

LOXAHATCHEE RIVER WATERSHED RESTORATION PROJECT

Project Delivery Team Meeting

December 14, 2016

Federally designated as a National Wild and Scenic River, the Loxahatchee River and its watershed are homes to 33 federally threatened and endangered species, 20 federally protected migratory bird species, and 30 additional State's species of concern

*Trusted Partners Delivering Value
Today for a Better Tomorrow*



U.S. ARMY



US Army Corps
of Engineers

BUILDING STRONG

One of the Last Old Growth Cypress
Floodplains in the SE Florida

Last Large Freshwater Wetland
Corridor in Project Area

Vulnerable estuarine habitats



BUILDING STRONG

Array of Alternative Plans to be Evaluated

Dr Brad Foster



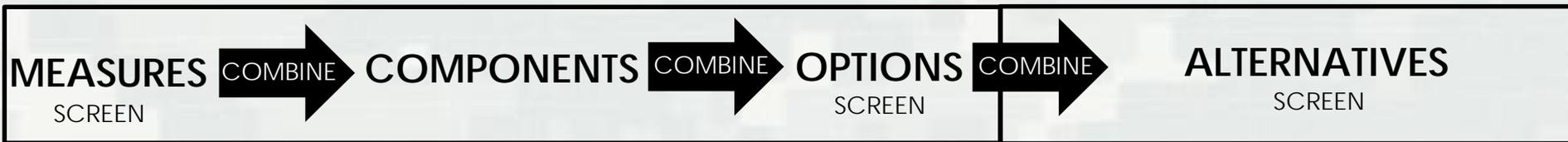
Review: Plan Formulation



BUILDING STRONG

DEVELOP BY FLOWWAYS RECOGNIZING INTERDEPENDENCE

INTEGRATE OPTIONS ACROSS FLOWWAYS



- 100 Management Measures screened to 90
- Measures combined into 47 Components
- 18 Options (6 for FW1, 7 for FW2, 5 for FW3)
- Retained two to three Options per flowway, screened the rest
- Combined the Options into 13 Alternatives
- 13 Alternatives screened to 5 Alternatives



Review: Initial Alternatives



BUILDING STRONG

- The Plan Formulation subteam combined the retained Options into complete Project Alternatives
 - Generally, one option per flowway
 - How the options would work together
 - Match volumes of storage so the total would be able to meet targets at Lainhart Dam
 - Alternatives received during earlier PDT meetings and Plan Formulation subteam meetings
 - Include some distinctly different alternatives



Major Features of the Focused Array of Alternatives



BUILDING STRONG

Alternative	C-51 Res. (yes)	L-8 Impoundment (yes)	Mecca Impoundment (acre-feet)	Mecca Natural Storage	ASR (number of wells)	FW3 option
2		Y	7,200		2	3E
5			9,500		4	3E
10	Y		7,200			3B
12	Y	Y		Y		3E
13		Y		Y	2	3E



Refinements to Alternatives



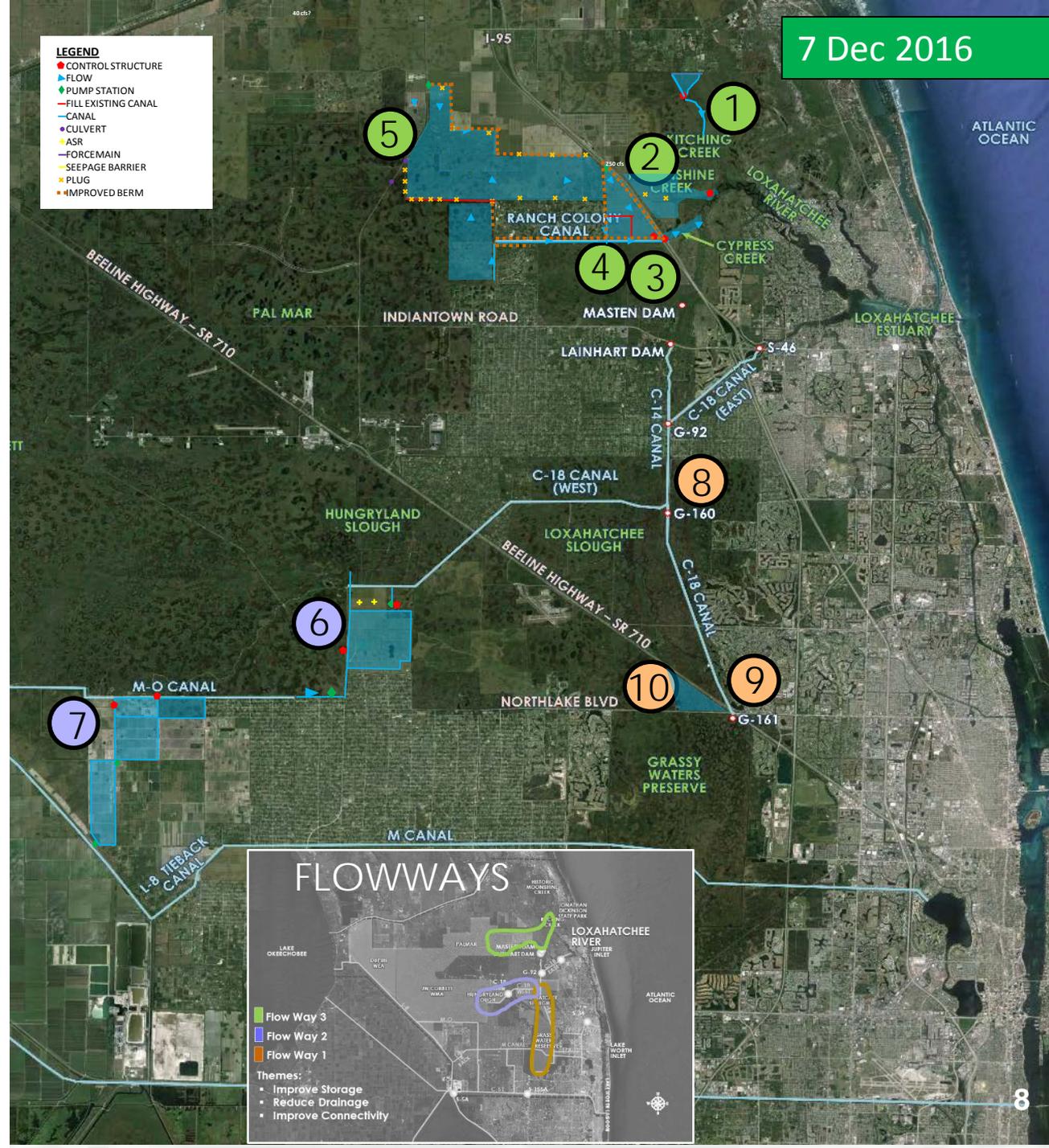
BUILDING STRONG

- From Apr 2016 to Nov 2016
 - Developed additional details for storage facilities, ASRs, conveyance canal dimensions and locations, recommended weir heights and locations, seepage management methods...
 - Used to inform modeling team
 - Used to develop cost estimates for construction, operations and maintenance, and real estate

ALTERNATIVE 2

7 Dec 2016

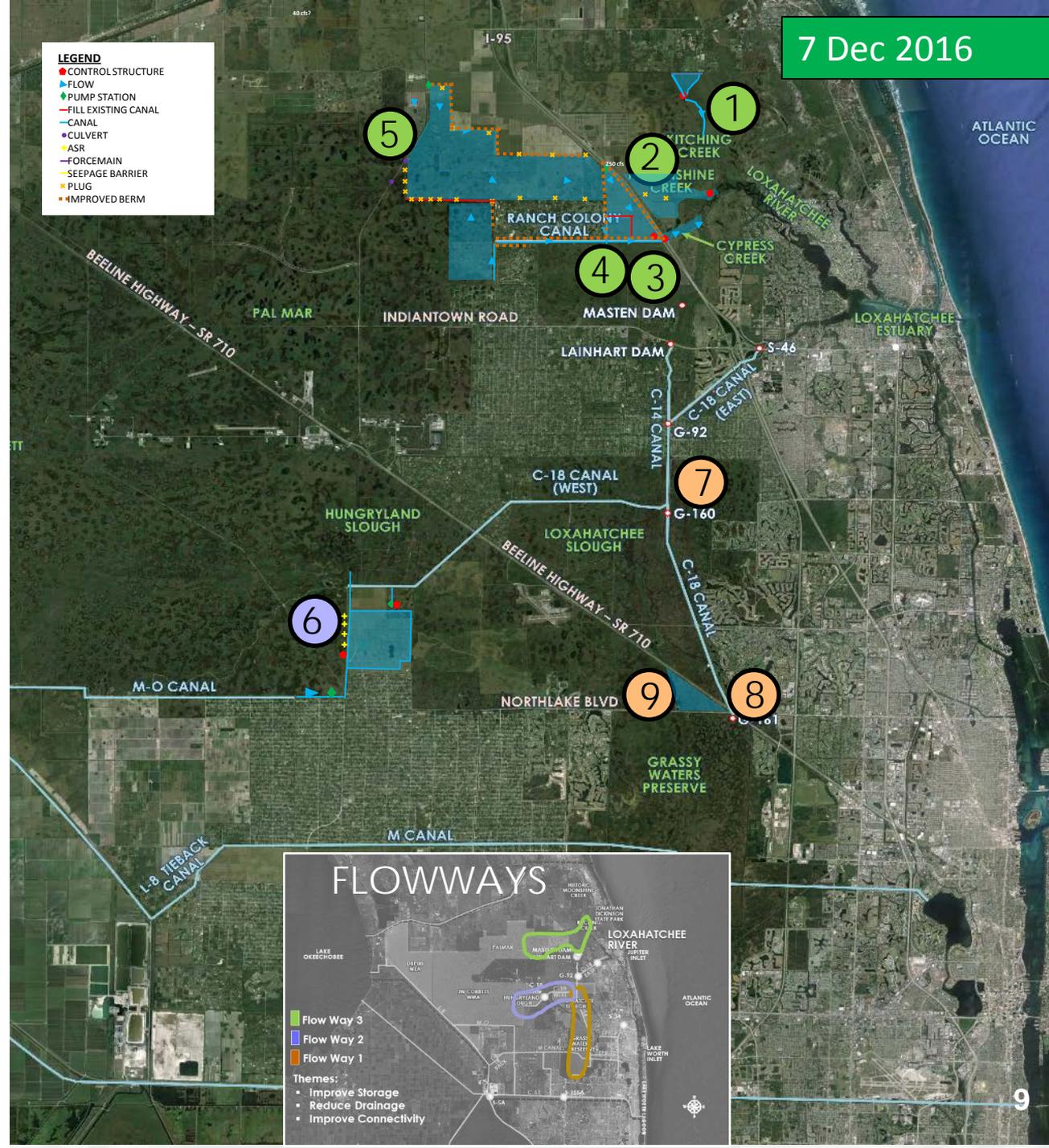
1. **Kitching Creek (Hydration)**
 Spreader canal; weir/plug (Jenkins Ditch)
2. **Moonshine Creek (MC) & Gulfstream East (GE) (Restoration)**
 Connect HSLCD ditch to MC; clear MC vegetation; weir Gulfstream Ditch; regrade to historic topography
3. **Cypress Creek Canal (CCC) (Reduce Over-drainage)**
 Replace CCC weir; raise berm at Ranch Colony; automate twin 84
4. **Gulfstream West (Restoration & Reduce Over-drainage)**
 Partial backfill & relocate southern end of HSLCD canal; small pump
5. **Palmar East (Restoration & Connectivity)**
 Plug ditches; remove pipes; improve northern berm; construct western berm; improve eastern berm; backfill northern canal; pumps at Thomas Farm; redirect drainage to north of Nine Gems
6. **C-18W Reservoir (7,200 ac/ft & 2 ASR Wells)**
 Above-ground reservoir; inflow pump; discharge structure; seepage control
7. **L-8 Basin Shallow Storage (10,000 ac/ft; includes pumps & channels)**
8. **G-160 Structure (Reduce Over-drainage: improve Hydroperiod in Loxahatchee Slough)**
9. **G-161 Structure (Connectivity: GWP water to Loxahatchee Slough)**
10. **GWP Triangle (Connectivity)**



ALTERNATIVE 5

7 Dec 2016

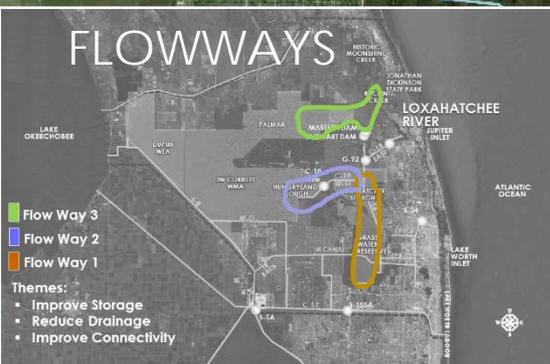
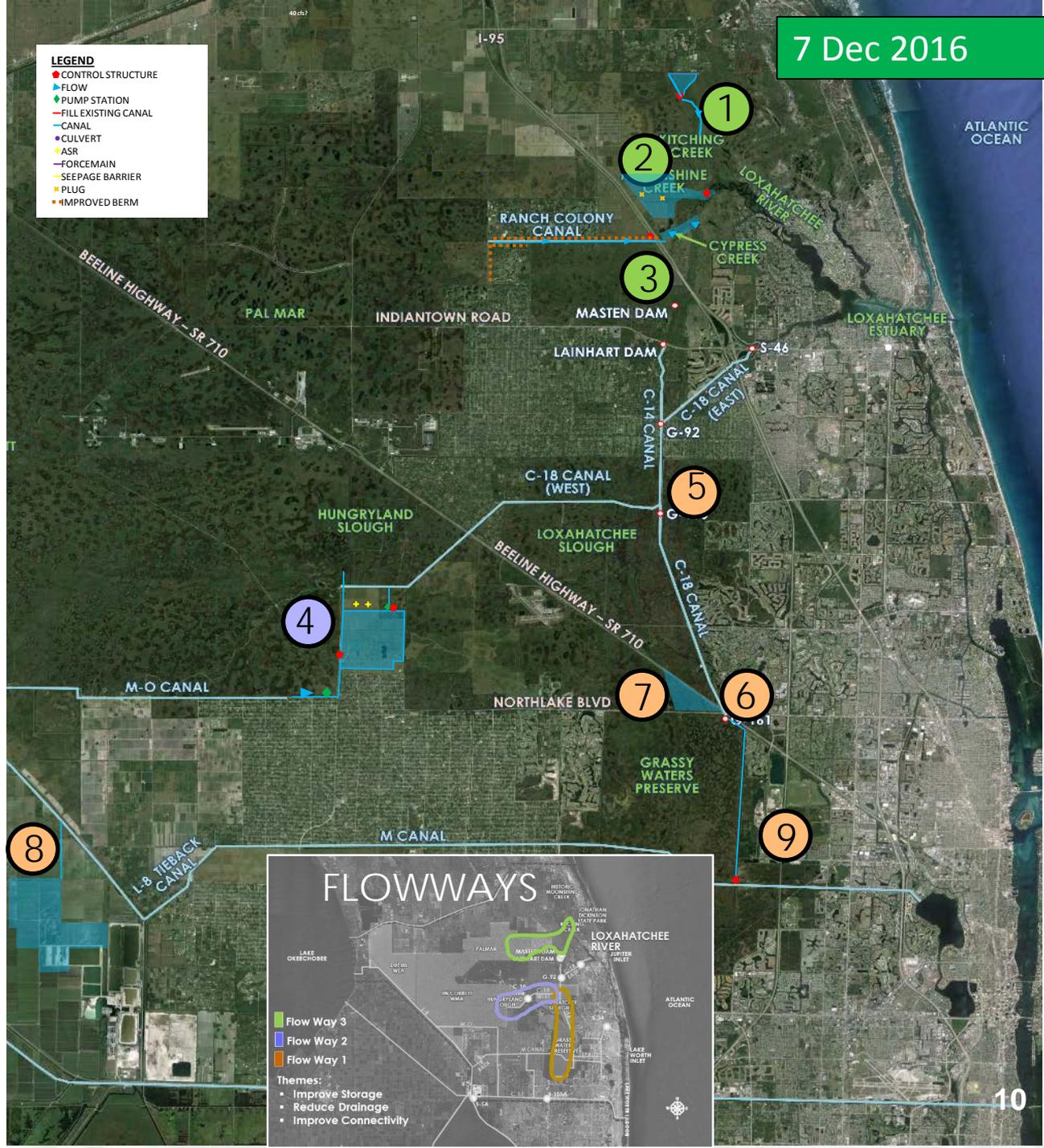
1. **Kitching Creek (Hydration)**
 Spreader canal; weir/plug (Jenkins Ditch)
2. **Moonshine Creek (MC) & Gulfstream East (GE) (Restoration)**
 Connect HSLCD ditch to MC; clear MC vegetation; weir Gulfstream Ditch; regrade to historic topography
3. **Cypress Creek Canal (CCC) (Reduce Over-drainage)**
 Replace CCC weir; raise berm at Ranch Colony; automate twin 84
4. **Gulfstream West (Restoration & Reduce Over-drainage)**
 Partial backfill & relocate southern end of HSLCD canal; small pump
5. **Palmar East (Restoration & Connectivity)**
 Plug ditches; remove pipes; improve northern berm; construct western berm; improve eastern berm; backfill northern canal; pumps at Thomas Farm; redirect drainage to north of Nine Gems
6. **C-18W Reservoir (7,200 ac/ft & 2 ASR Wells)**
 Above-ground reservoir; inflow pump; discharge structure; seepage control
7. **G-160 Structure (Reduce Over-drainage: improve Hydroperiod in Loxahatchee Slough)**
8. **G-161 Structure (Connectivity: GWP water to Loxahatchee Slough)**
9. **GWP Triangle (Connectivity)**



ALTERNATIVE 10

7 Dec 2016

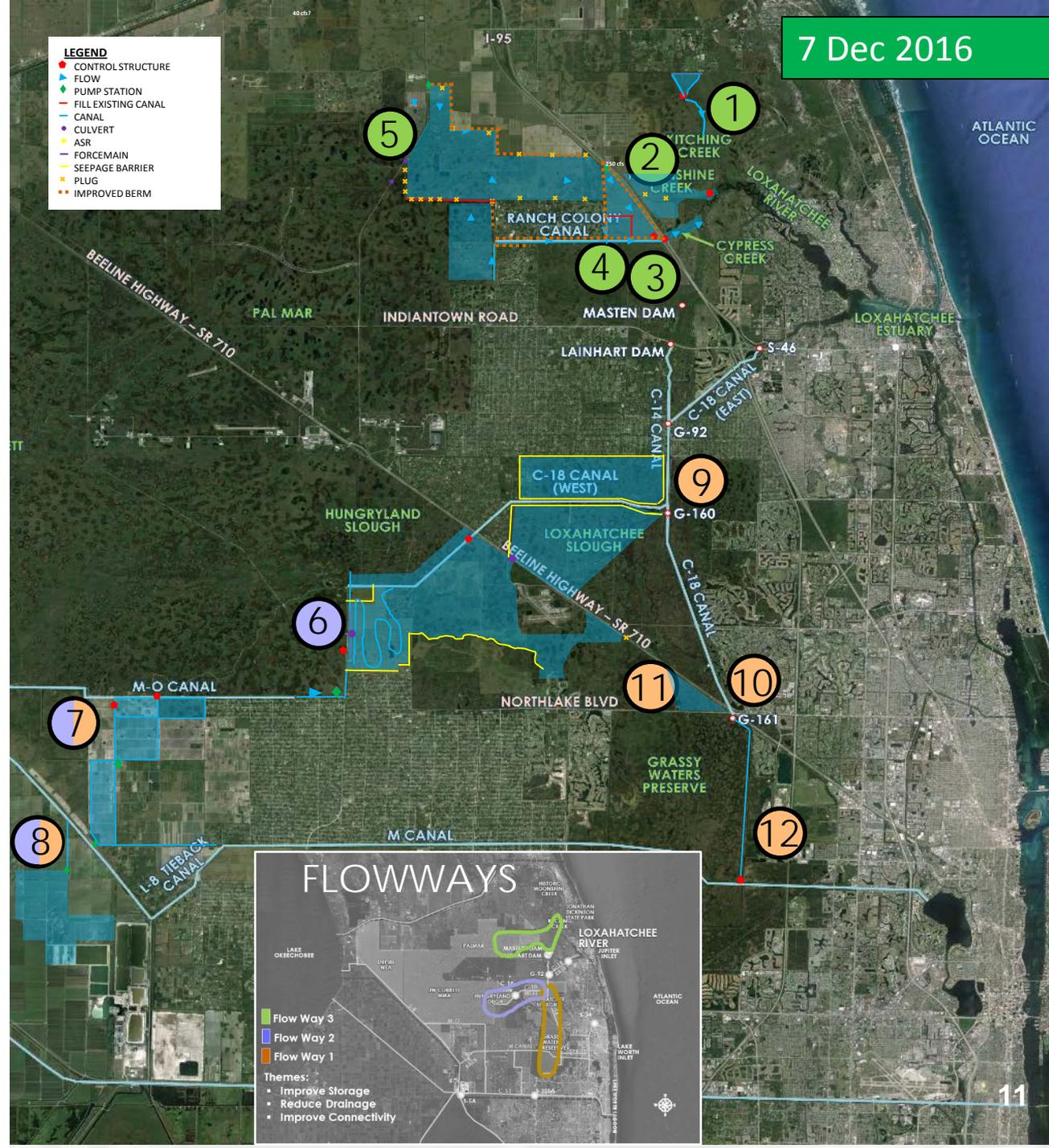
1. **Kitching Creek (Hydration)**
Spreader canal; weir/plug (Jenkins Ditch)
2. **Moonshine Creek (MC) & Gulfstream East (GE) (Restoration)**
Connect HSLCD ditch to MC; clear MC vegetation; weir Gulfstream Ditch; regrade to historic topography
3. **Cypress Creek Canal (CCC) (Reduce Over-drainage)**
Replace CCC weir; raise berm at Ranch Colony; automate twin 84
4. **C-18W Reservoir (7,200 ac/ft & 2 ASR Wells)**
Above-ground reservoir; inflow pump; discharge structure; seepage control
5. **G-160 Structure (Reduce Over-drainage: improve Hydroperiod in Loxahatchee Slough)**
6. **G-161 Structure (Connectivity):** GWP water to Loxahatchee Slough
7. **GWP Triangle (Connectivity)**
8. **C-51 Storage (deep storage)** includes pump & channels
9. **Force Main** (pump and pipeline through Grassy Waters Preserve to connect M-Canal to G-161)



ALTERNATIVE 12

7 Dec 2016

1. **Kitching Creek (Hydration)**
Spreader canal; weir/plug (Jenkins Ditch)
2. **Moonshine Creek (MC) & Gulfstream East (GE) (Restoration)**
Connect HSLCD ditch to MC; clear MC vegetation; weir Gulfstream Ditch; regrade to historic topography
3. **Cypress Creek Canal (CCC) (Reduce Over-drainage)**
Replace CCC weir; raise berm at Ranch Colony; automate twin 84
4. **Gulfstream West (Restoration & Reduce Over-drainage)**
Partial backfill & relocate southern end of HSLCD canal; small pump
5. **Palmar East (Restoration & Connectivity)**
Plug ditches; remove pipes; improve northern berm; construct western berm; improve eastern berm; backfill northern canal; pumps at Thomas Farm; redirect drainage to north of Nine Gems
6. **Natural Storage (C-18W Basin)**
Restore natural topography; seepage barriers; culverts for Beeline Hwy; backfill interior canals in Corbett
7. **L-8 Basin Shallow Storage (5,000 ac/ft; includes pumps & channels)**
8. **C-51 Storage (deep storage) includes pump & channels**
9. **G-160 Structure (Reduce Over-drainage: improve Hydroperiod in Loxahatchee Slough)**
10. **G-161 Structure (Connectivity) GWP water to Loxahatchee Slough**
11. **GWP Triangle (Connectivity)**
12. **Force Main (pump and pipeline through Grassy Waters Preserve to connect M-Canal to G-161)**



ALTERNATIVE 13

7 Dec 2016

1. **Kitching Creek (Hydration)**
 Spreader canal; weir/plug (Jenkins Ditch)
2. **Moonshine Creek (MC) & Gulfstream East (GE) (Restoration)**
 Connect HSLCD ditch to MC; clear MC vegetation; weir Gulfstream Ditch; regrade to historic topography
3. **Cypress Creek Canal (CCC) (Reduce Over-drainage)**
 Replace CCC weir; raise berm at Ranch Colony; automate twin 84
4. **Gulfstream West (Restoration & Reduce Over-drainage)**
 Partial backfill & relocate southern end of HSLCD canal; small pump
5. **Palmar East (Restoration & Connectivity)**
 Plug ditches; remove pipes; improve northern berm; construct western berm; improve eastern berm; backfill northern canal; pumps at Thomas Farm; redirect drainage to north of Nine Gems
6. **Natural Storage C-18W (Basin Restoration)**
 Restore natural topography; seepage barriers; culverts for Beeline Hwy; backfill interior canals in Corbett
7. **L-8 Basin Shallow Storage (6,500 ac/ft & 4 ASR wells); includes pumps & channels**
8. **G-160 Structure (Reduce Over-drainage: improve Hydroperiod in Loxahatchee Slough)**
9. **G-161 Structure (Connectivity) GWP water to Loxahatchee Slough**
10. **GWP Triangle (Connectivity)**

