# EXECUTIVE SUMMARY

## Introduction

Watersheds are defined by natural hydrology, and they represent the most logical basis for managing water resources. The resource becomes the focal point, and managers are able to gain a more complete understanding of overall conditions in an area and the stressors which affect those conditions.

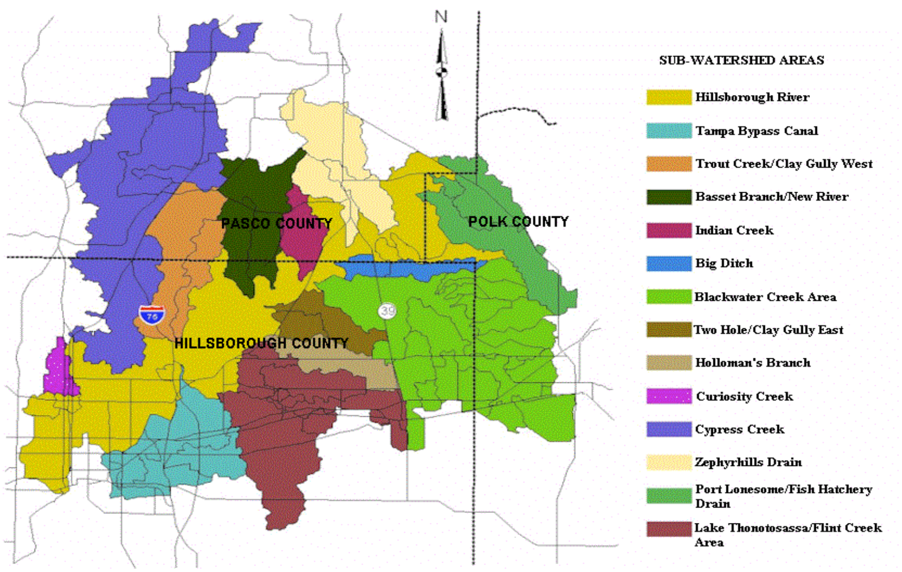
Traditionally, alleviating flooding problems have focused on efficient routing of stormwater with little consideration to environmental impact. Similarly, water quality improvements have focused on specific sources of pollution, such as industrial discharge or sewage discharges for a specific water resource, such as a river segment or wetland. While this approach may be successful in addressing site-specific problems, it often failed to address the more subtle and chronic problems that contribute to the long-term deterioration of a watershed. For example, pollution from a sewage treatment plant might be reduced significantly after a new technology is installed, and yet the local river may still suffer if other factors in the watershed, such as habitat destruction or polluted runoff, go unaddressed. Watershed management approach offers a holistic view of defining all related stressors that affect the overall quality of a watershed, and attempts to provide solutions that have multi-faceted benefits towards overall restoration and enhancement of the resources.

Besides the environmental pay-off, watershed approaches often have the added benefit of saving time and money. Whether the task is monitoring, modeling, issuing permits, or reporting, a watershed framework offers many opportunities to simplify and streamline the tasks, and facilitates coordination among different local, state, and federal agencies. By coordinating these efforts, the agencies can complement and reinforce each other's activities, avoid duplication, and leverage resources to achieve greater results.

Watershed protection also leads to greater awareness and support from the public. Active involvement and participation by the public build a sense of community, help reduce conflicts, increase commitment to the actions necessary to meet environmental goals, and ultimately, improve the likelihood of success for environmental programs.

# Hillsborough River-Tampa Bypass Canal Watershed Management Plan

The overall philosophy of watershed management in Hillsborough County (Florida) revolves around the holistic approach mentioned above and focuses on four key objectives: Flood protection; water quality enhancement; creation, restoration, and enhancement of natural systems; and improvement of water supply conditions. In 1998 the Board of County Commissioners approved approximately $10 million to complete the watershed management plans for all the major watersheds within the unincorporated Hillsborough County. Hillsborough River-Tampa Bypass Canal watershed is one of the largest and most urbanized watersheds in the county encompassing approximately 637 square mile area, of which 220 square miles lie within the unincorporated county.

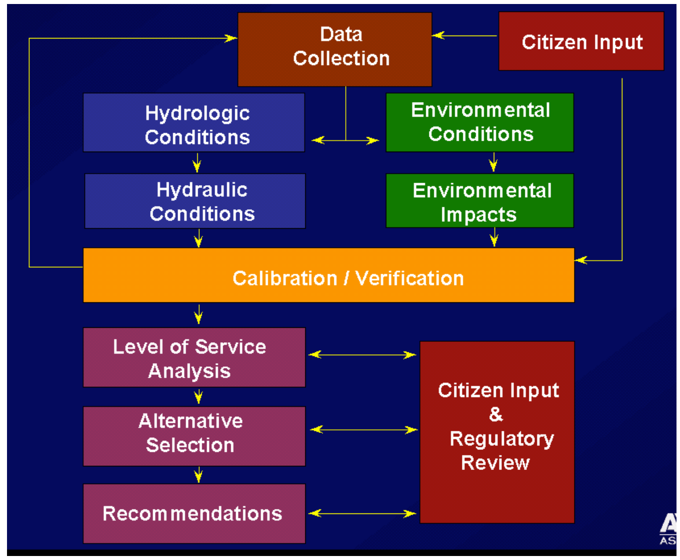



The headwaters of the Hillsborough River are located in the Green Swamp area of Pasco County. From that point, the river meanders for approximately 45 miles through the northeastern part of Hillsborough County and the cities of Temple Terrace and Tampa before discharging into Tampa Bay. Twenty major tributaries contribute to the flow of the river, draining residential, commercial, and agricultural lands from as far away as Zephyrhills and Lakeland. The Tampa Bypass Canal is a man-made canal system (approximately 13 miles long) with several flow control structures to provide flood relief. The canal originates near the County's Trout Creek Park north of Morris Bridge Road and is joined by a second diversion canal originating near Harney Road. The main canal discharges into the Palm River approximately 2.5 miles upstream of the river's mouth at McKay Bay.

In 1999, Ayres Associates was retained by Hillsborough County to develop a comprehensive watershed management plan for this important watershed. The overall study period was estimated as two years with completion date of November 2001. This article provides an overview of the Hillsborough River Watershed Management Plan and demonstrates the integrated approach of watershed management. Several unique tools and concepts were developed/utilized during the development of this plan, which facilitated data collection/analysis and prioritization of management alternatives, and are highlighted as appropriate.

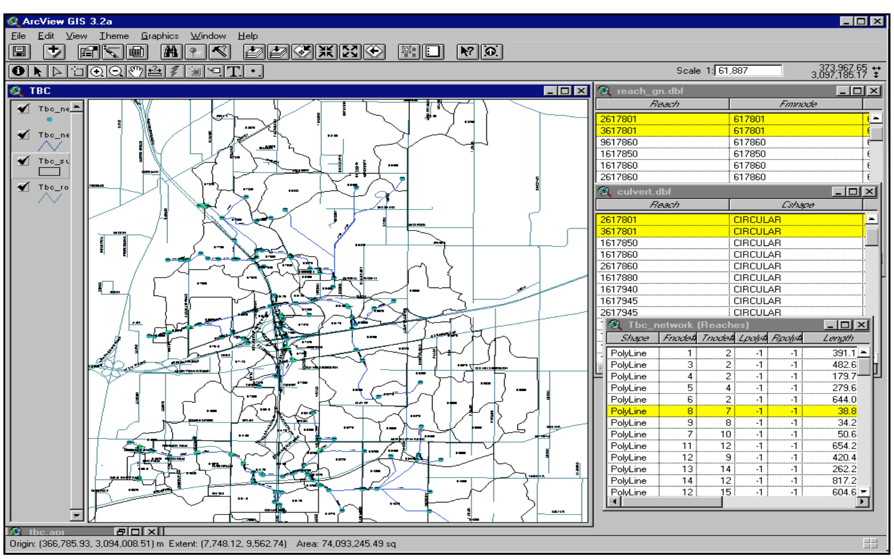
## Data Collection

The key steps followed during the development of the watershed management plan are outlined in the flow diagram. The process essentially began with data collection to characterize the existing conditions of the watershed. State-of-the-art GPS technology integrated with a custom made database was used to collect survey information for the conveyance systems. Historic flooding information was collected and mapped in a GIS system, and was subsequently verified in the field. To characterize the existing water quality conditions in the watershed, approximately 20,000 sampling data was collected from various federal, state, and local agencies. Wherever major data gaps were found, new sampling stations were implemented and both flow and water quality data were collected for the duration of the study. Historic land-use and vegetation maps were collected to determine the extent of habitat degradation within the watershed. Information was also collected to determine the change in predominant species of flora and fauna within the watershed. Wherever possible, the collected data was stored electronically in GIS linked databases.



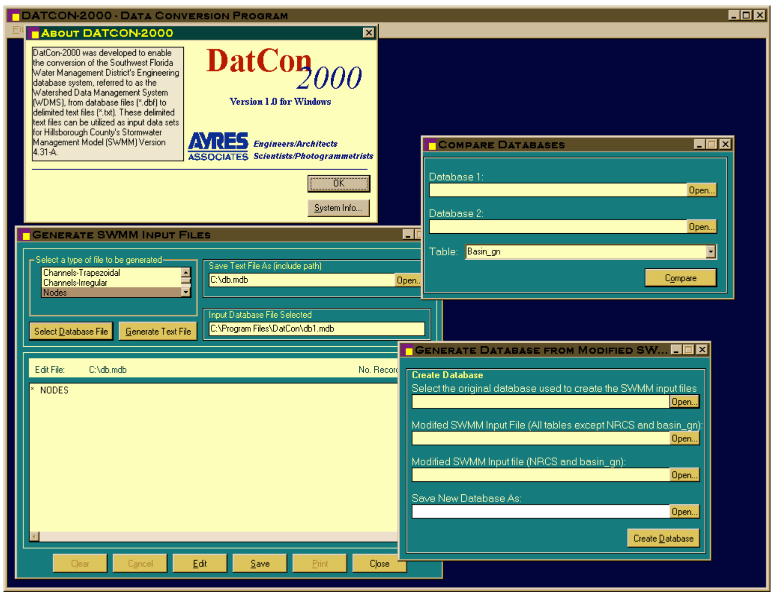

## Hydrologic / Hydraulic Modeling

The hydrologic/hydraulic modeling was performed using the Hillsborough County Storm Water management Model (HCSWMM) which utilizes the U.S. Soil Conservation Service (SCS) Runoff Curve Number method to convert stormwater rainfall excess into runoff, by developing hydrographs (SCS Dimensionless Unit Hydrograph Method). The generated runoff hydrographs were subsequently assigned to the hydraulic model at specified, unique, junction locations and were routed through the hydraulic system via a modified version of EPA Stormwater Management Model v.4.31a (SWMM) Extended Transport Block (EXTRAN). EXTRAN uses a numerical method to solve the St. Venant Equations for gradually varied, unsteady flow in open channels, and computes time dependent values for



flow rate and water surface elevation.

ArcInfo (ESRI Version 7.0) was utilized to aid in the determination of runoff curve numbers utilizing (i) basin delineations prepared from topographic aerial coverages (Southwest Florida Water Management District), and (ii) soils and land use information from soil map unit identifiers (MUID) and Florida Land Use Cover and Classification System (FLUCCS), respectively. A user-friendly GIS/database system was developed (as shown above) to present the connectivity diagrams of each subwatershed, which also housed all other information and pictures related to the nodes and reaches used in the model.




Customized database programs (e.g., DatCon 2000) were also developed to perform the QA/QC of all information utilized by the model. The program facilitated the formatting of datasets in accordance with the GIS data format outlined by the SWFWMD Data Management System.

Using one calibration (September 1997) and two verification events (December 1997), the Hillsborough River SWMM model was successfully calibrated to emulate observed runoff responses. Rainfall depths and distributions were obtained from over 43 rain gages located in and around the watershed for calibration. These depths and distributions were then allocated to individual subbasins using the Thiessen Polygon method. Calibration was performed to match computed stage, discharge, and runoff volume at 14 stream gage locations.

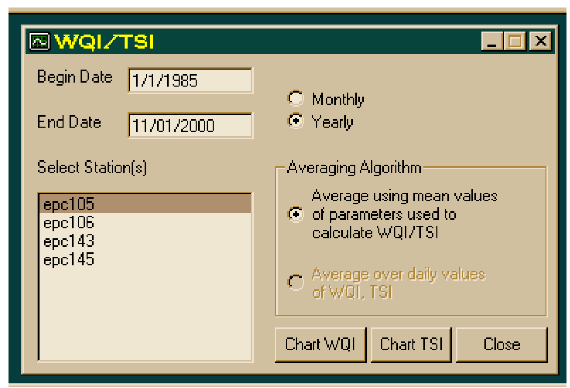
Following calibration, level of service (LOS) determinations were made to correspond with the Hillsborough County Comprehensive Stormwater Plan definitions for the flood protection LOS designations. These levels were not strictly defined, and required a quantitative interpretation for analysis, resulting in the following definitions.

LOS-A: No Significant Flooding (No flooding of roadways, No structures flooding, ≤3" above site)
LOS-B: No Major Residential Flooding (≤3" above road crown, No structures flooding, 3-6" above site)
LOS-C: No Significant Structure Flooding (>3" above road crown, No structures flooding, >6" above site)
LOS-D: No Limitation of Flooding (Structure Flooding)

Known flooding problems in the study area were also evaluated based on a review of complaint information compiled from Hillsborough County staff and from public meetings. The model results of the existing conditions and the flooding complaint records were identified and combined to create a set of LOS deficiencies. Also, maintenance needs were identified from field observations and reports from County Maintenance Units and identified for each of the regions.

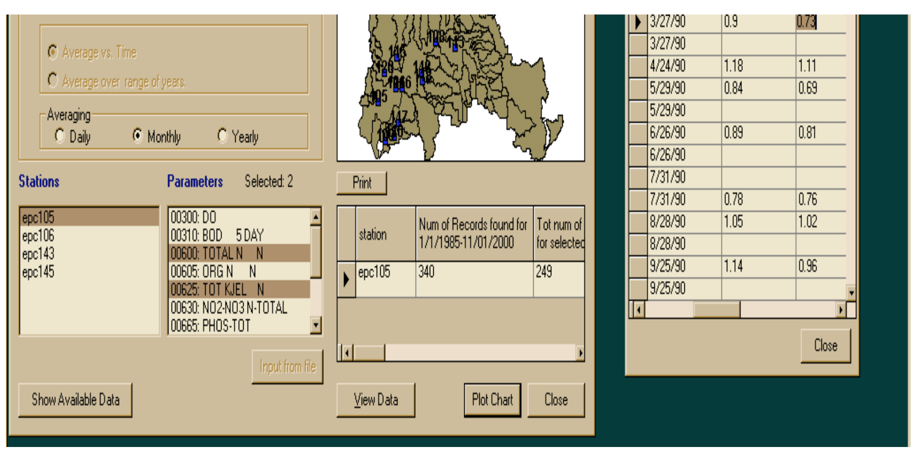
# Water Quality Evaluation and Pollutant Loading Modeling

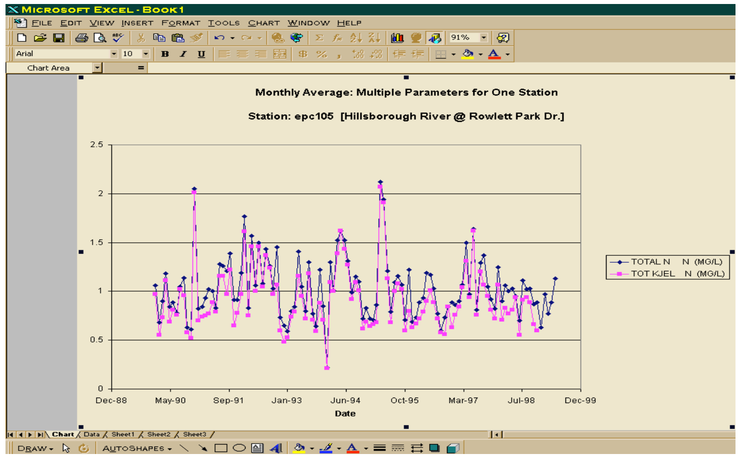
The primary water quality issues/areas of concern in the Hillsborough River watershed are related to both the highly developed nature of the landscape in the areas surrounding the Tampa Bypass Canal as well as the potential for future growth in the north, northwest, and northeastern region of the County. Intense urbanization and commercial development in the lower regions of the Tampa Bypass Canal area have resulted in significant negative impacts. These impacts were estimated by analyzing the existing water quality data and comparing the historic and current trends of the major pollutants. For the purpose of data analysis a custom made database was developed (as shown) which provided easy access to data, data query capabilities, WQI and TSI calculations, and automated plotting of queried data using Excel.




The key areas of concern determined from these analyses included the following:

- Increased impervious surface area
- Decreased stormwater infiltration to replenish and maintain groundwater levels in the aquifer
- Increased peak flows causing stream






- bank erosion, sedimentation, and increased pollutant loading
- Extreme losses of riparian and upland buffer areas which protect streams and lakes from water quality degradation
- Increased surface water pollution from residential and agricultural run-off, residual applications (septage and sludge spreading), and atmospheric deposition
- Consistently elevated mercury concentrations causing potential threat of bioaccumulation, and
- Potential contamination of groundwater from stormwater runoff, residual applications, and septic tank systems.

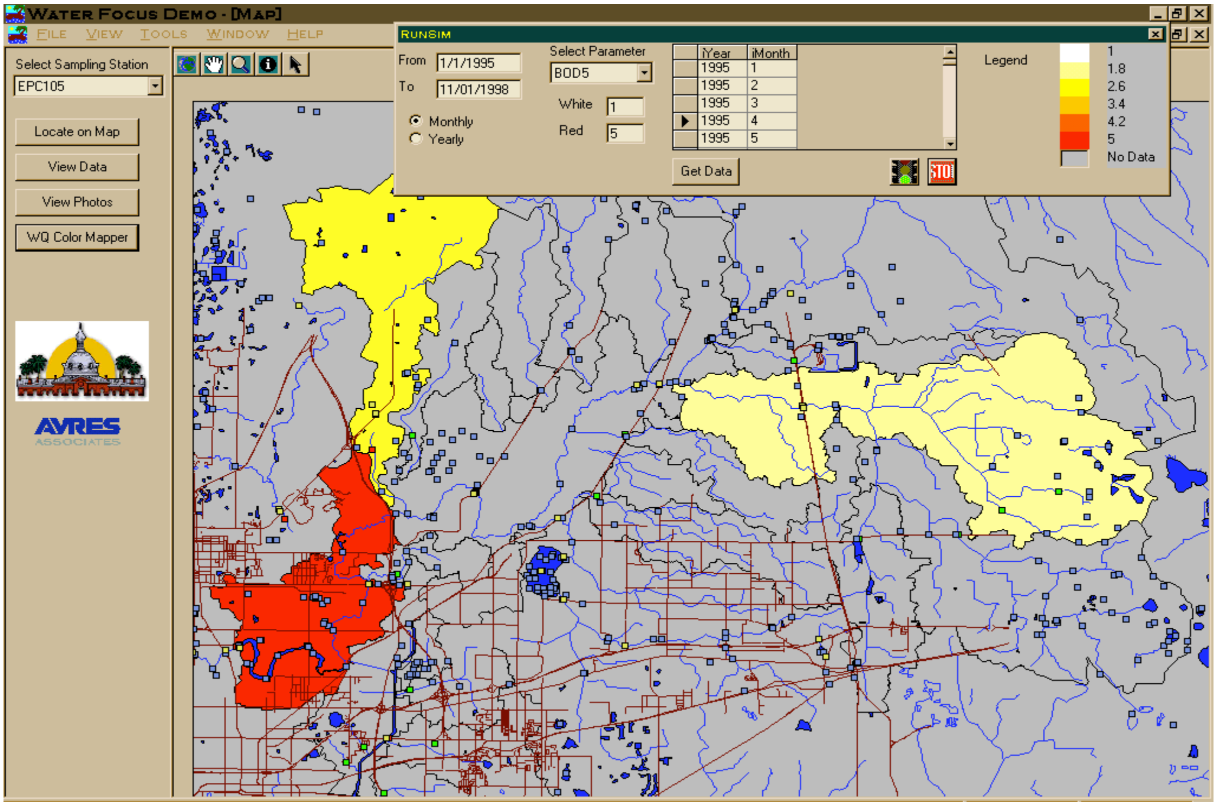
Based on the County's future land use plan for the area, these impacts are anticipated to occur at various locations in the northern regions of the watershed and would cause similar negative trends in water quality. Existing agricultural and waste management activities in these areas already contribute occasional high levels of nutrients (primarily nitrogen) and fecal coliform bacteria. Previous studies by Ayres Associates indicated that land application of residuals (septage and sludge) in the Tampa Bypass Canal and other subwatersheds could contribute significant nitrogen loading.

To determine the temporal trend in water quality conditions and present the data graphically, an interactive GIS based display program (WaterFocus – shown below) was developed. In this program the user chooses the specific area in the watershed and defines the range of pollutant concentrations for favorable and unfavorable conditions. The program searches the database for appropriate data and colors the subwatersheds according to the measured concentrations at sampling stations. The program runs through the data points in a pre-defined time step and allows the user to see the seasonal changes in pollutant concentrations simultaneously for all subwatersheds.

Potential water quality impact resulting from stormwater runoff in the watershed was evaluated using the Hillsborough County Pollutant Loading and Removal Model, which uses the EPA Simple Method (1992) to calculate pollutant loads. According to the Simple Method, non-point source pollutant loads are calculated as follows.

Annual pollutant load per basin (lb/yr)= $(0.227)(P)(CF)(Rv_I)(C_I)(A_I)$

| | | |
|---|---|---|
| P | = | annual average precipitation (in/yr) |
| $Rv_I$ | = | weighted average runoff coeff. based on impervious area |
| $C_I$ | = | event mean concentration of pollutant (mg/L) |
| $A_I$ | = | catchment area contributing to outfall (acres) |
| CF | = | correction factor for storms that do not produce runoff (assumed CF=0.9, 10% of storms do not produce runoff) |



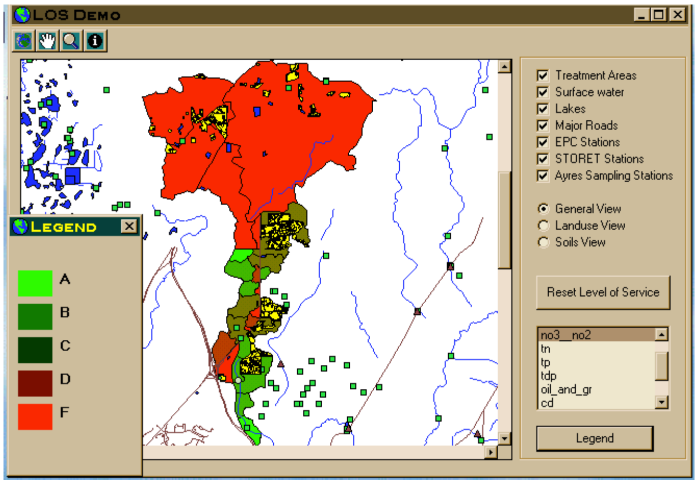

The pollutant loading model was developed in GIS to estimate the potential water quality impacts resulting from existing landuse and soils conditions, and also to evaluate the reduction in potential loading due to the existing best management practices (BMP) within the watershed. The gross pollutant load which assumes no treatment of the stormwater runoff is indicative of the potential of the land to yield contaminants into the environment. From this gross loading, the reduction in loading due to the existing BMPs was subtracted to approximate the net pollutant loading within the watershed. The existing BMPs considered within the watershed include approximately 775 treatment areas which were digitized in ArcView. Creating a shape file with the digitized treatment areas provided several advantages including the following:

- Modeling results are reproducible
- Treatment polygons may be geographically overlaid on other GIS coverages (e.g., soils, land-use, potentiometric surface, etc.)
- Digitized information can be used in future analyses including characterizing the effects of land use changes
- Treatment polygons can be added or deleted to reflect changes in the level of treatment.

Water quality treatment levels-of-service (LOS) criteria were used as part of this study to allow comparisons of existing and proposed stormwater treatment conditions to pollutant loading goals, and to help prioritize alternatives throughout the watershed.

The pollutant loading model was run at the finest level of basin delineation and each subbasin was characterized following the LOS criteria (A through F) defined below:

LOS A: Net load equivalent to 20% (or less) of untreated single family residential. LOS equal to A for a subbasin would indicate the presence of a high percentage of undisturbed natural systems, or high percentages of developed areas treated with BMPs capable of removing pollution levels to those representing natural systems.




LOS B: Net load equivalent to between 20 and 40% of untreated single family residential areas. LOS equal to B would indicate the presence of BMPs with removal efficiencies consistent with those representing adequately designed and maintained conditions and a relatively even mix of developed and natural land uses.

LOS C: Net load equivalent to between 40 and 70% of untreated single family residential areas. LOS equal to C would indicate the presence of treatment systems showing removal efficiencies consistent with those representing average to poorly maintained conditions and a greater percentage of developed versus natural land uses.

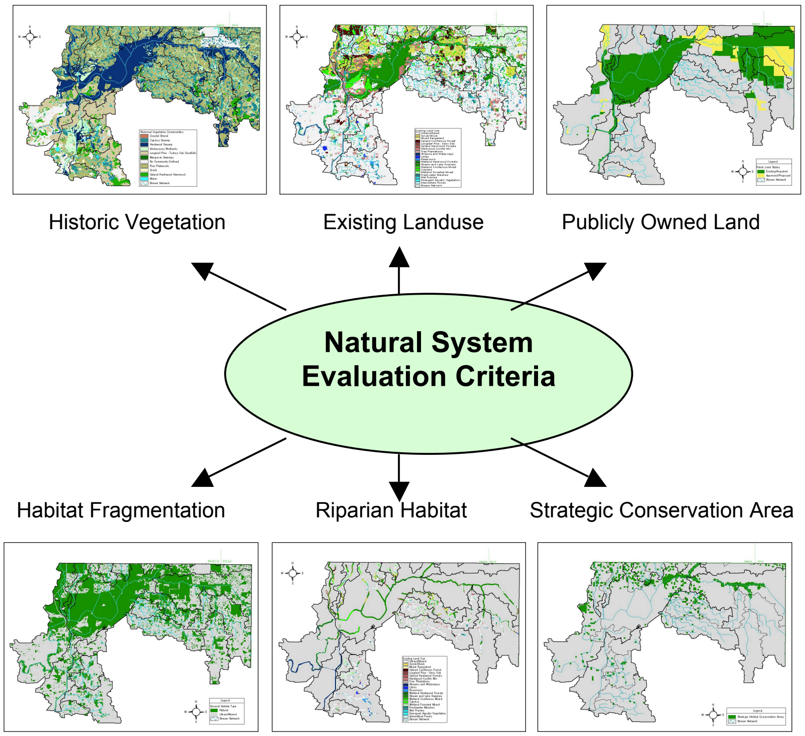
LOS D: Net load equivalent to between 70 and 100% of untreated single family residential areas. LOS equal to D would indicate minimal treatment of sub-basin discharges and relatively high percentage of developed land uses.

LOS F: Net load equal to or greater than 100% of untreated single family residential areas. LOS equal to F would indicate no treatment for sub-basin discharges, or the presence of extensive areas of land uses producing larger pollution loads per unit area than typical residential land uses.

Although there are some stormwater treatment areas in the watershed, many subbasins received D or F for nitrogen and phosphorus loading, mainly because of intense urbanization, increased imperviousness, and the lack of regional stormwater treatment facilities. The model results were also assessed by comparing the predicted loading rates with the calculated values of loading rates obtained from discharge data recorded at specific stations and pollutant concentrations measured at nearby locations. Based on these comparisons the loading model appears to estimate loads within reasonable accuracy for isolated drainage areas where there are no extraneous factors that affect flow (e.g., dams, surface water withdrawals, etc.). An example of this is Blackwater Creek where few significant changes in land use have occurred over the last ten years and there are no major control structures that affect the flow of surface waters.

# Evaluation of Natural Systems

The Hillsborough River watershed supports a diversity of natural resources including important habitats and wildlife species. However, fragmentation of contiguous forests and riparian corridors has resulted in significant declines in wildlife populations and an overall decline in ecosystem health. The loss of natural systems can result in other adverse effects including declining water quality, increases in runoff volume and timing, and the lack of recreational areas. Recent research has shown that with as little as 10% imperviousness (developed roads, buildings, parking lots, etc.) in a watershed, dramatic declines in biological health can occur as a result of changes in channel morphology, hydrologic regimes, habitat quality, and water quality.




One of the key objectives of this study was to identify opportunities to restore and protect natural systems which are important in preventing excessive runoff volumes and pollutant loads, maintaining terrestrial and aquatic biodiversity, protecting stream channel stability, and reducing stream bank erosion. The first step toward this goal was to identify and describe historical and existing natural systems. A description of key factors which influence ecosystem health were described and evaluated to assess and rank each of the subwatersheds using an evaluation matrix. Finally, significant issues and areas of concern for specific habitat types were evaluated and specific restoration efforts were recommended.

The parameters used in the evaluation matrix included the following:

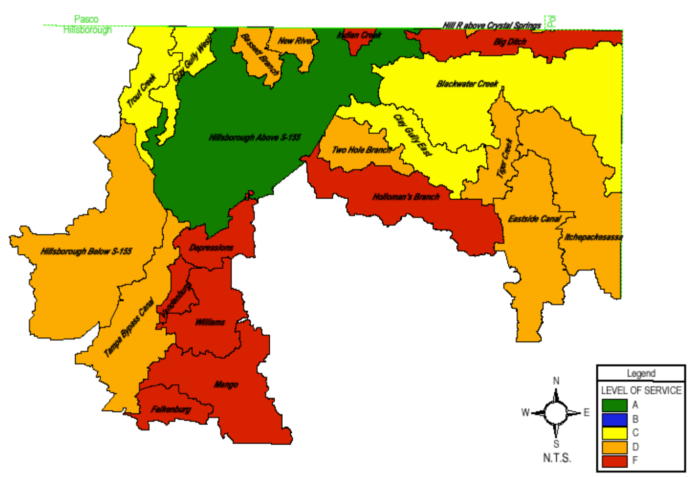
- Habitat fragmentation: represents the extent to which existing natural habitat are fragmented within a given subwatershed.
- Riparian Buffer Rating: represents a numerical score based on the percent of intact riparian habitat within various distances from creeks, streams, and rivers.
- Percent of existing natural systems: represents the percent of remaining natural habitat for a subwatershed.

- Exotic Vegetation (presence/absence): indicates the presence or absence of significant coverages of exotic vegetation based on field surveys of the watershed, primarily by low-level aerial overflights. Several species which have easily identifiable signatures were selected during the overflights (Brazilian pepper trees, Australian pine trees, Melaleuca, cogon grass, air potato).

- Strategic Habitat Conservation Areas: represents the percentage of strategic wildlife habitat contained within a subwatershed.

| Regions | Sub-Watersheds | Habitat Fragmentation | Riparian Buffer Rating | Percent of Watershed as Natural Habitat | Exotic Vegetation Observed | Percent of Watershed Identified as Strategic Habitat Conservation Area | Percent of Watershed under Public Ownership | Hydrologic Alterations | Score |
|---|---|---|---|---|---|---|---|---|---|
| Hillsborough River Near Crystal Springs | Hillsborough River Above Crystal Springs | 1 | n/a | 2 | 3 | 0 | 2 | 3 | C |
| | Big Ditch | 0 | n/a | 1 | 0 | 0 | 2 | 0 | F |
| | Indian Creek | 0 | n/a | 1 | 3 | 1 | 0 | 3 | D |
| | | | | | | | | | |
| Blackwater Creek | Blackwater Creek | 1 | 3 | 2 | 3 | 1 | 2 | 2 | C |
| | Itchepackesassa Creek | 0 | 2 | 1 | 0 | 0 | 2 | 1 | D |
| | East Canal | 0 | 1 | 3 | 0 | 0 | 1 | 1 | D |
| | Tiger Creek | 0 | 1 | 0 | 0 | 0 | 3 | 1 | D |

- Public Ownership: represents the percent of lands in public ownership for the purposes of conservation within a subwatershed.
- Hydrologic Alterations: represents the extent of drainage alterations that have occurred within a subwatershed. Such alterations include drainage ditches, berms/levees, dams, dredge and/or filling of waterways and wetlands. Percentages of land area within a subwatershed affected by hydrologic alterations were estimated using digital orthophotography and aerial overflights.

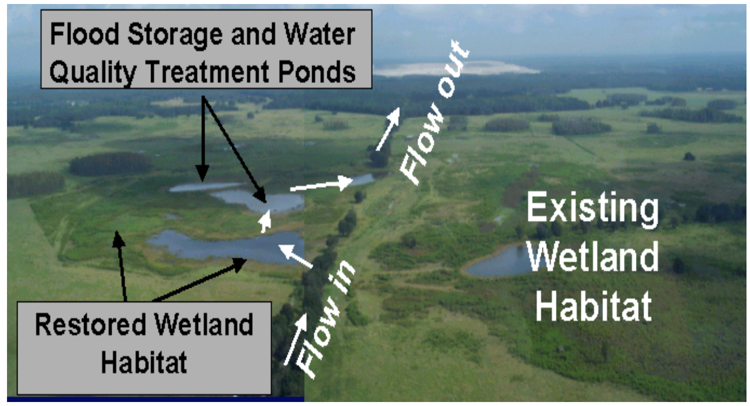



An overall score was calculated for each subwatershed based on the sum of scores for each parameter (see matrix above). Following a scoring technique similar to the water quality level of service evaluation, these total scores were normalized in to ratios obtained by dividing the total subwatershed score by the maximum possible score. Each subwatershed was then given a grade based on the following:

1.0 to 0.8 = A, 0.79 to 0.6 = B, 0.59 to 0.4 = C, 0.39 to 0.20 = D, <0.2 = F.

## Development of Alternatives

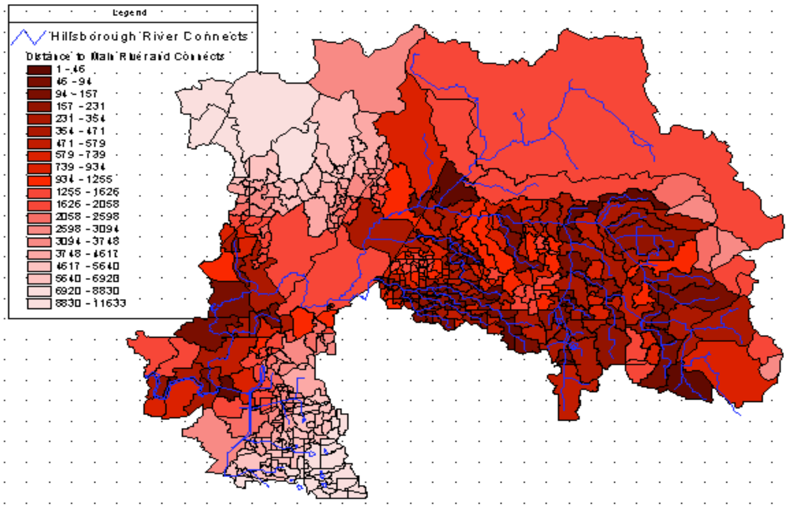
In order to provide "true" watershed management, best management practices must combine water quality and natural systems benefits with flooding problem solutions. Utilizing upstream areas to provide regional attenuation facilities prior to improving downstream conveyance systems provide one method of accomplishing this goal.



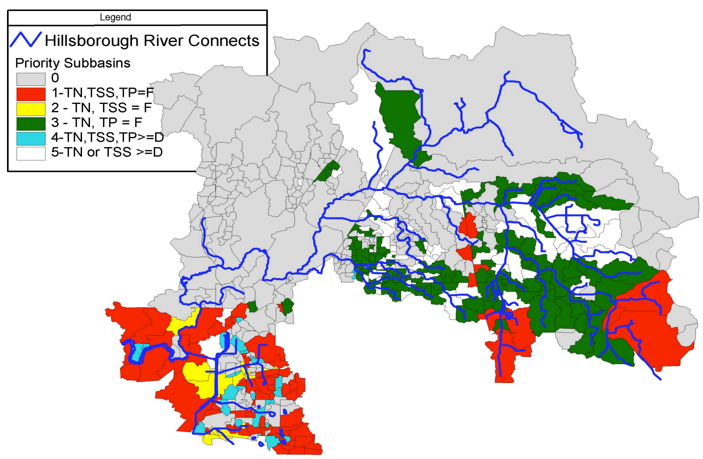

An example of such a concept can be demonstrated by the conceptual project shown here. This alternative is designed to attenuate flood water, provide water quality treatment by increasing the retention time, create and restore wetland habitat, and help in groundwater recharge through percolation. During development of alternatives for the Hillsborough River Watershed this philosophy was maintained and wherever possible projects with multiple benefits were recommended.

To facilitate locating undeveloped/open lands for construction of flood storage and water quality treatment ponds, GIS land use and soils data were used to identify the most suitable and cost-effective sites within each subwatershed. During this process, the undeveloped land, excluding water bodies and wetlands were intersected with hydrologic group A, B, C, and D soils. Using the maps and known flood problem areas, specific locations of storage ponds were identified and evaluated in the field.

A similar methodology to the above was used to identify potential wetland restoration areas within the Hillsborough River watershed. Since a large portion of the northeastern region of the watershed (including the Cone Ranch area) is relatively undeveloped, opportunities for riparian, wetland, and upland restoration of existing agricultural areas are extensive. Restoration and conservation activities in these areas are expected to be more cost-effective and viable than in urbanized regions such as the Tampa Bypass Canal area. For this analysis, agricultural and undeveloped land, excluding water bodies and wetlands, were intersected with hydrological group D soils to identify those areas most conducive to wetland restoration. These areas were further refined to identify potential riparian buffer restoration within 730 feet (223 meters) of the existing stream network. In addition, existing wetlands greater than 10 acres (4.05 hectares) were intersected within a 98-foot (30-meter) buffer of the stream network to identify potential hydrologic restoration of wetlands. Actual restoration site locations were refined through the collection of ecological data, field verification, and ownership information




The results from the pollutant loading model were integrated with a spatial analysis to further refine and prioritize areas of the watershed most in need of water quality improvement. To facilitate this process, a series of GIS analyses were performed to prioritize the subbasins which are in need of stormwater treatment. The first step of this process was to identify those subbasins that were in close proximity to the main stem and major tributaries of the river and Bypass canal using a centroid analysis in Arc/Info. Subbasins closest to a tributary were scored higher than those farther away.



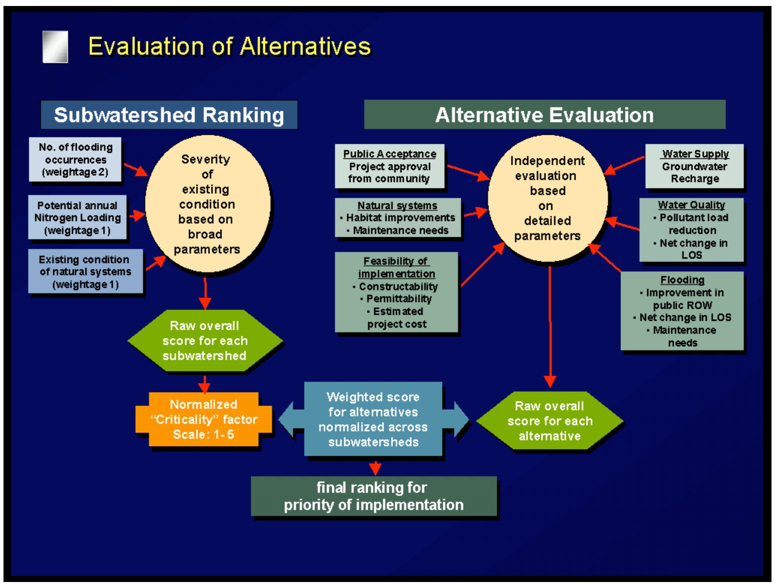

This data was combined with the LOS output data that had identified subbasins having relatively high loading values (poor level of service scores) for total nitrogen, total phosphorus, and total suspended solids. Those subbasins identified in red are the highest priority areas for stormwater treatment, followed by areas in yellow, green, blue, and white. A number of stormwater treatment alternatives have been developed for these priority areas to reduce pollutant loads.

Cost estimates for flooding and water quality alternatives were calculated based on a cost per item basis for each. Excavation quantities were determined as the volume of storage needed. For alternative items that are not listed as individual pay items, such as channel maintenance, a cost per unit was calculated as a product of its constituent pay items. Land values were calculated from a GIS layer created from the Hillsborough County Property Appraisers property boundaries map joined to the Hillsborough County Real Estate database of just market values. The just market value of each parcel was divided by the size (acres) of each parcel to develop a cost per acre GIS layer. The cost per acre layer was intersected with undeveloped lands on hydrologic group A, B, and C soils and clipped within a one-quarter mile radius of each node location requiring a stormwater pond.

Cost estimates for potential habitat restoration and water quality projects excavation were estimated with GIS by calculating the volume of soil above the low range of the groundwater table within a given area. Land values were estimated from the cost per acre GIS layer referenced above. The cost of potential restoration of existing wetlands through rehydration was estimated as a cost per acre of the wetland area delineated in the SWFWMD 1995 land use GIS layer.

# Evaluation of Alternatives

Evaluation of preferred alternatives was performed using a two tiered approach. Initially the subwatersheds were ranked based on broad parameters which depict the overall conditions of the subwatersheds, such as severity of flooding, potential nitrogen loading, and current conditions of the natural habitats. During this analysis flooding and environmental issues were considered to be of equivalent importance and were weighted equally. Flooding issues were mainly described by the number of flooding locations as simulated in the existing conditions model, and the environmental issues consisted of a combination of both water quality and natural system conditions within the subwatershed. The analysis resulted in a prioritized ranking of the subwatersheds in order of the “criticality” of the overall existing conditions.

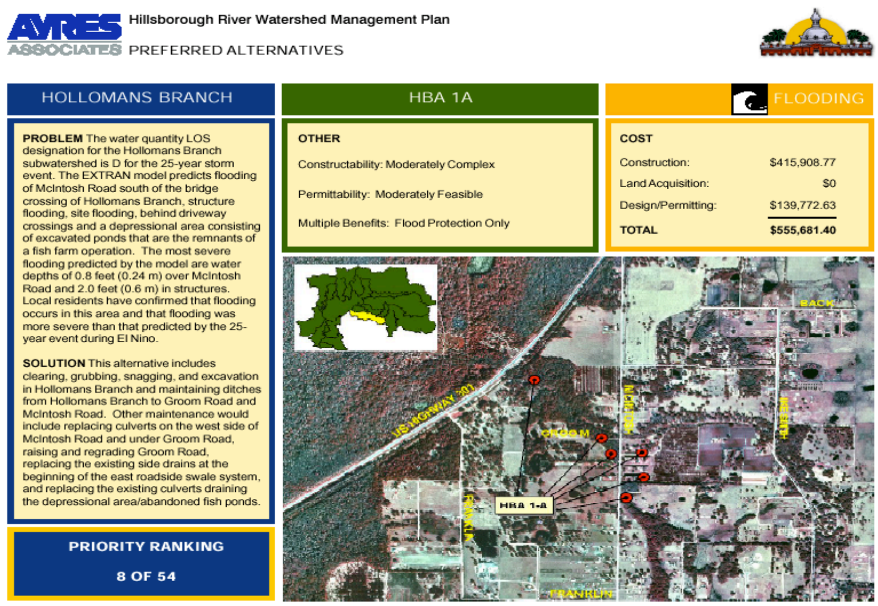


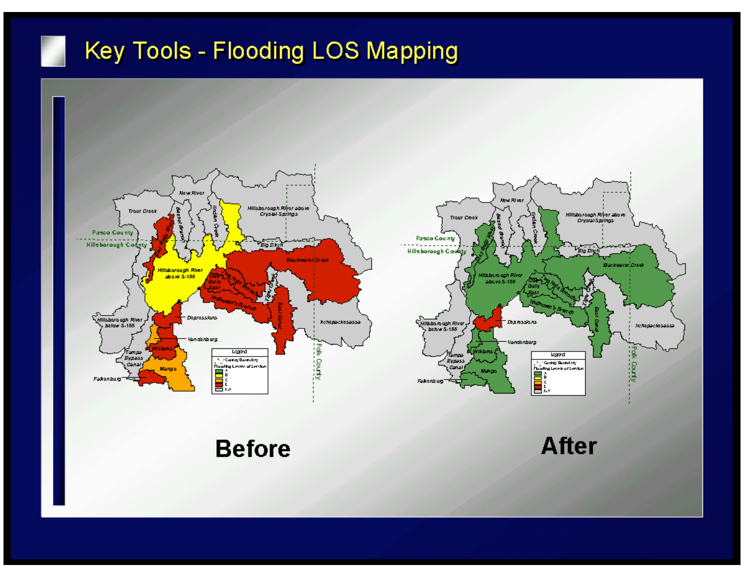

| Subwatershed | Issue(s) Resolved (flooding, water quality, natural system) | Project Name | FLOODING | | | WATER QUALITY | | NATURAL SYSTEMS | WATER SUPPLY | PUBLIC ACCEPTANCE | FEASIBILITY OF IMPLEMENTATION | | | | | OVERALL SCORE |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | Public Right-of-Way Improvements | Change in LOS | Maintenance | Pollutant Loading/Maintenance | Change in LOS | Habitat Improvement/Maintenance | Groundwater Recharge | Public Acceptance | Constructability | Permittability | Multipurpose Benefits | Actual Estimated Cost | Rated Cost | |
| BLK | fl, wq, ns | BLK 1 | 0 | 3 | -1 | 3 | 0 | 3 | 2 | 0 | 0 | 3 | 3 | $1,488,790 | 0 | 16 |
| BLK | fl, wq, ns | BLK 1 w/ Polk | 0 | 3 | -1 | 3 | 0 | 3 | 2 | 0 | 0 | 3 | 3 | $2,350,397 | 0 | 16 |

Subsequently the proposed alternatives were evaluated using a consistent and unified approach, independent of the “criticality” of the individual subwatersheds. At this step the impact of each alternative was evaluated individually based on a predetermined set of parameters, and the alternatives were scored independently using a pre-defined methodology. Several different parameters were used to evaluate the potential impact of the proposed projects including the net change in level of service for flooding, water quality, and natural systems, and impact on water supply/groundwater conditions. The feasibility of implementation was evaluated by another set of parameters such as public acceptance, permittability, constructability, and project cost. The analysis resulted in overall scores for each individual alternative, which was multiplied by the criticality factor for the purpose of determining the priority of implementation of the recommended projects.

## Recommended Alternatives

Based on the scores obtained from the evaluation matrix, a total of 54 projects were recommended to improve flooding and water quality conditions, and restore/enhance natural systems conditions in the Hillsborough River-Tampa Bypass Canal Watershed. Out of a total of 54 projects 32 projects were recommended primarily as flood control alternatives with secondary benefits of water quality and natural system benefits. Remaining 22 projects were developed specifically for enhancement of water quality and natural systems. These projects were summarized in project fact-sheets (as shown here) with all pertinent information, including a location map created using digital orthoquads. The long tern maintenance needs were also identified for conveyance systems and were included in the recommended project fact sheets.

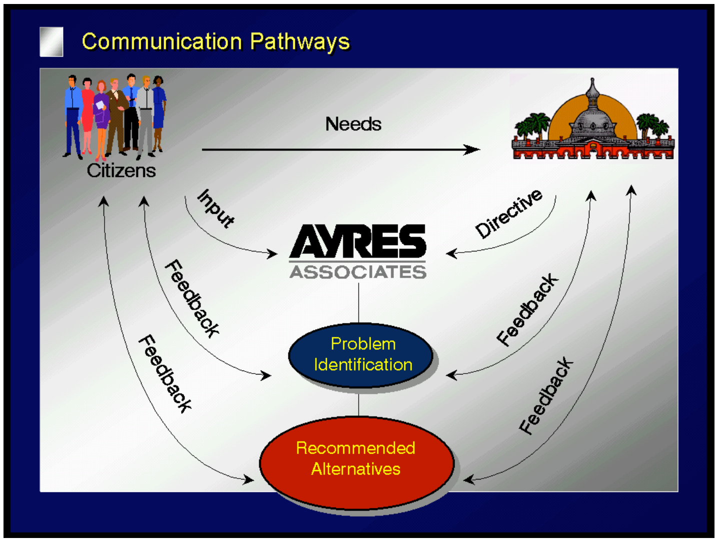



Finally the recommended projects were incorporated in the hydrologic/hydraulic model and pollutant loading model to determine the overall change in LOS for flooding and water quality conditions. The change in flooding LOS is shown here as "before and after" project implementation.

## Public Involvement

The public involvement program for the Hillsborough River Watershed Management Study was geared to inform citizens, groups, and organizations about decisions that were made regarding their watershed and as a way to ensure all views were considered in the planning and decision making. During the course of the study, the county and the project team offered a variety of ways to capture the public's interest and give them the information they need to understand to be able to provide constructive feedback.




Three separate public meetings were held at various locations throughout the watershed during the course of the study. The purpose of the first public meeting was to inform the public about the objectives of the study, share information regarding the existing conditions of the watershed, and receive feedback on specific issues and concerns.

The second public meeting was conducted to provide the public with the results of the existing conditions analysis and alternatives developed to address significant flooding, water quality, and natural systems issues. The information was presented in the form of a video presentation, which was followed by a poster-board session and question and answer session. As in the first meeting, the attendees were invited to provide oral and written comments to the project team.

The third public meeting was conducted to provide the public with the information on the recommended alternatives selected by the project team to address significant flooding, water quality, and natural systems issues. The feedback received from the public as well as other civic organizations during these meetings were incorporated throughout the study.

A project web site was created and

maintained throughout the duration of the study. The web page gave the public information about the project, the schedule, who to contact, maps, and a comment form that could be filled out and submitted.