

Flow Data at SFWMD Structures used in Settlement Agreement Report

*By
Matahel Ansar, Ph.D., P.E.*

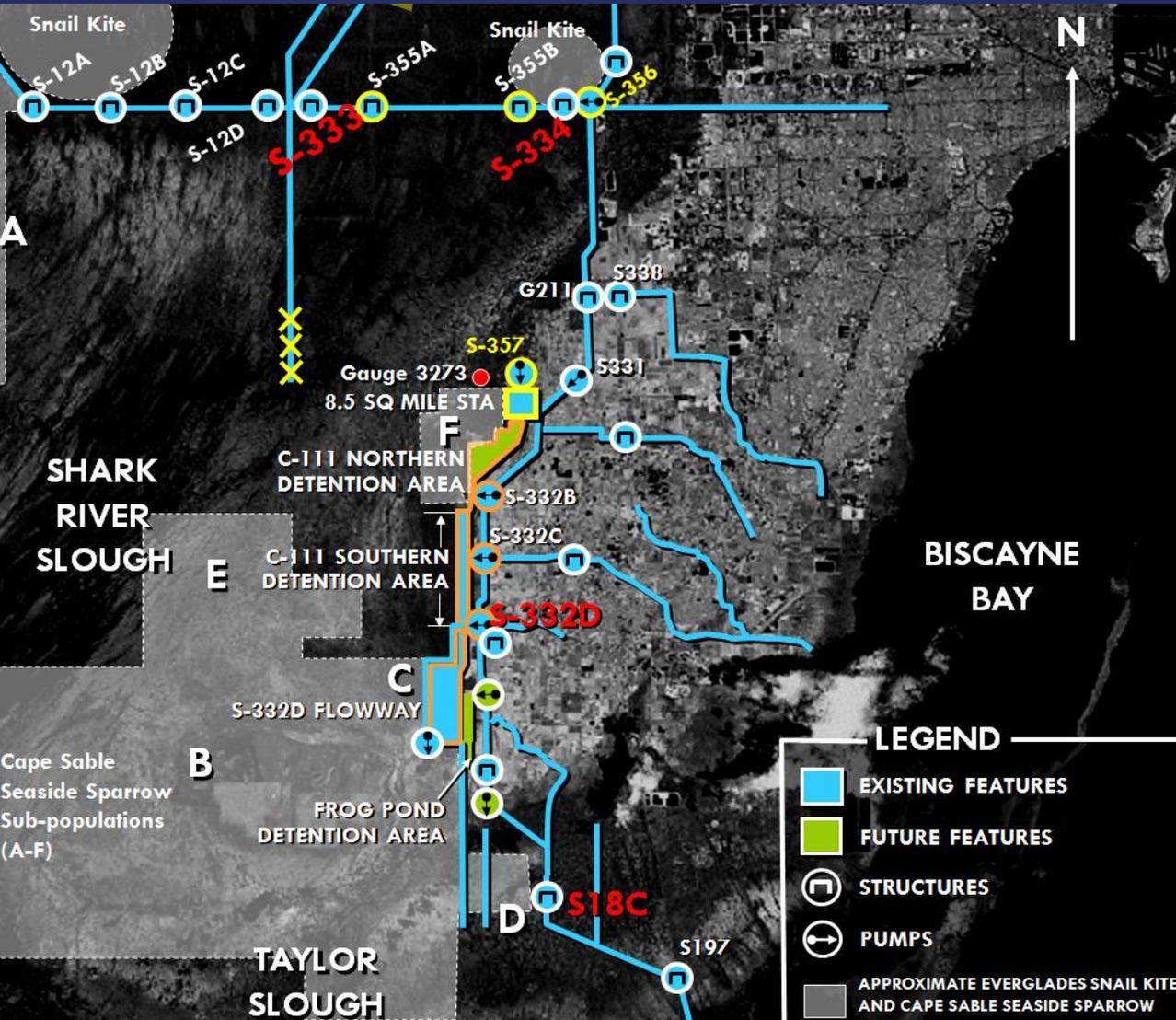
*Hydro Data Management Section
Infrastructure Management Bureau*

*TOC Meeting
May 14, 2013*



sfwmd.gov

SFWMD Structures



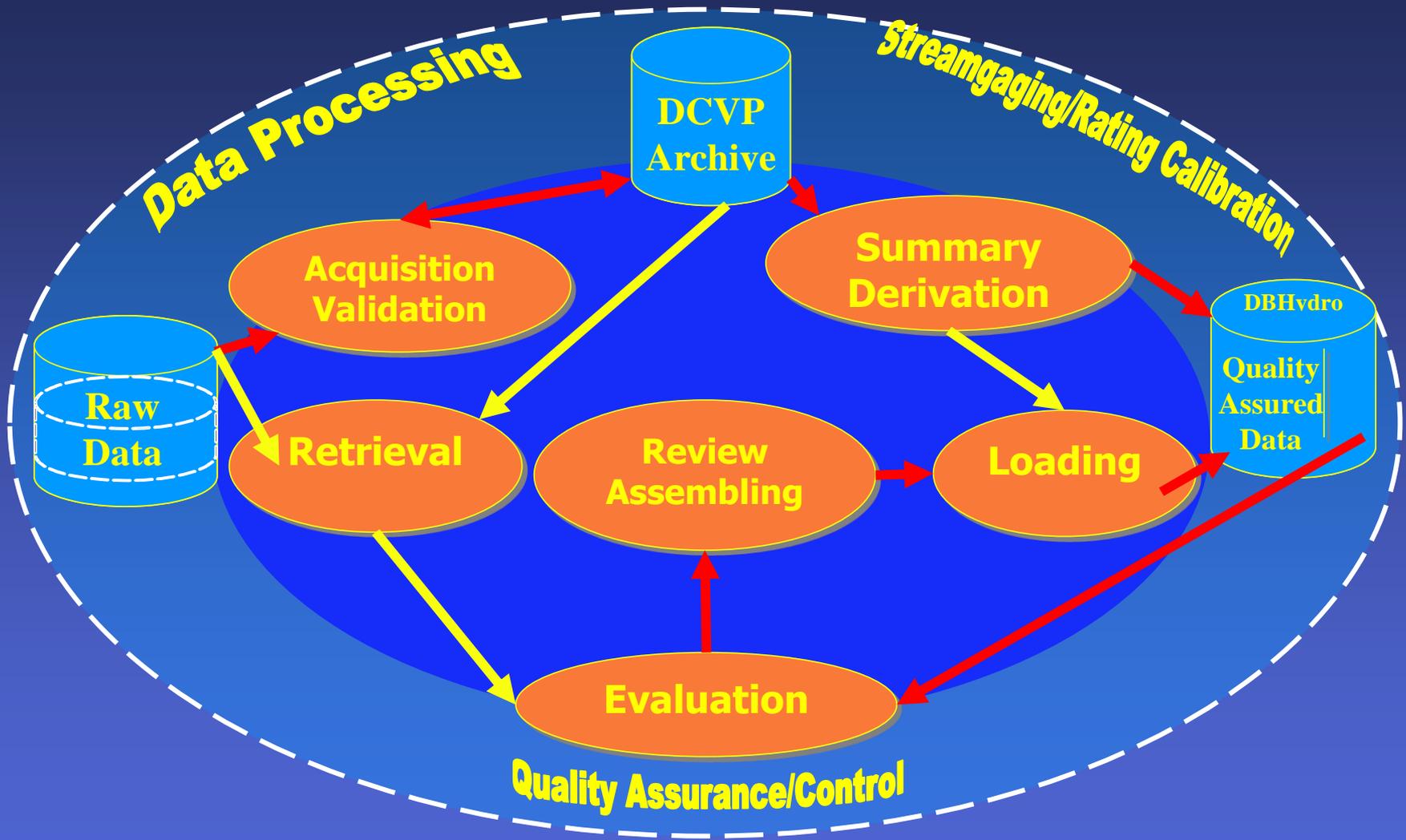
3 spillways: S333, S334 and S18C



One Pump Station: S332D

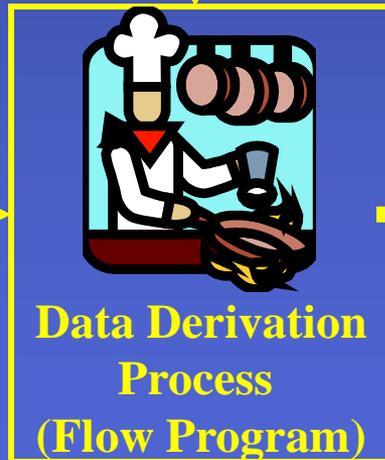
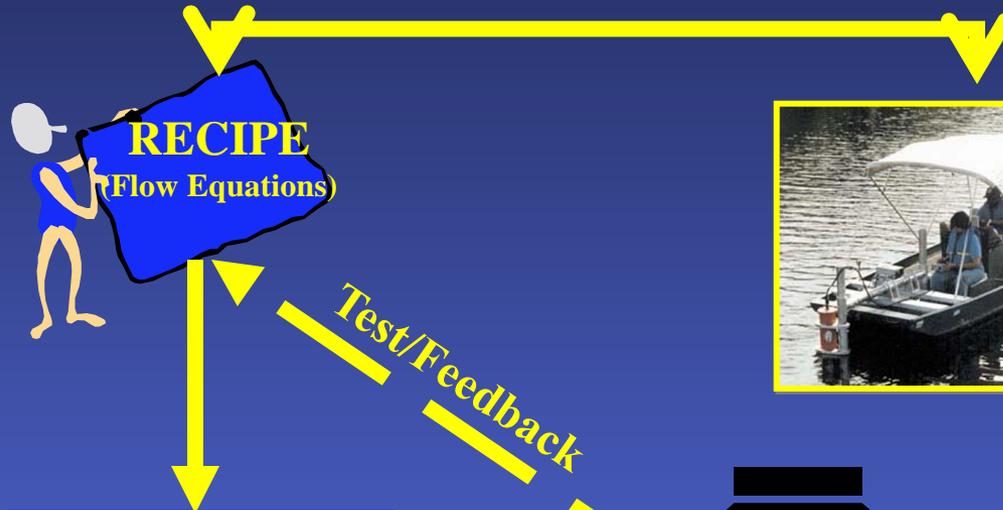
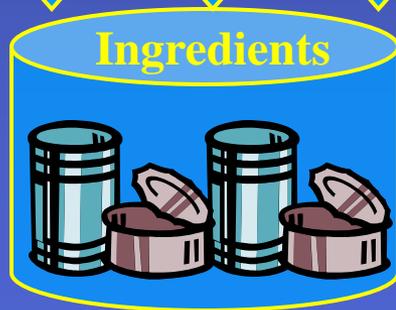


Data Management Process



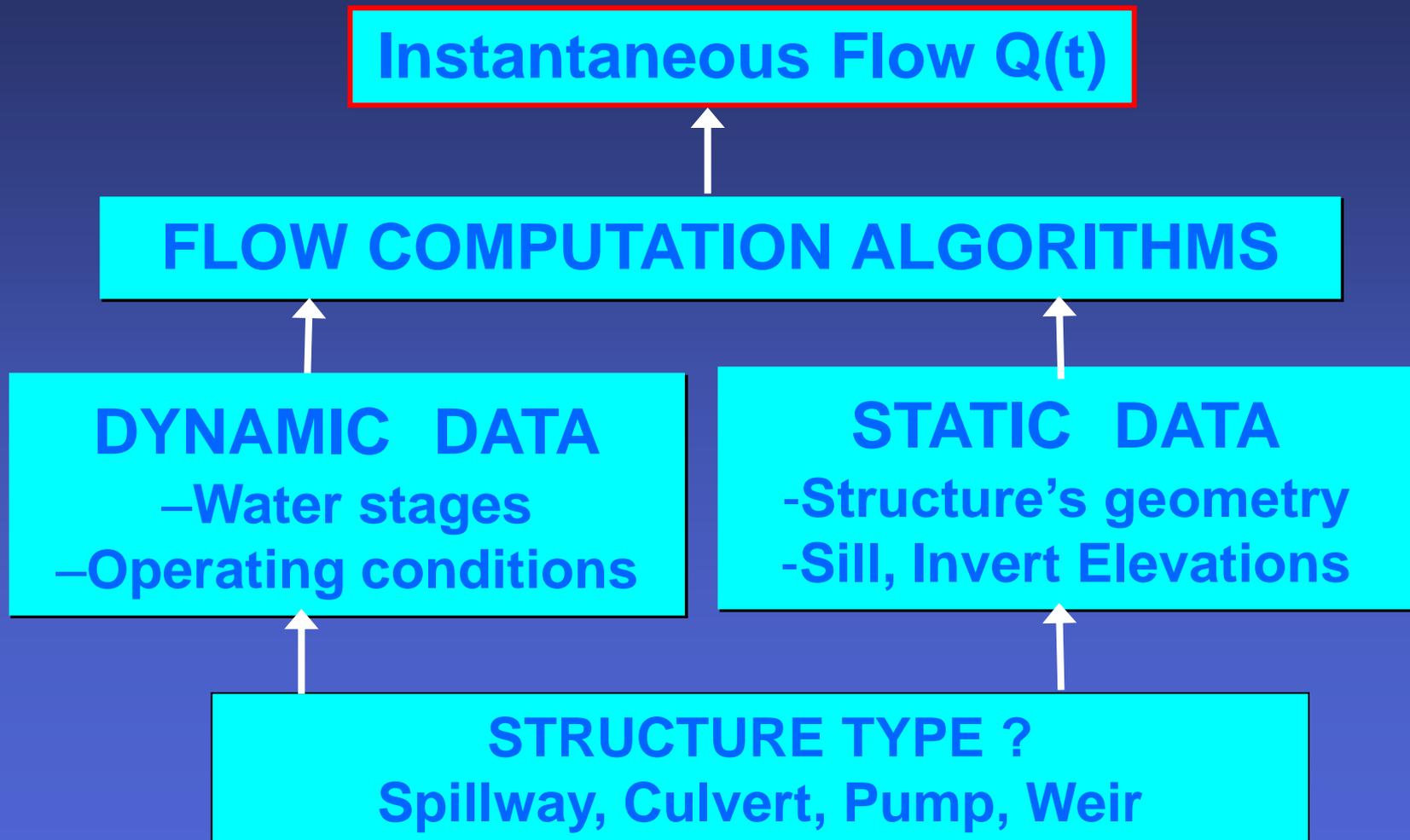
 **Main Route**
 **Secondary Route**

Flow Data Generation Process



End Users

Flow Computation From Breakpoint Data

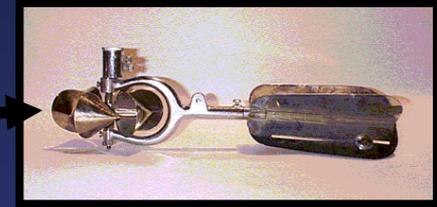


Summary of DCVP And Data Processing

- Verified data are archived in DCVP database
- DCVP stands for Data Collection, Validation and Preprocessing
- DCVP is used for all of the raw data received through the various data collection methods used by the District
- DCVP was developed to handle manually and electronically collected data
- Data processing consists of a set of checks and validation procedures such as
 - Verification of the Identifiers used to distinguish a data collection location from all others
 - Checks against maximum and minimum allowable values to help in data outliers identification
 - Checks rate of change does not exceed allowable maximum and minimum values

Flow Measurement Equipment

— Price meter



— Acoustic Doppler Current Profilers (ADCPs)

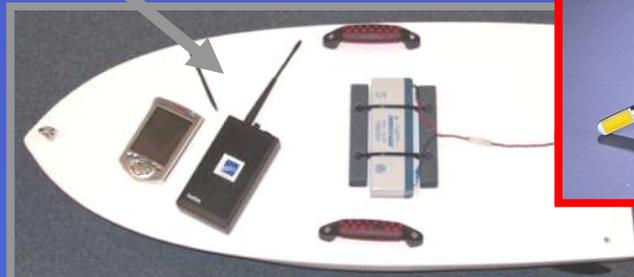
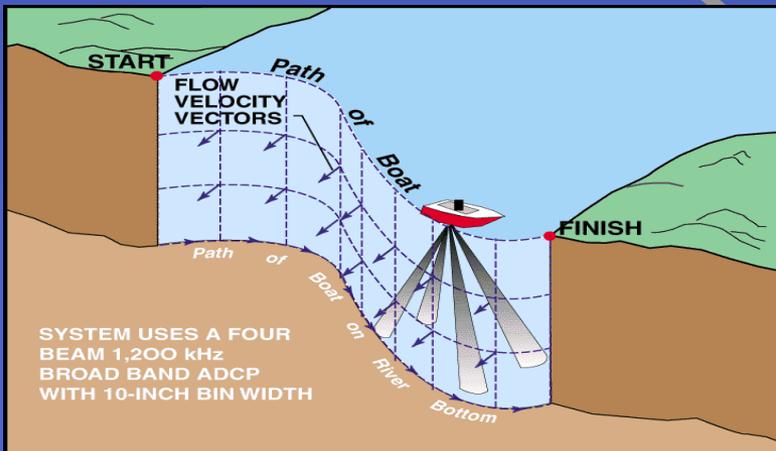


— Acoustic Doppler Flow Meters (ADFMs)

— Acoustic Doppler Velocity Meters (ADVs)



— Other ADPs



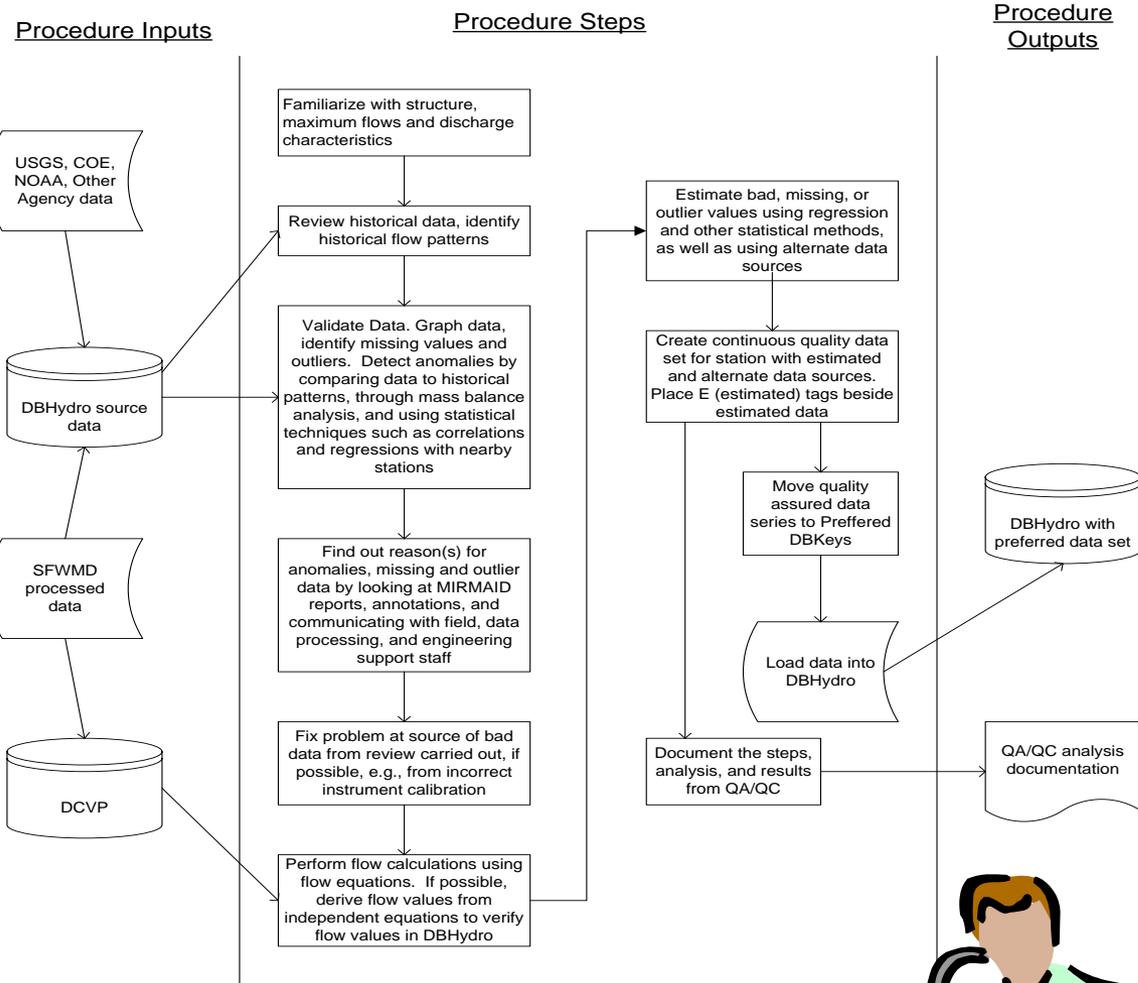
Summary of Flow Computation Flow Rating And Calibration

- Flow computation is done at over **550 District structures**
- Flow computation is performed by the **FLOW program** based on the type of structure (Spillway, Culvert, Pump, Weir) and flow conditions
- **Several equations** are used to estimate flow at a given structure, depending on the prevailing headwater, tailwater conditions as well as operating conditions (gate opening or pump rpm) at the structure.
- **Ratings and calibrations** are used to improve and verify the flow computation

Summary of Post QA/QC

- Post QA/QC of data is done using all information available (internal and external)
- Post QA/QC process is performed on a subset of data with legal mandates (EAA rulemaking, STAs, ECP, Consent decree ...etc.)
- Post QA/QC data are stored in special dbkeys called **Preferred (PREF) dbkeys**
- About **300+ PREF** sites are maintained in DBHYDRO

Flowchart of QA/QC Procedures for Flow Data



Shape Legend



- Acquire data from SFWMD, USGS, COE and other Agencies
- QA process for SFWMD data involves review of input data, regression analyses, mass balance, use of surrogate sensors, review of maintenance records, QA Analysis documentation
- QA of external data sources involves comparisons of different data Sources (USGS & Corps), limited access to maintenance records (email communications), limited or no information on the input parameters
- Final QA data stored in DBHydro as Pref Dbkeys



Questions ?

