Critical Elements: Progress Since Review

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Critical Element Review

- 1-day reviewed – June2006
- Streams & Rivers - Level 3 (94%)
- Recommendations
  - Increase spatial density and amount of sample locations
  - Add second biological assemblage
  - Improve diagnostic capabilities
  - Improve better integration of data
- Wetlands – Level 2 (76%)

Critical Elements

1. Index Period
2. Spatial Coverage
3. Natural Classification
4. Criteria for Ref
5. Ref
6
7
8. ple Processing
9. Data Management
10. Ecological Attributes
11. Biological Endpoints and Thresholds
12. Diagnostic Capabilities
13. Professional Review and Documentation

Major progress: biocriteria for second assemblage: algae

Critical Elements

1. Index Period
2. Spatial Coverage
3. Natural Classification
4. Criteria for Reference Streams
5. Reference Conditions
6. Taxonomic Resolution
7. Sample Collection
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Environmental Assessment and Geographic Database (EGAD)

- **New DEP database that stores all sampling data for departmental programs**
  - **Water quality (streams, lakes, wetlands,marine)**
    - **macroinvertebrates, algae, fish, fish tissue**
    - **Chemistry, habitat, landscape**
  - **Groundwater quality**
  - **Air Quality**
  - **Chemical spills, remediation, and Superfund**
- **12 million records – 105 users and growing**

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Benefits of EGAD

- **Improves data consistency**
  - **Same data format**
  - **Same parameters**
- **Facilitates data exchange.**
- **Allows us to ask more complex, interdisciplinary questions.**
- **Permission settings prevent accidental or “unauthorized” data changes.**

RIVER AND STREAM MONITORING
- River/Stream Monitoring Home
- Atlantic salmon rivers
- Biomonitoring
  - Contacts
  - History
  - Maps and Data
  - Materials
  - Sampling
  - Why
- Dioxin
- Modeling & data reports
- Stream studies

L&W Home > Monitoring & Assessment > Biomonitoring

Biomonitoring

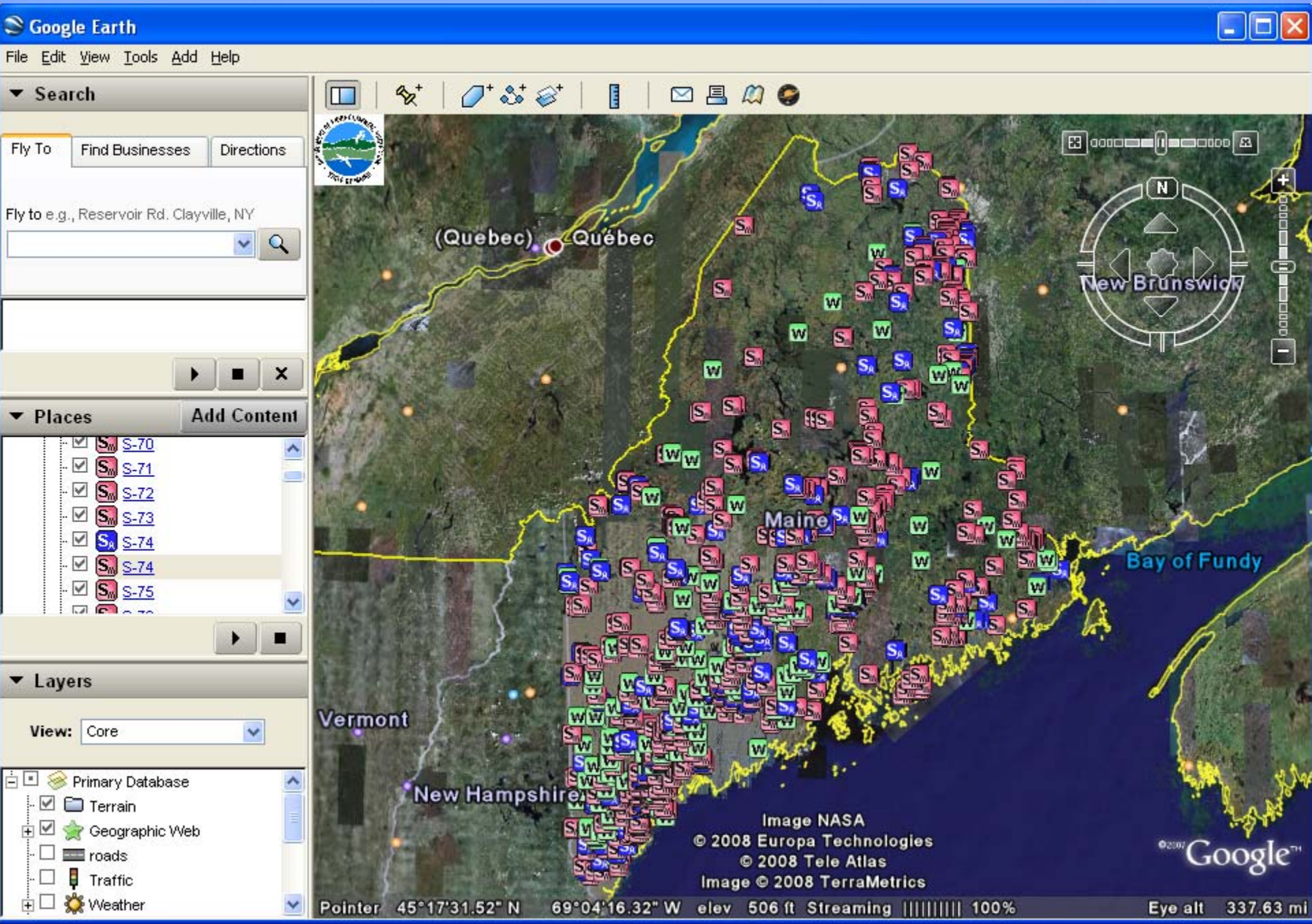
- Contacts. Who to contact for more information.
- History. Short history of our program.
- Maps and Data . Find sampling locations and review data.
- Materials. Reports, publications, SOPs and other quality assurance materials, etc.
- Sampling and analysis. Overview, field methods, data analysis methods, and descriptions of algae and macroinvertebrates.
- Why biological monitoring? Importance of biological monitoring and assessments.

Introduction

The Maine DEP's Biological Monitoring Program assesses the health of rivers, streams, and wetlands by evaluating the composition of resident aquatic benthic macroinvertebrate and algal communities. The Biological Monitoring Program can tell how healthy the waterbody is based on the amount and types of aquatic macroinvertebrates and algae living in a waterbody. The amount and types of macroinvertebrates and algae living there change when waterbodies are polluted or disturbed. For example, a polluted stream will often lack pollution-sensitive organisms like mayflies and stoneflies and will have more pollution-tolerant organisms like snails and leaches.

The Biological Monitoring Program uses their sampling results to inform a variety of management activities, such as:

- Determining if waterbodies are attaining environmental goals (criteria) associated with Class AA, A, B, and C waterbodies



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Google Earth

File Edit View Tools Add Help

Search

Fly To | Find Businesses | Directions

Fly to e.g., Reservoir Rd. Clayville, NY

Places | Add Content

- S-69
- S-70
- S-71
- S-72
- S-73
- S-74
- S-74
- S-75
- S-76

Layers

View: Core

- Primary Database
  - Terrain
  - Geographic Web
  - roads
  - Traffic
  - Weather
  - 3D Buildings
  - Borders and Labels

1506	9/21/2005	No	View
1539	8/7/2006	No	View
1629	8/7/2007	n/a	

DOWNSTREAM PHOTO
2007 downstream site photo

UPSTREAM PHOTO
2007 upstream site photo

Whitefield

Google

Pointer 44°13'22.46" N 69°35'35.29" W elev 117 ft Streaming 100%

Eye alt 6668 ft

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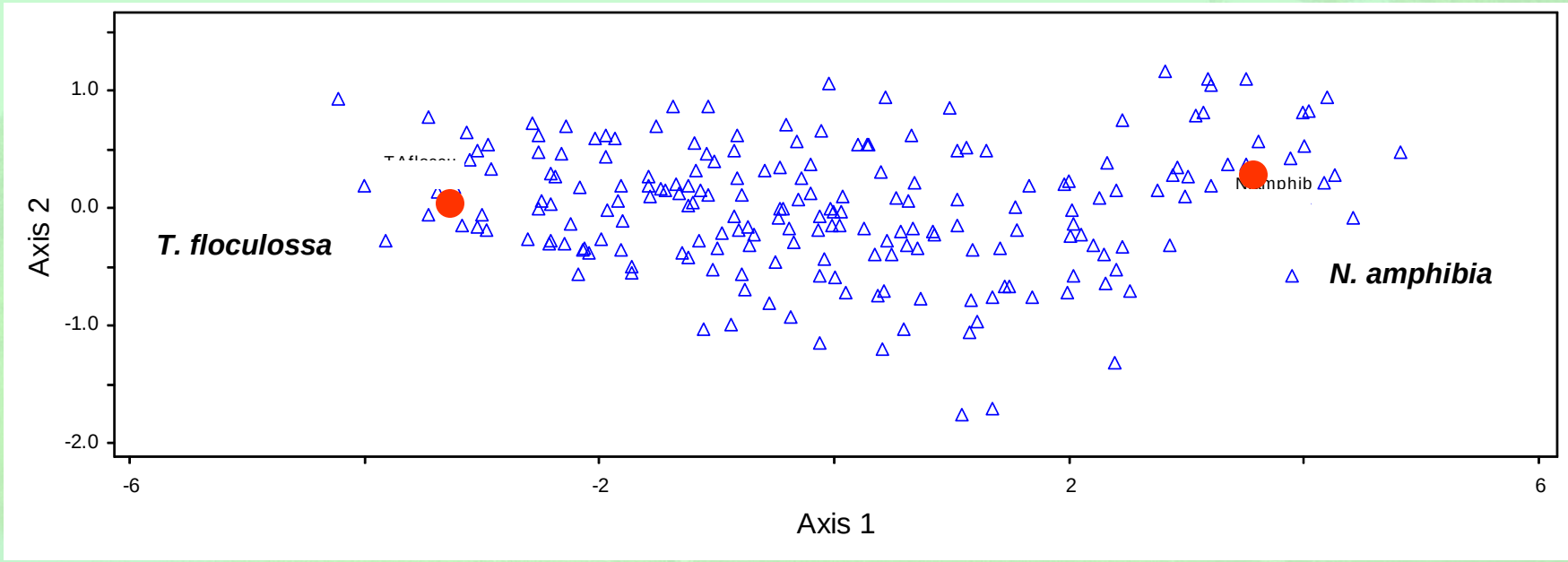
Progress Developing Diagnostic Capabilities

- **Urban Stream TMDLs (5 streams)**
  - **Multi-disciplinary Stressor ID process**
  - **% Impervious Cover TMDL based on biological and physical-chemical data**
- **Developmental planning: inference models for stream benthic macroinvertebrates**

PCA Ordination Identified Major Pattern in Species Optima



- **Axis 1 (“urbanization suite”) represents 86% of variance**
- **Rescaled axis to 1 (most sensitive) to 100**

TALU Milestones

Milestone 1. Establish Conceptual Foundation

- Establish an interdisciplinary, collaborative approach to the development of tiered uses (ecological, technical, and legal)
- Identify and acquire appropriate staff and management expertise

Milestone 2. Merge Scientific & Policy Foundations

- Link management objectives with technical program
- Evaluate for consistency with existing water quality standards framework
- Draft or refine narrative aquatic life use descriptions

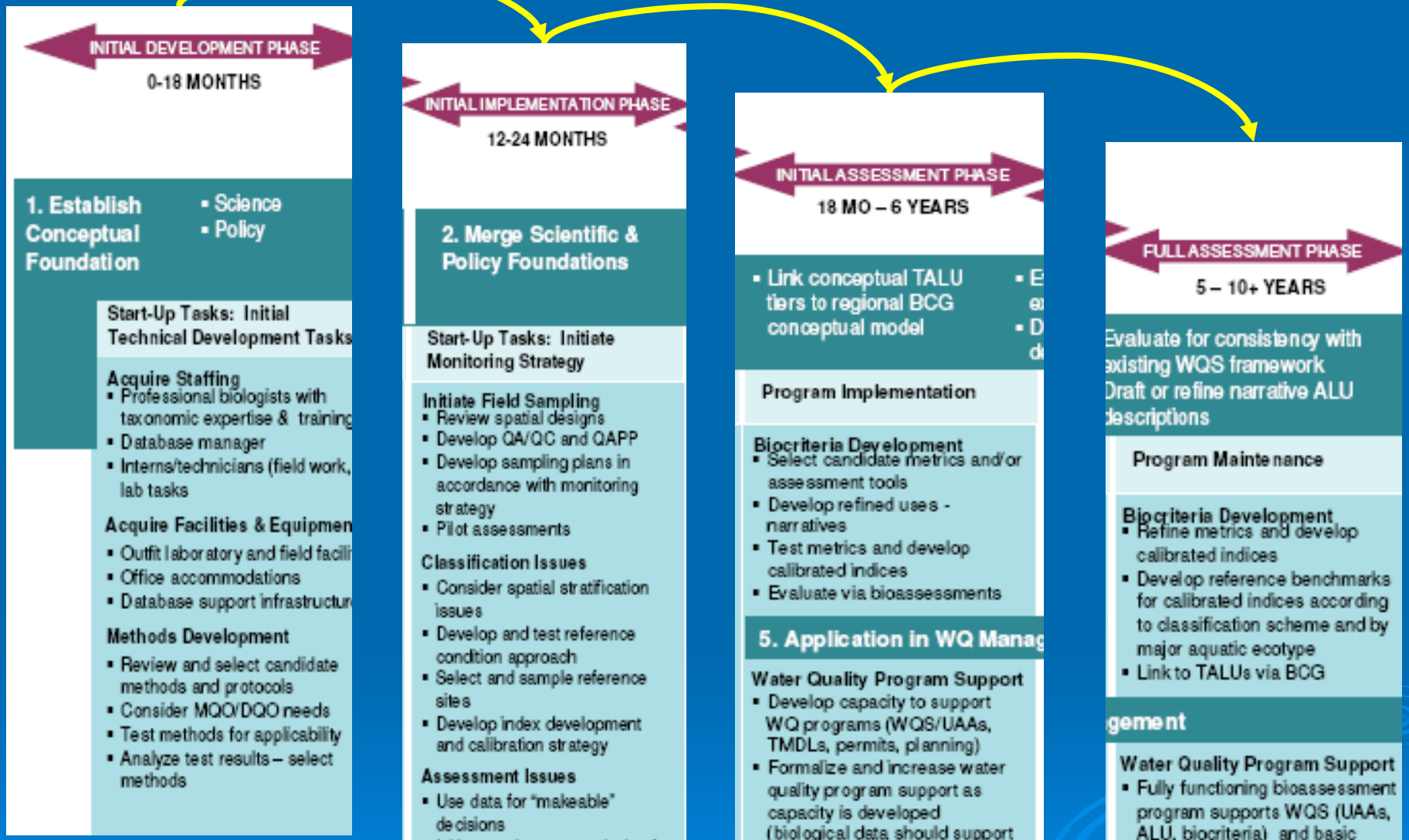
Milestone 3. Establish Monitoring Program

- Develop methods and monitoring design, establish reference conditions, build baseline database and database management system
- Logistics: staffing, facilities, and equipment

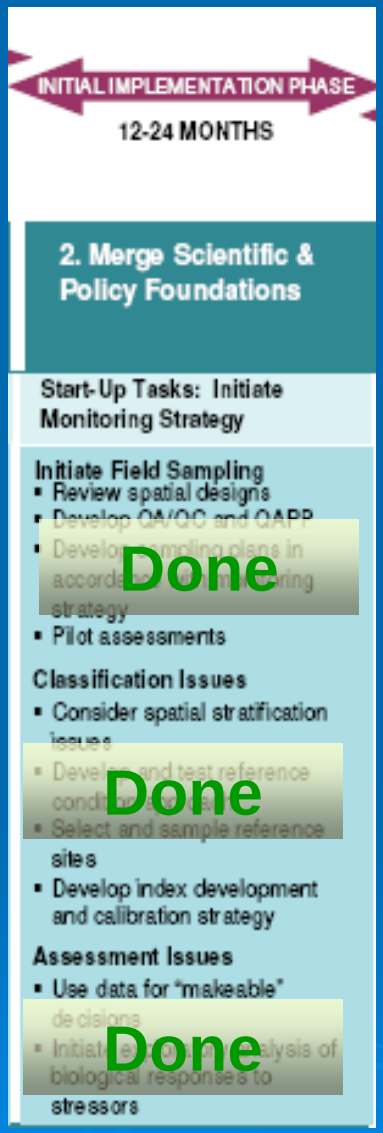
Milestone 4. Develop/Validate Quantitative Thresholds

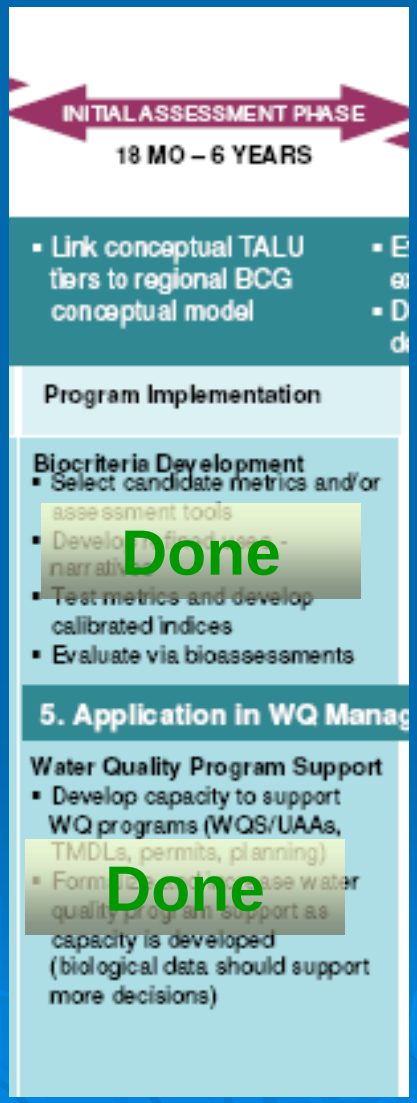
- Program implementation: develop biocriteria and water quality program support (initiating the process of using TALUs and biological assessments to support water quality management tasks)
- Validate the accuracy of ecological expectations with empirical data
- Program maintenance: refine biocriteria and maintain water quality program support (maintaining the process of using TALUs and biological assessments including the continuous evaluation of tools, criteria, and processes based on what is being learned via a systematic approach to monitoring and assessment; includes expansion to other aquatic ecotypes)

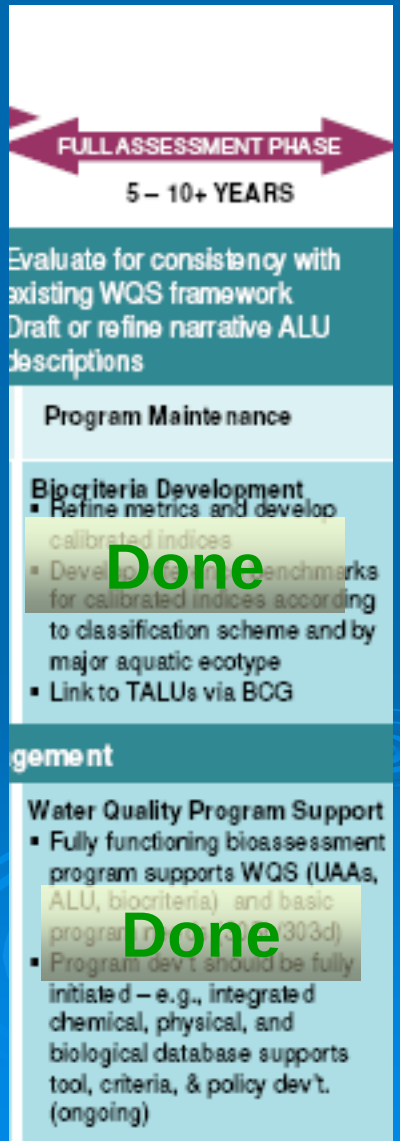
Minnesota's TALU Timeline Status



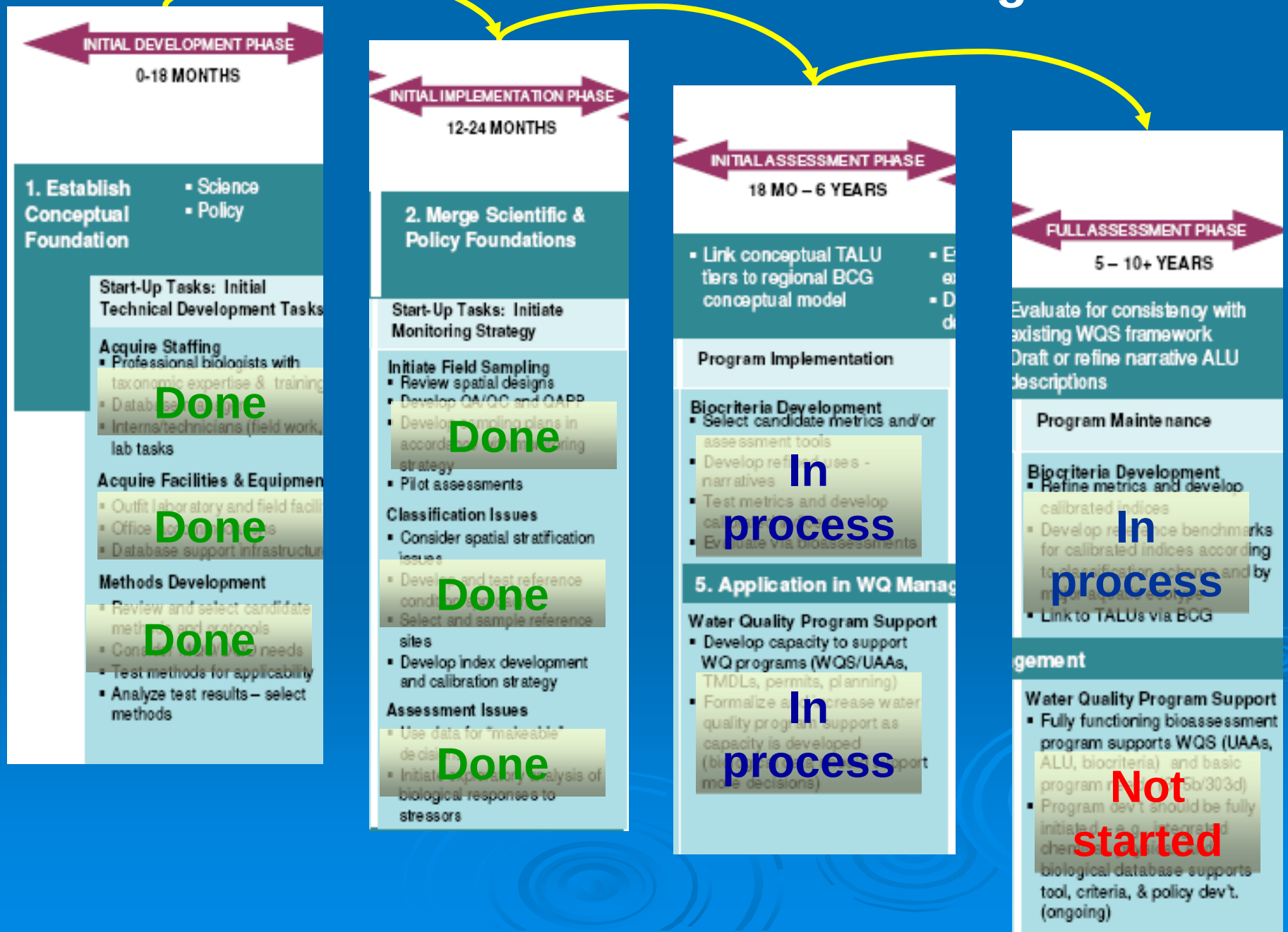
Maine River-Stream Macroinvertebrate TALU



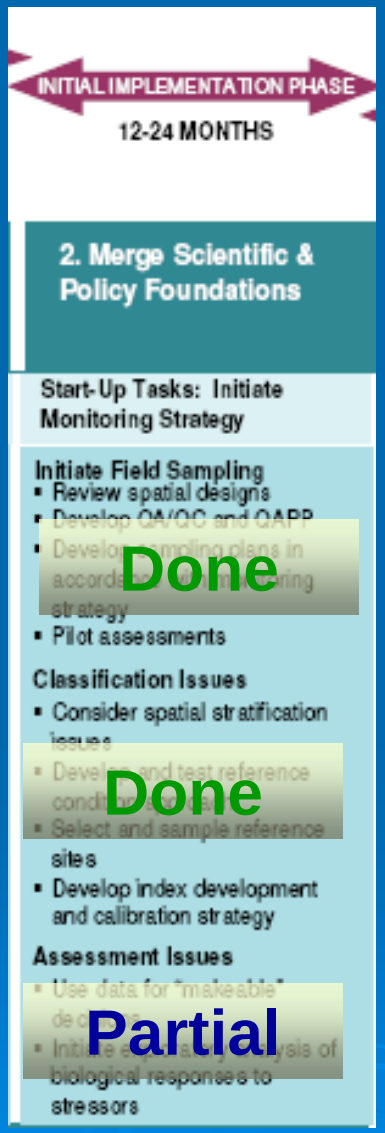


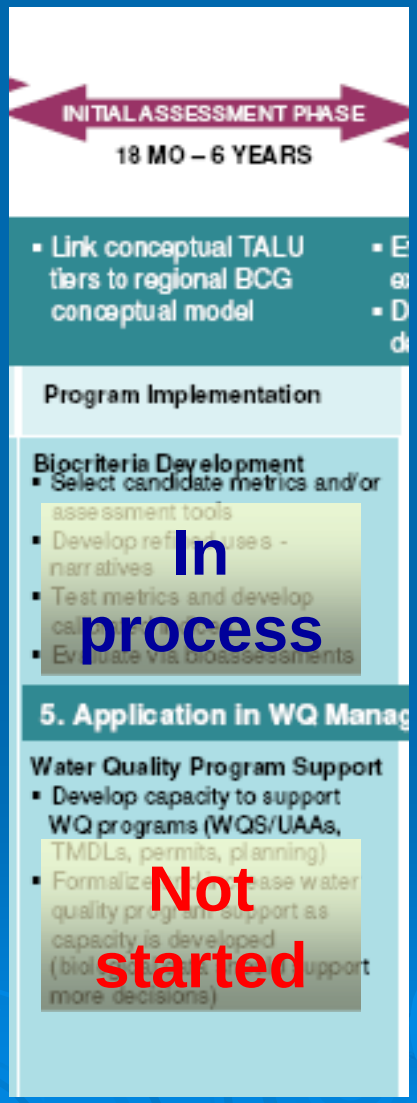


Maine Stream Algae TALU

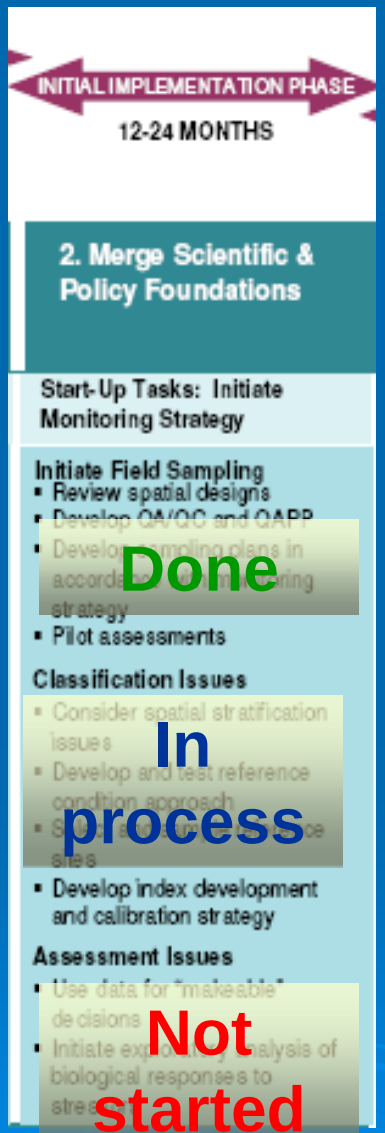


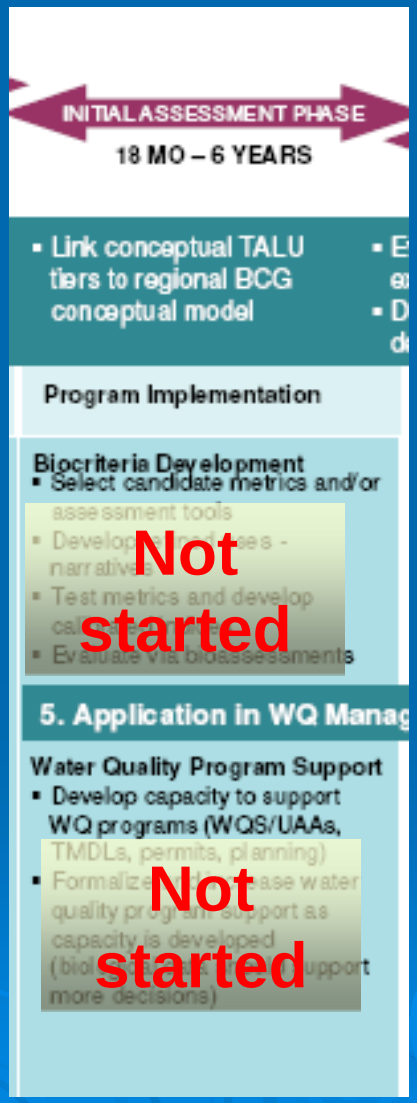
Maine Wetland Macroinvertebrate TALU





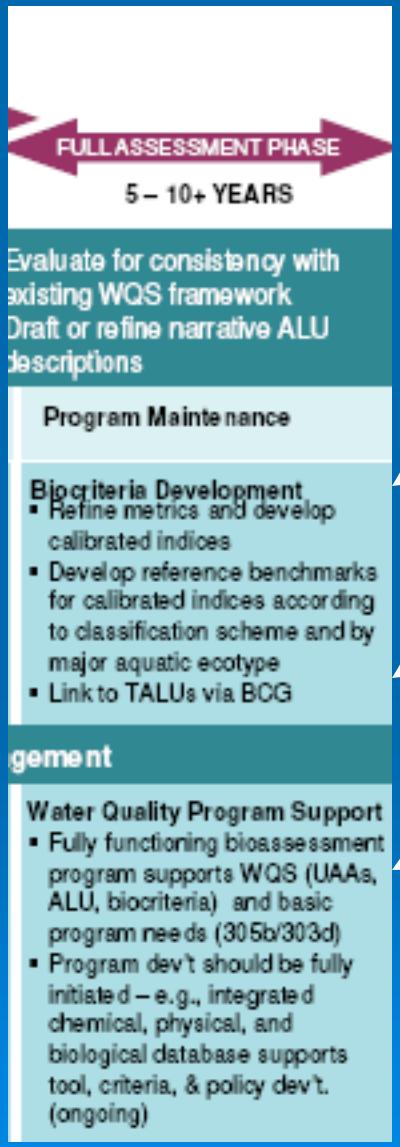
Maine Wetland Algae TALU





Maine River-Stream Macroinvertebrate TALU

"Program Maintenance"



LDM re-calibrated with new data in 1998 (due for re-calibration again)

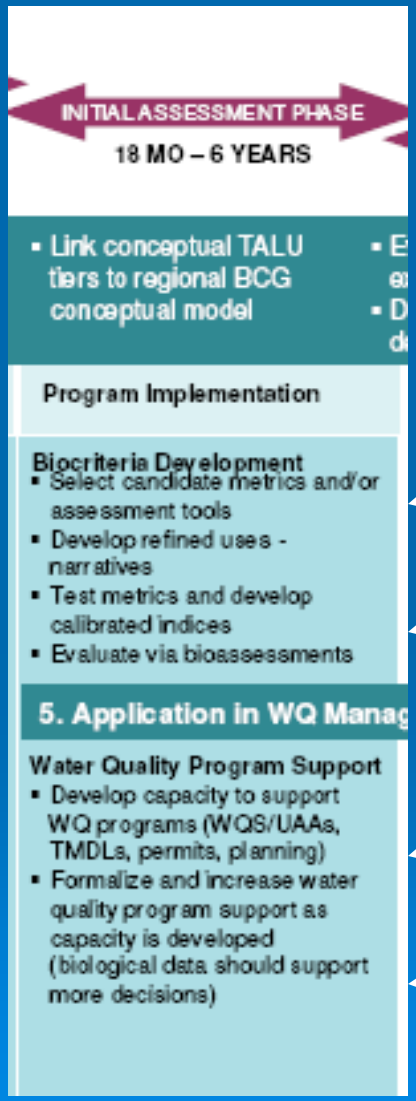
LDM fully linked to TALU's via BCG

TALU-BCG drives innovative, biologically-based TMDLs, WQ ReClass, determines need for, design of UAAs

TALU-BCG used to develop new biologically-based criteria: instream flow; nutrient criteria, etc

Maine Stream Algae TALU

"Program Implementation"



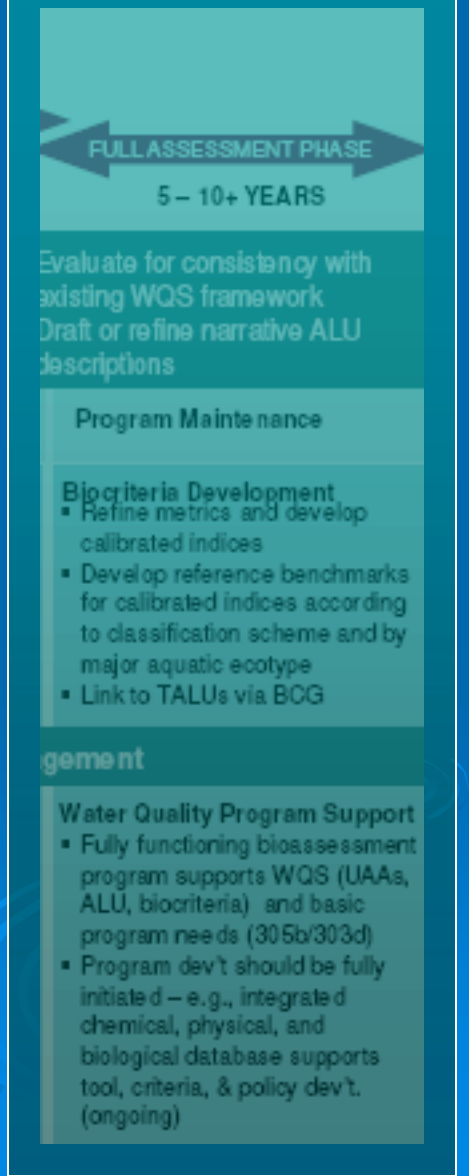
Conceptual linkage to invertebrate program & TALU via BCG is completed

Refined use narrative in place for 2nd assemblage

Metric selection and validation complete

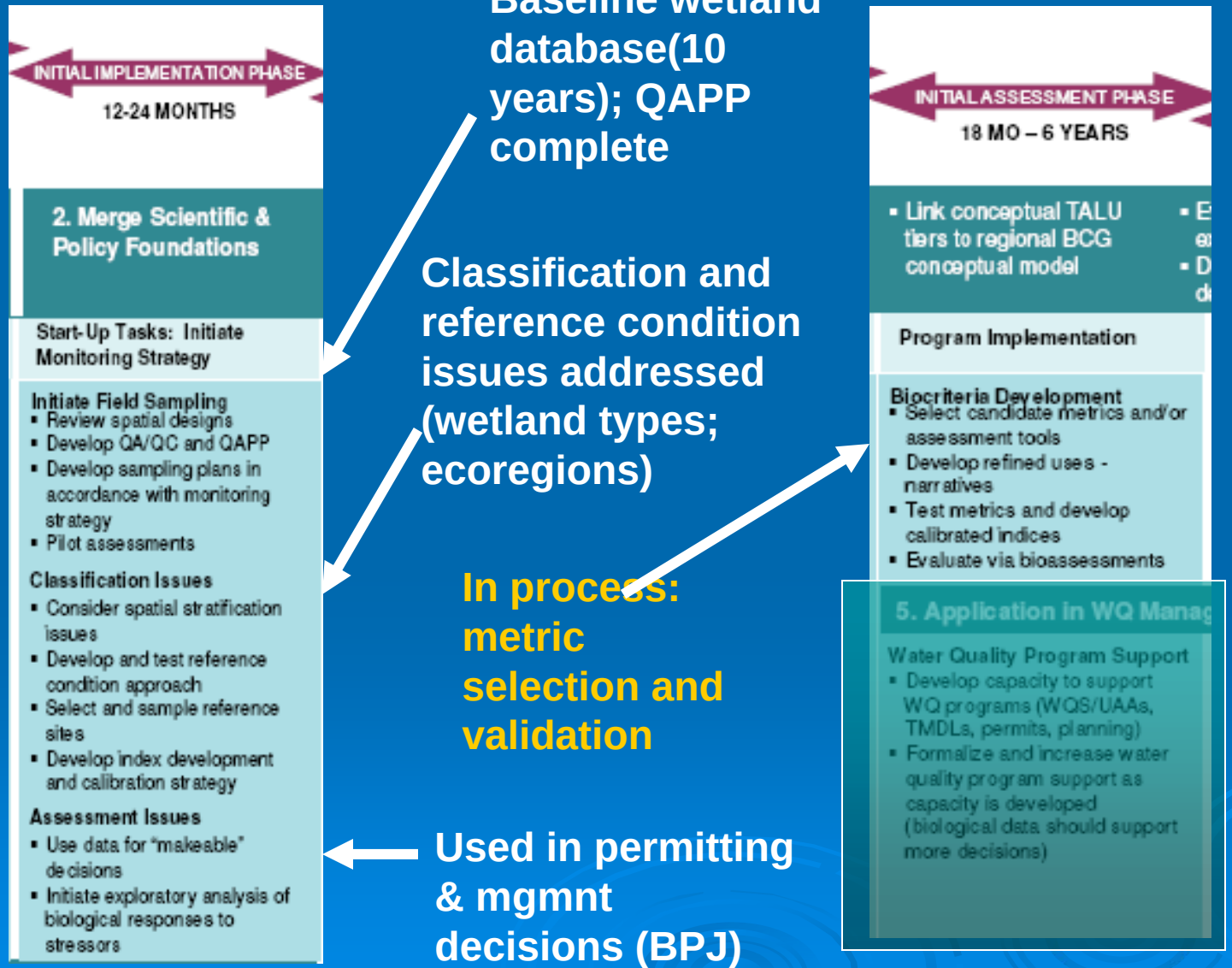
Algal data used to develop nutrient criteria rule

In process: formal rule development for 2nd assemblage



Maine' Wetland Macroinvertebrate TALU

"Program Implementation"



Baseline wetland database(10 years); QAPP complete

Classification and reference condition issues addressed (wetland types; ecoregions)

In process: metric selection and validation

Used in permitting & mgmnt decisions (BPJ)

Maine Wetland Algae TALU