

CERP Planning and Design

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August Governing Board Workshop
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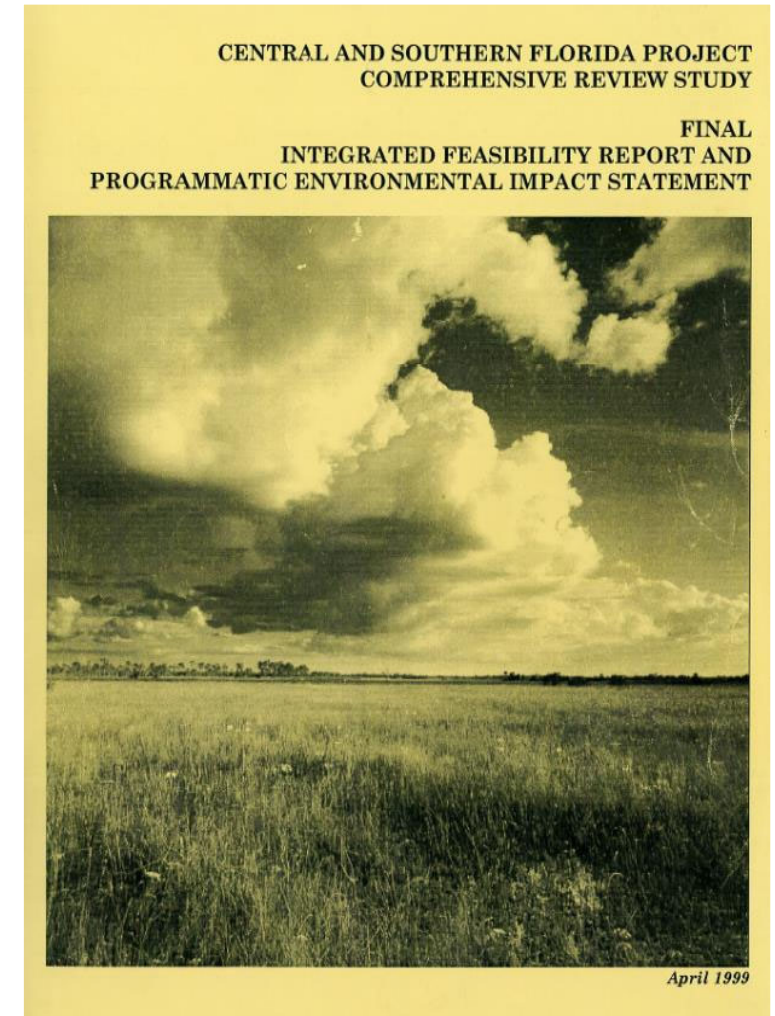
Introduction



Jennifer Leeds
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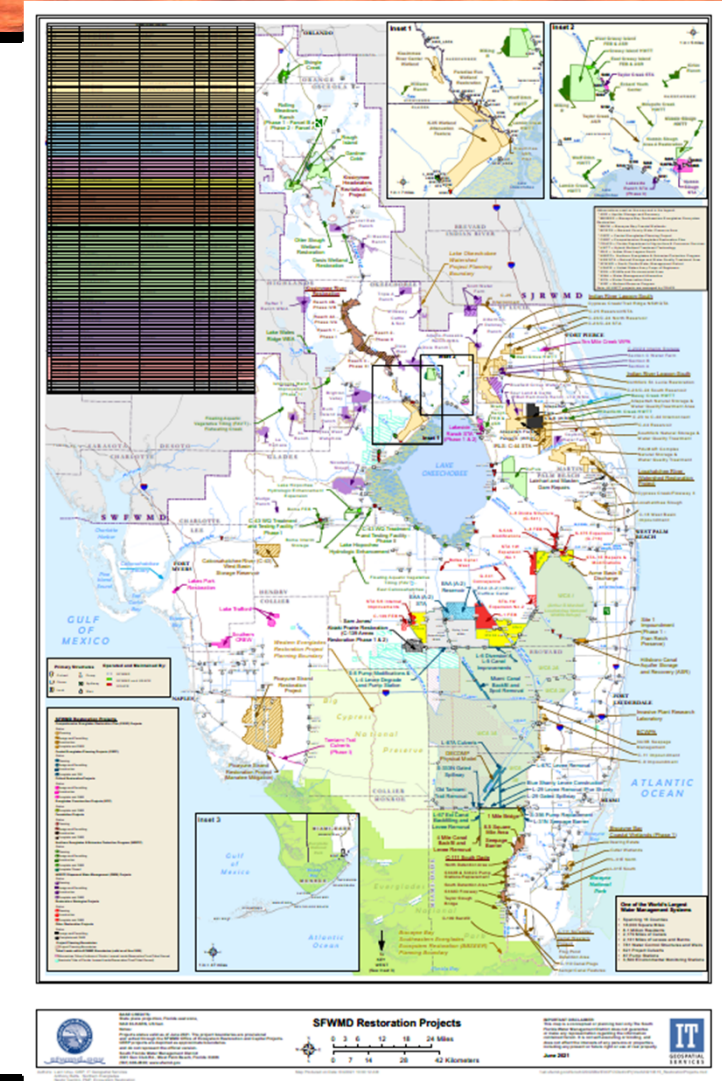
CERP Yellow Book

- Comprehensive Everglades Restoration Plan (CERP)
 - Framework for Everglades restoration
 - Authorized by Congress in WRDA 2000
 - Additional authorizations through 2020
 - Partnership with the U.S. Army Corps of Engineers (USACE)
 - 68 components
 - Estimated cost = ~\$21B



Planning Considerations

- Combining Yellow book components where it makes sense
- Consider other non-CERP projects
- C&SF system
- Existing infrastructure
- Land



Overview

- The why of planning
 - Army Corps Planning 101
- What is the planning process
 - SMART Planning Process (3x3x3)
 - Specifics of the process
- Current Planning Projects
 - LOWRP
 - WERP
 - BBSEER
- Design and permitting process

The Why of Planning



Dr. Kelly Keefe
Plan Formulation Branch Chief
U.S. Army Corps of Engineers

Army Corps Planning 101

During USACE planning across the country we **find answers to hydrology, flooding, coastal storm damage, and navigation problems**. These are called “mission areas”. **Everglades restoration** focuses on altered hydrology that is damaging unique ecosystems here that are considered national treasures.

What planning does:

- If the planning steps are followed, it informs a sound investment decision for American and local tax-payers, which also avoid impacts to historic, cultural, and natural resources. This is true across the mission areas.
- **For ecosystem restoration, the best investment is the one that improves the environment the most for each dollar spent, while also avoiding impacts.**

Steps to make sure we recommend the best investment that also avoids impacts:

1. Focus on hydrology problems
2. What do we already know? Create rough plans that will solve the problems
3. Compare & screen them
4. Then make the good ones better
5. Compare and screen again → Select one & optimize it from several perspectives
6. We often revisit steps because we learn during the study

Whom to include:

USACE and SFWMD are primary agencies.

South Florida has so many experienced people in agencies and the public. Include them throughout.

Army Corps Planning 101: Frequently Asked...

We know what the problem is. Why are you spending time figuring that out?

- “The paint is peeling” story... If this is wrong, everything from here may be wrong.
- On some studies this is hard, others easier.

We know what the solution is. Why are you spending time figuring that out?

- It is extremely helpful that people have experience!
- Without the experience-based solutions people have in mind, planning would take longer
- We *test* the solutions and often *combine* them to reach most effective solution

CENTRAL AND SOUTHERN FLORIDA PROJECT
COMPREHENSIVE EVERGLADES RESTORATION PLAN
BISCAYNE BAY COASTAL WETLANDS PHASE 1

FINAL INTEGRATED
PROJECT IMPLEMENTATION REPORT AND
ENVIRONMENTAL IMPACT STATEMENT



Volume 1 - Main Report

July 2011 – revised March 2012



US Army Corps
of Engineers®
U.S. ARMY CORPS OF ENGINEERS
JACKSONVILLE DISTRICT



SOUTH FLORIDA WATER
MANAGEMENT DISTRICT

What is the planning process?

What is the Planning Process?

- The 3x3x3 Planning Process
 - 3 years
 - \$3 million
 - 3 levels of vertical team alignment
 - When exceptions apply
- Process to develop an Integrated Project Implementation Report and Environmental Impact Statement (PIR/EIS)
 - NEPA coverage
 - Conceptual design

CENTRAL AND SOUTHERN FLORIDA PROJECT
COMPREHENSIVE EVERGLADES RESTORATION PLAN

CALOOSAHATCHEE RIVER (C-43)
WEST BASIN STORAGE RESERVOIR PROJECT

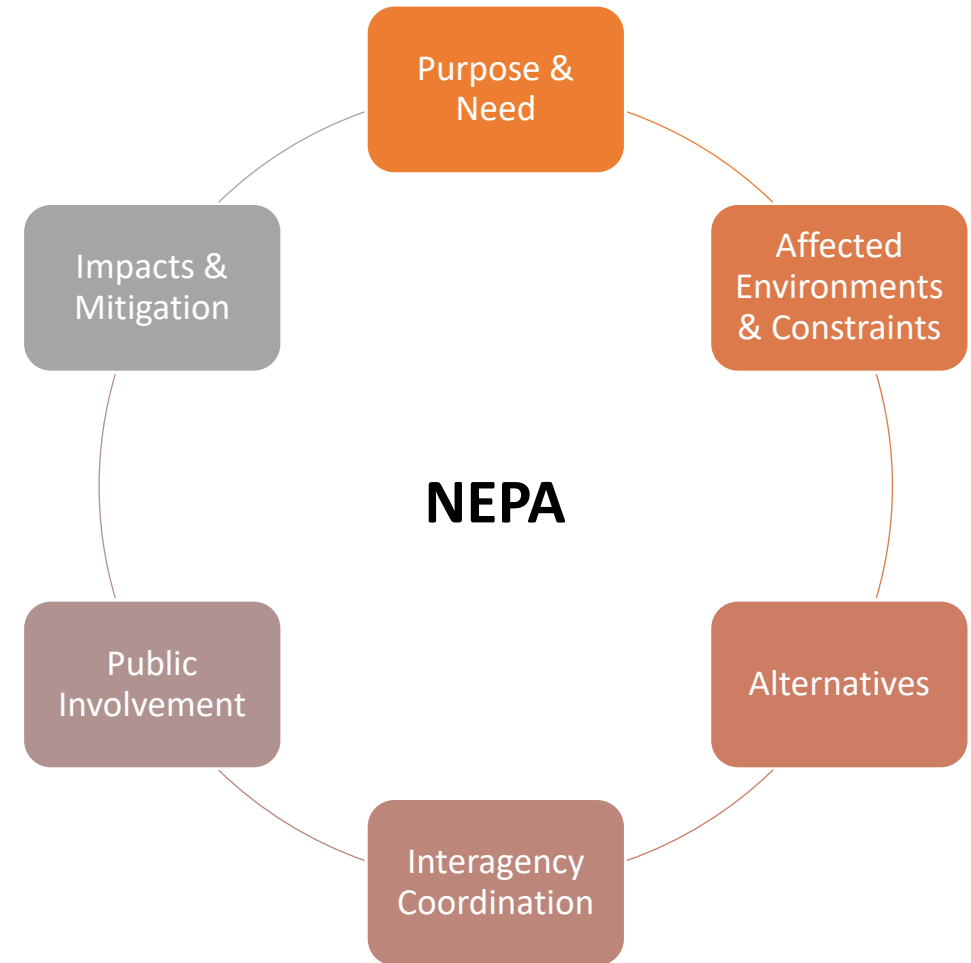
FINAL INTEGRATED
PROJECT IMPLEMENTATION REPORT
AND
FINAL ENVIRONMENTAL IMPACT STATEMENT



November 2010

National Environmental Policy Act (NEPA)

- The NEPA process is integral to the planning document
- Federal law requiring Federal agencies to consider the environmental impacts of a proposed project
- Cover major federal actions that may have a significant affect on the quality of the human environment
- Solicit and consider public views on proposals
- Consult with Tribal, state, and local governments concerning plans
- Provide agencies with a mechanism to coordinate overlapping, jurisdictional responsibilities



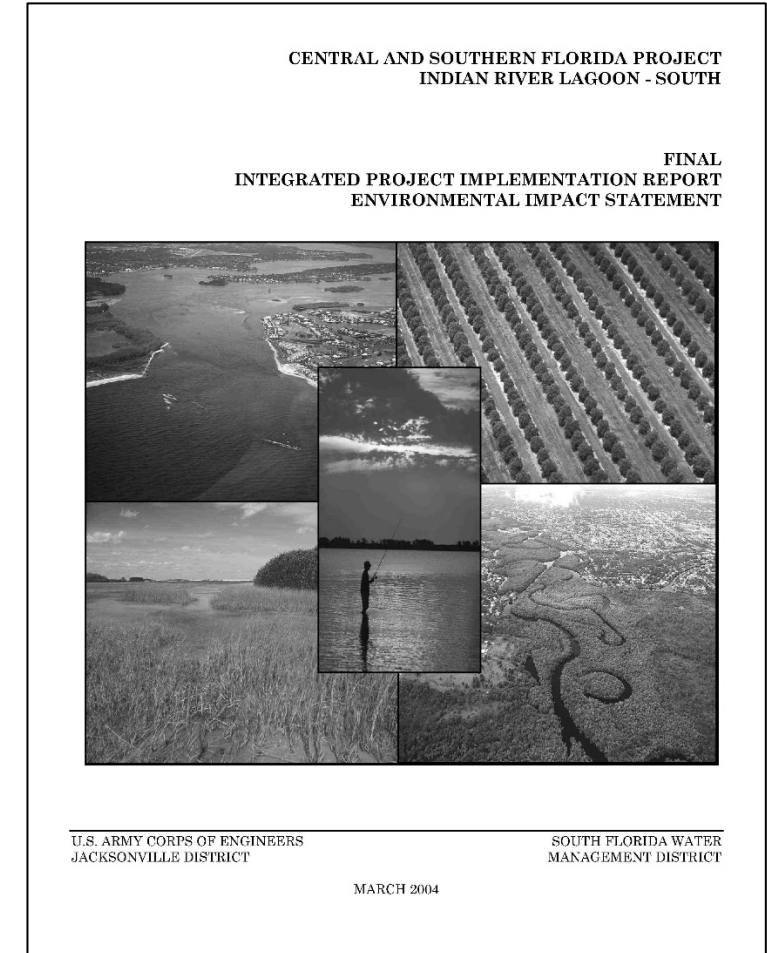
USACE SMART Planning

Army Corps planning steps are the same across the country

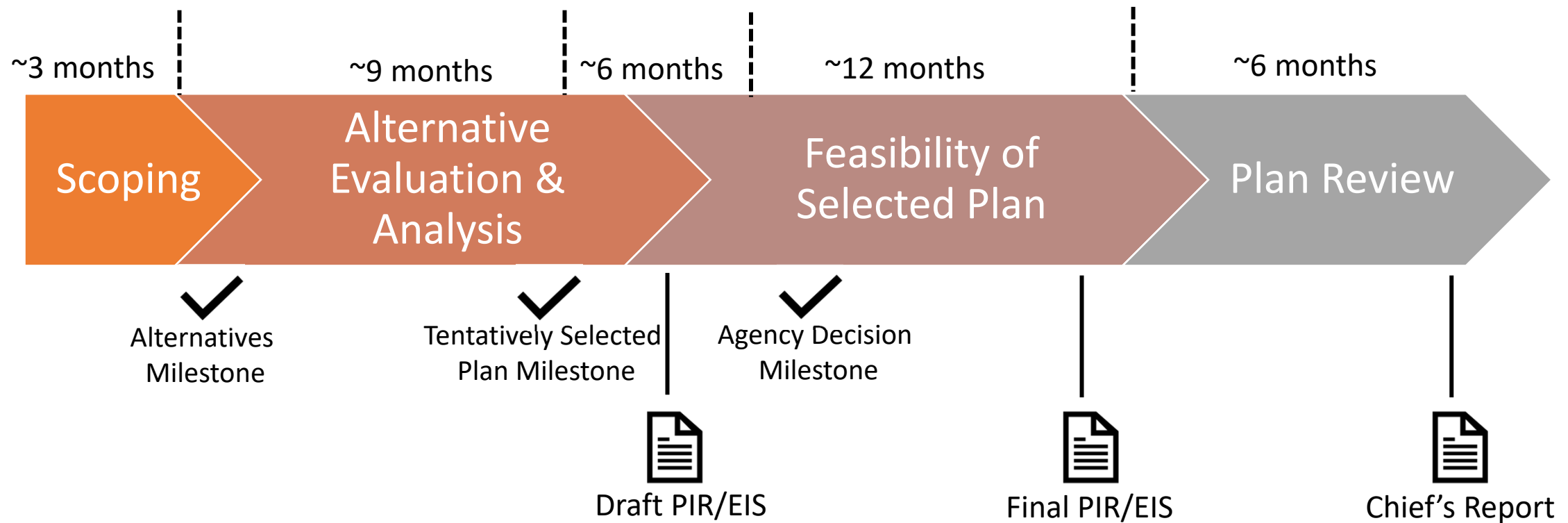
- Helps for comparing which projects are best even when they are in different states
- Helps people see which projects are best for the American people in addition to being good for the local area

“SMART Planning”

- Makes sure we don't go down rabbit holes!
- Focus on topics that have *most effect on choosing the final plan*
- Only spend resources on those
- In 2014, Congress said SMART Planning also has to fit within 3 years and \$3M (“3x3”)
- There are exceptions.
- These things are signs that planning is more complicated and will take longer or cost more... Section 1001



The Feasibility Study Process: Key Decision & Product Milestones



How does the planning process start?

- SFWMD and USACE management and policy teams meet
- Kick off and scoping
 - Problems and opportunities
 - Objectives and constraints
 - Uncertainties
- Develop Project Delivery Team (PDT)
 - Made up of federal, state, and local agencies, and tribal governments
 - Meetings are public and include comment periods
 - Sub-teams can be formed of select disciplines
 - Such as: Ecological, Modeling, Water Supply, Plan Formulation, Water Quality
- Plans can combine multiple yellow book components

Factors that can lengthen the process

- Incorporating sea level rise/climate change
- Need a new or different model or not covered by a model
- Size of the planning boundary
- Not enough data for regional model, leads to data collection
 - LIDAR, GW monitoring data
- Policy issues
 - Water quality (state responsibility, project responsibility)
 - Re-use
 - Planning boundaries
 - Yellow book components
- Real estate uncertainties
 - Public and private land ownership
 - Takings analysis
- Stakeholder opposition/controversy to project components

Current Planning Projects

Lake Okeechobee Watershed Restoration Project (LOWRP)

- Purpose:
 - Increasing water storage capacity in the watershed
 - Improving the quantity and timing of discharges to the St. Lucie and Caloosahatchee estuaries
 - Restoring wetlands
 - Improving water supply for existing legal users
- Waiver #1 2017:
 - Increased time and cost for additional risk studies
- Waiver #2 2019:
 - Additional coordination with stakeholders, technical evaluations that led to project components changing
- Waiver #3 2021:
 - Stakeholder concerns led to changes in the selected plan
- Status: Pending Chief's report, WRDA 2022



Current project features
46,000 ac-ft above ground storage
Wetland restoration 80 ASR wells

Western Everglades Restoration Project (WERP)

Purpose: to restore and reconnect the western Everglades ecosystem

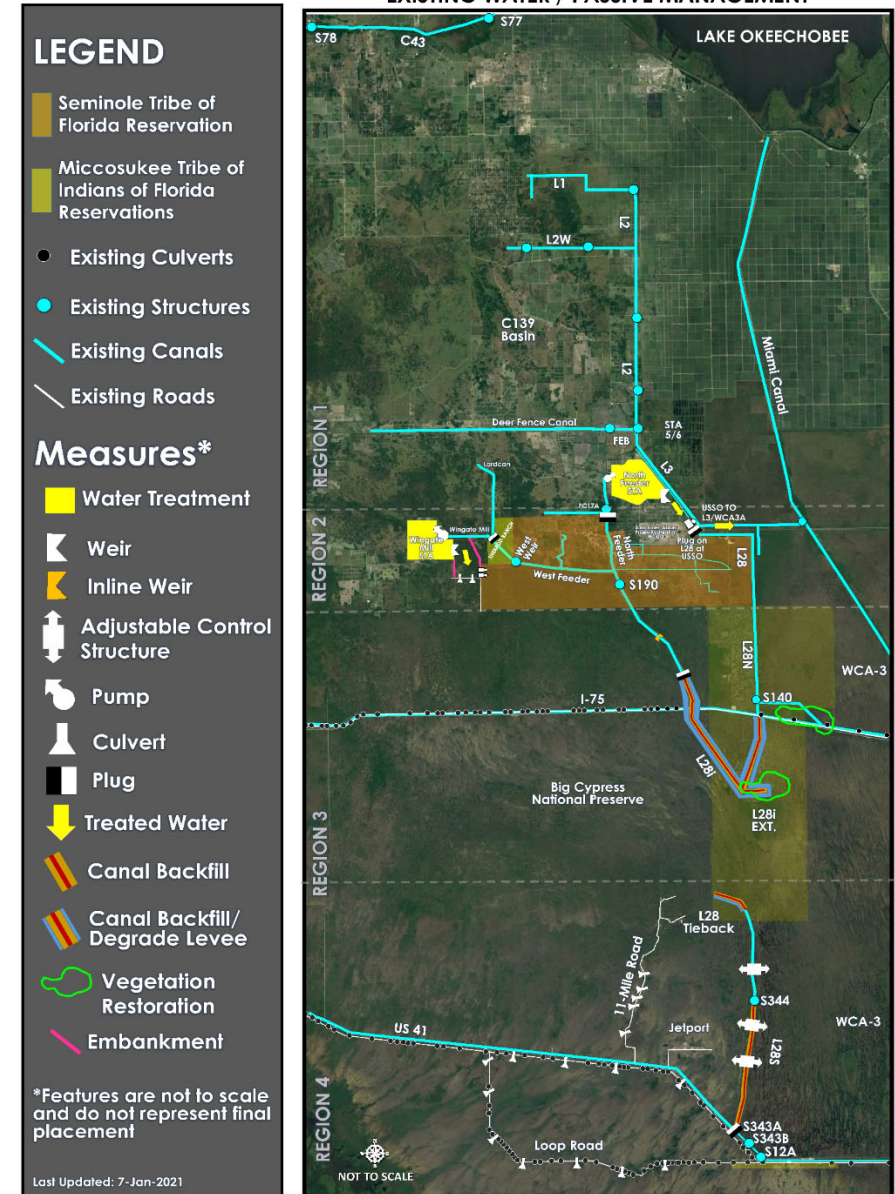
Study began August 2016, Target is WRDA 2024

First Exception approved January 2018 for \$6.7M and 46 months:

- Data Collection needed- LiDAR within and adjacent to BCNP, GW data
- Model expansion/ refinement in the project area

Second Exception Request for an additional \$4.5M and 23 months
Needed due to:

- Extensive coordination required throughout the project with Seminole Tribe of Florida and Miccosukee Tribe of Indians of Florida, and other stakeholders.
- Additional unplanned model run in 2020 for ALTHR.
- Surveys conducted in 2020 by SFWMD.
- A detailed real estate analysis is needed for inholdings within Big Cypress National Preserve, along with coordination and approval of non-standard estates (easements).
- Water quality treatment cost share coordination
- WERP was on hold 9 months in 2019, 8 months + in 2021. Need additional schedule to cover down time.



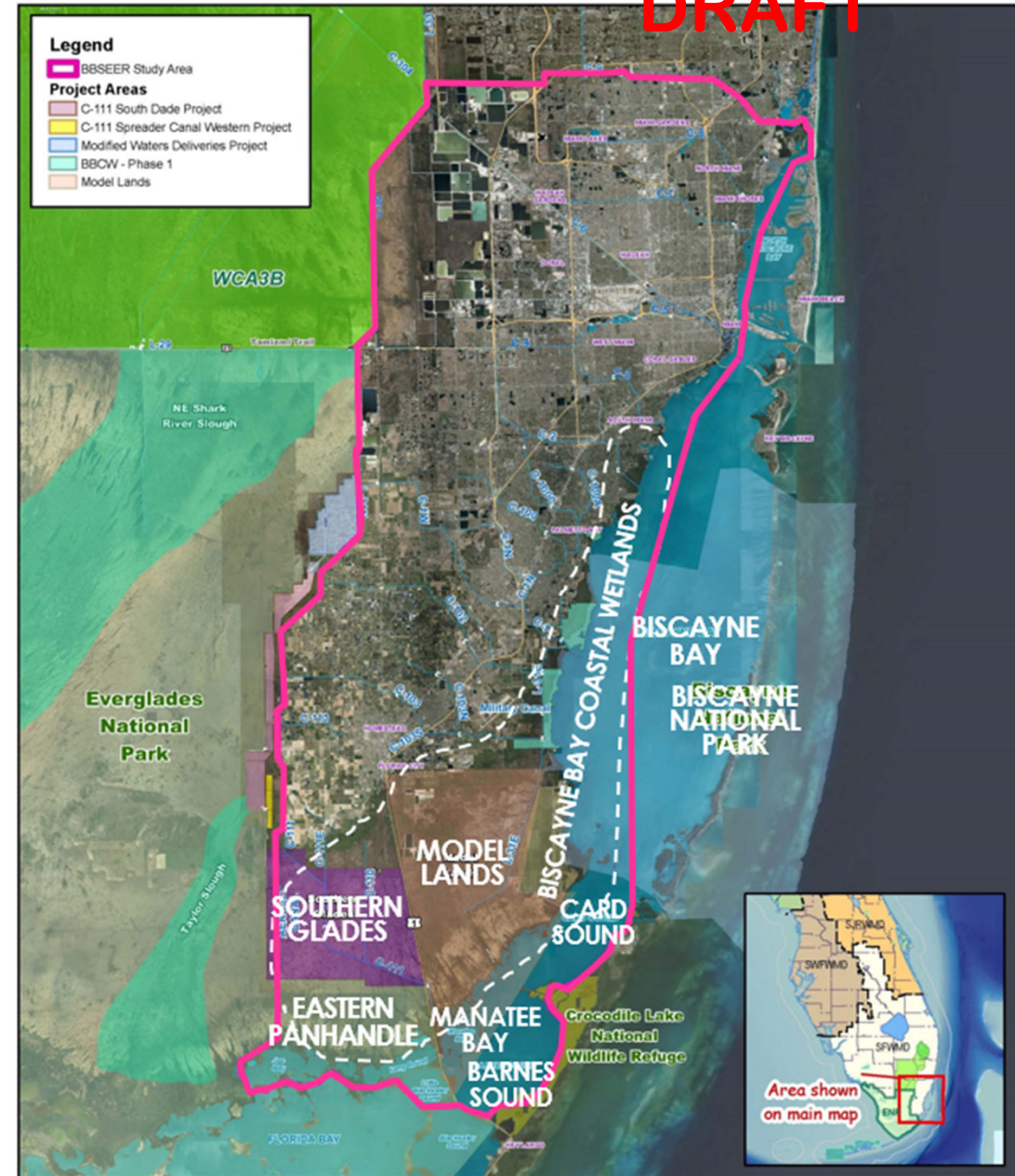
Biscayne Bay and Southeastern Everglades Ecosystem Restoration (BBSEER)

Purpose: improve the quantity, quality, timing and distribution of freshwater to Biscayne Bay, including Card Sound and Barnes Sound and Biscayne National Park, to improve the natural coastal glades habitat in the Model Lands and Southern Glades, and to improve resiliency of these coastal habitats in response to sea level change

Study Began August 2020

Exception Request for a total of 5 years and \$9M is needed due to:

- Project Complexity:
 - First CERP project to plan for sea level rise
 - Gradient of habitats and salinity in a low-lying area
 - Challenging features: wastewater re-use, storage in a porous geologic area, conveyance in a densely populated area
 - Need to develop new performance measures
 - Real estate: non-standard estates, Everglades Mitigation Bank
 - Water quality - comply with criteria that protect Biscayne Bay, an Outstanding Florida Water
- Coordination with stakeholders and involvement of over 18 Agencies, and a major utility (FPL)
- Modeling – use of new tools and a total of 4 models (BISECT and BBSM in addition to RSMGL and MD- RSM) to evaluate salinity along with hydrology
- Flood protection to maintain level of service, including agricultural lands





WRRDA 2014 SECTION 1001 EXCEPTION CRITERIA

IN MAKING DETERMINATION THAT STUDY IS TOO COMPLEX TO COMPLY WITH 3X3 REQUIREMENTS, THE SECRETARY SHALL CONSIDER...



BBSEER TECHNICAL COMPLEXITY CHALLENGES

- MAJOR DRAINAGE AND LAND USE CHANGES TO OVERCOME
- EXPOSURE TO SEA LEVEL RISE
- ALMOST FLAT TOPOGRAPHY
- POROUS SUBSTRATE
- GRADIENT OF HABITATS NEED UNIQUE WATER LEVELS
- FLOOD PROTECTION LEVEL OF SERVICE REQUIREMENTS FOR URBAN AREAS
- WATER QUALITY REQUIREMENTS
- COMPLEX FWOP ASSUMPTIONS
- REAL ESTATE NON-STANDARD ESTATES//MITIGATION BANKS
- ALL MUST BE IN ONE COHESIVE PLAN

CERP & SOUTHEAST FLORIDA:

- Miami-Dade, Broward, and Palm Beach counties are 1st, 2nd, and 3rd most populous counties in Florida.

BBSEER OBJECTIVES 1&2 BY SPATIAL ARRANGEMENT

BBSEER OBJECTIVES 3 & 4 BY SPATIAL ARRANGEMENT

1) RESTORE ECOLOGICAL AND HYDROLOGICAL CONNECTIVITY

Restore connectivity and habitat gradients in areas compartmentalized by federal and state canal system (C&S System) in Southern Everglades. Model Lands, Biscayne Bay Coastal Wetlands: Connected flow from seagrass marsh, through subtidal wetlands, to open water (0-35 psf gradient) to restore life cycle functions of these ecosystems.

PLANNING STRATEGY: RISK LEVEL GROUPINGS OF MANAGEMENT MEASURES, PER FUNCTION

PLANNING COMPLEXITY DEEP-DIVE: ECOLOGICAL PERFORMANCE MEASURES FOR GRADIENT OF HABITATS

Colors on map correlate with habitats listed on right →

Model Lands

Southern Glades

Seagrass Wet Prairie

Coastal Forest

White zone

Subtidal wetlands

PMs ARE USED TO DETERMINE WHICH

WATER LEVELS ARE USED TO DETERMINE WHICH

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(A) TYPE, SIZE, LOCATION, SCOPE, OVERALL COST OF THE PROJECT

RESTORATION WITH MAJOR CHANGES TO OVERCOME, EXTREMELY POPULOUS AREA, GRADIENT OF HABITATS, EXPOSURE TO SLC, ALMOST FLAT TOPOGRAPHY & POROUS SUBSTRATE, SIX CERP COMPONENTS,...

(B) INNOVATIVE DESIGN OR CONSTRUCTION TECHNIQUES

WASTEWATER REUSE, WATER STORAGE IN POROUS ROCK MINES, LARGE SCALE REGIONAL SEDIMENT MANAGEMENT & NATURE-BASED FEATURES,...

(C) REQUIRE SIGNIFICANT ACTION BY OTHER FED, STATE, LOCAL AGENCIES

18 AGENCIES + SIGNIFICANT UTILITY AND PRIVATE ENTITIES (FL POWER & LIGHT SERVES 11M PEOPLE)

(D) SIGNIFICANT PUBLIC DISPUTE AS TO NATURE OR EFFECTS OF THE PROJECT

CURRENTLY HAS BROAD SUPPORT. POTENTIAL SIGNIFICANT ISSUES W/ MITIGATION BANKS, WATER QUALITY, BALANCING COMPETING NEEDS FOR FRESHWATER,...

(E) SIGNIFICANT PUBLIC DISPUTE AS TO ECONOMIC OR ENVIRONMENTAL COSTS OR BENEFITS OF THE PROJECT

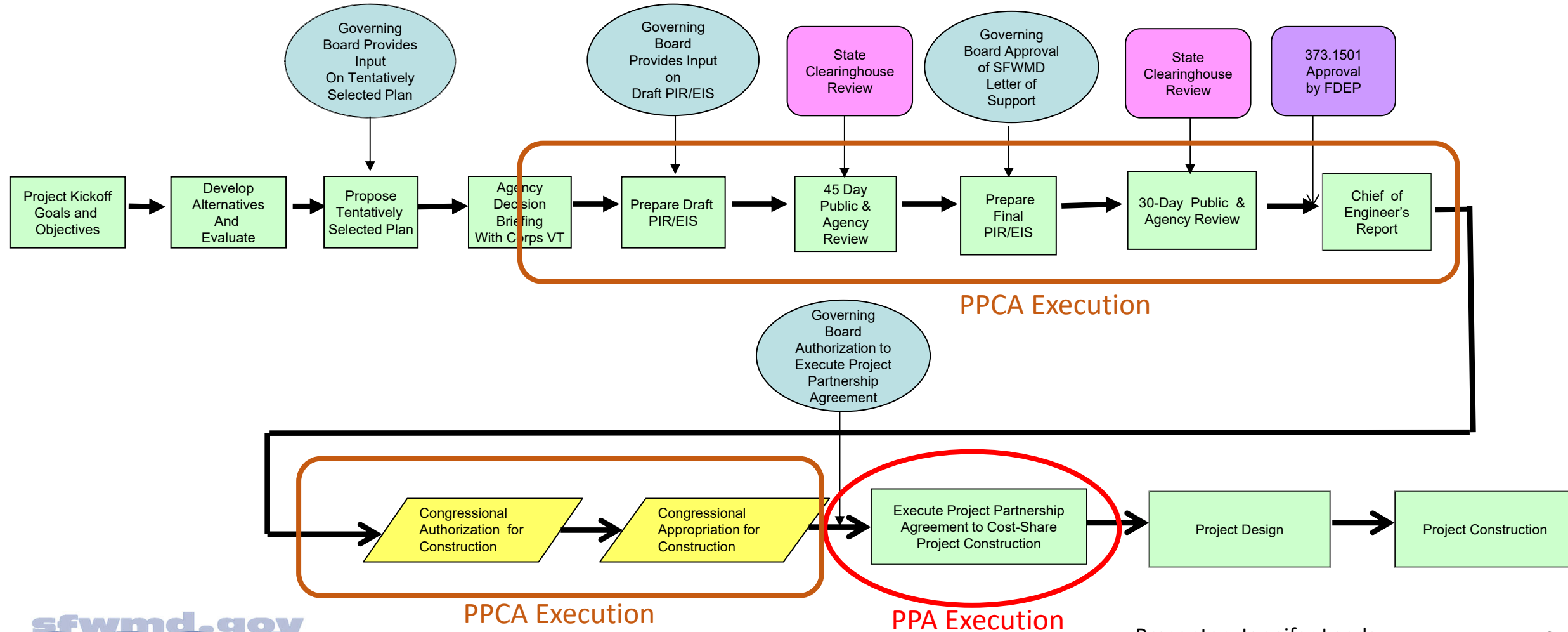
FLOOD PROTECTION TO MAINTAIN LEVEL OF SERVICE, MAINTAIN EXISTING PERMITTED WATER SUPPLY, POTENTIAL ISSUES W/ AGRICULTURAL LANDS,...

w/ other habitats

Ground-surface water interactions in this part of FL affect every aspect of BBSEER planning. H&H modeling is 3-D.

Differences of inches of water matter here to make a feasibility recommendation.

Planning to Implementation

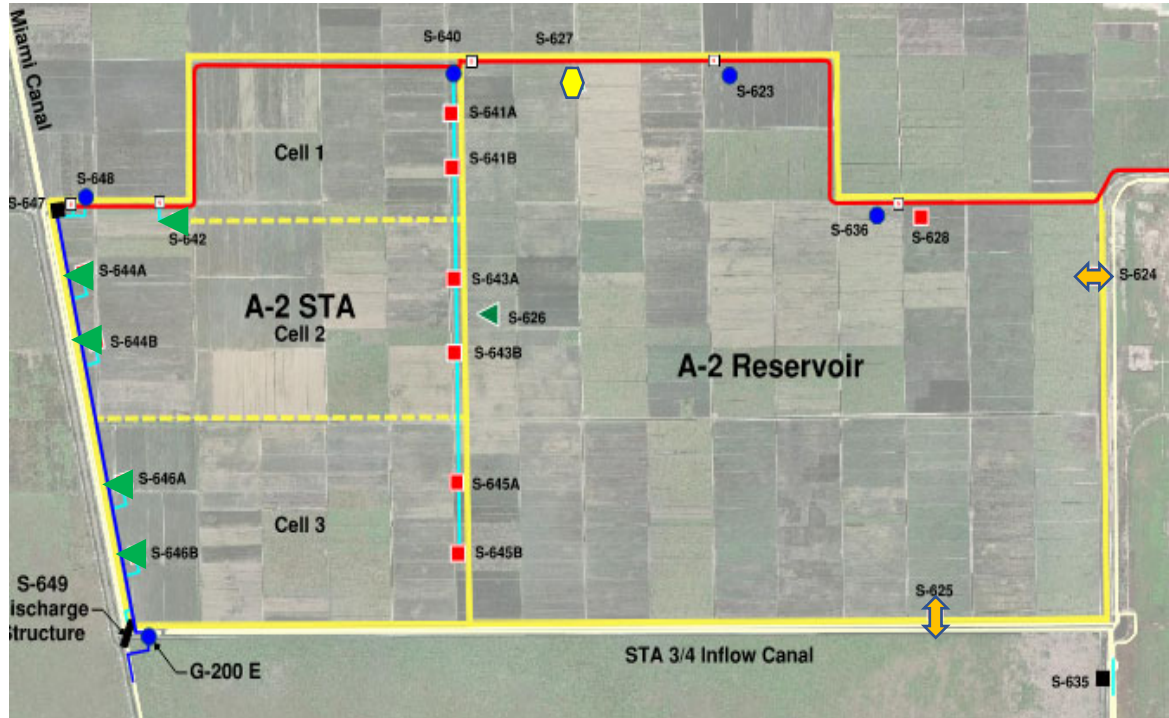


Design and Permitting Process



Lucine Dadrian
Project Management Section Administrator
Engineering & Construction Bureau
South Florida Water Management District

Design Phase



- Planning Phase includes design elements such as the Feasibility/Conceptual Design, Design Documentation Report (DDR) and Project Implementation Report (PIR)
- Pre-construction Engineering and Design (PED) phase commences when a project is authorized by Congress and funding is earmarked for that fiscal year
- Focus during PED is to complete the detailed technical studies and design needed to request bids for construction of a project
- Projects require multiple disciplines depending on the complexity: Civil, Structural, Geotechnical, H&H, Mechanical, Electrical, Instrumentation & Controls

DRAFT

Preliminary Studies for Design

Survey

- 5 to 6 month duration
- 1 month review period parallel with geotech

Geotechnical Borings & Analyses

- 5 to 6 month duration
- 1 month review period parallel with survey

Hydrologic & Hydraulic Modeling

- 5 to 6 month duration
- 1 month review period parallel with survey

Preliminary Design

30% Plans & Specifications

- 2 to 4 months duration

Reviews

- 2 -4 month review period
- Quality Control Review
- Independent Technical Peer Review
- USACE Agency Technical Review
- Technical Review Board for Consensus

FDEP CERPRA Permit Application Submittal

- Approx. 1 year duration

Clean Water Act Section 404 Permit (USACE or FDEP)

- Approx. 1 year duration

Intermediate Design

60% Plans & Specifications

- 4 to 6 month duration

Reviews

- 2 -4 month review period
- Quality Control Review
- Independent Technical Peer Review
- USACE Agency Technical Review

Coordination of Permitting Agency Requests for Additional Information

Final Design

90% Plans & Specifications

- 4 to 6 month duration

Reviews

- 2 -4 month review period
- Quality Control Review
- Independent Technical Peer Review
- USACE Agency Technical Review
- Constructability Review
- Technical Review Board for Consensus

Section 408 Department of Army Civil Works Application

Corrected Final / Ready to Advertise

100% Plans & Specifications

- 1 to 2 month duration

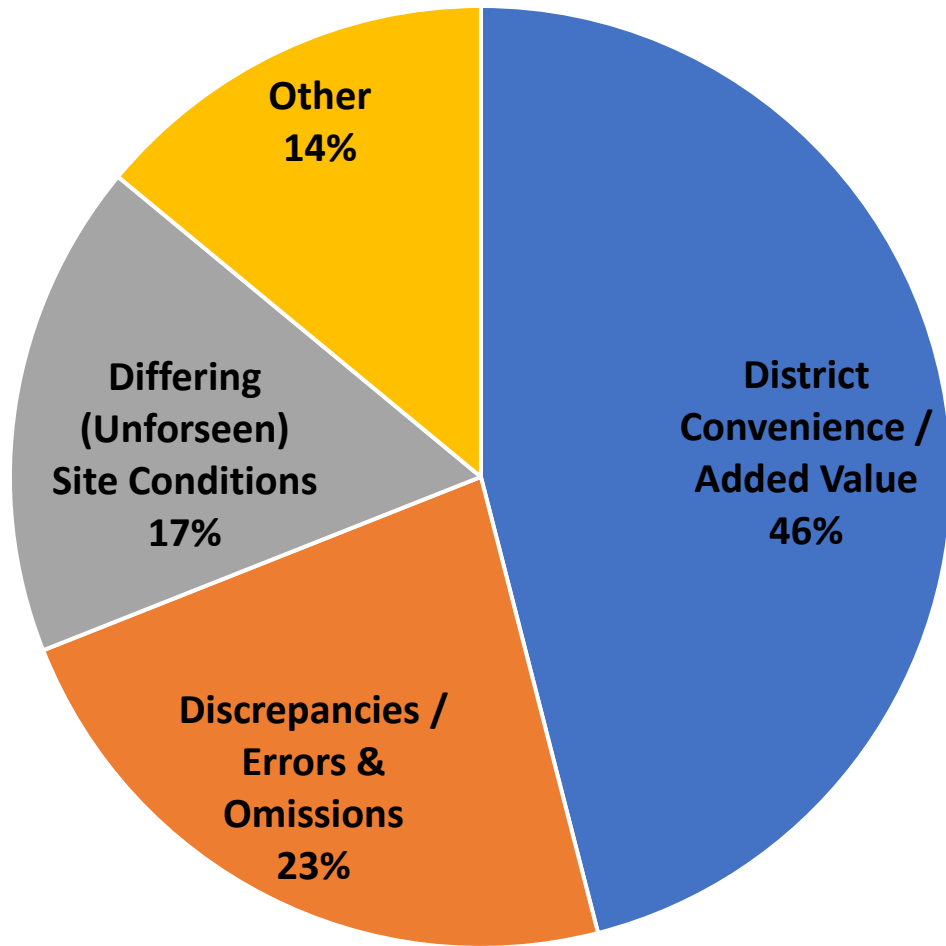
Reviews

- 1-2 month review period
- Quality Control Review
- Independent Technical Peer Review
- USACE Agency Technical Review
- Constructability Review

Permits Received prior to Advertisement for Bid

Sales

Value of Design Reviews



- Importance of design reviews
 - Deliver a project that meets both SFWMD and USACE guidelines/standards
 - Field Station and Water Managers needs are considered during the operations and maintenance phase
 - Reduce overall change orders during construction
- Between FY15 – FY20, District Convenience/Added Value (46%), Discrepancies/ Errors & Omissions (23%) and Differing (Unforeseen) Site Conditions (17%) made up nearly 86% of all changes in the SFWMD's construction projects
- CERP Program: Total change of \$5,949,169 (121 change items) on \$818,492,014 (17 contracts) with an average percent change by contract of 4.0%
- Expedited projects have gone out for bids utilizing the 90% design deliverables while designers complete the 100% design deliverable, and the SFWMD provides to contractors in an addendum during the bid phase
- Industry change orders range from 8% to 14% of contract value

Permitting during Design

Permits and approvals required for construction

- FDEP CERPRA Permit (Ch. 373.1502 F.S.)
- Clean Water Act Section 404 Permit (USACE or FDEP)
- Dependent on FDEP permit for proof of Water Quality Certification and of Section 408 approval
- Section 408 Department of Army Civil Works Approval - Required when a project affects federal civil works
- Other permits: Underground Injection Control (UIC) Permit (62-528 F.A.C) for all ASR wells (Multiple permit stages: Exploratory Wells Construction and Testing, ASR System Well Construction, Operations); Site specific authorizations to manage protected species (When not encumbered under the CERPRA or Section 404 permit); National Park Service Special Use Permit for works within Everglades National Park

Permits required for operations of a project

- Modification of FDEP CERPRA Permit (Ch. 373.1502 F.S.) to operations – once as-built drawings are approved
- ASR Projects: Modification of UIC Permit to Operations; National Pollutant Discharge Elimination System Permit; Consumptive Use Permit

CERP Projects in Design Phase

- LOWRP ASR Wells (SFWMD)
- CEPP New Waters A-2 Reservoir (USACE)
 - CNT 10A seepage, inflow outflow canals
 - CNT 10C Bridges (FDOT/SFWMD)
 - CNT 11B Reservoir Embankment, overflow spillway, gated outlet works structures
 - CNT 11C S-636 Seepage Pump Station
 - CNT -12 Inflow pump station
- Indian River Lagoon South (IRLS)
 - C-23 to C-44 Interconnect (SFWMD)
 - C-23/24 Storm Water Treatment Area (USACE)
 - C-23/24 C-24 North Reservoir (USACE)
 - C-23/24 South Reservoir (USACE)
 - C-25 Reservoir and STA (SFWMD)
- CEPP New Waters Canal Conveyance (SFWMD)
- CEPP North (SFWMD)
 - S-620 Gated Structure / L-6 Diversion
 - S-8A Pump Station Modifications
 - S-621, S-622 and L-5 Improvements
 - S-630 and L-4 Degrade
 - Miami Canal Backfill & Tree Islands
- CEPP South, CNT2, S-356 PS & S-334E Spillway (USACE)
- Broward Co WPA - C11 Impoundment (USACE)
- Biscayne Bay Coastal Wetland, Phase 1 Construction Cutler Flow-way (SFWMD)
- Picayune Strand Restoration Project: Design-Build of the US 41 Conveyance Facilities (USACE)

Discussion