

Element A – “Identifying Sources and Causes of Impairment in the Waterbody”

Watershed Plan Development Workshop

Bandera, Texas

June 3, 2008

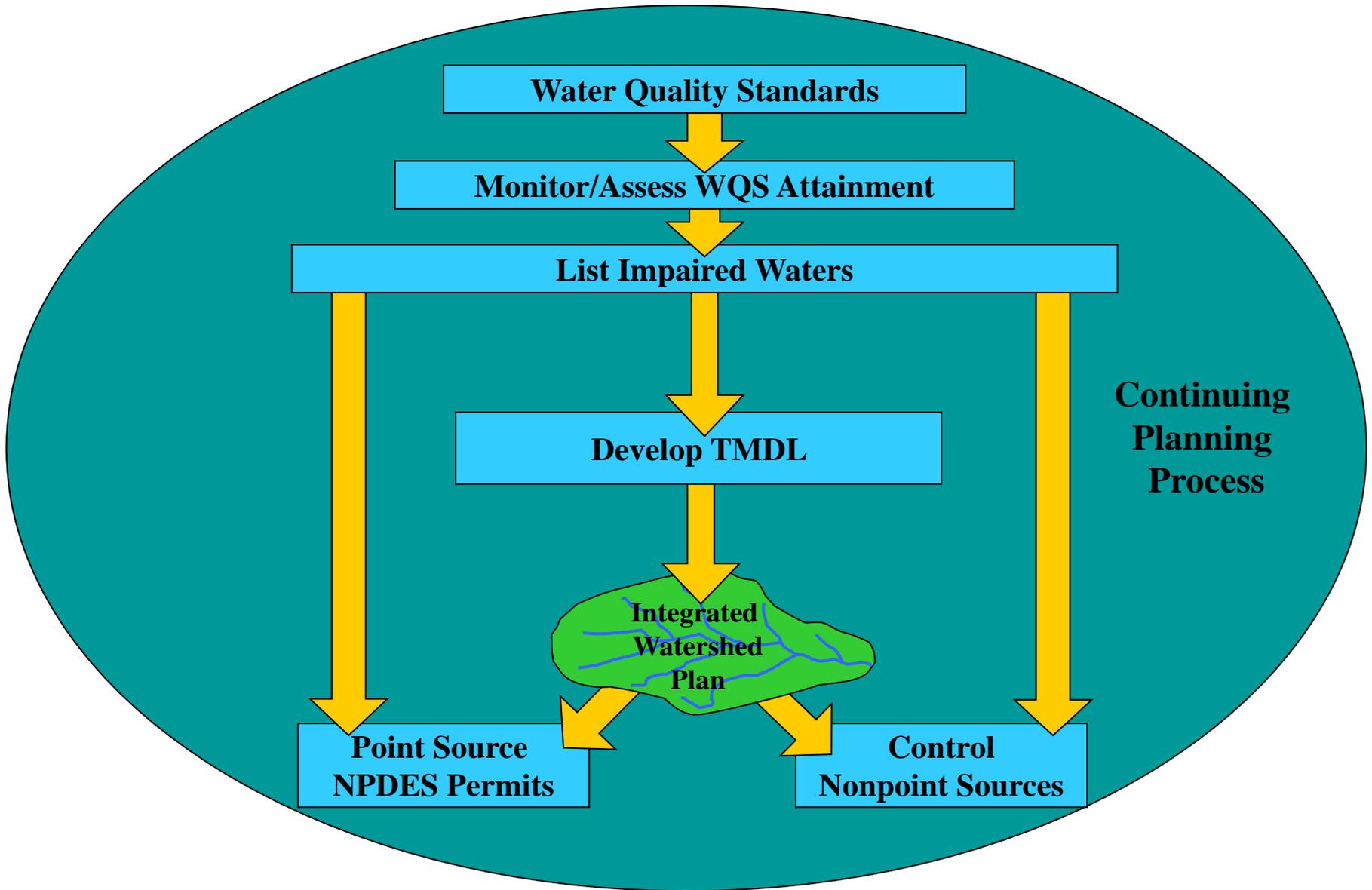
Brad Lamb

Nonpoint Source Program

Water Quality Protection Division

EPA Region 6

Clean Water Act Framework



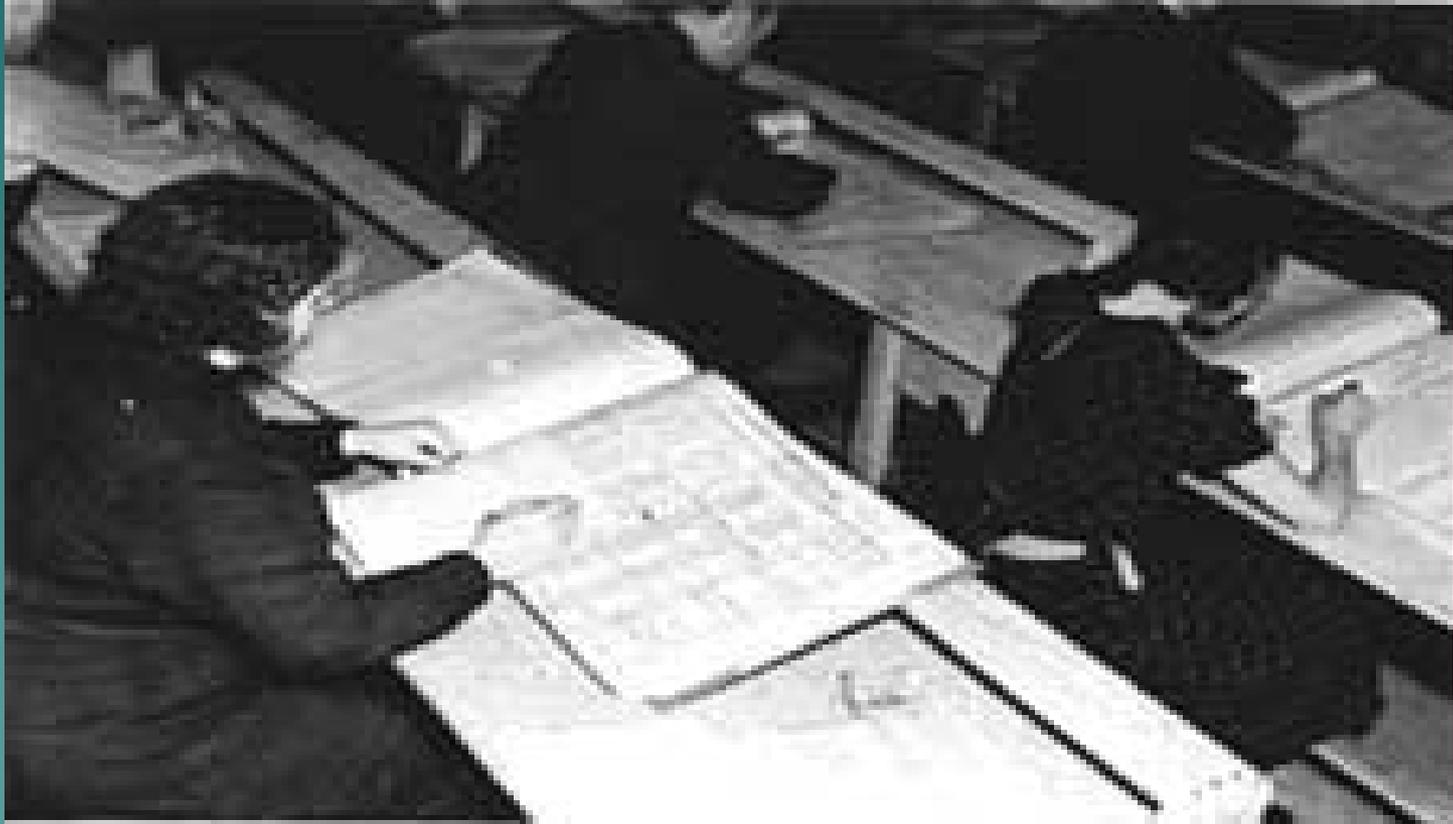
Element A

- ◆ An identification of the causes and sources or groups of similar sources that will need to be controlled to achieve the load reductions estimated in this watershed-based plan (and to achieve any other watershed goals identified in the watershed-based plan).

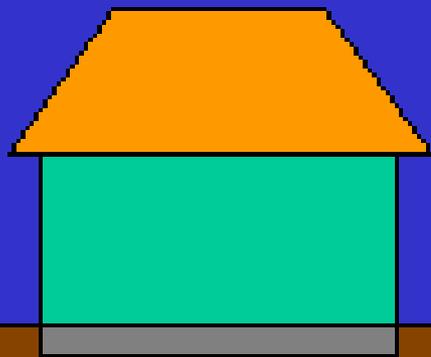
“Characterizing the watershed, its problems and pollutant sources, provides the basis for developing effective management strategies to meet water [quality] goals.”

A stylized silhouette of a mountain range in a darker teal color, located at the bottom right of the slide.

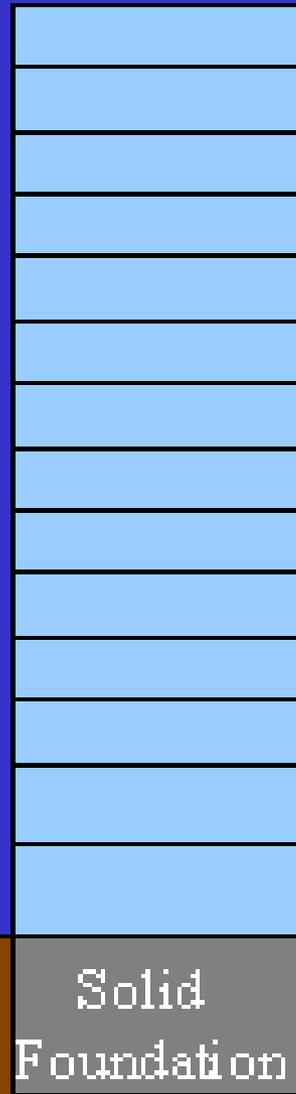
Do your homework up front!



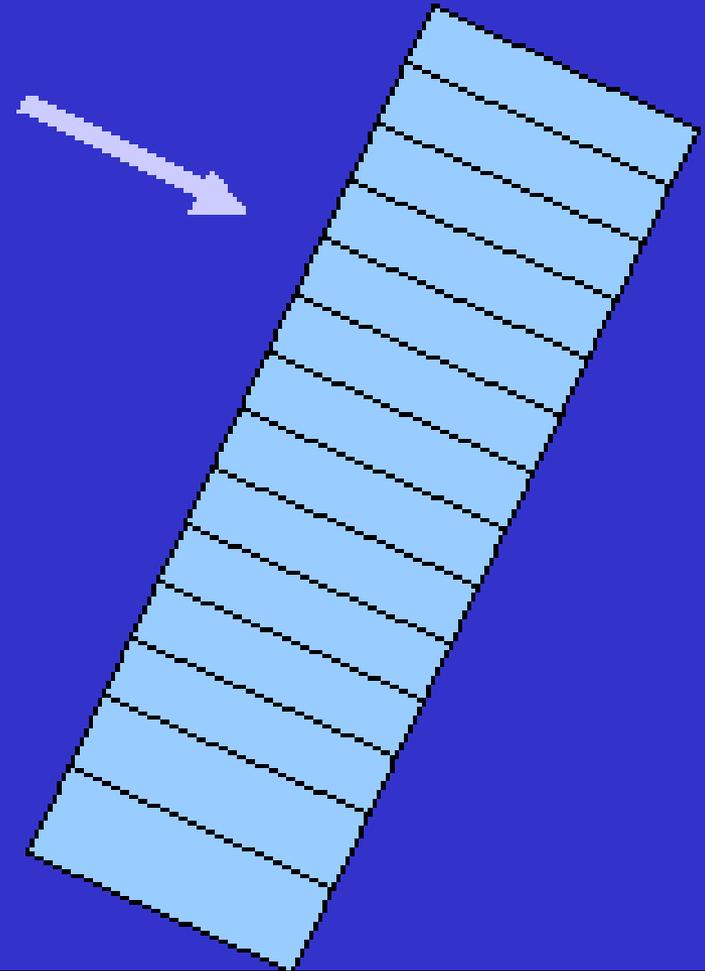
Foundations limit Height / Growth



Small
foundation



Solid
Foundation



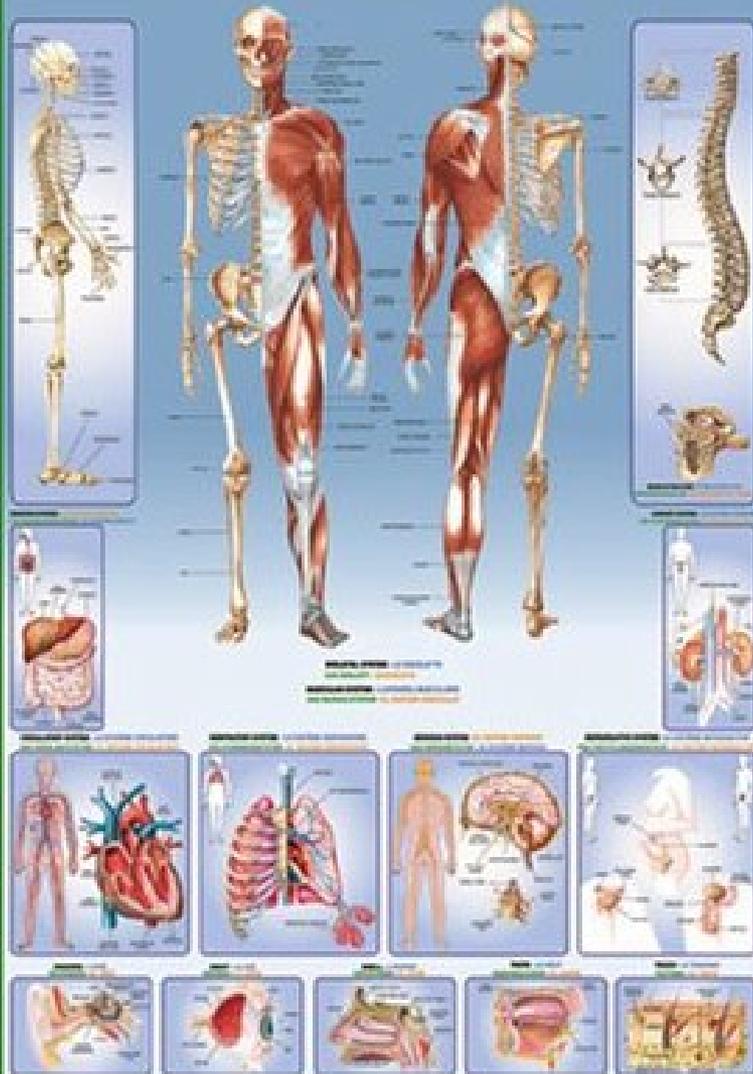
No foundation means that any
challenge could knock the
building over





THE HUMAN BODY

LE CORPS HANAVY • DER MENSCHLICHE KÖRPER •





Watershed Planning

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Watershed Planning Process - Characterize the Watershed



Characterizing the watershed, its problems, and pollutant sources provides the basis for developing effective management strategies to meet watershed goals. The characterization and analysis process helps you focus the planning efforts on the most pressing needs and targets your data collection and analyses to your specific watershed within the scope of the plan. The scope is defined as not only the geographic area to be addressed but also the number of issues of concern and the types (and breadth) of the goals you want to attain. If you define your scope and set preliminary goals early in the planning process, you will find it easier to work through the later steps in the process. The process of watershed characterization includes the following steps:

- [Gather Existing Data and Create a Watershed Inventory](#) - Data gathering and analyses helps you to characterize the existing condition of the watershed, identify pollutant sources, and estimate the pollutant loads entering the waterbodies. Data analysis is an iterative process. You will first identify what information already exists about the watershed through existing reports and datasets. Then you will create an inventory of that data.
- [Identify Data Gaps and Collect Additional Data](#) - There will always be more data to collect, but you need to keep the process moving forward and determine whether you can reasonably characterize watershed conditions with the existing information you have gathered. Conduct a data review to examine data quantity and quality and identify any significant data gaps. If you determine that you need to collect additional data, develop a sampling plan.

More info on Characterize the Watershed

- [Gather Existing Data and Create a Watershed Inventory](#)
- [Identify Data Gaps and Collect Additional Data if Needed](#)
- [Analyze Data](#)
- [Identify Causes and Sources of Pollution That Need to Be Controlled](#)
- [Estimate Pollutant Loads](#)
- [Results and Next Steps](#)

[EPA Programs](#)
[Plan Outline](#)
[Plan Examples](#)

Failing to Plan is Planning to Fail

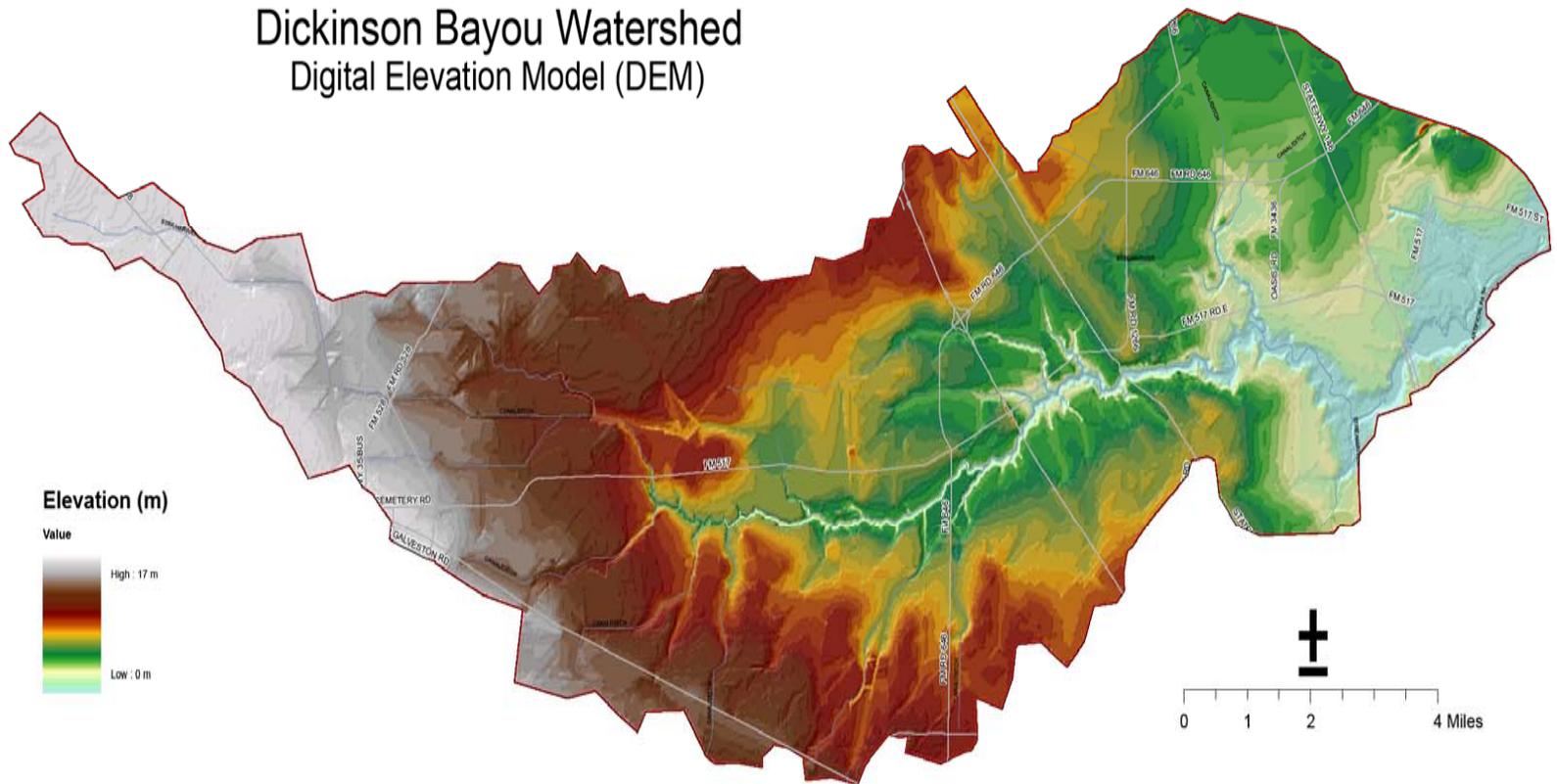
- EPA's "Handbook for Developing Watershed Plans" dedicates the first 11 Chapters to characterizing the watershed, water quality and identifying load reductions and management strategies PRIOR to beginning development of the Watershed Plan.

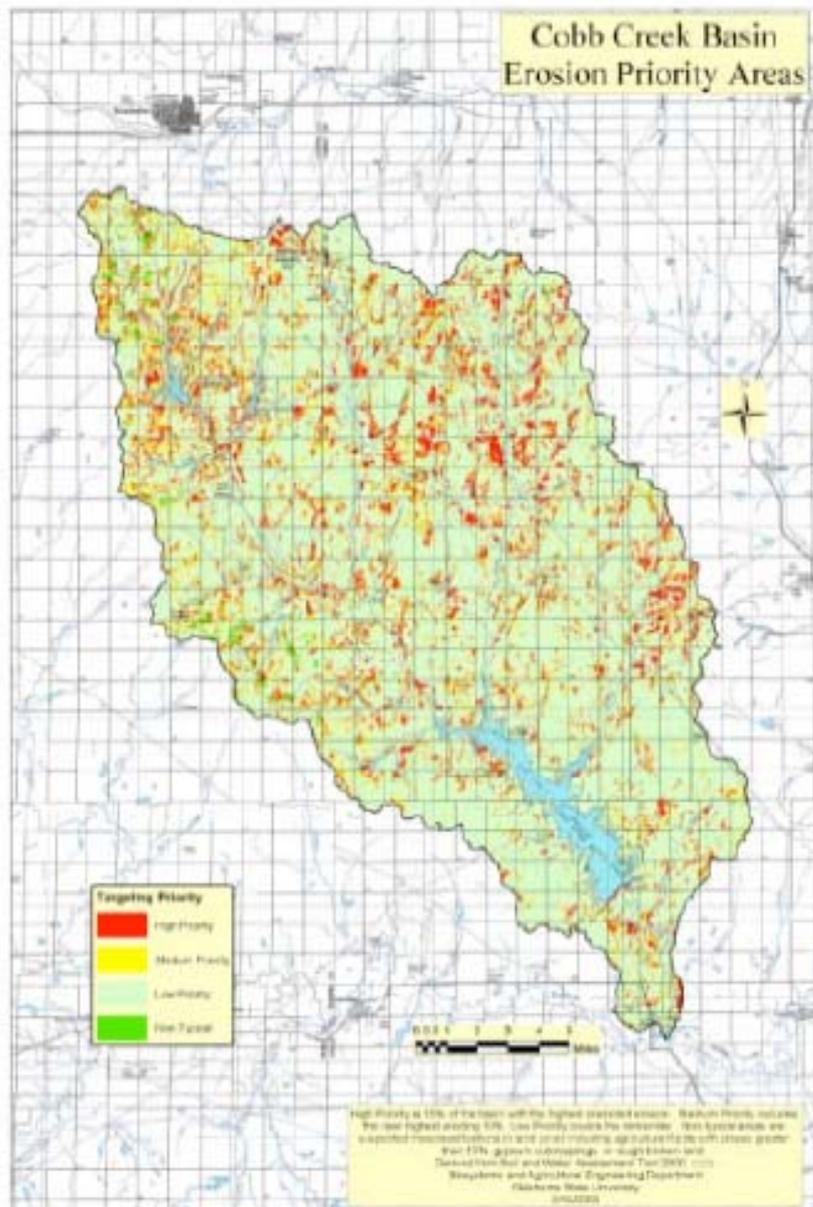
EPA Handbook for Developing Watershed Plans

- Chapter 4 – defines the scope – both geographic and scale of water quality issues
- Development through engagement with stakeholders
- Stakeholders likely have information of activities that have taken place in the watershed that will be useful in identifying causes and sources
- Stakeholders need access to water quality data from the responsible agencies in order to be successful
- Linkages and pathways of pollution between the sources and water body must be identified and defined
- Chapters 5 & 6 provides information on laying the groundwork towards establishing Element A



Dickinson Bayou Watershed Digital Elevation Model (DEM)





Modeling and mapping the watershed can reveal likely “hot spots” that warrant additional analysis to refine targeted actions

Figure 6. Location of areas in Fort Cobb Watershed most likely contributing the greatest portions of total sediment, and therefore phosphorus loading.

EPA Handbook for Developing Watershed Plans – Chapter 7

- ◆ Chapter 5 – identifying and gathering water quality data – building an inventory
 - ◆ Chapter 6 – review data, identify data gaps, and collect additional data
 - ◆ This analysis is essential to defining the watershed's water quality goals
 - ◆ Chapter 7 is the where Element A development begins
- 

EPA Handbook for Developing Watershed Plans – Chapter 7

- ◆ Identifying locations of impairments and problems
 - ◆ Determining timing of impairments and problems
 - ◆ Identifying potential sources
 - ◆ Determining areas for quantifying source loads
- 

Element A – Cornerstone of a Watershed Plan

- ◆ Element A serves as the cornerstone for the logical development of the remaining eight elements of a watershed plan.
- ◆ Good sampling data collected through an appropriate water quality monitoring program, field surveys, and land-use characterization, are necessary to identify and quantify the sources of pollution causing waterbodies to not meet water quality standards.
- ◆ Data serves as a baseline from which to determine whether water quality goals have been met.
- ◆ Sufficient resources should be allocated to accumulate and analyze data before moving forward to developing Element B.

Element A examples of information

- Baseline analysis of current waterbody conditions, including historical and newly acquired water quality data has been completed
- Field surveys and analysis are complete and is used to determine where most significant pollution contributions are coming from – site specific or geographical areas within the subwatershed
- Available data and information on critical zones/proximity to the stream have been visually inspected (ground-truth) and evaluated to isolate most significant pollution zones and site-specific geographic areas
- Pollution pathways have been identified and levels of pollution contribution to the waterbody has been determined
- If 319(h) funds were used to develop a TMDL that consisted primarily of NPS pollution contributions, this information should be considered for selecting critical sites for strategically locating BMPs to achieve the needed reductions in pollutants entering the waterbody.



Results

- Identified existing reports and data sets that exist within the watershed
- Water quality data inventory created
- Identified water quality data gaps and determined if new data needs to be collected
- Developed a monitoring plan and collected new water quality data as necessary
- Analyzed the data to determine the causes of impairments and the pathways and linkages of pollutants
- Initiated the identification of critical areas to target management efforts
- Estimated the relative contributions of the various pollutants



Next Steps:

- Identify load reductions needed to attain WQ standards
- Identify what types of management strategies are needed to reduce the pollutant loads and where to implement those strategies to control the sources
- Implement control measures and monitor to see if it is working
- If reductions are found to attain water quality standards, write success story



