Recovery Potential Metrics
Summary Form

Indicator Name: EXISTING TMDL OR WATERSHED PLAN

Type: Social Context

Rationale/Relevance to Recovery Potential: Many different types of studies have observed that despite the potential for conflict about a plan's contents, a completed plan generally has a positive influence on community progress, understanding and acceptance of restoration efforts. Studies of success stories have noted that a sound plan was a major driving factor. A technical plan such as a TMDL provides a quantitative, scientific basis for guiding actions. Existing plans can also clarify misconceptions, increase recognition of common interests, indicate government support and service, and provide a basis for further collaborative planning or action.

How Measured: Impaired waters with available plans are best represented by completed TMDLs or, in the case on non-pollutant impairments, by CWA Section 319 watershed plans. Scoring this metric should be limited to presence/absence of a plan.

Data Source: A national mapped dataset of waters with completed and approved TMDLs has been developed by EPA and is periodically updated and available online. A variety of other restoration or management plan types may be available in specific states or river basins. A national mapped dataset of waters with completed and approved TMDLs has been developed by EPA and is available through the Assessment TMDL Tracking and Implementation System (ATTAINS) (See: http://www.epa.gov/waters/ir/ and http://www.epa.gov/waters/data/downloads.html) or the Reach Address Database (RAD) (http://epamap32.epa.gov/radims/). EPA has also been collecting data on locations of section 319 projects since 2004 (see link to RAD above).

Indicator Status (check one or more)

_____ Developmental concept.
___x__ Plausible relationship to recovery.
_____ Single documentation in literature or practice.
___x__ Multiple documentation in literature or practice.
_____ Quantification.

Examples from Supporting Literature (abbrev. citations and points made):

- (Leach and Pelkey 2001) themes relating to watershed partnership success include [note that **bolded ones** are spatially representable for recovery screening with existing data while others are usually not available as spatially explicit data]: **funding, broad and inclusive membership,** committed participants, **effective leadership,** bottom-up leadership vs balanced among levels, trust, low or moderate conflict (vs none), geographic scope, limited scope of activities, adequate time, well-defined process rules, consensus rules, **formal enforcement mechanisms, effective communication, adequate sci-tech info,** monitoring data on outcomes, training in collaboration, **agency support and participation**, **legislative encouragement, community resources**.
- ***Existence of a general plan/agreement*** (Ducros and Joyce 2003) The three criteria that varied from the usual scoring range were the WFO agreement adopted, stream lower-bank stability, and vegetation type within the buffer zone. In the first exception, the WFO agreement, scores ranged from 15 to 40 with greater value placed on 20-year withdrawal and arable conversion agreements (Table 2). This scoring range recognized that the type of WFO agreement was potentially a particularly important influence on

riparian condition in this study. It also reflects the long-term nature of environmental enhancement and the potential habitat and water quality benefits of converting arable cropland to more natural vegetation (Dosskey 2001, Kemp and Dodds 2001). Furthermore, it was recognized that all WFO agreements potentially have considerable environmental benefit, so the minimum score possible was raised to 15. The second exception to the normal range of scores was for stability of the lower bank of the buffered stream. This criterion featured a depressed maximum score of 25 (Table 2) as lower-bank stability is not a substantial contributor to environmental enhancement in riparian zones compared, for example, to upper-bank character (Cooper and others 1987). The final exception related to the physical type or structure of vegetation in the buffer zone, which was assessed by recording the percentage of different vegetation types in the field and allocating a score based on the proportion of each vegetation type present (Table 2). Thus, a buffer zone with 50% woodland cover and 50% open ground would score 50% of 30 points (15) for the woodland and 50% of 10 points (5) for the open ground, yielding a total of 20 points. The minimum score assigned to this criterion was 10, as even the lowest category of open vegetation, such as low grasses, represents valuable wildlife habitat and can contribute to effective buffer zone functioning (Lyons and others 2000) (255).

- ***Existence of a general plan/agreement*** (Pringle 2001) The recent Black Sea Action Plan and the Black Sea Transboundary Diagnostic Analysis (Global Environmental Facility 1996, 1997) provide a basis for further international cooperation, but socioeconomic and political problems are impeding progress (984).
- (Ducros and Joyce 2003) The three criteria that varied from the usual scoring range were the WFO agreement adopted, stream lower-bank stability, and vegetation type within the buffer zone. In the first exception, the WFO agreement, scores ranged from 15 to 40 with greater value placed on 20-year withdrawal and arable conversion agreements (Table 2). This scoring range recognized that the type of WFO agreement was potentially a particularly important influence on riparian condition in this study.
- (Ghanbarpour, Hipel and Abbaspour 2005) Watershed management planning involves the interaction of objectives, existing constraints and available techniques to improve the effectiveness and efficiency of decision-making and implementation (Brooks et al., 1997).
- (Sudduth, Meyer and Bernhardt 2007) This is further supported by the fact that only 51% of projects were associated with a watershed assessment and only 30% of projects were done as part of a larger plan for the watershed. It may be that taking advantage of inexpensive land opportunities is perceived to be one way to use restoration dollars more efficiently, and in the world of mitigation and stream restoration done for profit, this may be a driving factor. However, adequate consideration of watershed conditions and proper site selection in the context of those conditions should improve project effectiveness (Kondolf 1998). A regulatory or funding agency requirement that project location be linked with watershed planning would be one way to encourage ecological rather than financial prioritization of site selection.
- (Palmer, Allan, Meyer and Bernhardt 2007) The development of a comprehensive watershed plan that places each restoration project in its present and future context is essential, where context refers not only to location of the stream but also to its current ecological state and the impacts it is likely to face in the future.
- (New York State Department of State Office of Coastal, Local Government and Community Stability 2009) Watershed planning focuses on the relationship between land use and land cover, the movement and storage of water, and water quality. It allows you to manage the land and how it is used in a way that will recognize the relationships between economic, social, and natural processes and keep drainage pathways functional and the water that flows through them clean. Watershed planning allows communities to integrate water resource protection and restoration with growth management at the local level, balancing environmental and economic factors. Watershed planning provides an opportunity for a community to reach out to its residents and businesses, building support for water quality improvements while planning for economic and community growth. Watershed planning is an ongoing and flexible process that is successful when there is

collaboration between all who live in the watershed. It cannot be done well without broad public participation.

- (Hobbs 2003) Setting goals for management and restoration is perhaps one of the most important steps in designing and implementing a project or program, and yet it is often either overlooked entirely or not done very well. There is a tendency to jump straight to the 'doing' part of a project without clearly articulating the reasons why things are being done and what the outcome should be. Ensuring that goals are both explicit enough to be meaningful and realistic enough to be achievable is a key to the development of successful projects. For most ecological management and restoration projects, goals also have to be decided inclusively so that they are agreed to by everyone with interest in the outcomes of the project.
- (Iles and Oleskiewicz 2003) Every watershed requires locally relevant planning based on local topography, current land-use trends such as sprawl, and historic land use. In general, watershed plans that address water quality issues from a relatively small scale (approximately 50 square miles) appear to be more effective than large-scale watershed plans.

- (Center for TMDL and Watershed Studies at Virginia Tech 2006) Although each watershed reviewed was unique, most possessed several common characteristics that enhanced or hindered implementation. Factors that enhanced implementation included:
    - The existence of a watershed plan that was focused and achievable –
      - focused on the issues in the watershed,
      - achievable through corrective actions that could be made/adopted with active stakeholder participation;
- (Center for TMDL and Watershed Studies at Virginia Tech 2006) A focused, relevant, achievable watershed plan facilitates implementation.
    - A traditional stand alone TMDL implementation plan is not the only approach, and is not a prerequisite to successful implementation.
    - Developing an implementation plan at the same time the TMDL is being developed benefits from continuous stakeholder involvement.