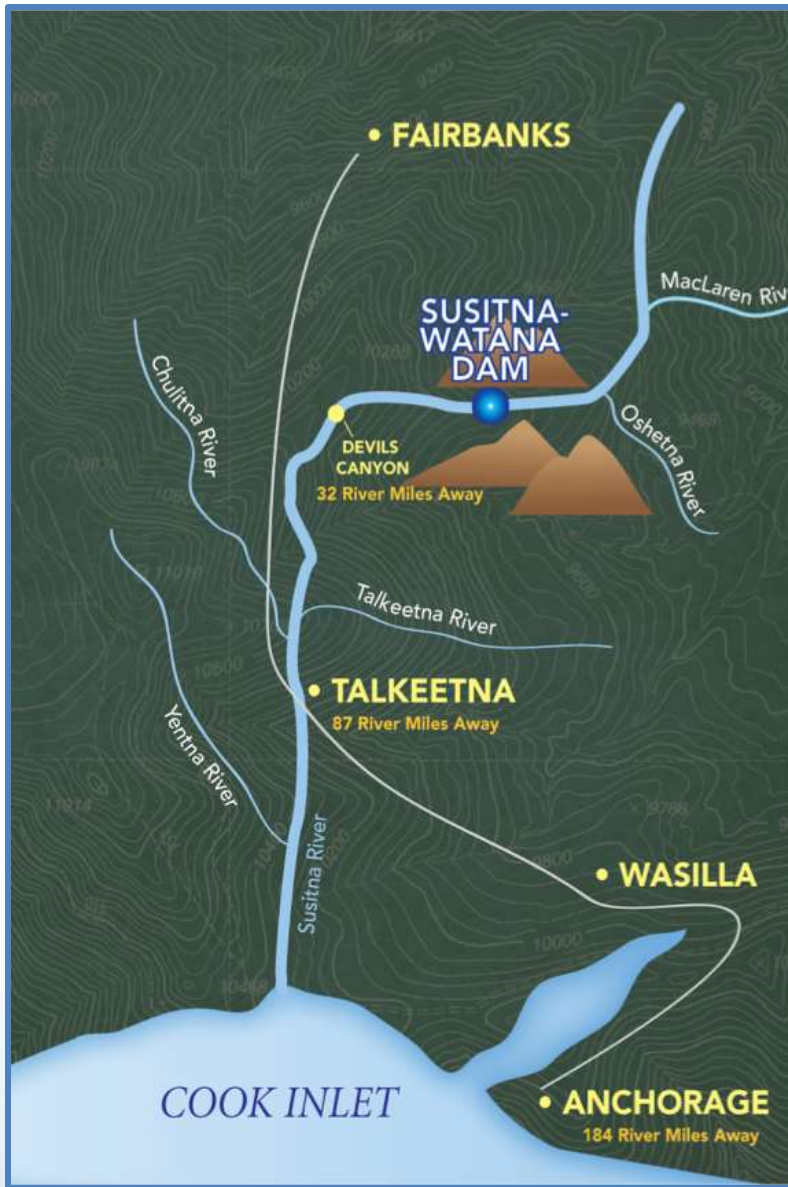


Technical Team  
Meeting  
*Riverine Modeling  
Proof of Concept*  
***Reach-Scale Fluvial  
Geomorphology  
Modeling and Inputs***

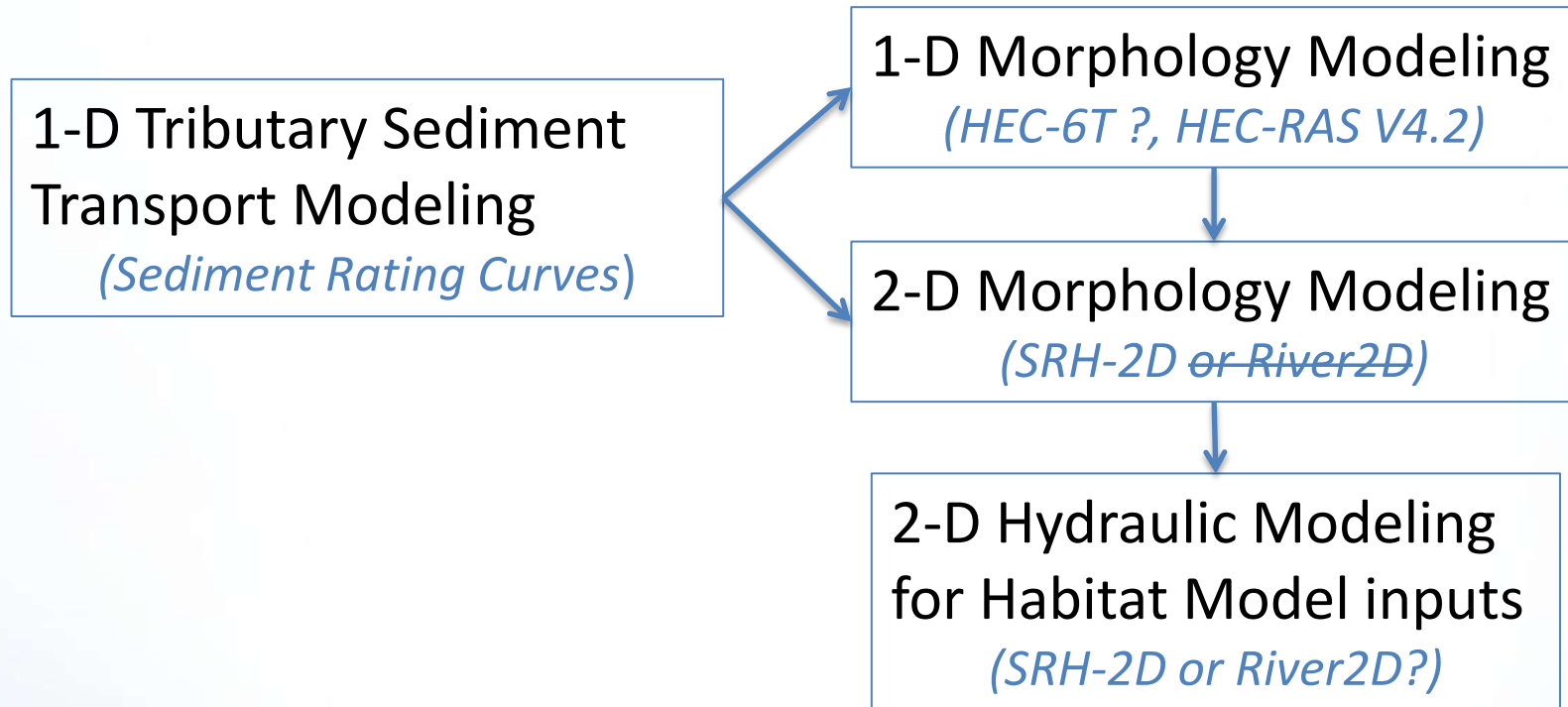
*April 15-17, 2014*

Prepared by  
Tetra Tech

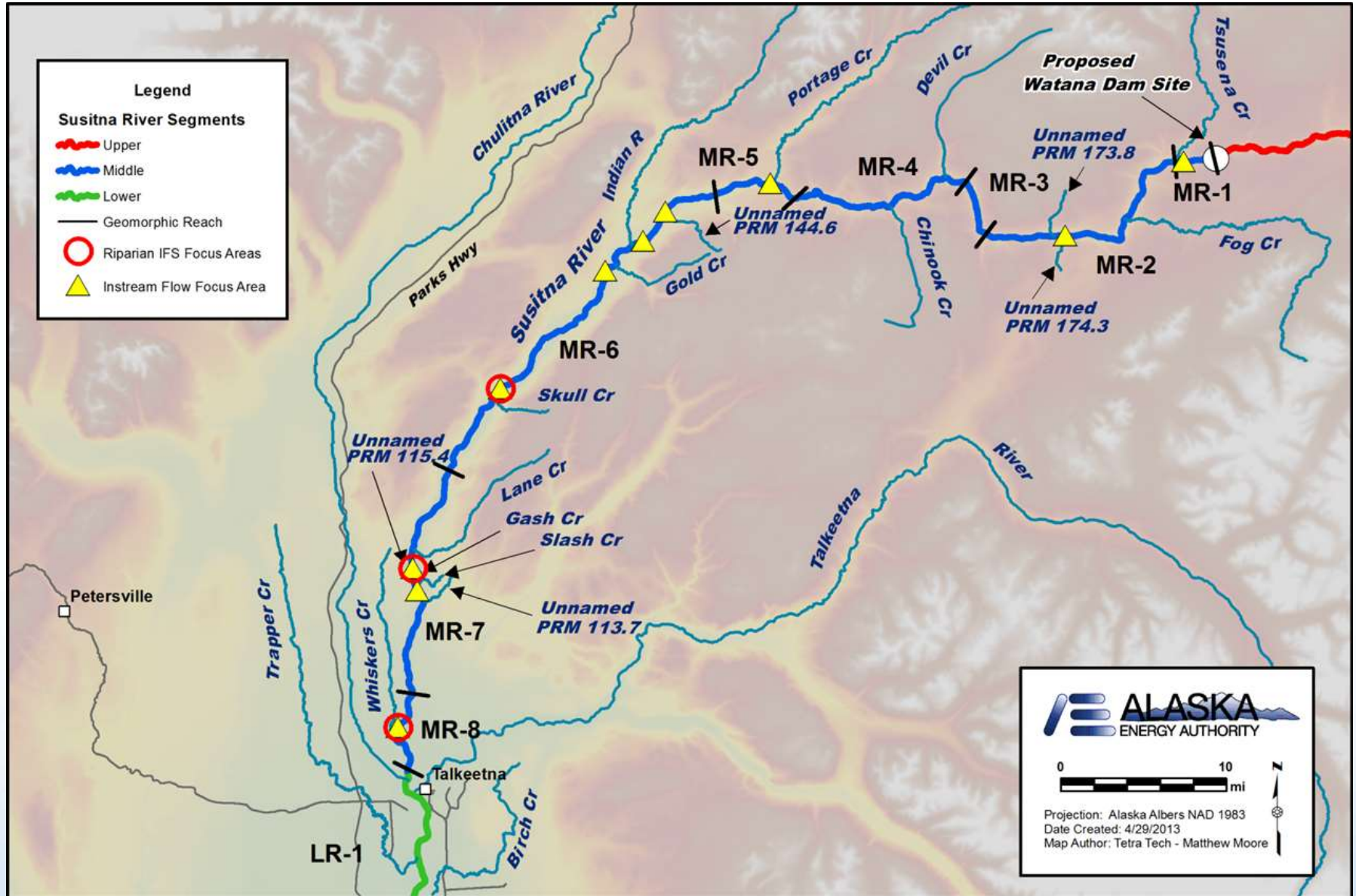


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# Fluvial Geomorphology Modeling (FGM) Approach - Models



# Middle River (MR): Fluvial Geomorphology Modeling



# Reach-Scale Bed Morphology Model

- Middle and Lower Susitna River from PRM187.2 to PRM29.9
- Includes Chulitna and Talkeetna Rivers up to USGS Gages
- Other tributaries included as flow and sediment sources
- Overbank areas from LiDAR

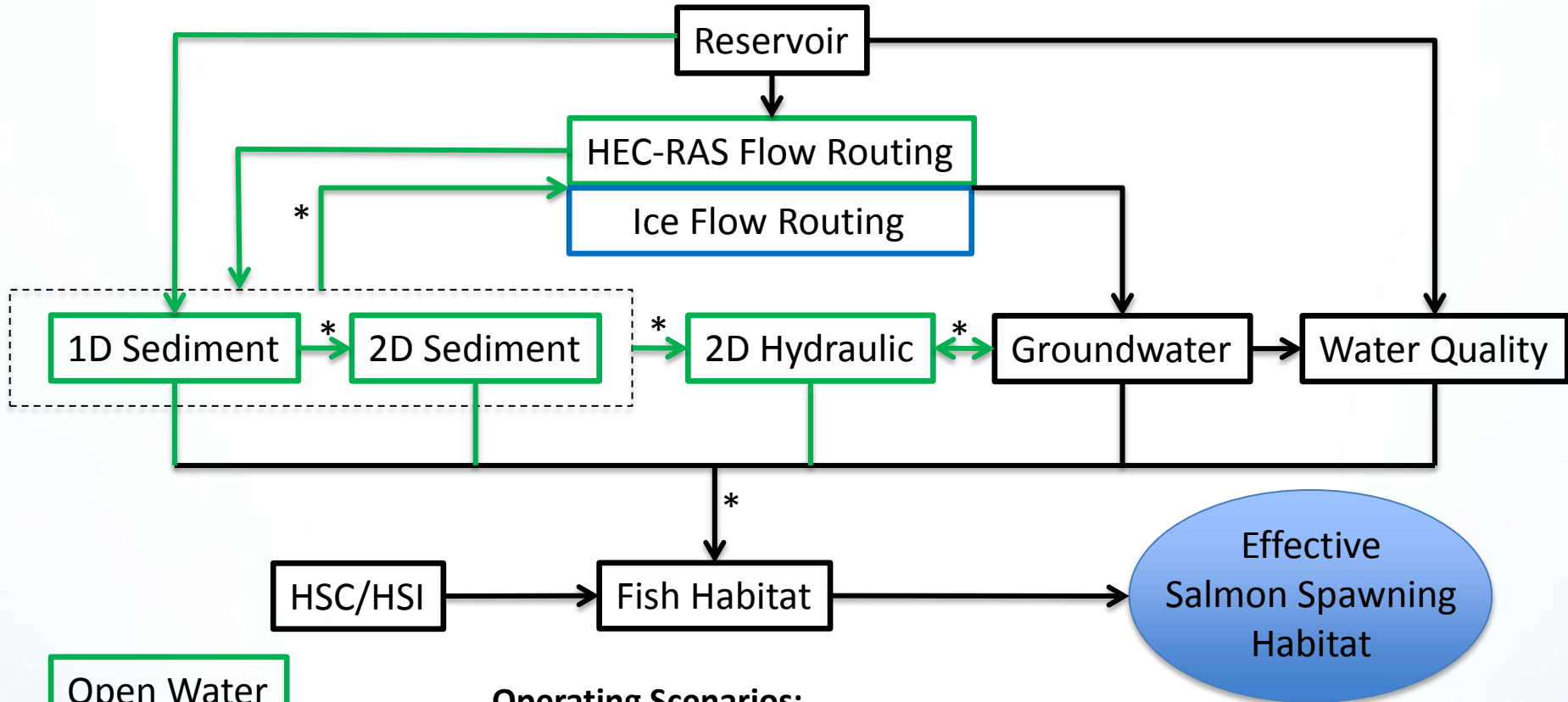
# Reach-Scale Bed Morphology Model

- Upstream and tributary flows from Operations and Flow Routing models
- Sediment inputs and bed gradations from USGS rating curves and field data
- Responses in hydraulic variables (V, D, etc.)
- Cross section average and reach-scale aggradation, degradation, water surface elevation response

# Reach-Scale Bed Morphology Model

- Future (years 25 and 50) inputs for Focus Area Models
  - Downstream water surface boundary conditions
  - Upstream flow and sediment boundary conditions
  - Main channel change

# FGM Interdependencies Flow Chart



- Open Water
- Ice Cover
- Both or N/A

## Operating Scenarios:

- Base Load
- Intermediate Load Following
- Maximum Load Following
- Run of the River

\* (Yrs 25 & 50)

# Proof of Concept - FGM

- Only 2-D hydraulic modeling presented as part of Proof of Concept
  - Year zero conditions
  - No sediment transport inputs or requirements (bed mobilization through incipient motion)
  - All habitat input requirements met by 2-D hydraulic model
  - Series of steady-state 2-D models provides results for existing conditions and operational scenarios for habitat analyses