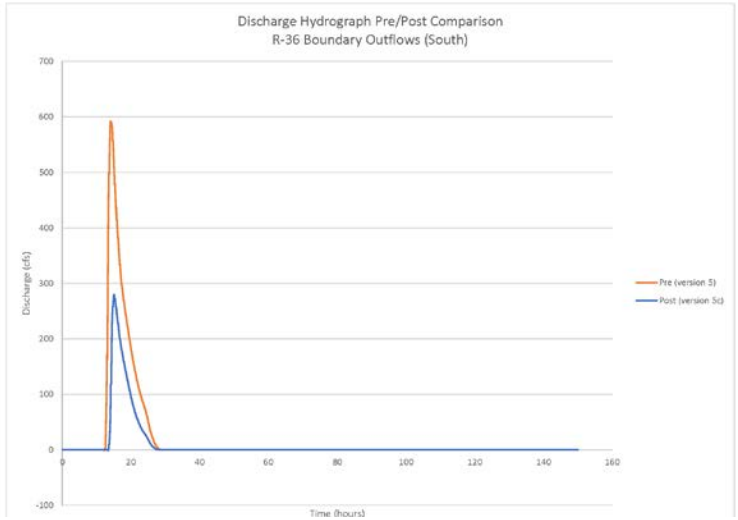


Pre/Post Discharge at R-36 Boundary Outflow (South)

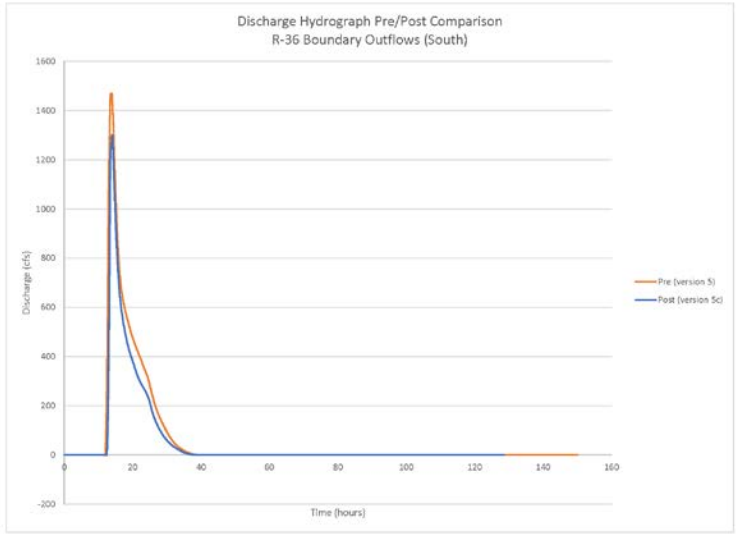
Mean Annual 24-Hour Storm Event



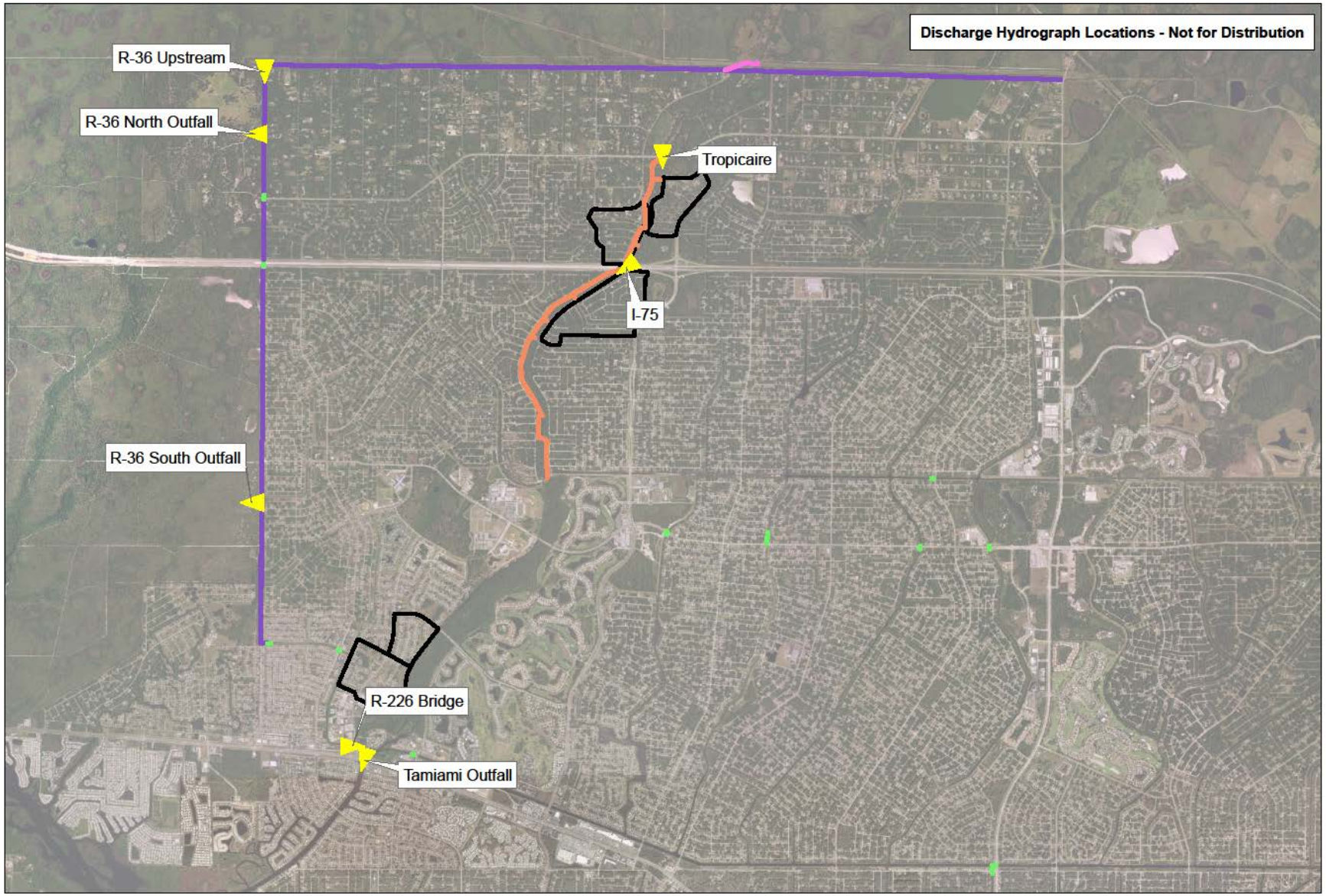
10-Year 24-Hour Storm Event



100-Year 24-Hour Storm Event

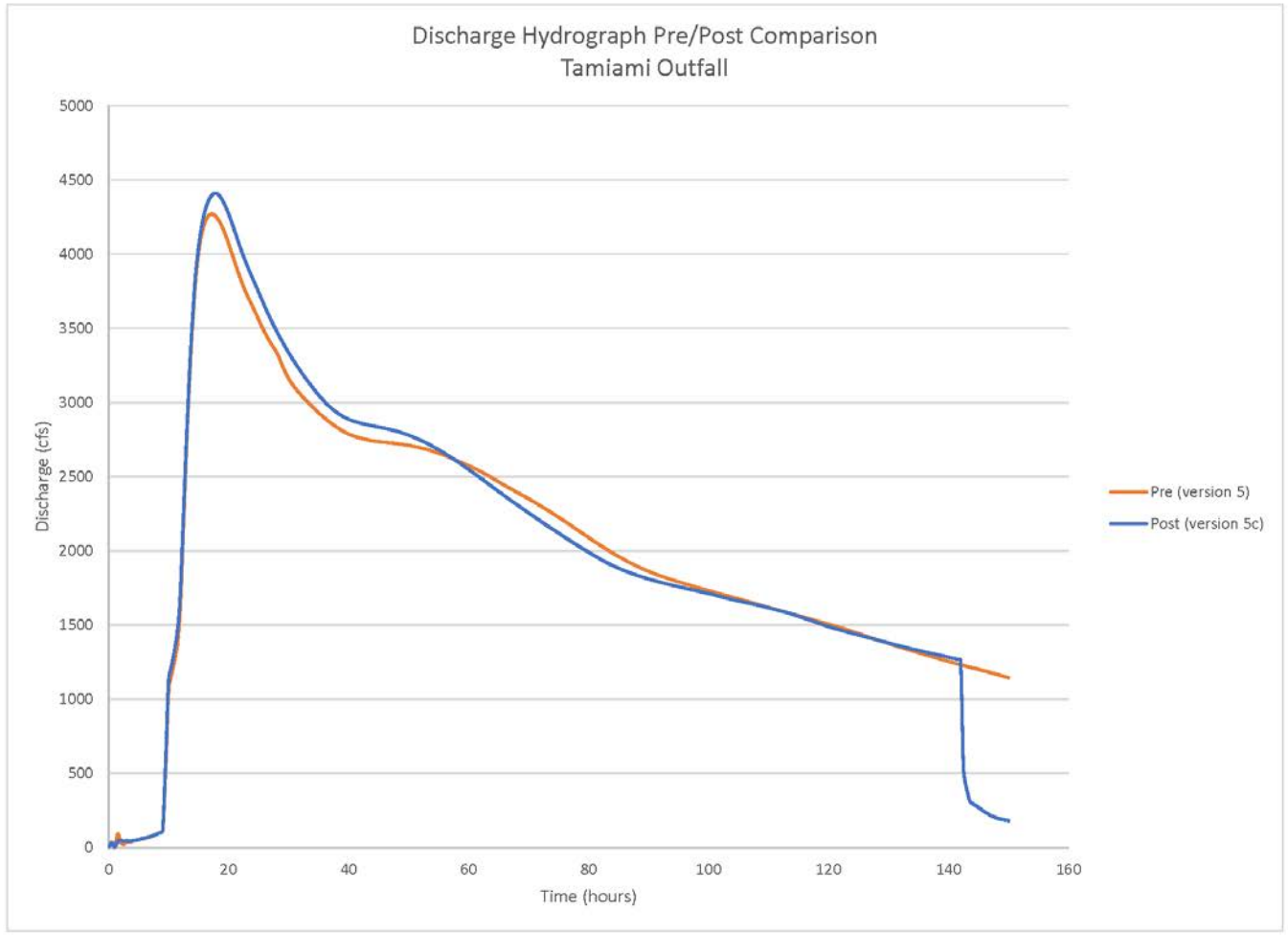


Hydrograph Locations for Discussion

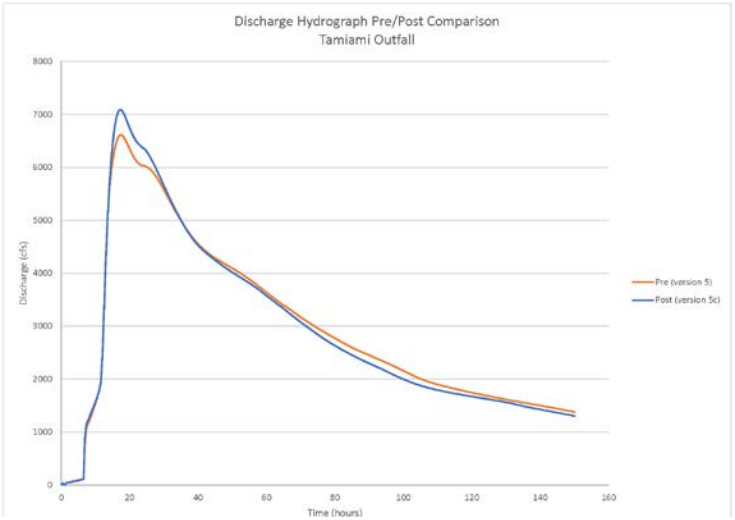


Pre/Post Discharge at Tamiami Outfall

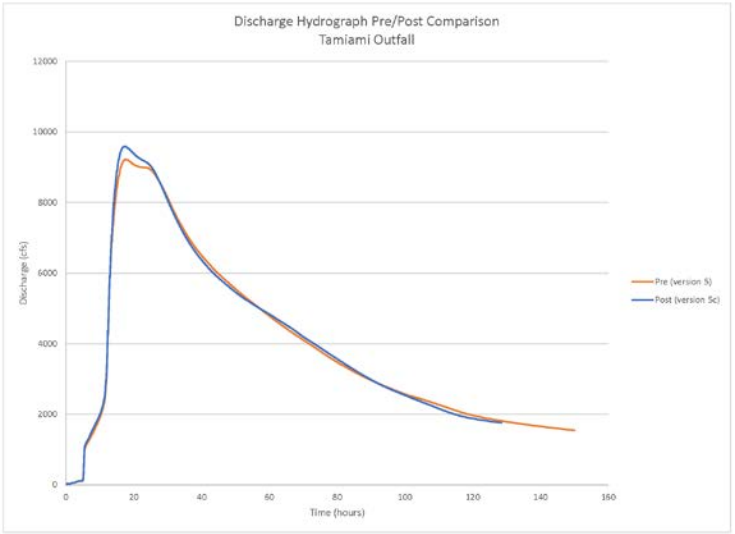
Mean Annual 24-Hour Storm Event



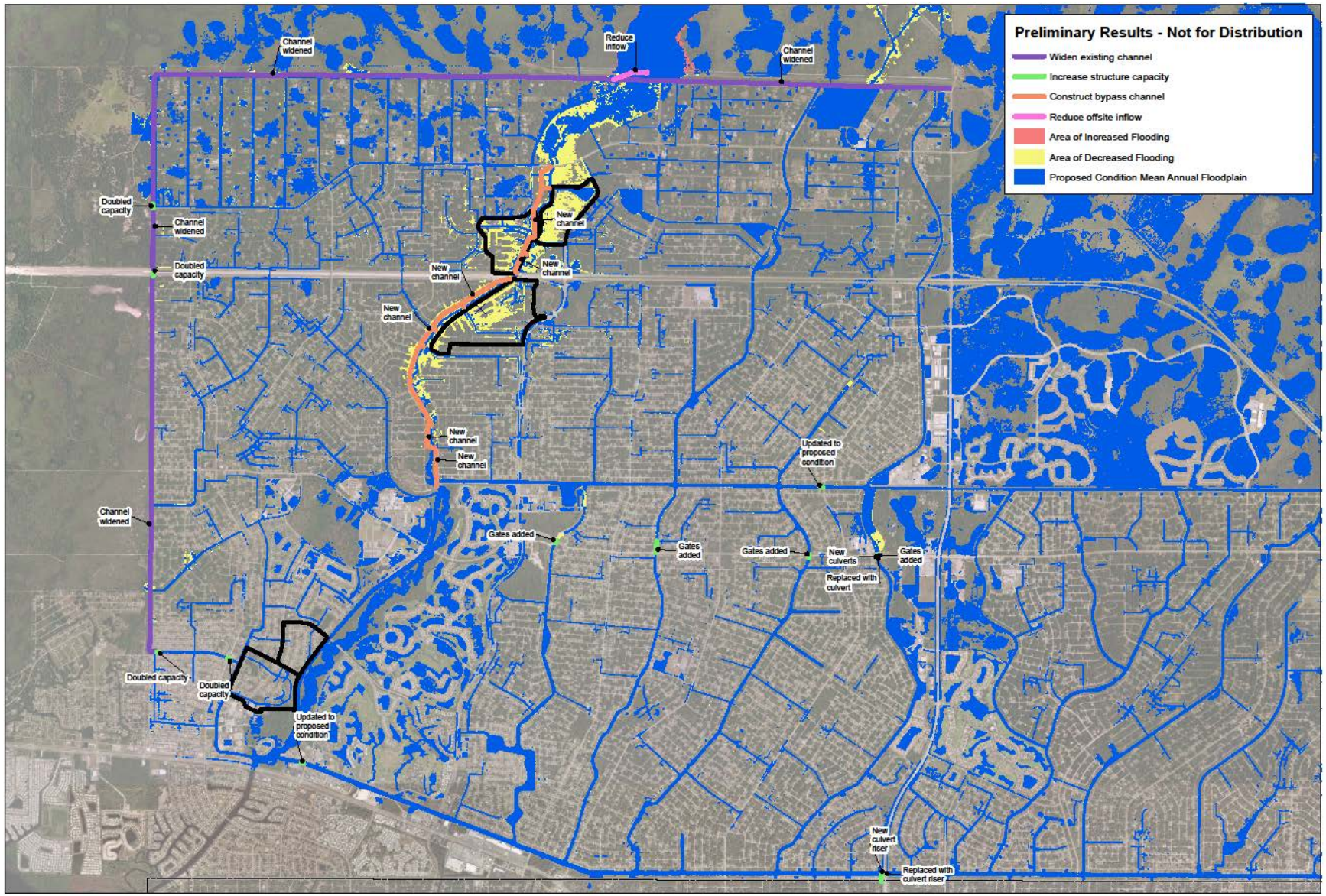
10-Year 24-Hour Storm Event



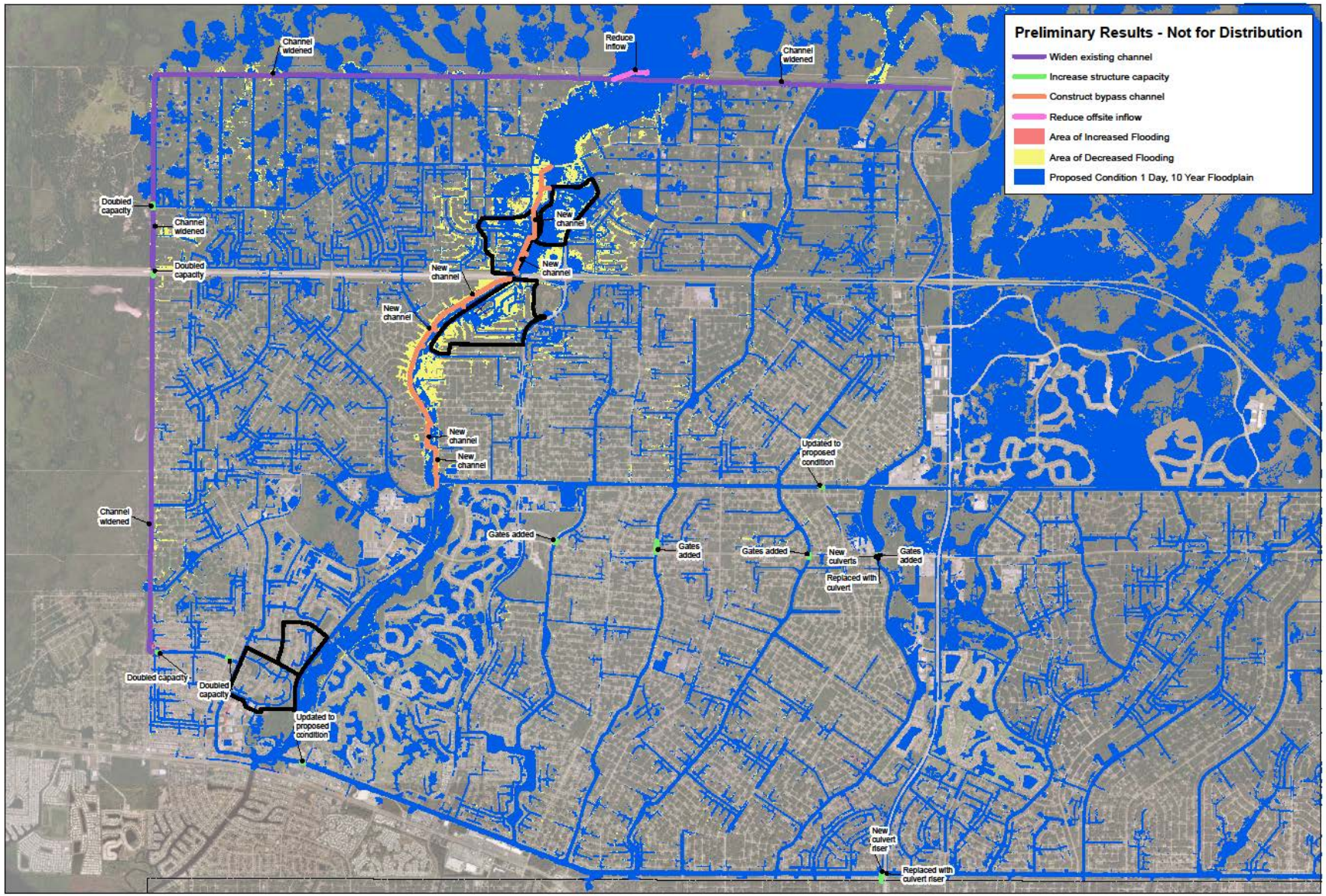
100-Year 24-Hour Storm Event



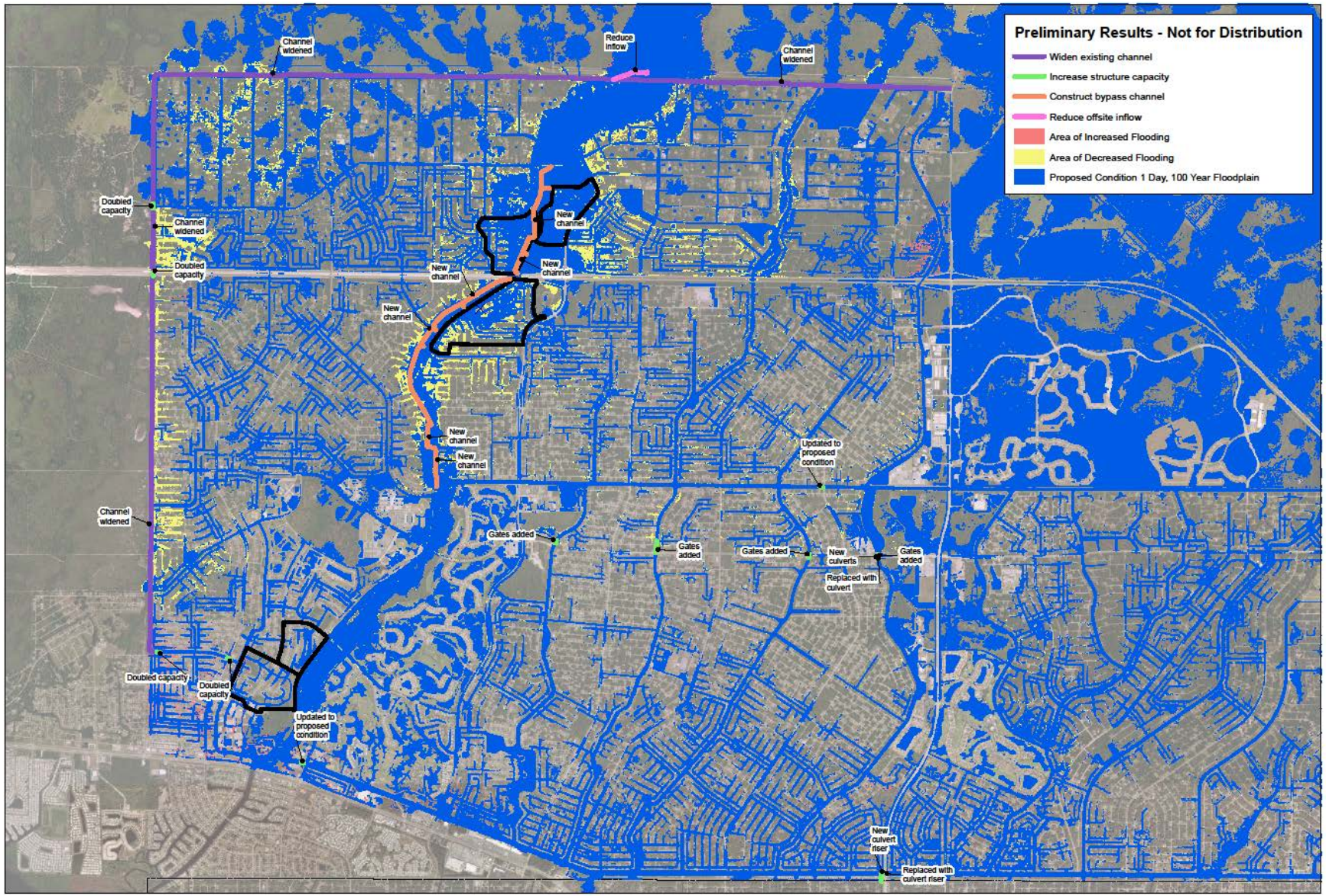
Mean Annual 24-Hour Storm Event



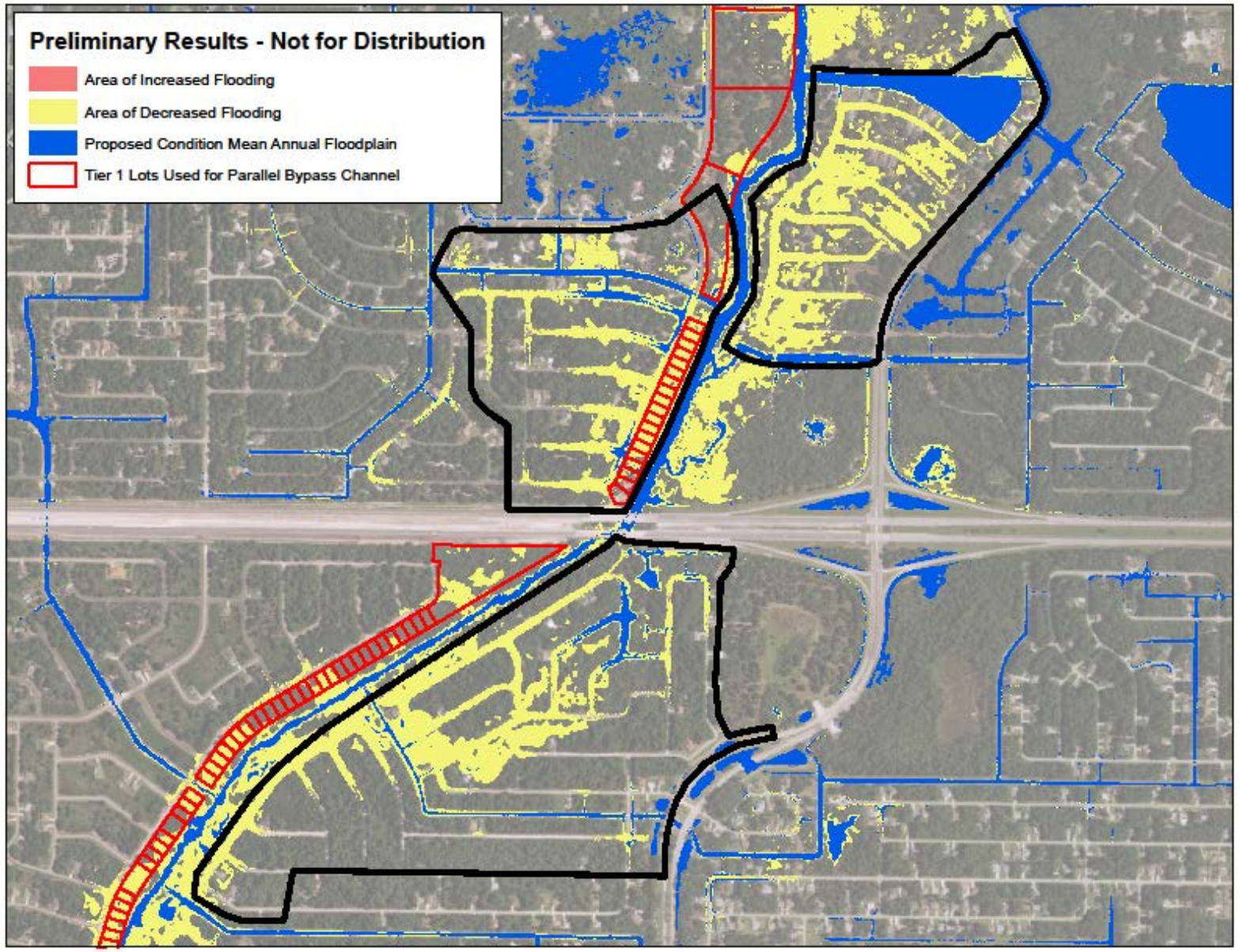
10-Year 24-Hour Storm Event



100-Year 24-Hour Storm Event



Mean Annual 24-Hour Storm Event



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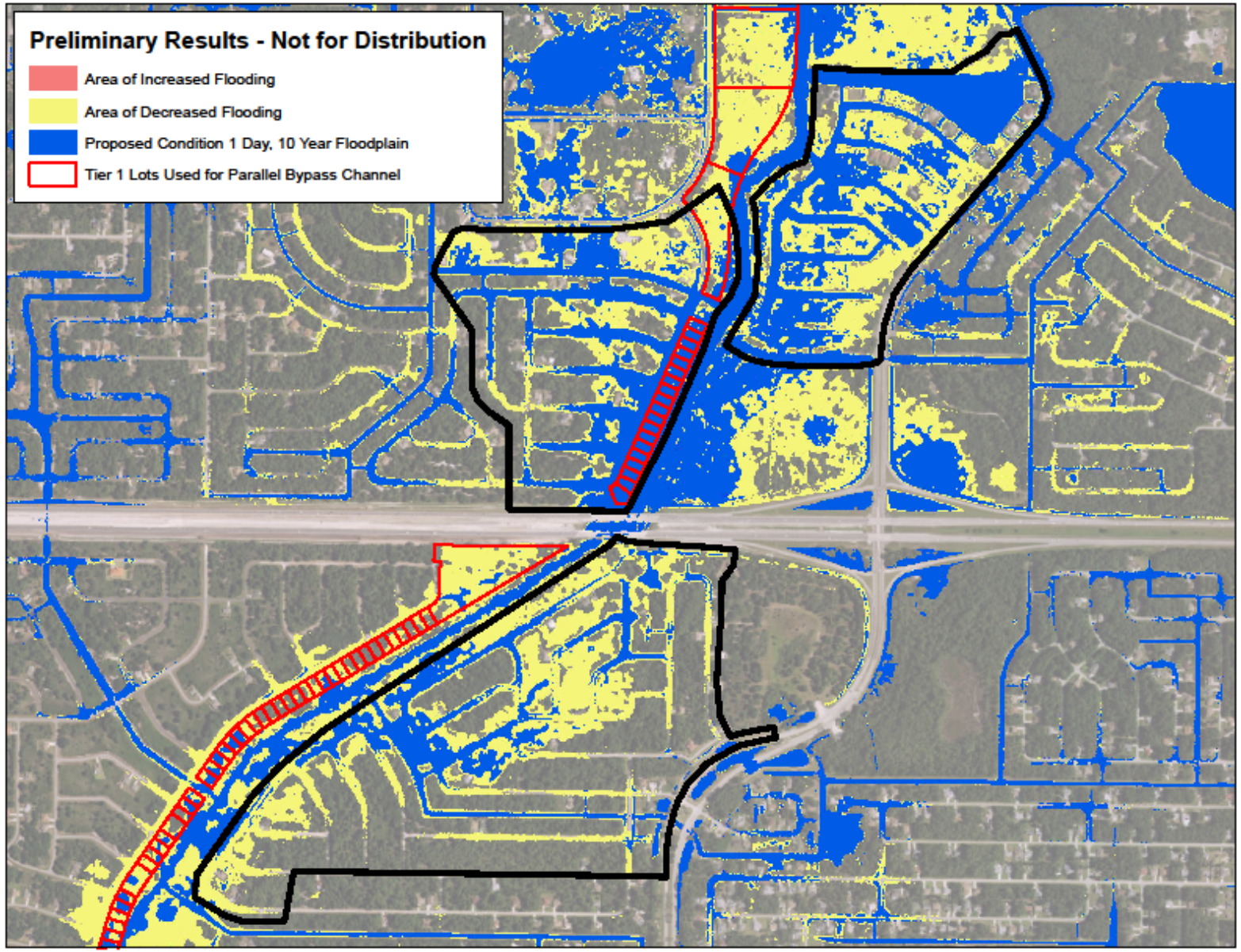

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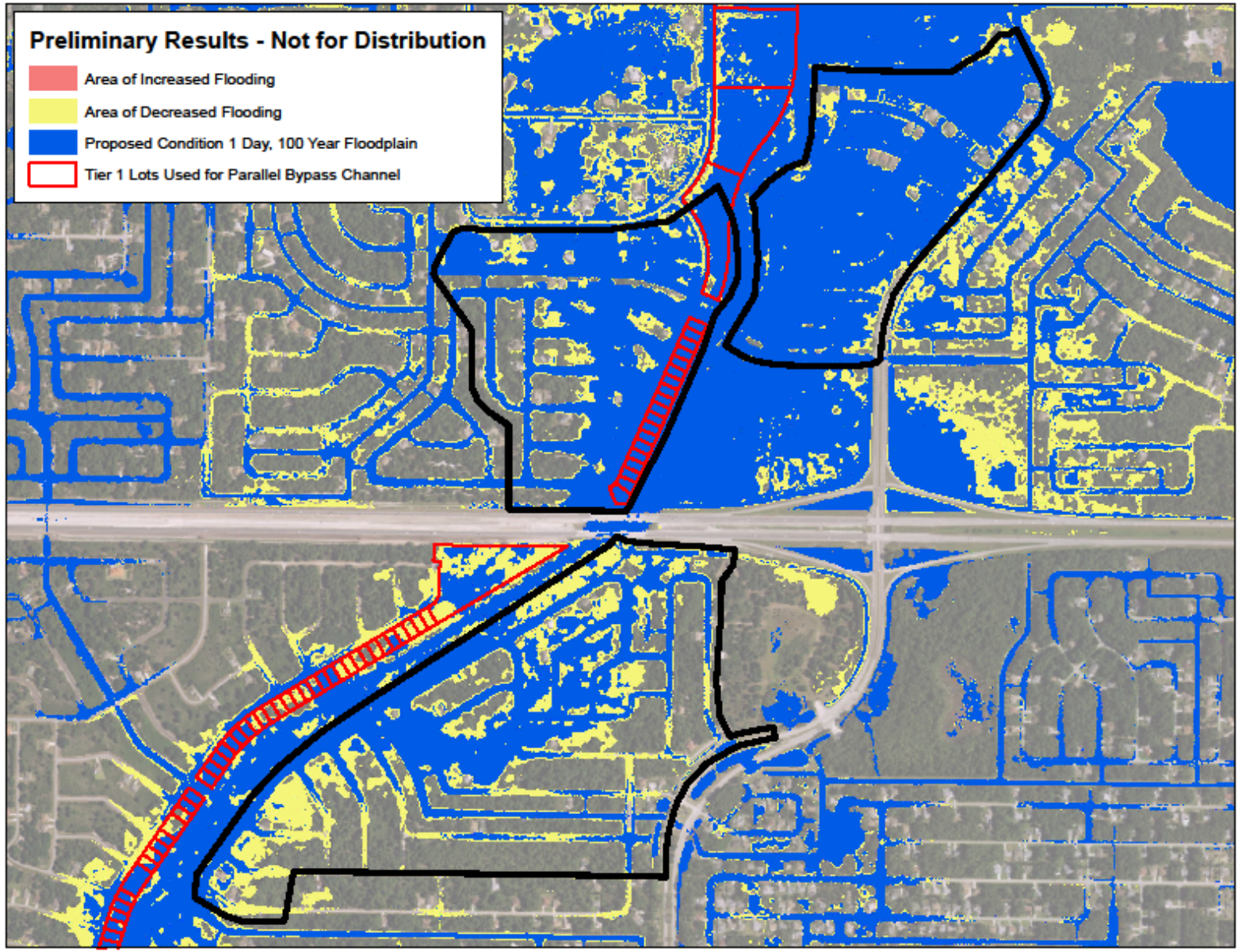
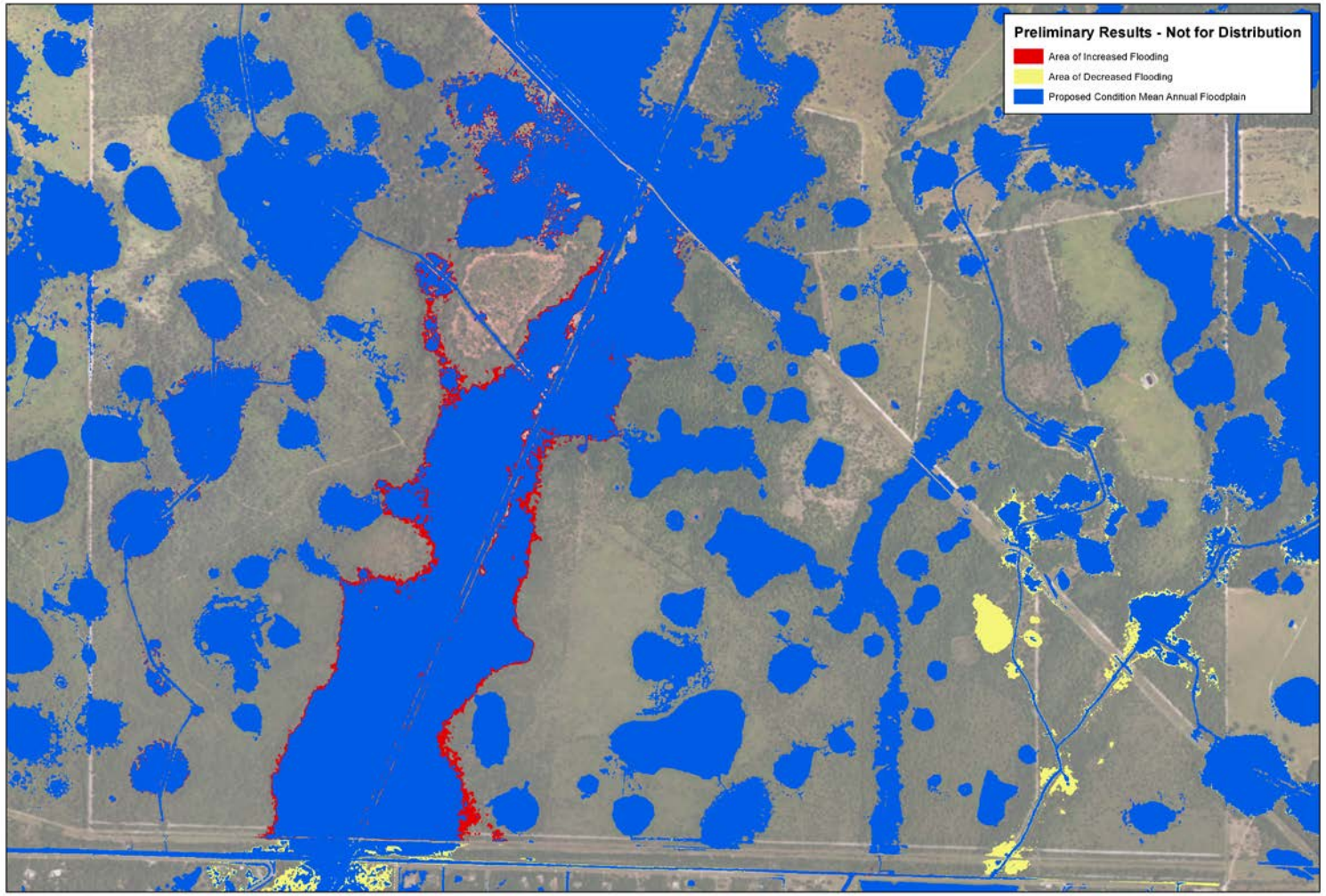
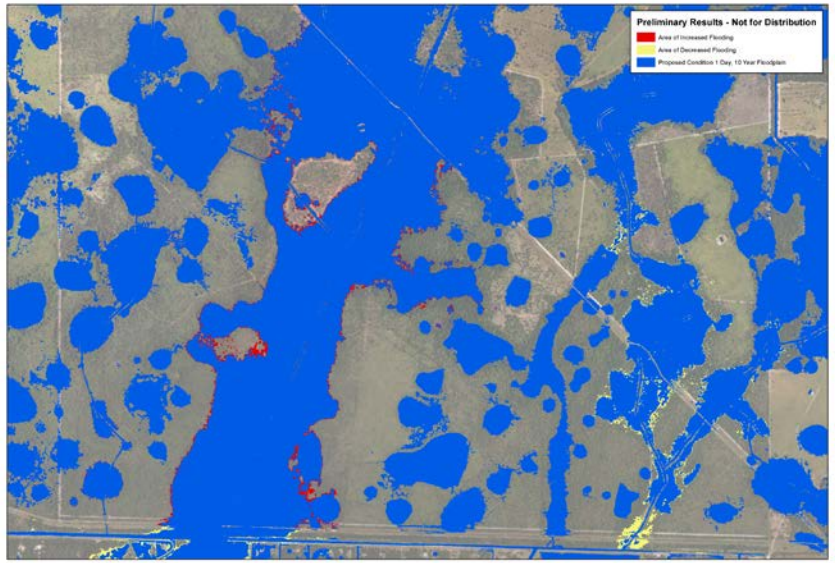


Upstream Area of Increased Inundation

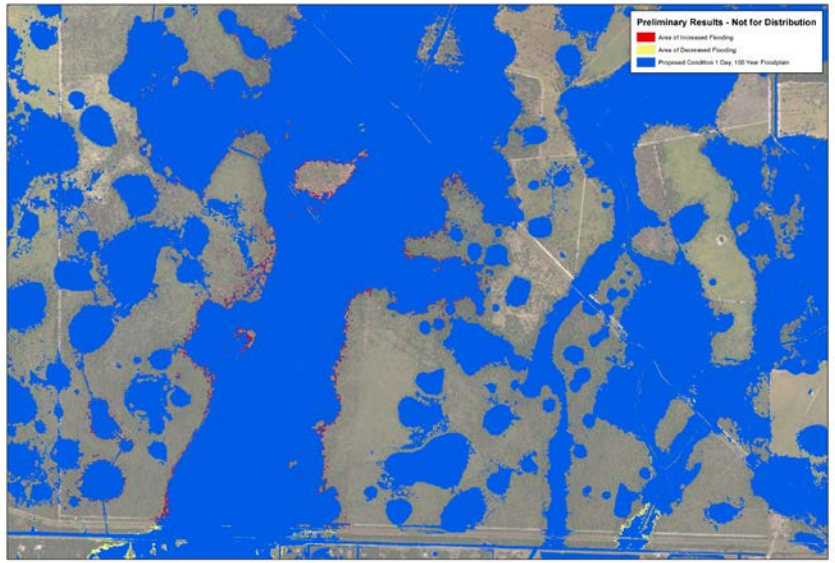
Mean Annual 24-Hour Storm Event



10-Year 24-Hour Storm Event

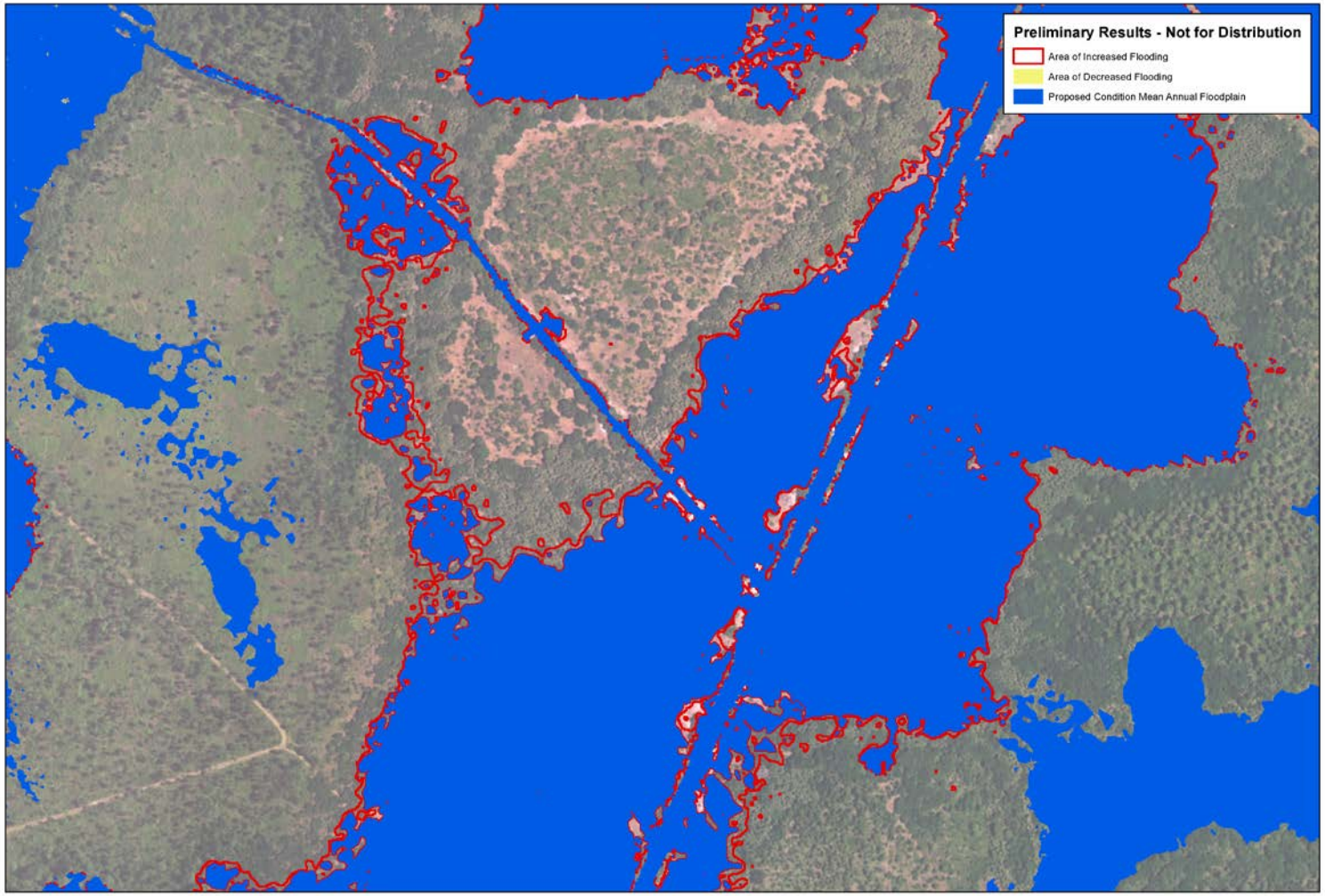


100-Year 24-Hour Storm Event

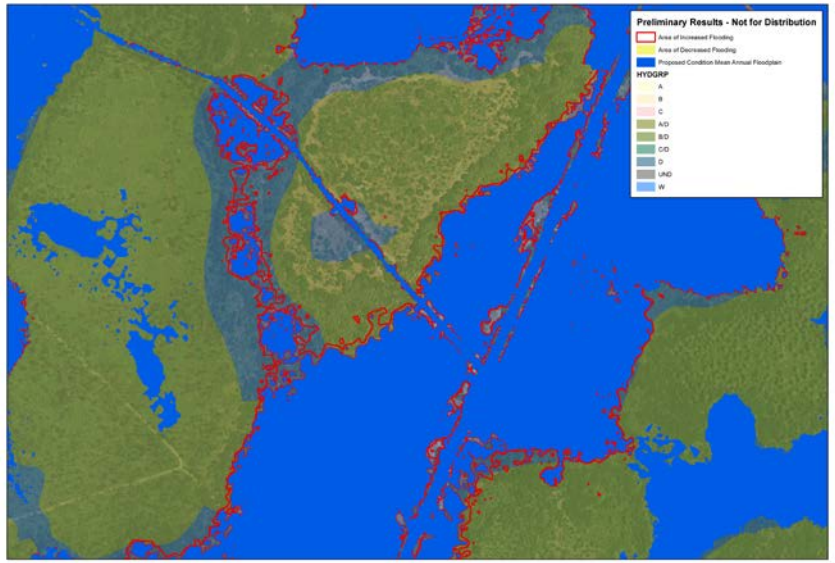


Example Area of Increased Inundation

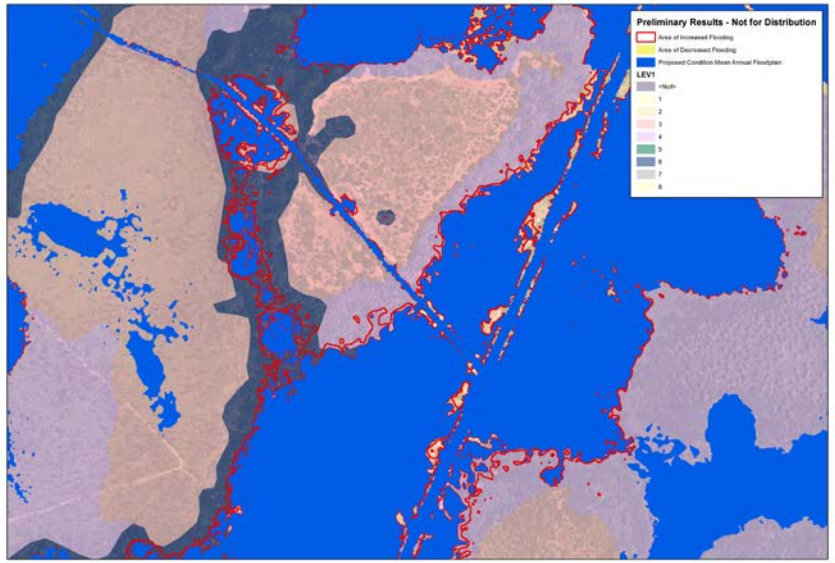
Mean Annual 24-Hour Storm Event



Hydrologic Soil Groups

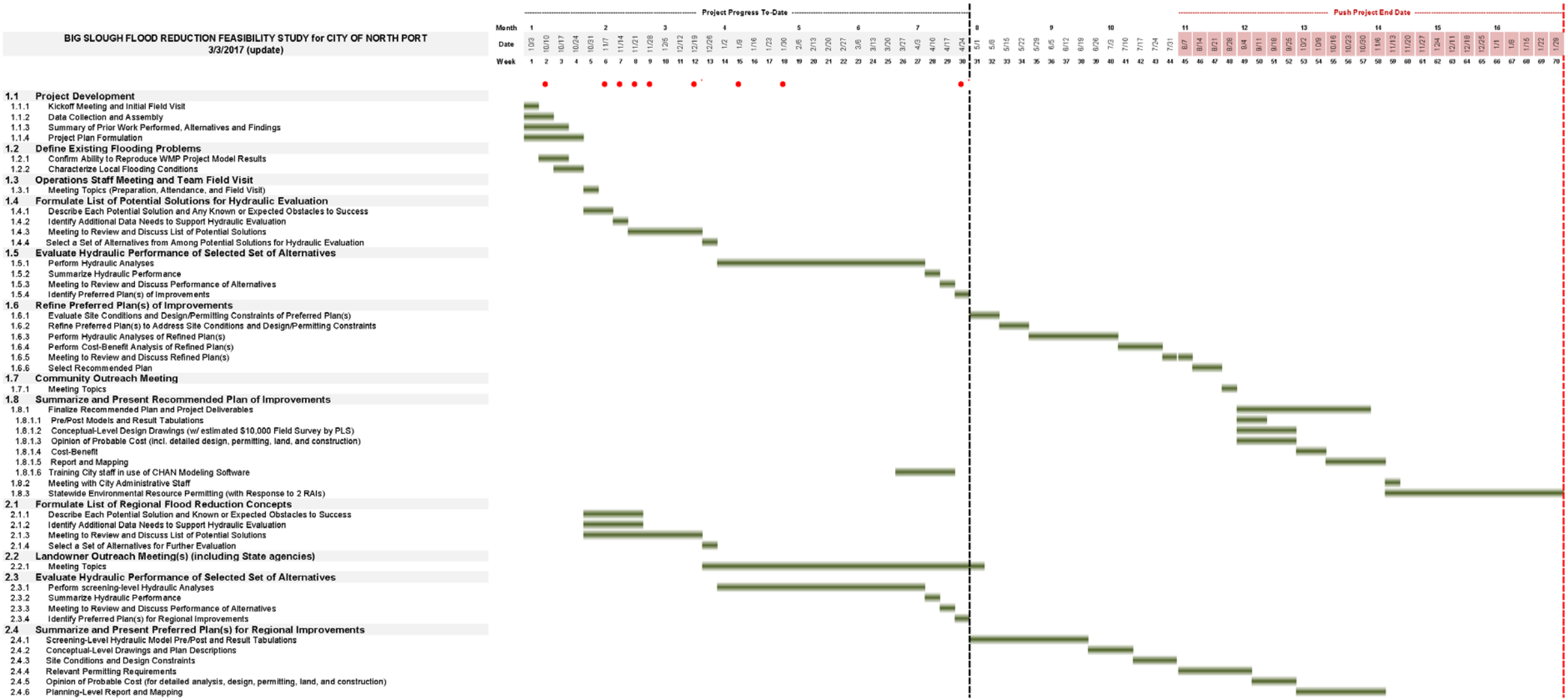


Land Use



Project Status

Revised Timeline and Cooperative Agreement



North Port Big Slough Flood Reduction Study

Team Progress Meeting

April 28, 2017

Plan Concepts and Preliminary Performance