TECHNICAL WORKING GROUP MEETING NO. 1

Key Colony Beach City Hall Auditorium
November 17, 2006 ❖ 9:30 am – 3:00 pm

Agenda

- Welcome
- FKRAD Overview
- Technical Working Group
- Florida Keys Water Quality
- Use of Local Water Quality Data
- Stakeholders Agreement
- Initial Working Schedule
- Information Requests
- Action Items

FKRAD OVERVIEW

- Reasonable Assurance Document Process
- FKRAD Mission and Scope
- Geographic Scope of Program
- FKRAD Program
- Stakeholders and Interested Parties

Fred Calder
Florida Department of Environmental Protection

The TMDL Program and Reasonable Assurance

- Snapshot of TMDL Program
- Importance of Your Involvement & Help
- What Reasonable Assurance Means and Where It Fits into the TMDL Program

Total Maximum Daily Loads

- Section 303 (D) FCWA
- States List Impaired Waters
- Develop TMDL = WLA + LA + MOS
- Implementation Plan

TMDL - maximum amount of pollutant loading that can be discharged to a healthy water body

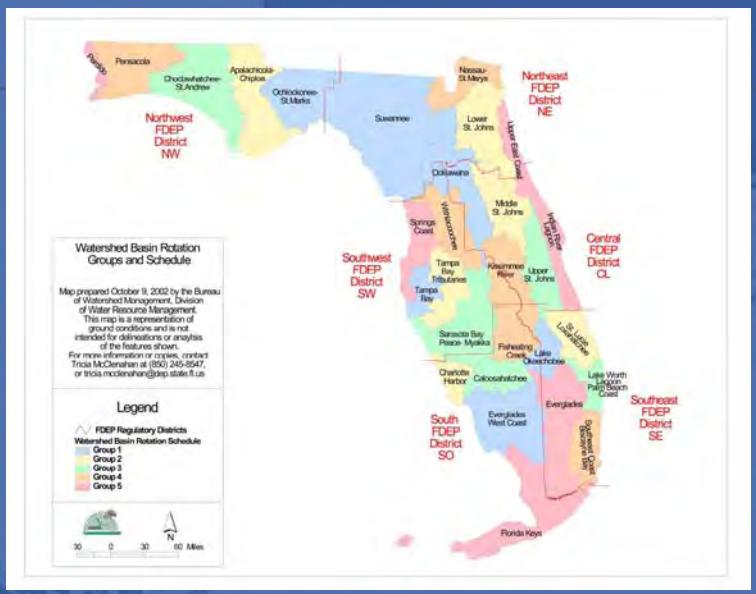
Florida Watershed Restoration Act Section 403.067, F.S.

- Enacted In 1999, Amended In 2005
- Gives DEP Legal Authority For TMDLs
- Requires "Good Science" - DEP To Adopt Methodology For Determining Impaired Waters = Impaired Waters Rule (62-303, FAC)

Florida Watershed Restoration Act Section 403.067, F.S.

- Requires "Public Participation"
  - 303(d) Lists Are Adopted By FDEP Secretary
  - TMDLs Are Adopted By Rule
  - BMAPs Are Adopted By Rule

Good Science + Public Participation = Good TMDLs



The Watershed Approach

- Divide watersheds into groups
- Rotate among groups over 5 years
- Five phases of basin cycle
  - Phase 1 - Preliminary basin evaluation
    - ✓ Products: Status report, planning list, monitoring plan
  - Phase 2 - Coordinated basin monitoring
    - ✓ Products: Assessment report, verified list
  - Phase 3 - Data analysis & TMDL Development
  - Phase 4 - Basin Mgmt Action Plan Development
  - Phase 5 - Implementation

Basis for Nine-year First Cycle

Year/ Group	2000	2001	2002	2003	2004	2005	2006	2007	2008
Group 1	Phase 1	Phase 2	Phase 3	Phase 4	Phase 5	Phase 1	Phase 2	Phase 3	Phase 4
Group 2		Phase 1	Phase 2	Phase 3	Phase 4	Phase 5	Phase 1	Phase 2	Phase 3
Group 3			Phase 1	Phase 2	Phase 3	Phase 4	Phase 5	Phase 1	Phase 2
Group 4				Phase 1	Phase 2	Phase 3	Phase 4	Phase 5	Phase 1
Group 5					Phase 1	Phase 2	Phase 3	Phase 4	Phase 5

Reasonable Assurance:
Where It Fits In TMDL Program

In first two phases of the cycle, stakeholders may submit documentation for review by FDEP (and EPA) that existing or proposed pollution control mechanisms are sufficient to attain water quality standards in a water segment without establishing a TMDL.

Reasonable Assurance:
What It Means in the TMDL Program

- If FDEP determines the water body's designated uses will be restored in the future and the water body will make reasonable progress towards attainment, the water is not placed on the verified list for TMDL adoption.
- FDEP documents the basis for its decision, noting proposed pollution control mechanisms and expected improvements in water quality.
- EPA reviews and accepts documentation.

Reasonable Assurance Recognizes Local Actions

- Reasonable Assurance Can Confirm Your Efforts and the Investments Made to Protect Water Quality.
- Stakeholder Involvement is the Most Important Part of Establishing Reasonable Assurance.

Your Information & Contacts Are Essential in Helping:

- Confirm Existing & Proposed Pollutant Reduction and Prevention Actions
- Secure Broader Stakeholder Support
- Connect with Local Expertise and Experience

The Real Mission of RA

We will have a mission statement for the Working Group, but the real mission of Reasonable Assurance is confirming your efforts!

RA Technical Working Group Draft Mission Statement

The mission of the Florida Keys Reasonable Assurance Documentation (FKRAD) Program's Technical Working Group is to obtain information on existing and pending stakeholder programs required to describe and document regional water quality management actions that will provide reasonable assurance that existing programs will meet identified local goals for restoring nutrient impaired waterbodies

Working Group Goals

1. Define guiding principles to be adopted by stakeholders for achieving the mission
2. Identify **nutrient** impaired waterbodies and the cause(s) of their impairments
3. Document existing and pending stakeholder programs for reducing anthropogenic impacts in receiving waterbodies
4. Identify local and regional water quality targets and aquatic ecological goals
5. Describe local and regional management actions being undertaken to achieve nutrient load reductions in the impaired waterbodies

Working Group Goals (continued)

6. Identify procedures for monitoring and reporting the results of the management actions
7. Describe proposed corrective actions
8. Gather local information and data required to fill key knowledge gaps
9. Identify the necessary education, outreach and implementation measures for moving the impaired waterbodies toward meeting regional goals and achieving FDEP water quality standards
10. Assist in securing participation of all interested groups, individuals and agencies and involving the public throughout the process

FKRAD Realities

- Reasonable Assurance May Not Be Proven For All Areas of the Keys
- FDEP Has An Open Mind As to Whether "Reasonable Assurance" is Appropriate

Contact Info

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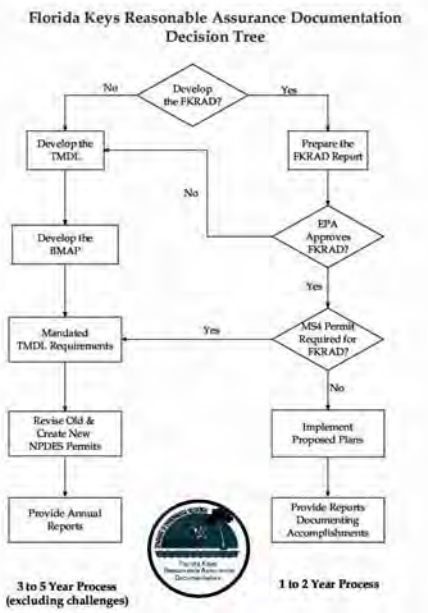
  850/245-8559
- eric.livingston@dep.state.fl.us
  850/245-8430
- http://www.dep.state.fl.us/water

TMDL Versus FKRAD Decision Process



FKRAD TECHNICAL WORKING GROUP

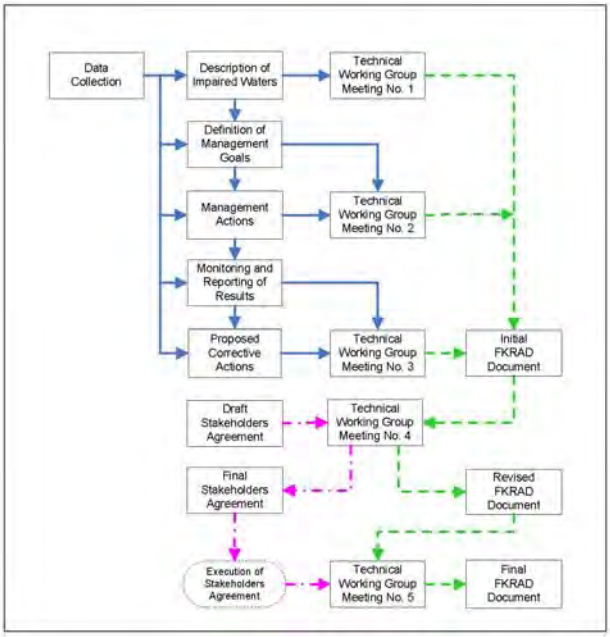
- Structure and Purpose
- Confirmation of Technical Working Group Members
- Focus on Nutrient Issues
- Overview of Future Meetings

Scott McClelland
Camp Dresser & McKee, Inc.

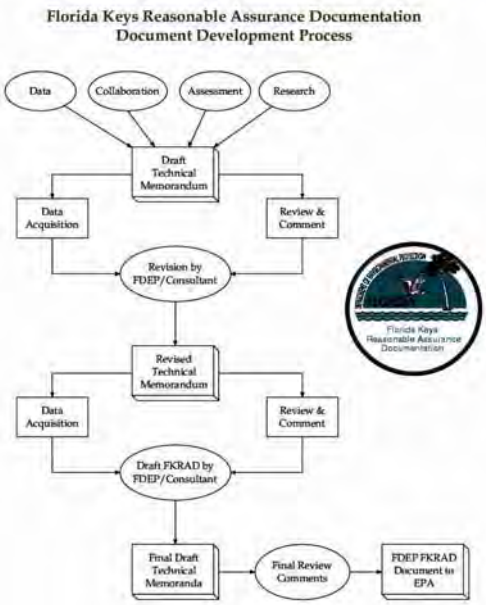
FKRAD Process Overview

- **One Focus**
  - Demonstrating Reasonable Assurance to Avoid TMDL and BMAP Development
- **Three Action Areas**
  - Data Acquisition
  - Investigation and Assessment
  - Preparation of the FKRAD Documents
- **Two Commitments**
  - Stakeholders Commit to Continue their Management Programs Related to Achieving Nutrient Reductions
  - FDEP commits to assist stakeholders in presenting the FKRAD Program and Stakeholders Agreement to their governing boards

FKRAD Process Overview



FKRAD Document Development Process



Step 1: Collection of Available Data and Programs

- Obtain Federal, State, Regional, and Local Data on Programs & Activities
- Describe Impaired Waters
- Describe Management Goals

Step 2: Define Programs and Actions to Achieve Goals

- Identify Programs and Actions That Address Goals
- Identify Potential Pollution Reductions Achieved Through Completion of Programs and Actions
- Estimate Time Frame for Achieving Water Quality Targets

Step 3: Define Programs to Monitor Program and Activities

- Identify Programs to Monitor Effectiveness of Programs and Activities
- Identify Reporting Mechanisms

Step 4: Define Potential Corrective Actions

- Identify Potential Actions If Monitoring Shows Program Or Activity Not Achieving Goals

Step 5: Prepare the FKRAD Documents

- Prepare Draft Document for Stakeholder Review
- Distribute for Review and Comment
  - Keys Stakeholders
  - Federal, State and Regional Agencies
  - Interested Parties
- Finalize FKRAD Report
- Submit for Review
  - FDEP
  - USEPA

Step 6: Draft and Finalize the Stakeholders Agreement

- Prepare the *Draft* Stakeholders Agreement
  - Formalizes Stakeholders Commitments to Continue Their Current and Pending Management Programs and Activities
  - Review by Legal Departments
  - Review by Stakeholder Officials
- Prepare *Final* Stakeholders Agreement
- Execute Stakeholders Agreement

Step 7: Finalize the Draft FKRAD Document

- Obtain Appropriate Signatures for Stakeholders Agreement
- Combine Report and Signed Agreement

Step 8: Submit the FKRAD Document

- Submit Document for Review
  - FDEP
  - USEPA
- Address Comments Received
- Resubmit FKRAD Report

Florida Keys Reasonable Assurance Documentation

Stakeholders and Technical Working Group

- All are Invited to the Technical Working Group Meetings
  - Signing Agencies
  - Regulatory Agencies
  - Programs
  - Interested Parties
- All Are Encouraged to Contribute
- Stakeholders Affirm the Decisions

Florida Keys Reasonable Assurance Documentation

Technical Working Group

- **Structure**
  - Representatives of Signing Group
  - Technical Contributors
- **Purposes**
  - Technical Focus
  - Identify Impairment Causes
  - Identify Water Quality Targets and Aquatic Ecological Goals
  - Identify Programs/Activities
  - Identify Monitoring/Reporting Activities
  - Prepare Potential Corrective Actions
  - Identify Specific Stakeholder Commitments

FLORIDA KEYS WATER QUALITY

REVIEW OF FLORIDA KEYS DRAFT
IMPAIRED WATER EVALUATION

- WBID Maps of the Upper, Middle and Lower Keys
- FL-STORET Database
- 2001 Surface Water Assessment

Pat Fricano
Florida Department of Environmental Protection

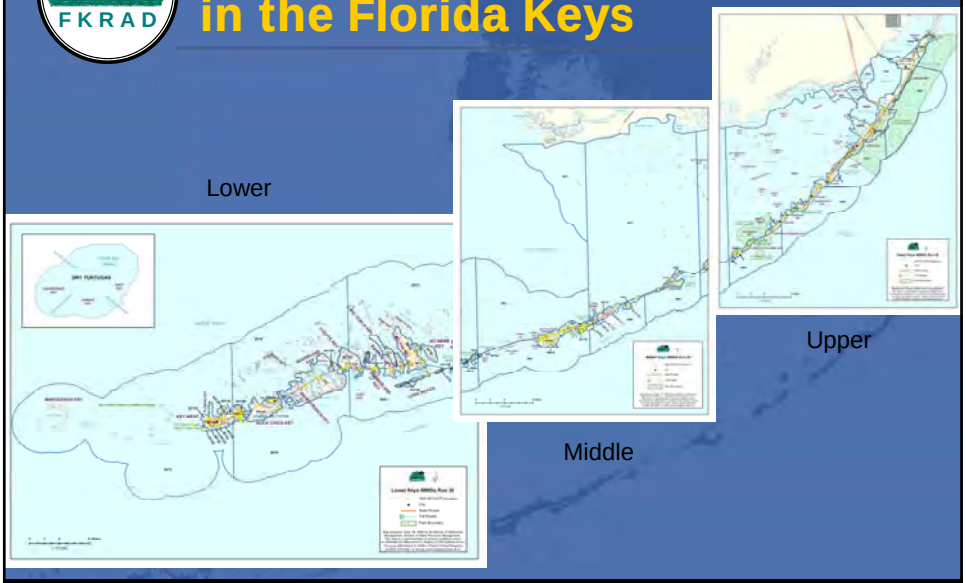
Florida Keys Reasonable Assurance Documentation

Determining Water Quality Through The Impaired Surface Waters Rule

- Identify Florida Keys Water Segments
- Assess Selected Island Water Body Segments
- Incorporate Historical Information

Florida Keys Reasonable Assurance Documentation

Impaired Waters in the Florida Keys



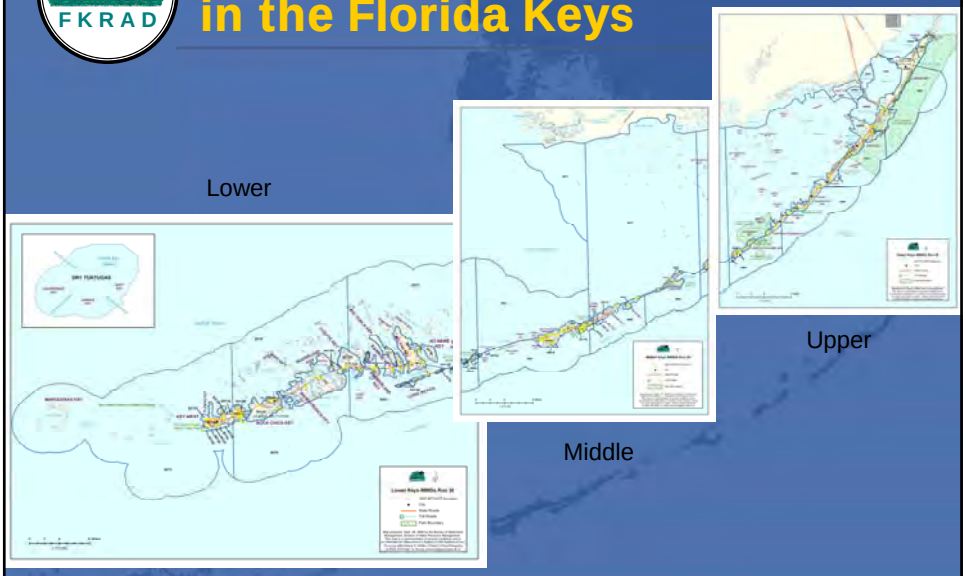
Florida Keys Reasonable Assurance Documentation

CONSIDERATION OF IMPAIRMENTS

- Within the Bubble
- Nutrient Impairment Only
- Old Versus New
- Identified Causes
- Data Gaps

Scott McClelland
Camp Dresser & McKee, Inc.

Impaired Waters in the Florida Keys



FKRAD Impaired Waters

- Nutrient Impairment Only
- Old Assessment
  - Impairment Based on 1998 Consent Decree
  - Based on Larger WBIDs
  - EPA STORET Data (All Sources, Unlimited Time Frame, Varying Data Quality)
  - Unable to Consistently Verify Impairment
- Recent Assessment
  - Uses Impaired Waters Rule
  - Near Shore WBIDs
  - Florida STORET (Limited Sources, Shorter Time Frames, Higher Data Quality)
  - Demonstrates Intermittent/Inconsistent Impairment
- **Both Are Required To Understand Impairments in The Florida Keys**
- **Resource-Based Data Also Required to Confirm Impairment**

Identified Causes

Summary of Contributions for Nutrient Loading to Near Shore Waters in the Florida Keys

Source	Nitrogen Loading	Phosphorus Loading
Stormwater	20%	45%
Wastewater	80%	55%
Total	100%	100%

Known But Unquantified

- Upwelling
- Atmospheric
- Vessel Discharges
- Effluent Leakance
- Mainland Discharges

Monroe County Stormwater Management Master Plan
Summary of Pollutant Loading Estimates (1)

Source	Runoff or Flow (ac-ft/yr)	Runoff or Flow (mgd)	Runoff or Flow %	Total Nitrogen (lb/yr)	Total Nitrogen %	Total Phosphorus (lb/yr)	Total Phosphorus %
Wetfall (2)	33,168	29.59	37.5%	88,388	18.8%	14,431	15.7%
Background (3)	18,372	16.39	20.7%	61,947	13.2%	10,990	11.9%
Urban Stormwater (4)	29,295	26.13	33.1%	161,623	34.3%	24,005	26.1%
Wastewater	7,716	6.9	8.7%	158,785	33.7%	42,672	46.3%
Total	88,551	79.0		470,743		92,098	

Notes:
(1) Excludes Key West
(2) Wetfall is the estimated flow and loading from Water/Wetland Land Uses.
(3) Background represents all land uses (other that Water/Wetland) converted to Forest/Open.
(4) Urban Stormwater is Existing Land Use Loading minus Wetfall and Background Load.

Data Gaps

- Frequency of Sampling
- Distribution of Station Locations
- Gaps in Long-Term Record
- Consistency of Parameter Suites
- Nutrient Speciation

Conclusions

- Consensus That The Florida Keys Nearshore Waters Are Impaired
  - Scientific
  - Community
  - Regulatory
- Causal Relationships Not Well Documented At This Time
- Existing Data Appear Reasonable To Proceed with RAD; But Not For TMDL

USE OF LOCAL WATER QUALITY DATA IN FKRAD ASSESSMENTS

- Simplified Modeling of Loads and Nutrient Concentrations
- Assessment of Water Quality Improvements
- Assessment of Benefits of Implemented Programs

Steve Lienhart
URS Corporation

Predicting Outcomes of Management Activities

- **Requirement For FKRAD Is To Demonstrate That Management Actions Will Reasonably Be Expected To Achieve Goals**
- **How Do We Do This?**
  - Complex Models
  - Simple Models
  - Waving Hands

Available Florida Keys Models

Fully Integrated Hydrology-Circulation-WQ Models with Adequate Data

- NONE

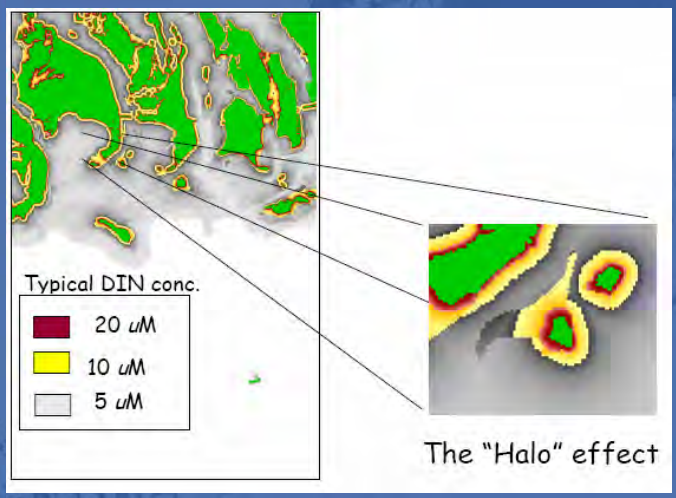
Fully Integrated Hydrology-Circulation-WQ Models with Limited Data

- CCIAM
- CCAM

Special Purpose Models with Limited Spatial Application and Adequate Data

- NONE?

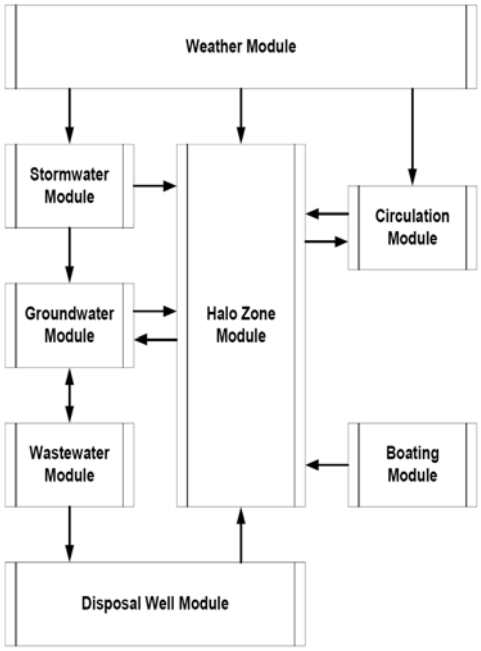
Halo Zone Effect



Integrated Model Complexity

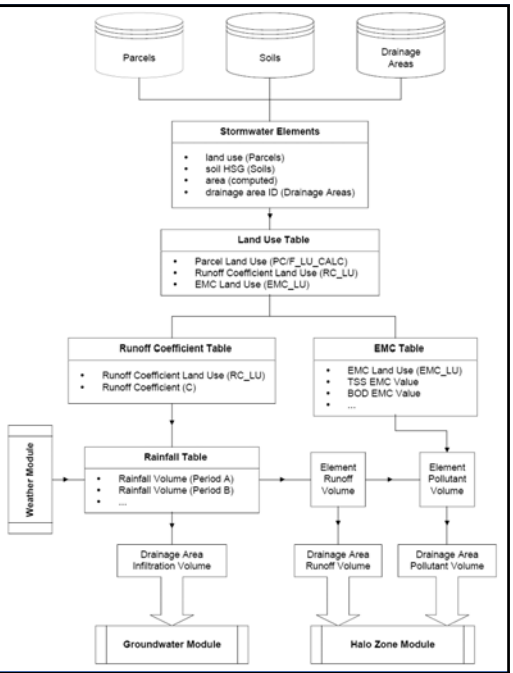
Extensive Data Requirements

- Rainfall
- Runoff
- Wind
- Circulation
- Bathymetry
- Topography
- Land Use
- Runoff Quality Characteristics
- Infiltration Rates
- Wastewater Practices
- Stormwater Practices
- Geohydrology
- Cultural Characteristics



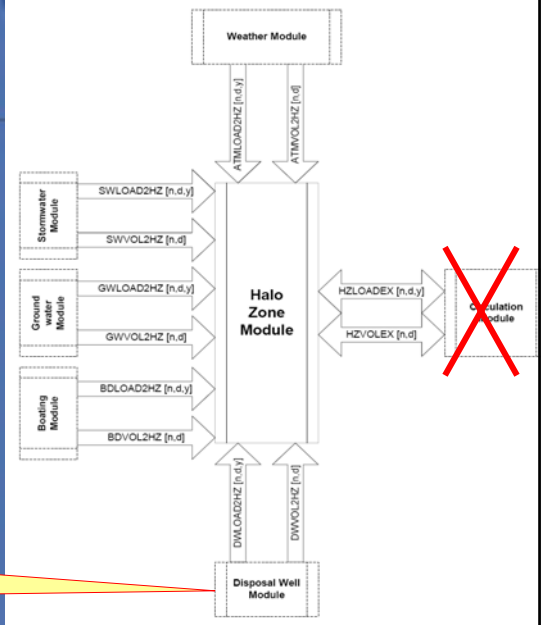
Florida Keys Reasonable Assurance Documentation

CCAM Stormwater Module



Florida Keys Reasonable Assurance Documentation

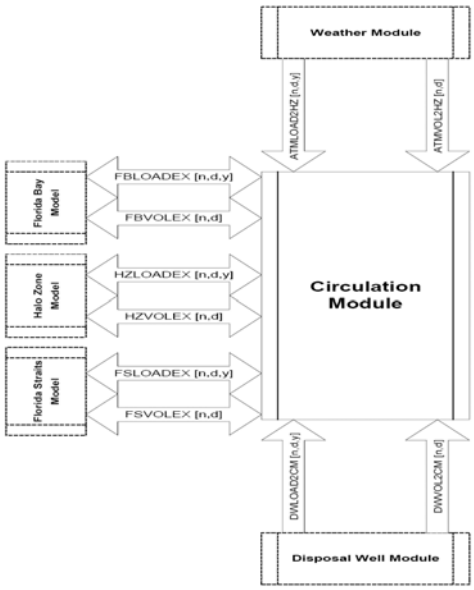
CCAM
Halo Zone Module



In the Absence of Real Data, What Leakance Rate Should Be Used?

Florida Keys Reasonable Assurance Documentation

CCAM
Circulation Module



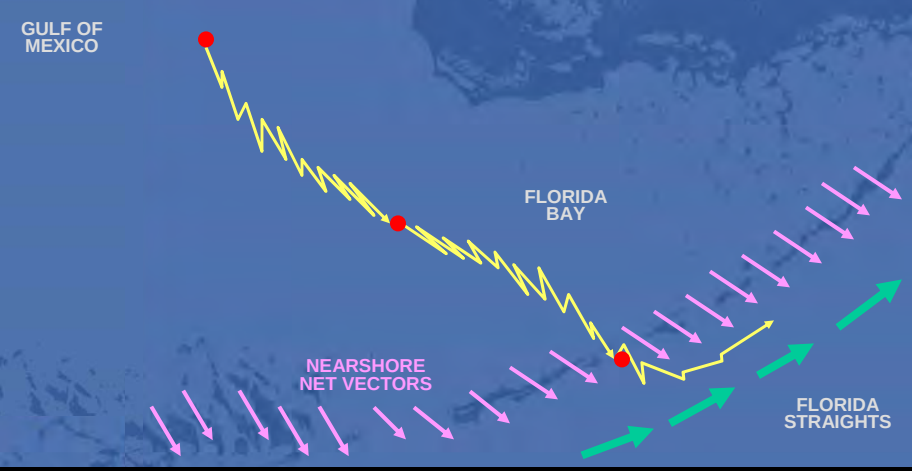
Florida Keys Reasonable Assurance Documentation

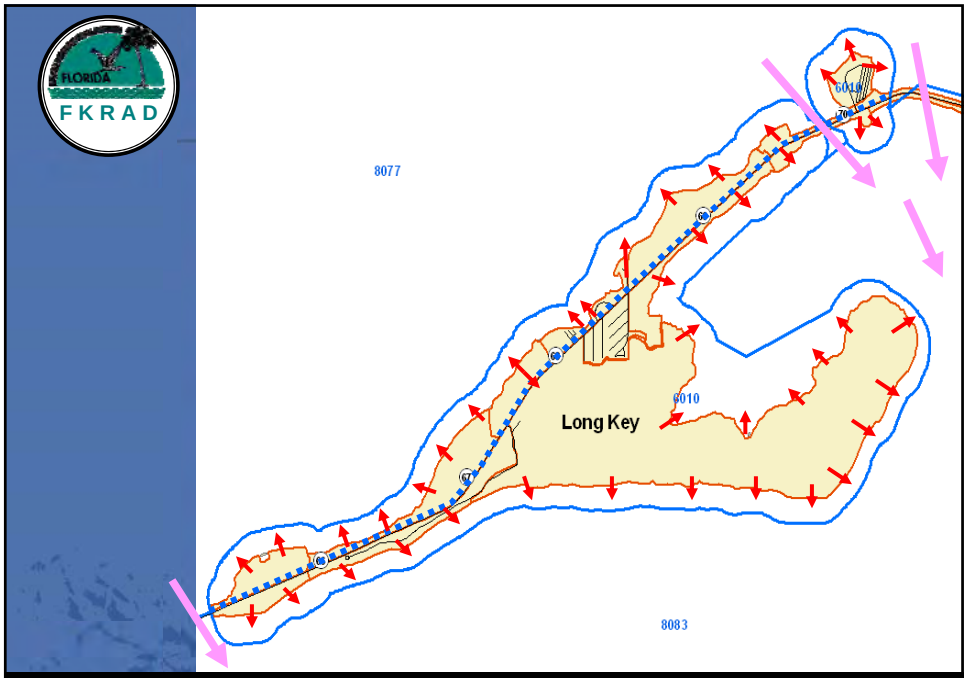
Near Shore Waters Modeling

Observations and Enabling Assumptions

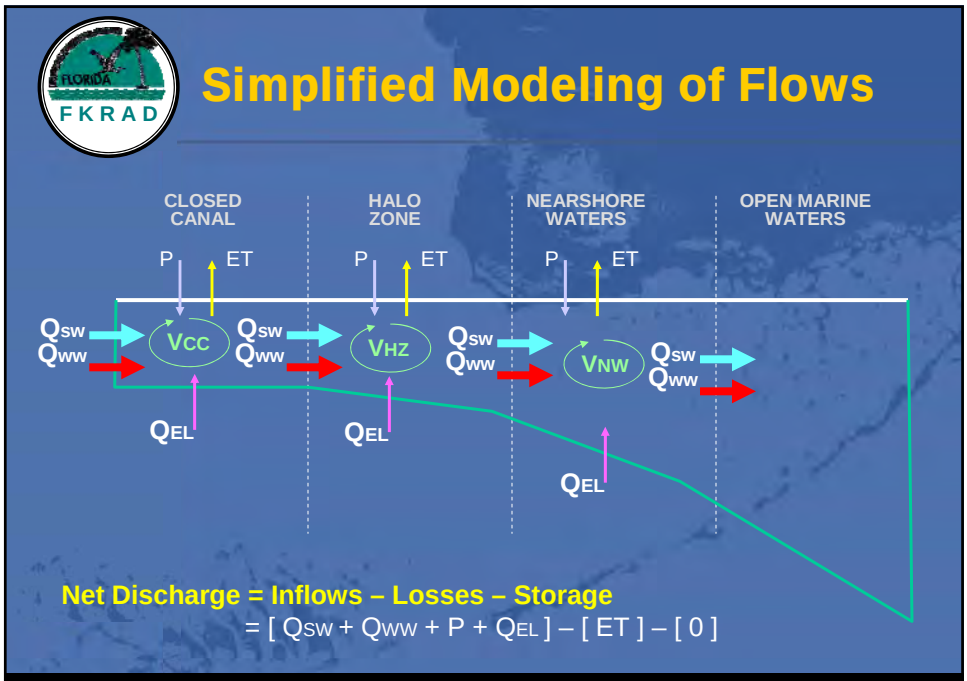
- A state-of-the-art 3-D circulation model cannot be developed for the Florida Keys RAD effort due to the constraints of available water quality/circulation/subsurface data, model development costs, model run times, and constraints placed on the FKRAD schedule.
- An alternate approach must be developed that reduces or eliminates the numerical processing requirements and model run times for the simulated events.
- Violent storm circulation conditions caused by tropical storms and hurricanes need not be simulated, as they are not representative of normal weather conditions in the Florida Keys.
- Total Nitrogen and Total Phosphorous are treated as conservative, non-reactive pollutants that do not volatilize or settle.
- Modeling of the component species dynamics of Total Nitrogen and Total Phosphorus, are not envisioned within the Florida Keys RAD.
- Nutrient cycling between the water column, biomass and the benthos will not be considered within the Florida Keys RAD.

Net Direction Vectors



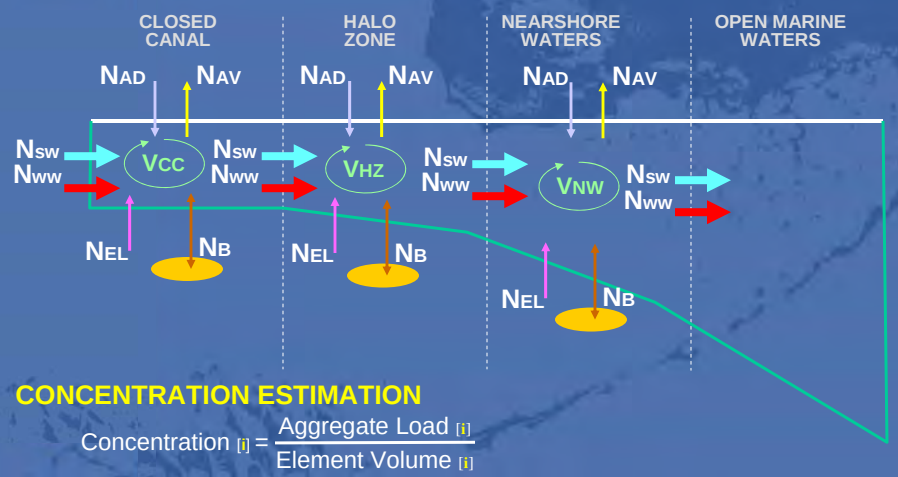


Florida Keys Reasonable Assurance Documentation



Florida Keys Reasonable Assurance Documentation

Simplified Modeling of Nutrient Loads and Concentrations

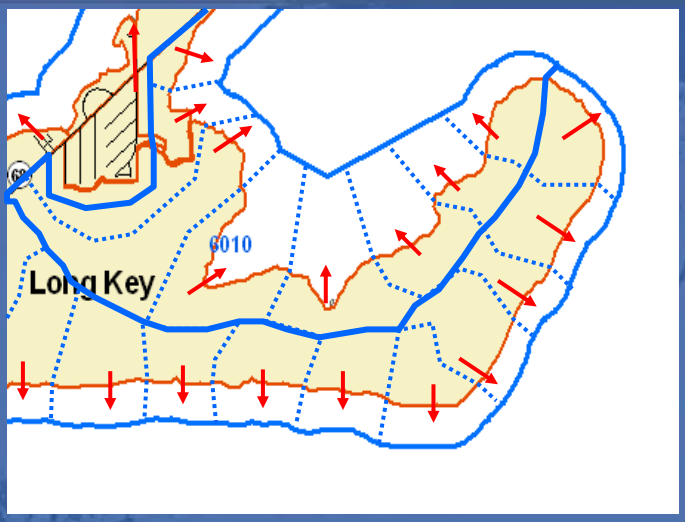


CONCENTRATION ESTIMATION

$$\text{Concentration}_{[i]} = \frac{\text{Aggregate Load}_{[i]}}{\text{Element Volume}_{[i]}}$$

Florida Keys Reasonable Assurance Documentation

Higher Discretization



Florida Keys Reasonable Assurance Documentation

Assessment of Benefits of Implemented Programs

Management Actions → Nutrient Load Reductions → Water Quality/ Ecosystem Benefit

Florida Keys Reasonable Assurance Documentation

Management Activities Information

- Owner
- Project Description
- Load Reduction
- Service Area
  - Location
  - Project Size
  - Benefited WBIDs
- Implementation
  - Time Frame
  - Costs (Land, Construction & Operation)

Florida Keys Reasonable Assurance Documentation

Assessment of Water Quality Improvements (in the Bubble)

- **Focus on Reduction**
  - Monitoring Results
  - Studies and Designs
  - Literature Values of Benefits

- **Translate to Ecosystem Benefits**
  - Nutrient Load Reductions
  - Water Quality Improvements
  - Aquatic Ecosystem Changes

FKRAD STAKEHOLDERS AGREEMENT OVERVIEW

- Purpose of the Agreement
- Individual Stakeholder Agreements
- Form and Content of the Document
- Signatures and their Significance

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URS Corporation

Purpose of the Agreement

- Identify Participants
  - Stakeholders/Implementers
  - Regulators, Programs, and Other Interests
- Define Management Activities
- Establish Responsibilities
  - What You Agree to Do In Your Community
- Anticipated Benefits
- Confirm Participation

Geographic Scope - Options

- Possibilities:
  - Whole Keys
  - Upper – Middle – Lower
  - Multiple Islands
  - Single Island
  - Single Jurisdiction
  - Some Combination of These
- EPA Must Concur

Individual Stakeholder Commitments

- Specific Management Actions
- Specific Service Areas
- Investments
  - Land
  - Construction
  - Operations
- Schedule
- Reporting of Accomplishments

Form and Content of the Stakeholder Agreement

- Background
- Mission
- Guiding Principles
- Stakeholder Commitments
- Measures of Success
- Signature Page(s)

Signatures (Resolutions) and Their Significance

- **Stakeholders**
  - Implementing Agencies
- **Significance (Commitments)**
  - As An Individual
    - Implement Individual Documented Management Activities
    - Reporting Progress
  - As A Group
    - Report Accomplishments
- **Other Interests**
  - Regulatory
  - Programs
  - 3rd Party Interests
- **Significance**
  - Overall Approach Can Achieve Goals
  - Statement of Support

FKRAD SCHEDULE

- Technical Working Group Meetings
- FKRAD Documents
- Stakeholder Agreements
- Stakeholder Support Activities
- Public Information and Involvement Activities

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URS Corporation

Initial Working Schedule

- **Technical Working Group Meetings**
  - Meeting 1: November 17, 2006
  - Meeting 2: December 13, 2006
  - Meeting 3: January 25, 2007
  - Meeting 4: February 22, 2007
  - Meeting 5: March 23, 2007
- **Stakeholders Agreement**
  - Release of Draft Agreement: Feb/Mar 2007
  - Distribution of Final Agreement: Mar/Apr 2007
  - Execution of the Final Agreement: Apr/May 2007
- **FKRAD Document**
  - Digital Release of Draft Document: Jan/Feb 2007
  - Digital Release of Final Document: Mar/Apr 2007
  - Distribution of Final Printed Document: Apr/May 2007

INFORMATION REQUESTS

- Data on Local Problems and Issues
- Local Keys Water Quality Data
- Community Management Goals and Management Actions
  - **Adopted, Implemented and in Operation**
  - **Pending or Anticipated**
- Community Issues and Concerns
  - **Water Quality Management**
  - **Impacts of Pollutants on Aquatic Resources in Impaired WBIDs**
- Specific Issues and Concerns that are
  - **Uniquely Important in the Context of the Community**
  - **Relevant to the FKRAD Process**

Steve Lienhart
URS Corporation

Information Request

- **Local Data to Fill Gaps**
  - Descriptions of Local Problems
  - Local Information on Impaired Waters
- **Existing and Pending Local Programs**
  - Water Quality Targets
  - Aquatic Ecological Goals
  - Programs and Management Actions
  - BMPs and Water Quality Capital Projects
  - Annual Regulatory, Enforcement and O&M Programs
  - Procedures for Monitoring and Reporting Results
  - Proposed Corrective Actions
- **Specific Information Needs Will Be Discussed at Each TWG Meeting**

ACTION ITEMS

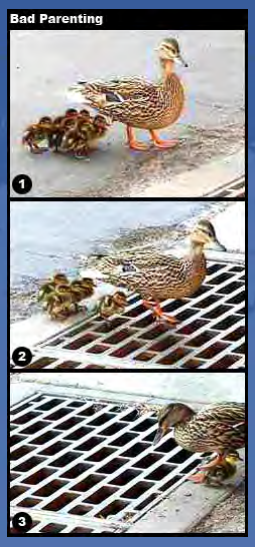
DATA AND STUDIES
- Water Quality Data NOT in FL-STORET
- Aquatic Ecosystem Data and Studies

IDENTIFICATION RESOURCE MANAGEMENT GOALS
- Comprehensive Plan Element
- Community Concerns

IDENTIFICATION OF MANAGEMENT ACTIVITIES
- Completed Projects
- Committed Plans

Scott McClelland
Camp, Dresser & McKee, Inc.

Questions?



Florida Keys Reasonable Assurance Documentation