Defining the Scope of the WPP

- Defining geographic & temporal scope
- Identifying issues of concern
- Developing preliminary goals
- Selecting indicators of environmental conditions

As outlined in Chapter 4 of the Handbook

Defining Scope

- Geographic area to be addressed
- Number of issues of concern
  - Impairments, concerns, other
- Types & breadth of the goals to attain
  - Water quality, ESA, invasives
- Temporal scope of implementation
  - Typically written for a time span of 10 years
    - → Adaptive management

Finding a balance

- If your scope is <u>too broad</u>
  - Difficult to “keep it all together”
  - Not able to efficiently/effectively use financial & human resources in process
  - Hamper ability to conduct detailed analyses of sources & solutions
  - Diminish likelihood of involvement by key stakeholders
  - Minimize probability of successful plan implementation
- If your scope is <u>too narrow</u>
  - Preclude the opportunity to address watershed stressors in a rational, efficient & economical manner

Geographic Focus

Key Concepts of WPPs

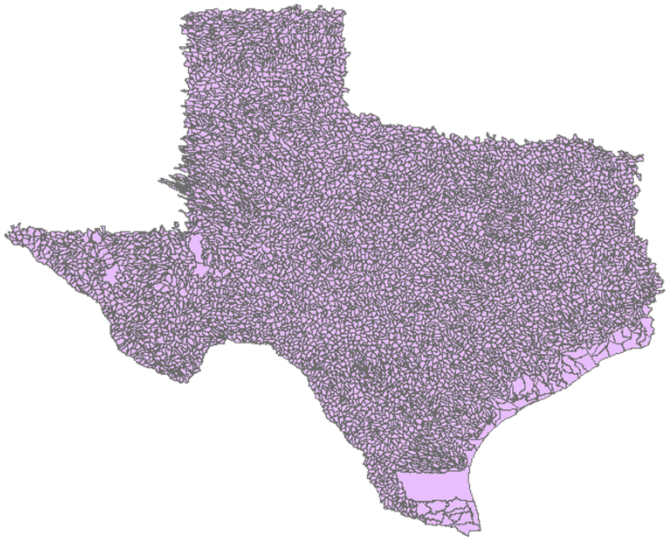
- Plans should address geographic areas large enough so that implementation holistically addresses all of the sources & causes of impairments & threats to water resources

Hydrologic Unit Codes (HUCs)

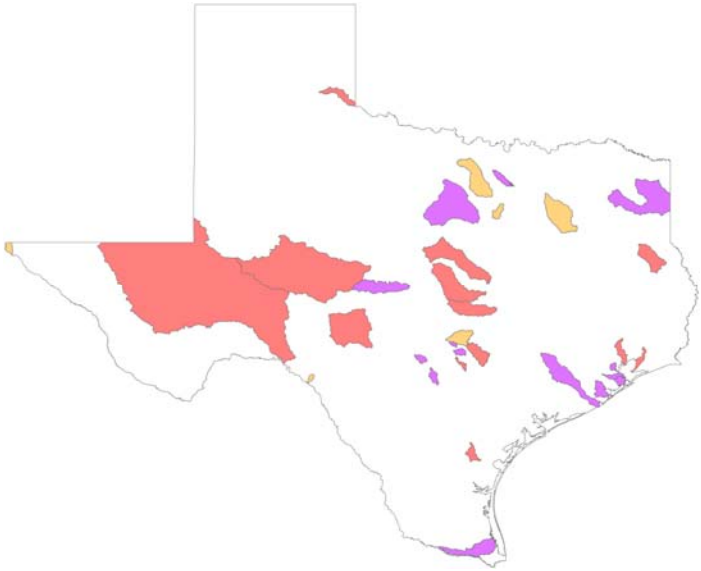
Watershed Boundary Definition	digits
A region, the largest drainage basin, contains the drainage area of a major river or the combined drainage areas of several rivers.	2
Subregions divide regions and include the area drained by a river system.	4
Basins divide or may be equivalent to subregions.	6
Subbasins divide basins and represent part or all of a surface-drainage basin, a combination of drainage basins, or a distinct hydrologic feature.	8
Watersheds divide subbasins and usually range in size from 40,000 to 250,000 acres. Subwatersheds divide or may be equivalent to watersheds and usually range in size from 10,000 to 40,000 acres.	10
Subwatersheds divide or may be equivalent to watersheds and usually range in size from 10,000 to 40,000 acres.	12

EPA recommends 12 digit HUCs for planning

>7,300 HUC12s in Texas



Texas WPPs



Acres in TX WPP Watersheds

Cypress Creek	24,299
Armand Bayou	35,496
Dickinson Bayou	63,571
Upper San Antonio River	85,431
Hickory Creek	110,635
Bastrop Bayou	148,317
Buck Creek	192,581
Plum Creek	254,080

Arroyo Colorado	451,840
Lake Granger	466,587
Brady Creek	513,950
Eagle Mountain Reservoir	550,432
Cedar Creek Reservoir	646,380
Lampasas River	839,800
Caddo Lake	1,216,000
Pecos River	12,434,468

Plum Creek HUC12s (10)

- So, the appropriate size of watershed (geographic focus) for a Texas WPP is...

Issues of Concern

2 step process

1. Project development/funding – grant workplans
   - Preliminary analysis to define scope
2. Beginning to pull stakeholders into the process
   - Query them about issues & goals
   - Worksheets 4-1 & 4-2 in Appendix B of Handbook

- What are the known or perceived impairments & problems in the watershed?
- What information is already available & what analyses have been performed to support development of the WPP?
- Are there any historical or ongoing management efforts aimed at controlling the problem pollutants or stressors?
- Are there any threats to future conditions, such as accelerated development patterns?

Handbook for Developing Watershed Plans to Restore and Protect Our Waters

Worksheet 4-1 *What Do We Already Know?*

1. What are the known or perceived impairments and problems in the watershed?
2. Do we already know the causes and sources of any water quality impairments in the watershed? If so, what are they?
3. What information is already available, and what analyses have been performed to support development of a TMDL, watershed plan, or other document?
4. Have the relative contributions from major types of sources of the pollutant or stressor causing impairment been estimated?
5. Are there any historical or ongoing management efforts aimed at controlling the problem pollutants or stressors?
6. Are there any threats to future conditions, such as accelerated development patterns?
7. Have any additional concerns or goals been identified by the stakeholders?

B-2

Appendix B: Worksheets

Worksheet 4-2 *What Ecosystem Issues Need to Be Considered?*

1. What are the sensitive habitats and their buffers, both terrestrial and aquatic?
2. Where are these habitats located in the watershed?
3. What condition are these habitats in?
4. Are these habitats facing any of the following problems?
   a. Invasive species
   b. Changes associated with climate warming
   c. Stream fragmentation and/or in-stream flow alterations
   d. Changes in protection status
5. On what scale are these habitats considered? (e.g., regional, watershed, subwatershed, or site-specific)

B-3

Tips for beginning the process

- Get stakeholders out into the watershed
  - Do a watershed tour (stream walk, kayak/canoe float trip, windshield survey, flyover) early in process
- Work to modify preconceived notions
  - About other stakeholders
  - About water quality issues
- Connection stakeholders with the waterbody
  - Where do stakeholders live, work or play?
  - How do their actions affect water resources?
  - This is KEY to ensuring long-term viability of process

Tips for beginning the process

- For stakeholders, it's not simply about water quality & removing waterbody from 303(d) list
  - Must identify what brings particular stakeholders to the table
    - Motivation => implementation
      - Illegal dumping at stream sites
      - Ecosystem issues (instream flows, habitat, brush)
- **Role of watershed coordinators** to understand links between pollutants/sources & watershed impacts & translate that for stakeholders => facilitate the process, guide them to solutions

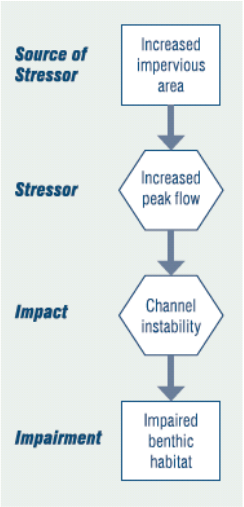


Figure 4-1. Simplified Conceptual Model

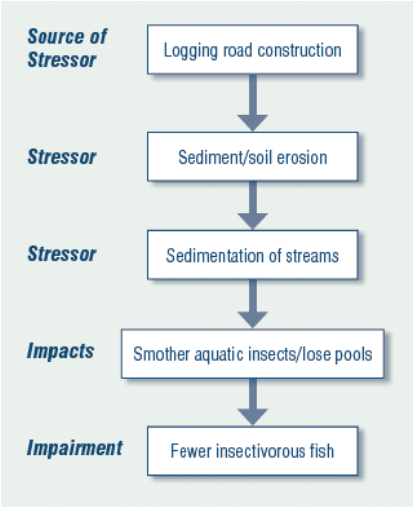


Figure 4-2. Simple Conceptual Model Involving Logging Road Construction Effects on Stream Aquatic Life (adapted from USEPA 1998)

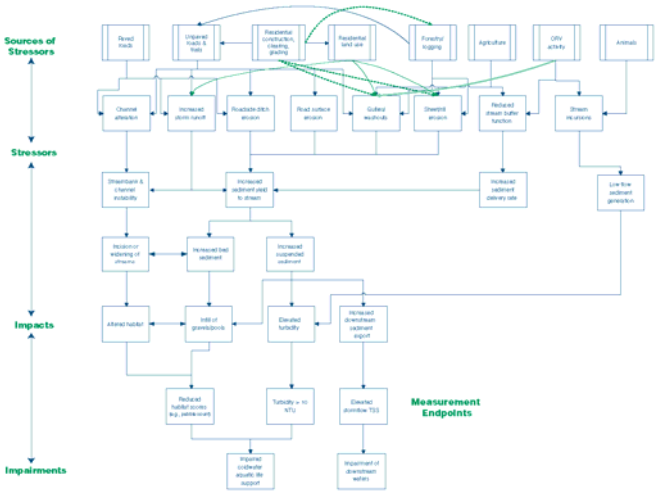


Figure 4-3. Draft Conceptual Model for Greens Creek, North Carolina

Goals

Watershed Approach Concept

- Action is driven by environmental objectives (measurable water quality goals) based on strong science and data

Vision & Preliminary Goals

Example Preliminary Goals

- Meet water quality standards for dissolved oxygen.
- Restore aquatic habitat to meet designated uses for fishing.
- Protect drinking water reservoir from excessive eutrophication.
- Manage future growth.
- Restore wetlands to maintain a healthy wildlife community.
- Protect open space.

- May be broad, with further refinement as watershed is characterized
- Establishes ownership of WPP effort & foundation for behavior change
- Incorporate TMDL goals, if applicable

Leon River WPP Goals

Goal to Address Contact Recreation Impairment in the Leon River Watershed

The WPP will reduce bacteria levels, where the goal is to achieve an instream concentration of *E. coli* resulting in a long-term geometric mean of 206 cfu/100mL at an appropriate downstream SWQM station recommended for each subwatershed. Maintaining this instream concentration will involve various levels of implementation requiring reductions in bacteria loadings that range from 15 to 26 percent depending on the subwatershed. The ultimate goal of the WPP is to achieve state water quality standards in the Leon River extending beyond the 10 year implementation timeframe of the WPP.

Goal to Address Nutrient Concerns in the Leon River Watershed

Implementation of management strategies to achieve pollutant reduction goals for *E. coli* will have a direct corollary benefit on decreasing nutrient loads and subsequent chlorophyll-*a* and DO impacts.

Consequence of No Action

Despite recent actions to avoid discharges of bacteria and nutrients to local creeks, stakeholders understand there are federal and state regulations that must be met because some creeks and parts of the Leon River are not attaining SWQSs. They recognize that taking no reasonable action to decrease bacteria or nutrient levels is not acceptable and further recognize that they ultimately have the responsibility of making the appropriate changes to land stewardship and business practices, social habits, and local government administration to avoid future state and federal regulatory requirements.

Buck Creek WPP Goals

- Maintain Unimpaired Status
  - The overarching goal decided upon by stakeholders is to maintain the current unimpaired status that Buck Creek has achieved. This includes maintaining E. coli levels in the creek below the current water quality standard and preventing the creek from becoming impaired for elevated nitrate levels when numeric nutrient standards are developed.
- Further Reduce E. coli Levels
  - To ensure that Buck Creek remains unimpaired, stakeholders set a goal to maintain current E. coli levels, but also decided to pursue a 2% load reduction from existing bacteria loads.
- Determine an Appropriate Nitrate Screening Level
  - Realizing that numeric nutrient standards are being developed for the state, stakeholders have established a goal of collecting needed data to support the development of a Buck Creek specific nitrate screening level.

Arroyo Colorado WPP Goals

THE ARROYO COLORADO WATERSHED PARTNERSHIP

Mission

The following mission statement was adopted by the ACW Partnership:

"Reduce the additions of pollutants to the Arroyo Colorado to the maximum extent possible in order to meet state water quality standards and improve the natural terrestrial, riparian, and aquatic habitat associated with the Arroyo Colorado Watershed."

Vision

The ACW Partnership adopted the following Vision:

"An ecologically sound Arroyo Colorado and Lower Laguna Madre that is understood and valued by all residents of the Lower Rio Grande Valley."

Goals

The ACW Partnership adopted the following goals:

- Reduce the additions (*i.e.*, loading) of nitrogen, phosphorus, ammonia, sediment, bacteria and biochemical oxygen-demanding substances by 7-19% over the next 10 years,
- Improve the awareness and understanding of the water quality issues associated with the Arroyo Colorado, its connection to the Lower Laguna Madre and the value both these natural resources bring to the communities of the Lower Rio Grande Valley,

Arroyo Colorado near Harlingen

Hierarchal, Step-wise Process

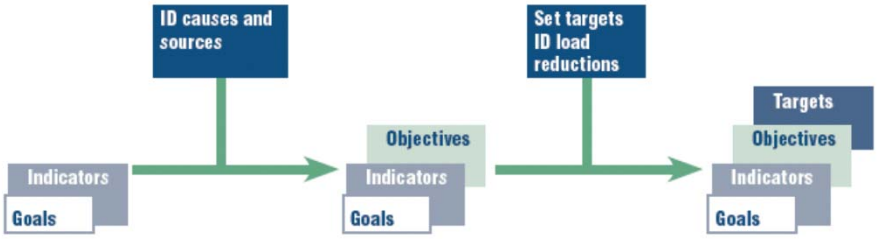


Figure 4-4. Evolution of Goals Throughout the Watershed Planning Process

Indicators

Indicators

- Measure current watershed health (status & trends)
- Measure progress toward meeting goals

Table 4-2. Use of Indicators Throughout the Watershed Planning and Implementation Process

Planning Step	How Indicators Are Used
Assess Current Conditions	Indicators are used to measure current environmental conditions, e.g., water quality, habitat, aquatic resources, land use patterns
Develop Goals	Indicators are used to determine when the goal will be achieved, e.g., reducing nutrient loads to meet water quality standards
Develop Pollution Load Reduction Targets	Indicators are used to measure the targets for load reductions, e.g., phosphorus concentration
Select Management Strategies	Indicators are used to track the implementation of the management measures, e.g., number of management practices installed
Develop Monitoring Program	The monitoring program measures the indicators that have been developed as part of the management strategies and information/education program
Implement Watershed Plan	Indicators are used to measure the implementation of the watershed plan, tracking dollars spent, resources expended, management practices implemented, and improvements in water quality

Combination & Quantitative

- Environmental
  - Temperature
  - Biological indices
  - E. coli
- Programmatic
  - # of brochures mailed
  - # of participants
  - # of website hits
- Social
  - Increased awareness / knowledge change
  - Increased # of landowners requesting technical assistance

Factors to Consider When Selecting Indicators

Validity
- Is the indicator related to your goals and objectives?
- Is the indicator appropriate in terms of geographic and temporal scales?

Clarity
- Is the indicator simple and direct?
- Do the stakeholders agree on what will be measured?
- Are the methodologies consistent over time?

Practicality
- Are adequate data available for immediate use?
- Are there any constraints on data collection?

Clear Direction
- Does the indicator have clear action implications depending on whether the change is good or bad?

See also Tables 4-3 & 4-5 in Handbook for examples

Worksheet 4-4 *Identifying Concerns, Causes, Goals, and Indicators*

What are the problems/ concerns in the watershed?	What do you think caused the problems?	How can we assess current conditions? (Indicators)	What would you like to see for your watershed? (Goals)	How will we measure progress toward meeting those goals? (Indicators)

Remember…

- Link concerns with goals and indicators
- Indicators used to track incremental progress toward achieving goals and restoration