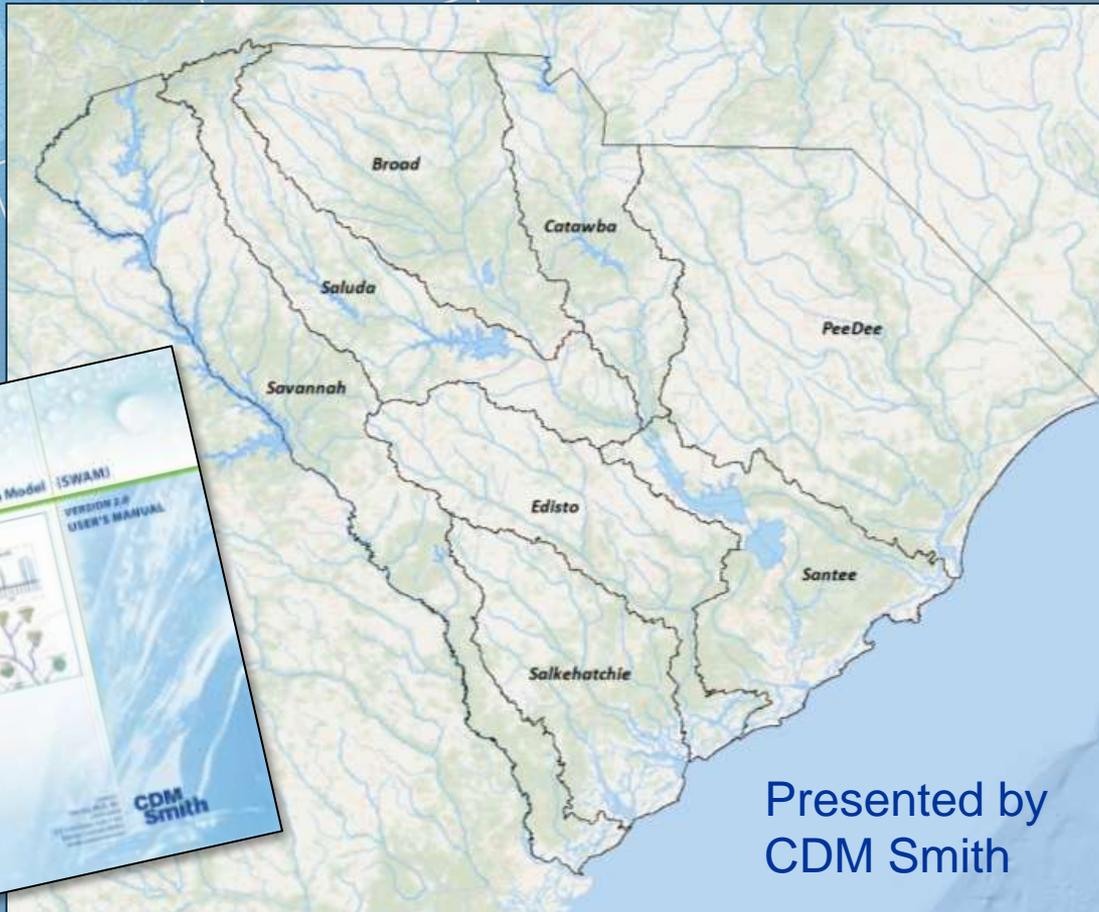


South Carolina Surface Water Quality Models

Project Kickoff Meeting

September 10, 2014



Presented by
CDM Smith

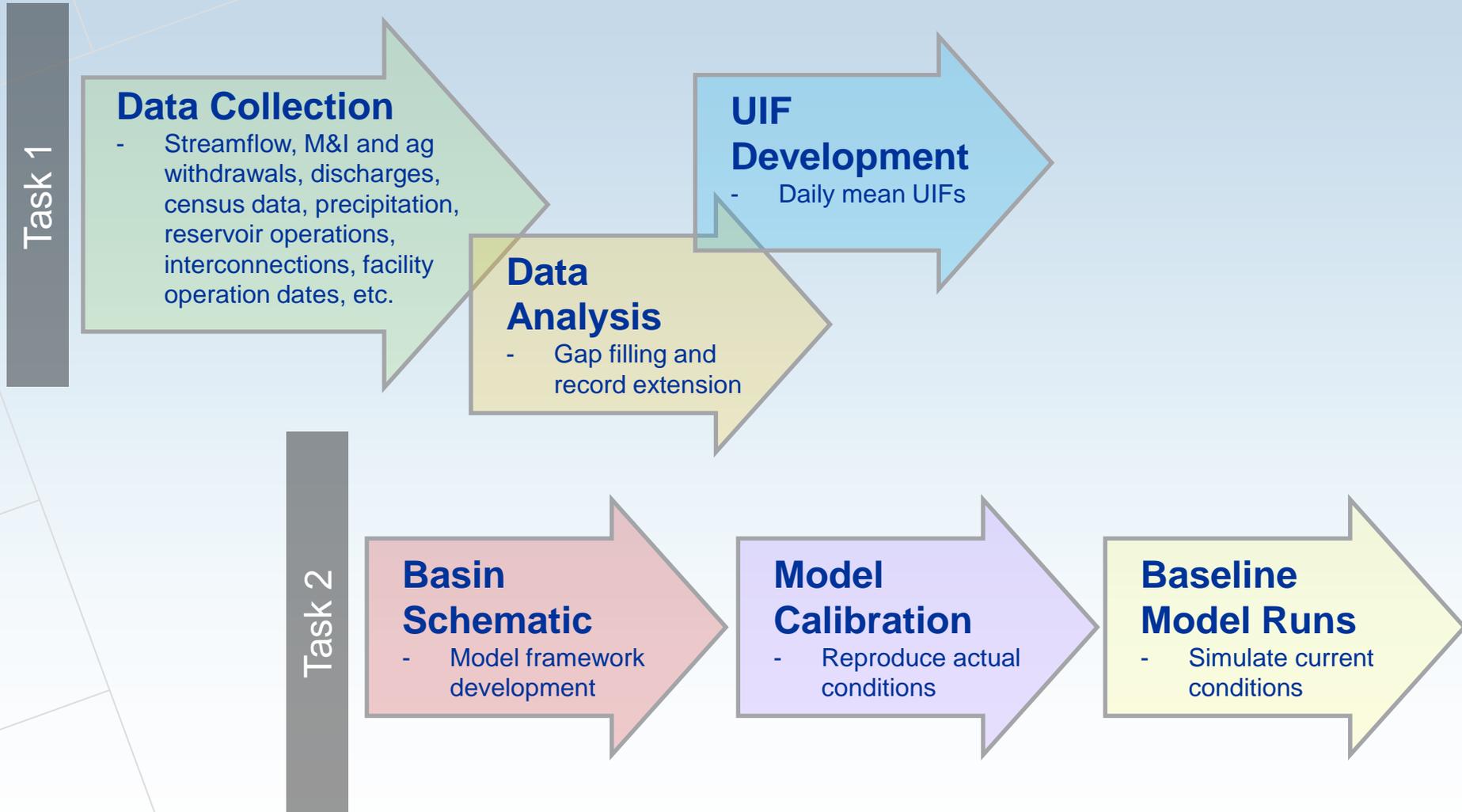


Kickoff Meeting Agenda

1. Introductions
2. Project Overview
3. Stakeholder Meetings
4. Approach to Developing Unimpaired Flows
5. Simplified Water Allocation Model (SWAM)
6. Other – Questions, Comments, Closing Remarks

Project Scope Overview

Major Steps for Each of Eight Models



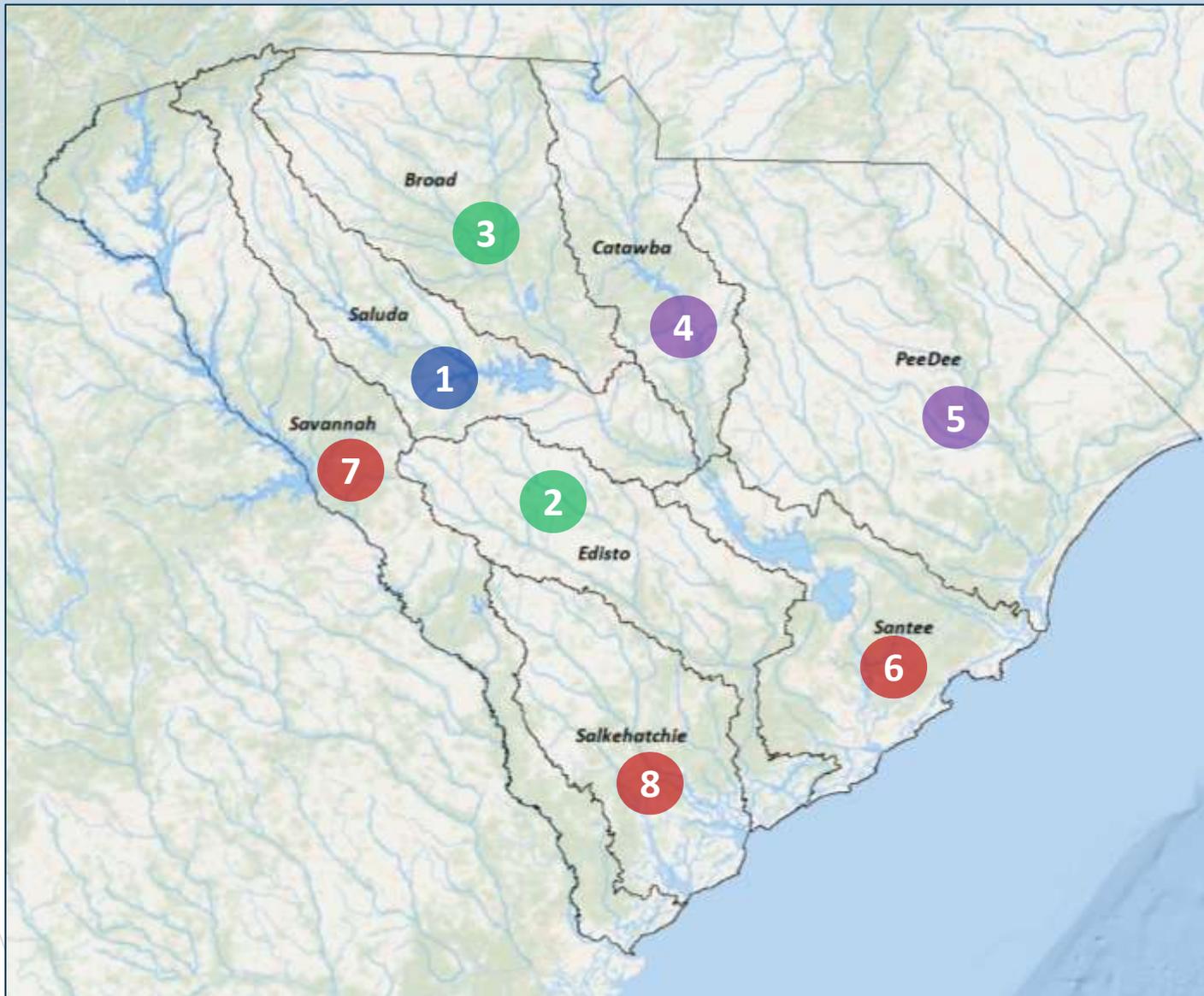
Intended Model Uses

- Evaluate surface-water availability in support of the new Surface Water Withdrawal, Permitting, Use, and Reporting Act
- Predict future surface-water availability using projected demands
- Develop regional water-supply plans
- Test the effectiveness of new water-management strategies or new operating rules
- Evaluate the impacts of future withdrawals on instream flow needs and minimum instream flows as defined by regulation
- Others?

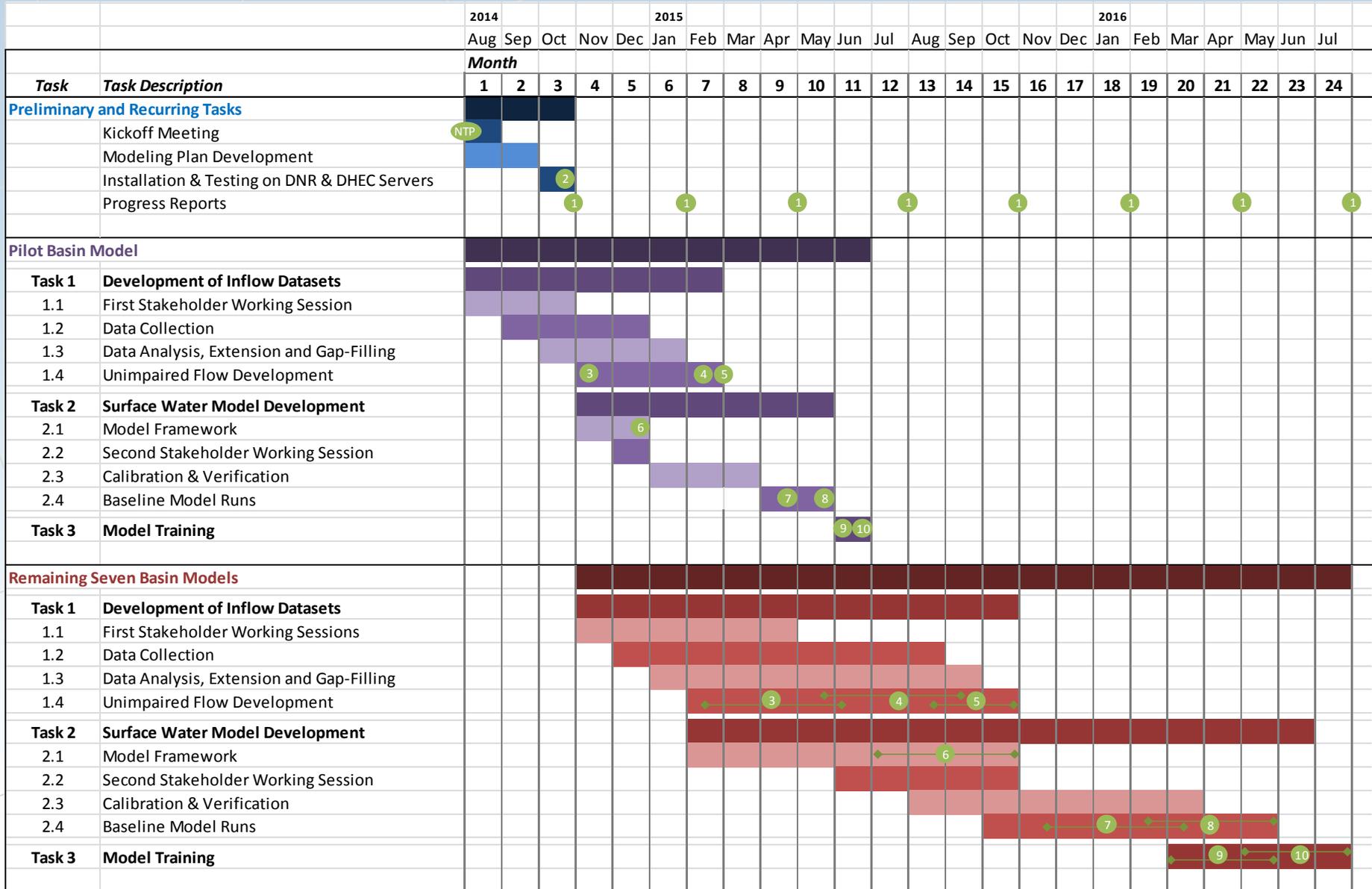
Data Needs / Data Collection

Data Need	Primary Source	Frequency
<i>Flow and Meteorological</i>		
Streamflow	USGS	Daily
Evaporation	SC Climatologist	Daily/Monthly
Precipitation	SC Climatologist	Daily/Monthly
<i>Withdrawals and Discharges</i>		
M&I Withdrawals	DHEC and Utilities	Monthly
NPDES Discharges	DHEC and Utilities	Monthly
Ag Withdrawals	DHEC	Monthly
Hydropower/Cooling	DHEC and Elect. Util.	Daily/Monthly
Groundwater Withdrawals	DHEC	Monthly
<i>Reservoirs</i>		
Operating rules (current/historical)	Electric Utilities	-
Historic Elevations	Electric Utilities/USGS	Daily/Monthly
Stage/Storage/Elevation	Electric Utilities	-
<i>Other</i>		
Instream Flow Requirements	DHEC	-
Drought Management Plans	DHEC and Utilities	-
Previously Developed UIF Datasets	NC DWR, GA EPD	-
Basin Characteristics	GIS	-
Census Data	US Census	-

Basin Priorities and Order



Schedule



Near Term Schedule and Deliverables

Saluda Basin

- Modeling Plan Oct 15
- Quarterly Reports Nov 15/Feb 15/May 15
- UIF Methodology Dec 1
- Saluda Model Framework Jan 15
- UIF Dataset Mar 1
- Draft Baseline Model Runs May 1
- Final Calibrated Model Jun 1
- Training/Users Manual Jul 30

Project Quality Management Process

- Clarify key project stakeholders roles and responsibilities
- Develop a clear understanding of the purpose, objectives and expectations of the project
- Develop consensus on the most important factors necessary to ensure a successful project
- Develop plan of action that will help the project team meet the project objectives

Project Critical Success Factors

- Modeling Plan/Pilot Model
 - *We must use the pilot model and modeling plan to develop a sound, clear, and transferable approach and template, and achieve consensus.*
- Communication
 - *We must develop and follow an established internal communication approach with a dedicated team having the proper skills to ensure consistency in execution and continually address critical success factors.*

Project Critical Success Factors

- Data Collection
 - *We must develop an efficient data collection approach that is appropriate to the model scale, clearly defines the period of record, identifies critical data, and documents the sources of data collected.*
- Unimpaired Flows
 - *We must achieve agreement on a consistent methodology to develop unimpaired flows, and the results.*

Project Critical Success Factors

- Quality
 - *We must follow CDM Smith's Quality Management Procedures (QMP), which include careful review and quality control of the products to ensure the highest quality before releasing to the client and public.*
- Modeling
 - *We must clearly define and achieve model requirements to meet the overriding objectives and stated future uses of the models, with a focus on model robustness, usability, transferability, defensibility, and flexibility.*

Project Critical Success Factors

- Stakeholders
 - *We must understand our role and work with DNR, DHEC, and the facilitator, to build understanding and agreement on the technical approach.*

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- 3. Stakeholder Meetings**
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Stakeholder Meetings

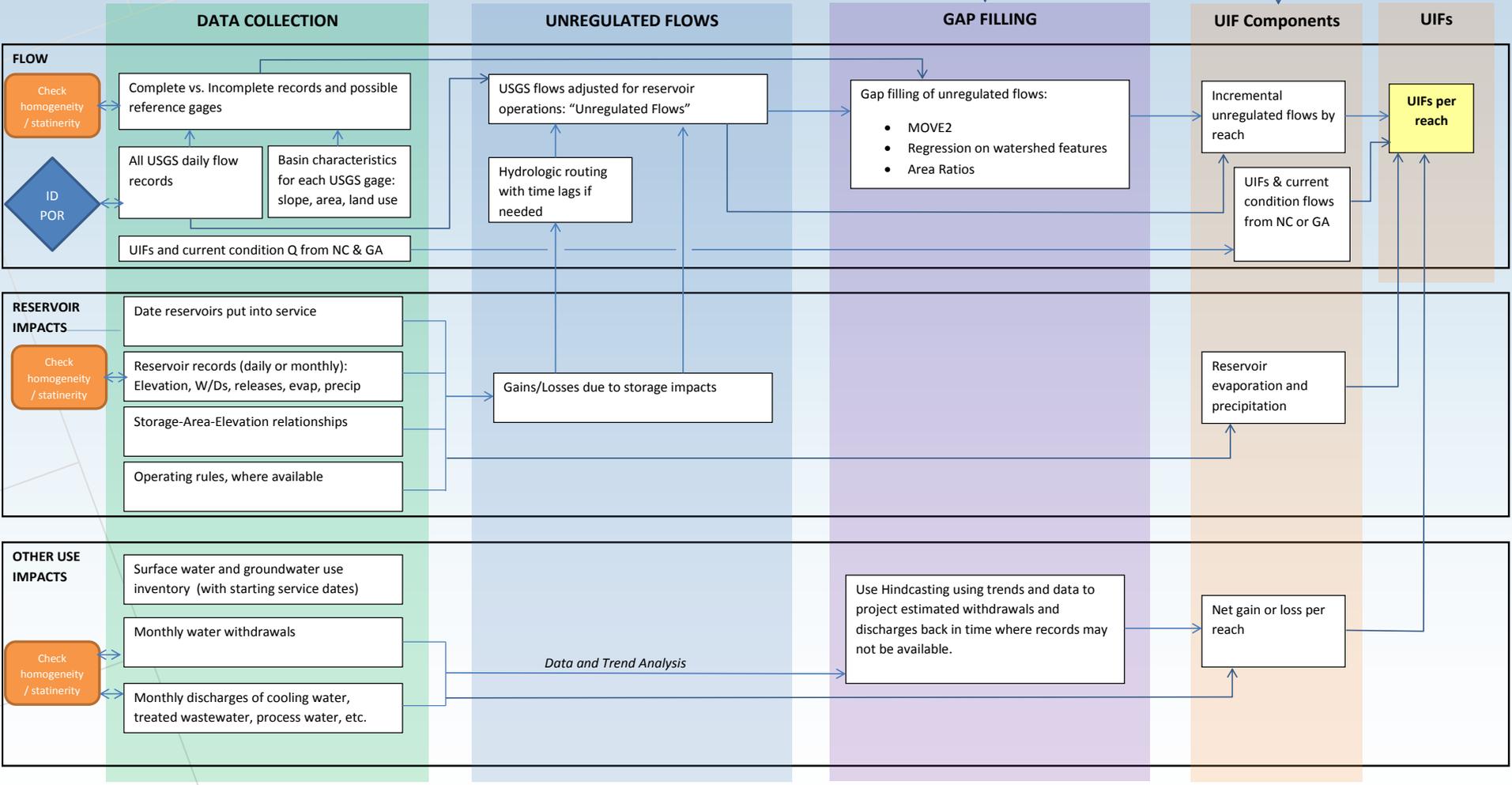
- Proposed Approach
 - Up to two meetings per basin
 - 1st Meeting to introduce model framework, present approach and assumptions, and explain data needs
 - Potential 2nd meeting to refine or confirm assumptions and clarify data received
- Role of Facilitator

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4. **Approach to Developing Unimpaired Flows**
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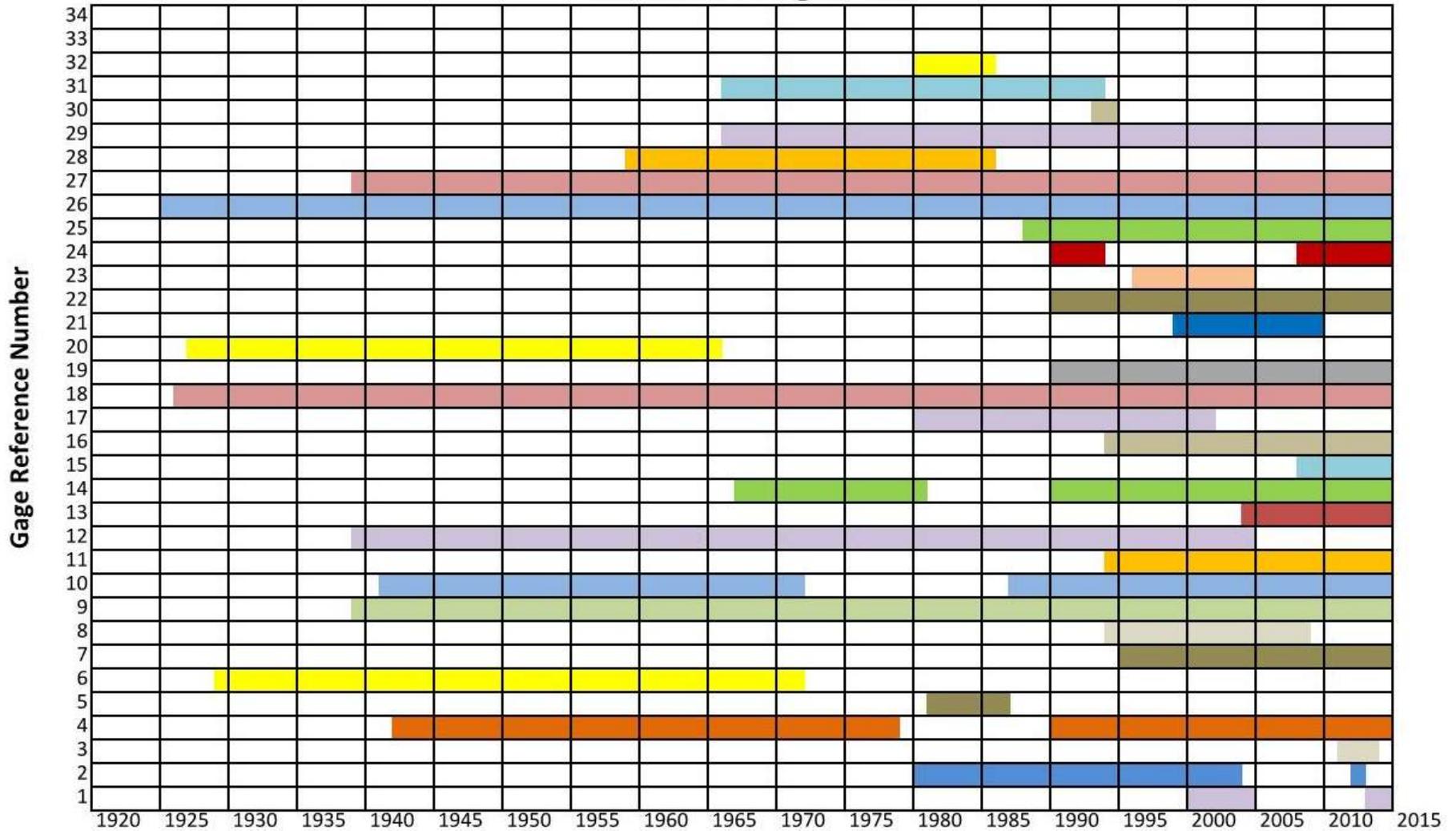
Draft Process Diagram for Unimpaired Flows for South Carolina

Some tasks may be iterative or re-sequenced



Saluda Basin

Timeline of Gage Data



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Web Accessibility Options

- **Citrix Deployment** provides SWAM access behind firewall that simulates a desktop environment
 - Simple, secure, suitable for number of concurrent users
- **Web SWAM** resides on web as a distributed application
 - Large number of concurrent users; requires significant modification
- **Hybrid SWAM** is a combination of first two options
 - Large number of concurrent users; requires significant modification
- **Desktop SWAM** eliminates web accessibility issues
 - User simply registers then downloads desired basin model
 - Model is updated and run locally

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