Assumptions and Modeling for DAB TMDL Development

11/19/2012

TMDL Overview

__Kg/day

__Kg/day

__Kg/day

__Kg/day

__Kg/day

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- A TMDL Study identifies
  - all sources of pollution
  - amounts from each source
 - reductions necessary to meet water quality standards
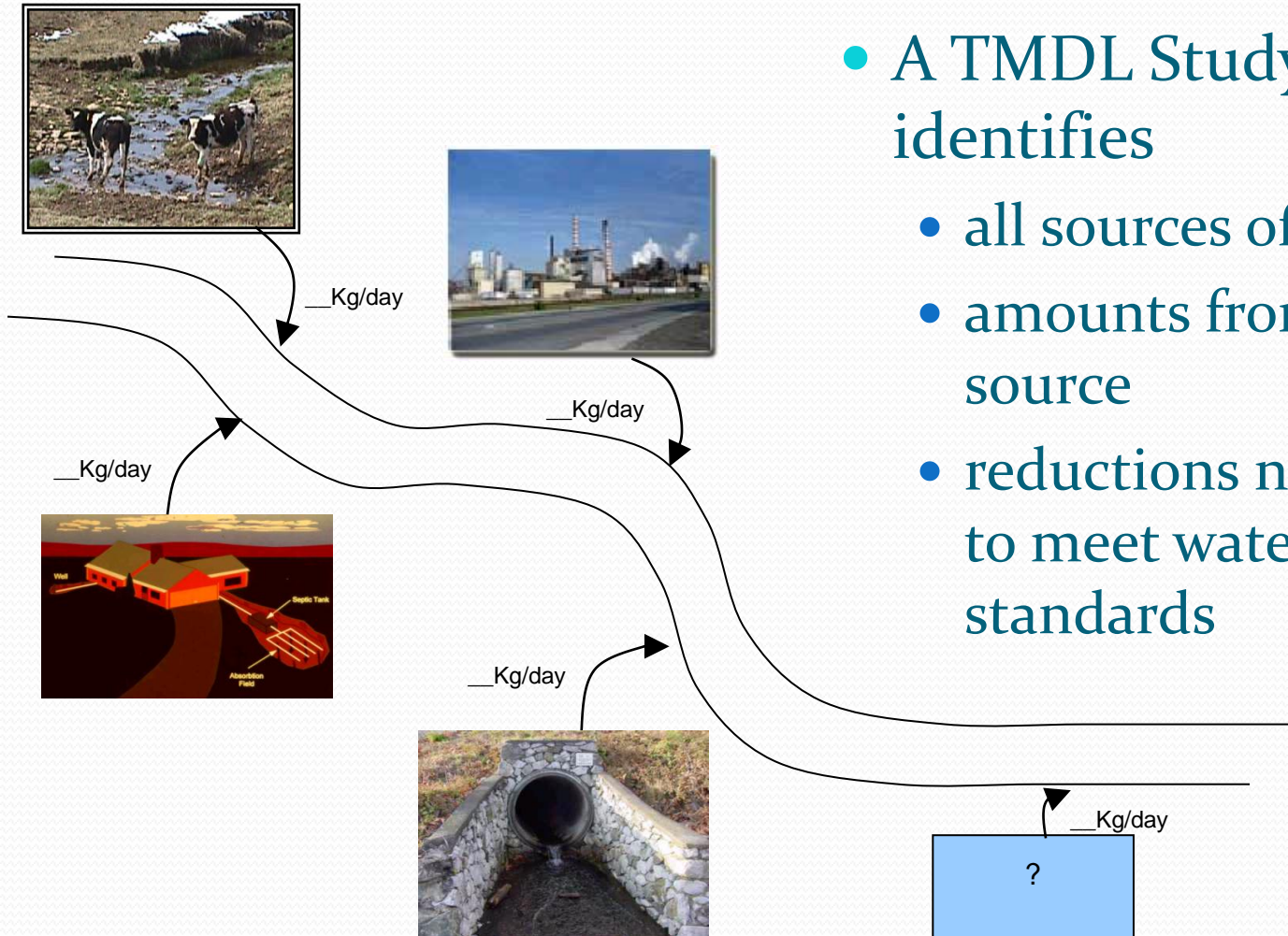
Modeling Overview

- Simulate impairment sources and transport pathways that affect sediment concentrations in San Diego Bay

- Linked watershed (LSPC) and receiving water (EFDC) models

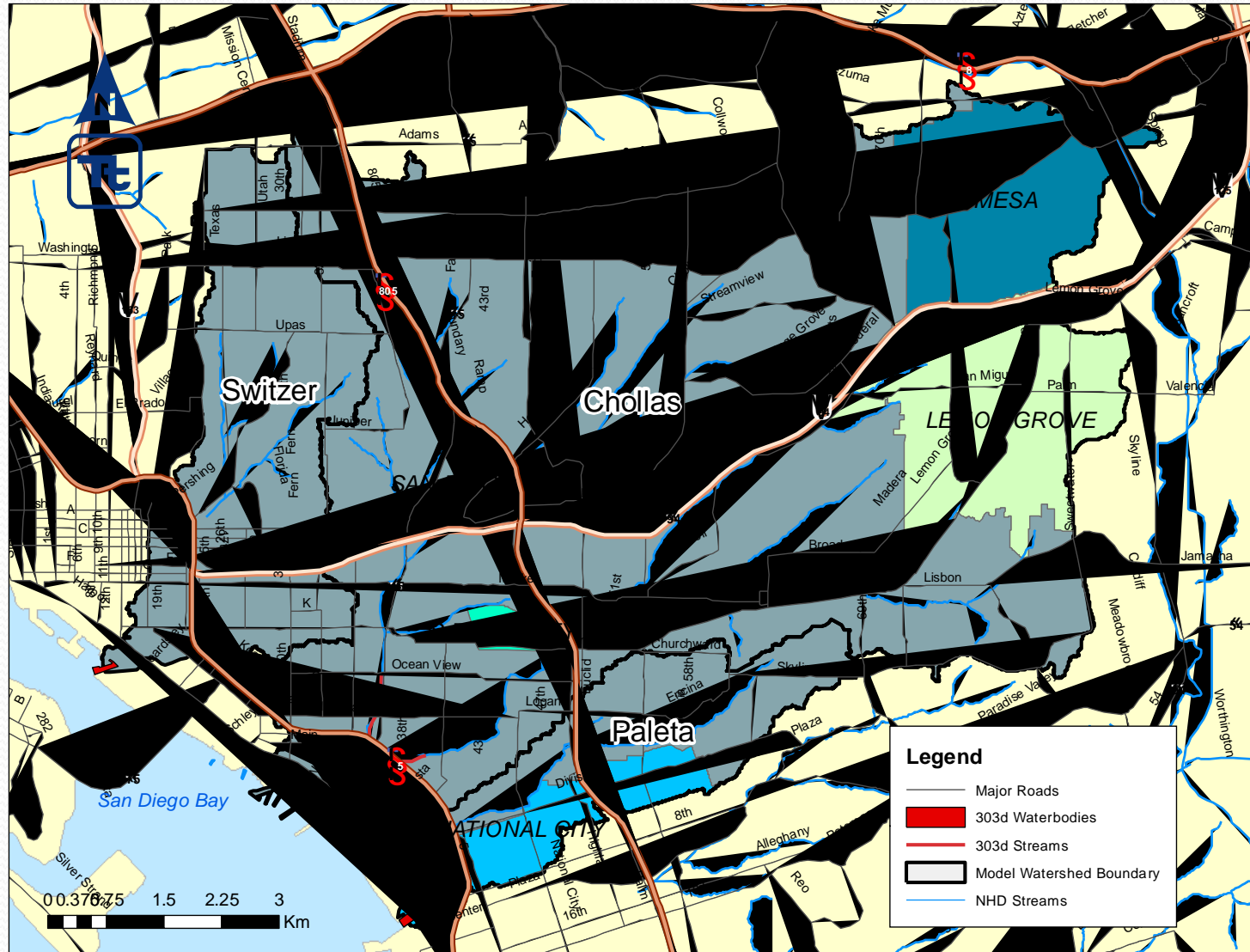- Similar modeling approach and assumptions used for CPS TMDLs

Modeling Details/Assumptions

- LSPC Watershed Model
    - Rainfall-runoff model
    - Simulate land use contributions
    - Long-term simulation – includes critical period (Oct 2004 – Apr 2005)
    - Calibration – hydrology and water quality (sediment)
    - Pollutant concentrations/loads estimated based on regression with TSS (except TPCBs)
    - TPCBs non-detect

- EFDC Receiving Water Model:
    - Model hydrodynamics and water/sediment quality
    - Incorporate LSPC time-series input
    - Initial sediment concentration = TMDL target
    - Avg results across impairment grid cells
    - Evaluate compliance with TMDL target for each pollutant. Identify % reduction required
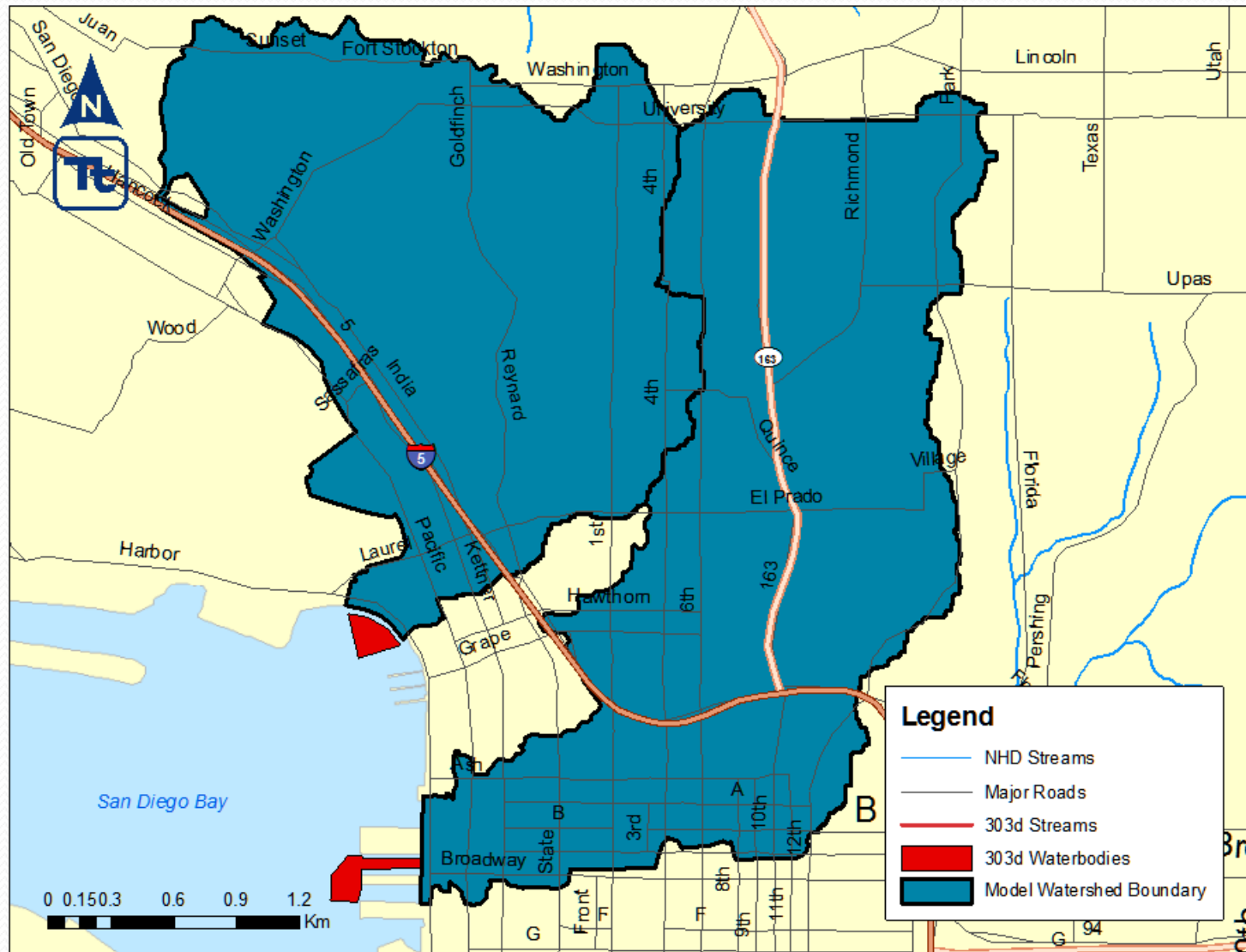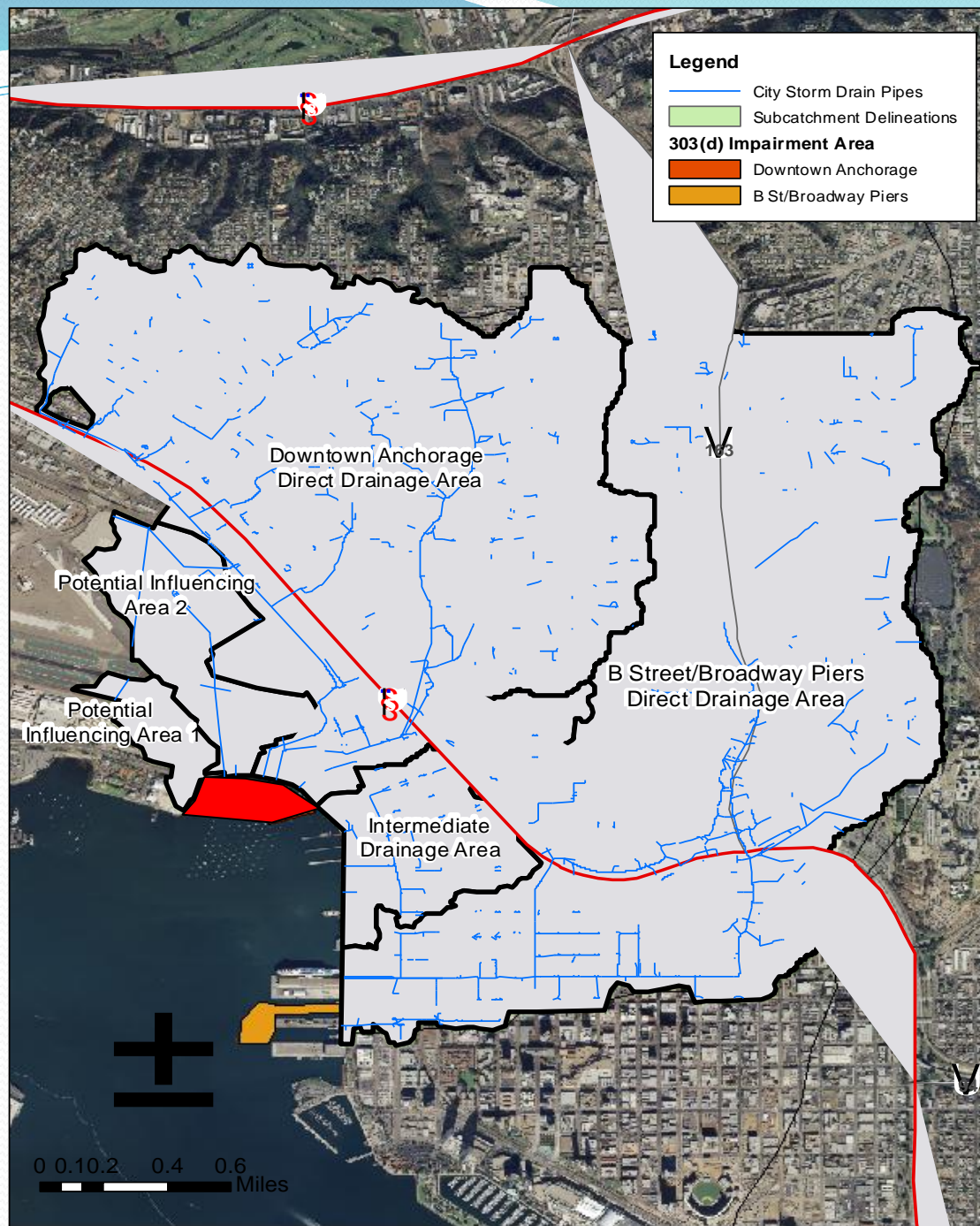   - Evaluate contribution from each drainage area

Example Model Linkage:

LSPC to EFDC Linkage
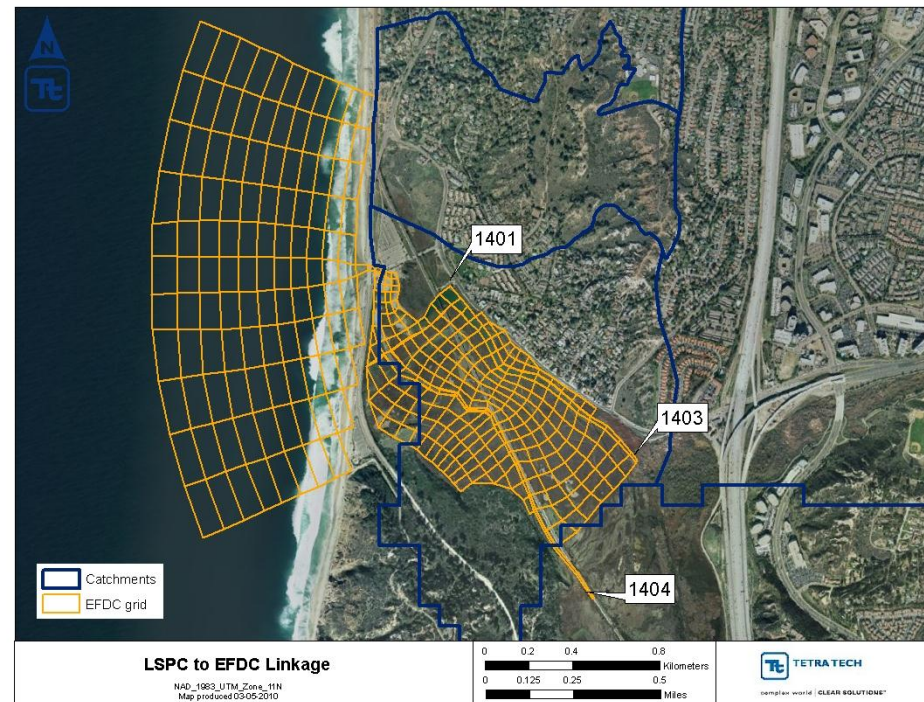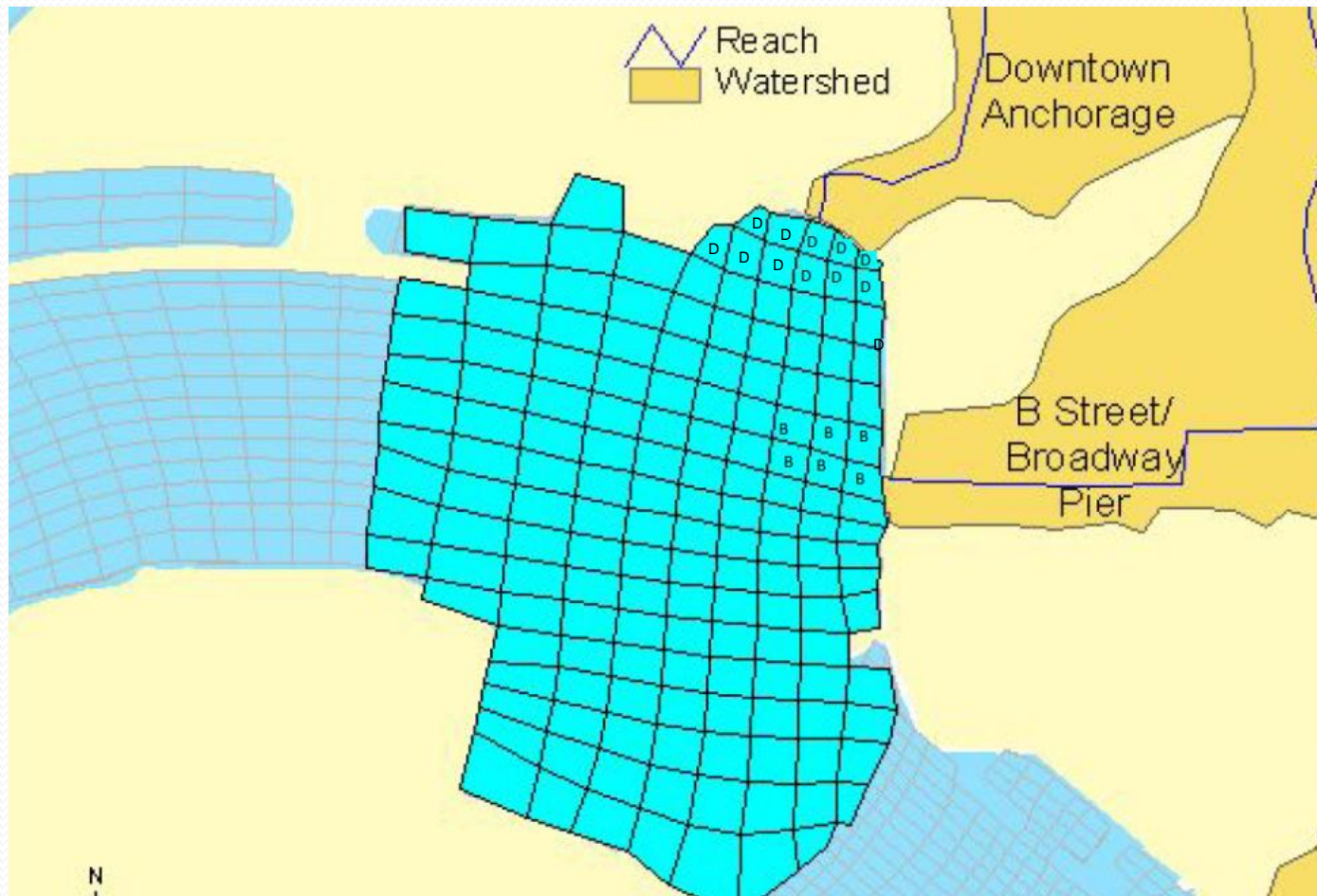
Chollas, Paleta, and Switzer Watersheds

Downtown Anchorage and B Street/Broadway Piers

Legend
- City Storm Drain Pipes
- Subcatchment Delineations

303(d) Impairment Area
- Downtown Anchorage
- B St/Broadway Piers

Downtown Anchorage
Direct Drainage Area

Potential Influencing
Area 2

Potential
Influencing Area 1

Intermediate
Drainage Area

B Street/Broadway Piers
Direct Drainage Area

0 0.10.2   0.4   0.6
Miles

EFDC Modeling Domain (grid)

TMDL Calculation

$$TMDL = \Sigma WLA + \Sigma LA + MOS$$

ΣWLA: Sum of waste load allocations

ΣLA: Assumed cleanup to TMDL targets

MOS: Margin of safety (implicit and explicit)

Allocate watershed load reduction to responsible parties