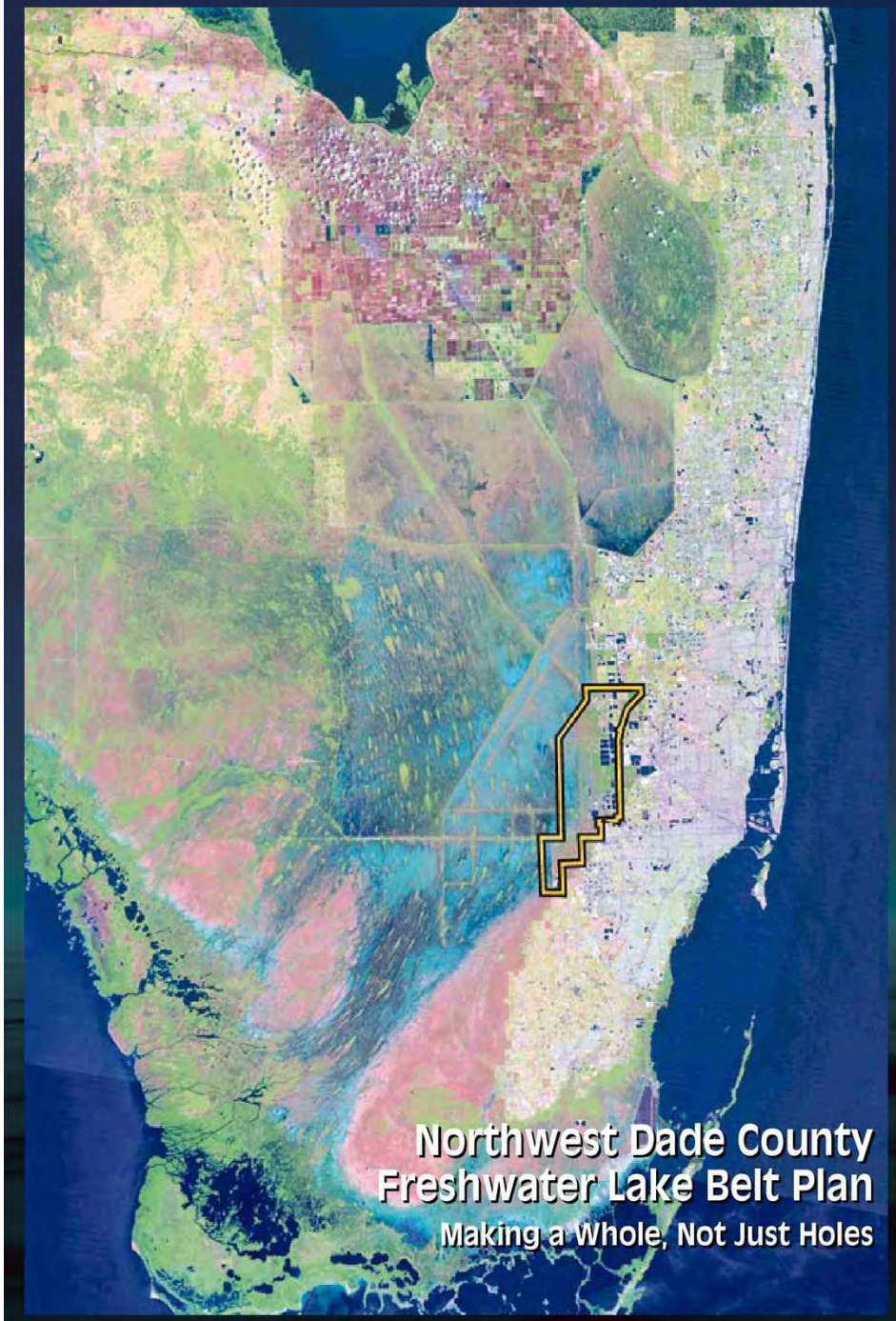



# Lake Belt Plan - 1999

Many Elements of the Plan

One is Mitigation

- All Wetland Impacts, whether directly caused by mining or caused by changes in groundwater flow must be mitigated.
- A fee on limestone products to be used to pay for mitigation.

# The Goal : Bring a Seepage Control Project on Line Concurrent with the Completion of the Tamiami Trail Bridge in 2013

# Core From Test Wall Site Showing Hard Layer Approx. 15 feet Below Grade

# Process Leading to the Phase 1 (2-mile) Seepage Barrier

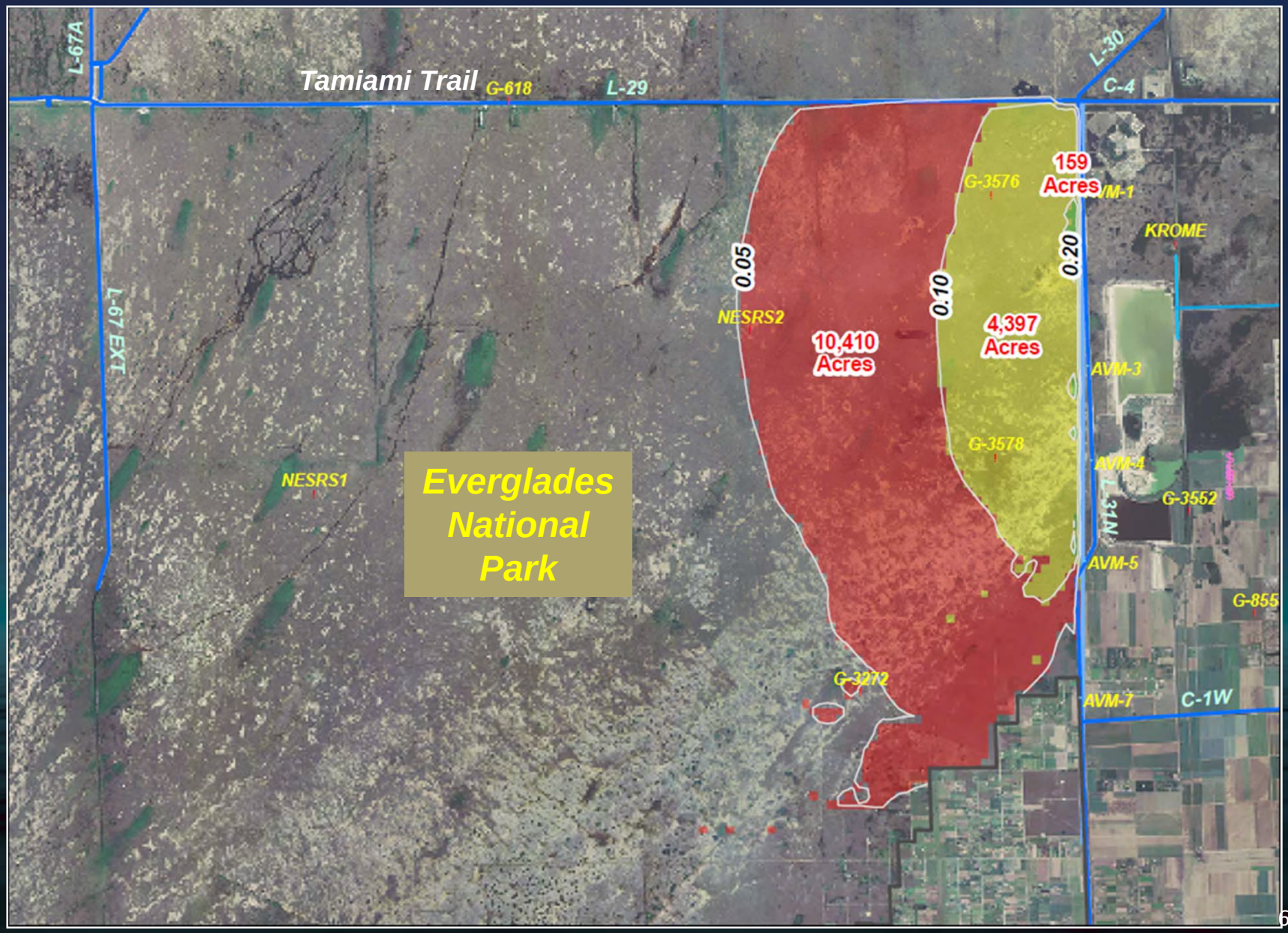
1. Built a 1000 foot, 18 foot deep test wall in 2009
   Spent 18 months evaluating the test wall
   Found problems…and developed solutions

2. Proposed a 7-mile 30 foot deep project
   Built computer model quantify benefits

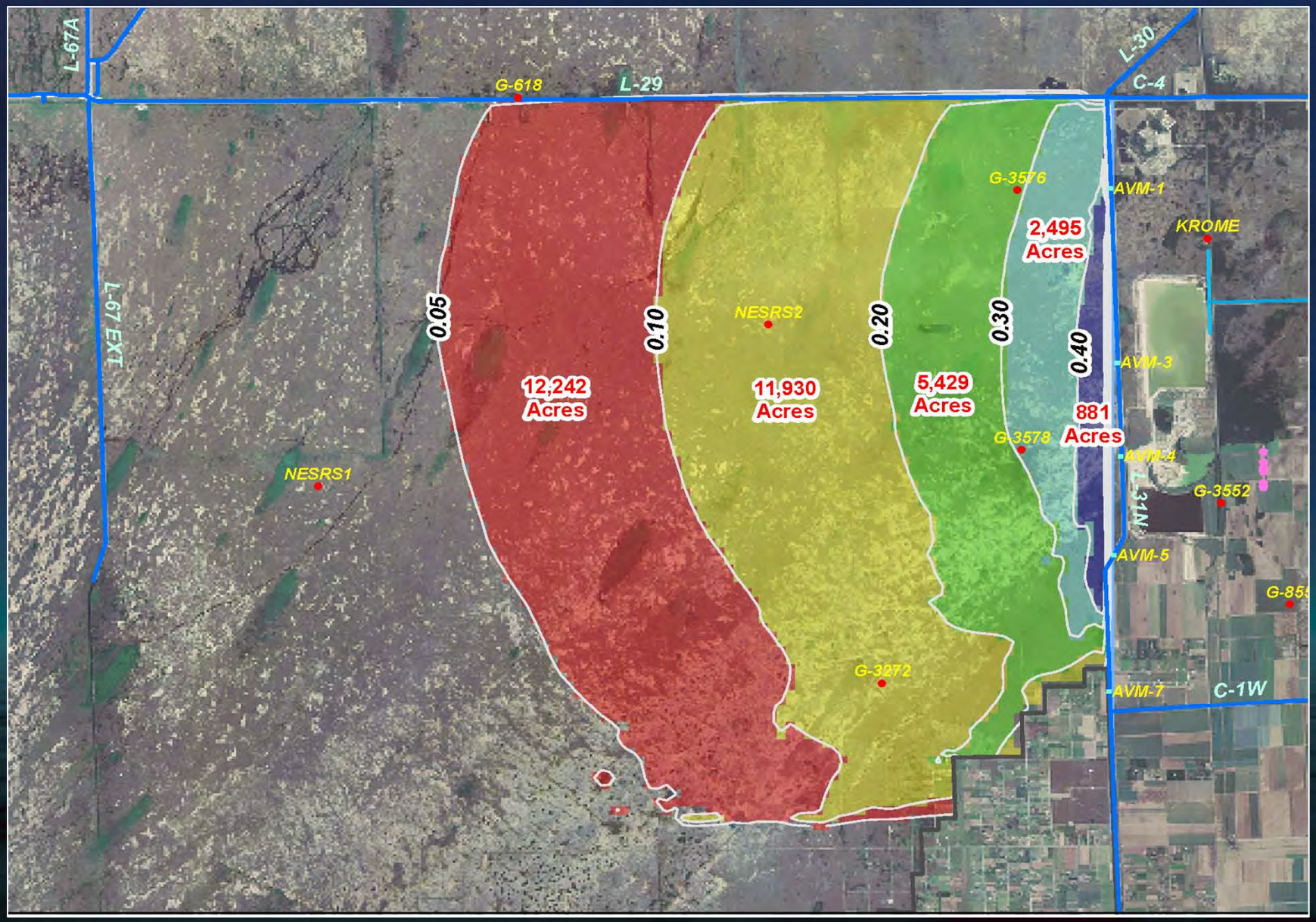
3. Performed WRAP assessment to value the benefits

4. Modified the design and construction methods

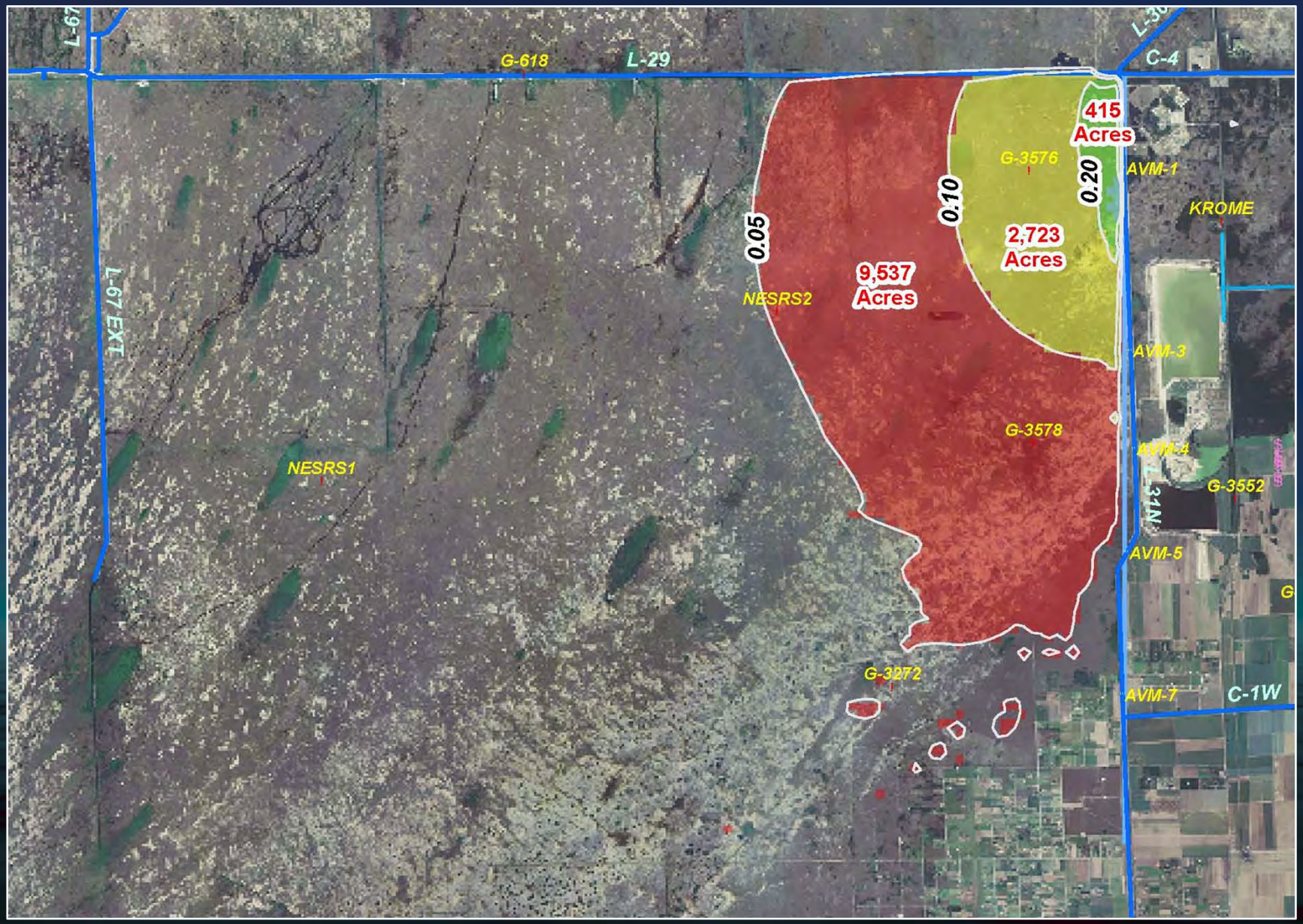
# Wet Season Stage Difference: 7-Mile Long, **18 Foot Deep** Barrier



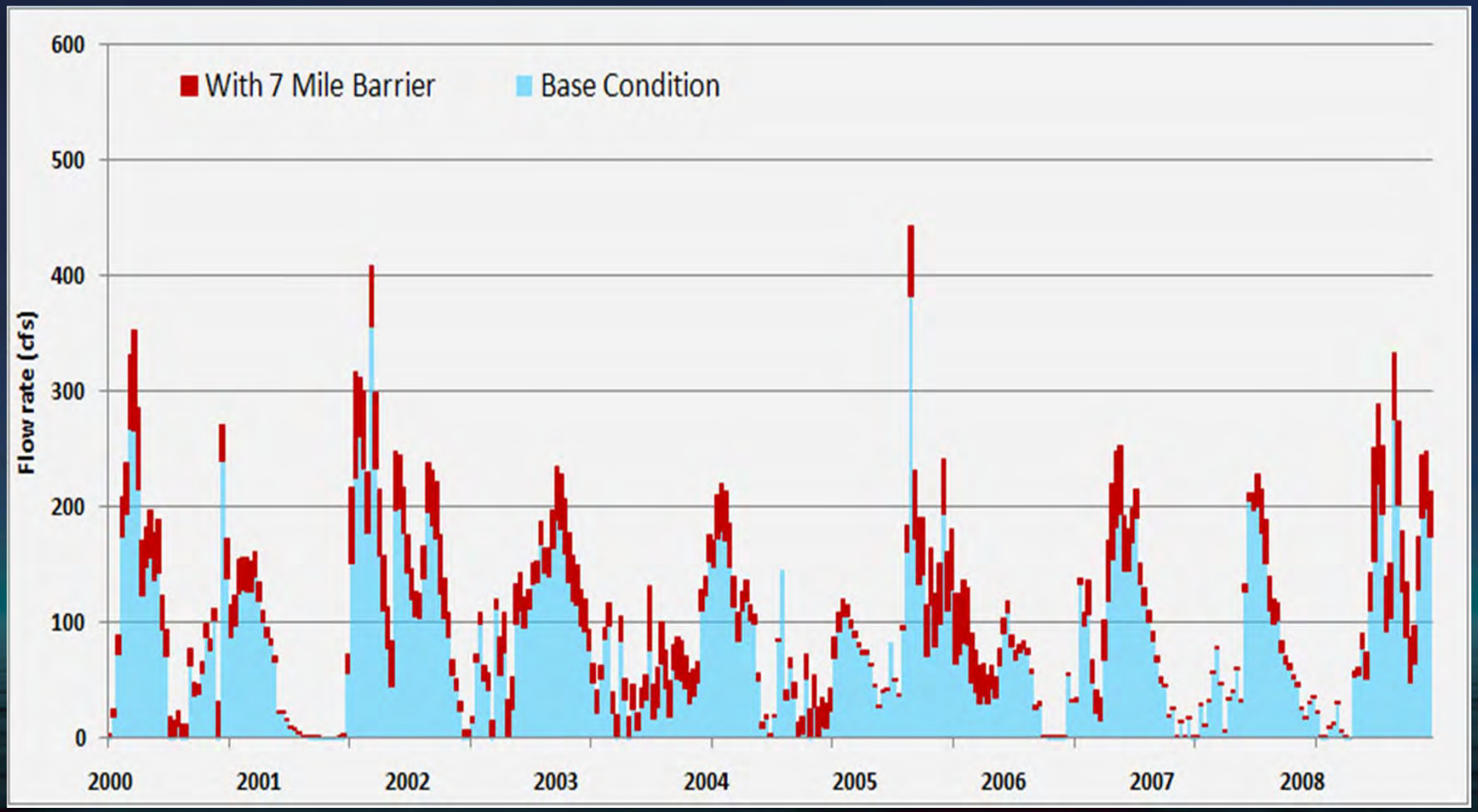
# Wet Season Stage Difference: 7-Mile Long, **30 Foot Deep** Barrier



# Wet Season Stage Difference: **2-Mile** Long, 30 Foot Deep Barrier



Estimated net flow through NESRS, with and without the 7-mile, 30 foot deep seepage barrier.



# Mitigation Credit Calculation

| Polygon | WRAP | | Acreage | | Mitigation Credits | |
|---|---|---|---|---|---|---|
| | Score | Lift | 7-mile | 2-mile | 7-mile | 2-mile |
| Baseline | 0.80 | N/A | N/A | **N/A** | **N/A** | **N/A** |
| >0.3 ft. | 0.91 | 0.111 | 3376 | **0** | **376** | **0** |
| 0.2 to 0.3 ft. | 0.88 | 0.077 | 5429 | 415 | **420** | **32** |
| 0.1 to 0.2 ft. | 0.84 | 0.045 | 11930 | 2,723 | **533** | **122** |
| 0.05 to 0.1 ft. | 0.81 | 0.011 | 12242 | 9,537 | **139** | **108** |
| Utilize a UMAM Risk Factor Adjustment of 1.75 to reflect uncertainty | | | | Sub-Totals | **1467** | **262** |
| | | | | **Final Credit 2 Mile Barrier** | | **150** |

WRAP does not utilize a Risk Factor to reflect uncertainty of outcome. UMAM has a risk factor adjustment option.

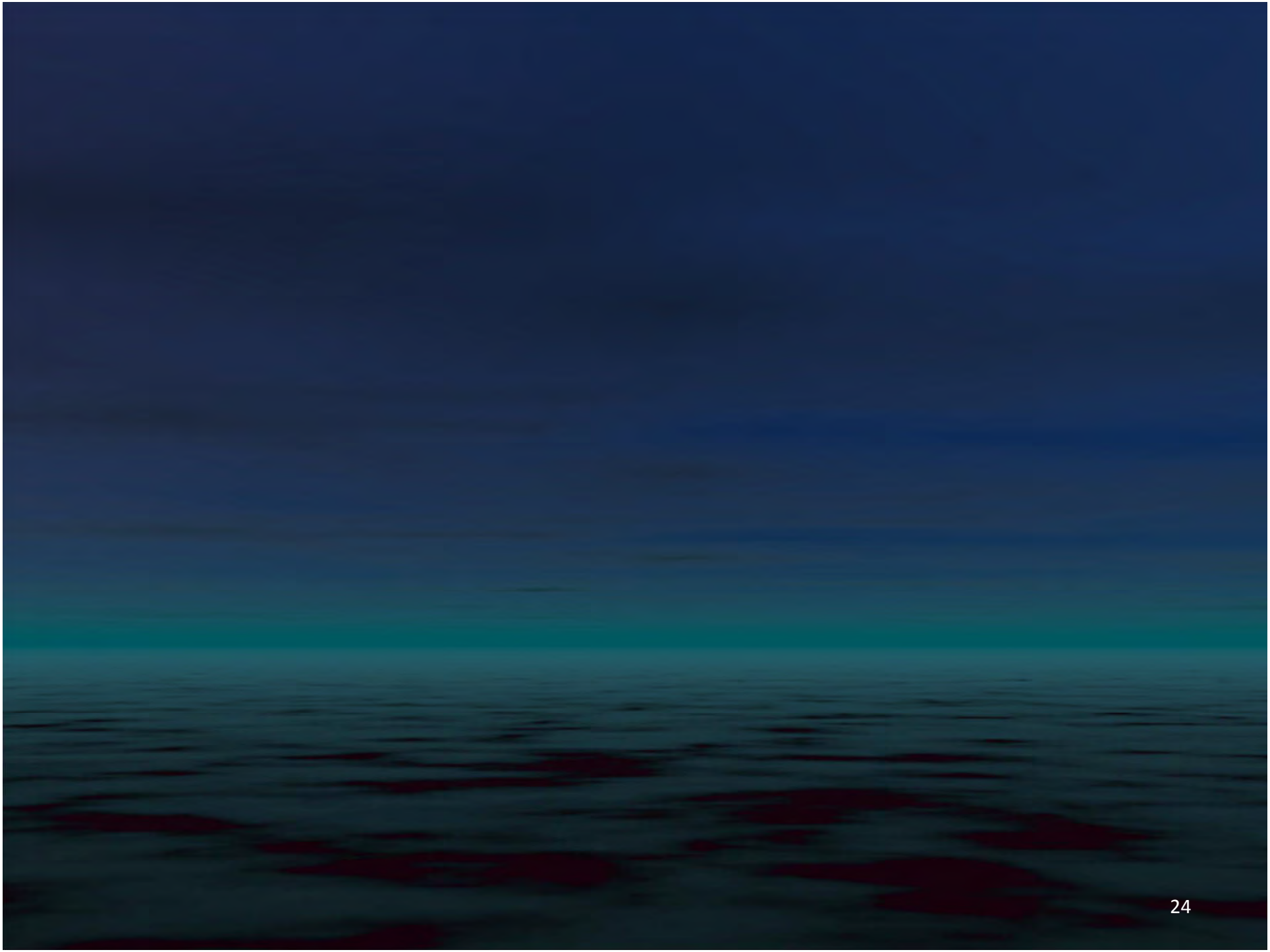
# Phase 1 (2 Miles, 35 feet Deep) – Cost Estimate

| | |
|---|---|
| Geo-Solutions (Slurry wall construction) | $ 5,405,000 |
| Chapman Pipeline Construction (Trenching) | $ 1,190,000 |
| AMEC-BCI (Project Engineer) | $ 320,000 |
| Miscellaneous Items | $ 521,000 |
| Sub Total | $ 7,436,000 |
| Contingency @ 5% | $ 372,000 |
| Total Project Cost | $ 7,808,000 |

KOMATSU

PC
400
LC

# 3 Months after Construction



# Seepage Projects

Dade-Broward Levee Project
- Required to mitigate for groundwater flow changes

L-31N Project
- Proposed for wetland enhancement within Everglades National Park

# Net change in flow through Northeast Shark River Slough

| Average Percent Change in Flow for Various Seepage Barrier Configurations | | | | | | | |
|---|---|---|---|---|---|---|---|
| | **Season** | Shallow-7 | Deep-7 | Deep-2 | Deep-1.5 | Deep-1 | Deep-7 (40 MGD) |
| Net Change for NESRS | Annual | 8.7% | 27.8% | 8.2% | 5.8% | 3.2% | 27.0% |
| | Wet | 12.2% | 37.5% | 11.0% | 7.7% | 4.4% | 36.1% |
| | Dry | 5.6% | 19.3% | 5.6% | 4.0% | 2.1% | 19.0% |

No Obvious Way to Reflect Regional Sheetflow in WRAP