California's Surface Water Ambient Monitoring Program

Data In and Data Out: Status on the SWAMP Database and Tools Being Developed for Biological Data

(Nov 16, 2010)

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Why this talk?

- To provide a glimpse of what tools are available and will be coming through SWAMP and CEDEN
  - Want programs, projects, and field/lab personnel to plan ahead for next year's sampling
    - Contracts, training, etc.

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- To encourage data submittal to CEDEN for greater data use
- To confirm we do not want to replace your data management system

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Basic Approach to Data Management

- SWAMP and CEDEN were designed to contain the necessary data elements for storing three event types:
  - Water Quality (WQ) – water/sediment chem & tox, bacteria
  - Tissue (TI) – fish, bivalves, birds, mammals
  - Bioassessment (BA)

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  - Water Quality (WQ) – water/sediment chem & tox, bacteria
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  - Bioassessment (BA)
- SWAMP was also mandated to store data of 'known and documented quality'
  - Necessitates a lot of associated metadata

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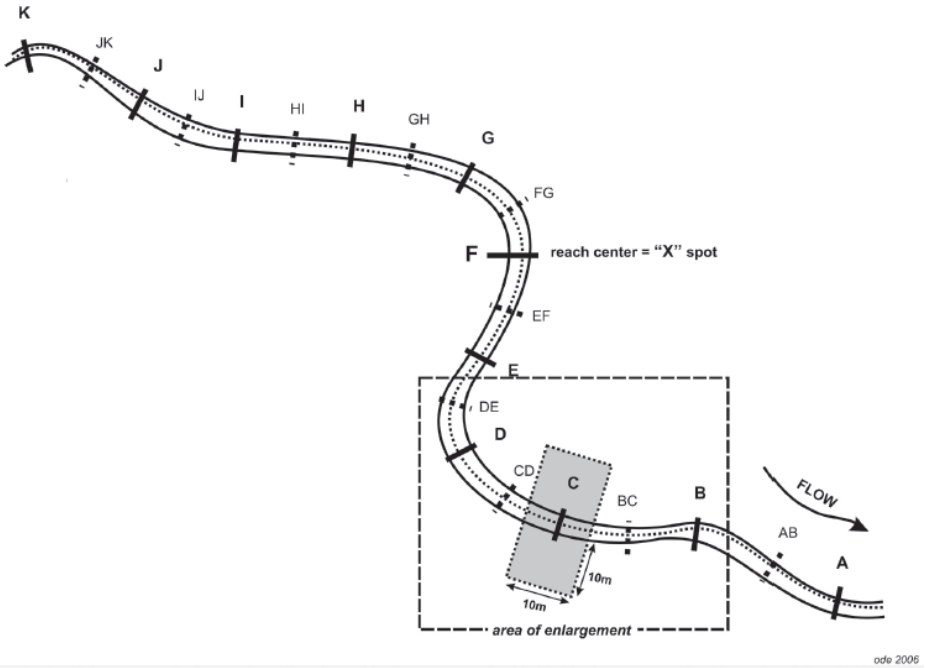
Bioassessment Data

- Need to acknowledge BA data is COMPLEX
  - Develop tools and provide support to help you
- Tools focus on SWAMP Wadeable Streams Full Protocol (2007)
  - Future – SNARL and EMAP protocols
    - Structure exists to store this data but need to develop the underlying look-up values



Data In

- Physical Habitat (PHAB) Data
  - Data Entry Options
    - MS Access Field forms
    - Excel template
    - Flexi-Grid
- Taxonomy Data
  - Data Entry Options
    - Excel template

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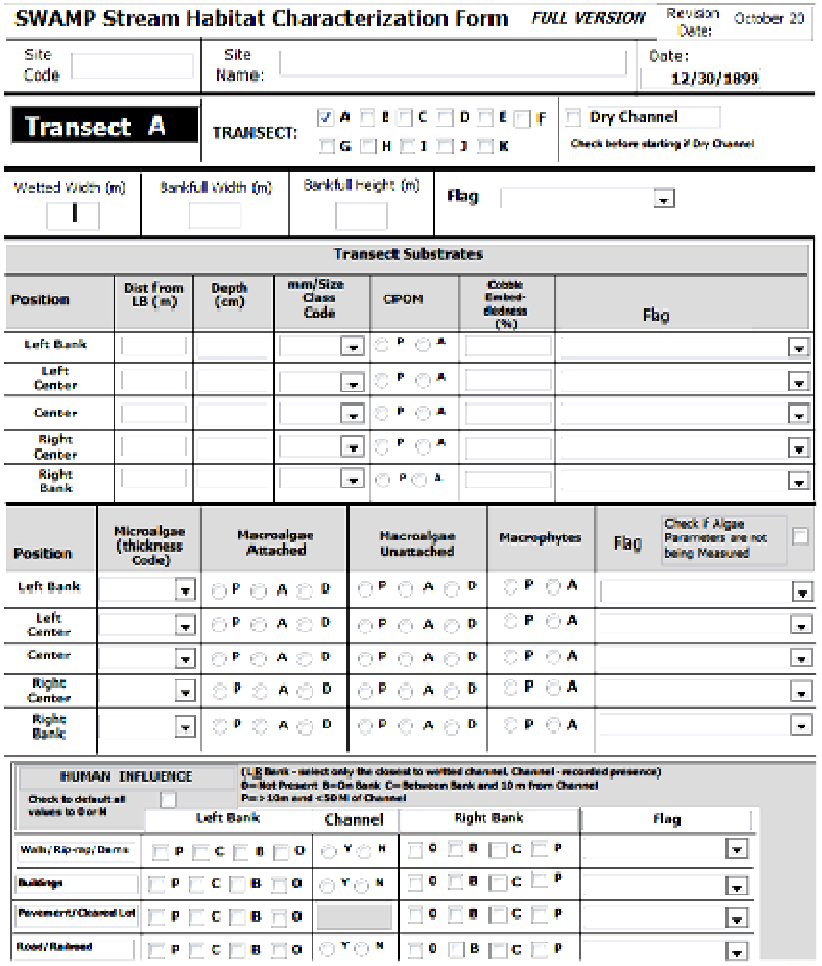
PHAB Data - MS Access Field Forms

- MS Access front-end application linked to stand alone MS Access back-end shell database
  - Looks similar to hard-copy forms
  - Follows SWAMP WS Full protocol



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PHAB Data - MS Access Field Forms

- MS Access front-end application linked to stand alone MS Access back-end shell database
  - Looks similar to hard-copy forms
  - Follows SWAMP Wadeable Streams (2007) Full Protocol
  - Write-only database so data cannot be retrieved within form view once data is saved
    - Provide queries to help with data review and updates
    - Will work on a re-design but not for 2011
  - Trainings via WebEx Webinars in spring and fall
    - Recorded trainings should be available online
  - Help Desk available to speak to a person regarding data and QA issues

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Excel Templates – PHAB & Taxonomy

- Available on MLML SWAMP website with examples
- Contains underlying SWAMP data structures
- Can be used for any data type – bioassessment, marine, basic field observations

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  - Requires Program/Project or Field Crew to provide collection information to link results to samples

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- For Taxonomy data, labs can enter data row-by-row or query from their database into the correct format
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- Both templates can be checked online for structure and business rules
- We will provide documentation, training, and Help Desk support

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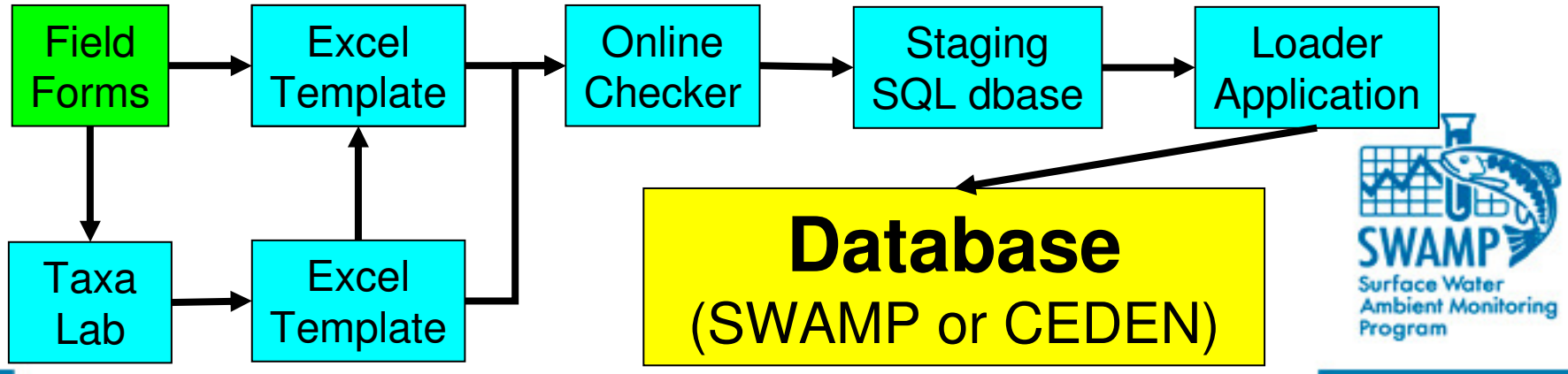
Anticipated Data Submittal Process

- Each spring, package containing MS Access front-end application and stand alone MS Access back-end shell database will be available for data entry (templates available online)



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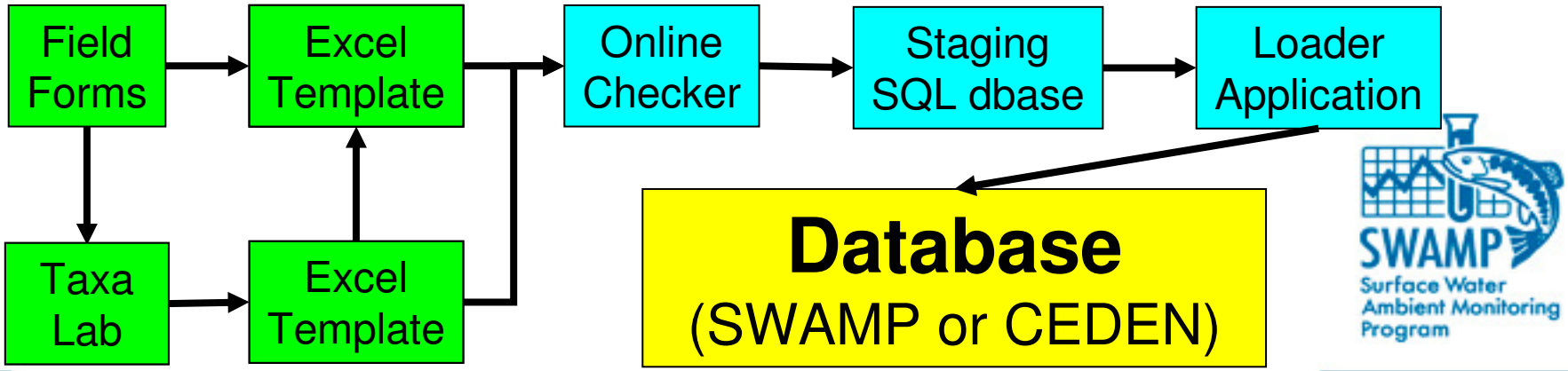
  - Taxonomy lab enters data into template and sends back to Project to be combined with PHAB field data



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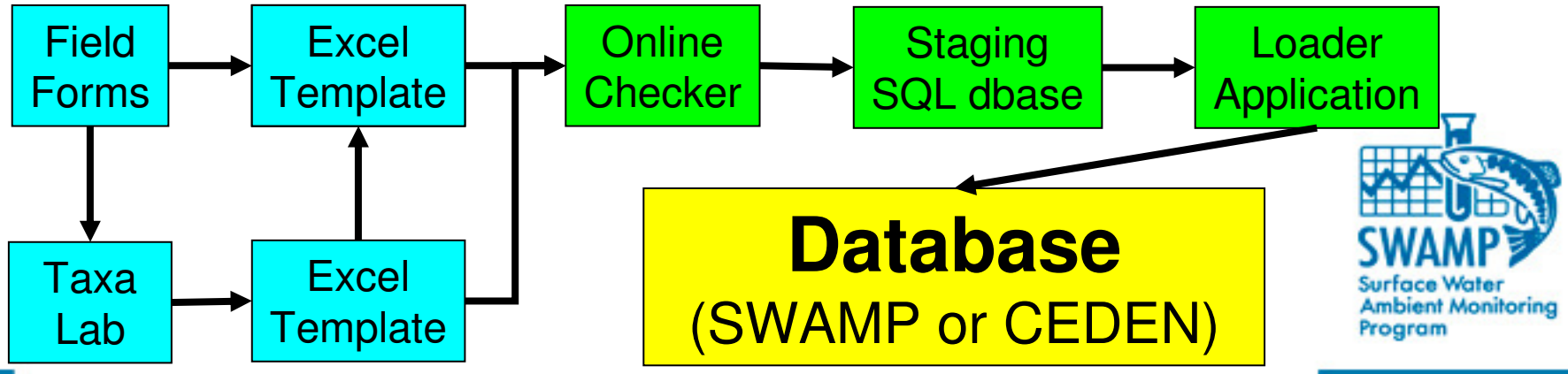
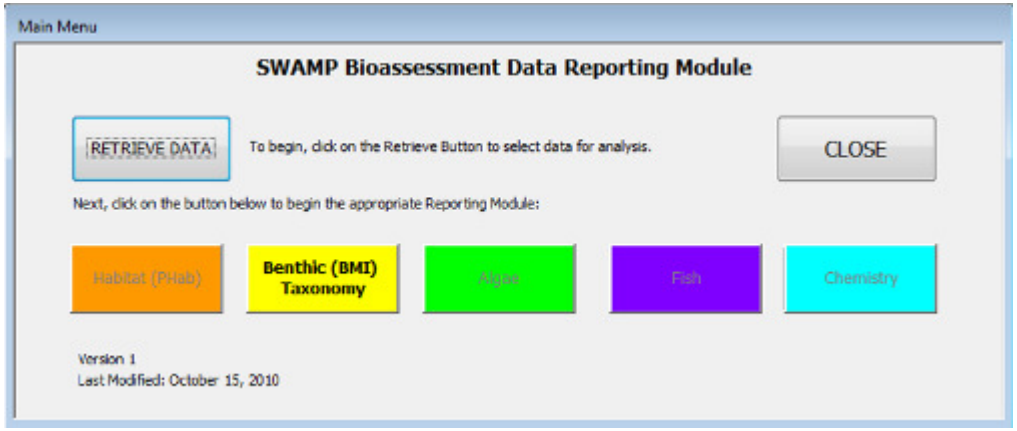
- When field data is entered and checked within the forms, user exports data to Excel templates (Field and Taxonomy)
- User runs completed Excel template through online checker to check for errors against business rules for the SWAMP WS Protocol
  - If no errors, user Submits data to staging SQL database where SWAMP or CEDEN can review data prior to loading
  - Once loaded, user receives confirmation email with unique code and specific output of metrics or indices related to PHAB and BMI data



Data Out

- Historically, relied on CalEDAS Reporting Module (RM) for reporting BMI taxonomy
- Goal for SWAMP is to create RM for:
  - BMI Taxonomy
  - PHAB including Algae
  - Algae Taxonomy
  - Chemistry & Toxicity (water, sediment)
  - Fish
- Data retrived will be available for all RMs



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Reporting Module (RM)

- SWAMP
  - MS Access desktop application
  - Data imported through internet from SWAMP or CEDEN SQL Server Data Mart
  - Full functionality including ability to change settings

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Reporting Module (RM)

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  - MS Access desktop application
  - Data imported from SWAMP or CEDEN through internet from SQL Server Data Mart
  - Full functionality including ability to change settings
- CEDEN
  - Online web application
  - Data imported from CEDEN only
  - Same underlying structure as SWAMP RM but less functionality
    - Settings defaulted based on reporting requirements

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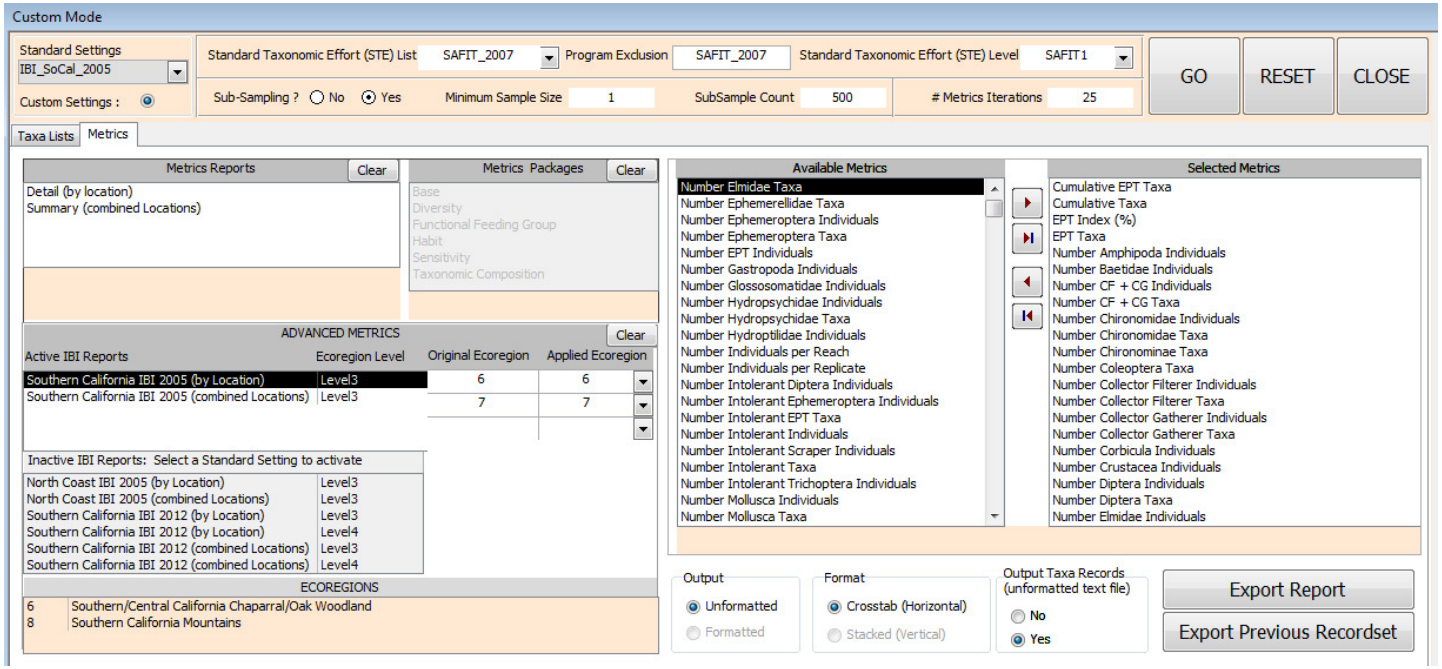
Benthic Macroinvertebrate (BMI) RM

- Building off CalEDAS
  - Same metrics but some updated
  - Adding IBIs
    - Now – SoCal, North Coast
    - Future – Eastern Sierra, Central Valley



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Physical Habitat (PHAB) RM

- New development
- Working with Pete Ode and Andy Rehn (DFG-ABL), Revital (RWQCB 2), and Raphael Mazor (SCCWRP) to incorporate metrics
  - EMAP (Kaufmann et al. 1999)
  - SWAMP
  - RWQCB 2
- Will include Algae PHAB data and metrics

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Future RMs

- Algae Taxonomy
  - Waiting on Master taxa list to be developed so can load data
  - Metrics and IBIs based on:
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- Fish
  - ???

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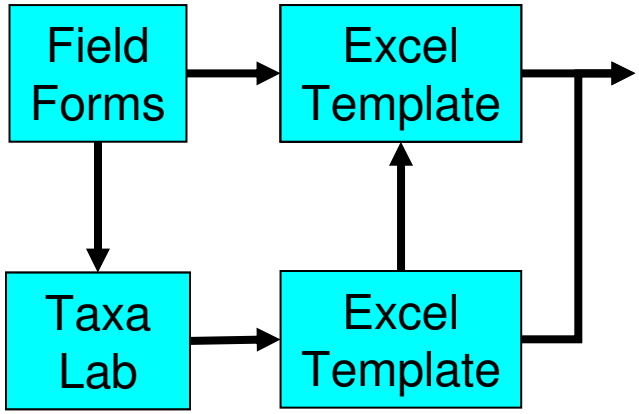
SWAMP Data Flow & Timelines



CEDEN Help Desk

Available now

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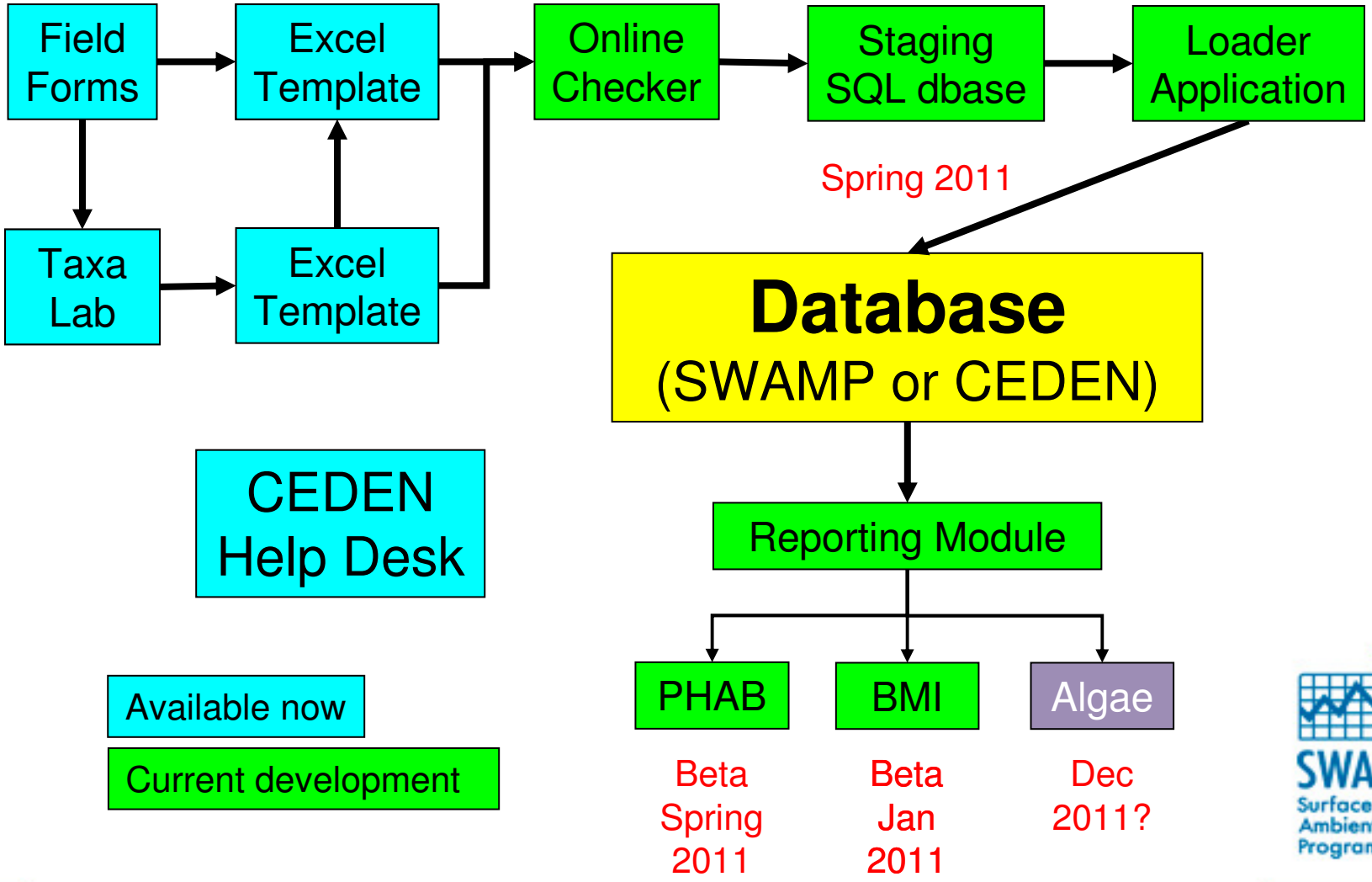

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  - Set aside funds for data management
- SWAMP plans to have base tools ready by Spring 2011 and CEDEN should be ready to accept and report bioassessment data in Summer 2011 if everything stays on schedule

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Contact Information

- Marco Sigala
  - msigala@mlml.calstate.edu
  - 831-771-4173
- MLML SWAMP web site (Docs & Resources)
  - http://swamp.mpsl.mlml.calstate.edu/
- Help Desk
  - Data Comparability – Stacey Swenson (swamphelpdesk@mlml.calstate.edu)
  - QA Comparability – Will Hagan (swampqa@mlml.calstate.edu)
- Revital Katznelson (Flexi-Grid)
  - revitalk@sbcglobal.net
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