

PALM BEACH COUNTY
BOARD OF COUNTY COMMISSIONERS

AGENDA ITEM SUMMARY

Meeting Date: June 28, 2011

Consent Regular
 Workshop Public Hearing

Department: County Administration

Submitted By: County Administration

Submitted For: Office of Community Revitalization

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I. EXECUTIVE BRIEF

Motion and Title: Staff recommends a motion to approve: Agreement with the Westgate/Belvedere Homes Community Redevelopment Agency (CRA) in an amount not-to-exceed \$500,000 for flood mitigation.

Summary: On February 3, 2009, the Board of County Commissioners (BCC) approved the allocation of \$500,000 to assist the CRA with the implementation of a flood mitigation plan. The plan was designed through the Stub Canal Task Force in collaboration with the Airport, the City of West Palm Beach, and the Towns of Cloud Lake, Glenn Ridge and Haverhill to mitigate flooding and improve water quality for the entire C-51 Basin. The CRA has been working on several major projects related to this plan with a cost of over \$20 million, which entail drainage, water quality improvement, flood mitigation, sanitary sewer and roadway improvements. The CRA executed a conceptual agreement with the County which provides for the reimbursement of \$500,000 for the various projects which mitigate flooding in the community. These funds will provide the required matching fund to implement three specific projects, including: the L-2 canal expansion, the L-2 canal property acquisition, and L-2 pump station. Remaining funding is in place with the allocation of \$725,000 from the CRA, \$5,775,000 from FEMA, and \$700,000 from a Palm Beach County Loan. If funding is not approved in a timely manner the CRA may forfeit federal funds in the amount of \$5,775,000. District 2 (GB)

Background and Justification: The CRA previously requested funding from the County to mitigate flooding in the Westgate Community. This project was reviewed by the CCRT and approved for funding by the BCC on February 3, 2009 in the amount of \$500,000. The submittal of this agreement was delayed to allow the CRA enough time to design, permit and raise enough funds to implement a comprehensive drainage plan for the area. This Agreement utilizes those funds previously approved by the BCC. The Agreement has been executed by the CRA and now needs to be approved by the BCC. Federal grants are due to expire in the first quarter of next fiscal year.

Attachments:

1. Interlocal Agreement between Palm Beach County and Westgate/Belvedere Homes Community Redevelopment Agency
2. Flood Mitigation Plan Summary
3. Westgate/Belvedere Homes CRA Flood Mitigation Project Funding
4. Excerpt of the Stub & L-2 Canals Drainage Basin Study

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Recommended by: _____

Department Director

Date

Approved By: _____

Deputy County Administrator

6/28/11

Date

II. FISCAL IMPACT ANALYSIS

A. Five Year Summary of Fiscal Impact:

Fiscal Years	20 <u>11</u>	20 <u>12</u>	20 <u>13</u>	20 <u>14</u>	20 <u>15</u>
Capital Expenditures	\$500,000	_____	_____	_____	_____
Operating Costs	_____	_____	_____	_____	_____
External Revenues	_____	_____	_____	_____	_____
Program Income (County)	_____	_____	_____	_____	_____
In-Kind Match (County)	_____	_____	_____	_____	_____
NET FISCAL IMPACT	<u>500,000</u>	_____	_____	_____	_____

ADDITIONAL FTE POSITIONS (Cumulative) _____

Is Item Included In Current Budget? Yes X No _____

Budget Account No.: Fund 3900 Department 366 Unit X073 Object 6506
Reporting Category

B. Recommended Sources of Funds/Summary of Fiscal Impact: Funds will be allocated from the Westgate/Belvedere CRA budget line previously approved. Fiscal impact will be a reduction to the amount allocated for this project from the capital account. Remaining funds, if any, after project is complete will be retained and moved to CCRT Recoup Funding line.

C. Departmental Fiscal Review: Pat Stinson

III. REVIEW COMMENTS

A. OFMB Fiscal and/or Contract Dev. and Control Comments:

WS 6/10/12 OFMB SN 6/13/11 6/9/12 Dr. J. Jacobson 6/16/11
Contract Dev. and Control

B. Legal Sufficiency: Assistant County Attorney 6/16/12

This Contract complies with our contract review requirements.

C. Other Department Review: Elisee Michel, Westgate CRA
Department Director

**INTERLOCAL AGREEMENT BETWEEN
PALM BEACH COUNTY AND
WESTGATE / BELVEDERE HOMES
COMMUNITY REDEVELOPEMENT AGENCY**

THIS INTERLOCAL AGREEMENT is made and entered into this _____ day of _____, 2011 by and between Palm Beach County, a political subdivision of the State of Florida hereinafter referred to as "COUNTY" and Westgate/Belvedere Homes Community Redevelopment Agency, a Florida public agency established pursuant to Chapter 163, Florida Statutes hereinafter referred to as "CRA"

WITNESSETH:

WHEREAS, the CRA has undertaken a multi-year project to mitigate flooding in the Westgate community, hereinafter referred to as the "PROJECT"; and

WHEREAS, CRA has requested COUNTY fund an amount not to exceed Five Hundred Thousand Dollars (\$500,000.00) for the PROJECT; and

WHEREAS, the COUNTY desires to support the PROJECT by providing supplemental reimbursement funding for documented costs of the PROJECT in an amount not to exceed Five Hundred Thousand Dollars (\$500,000.00); and

WHEREAS, the PROJECT serves a public purpose.

NOW THEREFORE, in consideration of the mutual covenants, promises, and agreements herein contained, the parties agree as follows:

1. The above recitals are true, correct and incorporated herein.
2. CRA shall conduct the PROJECT as more specifically described in the Scope of Work, which is attached hereto and incorporated herein as Exhibit "A".
3. COUNTY shall reimburse CRA an amount not to exceed Five Hundred Thousand Dollars (\$500,000.00) for the PROJECT, provided CRA performs pursuant to the terms and conditions of this Agreement. CRA agrees that the extent of COUNTY's responsibility under this Agreement shall be limited solely to funding, as stated above, and COUNTY shall have no obligation to any other person or entity.
4. Upon request by COUNTY, CRA shall provide COUNTY with all documentation pertaining to the PROJECT, including but not limited to all due diligence documents such as surveys, appraisals, title commitments, and environmental studies. In the event COUNTY determines a piece of property should not be acquired as part of the PROJECT, CRA shall not purchase that particular property with COUNTY funds.
5. CRA acknowledges the PROJECT will be used to mitigate flooding in the Westgate community, hereinafter referred to as the "IMPROVEMENTS". In the event the IMPROVEMENTS are not installed on the PROJECT within five (5) years from the date of execution of this Agreement, CRA shall reimburse COUNTY all funds received pursuant to this Agreement. This provision shall survive expiration and termination of this Agreement.
6. In the event the CRA ceases to exist, the CRA shall transfer title of the PROJECT to the COUNTY. Additionally, if the CRA ceases or suspends the PROJECT for any reason, any remaining unpaid portion of this Agreement shall be retained by COUNTY, and COUNTY shall have no further obligation to honor reimbursement requests submitted by CRA. The determination that CRA has ceased or suspended the PROJECT shall be made by COUNTY and CRA agrees to be bound by COUNTY's determination. This provision shall survive expiration and termination of this Agreement.
7. CRA shall use its own personnel and/or subcontractor(s) to perform this Agreement.

8. COUNTY shall reimburse CRA the amount established in Section 3 above for costs associated with the PROJECT, upon the CRA's submission of acceptable documentation needed to substantiate its cost for the PROJECT. The COUNTY will use its best efforts to provide said funds to the CRA on a reimbursement basis within forty-five (45) days of receipt of all information required in Section 10, below. COUNTY shall have the final determination of eligibility for reimbursement.

9. The CRA shall assume all responsibility for due diligence, bidding, contract preparation, and contract administration necessary for the PROJECT, including payment(s) to contractor(s) pursuant to all applicable governmental laws and regulations and will comply with all applicable governmental codes and permitting requirements. The CRA shall also assume financial responsibility for the completion of any portions of the PROJECT that is not fully funded by the amount set forth in Section 3, above. COUNTY shall have the final determination of the eligibility for reimbursement of any changes to the PROJECT. Substantial variations from the approved plans shall require prior written approval from the COUNTY.

10. The CRA shall obtain or provide all labor and materials necessary for the PROJECT. The CRA shall furnish to the Office of Community Revitalization's representative a request for payment supported by the following:

A) A Contract Payment Request Form and a Contractual Services Purchases Schedule Form, attached hereto and incorporated herein as Exhibit "B", which are required for each and every reimbursement to the CRA. Said information shall list each invoice payable by the CRA and shall include the vendor invoice number, invoice date, and the amount payable by the COUNTY. The CRA shall attach a copy of each vendor invoice paid by the CRA along with a copy of the respective check and shall make reference thereof to the applicable item listed on the Contractual Services Purchases Schedule Form. Further, the CRA Financial Officer, or authorized representative, shall also certify that each invoice listed on the Contractual Services Purchases Schedule Form was paid by the CRA as indicated. CRA shall supply any further documentation deemed necessary by COUNTY within seven (7) calendar days of request by the COUNTY. Failure to submit completed reports within the specified timeframe may result in a delay in payment. In no event shall COUNTY provide advance funding to CRA.

11. CRA shall maintain books, records, and documents to justify all charges, expenses and costs incurred under this Agreement in performing the PROJECT, in accordance with Generally Accepted Accounting Principles (GAAP), as promulgated by the Government Finance Officers Association from time to time. The COUNTY shall have access to all books, records, and documents as required in this Agreement, and for at least three (3) years after completion of the PROJECT. In the event any work is subcontracted by CRA, CRA shall similarly require each subcontractor to maintain and allow access to such records for audit purposes.

12. The CRA shall be solely responsible for the subsequent maintenance of the PROJECT. The CRA shall be solely responsible for obtaining and complying with all necessary permits, approvals and authorizations from any federal, state, regional, County or agency if any are required for the PROJECT.

13. The term of this Agreement shall be effective on the date of execution of this Agreement by both parties and shall continue in full force and effect until October 1, 2014, unless otherwise terminated as provided herein. COUNTY reserves the right to extend this Agreement for good cause. Any extensions shall be in writing and executed by both parties. The PROJECT shall be completed and final invoices submitted to the COUNTY no later than September 1, 2014 and the COUNTY shall have no obligation to the CRA or any other entity or person for any cost(s) incurred thereafter unless the time for completion is extended by written modification of this Agreement.

14. CRA shall not assess any property owners for the PROJECT.

15. CRA is, and shall be, in the performance of all work, services and activities under this Agreement an Independent Contractor and not an employee, agent or servant of COUNTY. All persons engaged in any of the work or services performed pursuant to this Agreement shall

at all times, and in all places, be subject to CRA's sole direction, supervision and control. CRA shall exercise control over the means and manner in which it and its employees perform the work, and in all respects CRA's relationship and the relationship of its employees to the COUNTY shall be that of an Independent Contractor and not as employees or agents of the COUNTY.

16. CRA represents that it has, or will secure at its own expense, all necessary personnel required to perform the services under this Agreement. Such personnel shall not be employees of or have any contractual relationship with the COUNTY. All of the services required herein under shall be performed by CRA or under its supervision, and personnel engaged in performing the services, shall be fully qualified and, if required, authorized or permitted under state and local law to perform such services.

17. Each party shall be liable for its own actions and negligence and to the extent permitted by law; the CRA shall indemnify, defend and hold harmless the COUNTY against any actions, claims or damages arising out of the CRA's actions in connection with this Agreement or the performance by the CRA as it may relate to this Agreement. The foregoing indemnification shall not constitute a waiver of sovereign immunity beyond the limits set forth in Florida Statutes, Section 786.28, nor shall the same be construed to constitute agreement by either party to indemnify the other party for such other party's negligence, willful or intentional acts or omissions. This section shall survive termination or expiration of this Agreement.

18. As provided in F.S. 287.132-133, by entering into this Agreement or performing any work in furtherance hereof, the CRA certifies that its affiliates, suppliers, sub-contractors, and consultants who perform work hereunder, have not been placed on the convicted vendor list maintained by the State of Florida Department of Management Services within 36 months immediately preceding the date hereof. This notice is required by F.S. 287.133(3)(a).

19. The obligations of COUNTY under this Agreement are subject to the availability of funds lawfully appropriated for its purpose by the Board of County Commissioner of Palm Beach County.

20. The CRA shall, at all times during the term of this Agreement, maintain in force its status as an insured corporation, and shall provide evidence of this insurance prior to the COUNTY's execution of this Agreement. Without waiving the right to sovereign immunity as provided by Section 768.28, Florida Statutes, CRA acknowledges it is either self-insured under State Sovereign Immunity statutes with coverage limits of \$100,000 Per Person and \$200,000 Per Occurrence; or such monetary waiver limits that may change and be set forth by the legislature, which the COUNTY shall recognize as acceptable coverage for General Liability and Automobile Liability insurance. In the event CRA does not rely exclusively on sovereign immunity as provided by Section 768,28, Florida Statute, CRA shall maintain third-party Commercial General Liability and Automobile Liability at limits not less than \$1,000,000 Per Occurrence. With respect to Commercial General Liability, CRA shall add the COUNTY as an "Additional Insured".

- A. CRA shall maintain or be self-insured for Worker's Compensation & Employer Liability insurance in accordance with Florida Statutes, Chapter 440.
- B. CRA shall provide a statement or Certificate of Insurance evidencing insurance, self-insurance and/or sovereign immunity status, which COUNTY shall recognize as acceptable for the above required coverage. The Certificate Holder shall be: Palm Beach County.
- C. CRA shall require each contractor engaged by the CRA for work associated with this Agreement to maintain:
 - 1) Workers' Compensation coverage in accordance with Florida Statutes, and;
 - 2) Commercial General Liability coverage, including vehicle coverage, in combined single limits of not less than One Million Dollars (\$1,000,000.00). The COUNTY shall be included in the coverage as an additional insured.

3) If applicable, a payment and performance bond for the total amount of the PROJECT in accordance with Florida Statute 255.05.

21. In the event of termination of this Agreement, the CRA shall not be relieved of liability to the COUNTY for damages sustained by the COUNTY by virtue of any breach of this Agreement by the CRA; and the COUNTY may withhold any payment to the CRA for the purpose of set-off until such time as the exact amount of damages due the COUNTY is determined.

22. The CRA's termination of this Agreement shall result in all obligations of the COUNTY for funding contemplated herein to be cancelled.

23. The COUNTY and CRA agree that no person shall, on the grounds of residency, race, color, national origin, ancestry, sexual orientation, sex, age, religion or creed, marital status, family status, gender identity or expression be discriminated against in performance of this Agreement. CRA shall ensure that all contracts let for the PROJECT pursuant to the terms of this Agreement will contain a similar non-discrimination and equal opportunity clause.

24. In the event that any section, paragraph, sentence, clause or provision hereof is held invalid by a court of competent jurisdiction, such holding shall not affect the remaining portions of this Agreement and the same shall remain in full force and effect.

25. All notices required to be given under this Agreement shall be in writing, and deemed sufficient to each party when sent by United States Mail, postage paid, to the following:

AS TO THE COUNTY

Houston L. Tate, Director
Palm Beach County Office of Community Revitalization
2300 North Jog Road, 2nd Floor East
West Palm Beach, Florida 33411

AS TO THE CRA

Westgate/Belvedere Homes
Community Redevelopment Agency
Elizee Michel, ACIP
Executive Director
160 Australian Avenue, Suite 500
West Palm Beach, Florida 33406

26. This Agreement shall be construed and governed by the laws of the State of Florida. Any legal action necessary to enforce this Agreement shall be held in Palm Beach County. No remedy herein conferred upon any party is intended to be exclusive of any other remedy, and each and every other remedy shall be cumulative and shall be in addition to every other remedy given hereunder or now hereafter existing at law or in equity or by statute or otherwise. No single or partial exercise by any party of any right, power or remedy shall preclude any other or further exercise thereof.

27. Any costs or expenses (including reasonable attorney's fees) associated with the enforcement of the terms and conditions of this Agreement shall be borne by the respective parties; provided, however, that this clause pertains only to the parties to the Agreement.

28. Except as expressly permitted herein to the contrary, no modification, amendment, or alteration in the terms or conditions contained herein shall be effective unless contained in a written document executed with the same formality and equality of dignity herewith.

29. Each party agrees to abide by all laws, orders, rules and regulations and the CRA will comply with all applicable governmental codes during the PROJECT.

30. Each party shall promptly notify the other of any lawsuit-related complaint, or cause of action threatened or commenced against it, which arises out of or relates, in any manner, to the performance of this Agreement.

31. The parties expressly covenant and agree that in the event any of the parties are in default of its obligations under this Agreement, the parties not in default shall provide to the defaulting party thirty (30) days written notice before exercising any of their rights.

32. The preparation of this Agreement has been a joint effort of the parties, and the resulting document shall not solely as a matter of judicial constraint, be construed more severely against one of the parties than the other.

33. This Agreement represents the entire understanding among the parties, and supersedes all other negotiations, or agreements, written or oral, relating to this Agreement.

34. CRA shall not pledge the COUNTY's credit or make it a guarantor of payment or surety for any contract, debt, obligation, judgment, lien, or any form of indebtedness. CRA further warrants and represents that it has no obligation or indebtedness that would impair its ability to fulfill the terms of this Agreement.

35. This Agreement may be terminated by either party to the Agreement upon sixty (60) days written notice to the other party. CRA's termination of this Agreement shall result in all obligations of the COUNTY for funding contemplated herein to be cancelled.

36. A copy of this Agreement shall be filed with the Clerk of the Circuit Court in and for Palm Beach County, Florida.

37. COUNTY and CRA agree that this Agreement sets forth the entire Agreement between the parties, and there are no promises or understandings other than those stated herein.

38. COUNTY may, at its discretion and for the duration of construction and repairs, install signs within public property or easements notifying the public that construction of the PROJECT was funded with COUNTY dollars.

39. Palm Beach County has established the Office of Inspector General in Ordinance 2009-049, as may be amended, which is authorized and empowered to review past, present and proposed County contracts, transactions, accounts and records. The Inspector General has the power to subpoena witnesses, administer oaths and require the production of records, and audit, investigate, monitor, and inspect the activities of the CRA, its officers, agents, employees, and lobbyists in order to ensure compliance with contract requirements and detect corruption and fraud. Failure to cooperate with the Inspector General or interference or impeding any investigation shall be in violation of Ordinance 2009-049, and punished pursuant to Section 125.69, Florida Statutes, in the same manner as a second degree misdemeanor.

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IN WITNESS WHEREOF, the parties have executed this Agreement and it is effective on the date first above written.

WESTGATE/BELVEDERE HOMES
COMMUNITY REDEVELOPEMENT
AGENCY

PALM BEACH COUNTY, FLORIDA, BY ITS
BOARD OF COUNTY COMMISSIONERS

By: Elisee Michel
Executive Director

By: _____
Karen T. Marcus, Chairperson

ATTEST:

ATTEST:

SHARON R. BOCK, CLERK &
COMPTROLLER

By: _____

By: _____
Deputy Clerk

APPROVED AS TO FORM AND
LEGAL SUFFICIENCY

APPROVED AS TO FORM AND
LEGAL SUFFICIENCY

By: [Signature]

By: _____
Assistant County Attorney

Date: 6/16/11

Date: _____

APPROVED AS TO TERMS
AND CONDITIONS

By: [Signature]
Houston L. Tate, Director
Office of Community Revitalization

Date: 6/8/11

Flood Mitigation Plan

Flood Prevention Measures for the Westgate/Belvedere Homes Community Redevelopment Agency

Background

The Westgate Belvedere Homes Community Redevelopment Agency is bounded by Okeechobee Blvd. on the north, Belvedere Rd. on the south, Florida Mango Rd. on the east and Military Rd. on the west. It consists of five distinct neighborhoods, Golfview Heights, Westgate, Belvedere Heights, Lakeside Mobile Home Park and Palm Beach Colony Mobile Home Park. The Westgate area was developed in 1921, as the most western gateway into the City of West Palm Beach. The area was de-annexed in 1931 by the city and has remained unincorporated since.

Created on April 18, 1989 by the Board of County Commissioners (BCC), the CRA is responsible for developing and implementing plans and activities to eliminate and prevent the spread of blighting conditions and to develop workable programs to aid in rehabilitation, conservation, and redevelopment. The CRA's 1989 redevelopment plan was amended in May 2004.

The 2010 census estimates the CRA's population at 9,158 people with a median annual household income of \$29,493. It is also estimated that 22.4% of the households live below the poverty level. The area comprises approximately 1,007 acres.

Flooding/Drainage Issue

The Westgate/Belvedere Homes Community Redevelopment Agency identifies flooding, due to insufficient drainage, as the primary common concern of the five neighborhoods that formed the WCRA.¹ The flooding problem is primarily one of insufficient storm water storage capacity and poor conveyance, as the entire area eventually drains into one canal, the C-51 (West Palm Beach Canal) which has severe limitations relative to allowable discharges.

The entire Westgate CRA area is in the Southwest Florida Water Management District C-51 Basin. The problem of flooding is severe because the CRA is one of the oldest and lowest-lying areas of Palm Beach County. The elevation ranges between 12 and 16 feet above sea level. The Lakeside Mobile Home Park is at the lowest point, and as a result has repeatedly suffered the worst flooding.

The CRA made infrastructure improvements to South Westgate after adoption of the 1991 Master Plan. These included creation of wet and dry detention areas, controls structures and a stormwater system of swales, catch basins and drainage pipes. Similar improvements are currently underway in the North Westgate area, but improvements have not yet been made in Golfview Heights (Belvedere Heights). Golfview Heights is at a lower elevation than the Westgate neighborhood and without improvements of internal canals, will continue to suffer from flooding.

¹ *Westgate/Belvedere Homes Community Redevelopment Plan*, p. II- 6. (WCRA, 2004).

C-51 Rule: Compensating Storage Requirements

Compensation requirements for development require that the developer contain the volume of stormwater within the 100 year floodplain that is displaced by the building or any site improvements below the 100 year flood stage. In addition, new development must meet the detention requirements of the County, the Lake Worth Drainage District (LWDD), and the South Florida Water Management District (SFWMD). The county is stricter, requiring enough capacity for the 25 year storm event. So even if any area can meet the 10 year storm capacity, it cannot be built upon if it cannot meet the County's 25 year storm capacity requirement. But even where development can occur, the landowners must purchase an extra piece of property to leave undeveloped in order to retain water. Finally any new construction must locate the first floor elevation above the level of a 100 year, 3 day storm, which is 18 inches of water over three days, thus increasing the amount of filling required within the 100 year flood plain.

History of Flooding

A number of flooding incidents have hit the area in the last 30 years. In 1988, heavy flooding inundated houses and roads in Palm Beach County, hitting the Westgate area the hardest. The Colony Mobile Home Park was inundated during that flood. Water had to be pumped out of business and residential buildings.² The American Red Cross had set up shelters and Palm Beach County's sheriff's deputies stood by to evacuate hundreds of residents as the water approached dangerous levels.

The Tropical Storm Jerry flooded the Westgate community and affected businesses in the area in 1995.³

Rainfall flooded unpaved streets in the Westgate neighborhood in 1994, especially Oswego, Saranac, and Saginaw avenues.⁴

In 1998, the Palm Beach Post reported an evacuation threat for the Lakeside Mobile Home Park because of 9 inches of rain dropped by El Niño on central Palm Beach County. Even though official evacuation was avoided, residents experienced major stress due to the threat of evacuation.⁵ Westgate Elementary was closed because of flooding. More recently, in 2004, Hurricane Jeanne and Francis brought more than two feet of water into the Lakeside Mobile Home Park forcing residents to evacuate and seek alternative shelter for a week. In addition, major flooding (housing, street, yard) occurs in the Westgate area after any significant rain event putting many houses in the area on the repetitive insurance flood list.

Drainage Studies

Several groups have studied the drainage problems and proposed some meritorious solutions to alleviate the flooding problems. Palm Beach Airport published one in 1994 that suggested a number of projects that if implemented would provide some relief for Westgate. In 2003, the CRA paid Keshavarz and Associates Inc. to study extensively the

² Sun-Sentinel. *Heavy Rains Flood County Tropical Wave Inundates Houses, Roads*. Joseph C. Nuñez. (Palm Beach County: August 21, 1988).

³ The Palm Beach Post. *As Storm Turns North, Threat of Flooding Eases*. David Holmberg. (Palm Beach County, August 2, 1995).

⁴ The Palm Beach Post. *Unseasonal Rain Takes sun out of Sunshine State.*: Mitch McKenney. (Palm Beach County: February 3, 1994)

⁵ The Palm Beach Post. *Flood Brings Minor Damage, Major Stress*. Robert P. King and Tim Pallesen. (Palm Beach County: January 23, 1998).

drainage problems and propose solutions for mitigation. They found in general that the CRA needs to set aside 15% of its land, about 200 acres for water storage in order to seek protection from the 100-year flood. Perhaps the most valuable study was the one commissioned by the Board of County Commissioners through the Stub Canal Task Force in 2006 which studied and modeled the entire Stub Canal, a sub-basin of the C-51 Canal. This study suggested a plethora of projects that could drastically reduce flooding generally in the C-51 Canal Basin but particularly in the Westgate area.

Stub Canal Task Force Report

Led by Kenneth S. Todd P.E., the County's Water Resources Manager, the Stub Canal Task Force worked for two years with the engineering firm Mock-Roos in cooperation with Keshavarz & Associates and the members of the Task Force that include Palm Beach County, City of West Palm Beach, Palm Beach International Airport, Westgate CRA, Glen Ridge, Cloud Lake, Lake Worth Drainage District, South Florida Management District and some others, to model the existing conditions and propose alternative solutions to mitigate flooding in the area. The work resulted in the following eight goals. 1) Increased Storage Opportunities; 2) Alleviate Flooding; 3) Improve Conveyance; 4) Improve Operations; 5) Stabilize Canal Banks; 5) Improve Water Quality; 6) Improve Water Quality; 7) Maintenance Awareness; and 8) Permitting Flexibility. To accomplish these goals each member of the Task Force had to implement several projects in their respective area.

CRA Flood Mitigation Projects

The Task Force found that the Westgate CRA could increase storage opportunities by developing additional water detention areas; could alleviate flooding by improving the drainage infrastructure in the North Westgate, the Belvedere Homes and the Lakeside Mobile Home Park; could improve conveyance by improving the L-2 Canal; could improve operations by addressing the flooding issues at the Cherry Road Bridge; could stabilize canal banks by modifying the cross sections of the L-2 Canal; could improve water quality by providing sanitary sewers for North Westgate and Belvedere Homes; could enhance maintenance awareness by improvement maintenance arrangements for the L-2 Canal, the L-2B Canal, the E-3 and ½, the Florida Mango Road Ditch and the Belvedere Homes Stormwater System; and could promote permitting flexibility by working with permitting agencies to streamline the permitting process. Out of this process the following projects were developed:

1. L-2 Canal Expansion
2. L-2 Canal Property Acquisition
3. L-2 Pump Station
4. The Westgate Central Lake
5. Phases 4, 5, and 6
6. Phase 3
7. Cherry Road Bridge
8. Belvedere Homes Drainage⁶

The L-2 Canal Expansion proposes to deepen, and widen the western end of the L-2 and L-2B cross sections using existing County and CRA owned properties. This project will provide better conveyance and additional storage for the area.

⁶ STUB & L-2 CANALS DRAINAGE BASIN STUDY, Prepared by Mock-Roos and Keshavarz and Associates Inc., May 2008

Cost: \$700,000.00
Funding Source: FEMA: \$525,000.00; CRA: \$75,000
Match Needed: \$100,000
Status: Design and Permitting Completed
Completion Deadline: September 2011

The L-2 Canal Property Acquisition proposes to acquire private properties to deepen and widen the eastern portion of the L-2 from Wabasso Drive to Congress Ave. This project will provide better conveyance and additional storage for the area.

Cost: \$3,000,000.00
Funding Source: FEMA: \$2,250,000.00; CRA: \$525,000
Match Needed: \$225,000
Status: Design Completed
Completion Deadline: October 2011 (Design Phase)

The L-2 Pump Station proposes to provide three 60,000 gpm pumps (one is a back up/emergency operation pump), a 72" gravity gate, rip rap for bank stabilization for intake and discharge side, trash rack and rake system, a generator building, and fuel tank. The station will be fully automated and equipped with telemetry controls for remote and manual operation. The entire area will be fenced for security purpose.

Cost: \$4,000,000.00
Funding Source: FEMA: \$3,000,000.00; CRA: \$125,000.00; PBC Loan: \$700,000.00
Match Needed: \$175,000
Status: Negotiating Construction Contract
Completion Deadline: December 2011

The Westgate Central Lake is the excavation of six acres of land to provide additional storm water storage capacity for the Westgate area.

Cost: \$600,000.00
Funding Source: FEMA: \$450,000.00; CRA: \$ERM: \$150,000.00
Match Needed: \$None
Status: Under Construction
Completion Deadline: December 2011

Phases 4, 5 and 6 is the installation of drainage pipes, sewer pipes, and pavement for the North Westgate area. This project will provide flood mitigation and water quality for the basin.

Cost: \$3,500,000.00
Funding Source: DRI: 2,700,000.00; FEMA: \$250,000.00; ERM: \$250,000.00; CRA: \$300,000
Match Needed: None
Status: Under Construction
Completion Deadline: December 2011 – March 2012

Phase 3 is the installation of drainage pipes, sewer pipes, and pavement for the western areas of North Westgate Estate. The project provides flood mitigation and water quality for the basin.

Cost: \$2,250,000.00
Funding Source: DRI: 1,000,000.00; ERM: \$300,000.00; CRA: \$200,000.00
Match Needed: None
Status: Project Completed
Completion Deadline: Completed

Cherry Road Bridge is the widening of the Cherry Road Crossing to provide better conveyance for the residents of Belvedere Homes. This project is listed as number one in the priority list of projects proposed by the Stub Canal Task Force.

Cost: \$3,000,000.00

Funding Source: CDBG-R: \$660,000.00; CRA: \$240,000

Match Needed: None

Status: 90% Completed

Completion Deadline: September 2011

Belvedere Homes Drainage proposes to install drainage pipes and a vacuum sanitary system for the residents of Belvedere Homes north of Cherry Road.

Cost: \$5,500,000.00 (Phase 1)

Funding Source: DRI: \$3,000,000.00 FEMA: \$300,000.00; CRA: \$750,000; Water Utility: \$1,000,000.00

Match Needed: None

Status: Design Completed

Completion Deadline: June 2012

Once completed, these projects will significantly improve the basin drainage system and reduce flooding in the Westgate and the surrounding areas. The CRA is using existing Tax Increment Financing and grant fund to complete these projects. The Agency is in dire need of the OCR grant to meet the match requirements. There are no other sources of fund available to the CRA to provide the needed match.

Westgate/Belvedere Homes CRA Flood Mitigation Project Funding

Project Description	Requested Funding from OCR	Funding Sources		Total Cost	Match Deadline	Status of Project
L-2 Canal Expansion	\$100,000.00	\$525,000.00	FEMA	\$700,000.00	June-11	Design Completed
		\$75,000.00	CRA			
L-2 Canal Property Acquisition	\$225,000.00	\$2,250,000.00	FEMA	\$3,000,000.00	June-11	Design Completed
		\$525,000.00	CRA			
L-2 Pump Station	\$175,000.00	\$3,000,000.00	FEMA	\$4,000,000.00	June-11	Negotiating Construction Contract
		\$700,000.00	PBC Loan			
		\$125,000.00	CRA			
Westgate Central Lake	\$0.00	\$450,000.00	FEMA	\$600,000.00		Under Construction
		\$150,000.00	ERM			
Phases 4, 5 and 6	\$0.00	\$2,700,000.00	DRI	\$3,500,000.00		Under Construction
		\$250,000.00	FEMA			
		\$250,000.00	ERM			
		\$300,000.00	CRA			
Phases 3	\$0.00	\$750,000.00	CDBG	\$2,250,000.00		Completed
		\$300,000.00	ERM			
		\$1,000,000.00	DRI			
		\$200,000.00	CRA			
Cherry Road Bridge	\$0.00	\$660,000.00	CDBG-R	\$900,000.00		90% Completed
		\$240,000.00	CRA			
Belvedere Homes Drainage	\$0.00	\$3,000,000.00	DRI	\$5,500,000.00		In Permitting
		\$1,000,000.00	WUD			
		\$750,000.00	CDBG			
		\$750,000.00	CRA			
TOTAL	\$500,000.00			\$20,450,000.00		



STUB & L-2 CANALS DRAINAGE BASIN STUDY

**Technical Memorandum No. 4
Alternative Conditions
Modeling and Project Summary**

May 2008

Prepared by Mock•Roos
in cooperation with
Keshavarz & Associates, Inc.
and the Stub/L-2 Canals Drainage
Basin Study Task Force

MOCK • ROOS
ENGINEERS • SURVEYORS • PLANNERS



attachment 4

Engineer's Signature Page

I hereby state, as a Professional Engineer in the State of Florida, that this report titled "*Alternative Conditions, Modeling and Project Summary*", *Technical Memorandum No. 4* and dated May 2008, was prepared and assembled under my direct responsible charge.

Alan D. Wertepny, P.E.
Vice President
Fla. P.E. No. 32350

Date

Mock, Roos & Associates, Inc.
5720 Corporate Way
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Executive Summary

Technical Memorandum Number 4 ("TM#4") documents the development of the proposed improvements included in the Alternative Condition model, the approximation of the selected proposed improvements in the model software, and the results from the simulations of the Alternative Condition model.

The Task Force members individually and collectively spent much of 2006 and 2007 exploring and developing possible improvements for the Stub/L-2 Drainage Basin. Ten Task Force meetings and many individual meetings took place in the effort to develop a list of planned improvements. Discussion and voting reduced the list of goals to those that had the full support of the Task Force.

The next step was the consideration of possible improvements that might individually or collectively achieve the goals. During several subsequent meetings of and discussion by the Task Force members, the list was re-organized and streamlined. The Task Force then organized sub-committees to consider each of the improvements in more detail. The additional consideration, in some cases, included limited analysis (or modeling) of the improvements. The Task Force expended considerable time and effort to arrive at the list of mutually agreed upon proposed improvements that would address as much and as many of the concerns as feasible. Once the Task Force consultants (Keshavarz and Mock•Roos) developed and tested (for run-time errors) the Alternative Condition model, the same three design storm events (100-year/3-day, 10-year/3-day, and 5-year/1-day) that were simulated with the Existing Condition model were simulated with the Alternative Condition model. Peak stages, peak flows, and extent of inundation were all compared between Existing Condition and Alternative Condition modeling results. The results were presented to the Task Force in early 2007.

Once the results of the Alternative Condition model simulations were presented to the Task Force, the group proceeded with ranking the improvements. The results are re-presented below.

Improvement	Entity	Cost	Rank
Cherry Rd. crossing - Replace culvert with bridge	Westgate CRA	\$ 750,000	1
E-3 1/2 Structure - Revise operating schedule	PBIA/PBC/CRA/SFWMD	\$ 0	2
Pineapple Park area - Increase basin storage (Howard Park & Stub Canal)	WPB	\$ 4,800,000	3
Stub Canal (Southern Blvd. to C-51 Canal) – Improved section	PBC	\$ 4,600,000	4
Westgate & Belvedere Homes – Additional storage	Westgate CRA	\$500,000/acre	5
Renaissance Project – Expansion	WPB		6
Waterview Mobile Home Park - Redevelopment	Landowner/PBC/CRA		7
L-2 Canal - Widen/deepen (E-3 1/2 to Congress Avenue) & lower bottom at Osceola, Seminole, & Wabasso crossings	Westgate CRA	\$ 1,900,000	8
Belvedere Ditch - Improved section	Westgate CRA	\$ 550,000	9
Tuxedo Park - Improved conveyance	WPB	\$ 804,000	10
Boyd Street structure - Additional culvert/gate	WPB	\$ 200,000	11
PBIA - Reduce pumping/inter-basin connections	PBIA	\$ 6,600,000	12

The Task Force has already realized some success – in getting the Florida Department of Transportation (“FDOT”) to remove some temporary construction culverts in the Stub Canal that were restricting flow from the Pineapple Park area and in undertaking a canal restoration project in their place.

The Task Force supports the suggestion that PBC and South Florida Water Management District (“SFWMD”) jointly participate in remodeling the C-51 East Basin to determine the impact of the (Westgate Community Redevelopment Area (“CRA”) and Palm Beach International Airport (“PBI”)) proposed improvements. The Task Force agreed that the re-evaluation should include modeling of the proposed discharge rate from the E-3 ½ Canal.

The concept of expanding the City of West Palm Beach (“WPB”) Renaissance Project was presented to several entities and preliminary calculations demonstrated its merits as both a flood control and alternative water supply project.

The following recommendations were approved by the Task Force:

- The existing condition model (as updated) should be adopted by one entity and kept up to date with changes that occur within the area.
- The C-51 East Basin should be remodeled by SFWMD to reflect corrections that were discovered during this Task Force effort, including the proposed flows (as a result of this Stub Canal Study) from E-3 ½ Canal.
- Proposed redevelopment of the Lakeside/Waterview Mobile Home Park should be monitored by PBC to assure that planned improvements have a beneficial result on the Basin.
- Coordination between PBC and SFWMD should continue on a revised operating schedule for the control structure on the E-3 ½ Canal.
- The Task Force should meet periodically to provide support for implementation of improvements.
- Entities pursuing improvement projects should seek Legislative support for funding assistance in implementing some of the proposed improvements.
- Entities pursuing improvement projects should seek SFWMD support for funding opportunities for some of the proposed improvements.
- An annual update of the status of the proposed improvements should be provided to each Task Force member by PBC.
- WPB, with the support of the Task Force, should continue to pursue the expansion of the Renaissance Project through the use of the lake south of Okeechobee for treatment and storage of stormwater from the City’s Pineapple Park neighborhood.

Introduction

Technical Memorandum Number 4 (“TM#4”) documents the development of the proposed improvements included in the Alternative Condition model, the approximation of the selected proposed improvements in the model software, and the results from the simulations of the Alternative Condition model.

As a result of additional information being provided after its development, and to allow for more flexibility in simulating pre-storm operation of the system, the Existing Condition model was revised before development of the Alternative Condition model. The documentation for that effort is also included in this TM#4.

Finally, documentation of the Task Force’s effort following presentation of the modeling results is provided in this report. For information regarding the Data Acquisition efforts and development of the Existing Condition Model, please refer to Technical Memorandum No. 3.

Existing Condition Model Update

The Existing Condition model was completed and calibrated in October 2005. During subsequent months, as Task Force members began looking at improvements within their respective areas, additional and/or corrected information was provided about the Existing Condition. Also, in anticipation of the possibility of simulating various operating schedules with the Alternative Condition model, the Existing Condition model was revised. A detailed account of the changes that were made to the Existing Condition model is included in **Appendix A**. The revised Existing Condition model includes a 24-hour pre-storm system drawdown period. The original Existing Condition model represented this condition by using lowered initial elevation values for the sub-basins and canals. Changing the representation in the model allowed more flexibility, but required the development of modified rainfall curves – ones that included a 24-hour period of zero rainfall at the beginning of the simulation event. Thus, the two standard rainfall curves used in ICPR (SFWMD72 for the 3-day event and FLMOD for the 1-day event) were modified. The tailwater time vs. stage curves that were developed to represent the receiving waters of the model for the 10-year/3-day event were also revised to represent a 24-hour period of no rainfall at the beginning of the simulation. (The 5-year/1-day event assumed a constant tailwater throughout the storm event.) The revised curves are all shown as figures in **Appendix A**.

Development of Alternative Improvements

The Task Force members individually and collectively spent much of 2006 and 2007 exploring and developing possible improvements for the Stub/L-2 Drainage Basin. Ten Task Force meetings and many individual meetings took place in the effort to develop a list of planned improvements. The first step taken was to identify the goals of the improvements. A preliminary list was generated from the individual goals that were shared by each Task Force member. The list was then taken under consideration by the Task Force for consideration. Discussion and voting reduced the list of goals to those that had the full support of the Task Force. **Table 1** presents the goals that were agreed to by the Task Force.

Table 1 – Goals
• Increased Storage Opportunities
• Alleviate Flooding
• Improve Conveyance
• Improve Operations
• Stabilize Canal Banks
• Improve Water Quality
• Maintenance Awareness
• Permitting Flexibility

The next step was the consideration of possible improvements that might individually or collectively achieve the goals. Again, a preliminary list was developed from the individual ideas that were shared by Task Force members. Each item on the list was discussed and those that had a limiting factor were deleted from future consideration in this study. Table 2a presents the full list and indicates the improvements the Task Force agreed would stay “IN” for further consideration or were “OUT.”

Table 2a – Preliminary List of Potential Improvements	IN	OUT
Increased Storage Opportunities –		
• Lakeside Mobile Home Park	X	
• Westgate area	X	
• Ware Street Canal	X	
• Old Australian Avenue Landfill	X	
• ASR Wells		X
• Pineapple Park	X	
• PBIA Property		X
• Hillcrest area		X
• Alternative Technologies (e.g. underground storage at PBIA)	X	
Alleviate Flooding –		
• Lakeside Mobile Home Park	X	
• Westgate area	X	
• Pineapple Park	X	
• Tuxedo Park	X	
• Glen Ridge	X	
• Cloud Lake	X	
• FL Mango/Old Okeechobee Industrial/Commercial Area	X	
Improve Conveyance –		
• Stub Canal (So. Blvd. to C-51 Canal)	X	
• L-2 Canal in CentrePark (Australian Ave. to Stub Canal)	X	
• FDOT Culverts in Stub Canal under PBIA Flyover	X	
• Ware Canal at Okeechobee	X	
• E-3½ Canal (L-2 to Cherry Road, including culvert crossing)	X	

Improve Operations –		
• Automate & Relocate Divide Structure in L-2 to FL Mango Road	X	
• Add Pump Station at Belvedere Road and E-3½ Canal	X	
• Automate SR 80 Structure at E-3½ Canal (w/ schedule)	X	
• Automate Old Okeechobee Blvd. Structure	X	
• Add Network of Telemetry Monitoring Stations	X	
• Revise PBI A East Pump Station Schedule	X	
Stabilize Canal Banks –		
• L-2 Canal	X	
• Old EOC Ditch	X	
• Stub Canal (So. Blvd. to C-51 Canal)	X	
• Ware Street Canal	X	
• FL Mango Road Ditch	X	
Improve Water Quality –		
• Provide Sewers for Cloud Lake/Glen Ridge	X	
• Basin-wide Water Treatment Areas	X	
• Pine Lake Littoral Shelves		X
• Alternative Technologies	X	
Maintenance Awareness –		
• L-2 Canal (Australian Ave. to Congress Ave.)	X	
• L-2 B Canal	X	
• E-3½ B Canal	X	
• FL Mango Road Ditch	X	
• Sunset Homes Outfall Ditch	X	
• Stub Canal	X	
• Belvedere Homes Stormwater System	X	
Permitting Flexibility –		
• Operational Structures (passive/active)	X	
• Alternative Technologies	X	
• Floodplain Compensation	X	
• Streamline Permitting Process	X	

During several subsequent meetings of and discussions by the Task Force members, the list was re-organized and streamlined into the following list (Table 2b) of improvements and sub-elements:

Table 2b – List of Potential Improvements	
Improve conveyance of the E-3½ Canal –	
• Replace Cherry Rd. crossing with bridge	
• Widen L-2 from E-3½ to Congress Ave.	
• Lower Canal bottom at Osceola, Seminole, and Wabasso crossings	
Stub Canal Improvements –	
• Widen and deepen from Southern Boulevard to C-51 Canal	
Centerpark Area Improvements –	
• Replace Centerpark Culverts	
• Improve 600' of Stub Canal from Boyd Street to RR crossing	
• Old Okeechobee Structure operation schedule revisions	
New operating schedule for E-3½ Canal Gates –	
• Revised operating schedule	
Belvedere Rd. Pump Station --	
• Sizing pump station for contributing area	
Increase storage within Westgate and Belvedere Homes –	
• Amount of area available for Basin use	
PBIA East Pump station –	
• Revise operating schedule	
Lakeside/Waterview Mobile Home Park –	
• Use of southern portion for storage & raising northern portion elevation	
Australian Ave. landfill and Tuxedo Park Improvements –	
• Use of site for Basin storage	
Pineapple Park Improvements --	
• Area storage and raising elevations	
Ware Canal Improvements –	
• Canal improvements	
L-2 Divide Structure Relocation –	
• Relocation /Structure Modification	

The Task Force then organized sub-committees to consider each of the proposed improvements in more detail. The additional consideration, in some cases, included limited analysis (or modeling) of the proposed improvements. During the Task Force meetings that followed, the sub-committees' findings were reported:

Improve conveyance of the E-3½ Canal

Sub-Committee Representatives: PBIA, PBC, Westgate CRA, LWDD, SFWMD

Team Leader: Bob Canterbury of Keshavarz & Assoc. (for Westgate CRA)

Keshavarz said the modeling showed that there would be significant improvement in E-3½ Canal stages if the culverts at the Cherry Road crossing were increased in size and the LWDD L-2 canal cross section was improved. The sub-committee recommended including replacement of the Cherry Road crossing with a bridge, widening and deepening the L-2 Canal from the E-3½ Canal to Congress Ave., lowering the Osceola, Wabasso, and Seminole Rd. crossings, and improving the Belvedere Homes canal section. The sub-committee believed all of these improvements should provide a significant improvement to the backwater profile through the E-3½ Canal serving Westgate. The Task Force agreed to have these improvements included in the Alternative Condition model. Keshavarz also provided proposed structure modification information for several of the upstream structures within the Westgate CRA. This information was included in the Alternative Condition model.

Stub Canal Improvements

Sub-Committee Representatives: PBC, Glen Ridge, Cloud Lake

Team Leader: Charlie Rich of PBC Engineering

Palm Beach County indicated that an improved canal cross section within the Stub Canal (SR 80 to C-51 Canal) would provide a significant improvement to the Stub Canal backwater profile. The County recommended to the Task Force that these improvements be included in the Alternative Condition model and provided the proposed cross section for this canal segment.

Centerpark Area Improvements

Sub-Committee Representatives: SFWMD, PBC, City of WPB

Team Leader: Pete Spataro of City of WPB

The City of WPB and its consultant made a presentation concerning improvements to the Centerpark area. The Existing Condition modeling showed a head loss in this area, possibly due to the culverts within the Centerpark business development. Further analysis showed that increasing the culvert sizes would only improve peak canal stages 0.3 feet. The anticipated cost of replacing the culverts led to the recommendation that this improvement not be included in the Alternative Condition model.

The operation of the City of WPB's Old Okeechobee control structure was also reviewed. Current policy is for telephone communication between the City and SFWMD prior to opening any gates. While this has been a successful policy, it was recommended that the operating protocol be formally documented.

New operating schedule for E-3½ Canal Gates

Sub-Committee Representatives: PBIA, Westgate CRA, SFWMD, PBC Road & Bridge

Team Leader: Randy Bushey of CH2MHill (for PBIA)

CH2MHill (Efrain Giron) made a report to the Task Force concerning a new operation schedule for the structure that discharges the E-3½ to the C-51 Canal. The modeling completed by CH2MHill showed that having both gates open would have very little

effect on stages within the E-3½ Canal at times when the C-51 Canal stages were high. However, when C-51 stages were low, there would be a benefit to E-3½ Canal stages. The sub-committee recommended that the Alternative Condition model include having both gates open for the early part of the storm and then closing one gate at an elevation in the C-51 Canal with which SFWMD Operations was comfortable. The Task Force accepted that recommendation and asked CH2MHill to work with SFWMD staff in determining that elevation. *Subsequent meetings were pursued between PBLA staff, their consultant, PBC Road & Bridge and SFWMD, however, no consensus was returned for inclusion in the modeling. It was acknowledged by all parties that there would be merit in operating the second gate when stages in the C-51 were low. The Task Force agrees that an operating schedule should be coordinated amongst the interested parties. It is further recommended that a proposed operating schedule be included in the forthcoming C-51 East Basin Model update being coordinated between SFWMD and PBC.*

Belvedere Rd. Pump Station

Sub-Committee Representatives: Westgate CRA, PBLA, PBC

Team Leader: Bob Canterbury of Keshavarz & Assoc. (for Westgate CRA)

Keshavarz & Assoc. indicated that the installation of a pump station at the limits of the CRA would not provide enough benefit to justify the cost. This assessment was based upon Keshavarz's modeling efforts, assuming that the downstream conditions to the CRA remain unchanged.

Increase storage within Westgate and Belvedere Homes

Sub-Committee Representatives: Westgate CRA, PBC

Team Leader: Bob Canterbury of Keshavarz & Assoc. (for Westgate CRA)

Keshavarz & Assoc. indicated there would be improvements in the peak stage values in the LWDD L-2 if the canal cross section could be improved, whereby additional storage was added. In addition, the existing width of the canal makes maintenance difficult at best. Pat Martin with LWDD concurred and suggested the Westgate CRA make a presentation to the LWDD Board concerning LWDD's turning over that stretch of canal to the Westgate CRA. Elizee Michel of the Westgate CRA made a short presentation about the future plans of the Westgate Community indicating that Westgate intended to create additional storage areas within the community. Some of these areas would be available storage for the Stub Canal Basin. Westgate was to have their consultant work with the Task Force consultant and the PBLA consultant in bringing back to the full Task Force at the following meeting recommendations of features to be included in the Alternative Condition model. *The Westgate CRA continues to pursue land area within the Westgate CRA that can be used for storage basins. This is an on-going effort. The Westgate CRA consultant has conducted computer modeling of the proposed plans and reported that additional storage in the Westgate CRA area will be beneficial for the local and larger L-2 Canal drainage basin. No specific additional storage information was provided for inclusion in the Alternative Condition model.*

PBLA East Pump Station

Sub-Committee Representatives: PBLA, SFWMD

Team Leader: Jeff Gronborg of SFWMD

SFWMD reported that the PBLA East Pump Station pumps turn on when PBLA lake stages reach elevation 9.7' NGVD and quit pumping when the stages in the Stub Canal reach elevation 13.0' NGVD. The Existing Condition model results show that for the 100-year/3-day storm event, the Stub Canal peak stage elevation near Cloud Lake is approximately 11.75' NGVD. This is approximately one foot below the current berm height at Cloud Lake. Jeff reported that SFWMD staff has worked well

with PBIA with regard to the pump schedule and the sub-committee does not recommend revising the pump schedule at this time.

Jeff also reported that the sub-committee had discussed the possibility of connecting the PBIA east drainage basin to its south drainage basin via piping. This may enable PBIA to use only two of the three pumps in the East Pump Station by moving some (about 100 cfs) of the east drainage basin discharge to the south. That amount of flow would then be added to that pumped directly into the C-51 Canal via the south pump station. This could help the Stub Canal backwater profile for the northern portions of the watershed. The sub-committee recommended that this be included in the proposed improvements of the Alternative Condition model.

Lakeside/Waterview Mobile Home Park

Sub-Committee Representatives: PBC, Westgate CRA

Team Leader: Ken Todd of PBC

The owner is considering the redevelopment of the Lakeside/Waterview Mobile Home Park site with affordable housing. The Task Force agreed that since this property is privately owned, it did not make sense to pursue further public improvement at this time. The Task Force did agree to have proposed modeling effort include two different runs for the mobile home park. One run would leave the park exactly as is and the other run would assume that a portion of the mobile home park would be utilized for regional storage as part of the planned Westgate improvements. The Task Force consultant will work with Westgate CRA to determine how much of the property will be designated as storage for modeling purposes. *The Westgate CRA continues to coordinate with the potential re-developer of the mobile home park. The plan has been modified several times and no specific area for additional storage was ever provided for inclusion in the Alternative Condition model.*

Australian Avenue Old Landfill & Tuxedo Park Improvements

Sub-Committee Representatives: PBIA, PBC, City of WPB

Team Leader: Ken Todd of PBC & Alan Wertepny of Mock, Roos & Assoc. (for WPB)

PBC recommended that the idea of developing storage on the old Australian Avenue landfill site not be pursued any further. Modeling indicated that there would only be a 0.1 foot reduction in peak stages in the Stub Canal as a result of the added storage on the landfill site. This insignificant improvement does not justify the land acquisition and construction costs. It was noted that 10 acres was the maximum practical area used for the storage calculations.

Mock•Roos reported that this sub-committee also investigated internal conveyance improvements for the Tuxedo Park area. Modeling results indicated lower stages in Tuxedo Park, minimal increase in discharge, and no increase in discharges from the Stub Canal into the C-51 Canal as a result of improved collection and conveyance within the Tuxedo Park area. The sub-committee recommended that the Tuxedo Park proposed improvements be included in the Alternative Condition Model.

Pineapple Park Improvements

Sub-Committee Representatives: City of WPB, PBC

Team Leader: Alan Wertepny of Mock•Roos (for City of WPB)

Mock•Roos reported that its investigation of the Pineapple Park area showed that an additional storage area of approximately 20 acres would decrease stages from the 100-year storm event approximately 1 foot within the sub-basin. However, there really isn't vacant property available in the sub-basin; therefore, WPB would have to purchase property to provide the land needed for storage. Alan also noted that if two feet of storage could be added to the south lobe of Clear Lake, there may not be a need

for the acquisition of property. Howard Park improvements being planned by the City may allow for increased storage capacity in the Park. The recommendation is to include the appropriate storage area the City is considering for this area in the proposed improvements for the Alternative Condition model. The sub-committee for these improvements also looked into the improved conveyance of the 600 feet of canal immediately south of the Boyd Street divide structure. In addition, the possibility of an additional gate (a fourth gate) at the divide structure was considered. The sub-committee found that both improvements could be beneficial and recommended that they be included in the Alternative Condition model.

Ware Canal Improvements

Sub-Committee Representatives: City of WPB, PBC

Team Leader: Alan Wertepny of Mock•Roos (for City of WPB)

Mock•Roos indicated that the modeling results showed insignificant reductions in peak canal stages as a result of increased culvert sizes in the Ware Street Canal. Peter Spataro noted that there have been historical maintenance problems with FDOT's culvert under Okeechobee Blvd. The City will be inspecting segments of the canal adjacent to Okeechobee Blvd. The City will continue to address maintenance with FDOT. WPB recommended that the Ware Street Canal improvements not be included in the Alternative Condition model.

L-2 Divide Structure Relocation

Sub-Committee Representatives: LWDD, Westgate CRA, PBC

Team Leader: Pat Martin of LWDD

LWDD indicated that based on the modeling results of Westgate CRA consultant (Keshavarz) and due to the costs associated with the removal of the divide structure at Congress Avenue, the recommendation is not to remove or relocate the divide structure. Keshavarz's modeling showed that removal of the structure did not improve canal stages significantly on either side of the structure.

The Task Force expended considerable time and effort to arrive at a list of mutually agreed upon proposed improvements that would address as much and as many of the concerns as feasible. The evaluation of some of the individual proposed improvements was ultimately taken up by respective consultants of the jurisdictional entity. The developed computer model was provided to the other consultants for use in evaluating individual improvements. The improvements related to the operation of the PBI surface water management system were modeled by their consultant, CH2MHill. Some of the improvements within the Westgate CRA were modeled by their consultant, Keshavarz. As members of the Task Force, the results of these efforts were reported back to the group during the scheduled meetings. The final list of improvements to move forward into the modeling/evaluation effort is given below in **Table 3**.

Table 3 – Proposed Improvements	
Improvement	Entity
Improved Conveyance of E-3 1/2 Canal	
Replace Cherry Rd. crossing with bridge	Westgate CRA
Widen & deepen L-2 from E-3 1/2 to Congress Avenue & lower canal bottom at Osceola, Seminole & Wabasso crossings	Westgate CRA
Improvement to Belvedere Ditch	Westgate CRA
Stub Canal Improvements	
Improved Section from Southern Blvd. to C-51 Canal	PBC
Upper Stub Canal Improvements	
Improve 600' of Stub Canal from Boyd Street south	FDOT
Remove temporary culverts	FDOT
New Operating Schedule for E-3 1/2 Structure	
Revise operating schedule	PBIA/PBC/CRA/SFWMD
Increase Storage w/i Westgate & Belvedere Homes	
Add storage to basins within area	Westgate CRA
PBIA East Pump Station	
Reduce pumping/interbasin connections	PBIA
Tuxedo Park	
Improve conveyance from Tuxedo Park area	WPB
Pineapple Park Improvements	
Increase storage in basin (Howard Park & Stub Canal)	WPB
Boyd Street Additional cuvert/gate	WPB
Renaissance Project Expansion	WPB
Waterview Mobile Home Park	
Redevelop Property	Landowner/PBC

Alternative Condition Model Development

The final direction of the Task Force, concerning proposed improvements modeling, was for the Consultant to develop one Alternative Condition model that included the following proposed improvements:

Table 4 – Modeled Improvements
Stub Canal Basin Improvements
Stub Canal, Southern Boulevard to C-51 - Improve cross section of canal
Stub Canal, Boyd Street gates to 600' south thereof - Improve cross section of canal
Pineapple Park area - Add storage to Howard Park
Tuxedo Park area - Internal improvements
PBIA discharge - Reduce to two pumps to Stub Canal
L-2 West and E-3 ½ Basin Improvements
L-2 Canal - Cross section improvements
Cherry Road crossing – Replace culvert with bridge/box culvert
Westgate CRA - Modify the secondary control structures
Belvedere Homes area - Increase conveyance

To develop the Alternative Condition model, the revised Existing Condition model was copied and modified to include all the proposed improvements. A detailed list of the elements that were added/deleted/changed in the ICPR model to represent these improvements is provided in Appendix B. In addition to the listing, Appendix B contains exhibits and graphic depictions (from a modeling standpoint) of some of the proposed improvements.

Alternative Condition Simulation Results

Once the Alternative Condition model was developed and tested (for run-time errors), the same three design storm events (100-year/3-day, 10-year/3-day, and 5-year/1-day) simulated with the Existing Condition model were simulated with the Alternative Condition model. Peak stages, peak flows, and extent of inundation were all compared between Existing Condition and Alternative Condition modeling results. Table 5 provides the peak stage comparisons for all the nodes in the model.

Table 5 – Peak Stage Comparison Existing vs. Alternative Condition									
<i>Name</i>	100yr/3dy			10yr/3dy			5yr/1dy		
	<i>Existing Max Stage (ft)</i>	<i>Alt I Max Stage (ft)</i>	<i>Diff.</i>	<i>Existing Max Stage (ft)</i>	<i>Alt I Max Stage (ft)</i>	<i>Diff.</i>	<i>Existing Max Stage (ft)</i>	<i>Alt I Max Stage (ft)</i>	<i>Diff.</i>
CS1E	10.30	10.30	0.00	9.00	9.00	0.00	8.00	8.00	0.00
CS1W	11.80	11.80	0.00	10.00	10.00	0.00	8.00	8.00	0.00
CLEAR	13.50	13.50	0.00	13.50	13.50	0.00	13.50	13.50	0.00
N01	15.30	15.19	-0.11	13.88	13.73	-0.15	11.70	11.37	-0.33
N02	13.16	13.16	0.00	13.11	13.11	0.00	13.10	13.10	0.00
N03	14.37	14.12	-0.25	11.96	11.59	-0.36	10.49	10.22	-0.28
N04	14.65	14.60	-0.05	13.62	13.62	0.00	12.52	12.52	0.00
N05	15.91	15.91	0.00	13.25	13.25	0.00	10.91	10.91	0.00
N06	11.02	11.02	0.00	11.01	11.01	0.00	11.01	11.01	0.00
N07	16.21	16.21	0.00	15.98	15.98	0.00	15.92	15.92	0.00
N08	14.11	14.10	0.00	13.65	13.64	-0.01	13.23	13.22	-0.01
N09	13.03	13.03	0.00	13.01	13.01	0.00	12.52	12.52	0.00
N10	12.35	11.12	-1.23	10.82	9.60	-1.22	9.75	9.21	-0.55
N11	14.72	14.65	-0.07	14.07	14.02	-0.05	13.58	13.57	-0.01
N12	17.00	17.00	0.00	16.99	16.99	0.00	16.77	16.77	0.00

N13	14.32	14.32	0.00	14.16	14.16	0.00	14.04	14.04	0.00
N14	14.05	14.05	0.00	14.04	14.04	0.00	14.03	14.03	0.00
N15	13.94	13.88	-0.06	13.34	13.34	0.00	13.08	13.08	0.00
N16	12.30	11.74	-0.55	11.22	11.21	-0.01	10.78	10.77	0.00
N17	13.47	13.44	-0.04	12.23	12.13	-0.10	11.63	11.57	-0.06
N18	12.55	12.48	-0.08	12.39	12.33	-0.06	12.34	12.29	-0.05
N19	16.06	16.02	-0.03	16.02	14.55	-1.47	14.47	13.43	-1.05
N20	16.35	16.35	0.00	15.77	15.77	0.00	15.57	15.57	0.00
N21	14.28	14.31	0.04	14.09	12.70	-1.39	13.99	11.19	-2.80
N22	14.57	14.80	0.22	13.14	12.57	-0.57	12.07	11.46	-0.60
N23	12.28	12.19	-0.09	11.94	11.94	0.00	11.82	11.82	0.00
N24	16.76	16.76	0.00	16.39	16.39	0.00	16.16	16.16	0.00
N25	12.73	11.76	-0.97	11.11	11.11	0.00	10.98	10.88	-0.10
N26	15.08	15.08	0.00	15.06	15.06	0.00	15.03	15.03	0.00
N27	13.05	13.05	0.00	13.03	13.03	0.00	13.03	13.03	0.00
N28	12.44	11.25	-1.19	11.11	11.11	0.00	11.10	11.10	0.00
N29	12.73	11.76	-0.97	11.09	11.06	-0.03	10.84	10.76	-0.08
N31	12.42	12.14	-0.28	12.09	12.09	0.00	12.04	12.04	0.00
N32	13.95	14.34	0.39	12.04	12.64	0.60	11.24	11.78	0.54
N33	13.04	13.04	0.00	13.01	13.01	0.00	12.52	12.52	0.00
N34	12.98	12.17	-0.81	11.28	10.46	-0.81	10.10	9.17	-0.93
N35	13.08	13.07	-0.01	12.13	12.03	-0.10	11.33	11.25	-0.08
N36	12.43	11.22	-1.21	10.86	9.71	-1.15	9.79	8.43	-1.36
N37	12.44	11.25	-1.20	10.87	9.72	-1.14	9.80	8.46	-1.34
N38	13.52	14.25	0.72	12.67	12.67	0.00	11.27	11.27	0.00
N39	14.52	14.41	-0.10	13.63	13.36	-0.27	13.01	13.01	0.00
N40	13.34	13.06	-0.28	13.04	13.04	0.00	13.04	13.04	0.00
N41	16.14	16.12	-0.02	14.89	14.87	-0.02	14.14	14.13	-0.01
N42	10.93	10.38	-0.55	10.02	10.02	0.00	10.01	10.01	0.00
N43	11.85	11.73	-0.12	10.38	10.30	-0.08	9.50	9.50	0.00
N44	18.15	18.15	0.00	18.01	18.01	0.00	17.93	17.93	0.00
N45	17.19	17.19	0.00	15.90	15.90	0.00	15.24	15.24	0.00
N46	15.01	15.01	0.00	13.23	13.23	0.00	11.49	11.49	0.00
N48	18.76	18.70	-0.06	17.90	17.90	0.00	17.16	17.16	0.00
N49	16.11	14.35	-1.76	15.51	12.57	-2.94	15.18	12.29	-2.88
N50	17.04	16.42	-0.62	16.02	14.81	-1.21	15.52	14.33	-1.19
N52	13.69	13.57	-0.12	11.77	11.45	-0.33	10.50	10.40	-0.10
N53	12.74	11.96	-0.78	10.96	9.99	-0.96	9.84	8.60	-1.24
N54	12.21	10.78	-1.44	10.73	9.31	-1.42	9.67	7.88	-1.79
N55	14.54	14.44	-0.10	13.21	12.54	-0.66	12.10	11.46	-0.64
N56	14.56	14.46	-0.11	13.22	12.55	-0.66	12.12	11.49	-0.63
N57	15.50	15.47	-0.03	14.38	14.36	-0.02	14.09	14.09	0.00
N58	13.93	13.54	-0.39	13.22	13.20	-0.02	12.00	11.78	-0.22
N59	15.06	14.84	-0.22	15.03	13.47	-1.55	14.89	12.29	-2.60
N60	15.05	14.57	-0.48	14.95	12.10	-2.85	14.03	11.10	-2.93
N61	15.05	14.91	-0.14	15.02	13.39	-1.63	14.53	12.19	-2.33
N62	15.05	14.76	-0.29	14.73	13.48	-1.25	13.26	12.31	-0.96
N63	14.52	14.41	-0.11	14.08	13.69	-0.39	14.05	12.43	-1.62
N64	19.73	19.37	-0.35	19.33	18.84	-0.49	19.17	18.52	-0.65
N65	14.53	14.39	-0.14	13.38	12.34	-1.04	12.30	11.18	-1.12

N66	14.52	14.39	-0.12	13.66	12.37	-1.29	12.67	11.27	-1.40
N67	15.03	15.02	-0.01	14.11	13.51	-0.60	12.75	12.35	-0.41
N68	16.05	14.77	-1.28	15.29	13.02	-2.27	14.82	13.01	-1.80
N69	16.35	16.34	-0.01	15.00	14.98	-0.02	14.21	14.21	-0.01
N70	16.03	14.78	-1.25	15.48	13.08	-2.40	15.15	11.31	-3.84
N71	14.53	14.40	-0.14	13.70	12.55	-1.15	12.70	11.41	-1.29
N73	14.53	14.40	-0.14	13.71	12.54	-1.16	12.64	11.37	-1.26
N74	13.93	13.12	-0.81	11.33	10.49	-0.84	9.75	9.07	-0.68
N75	14.86	14.81	-0.04	14.11	14.07	-0.05	13.61	13.60	-0.01
N76	14.71	14.63	-0.07	14.07	14.02	-0.05	13.57	13.56	-0.01
N77	14.94	14.99	0.05	13.15	12.86	-0.29	12.37	12.13	-0.23
N78	14.55	14.53	-0.02	14.06	14.06	0.00	14.04	14.04	0.00
N79	14.48	14.59	0.11	13.26	12.54	-0.73	12.74	11.52	-1.23
N80	17.35	15.31	-2.03	16.78	12.79	-3.99	16.30	11.55	-4.75
N81	15.07	15.07	0.00	15.04	15.03	-0.01	15.00	11.40	-3.60
N82	16.94	16.94	0.00	16.52	16.28	-0.24	14.65	14.43	-0.22
N83	18.98	16.87	-2.11	17.96	15.68	-2.28	16.86	14.82	-2.04
N84	15.37	15.27	-0.10	14.03	13.93	-0.10	12.54	12.42	-0.13
N86	13.36	13.99	0.63	10.85	11.63	0.78	10.05	10.16	0.11
N87	13.20	13.76	0.57	10.76	11.46	0.69	10.00	10.03	0.02
N88	13.45	12.83	-0.62	11.87	11.28	-0.59	10.66	10.02	-0.64
N89	13.20	12.51	-0.70	11.59	10.89	-0.70	10.37	9.58	-0.79
N90	16.58	16.58	0.00	14.94	14.94	0.00	13.59	13.59	0.00
N L2B	14.55	14.53	-0.02	13.14	12.48	-0.66	12.07	11.40	-0.66
NC_B005	14.52	14.41	-0.10	13.63	13.36	-0.27	12.52	12.26	-0.26
NC_B010	14.52	14.41	-0.10	13.63	13.36	-0.27	12.52	12.26	-0.26
NC_B015	14.51	14.41	-0.10	13.62	13.34	-0.28	12.51	12.24	-0.27
NC_B020	14.51	14.41	-0.09	13.60	13.31	-0.29	12.50	12.21	-0.30
NC_B025	14.46	14.40	-0.06	13.53	13.20	-0.33	12.46	12.11	-0.35
NC_B030	13.52	14.25	0.72	11.07	11.98	0.91	10.21	10.62	0.42
NC_E005	14.28	14.31	0.04	12.43	12.03	-0.40	11.41	10.66	-0.75
NC_E010	14.10	14.30	0.20	12.05	12.01	-0.05	11.02	10.62	-0.40
NC_E015	13.51	14.27	0.76	11.23	11.98	0.75	10.43	10.59	0.16
NC_E020	13.50	14.24	0.73	10.98	11.94	0.95	10.12	10.52	0.40
NC_E025	13.50	14.21	0.71	10.98	11.88	0.90	10.11	10.44	0.33
NC_E030	13.49	14.19	0.70	10.97	11.83	0.87	10.11	10.36	0.26
NC_E035	13.45	14.11	0.66	10.94	11.77	0.83	10.10	10.32	0.23
NC_E040	13.45	14.11	0.66	10.94	11.77	0.83	10.09	10.32	0.22
NC_E045	13.43	14.08	0.65	10.93	11.74	0.82	10.09	10.30	0.21
NC_E050	13.41	14.06	0.65	10.90	11.71	0.80	10.07	10.25	0.17
NC_E055	13.39	14.03	0.64	10.89	11.69	0.79	10.07	10.23	0.16
NC_E060	13.38	14.02	0.64	10.88	11.67	0.79	10.06	10.21	0.15
NC_E065	13.36	13.99	0.63	10.85	11.63	0.78	10.05	10.16	0.11
NC_E070	13.20	13.76	0.57	10.76	11.46	0.69	10.00	10.03	0.02
NC_E075	13.18	13.75	0.56	10.75	11.43	0.69	9.99	10.00	0.00
NC_LE005	13.58	13.01	-0.58	11.54	10.84	-0.71	10.29	9.59	-0.69
NC_LE015	13.57	13.00	-0.57	11.53	10.84	-0.70	10.28	9.60	-0.69
NC_LE020	13.56	12.98	-0.57	11.53	10.83	-0.70	10.28	9.59	-0.69
NC_LE022	13.55	12.98	-0.57	11.52	10.83	-0.69	10.27	9.58	-0.69
NC_LE025	13.54	12.97	-0.57	11.51	10.82	-0.69	10.26	9.58	-0.69

NC_LE030	13.53	12.96	-0.57	11.50	10.81	-0.68	10.25	9.57	-0.69
NC_LE035	13.51	12.94	-0.57	11.48	10.80	-0.69	10.25	9.55	-0.70
NC_LE037	13.49	12.91	-0.57	11.48	10.78	-0.69	10.24	9.53	-0.71
NC_LE040	13.35	12.85	-0.50	11.40	10.75	-0.66	10.18	9.49	-0.69
NC_LE045	13.34	12.84	-0.50	11.40	10.73	-0.67	10.17	9.41	-0.76
NC_LE050	13.29	12.74	-0.55	11.38	10.68	-0.70	10.16	9.35	-0.81
NC_LE055	13.27	12.68	-0.58	11.36	10.64	-0.72	10.15	9.32	-0.83
NC_LE060	13.22	12.58	-0.64	11.34	10.58	-0.76	10.13	9.24	-0.89
NC_LE065	12.97	12.16	-0.81	11.27	10.45	-0.82	10.10	9.16	-0.94
NC_LE070	12.97	12.15	-0.82	11.27	10.45	-0.82	10.10	9.16	-0.94
NC_LE075	12.96	12.13	-0.83	11.26	10.42	-0.83	10.08	9.12	-0.96
NC_LE080	12.73	11.76	-0.97	11.09	10.14	-0.95	9.96	8.86	-1.11
NC_LE085	12.70	11.70	-1.00	11.07	10.09	-0.98	9.94	8.79	-1.15
NC_LE090	12.44	11.25	-1.19	10.87	9.74	-1.13	9.80	8.48	-1.33
NC_LE095	12.42	11.21	-1.22	10.85	9.70	-1.16	9.79	8.42	-1.36
NC_LE110	12.39	11.12	-1.28	10.82	9.60	-1.21	9.75	8.31	-1.45
NC_LW005	14.42	14.36	-0.07	13.53	12.29	-1.24	12.63	11.18	-1.45
NC_LW010	14.46	14.37	-0.09	13.54	12.29	-1.25	12.64	11.18	-1.45
NC_LW015	14.52	14.39	-0.13	13.54	12.29	-1.26	12.64	11.18	-1.46
NC_LW020	14.52	14.39	-0.13	13.54	12.29	-1.26	12.64	11.18	-1.46
NC_LW022		14.39			12.28			11.17	
NC_LW025	14.53	14.39	-0.13	13.54	12.28	-1.26	12.62	11.17	-1.46
NC_LW030	14.53	14.39	-0.13	13.54	12.28	-1.26	12.62	11.17	-1.46
NC_LW035	14.53	14.39	-0.14	13.46	12.28	-1.19	12.50	11.16	-1.34
NC_LW040	14.53	14.39	-0.14	13.36	12.25	-1.11	12.32	11.10	-1.22
NC_LW045	14.53	14.39	-0.14	13.35	12.24	-1.11	12.31	11.09	-1.22
NC_LW050	14.53	14.39	-0.14	13.05	12.23	-0.81	12.03	11.09	-0.94
NC_LW055	14.43	14.33	-0.10	12.71	12.06	-0.65	11.70	10.69	-1.01
NC_LW060	14.77	14.34	-0.43	13.10	12.06	-1.04	12.34	10.71	-1.63
NC_LW065	16.09	14.34	-1.75	15.50	12.07	-3.43	15.17	10.71	-4.46
NC_S005	12.65	11.64	-1.00	10.82	9.77	-1.05	9.75	8.44	-1.32
NC_S010	12.64	11.64	-1.00	10.82	9.77	-1.05	9.75	8.44	-1.32
NC_S015	12.63	11.62	-1.02	10.82	9.75	-1.06	9.75	8.43	-1.33
NC_S020	12.39	11.10	-1.29	10.81	9.59	-1.22	9.75	8.29	-1.46
NC_S025	12.39	11.10	-1.29	10.81	9.59	-1.22	9.75	8.29	-1.46
NC_S030	12.40	11.09	-1.32	10.81	9.57	-1.24	9.74	8.26	-1.48
NC_S035	12.32	11.06	-1.26	10.80	9.55	-1.25	9.74	8.25	-1.49
NC_S040	12.27	10.92	-1.35	10.76	9.43	-1.33	9.70	8.06	-1.65
NC_S045	12.23	10.81	-1.42	10.74	9.34	-1.40	9.68	7.90	-1.78
NC_S060	12.13	10.60	-1.54	10.67	9.19	-1.49	9.63	7.88	-1.74
NC_S065	11.74	10.52	-1.22	10.37	9.14	-1.23	9.33	7.88	-1.44
NC_S070	10.94	10.41	-0.53	9.66	9.07	-0.59	8.57	7.88	-0.69
NC_S075	10.93	10.38	-0.55	9.62	9.05	-0.56	8.46	7.88	-0.58
NC_S080	10.57	10.34	-0.23	9.26	9.02	-0.24	7.93	7.88	-0.04
NC_S090	10.45	10.31	-0.14	9.16	9.01	-0.15	7.87	7.88	0.01

Table 6 presents the peak discharge value comparison, at selected locations.

Table 6 – Peak Flow Comparison Existing vs. Alternative Condition										
<i>Name</i>		<i>100yr/3dy Existing Peak Flow (cfs)</i>	<i>Alt 1 Peak Flow (cfs)</i>	<i>Diff.</i>	<i>10yr/3dy Existing Peak Flow (cfs)</i>	<i>Alt 1 Peak Flow (cfs)</i>	<i>Diff.</i>	<i>5yr/1dy Existing Peak Flow (cfs)</i>	<i>Alt 1 Peak Flow (cfs)</i>	<i>Diff.</i>
SI01	Boyd Street Structure	254	362	108	100	142	42	0	56	56
CS01	Stub Canal immediately d/s of Boyd St.	288	402	114	139	188	49	36	99	62
LI06	L-2 culverts under Fla Mango Rd	487	625	137	239	313	74	161	250	89
LI11	L-2 Canal immed. u/s of confl. w/ Stub Canal	2665	1242	-1422	1008	1007	-1	656	813	157
CS07	Stub Canal under PBIA flyover	1525	1878	353	946	1230	284	701	946	245
SI06	Stub Canal under Southern Blvd.	2117	2450	333	1436	1670	234	1111	1319	208
SL11	PBIA east pump station	320	240	-80	320	240	-80	320	240	-80
CS14	Stub Canal discharge to C-51	2166	2501	335	1476	1707	231	1131	1334	202
LI04	L-2 Canal divide structure	109	103	-6	42	9	-33	13	0	-13
CE01	E-3 1/2 Canal immed. Sth of L-2 West	275	431	155	200	315	115	135	249	114
CE08	E-3 1/2 Canal between Belv. & Southern	387	474	87	278	397	119	180	340	160
EI02	E-3 1/2 culverts under Belvedere Rd.	450	539	89	287	422	135	177	338	160
EI06	E-3 1/2 Control Structure	413	490	77	307	422	115	208	368	160

The maximum canal stage profiles were plotted for the L-2 West/E-3 ½ Canals, the L-2 East/Stub Canals, and the Stub Canal from the Boyd Street structure to the confluence with the L-2 Canal. These are presented, along with the Existing Condition model results, in Figures 1, 2, and 3.

Lastly, comparisons of the resulting inundation (flooding) between Existing Condition and the Alternative Condition models were graphically represented. Figures 4, 5, and 6 depict the following information:

The areas that flooded as a result of the three storm events simulated with the Existing Condition model are shown in shades of pink. The various shades depict various depths of inundation. The areas that flooded as a result of the three storm events simulated with the Alternative Conditions model are shown in shades of blue. With the Alternative Condition results superimposed over the Existing Condition results, the areas that still show in a shade of pink, are areas that will be improved by the proposed improvements. Please reference the notes on the Figures for specific information about the graphic representations.

The results were presented to the Task Force in early 2007. Minutes of all the Task Force meetings are provided in Appendix C.

Discussion

On several occasions, the Task Force discussed the temporary culverts that were installed in the Stub Canal, south of the Boyd Street structure. The culverts were placed there for temporary use by FDOT contractors during the construction of the PBIA flyover and associated I-95 improvements. The "temporary" culverts were in place for many years. The culverts created a headloss in the system, as observed by WPB staff during various storm events. Since the construction work was complete, the Task Force took up the effort of encouraging FDOT to remove the temporary culverts. It was reported at the January 16, 2008 meeting that the culverts had finally been removed. Furthermore, construction of the proposed canal restoration in that area (by FDOT) has started. Because this proposed improvement is under construction, it was eliminated as a project to be pursued/supported by the Task Force.

The control structure for the E-3 ½ Canal plays a significant role in the water management for not only a portion of PBIA, but also the entire area to the north of PBIA that outfalls through it (primarily the Westgate CRA). Permits issued by SFWMD to PBC Department of Airports for the PBIA facility indicate that SFWMD approved a design discharge rate of 1,414 cfs from the E-3 ½ Canal into the C-51 Canal. To achieve this flow rate, both gates of the E-3 ½ control structure must be fully open. The Westgate CRA and PBIA are each proposing improvements within this basin that will result in a combined peak discharge rate that is less than the permitted discharge rate. These proposed improvements will require approval from SFWMD. The Task Force supports the suggestion that PBC and SFWMD jointly participate in a remodeling the C-51 East Basin to determine the impact of the (Westgate CRA and PBIA) proposed improvements. The Task Force agreed that the re-evaluation should include modeling of the proposed discharge rate from the E-3 ½ Canal.

The concept of expanding the WPB Renaissance Project to accommodate larger volumes of stormwater runoff and provide a greater level of protection to the Pineapple Park area was discussed at several Task Force meetings. Ken Todd spoke with several individuals at the local and state level about the possibility of using the lake south of Okeechobee Boulevard (the former south lobe of Clear Lake) as a treatment area, which would provide the larger treatment area needed to increase flood protection levels and alternative water supply storage volume. The benefit to the entire Stub Canal basin would be that any volume of stormwater runoff that could be directed away from the Stub Canal, would be volume that could then be used by others in the Basin that discharge there. The concept was well-received, but the Task Force acknowledged that it would not be a "quick fix." WPB will continue to take the lead in pursuing this project, with the support of the Task Force.

The alleviation of flooding was one of the documented goals of the Task Force. The municipalities of Cloud Lake and Glen Ridge, and the area of Old Okeechobee Road near Florida Mango Road, have all experienced flooding throughout the years. While no projects or improvements have been proposed to address these specific areas, it is anticipated that the Stub Canal cross section improvement from Southern Boulevard to the C-51 Canal will have a positive effect on these locations.

Ranking of Alternative Improvements

Once the results of the Alternative Condition model simulations were presented to the Task Force, the group proceeded with ranking the improvements. It was decided that this step would be helpful in developing an implementation plan for those improvements that the Task Force wishes to pursue and/or support. As a first step, the Task Force prioritized the improvements by assigning a low, medium, or high priority to each. The Task Force then requested that each sub-committee provide a cost estimate for the individual improvements. Once this information was collected, the Task Force met and ranked the projects. Each improvement was briefly discussed again, and the initial priority assigned was re-evaluated. Some of the improvements were re-prioritized as a result. The high priority projects were considered first, with the Task Force voting on the ranking for each. This continued with the medium and low priority projects. The results are presented in Table 7.

Table 7 – Improvement Ranking			
Improvement	Entity	Cost	Rank
Cherry Rd. crossing - Replace culvert with bridge	Westgate CRA	\$ 750,000	1
E-3 1/2 Structure - Revise operating schedule	PBIA/PBC/CRA/SFWMD	\$ 0	2
Pineapple Park area - Increase basin storage (Howard Park & Stub Canal)	WPB	\$ 4,800,000	3
Stub Canal (Southern Blvd. to C-51 Canal) - Improve	PBC	\$ 4,600,000	4
Westgate & Belvedere Homes – Additional storage	Westgate CRA	\$500,000/acre	5
Renaissance Project - Expansion	WPB		6
Waterview Mobile Home Park - Redevelopment	Landowner/PBC/CRA		7
L-2 Canal - Widen/deepen (E-3 1/2 to Congress Avenue) & lower bottom at Osceola, Seminole, & Wabasso crossings	Westgate CRA	\$ 1,900,000	8
Belvedere Ditch - Improved section	Westgate CRA	\$ 550,000	9
Tuxedo Park - Improved conveyance	WPB	\$ 804,000	10
Boyd Street structure - Additional culvert/gate	WPB	\$ 200,000	11
PBIA - Reduce pumping/inter-basin connections	PBIA	\$ 6,600,000	12

The entity(ies) listed for each improvement were identified to be the one(s) that would coordinate the improvement, or take the lead in its implementation.

Conclusion

The Task Force collectively expressed its desire that this Study not be “put on the shelf,” but rather, be used as a guidance document to assist in improving the surface water management within the Stub/L-2 Drainage Basins. The computer model that was developed could continue to be a useful analysis tool, if it is adopted by one entity and kept up to date with changes that occur within the area.

The information that was researched during the initial data acquisition phase of this Study, identified some incorrect assumptions in the model of the C-51 East Basin for SFWMD. These items have been discussed with SFWMD, and a proposed project to update the C-51 East Basin Model is being

considered. SFWMD has also updated/improved the LiDAR data that was used for determining storage for the C-51 model. The improved storage information should also be incorporated into their update. Given that those modeling results affect the management decisions for the entire C-51 Basin (within which the Stub and L-2 Basins lie), the Task Force believes it is important that the information used in that model be as accurate as practicable. Therefore, the Task Force supports the planned remodeling by SFWMD of the C-51 East Basin with all the new data, including the proposed flows from the E-3 ½ Canal.

Lakeside/Waterview Mobile Home Park includes the overall C-51 Basin "low-point." That is, street flooding begins there before anywhere else in the Basin (unless there is a localized problem somewhere). Therefore, it has routinely been that location that has largely dictated the water management decisions for the Basin, during a rainfall event. In many instances, discharges to the Stub and/or L-2 East Canals were suspended because additional volume discharged into those canals risked raising stages at the Mobile Home Park. When the Task Force first convened, there was some discussion of publicly acquiring the property, so the area could be used, at least in part, as storage. However, during the course of the Study, the property was under consideration for redevelopment by private parties. SFWMD, as a member of the Task Force, agreed that any redevelopment that was to be permitted for the property would be scrutinized for its ability to provide increased flood protection and result in no negative impact to off-site property.

The Task Force believes that a genuinely cooperative effort was put forth in arriving at a list of improvements that could significantly benefit several areas within the drainage basins. Funding is, of course, a big concern as the Task Force completes its focus on the Study and looks toward implementation of the proposed improvements. During the last Task Force meeting, considerable time was spent discussing funding opportunities and partnerships that may facilitate bringing the planned improvements to fruition. The Task Force Chair, Ken Todd, will continue to champion the intention of this Task Force, and as such, will be discussing funding opportunities with governmental representatives from this area. It is anticipated that Mr. Todd will follow-up on the progress of, or be involved with the implementation of, many of the proposed projects. The Task Force, or portions thereof, may reconvene periodically, to provide support for the implementation of proposed improvements. It is also recommended that an annual update be provided to all Task Force members to update them on the status of improvements at that time.

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CERTIFICATE OF COVERAGE

Certificate Holder

PALM BEACH COUNTY BOARD OF COUNTY COMMISSIONERS
 A POLITICAL SUBDIVISION OF THE STATE OF FLORIDA ITS OFFICE EMPLOYEES AND AGENCY
 C/O DEPARTMENT OF HOUSING AND COMMUNITY DEVELOPMENT
 100 AUSTRALIAN AVENUE SUITE 500
 WEST PALM BEACH FL 33406

Administrator

Issue Date 2/3/11

Florida League of Cities, Inc.
 Department of Insurance and Financial Services
 P.O. Box 530065
 Orlando, Florida 32853-0065

COVERAGES

THIS IS TO CERTIFY THAT THE AGREEMENT BELOW HAS BEEN ISSUED TO THE DESIGNATED MEMBER FOR THE COVERAGE PERIOD INDICATED. NOTWITHSTANDING ANY REQUIREMENT, TERM OR CONDITION OF ANY CONTRACT OR OTHER DOCUMENT WITH RESPECT TO WHICH THIS CERTIFICATE MAY BE ISSUED OR MAY PERTAIN, THE COVERAGE AFFORDED BY THE AGREEMENT DESCRIBED HEREIN IS SUBJECT TO ALL THE TERMS, EXCLUSIONS AND CONDITIONS OF SUCH AGREEMENT.

COVERAGE PROVIDED BY: **FLORIDA MUNICIPAL INSURANCE TRUST**

AGREEMENT NUMBER: FMIT 0637

COVERAGE PERIOD: FROM 10/1/10

COVERAGE PERIOD: TO 10/1/11 12:01 AM STANDARD TIME

TYPE OF COVERAGE - LIABILITY

General Liability

- Comprehensive General Liability, Bodily Injury, Property Damage and Personal Injury
- Errors and Omissions Liability
- Supplemental Employment Practice
- Employee Benefits Program Administration Liability
- Medical Attendants/Medical Directors' Malpractice Liability
- Broad Form Property Damage
- Law Enforcement Liability
- Underground, Explosion & Collapse Hazard

Limits of Liability

* Combined Single Limit

Deductible N/A

Automobile Liability

- All owned Autos (Private Passenger)
- All owned Autos (Other than Private Passenger)
- Hired Autos
- Non-Owned Autos

Limits of Liability

* Combined Single Limit

Deductible N/A

TYPE OF COVERAGE - PROPERTY

- | | |
|---|--|
| <input checked="" type="checkbox"/> Buildings | <input checked="" type="checkbox"/> Miscellaneous |
| <input type="checkbox"/> Basic Form | <input type="checkbox"/> Inland Marine |
| <input checked="" type="checkbox"/> Special Form | <input checked="" type="checkbox"/> Electronic Data Processing |
| <input checked="" type="checkbox"/> Personal Property | <input type="checkbox"/> Bond |
| <input type="checkbox"/> Basic Form | <input type="checkbox"/> |
| <input checked="" type="checkbox"/> Special Form | |
| <input type="checkbox"/> Agreed Amount | |
| <input checked="" type="checkbox"/> Deductible \$500 | |
| <input checked="" type="checkbox"/> Coinsurance 100% | |
| <input type="checkbox"/> Blanket | |
| <input checked="" type="checkbox"/> Specific | |
| <input checked="" type="checkbox"/> Replacement Cost | |
| <input type="checkbox"/> Actual Cash Value | |

Limits of Liability on File with Administrator

TYPE OF COVERAGE - WORKERS' COMPENSATION

- Statutory Workers' Compensation
- Employers Liability
 - \$1,000,000 Each Accident
 - \$1,000,000 By Disease
 - \$1,000,000 Aggregate By Disease
- Deductible N/A
-

Automobile/Equipment - Deductible

- Physical Damage N/A - Comprehensive - Auto N/A - Collision - Auto N/A- Miscellaneous Equipment

Other

The limit of liability is \$100,000 Bodily Injury and/or Property Damage per person or \$200,000 Bodily Injury and/or Property Damage per occurrence. These specific limits of liability are increased to \$500,000 (combined single limit) per occurrence, solely for any liability resulting from entry of a claims bill pursuant to Section 766.28 (5) Florida Statutes or liability/settlement for which no claims bill has been filed or liability imposed pursuant to Federal Law or actions outside the State of Florida

Description of Operations/Locations/Vehicles/Special Items

Re: Community Development Block Grant

THIS CERTIFICATE IS ISSUED AS A MATTER OF INFORMATION ONLY AND CONFERS NO RIGHTS UPON THE CERTIFICATE HOLDER. THIS CERTIFICATE DOES NOT AMEND, EXTEND OR ALTER THE COVERAGE AFFORDED BY THE AGREEMENT ABOVE.

DESIGNATED MEMBER

WESTGATE/BELVEDERE HOMES COMMUNITY REDEVELOPMENT AGENCY
 100 AUSTRALIAN AVENUE SUITE 410
 WEST PALM BEACH FL 33406

CANCELLATIONS

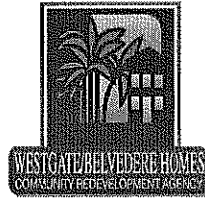
SHOULD ANY PART OF THE ABOVE DESCRIBED AGREEMENT BE CANCELLED BEFORE THE EXPIRATION DATE THEREOF, THE ISSUING COMPANY WILL ENDEAVOR TO MAIL 45 DAYS WRITTEN NOTICE TO THE CERTIFICATE HOLDER NAMED ABOVE, BUT FAILURE TO MAIL SUCH NOTICE SHALL IMPOSE NO OBLIGATION OR LIABILITY OF ANY KIND UPON THE PROGRAM, ITS AGENTS OR REPRESENTATIVES.



AUTHORIZED REPRESENTATIVE

3B-1

ADD'L BACKUP



Westgate/Belvedere Homes CRA Flood Mitigation Project

Scope of Work

The Westgate Belvedere Homes area was one of the first areas to be developed within suburban West Palm Beach. Back then, there was no storm management system in place. After the South Florida Water Management District was formed in the late 70's, surrounding areas started using stormwater management requirements to build at elevations generally higher than the Westgate area. As a result, Westgate became immediately a low lying area which floods consistently after any rainfall event.

Currently, there are very limited areas for detention or retention of stormwater runoff within the Westgate community. Primary storage is provided within the internal canal systems for the area. The stormwater storage areas that currently exist are significantly smaller in storage capacity relative to the overall drainage area that current regulatory agency requirements desire.

The Westgate CRA, in partnership with the Stub Canal Task Force, has developed a comprehensive plan to address the flooding problem in the area. The plan includes the acquisition of properties for water retention, canal improvement, pump station, and other drainage improvement projects. These projects are estimated to cost more than \$20 million.

The CRA has been successful in receiving some major grants to implement the flood mitigation plan. The grants require a local match. The CRA would like to use the OCR funding, alongside its other Tax Increment Financing dollars, as a local match to the federal grants received to address the severe flooding problem of the area. There are no other funds available to the CRA to make up the required match. If funding is not approved in a timely manner the CRA may forfeit federal funds in the amount of \$5,775,000. The requested funds will be used as follows:

PROJECTS	AMOUNT
L-2 Canal Expansion	\$100,000.00
L-2 Canal Property Acquisition	\$225,000.00
L-2 Pump Station Matching Funds	\$175,000.00
Total	\$500,000.00

Submitted by Elizée Michel, AICP, Executive Director.